

Midterm Exam Study Guide

Spring 2016

EW MBA201B – Macro

Sections Axe&Oski/AM&PM/31A&32A/Morning&Afternoon

Jim Wilcox and Leslie Shen

These questions are food for thought; they are designed to assist you in studying for the midterm exam. YES and NO: Yes, some of these questions are similar to what could appear on the midterm exam; No, other questions here are too wide-ranging to be used on exams; No, the midterm exam will not be this long!

This guide won't explicitly cover all of the terminology, concepts, topics, and events that appear in class, in the book, or in the class slides and that you will be studying. Rather it attempts to provide you with some representative study questions.

Other practice/review resources

1. MEL: please find extra practice questions for Chapters 1-5 in “Do Homework” and “Take a Quiz/Test” under the Assignment tab.

Many of the homework questions have, on the left margin, the “Help Me Solve This 1-2-3” button that walks students through the type of question being asked.

MEL tracks your answers so that it can provide each student with customized suggestions for study in the “Study Plan.”

2. At the end of each textbook chapter, there are answers to each of the Self-Test Questions, which are highlighted in each chapter.

The study guide questions and some answers begin on the next page →

1. Why can we always regard a country's income as being equal to its output?

A country's output is always equal to its income. Every transaction has a buyer and a seller. Every dollar of spending by some buyer is a dollar of income for some seller. Gross domestic product (GDP) measures an economy's total expenditure on newly produced goods and services, which is the same value as the total income earned from the production of these goods and services.

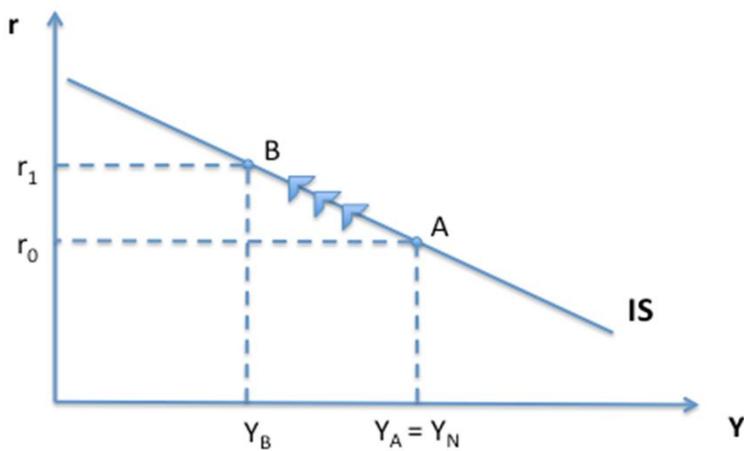
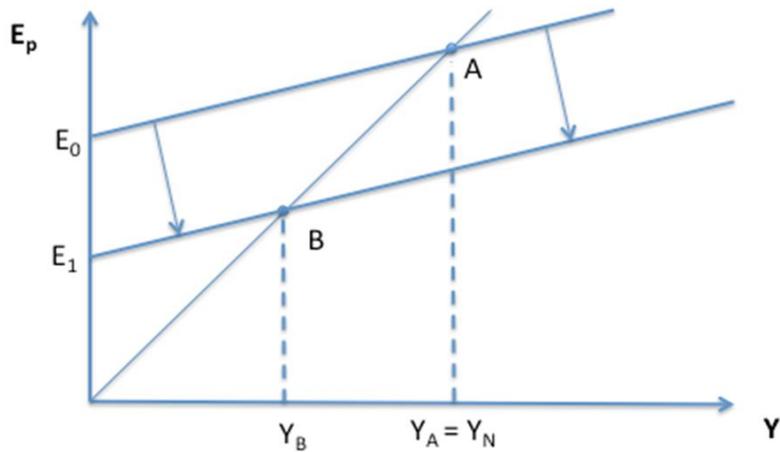
2. Why is saving positively related to the interest rate, but investment negatively related to the interest rate?

Saving (either household or business) is positively related to the interest rate because, as interest rates rise, the larger the incentive for people and businesses to defer consumption in order to earn more interest income. Since saving is simply postponed consumption, people postpone more consumption when they are paid more to do so.

