

MACROECONOMICS 201
Spring 2020
NOTES 8

Stabilizing the Economy

Readings:

Principles of Economics: Chapter 25

1. Who was Keynes and What was the Keynesian revolution?

In this section, we will set forth the revolutionary changes in macroeconomic theory and practice that have occurred since John Maynard Keynes. Keynes developed concepts that are used by almost all economists, even if many would not describe themselves as Keynesians. The aggregate demand and aggregate supply curves that we have described have their origins in Keynesian economics although not all people would agree. The textbook attempts to distinguish between Keynesian and long term neoclassical approaches, but I doubt if this is very useful. To paraphrase Richard Nixon, we are all Keynesians now. We will discuss this further in notes 12.

The Keynesian approach originated as an explanation of, and a way of reducing, the massive employment that existed during the 1930's. However, these concepts serve equally well for explaining demand pull inflation, and for identifying different ways in which demand pull inflation might be controlled. We discussed Keynes briefly in notes 7.

2. How did Keynes' theory differ from the classical theory?

Keynes differed from conventional beliefs (i.e. the classical theory as described in notes 7) in three primary ways.

1. He believed that wages were rigid downward, i.e., unemployed workers, by and large, would *not* quickly accept a reduction in wages in order to become employed, sometimes because of union resistance. You will recall from our discussion of AD and AS curves, sticky wages were the reason why rising unemployment did not force a dramatic shift downward of the AS curve, at least not in the short run, and why I drew a long relatively flat part at low level of real output for the AD curve.

2. He did not believe that interest rates would necessarily fall to a level that would always entice entrepreneurs to borrow and invest and sop up savings.

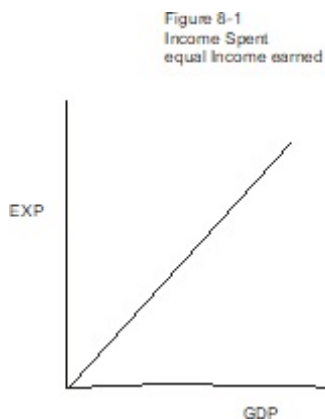
3. He believed that unemployment could persist for very long time intervals. This is at least partly due to the increasing shift from an agricultural economy to an industrial economy

These differences are critical. In 1935, there were large numbers of unemployed individuals throughout the world and wages *were not* declining as classical economics had predicted so that unemployed workers might locate jobs. In addition, although there were large amounts of money available for lending in banks, interest rates did not fall to a level sufficient to cause people to borrow for investment (and other spending) to the extent needed to eliminate unemployment. Unfortunately, there was also great pessimism about the future, another reason why banks were unwilling to lend and consumers and investors were unwilling to borrow to finance purchases or invest. It has been said that interest rates would have had to fall below 0 (negative interest) in order to significantly increase borrowing and spending during the great depression. And why would anyone pay a borrower for the privilege of borrowing from him or her (if you take a more advanced course, this situation may be described as the "liquidity trap").

It is not quite correct to say that Keynes or any of his followers felt that wages would not fall, but

he argued that they would fall *very slowly* in the *short* run, keeping prices high, and impeding hiring of more workers, hence the shape of the AS curve as drawn in my notes. If the AS curve did shift downward, it would do so slowly. It was also argued that even if wages fell, causing a downward shift in the AS curve, it might have little effect on employment because consumption expenditures would fall in proportion to the fall in wages causing the AD curve to shift to the left. As noted above, the net effect of sticky wages was to explain the phenomenon of relatively stable prices and a relatively stable AS curve over large stretches of possible real GDP since if wages did not fall much, neither could the AS curve. We discussed these factors in the previous set of notes.

3. What is the Expenditure/Keynesian Model?



Burn this statement into your brains. ***GDP is at equilibrium only when the value of Planned Aggregate Expenditures on domestic production equals the value of income that people receive from productive activities.*** This is sometimes simplified as ***Income Spent must equal Income Earned and was described in notes 5 dealing with national income accounting.***

This identity ***follows directly from the circular flow of resources*** and all those confusing ways of measuring current GDP. You will recall that the value of everything that is produced is reflected in someone's income either as wages, interest, rent, profits (includes both dividends and imputed retained earnings). Call this total income earned. Since the value of everything that is produced must be reflected somewhere in income earned, ***income earned also is the same as the full value of GDP.*** Note that this is the basis of **Say's law**, frequently cited in the text, the act of production generates income which is sufficient, in theory, to purchase all of the goods that are produced (although people may, in fact, purchase more or less goods and services than are actually produced, a fact that the ***text*** should emphasize more).

