

14.02 REVIEW FOR MIDTERM #2

General hints for preparation.

Note that questions generally tied to key concepts.

Look over chapter summaries and key words at end of each chapter.

Problem set questions are generally a good reflection of what long questions will look like.

Look over last year's exam.

Material.

Chapter 9-14 plus lecture on Banks and Banking

Banks and Banking

History

In the beginning, banks issued notes in exchange for deposits of specie (gold and silver coins) and then loaned out a fraction of specie holdings

Today banks issue variety of deposits in exchange for deposits of other banks and notes of the Federal Government

Role

The liquidity of an asset is measured by how fast it can be exchanged for cash.

Financial intermediaries issue liquid deposits (or notes) to create illiquid assets (like loans)

Credit is important for the purchase of durable goods, smoothing of consumption and investment, and economic growth

Risks

Surprises in the average level of deposits can cause serious problems as banks can't convert loans to cash very quickly.

Speculation that a bank may have low levels of cash and thus not be able to pay out to depositors on demand can lead to run on bank deposits.

A run on deposits in one bank can easily spread to other banks.

Run on deposits can have serious economic effects as forcing banks to call loans can bankrupt farmers or businessmen.

Safeguards

Deposit insurance ensures eliminates the possibility of bank runs as funds in banks are guaranteed. Statutory reserve requirements ensure banks always have adequate funds to handle small surprises in the level of deposits.

The central bank as a lender of last resort can help smooth large shocks (for example if there is a large reallocation of deposits between banks, the FED can loan money to the shrinking bank to pay out depositors without the need for calling loans)

Problems

Eliminating risks for depositors through deposit insurance removes implies that depositors are unconcerned with the lending practices of the bank and thus managers are free to make risky loans with high returns without the threat of losing deposits.

Fixes

Risk-based capital requirements imply that the amount of bank capital depends on the portfolio of assets a bank holds.

Regulations prohibit banks from holding many risky assets and limit investment in real estate.

Stocks and Bonds

Yield curve handout.

The value of a bond is the PDV of cash flows from the bond. Expectations of cash flows and interest rates are assumed the same across all agents so everyone values the bond equally. Equilibrium requires price equals this common value. Thus we believe that the price of a one-year zero with a face value of \$100

should be $P_{1t} = \$100 / (1 + i_{1t})$ and speculate that the price of a two-year zero with similar face value should be $P_{2t} = \$100 / (1 + i_{1t})(1 + i_{1t+1})$.

The law of one price requires that identical goods have the same price. If there are differences in prices of identical goods, it is possible to buy at the low price and sell at the high price and make easy money. The process of making money off differences in the prices of identical goods is called arbitrage. Discern between two kinds of arbitrage. Expected arbitrage applies to taking advantage of price differences between goods which may not be identical in every state of nature, but in expectation or on average will be identical. Riskless arbitrage applies to taking advantage of price differences between goods which are identical regardless of the course of future events. It is common to assume the absence of arbitrage in determining the equilibrium pricing of assets.

Compare a 1-year zero and a 2-year zero that you will sell in one year, each with a face value of \$100. The nominal return on the 1-year zero is simply the 1-year nominal interest rate today. The nominal return from selling the 2-year zero is simply the price of a one-year zero tomorrow divided by the price paid for the 2-year bond today. The absence of expected arbitrage requires that $(1 + i_{1t}) = P_{1t+1} / P_{2t}$, or equivalently $P_{2t} = P_{1t+1} / (1 + i_{1t})$. As we know that $P_{1t+1} = \$100 / (1 + i_{1t+1})$, we finally arrive at the conclusion below that $P_{2t} = \$100 / (1 + i_{1t})(1 + i_{1t+1})$. Thus we have two equivalent representations for the price of the two-year zero. First, it is equal to the expected PDV of cash flows. Second it is equal to the expected PDV of cash flows from a strategy which sells the bond after one year. The absence of expected arbitrage requires these representations be equal.

The yield-to-maturity on a bond is the common interest rate which forces the PDV of cash flows to be equal to the price. Thus for a 2-year zero we have $P_{2t} = \$100 / (1 + ytm_{2t})^2$. Think of the ytm as the average interest rate over the life of the bond. Since bond prices must equal the PDV of cash flows given expected future interest rates AND also given the ytm, we have another equality described below

$$\$100 / (1 + ytm_{mt})^m = \$100 / (1 + i_{1t}) * (1 + i_{1t+1}) * \dots * (1 + i_{1t+m-1})$$

Log approximations thus require the following:

$$ytm_{mt} = (i_{1t} + i_{1t+1} + \dots + i_{1t+m-1}) / m$$

This implies the yield curve is approximated as an average of expected future short rates.

Link to IS-LM model is by recognizing that the nominal interest rate determined by intersection of the IS and LM curves is the one-year short rate. Thus next year's expected short rate is determined by the intersection of next year's IS and LM curves.

Problem Set #4 question #1 about here.