Investment, I , refers to residential investment (home and apt. and condo... construction) plus "capex", or business investment spending (on equipment and structures). I falls as interest rates rise, because borrowing for investment is more expensive. At higher "hurdle rates, or borrowing costs (or opportunity cost of cash that is used), fewer projects are worth funding. And the opportunity cost of using holdings of financial assets, instead of loans, to finance I is also measured by r .

3. Consider our usual model economy that (so far) is closed to international trade and exchange rates. There are no income taxes. Suppose that interest rates are not near zero and that (real) GDP at its natural rate. The economy starts and ends in equilibrium. Now, assume that the central bank raises short-term interest rates. Show (if our usual graphs can do so) and report whether (and why) each of the following economic magnitudes is higher, lower, unchanged, or are uncertain as to what direction they moved (from the initial to the final equilibrium of the economy):

income,
the interest rate,
taxes,
government purchases of goods and services,
investment,
inventory investment,
involuntary inventory investment,
residential investment,
"capex",
consumption, and
employment.



Income, Y, or production, is lower.

The interest rate is given to be higher.

Taxes are all autonomous and are unchanged.

Government purchases of goods and services are autonomous and unchanged.

Investment is lower, because r is higher.

Inventory investment is lower because r is higher.

Involuntary inventory investment is zero in initial and eventual equilibrium.

Residential investment is lower due to higher r.

“Capex” is I, investment, and is lower due to higher r.

Consumption is lower due to lower Y-T and to higher r.

Employment is lower at lower level of production, Y.

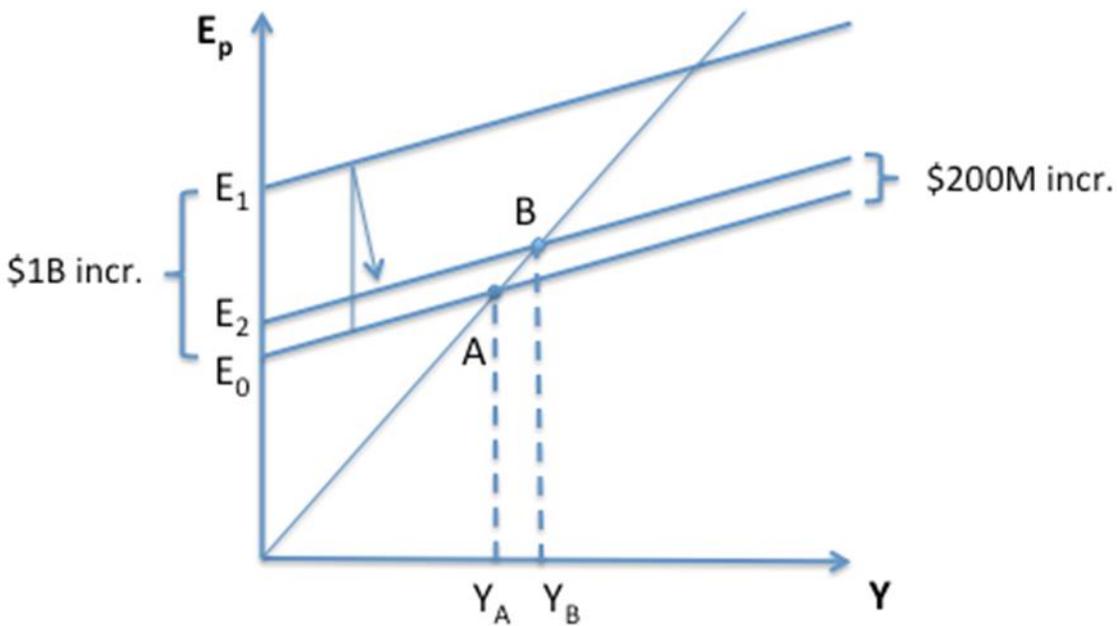
4. Why does a \$1B increase in government spending that is financed by an equal tax increase raise equilibrium real GDP? Explain how much it raises GDP. Explain why it would raise it less if an income tax were added to the economy.

This is a multiplier question. $Y = C + I + G + NX$ ← Notice there is no T here directly. A_p rises by \$1B due to that much higher G .

