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UNIVERSITY OF CALIFORNIA

Final Exam

Haas School of Business

Spring 2018

EW MBA201B – Macroeconomics in the Global Economy

Professor James A. Wilcox

Spring 2018 Macro Final Exam---with guides to answers included

This exam has five multi-part questions, followed by four shorter-answer questions on 11 pages. Points are shown before each question.

Remember that we can't grade what we can't read; write legibly, please.

Feel free to use graphs and equations in your answers if you like, but be sure to explain how they help answer the questions. Label graphs sufficiently.

Some parts and some questions are much easier than others. Allocate your efforts accordingly.

Time limit: 120 minutes

Word limit: 40 words per part of each question 1-5; 30 words per shorter-answer question

In general (unless told otherwise), for each question, assume that consumption depends on after-tax income and that imports depend on income. Also, assume that both consumption and investment are affected both by interest rates and by sentiment (consumer and business, respectively). The constant income tax rate is t . Government purchases are entirely autonomous, unless specifically stated otherwise.

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Do well.

(22 points)

1. Suppose that the economy starts in long-run equilibrium ($Y=Y^N$ and $U=U^N$). Suppose also that the inflation is at the central bank's desired, or target, inflation rate of 2% per year. Suppose now that the government increases its spending for defense and for infrastructure improvements. (For this question, assume that there are no accelerator effects on investment spending.)

Explain why the increase in government spending would be likely to:

- a. Raise real GDP in the short run by a multiple of the increase in government spending, but also lower investment

As G spending increases, employment and incomes rise. Part (due to the MPC) of the extra income is spent, further raising Y, and this process continues, in the usual way of multipliers. The increase in G shifts the IS curve to the right, thereby raising r. Higher r reduces I.

- b. Raise the inflation rate in the short run

In the short run, higher Y leads to a movement to the right along the SP curve, $Y > Y^N$ and inflation increases.

- c. Raise the expected inflation rate less than the actual inflation in the short run

Inflation expectations adjust gradually, usually in response to actual inflation. One form of expectations formation that we learned is adaptive expectations, where people revise their expectations about what will happen in the future based on what has happened in the past, in particular based on how much actual differed from their expectations.

- d. Have very little or no effect on real GDP in the long run (when expected inflation and actual inflation are re-equated)

SP curve will shift up as expected inflation and actual inflation get re-equated. Real GDP will come back to long-run equilibrium. $Y_0 = Y_1 = Y^N$.

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- e. Suppose that the economy starts at its long-run equilibrium. With the government's expansionary fiscal policy, briefly explain what happens, and why, to the following items by comparing their values in the eventual, new, long-run equilibrium with their initial, long-run equilibrium values:

GDP: no change, since Y starts at Y^N and comes back to Y^N in the long run.

Consumption: decreases, since expansionary fiscal policy pushes up interest rate, while disposable income ($Y-T$) is unchanged.

Investment: decreases, since expansionary fiscal policy pushes up interest rate.

Exports: no change, since exports are determined by GDP of foreign economies. (Alternative answer, expansionary fiscal policy exerts pressure for exchange rate to appreciate, which lower exports.)

Imports: no change since there is no long run change in GDP. (Alternative answer, expansionary fiscal policy exerts pressure for exchange rate to appreciate, which increases imports.)

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(16 points)

2. During his first year in office, suppose that President Trump gets a new law passed that cuts taxes. Being able to get this law enacted was a complete surprise. Compared with prior tax laws and projected federal budgets, the new law lowers federal personal tax rates and increases some tax-reducing loopholes. Suppose that the President also got a new law passed that boosted federal government spending on infrastructure. The two new laws gradually phase in all of these changes over the five years following their being enacted as laws.

For this question, assume that real GDP is unaffected. Focus on consumption and saving.

Hint:

You might find it helpful to draw out the time paths for the tax and government spending laws, and also the time paths for future consumption and saving.

Suppose that the economy has two groups of people:

Group 1 consists of forward-looking consumers who typically have considerable assets, such as bank deposits, and who can easily get credit, say via personal loans or putting larger balances on their credit cards. Members of Group 1 act as if they live by the life-cycle theory of consumption. Most of the members of Group 1 are age 50 or more and expect to have relatively steady incomes until they retire.

Group 2 consists of households most of whom live “paycheck to paycheck,” in that they usually spend just about all of their incomes each month, thus, have accumulated few, if any, financial assets. Members of Group 2 are younger on average--mostly in the range from 18-50 years old, and tend to have more and longer episodes of unemployment than members of Group 1.

