Economics 1021, Section 1 **Prof. Steve Fazzari**
Exam #3 Solution Notes **Spring, 2013**

MULTIPLE CHOICE (5 points each) Write the letter of the alternative that *best* answers the question in the blank. Make sure you read all four alternatives before making your choice.

_B__ 1. Quantitative easing is best described as monetary policy that:

(A) Sets an explicit target for long-run inflation that anchors expectations.
(B) **Is executed by purchases of assets other than short-term government bonds.
(C) Puts more emphasis on keeping inflation low than on reducing unemployment.
(D) Uses open market operations to lower the federal funds rate when output is below potential.

_D__ 2. Which alternative below best describes the possible long-run macroeconomic benefits of higher saving?

(A) Higher saving raises individuals' wealth, increases aggregate demand, and pushes the economy closer to potential output.
(B) Higher saving increases the amount of money in individuals' bank accounts which will eventually circulate through the economy.
(C) Higher saving reduces the need for the Fed to pursue stimulative monetary policy, which keeps inflation expectations better anchored.
(D) **Higher saving lowers the cost of capital, increases business investment, and raises the long-run capital stock.

_A__ 3. Which of the following statements about tax cuts is consistent with the policy recommendations of "supply-side economics" in the long run?

(A) **Lower income taxes increase the incentives to create new businesses.
(B) Lower taxes an effective way to respond to most recessions.
(C) Lower income taxes raise the government deficit and therefore reduce the ability of the government to raise spending during a recession.
(D) Lower income taxes increase the multiplier because more income is passed through to consumption.

_A__ 4. Suppose the slope of the investment demand curve changes so that an increase in the interest rate causes a *smaller* reduction of private investment. Then, assuming the economy operates at potential output, the magnitude of crowding out caused by an increase in the government deficit will be:

(A) **Smaller.
(B) Larger.
(C) Unaffected.
(D) Unknown, without further information.

_A__ 5. The chair of the Federal Reserve, Ben Bernanke, has long supported inflation targeting. Bernanke's term is soon to end and he is not likely to accept another term. Which of the following alternatives best explains the macroeconomic effect in the Phillips Curve model of replacing Bernanke with an individual who is less concerned about controlling inflation?

(A) **Inflation expectations rise, shifting the Phillips Curve upward.
(B) Higher inflation expectations push the economy up the current Phillips Curve.
(C) Fears of higher inflation raise unemployment, pushing the economy down the current Phillips Curve.
(D) The prospect of higher future unemployment shifts the Phillips Curve downward.

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_B__ 6. Which of the following statements does *not* correctly describe a characteristic of the equilibrium level of output in the Keynesian cross model?

(A) Aggregate supply equals aggregate demand at equilibrium.
(B) **Equilibrium output will be the same as potential output at all times.
(C) Potential output is a special case of possible equilibrium values for output.
(D) Firms' sales are consistent with their expectations at equilibrium.

SHORT ANSWER QUESTIONS. Read each question carefully and answer in the space provided. Use clear economic reasoning and make sure you write clearly and *legibly*, otherwise your score may be lower.

1. (40 points) Suppose that the model given by these two equations below describes the determination of output in the economy:

(1) $Y = C + I + G + Ex - Im$

(2) $C = a + (MPC_1)\,[h\,Y - T_1] + (MPC_2)\,[(1\text{-}h)\,Y - T_2]$

The model is similar to the ones analyzed in class and the lecture notes. The variables denote output or pre-tax income (Y), consumption (C), government spending on goods and services (G), investment (I), exports (Ex), and imports (Im). The unique feature of this model is that consumption is determined separately for two groups. Group 1 is relatively wealthy, earns a share $h<1$ of aggregate pre-tax income. Group 2 consists of the less wealthy people in the economy who earn a share $1\text{-}h$ of pre-tax income. The marginal propensity to consume for group 1 is lower than the marginal propensity to consume for group 2 ($MPC_1 < MPC_2$). Taxes for group 1 are denoted as T_1, with taxes for group 2 given by T_2. The variables *I, G, Ex*, and *Im* are exogenous.

a) (5 points) Which equation in the model given above makes it a demand-side model. Explain your answer briefly.

According to equation (1), output (Y) is determined by the different components of spending (or demand). Output is not necessarily at the potential level (Y*) determined by resources, preferences, and technology.

b) (10 points) Solve for equilibrium output (Y).

$Y = C + I + G + Ex - Im$

$Y = a + (MPC_1)\,[h\,Y - T_1] + (MPC_2)\,[(1\text{-}h)\,Y - T_2] + I + G + Ex - Im$

$Y - (MPC_1)\,h\,Y - (MPC_2)\,(1\text{-}h)\,(Y) = a - (MPC_1)(T_1) - (MPC_2)\,(T_2) + I + G + Ex - Im$

$Y\,[1 - (MPC_1)*(h) - (MPC_2)*(1\text{-}h)] = a - (MPC_1)(T_1) - (MPC_2)\,(T_2) + I + G + Ex - Im$

$$Y = \frac{1}{[1-(MPC_1)h-(MPC_2)(1-h)]}[a-(MPC_1)T_1-(MPC_2)T_2+I+G+Ex-\mathrm{Im}]$$

c) (7 points) Using your result from part b, identify the expression for the multiplier. What happens to the multiplier if the share of income going to the relative wealthy group (*h*) were to increase? Explain your answer and provide some intuition for why the multiplier changes when *h* rises.