We can illustrate this basic equation as follows (figure 8-1). Consider a graph that has GDP on the horizontal axis, and **aggregate nominal** expenditures on the vertical axis. Now let's draw a 45 degree line. This 45 degree line identifies all the *possible equilibrium* levels of nominal GDP. This balancing equation shows all the points on the graph where income earned (which equals GDP) would equal income spent (EXP). Income spent, of course, is aggregate planned expenditures, i.e., $C + I + G$ (it does not include unplanned inventory change), and income earned represents the value of all production (remember the circular flow of resources). To see this, consider any possible level of nominal GDP. If aggregate expenditures are above this level, inventories will decline and price should rise stimulating an increase in production in the next period. Of course, the opposite would occur if aggregate expenditures were less than nominal GDP.

4. What is the distinction between aggregate expenditures and aggregate demand?

This is the basic Keynesian model that utilizes the equation that aggregate expenditures equal aggregate income in equilibrium. Perhaps we can describe it as the AE/AI model (described in an appendix in the text and in this set of notes). The AE/AI model has largely been replaced by the AD/AS model described in notes 7. Either model works equally well for explaining the determination of the equilibrium level of GDP, and the forces that can cause change in the level of GDP, although I believe that the AD/AS model is preferable and clearer, if you do not become confused by the tricky concept of *ceteris paribus*, which, as noted in notes 7, must sometimes (often?) be modified in the AS/AD model. In consequence, I will utilize the AD/AS model in the succeeding discussions

I believe it will also be helpful to include another short discussion of the difference between

aggregate expenditures and aggregate demand. In the not too distant past, economists used aggregate demand to precisely mean aggregate nominal expenditures and if you read any of the earlier literature, the term aggregate demand is defined as aggregate expenditure (the text is not as clear as it should be on this issue). You will find (and will often hear) it used that way in discussions about the national economy by pundits who will not be as sophisticated as you will be concerning the distinction that should be made between aggregate demand and aggregate expenditures.

As was explained in our discussion of the AD/AS model, the AD schedule shows the relation between the price level, and the physical amount of goods and services that will be demanded, i.e, the amount of real goods and services that will be purchased, and the amount that will be supplied, at each price level, all other things equal (*ceteris paribus*). The intersection of the AD and AS schedules shows the equilibrium level of prices and *real* output in the economy. Multiplying the *average* price of the goods produced *times* the amount of goods and services produced necessarily equals nominal GDP (the text seems unclear on this issue)..

In any event, it should be obvious, and what must be emphasized, is that **any change in total spending that affects aggregate expenditures will also affect the position of the AD curve.** If aggregate expenditures rise, the AD curve will shift to the right, and if aggregate expenditures fall, the AD curve will shift to the left.

The fundamental lesson that Keynes taught is that the AD curve can be shifted (by changing aggregate expenditures - and the level of GDP correspondingly increased or decreased. You want to increase GDP if you want to increase employment and decrease GDP if you are concerned about inflation.

5. What are leakages and injections and why are they important?

As we repeatedly emphasized, the value of everything that is produced is necessarily reflected in a factor payment (wages, rents, interest, or profits) or capital consumption. But, not all of the income that *households receive* is actually expended on consumption of *domestically* purchased goods. A part is saved, a part is paid in taxes, and a part is expended on imported goods. These are called leakages, i.e., income not spent on domestic production. The sum total of these “leakages” measures the extent to which purchases by domestic households *for consumption* are not used to purchase the full value of *domestically* produced goods and services.

The leakages, i.e., savings, taxes, and imports, are shown *on the circular flow of resources chart* and their effect should be intuitively obvious

“Injections”, in contrast, are *additions* to domestic spending, and include both government, investment, and exports, unlike leakages which are based on spending only on consumption. Injections consist of:

- government spending;
- *ex ante* (planned) gross investment;
- exported goods and services;
- increases in consumption due to an increase in disposable income that is not due to productive activity, e.g., the government prints up money and gives it away, or people take money out of savings. It might also be due to a reduction in the tax rate so that people have more disposable income. This will be explained more fully in this and the next set of notes.