- a. Explain how the enactment of the new law would be expected to affect the spending, and the saving, of Group 1 (1) over the years from the enactment through the complete implementation of the changes (i.e., 2018-2023), and (2) in the years after that (i.e., after 2023).

Group 1 is forward looking. They consciously smooth out their Cover their (expected) remaining years, including when retired. Knowing that they will eventually retire, they have already accumulated some assets. They will have a little more disposable income during the phase-in and a lot more after tax cuts are fully implemented. Knowing what taxes are coming, they boost their C quite a lot now, to a permanently higher level.

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- b. Now, do the same for Group 2.

Group 2 will shift up their consumption up by as much as the tax changes 2018-2023 before leveling out at a now higher level once the 5 years are up. Because $Y = C$ for Group 2, they have negligible, if any, savings (ie, assets). Their C will track their current actual (Y-T).

- c. Explain when, and why, and in which direction, we would expect each group's total assets to be affected by the new law from its enactment through the end of the 5-year phase-in period (i.e., 2018-2023).

For group 1 members, their total assets are expected to decline over the period 2018-2023, as they will be consuming at a much higher level because they've taken into account the permanently-lower future taxes (and higher (Y-T)). Because their C increase more than their Y-T during the phase-in period, their S will be lower, or even negative, in which case they are reducing their assets.

For group 2 members, their assets are zero to begin with and will continue remain zero given they are "paycheck to paycheck" consumers and will spend all of their additional income due to the tax cut.

- d. Explain why, in the years after the 5-year phase-in period ends (i.e., after 2023), the current members of Group 1 might start spending more and saving less of any extra income or wealth that comes their way after the 5-year phase-in period, say during 2023-2043. Also, explain why the average spending rate (i.e., consumption as a percent of their disposable incomes ($C/(Y-T)$) of the younger, current members of Group 2 would be expected to rise during 2023-2043.

For group 1 members, they might start spending more because they about to enter retirement and face fewer remaining years to spend. Thus, their MPCs and "wealth effects" are likely larger if income or wealth increases for older consumers.

For group 2 members, their incomes are expected to increase significantly over the 2023-2043 period as they will be in their prime earnings years. During their highest income years, they would save large amounts to prepare for their eventual retirement.

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(20 points)

3. Suppose a crackdown by the Chinese government on corruption raises uncertainties and fears about continuing to own many assets in China. Suppose that both (1) foreign companies that operate in China and (2) Chinese households can move their funds in or out of China quite freely.

Suppose that the Chinese government currently allows the yuan (or renminbi) to float.

- a. Show in a diagram for the supply and demand of the Chinese currency, the yuan, (or, equivalently, yuan-denominated assets in China) and explain, why the exchange rate of the yuan depreciated as a result of the crackdown.

Higher uncertainty about Chinese currency lowers demand for the currency, which lead to a depreciation of the currency. Alternatively, can consider higher uncertainty leads to excess supply of Yuan, which also exerts pressure to the currency to depreciate.

- b. Explain how the yuan's depreciation likely boosted both (1) GDP and (2) the international-trade surplus in China.

Weaker Yuan makes Chinese-produced goods cheaper relative to foreign goods for the Chinese. That increases exports and lowers imports and thus increases China's net exports.

Higher exports shifts IS curve to the right and increases GDP due to multiplier effect.

- c. Explain how and why the depreciation of the yuan (1) helped the Chinese business sector, but (2) raised the cost of living for Chinese consumers.

The depreciated yuan means higher demand for Chinese goods both from foreigners and from domestic customers.

The cost of living for Chinese consumers will be higher because 1) the weaker Yuan increases the price of imports in Yuan and (likely also increases the prices of domestic competitors of the imported goods) and 2) the weaker Yuan raises GDP, which would likely lead to a bigger increase in inflation than in wages and salaries (real wages fall).

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- d. As a result of the higher cost of living above, suppose that the Chinese government fears the possibility of civil unrest and therefore wants to prevent the yuan from depreciating. Explain how it can use its monetary policy to keep the yuan at its original level in the face of the results in a. above.

The Central Bank of China would boost the exchange rate by buying Yuan and selling foreign currency (mainly US treasury bills).

- e. In light of the monetary policy change in d. above, explain the effects on China's holdings of foreign assets.

Boosting Yuan by selling foreign assets would reduce the amount of foreign assets.

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(14 points)

4.

- a. Suppose that there is a broadly-based change in households' outlooks for their economic futures from "average" to "optimistic." Explain why capex (or businesses' capital expenditures or I) would be expected to surge upward initially, and then likely subside—despite continuing increases in spending by households.