*The tax hike operates a little differently. When T rises by the same \$1B, initially C declines by $c * \$1B$, where $c = MPC$. $C = C_a + c(Y-T)$. If $c = 0.80$, then households spend \$800m less and save \$200m less. Thus, the E_p line shifts up \$1B due to G rise of that amount and then it shifts down by \$0.8B, due to the C decline due to the tax increase of \$1B. The net upward shift in E_p then is \$0.2B.*

*In our simplest case, $k = 1 / (1 - c)$. The change (delta) in $A_p = +0.2B = (1 - c) * \$1B$. Then, $k * \text{delta } A_p = 1$. That is, GDP rises by 1 here. (Really.)*

If t increases from 0% to 25%, then GDP won't rise as much when A_p rises by a given amount. (That is, the multiplier is reduced by higher t .) The reason is that, now, as Y rises, so does total T because of the income tax. So when your Y increases by \$1B, first you pay \$0.25B to the Treasury in higher T . Your $Y-T$, disposable or after-tax income rises by only $3/4$ as much as your gross income. Then, if A_p rises by \$1B and firms produce \$1B more (and generate \$1B more of incomes), $Y-T$ rises by only \$0.75B. Consumers then spend c (the MPC) of that \$0.75B. That smaller (due to the income tax) $Y-T$ is re-spent at every round due to t being larger. Thus, the multiplier is reduced by higher t .



5. What is the relationship between interest rates and bond prices? When the Fed tightens monetary policy, what happens to the wealth of those who already held bonds? How would that affect their consumer spending?
 - a. Compare the returns (1) that existing bondholders just got with (2) the returns that bondholders will get in the ensuing periods with (3) the returns that bondholders got before the Fed change in policy.
 - b. In what way are savings accounts in banks like bonds?

Bond prices move inversely (i.e. in the opposite direction) of interest rates.

When the Fed tightens monetary policy, it raises r . Then, bond prices drop. Bondholders' wealth drops and thus so does their C . Bondholders' capital losses are negative returns. Later, at the Fed-induced higher r generally throughout the economy, bonds will pay higher yields than they did before the Fed acted. So, after their big negative returns when rates rose, at the higher interest rates later, bondholders too earn higher yields than before she raised rates.

Saving accounts are "bonds". So, too, are any other deposits or loans in the economy. They pay interest. They have principal. They may act like very short-term bonds in that their r may change often. In macro, we abstract from the myriad types of loans, bonds, deposits, etc. Finance courses delve into the similarities and differences.

6. Explain why countries that are net exporters of goods also tend to be net importers of stocks and bonds.

Recall that $NX = NFI$. The Chinese and Germans are willing to send goods and provide services to the U.S. because they get paid for them. Usually, the net exporters use their proceeds to, in turn, buy assets like stocks, bonds, buildings, real estate, etc. So, in effect, they send out cars and electronics and bring home stocks and bonds.