The first three of these injections are also shown on the circular flow of resources, although investment in the circular flow of resources chart includes unintended inventory buildup (when measuring nominal GDP) and may differ somewhat from *ex ante* (planned) gross investment, which does not. To reiterate, planned I, G, and exports are considered injections along with increases in consumption due to a

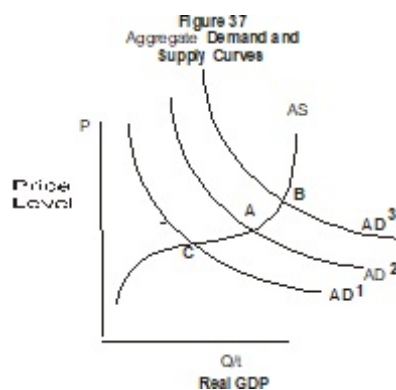
change in disposable income (lower taxes, increases in the money supply) in the sense that they will add to the total amount of purchases of goods and services. $S + T + \text{imports}$ are considered leakages.

There is no obvious reason why the value of leakages should be necessarily be equal to the value of injections. Taxes are not necessarily equal to government spending. Savings are not necessarily equal to *intended* (*ex ante*) investment. Imports are not necessarily equal to exports. Increases in disposable income are primarily due to some change in government policy, e.g., change in taxes.

- It should be intuitively obviously, however, that if the value of the injections is equal to the value of the leakages, then all of production will be purchased and the economy will be in equilibrium (but not necessarily without unacceptable levels of unemployment or inflation). In symbols the value of leakages ($S + T + \text{Im}$) must be equal to the value of injections ($I + G + \text{Ex}$ + plus increases in spending that comes from sources other than income earned from production) to be in equilibrium in the sense that all current production is purchased or is intended to be added to inventory (at a point on the 45 degree line in figure 8.1).
- If leakages are greater than injections, then, as noted above, unintended inventories will increase, firms will reduce production, workers will be laid off, and prices may or may not fall.
- If injections are greater than leakages, inventories will decline, firms will (usually) increase production, workers will be hired, and prices may or may not increase depending upon the difficulty of obtaining resources needed for increased production.
- It follows that we can increase aggregate expenditures **and** (as noted above) aggregate demand by increasing injections and decrease aggregate expenditures and AD by increasing Leakages.
- It is critical that you understand that *decreasing* taxes, which increases peoples' disposable income and increases expenditures by people on consumption and perhaps investment has the same effect as an increased injection (which in fact, it is) in stabilization policy, although the size of the injection may be diminished if a part of the increased disposable incomes leads to an increase in imports or savings. Conversely, increases in taxes are equivalent to increased leakages in stabilization policy and have the opposite effect although not so listed above..

Note that the text does not use the terms "injections" and "leakages" However the text does discuss how AD can be shifted by changing the variables we have discussed under this topic.

6. What do we want to accomplish in stabilization policy?



Stabilization policy primarily focuses (or at least should) on keeping unemployment and inflation down to a reasonable level. In stabilization policy, we are primarily concerned with demand/(cyclical unemployment (not structural or frictional) and demand-pull (not cost push) inflation. These other issues should/must be dealt with other types of policies (e.g., retraining).

Let us go back to our AD and AS curves. We draw three AD curves (figure 37). AD(1) implies a great deal of unemployment. Obviously, we almost certainly wish to shift the AD curve to the right. AD(3) indicates substantial inflationary pressures. In that case, we probably wish to shift the AD curve to the left. AD(2) indicates a combination of unemployment and inflationary pressures. In this

case, we aren't sure what to do. It depends upon your values, i.e, how much inflation are you willing to tolerate to achieve lower unemployment.

7. How do you increase or decrease aggregate demand?

We cause the AD curve to shift by increasing or reducing aggregate expenditures, which is why I felt it necessary for the lengthy explanation of the relationship between AD and AE in the previous section. There are many ways in which this can be done. They can be summarized under *two* main headings, monetary policy and fiscal policy. Fiscal policy refers to government spending *and* taxation. There are four main components of expenditures, C, G, I, and X. We will consider each of these areas in turn and discuss them in greater detail in the next three sets of notes.

A. Consumption: The following are the main possibilities for *shifting* the AD curve to the right and represent options that politicians with different values battle over. You see these battles taking place during the current debate s in congress, and will undoubtedly become an issue in the elections later this year. We discussed many of these possibilities in notes 7. Depending upon which choice you prefer, you might support republicans, democrats, or even some other political party. To increase aggregate demand, you could:

- Change disposable income by lowering income taxes;
- extend and/or increase unemployment compensation benefits;
- lower prices by giving tax credits for some purchases, e.g., installing solar or wind power, energy efficient windows, etc. this serves two values. Increasing employment and decreasing global warming
- Lower the cost of goods and services by lowering sales and other excise taxes.
- Lower interest rates to influence consumer financing of cars, large TVs, homes, etc. We will discuss in notes 11 how this is done
- give people on public support, e.g., Social Security for the aged and disabled, or Supplemental Security Income (SSI) a one time bonus, e.g., \$250, as was done at the beginning of the recent recession.
- and much else

If you wish to shift the AD curve to the left to reduce inflation, you do the *opposite* of the above.

