Exam 1. Econ520. Fall 2024

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UNC

Instructions:

- Answer all questions.
- Write legibly.
- If you need more space, attach additional pages. Number your answers. Do not write on the back of the pages.
- *Explain* your answers – do not just state them.
- *Show* your derivations – do not just state the final result.
- Do not refer to any notes or books. You may use a calculator.
- The total time is 75 minutes.
- The total number of points is 75.

Name:	PID:

1 Short Questions

Here, I am looking for short answers that get to the main point. No models are needed, unless I specifically ask for them.

1. [9 points] In the IS/LM model, if government spending rises by \$1 and the interest rate stays unchanged, equilibrium output rises by more than \$1. What is the economic story underlying this "fiscal multiplier?" How does the size of the multiplier depend on the marginal propensity to consume?

   Answer

   Higher G increases Y (which equals aggregate demand). That increases consumption (by the MPC times the change in G). That in turn increases Y which increases C and so on. By this logic, a higher MPC raises the multiplier.

2. [8 points] The labor supply equation $N^s = F\left(\frac{P}{P^e}\frac{1}{1+m}, z\right)$ says that unanticipated price increases raise employment while anticipated price increases do not. Explain the difference.

   Answer

   Labor supply depends on the perceived real wage W/P^e.

   Unanticipated $P \uparrow$: P^e unchanged. $W \uparrow$ because firms pay workers their marginal value product ($W = P/(1+m)$). Perceived real wage rises.

   Anticipated: P/P^e unchanged. Hence W/P^e unchanged. No change in labor supply.

3. [9 points] Comment on the following claim:

   A \$1.1 trillion infrastructure spending package would create roughly 500,000 new jobs in the medium run. (My interpretation of a story by CBS News, July 27, 2021).

   Answer

   We discussed this in class. Medium run employment is determined entirely by AS. A spending package cannot create jobs by adding to AD. It has to shift MR-AS. Its only lever to do so is to increase labor productivity (the real wage). But that runs into the problem that medium run labor supply does not look upward sloping in the real wage.

4. [9 points] Would you expect the marginal propensity to consume out of a one-time stimulus payment to be large or small? How about a recurring payment that is paid out every year indefinitely? Explain.

   Answer

Think permanent income hypothesis. Consumers want smooth consumption. A one-time payment has little effect on lifetime income and therefore on lifetime consumption. Most of it will be saved. A recurring payment has larger income effects and therefore the MPC will be higher.

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2 AS/AD: Positive Supply Shock

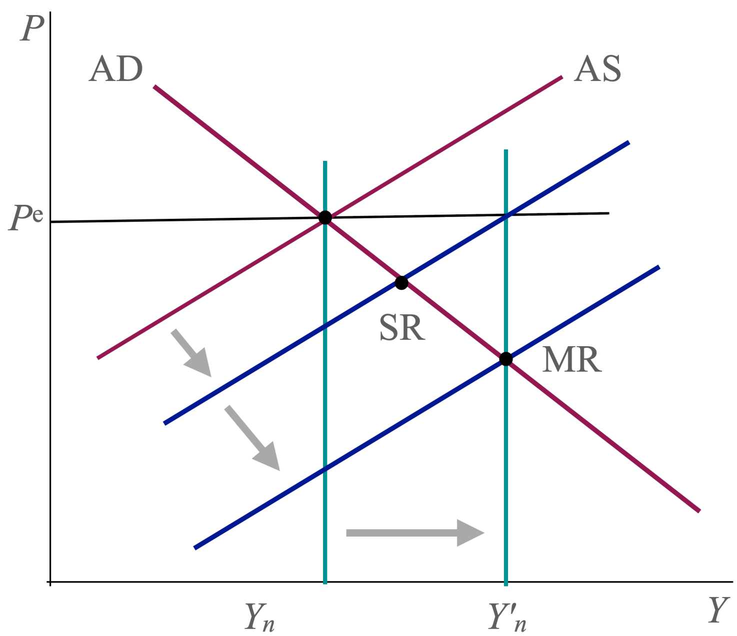
Recall the equations for the AS/AD model:

- AS: $Y = F\left(\frac{P}{P^e}\frac{1}{1+m}, z\right)$
- IS: $Y = C(Y - T) + G + I(Y, i)$
- LM: $M/P = Y \times L(i)$

Consider an economy that, starting in full employment equilibrium, experiences a positive supply shock. We model the shock as a *permanent* decrease of m.

1. [10 points] **Graph** the new short-run and medium run equilibria. Explain which curves shift and why. Defer other explanations to the next answer.

Answer



MR-AS shifts right. SR-AS does the same, intersecting the new MR-AS where $P = P^e$. P^e is unchanged in SR.

MR: intersection of MR-AS and AD ($Y\uparrow, P\downarrow$).

SR: intersection of SR-AS and AD (also $Y\uparrow, P\downarrow$ but less).

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2. [15 points] Derive what happens in the **short run** to output, prices, consumption, investment, and interest rates. Explain the sequence of events that leads from the original equilibrium to the new short run in words.

Answer

$C\,(Y - T) \uparrow$

From IS/LM diagram: Lower P shifts LM right. Hence lower i.

Hence $I \uparrow$.

Explanation: The shock raises AS. Excess supply of goods forces firms to lower prices. Higher M/P causes households to buy bonds which lowers i. That raises I. The process continues until AD has risen to meet the higher AS.

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3. [5 points] Explain what happens during the **transition** from short run to medium run.

Answer

SR: $P < P^e$ to $P^e \downarrow$. Workers perceive higher real wage W/P^e and work more. This acts very much like more of a supply shock. Firms can lower prices and the same process that lead to the short run occurs again.

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4. [10 points] If you were running the Fed, how would you respond to this shock? What real world complications would you have to worry about? Illustrate in a graph.

Answer

Without lags the answer is easy: shift AD right (by raising M) to get the economy right away to full employment. That holds prices constant. It speeds up the increase in Y and avoids a period of deflation.

The real world complication is lags. If it takes time for AD to adjust, I would opt for a smaller stimulus. I would target it so that SR-AS and shifted AD meet at full employment once the monetary expansion has fully kicked in.

End of exam.