This is an accelerator question. When the outlook changes from average to optimistic, the positive accelerator effect is dramatic and capex grows quickly. Later, as output and incomes, as well as the capital stock due to more capex, rise, capex will decline gradually as companies no longer need to add as much new equipment when their capital gets closer to its target amount.

- b. Explain why, in response to households' more optimistic outlooks, the initial surge in investment spending would be relatively large for longer-lived capital goods than for shorter-lived capital goods. Give one example of a type of longer-lived capital and one example of a type of shorter-lived capital.

There is more investment per extra output for long-term capital such as apartment buildings than for two-year equipment, for example. The price-to-rent ratio for K rises with durability.

- c. Explain why the accelerator model of investment also helps us understand the large fluctuations in the levels of desired inventory investment.

If a company expects sales to grow quickly, then to keep Inventories/Sales constant, inventories must rise quickly, so investment in inventory will increase. If sales flatten out, no more net change in inventory needed, so investment in inventory will move back to zero.

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(16 points)

5.

- a. Suppose Country A experiences a large, one-time, but permanent increase in the productivity of its existing capital stock. Explain the effects of that increase in the level of “efficiency” (or, of the autonomous factor) on the (1) output, (2) labor productivity, (3) wages and salaries per hour (or per worker), and (4) number of employees.

Based on the production function $Y=AF(L,K)$, an increase in the productivity of capital increases labor productivity and output and shifts the labor demand curve upward, which raises the real wage and employment.

- b. Suppose Country A experiences a one-time, permanent decline in the size of its work force. How does that affect its (1) output, (2) labor productivity, (3) wages and salaries per hour (or per worker), and (4) number of employees.

A decline in the size of the work force reduces output and the quantity of workers available for firms to hire. That shortage of workers increases the real wage and also causes firms to employ less labor. Because firms employ fewer workers with a given amount of other factors of production, labor productivity rises.

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Shorter-Answer Questions

(3 points each, 12 total)

- a. Explain why, even though the total inflation rate measures the prices paid in an economy, central banks might choose their monetary policies on the basis more of core inflation than of headline inflation.

Headline inflation includes food and energy prices, which tend to be more volatile and not as indicative of underlying inflationary forces because it contains effects of non-economic factors, such as weather and geopolitics. Because it removes the erratic part of inflation, core inflation is a better forecaster of both core and total future inflation.

- b. Higher interest rates reduce consumption and investment spending, which in turn reduces aggregate demand and thus GDP. Explain, then, why we so often observe that both C and I are high when interest rates are high.

The apparent, not real, contradiction arises here from not distinguishing a shift of an IS curve from a slide along an IS curve. If monetary policy raised interest rates, then we would slide along an IS curve and witness that I declined as r rose. But, in practice, often it is the IS curve that shifts around a lot. When business optimism, stronger export demand, or tax changes change autonomous I , and thus shift the IS, then we see that I and r both go up (or down) in tandem.

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- c. Households mostly consume nondurables and services, not durable goods. Businesses invest in long-lived capital goods. Nonetheless, explain why a temporary increase in personal tax credits, say for dependents, might have quite small effects on aggregate consumer spending, while a temporary increase in the tax credits for business investment spending might have quite large business investment spending.

Based on the PIH-LCH, consumers spend based on their permanent lifetime income. A temporary increase in tax credit spread over $(L-T)$ years likely will not increase their average annual incomes much. So effects on current aggregate consumer spending might be small, with the one-time tax cut spent over many future years. (That is why the wealth effect might be as small as 0.04.)

A temporary once-time increase in business credits would induce a big investment jump now as businesses act to take as much advantage of the tax credit as possible. Investment likely will be lower after the temporary tax credit.

- d. Suppose that an economy was in a recession during 2008-2009. As a result, the government then reduced tax rates and boosted the amount of weekly unemployment checks that each unemployed worker received. Explain what we would expect to happen, as a result of the recession and the changes in fiscal policy, and why, to (1) the government deficit, (2) the cyclical deficit, and (3) the full-employment, or natural employment, deficit (NED) during 2008-2009.

Reduced tax rates and more unemployment benefits lowers the government's net taxes ($T=R-F$). That makes the NED larger (or a reduced or more-negative surplus). At the same time, lower T should raise Y , for all the usual reasons, and that should raise T somewhat, and thus reduce the cyclical deficit. The actual deficit is the sum of the two pieces, cyclical and structural. The indirect effect through incomes will be smaller than the direct tax cut, so the actual total deficit will be larger (or small or more-negative surplus).