Class Outlines
September 4 and 6 2001

September 4, 2001

I.   Review

II.   Our goal: Build a model under assumptions (that hold moderately well in the short run) that predicts output.

   a.   Solving from the equilibrium condition we saw last time yields the following:
        1. $Y_t = 1/(1-c_1)[\ c_0 - c_1 T_t + \underline{I} + \underline{G}]$

   b.   The component of the demand for GDP that does not depend on income is known as *autonomous spending*. Autonomous spending is thus equal to:
        1. $c_0 - c_1 T_t + \underline{I} + \underline{G}$

   c.   The equation implies that equilibrium income/output depends on autonomous spending.
        1.   An increase in investment, government spending, or c_0 leads to an increase in equilibrium output.
        2.   An increase in taxes leads to a decrease in equilibrium output.

   d.   For a $1 increase in autonomous spending, equilibrium output increases by $1/(1-c_1)$. This number is also known as the multiplier.

   e.   We looked at an example, where if the marginal propensity to consume is equal to ½, an increase in government spending of $10,000 leads to an increase in equilibrium output of $20,000.

III.   Graphical analysis

   a.   We wanted to predict what happens to equilibrium output when demand changes (remember supply does not enter the picture yet). We thus looked at a graph in which we plotted production and demand against income.

   b.   Graphically, we showed why an increase in government spending by $10,000 in the previous example led to an increase in equilibrium output of $20,000.

IV.   Investment equals savings

a. There is more than one way to skin a cat as they say. Rather than look at equilibrium from the perspective of the goods market, we could start with a savings approach.

b. Savings must be equal to the amount of income we have left over after we pay taxes and consume goods and services. In math symbols, we have:
   1. $S_t = Y_t - T_t - C_t$

c. We know income/production is equal to consumption plus investment plus government spending. If we substitute $C_t + I_t + G_t$ into the above expression, with some algebra, we get the following expression:
   1. $I_t = S_t + (T_t - G_t)$.
   2. In words, investment is equal to the sum of private savings plus public savings (in equilibrium).

September 6, 2001

I. Review

II. I-S relationship.

a. Last time, we discussed the fact that investment is equal to the sum of private savings plus public savings. We can rewrite the expression for savings as follows:
   1. $S_t = Y_t - T_t - C_t$

b. If we plug in our expression for consumption, we arrive at the following expression (after a little bit of algebra).
   1. $S_t = -c_0 + (1-c_1)(Y_t - T_t)$.
   2. $(1-c_1)$ is also known as the marginal propensity to save.

c. In equilibrium, investment must be equal to savings. Above we have an expression for private savings. Since investment must equal private savings plus public savings, we have
   1. $I_t = -c_0 + (1-c_1)(Y_t - T_t) + (T_t - G_t)$

d. Some algebra yields the following:
   1. $Y_t = 1/(1-c_1)[\ c_0 - c_1 T_t + \underline{I} + \underline{G}]$
   2. Note this is precisely the equilibrium condition we derived above.

e. The expression above implies that if we start from an investment equals savings perspective, we arrive at exactly the same equilibrium

condition. For this reason, we will refer to equilibrium in the goods market as the I-S condition.

III.   Fiscal policy

    a. Fiscal policy is the use of government spending and taxes (usually with some economic goal in mind).
        1. *Expansionary fiscal policy*
            a. A \$1 increase in government spending leads to an increase in equilibrium output of $1/(1-c_1)$.
            b. A \$1 decrease in taxes leads to an increase in equilibrium output of $c_1/(1-c_1)$.
        2. *Contractionary fiscal policy*
            a. A \$1 increase in taxes leads to a decrease in equilibrium output of $c_1/(1-c_1)$.
            b. A \$1 decrease in government spending leads to a decrease in equilibrium output of $1/(1-c_1)$.

IV.   Do governments really have as much influence as our models suggest?

    a. We know that we are looking at an economic model. In order to build an economic model, we must make assumptions. Under our assumptions, fiscal policy has immediate and dramatic effects as the above indicates.   We will drop some assumptions as the need arises, but for now several words of warning with respect to the use of fiscal policy and its effects on equilibrium output.
        1. Changing government spending and taxes can be very difficult (consider how difficult the Republican Party worked to implement the recent tax cut).
        2. The effects of spending and taxes on demand are less cut and dry than we have explained them.
        3. Maintaining a desired level of output can have adverse side effects on the economy. We will see later in the semester that a high level of output may also be associated with relatively high inflation.
        4. Cutting taxes and/or increasing government spending may lead to budget deficits. Although the full effects of budget deficits have yet to be considered, some economists suggest that budget deficits can hurt economic growth.

V.   Financial markets

    a. We have looked at only one side of the picture with the goods market. We also have yet to talk about one of the more important economic

variables, namely the interest rate. To facilitate the analysis, we now consider financial markets.

b. Assumption: We will assume there are only 2 assets in the economy.
    1. Money – we will abstract away from interest bearing checking accounts and the like and assume that money can only be used for transactions and bears no interest.
    2. Bond – there is a single interest bearing bond that can not be used for transactions. The bond pays an interest rate denoted i.

c. The demand for money.
    1. People hold money for at least three reasons.
        a. Transactions – Under our assumptions, in order to conduct transactions we need money. As income increases, we conduct more transactions, and thus need more money. We say there is a positive relationship between money demand and income.
        b. Precautionary demand – we will hold some money for emergencies.
        c. Speculative demand – we will hold money to take advantage of future investment opportunities.
    2. Under our assumptions, we can write the demand for money as follows:
        a. $M^d = Yt*L(i)$