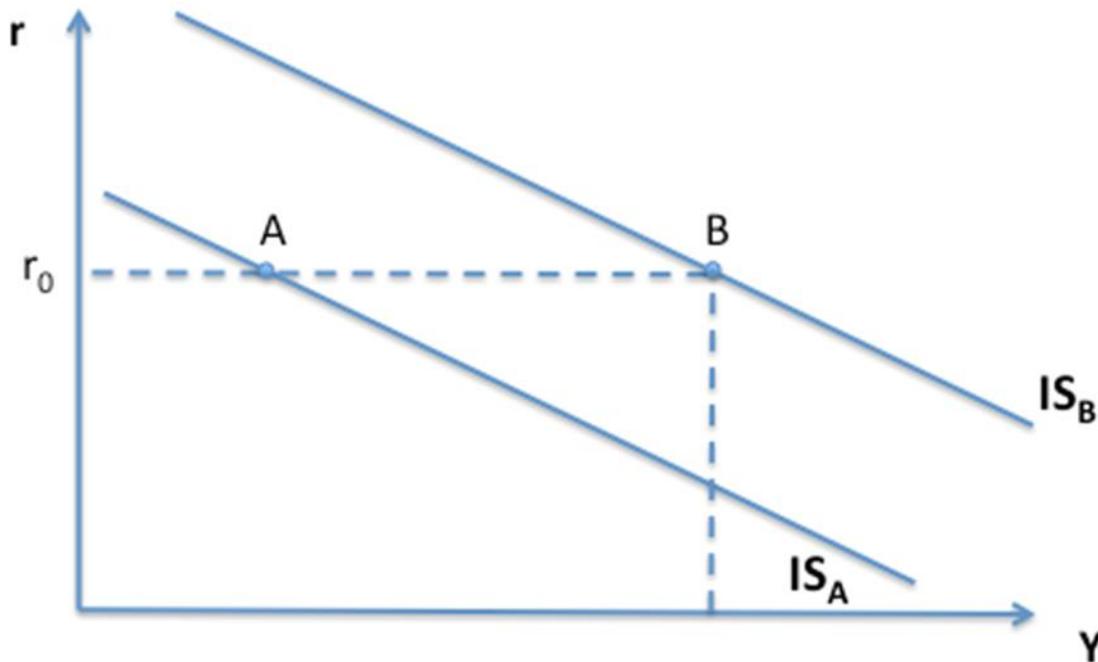
7. Explain why (autonomous) tax increases tend to be "disappointing" to those who want to reduce government deficits (that is, why, for example, a \$10 billion autonomous tax hike tends to reduce the deficit by less than \$10 billion). Assume that the income tax rate is 0.20 (20%).

*Deficit = $G - T$. More T brings more revenue, but it also lowers GDP (by shifting the E_p line down), which then reduces income tax revenue, and thereby partially offsetting the \$10B increase in autonomous T . Thus, the net effect on the deficit is smaller than the initial tax increase. Note that autonomous T rose, but endogenous t^*Y fell when Y fell.*

8. Suppose, when taken together as a group, the world's major economies raise government spending and reduce taxes in response to political pressures they face to boost employment. (Assume the world's central banks make sure that interest rates remain at their current levels.) Explain what has changed (if at all), and why, at the new compared with the original equilibrium to the world's totals for each of these: Y , C , r , NX , bond prices, residential investment, and budget deficits.

This is a global fiscal stimulus. The world's IS curve shifts to the right. (The world is the sum of its countries. The analysis is the same as if there were only one country.)

- a. Y is higher
- b. C is higher due to Y being higher (r unchanged)
- c. Given that there is no change in r
- d. NX is unchanged. Imports and exports (so far) are autonomous. And besides, world net exports always have to be $= 0$. (No trade with Jupiter.)
- e. Bond prices are unchanged because r is unchanged.
- f. Residential investment is unchanged because r is unchanged.
- g. Budget deficits, $G - T$, are larger due to G up and T down (even if there is an income tax).



9. Briefly discuss some (e.g., three) reasons why the supply of credit, especially to consumers rather than businesses, was apparently considerably higher in the mid-2000s than it had been previously.

Explain why the increase in supply raised the price and quantity of residential (houses) and commercial (buildings) real estate.

Explain why the increase in house prices led households to save less.

Explain why the increase in the building prices led financial institutions to lend more.

(Hint: To get some insight, you might also consider what happened after the mid-2000s when residential and commercial real estate prices fell, households and financial institutions “deleveraged,” and the shadow (i.e., non-) banking sector greatly reduced its supply of credit to housing markets, thereby contributing much to the reversals of those same, prior processes.)

Chapter 5 describes a number of reasons that lending, especially to households and for residential real estate, was historically high into the mid-2000s: the growth of subprime mortgages, a bubble mentality in households and in lenders, burgeoning securitization of households' loans, more public policies that promoted home ownership.

Greater supply of credit (loans, etc.) fueled increased demand for residential real estate, which raised their prices and volumes.

