

**Economics 1
Problem Set 4**

Due in the second section meeting in the week of Nov. 10.

I. Measurement of Price Changes.

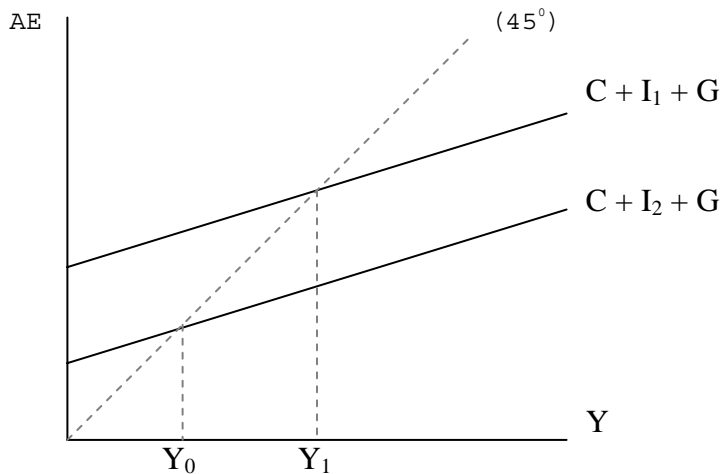
In Merryland, there are only 3 goods: popcorn, movie shows, and diet drinks. The following table shows the prices and quantities produced of these goods in 1980, 1990, and 1991:

	1980		1990		1991	
	P	Q	P	Q	P	Q
Popcorn	1.00	500	1.00	600	1.05	590
Movie Shows	5.00	300	10.00	200	10.50	210
Diet Drinks	0.70	300	0.80	400	0.75	420

- A "market bundle" for a typical family is deemed to be 5 popcorn, 3 movie shows, and 3 diet drinks. Compute the consumer price index (CPI) for each of the three years, using 1980 as the base year.
- What was the rate of inflation from 1990 to 1991, using the CPI you calculated in (a)?
- Now compute the CPI for each of the three years, using 1990 as the base year instead of 1980 but using the same "market bundle."
- What was the rate of inflation from 1990 to 1991, using the CPI you calculated in (c)? Is it the same as your answer to (b)?
- Now suppose that a new market bundle is defined; the "market bundle" is now 6 popcorn, 2 movie shows, and 4 diet drinks. Compute the CPI for the three years, using this "market bundle" and using 1980 as the base year.
- What was the rate of inflation from 1990 to 1991, using the CPI you calculated in (e)? Explain why it is different from your answer to (b)?

II. Determination of Aggregate Output

1. The effect of an increase in planned investment can be shown graphically as follows:



An increase in I leads to an increase in equilibrium Y .

Using the same kind of graphical analysis, show the effect of each of the following:

- Consumption drops because consumers are saving more.
 - Government spending increases, without any change in taxes.
 - Taxes rise, without any change in government spending.
 - Government spending and taxes rise by the same amount.
2. Consider an economy with no government, imports, or exports, and with fixed prices and interest rates. Let $C = 150 + 0.60Y$ and $I = 50$.
- What is the equilibrium output?
 - What is the value of the marginal propensity to consume?
 - What is the value of the multiplier?
 - Suppose planned investment rises by 10 to $I = 60$. Calculate the new equilibrium output in two ways. First, calculate the new equilibrium output using the multiplier from (c). Second, calculate the new equilibrium output using the same procedure as you did for (a), but with $I = 60$ instead of $I = 50$. Your answer should be the same under both methods.
3. A government is added to the original ($I = 50$) economy from part (2). The government spends 100 and receives taxes of 100 (such that the government budget is balanced with no deficit.) The economy is now described by:

$$C = 150 + 0.60(Y-T)$$

$$= 150 + 0.60(Y-100)$$
$$I = 50$$
$$G = 100$$

- a) What is the equilibrium output?
- b) As explained in lecture and in the text, the balanced budget multiplier equals 1. Explain how your answers to (2a) and (3a) confirm that the balanced budget multiplier is indeed 1.
- c) Full employment output in this economy is 800. Suppose government spending is raised to attain this level of income, but taxes are not changed. What level of government spending will result in an equilibrium output of 800? How large will the deficit be? What will be the level of consumption?
- d) Suppose instead that government spending and taxes are raised simultaneously, such that the budget remains balanced. What level of government spending and taxes are needed to attain full employment output ($Y=800$)? What will be the level of consumption?

III. Determination of Interest Rate.

Using supply and demand curves for money, illustrate the impact of the following events on the equilibrium interest rate.

- a) The general price level for goods increases.
- b) Aggregate output rises.
- c) The Fed sells government securities (bonds) in the open market.
- d) The Fed decreases the minimum reserve requirement of banks.