The multiplier is given by:

$$\frac{1}{[1-(MPC_1)h-(MPC_2)(1-h)]}$$

Because MPC_1 is less than MPC_2, an increase in the share of income (h) going to the relatively wealthy group 1 makes the denominator of the expression larger and reduces the multiplier. Intuitively, as a demand shock propagates through the economy creating (or destroying) income, there will be less effect on consumption if more of the income at each stage of the multiplier process more income goes to the low-spending, relatively wealthy, group 1.

d) (8 points) Suppose that the government decides to reduce its deficit by raising taxes. How would the effect of a tax increase entirely imposed on group 1 (that is, T_1 increases by a given amount with T_2 unchanged) differ from a tax increase entirely on group 2 (that is, T_2 increases by the same given amount with T_1 unchanged)? Explain your answer. (Note that you do not need to use algebra to receive full credit for this part, but you may use algebra if you find it helpful to present a clear answer.)

The initial decrease in demand (consumption) caused by a tax increase is the marginal propensity to consume times the change in taxes. Because the MPC for group 1 is less than the MPC for group 2, the effect of the tax increase on output will be smaller if the tax increase is imposed on the relatively wealthy group 1.

Although it was not necessary to receive full credit for this question, you could show this result algebraically.

$$\frac{-\Delta T_1(MPC_1)}{[1-(MPC_1)h-(MPC_2)(1-h)]} < \frac{-\Delta T_2(MPC_2)}{[1-(MPC_1)h-(MPC_2)(1-h)]}$$

Assuming that $\Delta T_1 = \Delta T_2$ and $MPC_1 < MPC_2$.

e) (10 points) Suppose that the correct model for analyzing the effect of the tax increase is a supply-side model rather than a demand-side model. How would your analysis of the effect of raising tax rates on group 1 versus group 2 change? (Note: there is no need to use algebra for this question. Focus on the effects of tax rates on behaviors of households and firms from a supply-side perspective.)

In a supply-side model, output is determined by resources, preferences, and technology, not spending. In such a model, the key effect of a tax increase is the effect on the incentives of households and firms to work, save, and invest. There is no reason to think that relatively wealthy people respond less strongly to incentives than others. In fact since relatively wealthy people do more of the saving and run more of the businesses, they may respond more to the incentive effects of tax increases than the rest of society. Therefore, a tax increase on group 1 in a supply-side model is likely to reduce output just as much, if not more, than a tax increase on group 2.

2. (30 points) The excerpts below are from a *Wall Street Journal* article (April 4, 2013) on recent monetary policies pursued by developed countries around the world. Answer the questions about each quotation.

a) (8 points) The article states that "The Bank of Japan's new tactics echo moves by the Fed: aggressive buying of long-term securities." What are the central banks trying to achieve by creating money to purchase long-term securities? Describe the macroeconomic channel through which this policy, if successful, would operate.

The central banks are trying to lower long-term interest rates to encourage more borrowing and spending (because short-term rates are now almost zero and cannot fall any further). The objective is to raise aggregate demand, by increasing consumption, investment, or net exports, to stimulate output and employment.

b) (10 points) In a discussion of criticisms of recent monetary policies, the article states, "[w]ith interest rates already at record lows, economists said another cut wasn't likely to add much juice to the euro-zone economy." Briefly describe two reasons why recent monetary policies may not be effective in reaching their objectives.

First, interest rates cannot fall below zero. So, with rates "at record lows," they may not be able to fall enough to stimulate much aggregate demand. Second, evidence shows that the various components of demand are not too sensitive to interest rates (that is, demand is "inelastic" with respect to interest rates). If this is the case, falling rates may not be effective in stimulating spending.

c) (12 points) Esther George, president of the Federal Reserve Bank of Kansas City, said in a speech "I view current policies as overly accommodative, causing distortions and posing risks to … long-term inflation expectations." Explain this potential "risk" of expansionary monetary policy. Why do you think that President George chose to give particular emphasis to inflation expectations? During what period since World War 2 did inflation expectations cause significant problems for the U.S. economy?

If monetary policy stimulates too much demand it can cause inflation. If actual inflation rises, expected inflation is likely to follow. The history of inflation shows that once it is expected, it tends to be persistent. Once long-term inflation expectations are high, it may be difficult (if not impossible) to purge these expectations from the economy without creating a recession. The experience of the high inflation of the 1970s and the deep recession of early 1980s shows, a main lesson for monetary policy is to prevent inflation expectations from rising.