*Higher house prices raised wealth, which increased consumption.
(Perhaps, 5-cents spent annually per extra dollar of wealth.)*

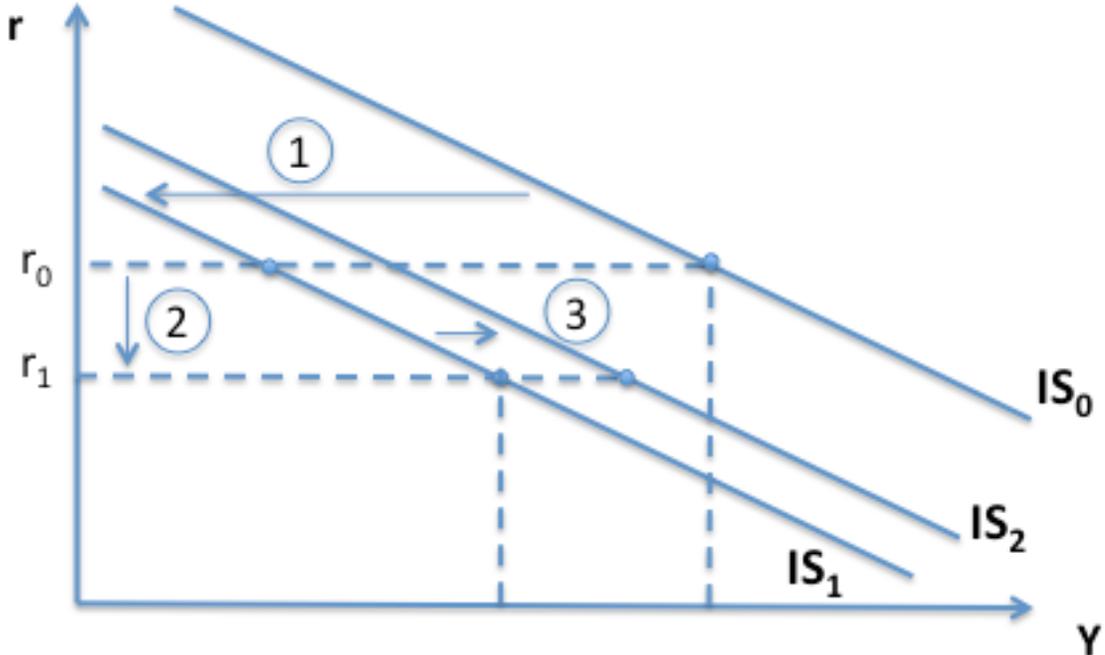
The persistent increases in prices of houses and commercial buildings apparently lowered the perceived risk of residential and commercial real estate, which led to more lenient lending and more willing borrowers.

10. Assume that the Fed, with only partial success, used its monetary policy after the mid-2000s in its attempts to keep the unemployment rate from rising. Show and explain the effects on output and interest rates of the declines in residential and commercial real estate prices. Then identify and show the effects on output and interest rates of various public policies that were enacted in the late 2000s as attempts to reduce the unemployment rate.

In the figure below, the economy headed toward B from A as the IS went left, due to the decline in real estate values, which reduced wealth (W) and led to tighter or less credit supplied by lenders. Unable to borrow and spend as much, households saved more and thereby “deleveraged” their household balance sheets.

Then, the economy headed toward C as a result of the Fed’s usual reducing of short-term interest rates, r, which led the economy to slide down the prevailing IS curve.

The, the economy headed toward D, as the IS curve was shifted partially back to the right by the various tax cuts, increases in G, and so on. (See chapter 5).



11. Mr. A argues that encouraging consumers to save more is self-defeating, because it wouldn't raise saving, but would only reduce consumption. Ms. B counters that saving more leads to investing more and living better later in life. Mrs. C contends that saving more boosts businesses efforts to modernize and expand. True, False, Uncertain? Discuss.

A says that higher autonomous S (saving) reduces autonomous C , which in turn reduces E_p (shifts it down in a 45-degree line figure) and thus equilibrium Y . The lower Y means that endogenous S will be lower. (You can safely ignore this, but it is intriguing: In this case, where any change in r has been ignored, you could actually show that the net change in $S = 0$ here due to the increase in autonomous S ! Indeed, the fall in C equals the fall in Y . really.)

Notice the slippery terminology of Ms. B. She may be referring to saving as investing, and not referring to I , purchases and production of equipment, inventories, and structures.

Mrs. C says that if S is higher, then r will fall, which will raise I . If all of the extra "leakage" is then funneled (through the capital markets, for example, via lower r) into the same extra "injection", then the change in $Y = 0$. In that case, higher S did lead to higher I (and also to higher C too).

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