Stock prices are also simply the expected PDV of dividends. Recognize that future dividends are driven by future sales, which in turn depends on future output. Higher expected future output levels should increase stock prices. Recognize that implicit in a stock price is a sequence of expected future short rates. Unexpected news will change stock prices while expected news will not. Review trends in real VS nominal stock price levels.

Problem Set #4 question #2 about here.

Expectations and Policy

When taking account of expectations, the IS curve is likely very steep. This is for two reasons. First, given future interest rates, changes in the current interest rate are not likely to affect the PDV of profits for firms OR PDV of wealth for consumers. From chapter 8, we believe that agents make consumption and investment decisions with foresight, and thus expected profit and wealth are the main determinants of spending in the economy. Second, along the same lines, given the interest rate, we believe that the

response of spending to changes in current income is small, given the path of future income, for the same reasons above. Note that the presence of liquidity constraints and risk-aversion imply that spending depends more on current income, and thus tends not to make the IS curve as steep.

The LM curve is unaffected by expectations (except inflationary expectations).

With a steep IS curve the ability of monetary policy to affect the economy directly is weakened. If agents believe monetary policy will be successful, however, future interest rates will fall and output will rise, shifting the current IS curve to the right, amplifying the monetary expansion.

Problem Set#5 question #1 about here.

Introduction to the Open Economy

There are different measures of openness. Ratio of exports or imports to GDP versus ratio of traded goods to GDP.

Definition of the nominal exchange rates, appreciation and depreciation, plus empirical notes plus empirical notes on the dollar-DM rate.

Definition of the real exchange rate, decomposition of the percent change below, plus empirical notes on the dollar-DM rate.

Definition of multilateral exchange rates plus empirical notes on the dollar-DM rate.

Problem Set #6 question #3 about here.

Accounting and the Balance of Payments. Key insight is that the Current Account must be financed by the Capital Account.

Problem Set #6 question #2 and #4 about here.

Uncovered Interest Parity as No expected arbitrage in international bond markets

Consider government bonds from two different countries with no default risk. The domestic country's bond pays a nominal return of i_{1t} while the foreign country's bond pays a nominal return of i_{1t}^* . Recognize, however, that for domestic agents purchasing the foreign bond, they must first convert domestic currency to foreign currency at the current exchange rate, and when liquidating their investment must perform the reverse transaction at some future exchange rate. As is such, the position in foreign bonds also requires a position in foreign currency. If the domestic currency depreciates, then every foreign bond is worth more in terms of domestic currency, so the return on the foreign bond increases. This implies that the absence of expected arbitrage requires the return on the domestic bond be equal to the return on the foreign bond plus expected depreciation of the domestic currency. Recognize that this equilibrium relationship is ex ante, and that ex post surprises in returns are consistent with arbitrage.

Problem Set #6 question #1 about here.

The Open Economy Goods Market

See Exchange Handout

$$DD = C+I+G$$

$$ZZ = DD+NX$$

Equilibrium is $Z=Y$.

Basic result is that increase in foreign income ALWAYS raises equilibrium net exports (in this model).

There are differences in the consequences changes in domestic versus foreign spending. In particular higher domestic spending increases output but also the trade deficit of the domestic country which increasing foreign output and improving their trade deficit.

Problem Set #6 question #2 about here

Marshall-Lerner requires that net exports rise in response to a real depreciation.

The consequences of Marshall-Lerner are not immediate, however, illustrated by the J-curve. If it takes time for imports and exports to respond to changes in the real exchange rate, a real depreciation first causes net exports to become worse.

Savings and Investment in the Open Economy

$Z = C+I+G+NX$ implies $S=I+G-T+NX$

The Open Economy IS-LM

Three endogenous variables (E, Y, i) determined by IS (goods market equilibrium), LM (money market equilibrium), and UIP (no expected arbitrage)

Under flexible exchange rates expansionary fiscal policy causes an appreciation of the currency and consequently worsens the trade balance (appreciation and higher output work same direction) while expansionary monetary policy causes a depreciation of the currency and consequently has an ambiguous effect on the trade balance (depreciation and output work in different directions).

Fiscal expansion and monetary contraction, a story of the early 1980s.

Fixed exchange rates and the consequences for monetary policy. A fixed exchange rate requires a fixed domestic interest rate thus the domestic economy does not have the ability to expand the money supply to lower interest rates and improve output. On the other hand monetary policy must magnify the effects on output of shifts in the IS curve (like with fiscal policy).

Problem Set #6 question #3a about here

Expectations and Exchange Rate Crises

Real interest parity (as no goods market arbitrage) and determination of the real exchange rate.

Determination of the long-run exchange rate using Marshall-Lerner condition.

The case of the United States (fluctuations in real exchange rate well-explained by fluctuations in interest differentials) and Japan (fluctuations in real exchange rate must be explained by fluctuations in long-run exchange rate).

Explaining exchange rate crises.

Problem Set #6 question #3b about here.