B. Government Spending: Government spending can be increased in myriad ways, e.g., we could invest more in schools, build better roads, improve social programs, fund more research projects, protect the environment, and you should be able to think of countless additional ways in which the government could spend money, politicians certainly have no trouble doing so. Conversely, we can reduce G by reducing expenditures in any of these areas. For reasons that will be discussed below, if changes in government spending are meant to change AD or AE, then taxes should not be changed. You would not wish to increase spending by increasing G, but then nullify that stimulus by increasing taxes which reduces C because taxes take money away from people. Nor would you wish to reduce taxes if G is reduced in order to diminish inflation. We will discuss later how deficit spending can be financed.

C. Investment: Investment is, of course, dependent upon such factors as business expectations, the development of new technology, and the need to keep up with the competition. Remember, we are talking about real investment in plant, equipment, knowledge, and people (specialized training) and not stocks and bonds which represent a transfer of financial assets (not new production). Buying stocks, for example, clearly does not cause new products to be produced (unless you invest in new issues - sometimes described as initial public offerings - IPOs). Ultimately, people invest to make money. Profit is dependent upon cost. And the cost of investment can be lowered, or profit margins increased, or both, in several ways, among which the most important are (this repeats much of what is in notes 7):

- raise or lower interest rates (if profits represent 8 percent of gross revenue, a 1 percent fall

in the interest rate can add considerably to the percentage rise in expected profits).

- raise or lower the tax rate on firms (e.g., change excise taxes, corporate profits tax, etc.);
- Create an investment credit. An investment credit had its roots in the early 1960's, and an investment credit was passed under President John Kennedy. However, this was done more to encourage economic growth than to expand employment. Currently, investment credits are sometimes given for specialized types of investment, such as those that conserve energy.
- Accelerate depreciation. Those of you who are going to become accountants will become very familiar with this possibility. Although the total amount deducted from taxes may not change over the long term, a business will receive its tax credit earlier, and can then gain by the interest they can earn with this earlier payment.
- Reduce unnecessary government imposed burdens on industry, e.g., reduce reporting requirements, unneeded regulations, and perhaps other costs such as mandatory health coverage as was formerly required under the Affordable Care Act for many firms. This could have a double effect by causing the AD curve to move to the right (enhanced investment) and the AS curve to fall (reflecting lower costs of production), both of which would have positive effects on employment.

Note: Politicians argue over whether it is better to encourage consumption as a method of stimulus, which might be accomplished by lowering the tax rates of people with low incomes (e.g., lowering social security taxes), or to encourage investment and stimulate economic growth, e.g. by lowering corporate taxes. Which would you choose?

Exports/imports: One could seek to encourage exports to stimulate the demand for American products, or to reduce imports, which may have the same effect. There are numerous ways to accomplish this, some of which we will discuss when we discuss international trade (notes 14). However, I consider **most** (but not all) of these as bad policy (whatever trade unions or politicians might argue). If we try to discriminate against imported goods from other countries, they will almost certainly retaliate by discriminating against our goods, and this will usually lead to a **net loss by all** countries (notes 14). Trade wars usually lower living standards in all countries involved.

You should be able to explain how each of the above possible policies could cause the AD curve to shift, and the resulting effects on price levels and GDP.

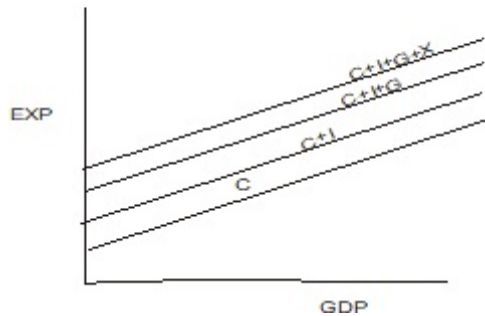
There are obviously many different public policies that could be employed to shift these the AD and AS schedules in the desired direction. Economists have had lengthy arguments and still disagree on the best ways to do this, but there is little disagreement that we have methods of increasing or decreasing aggregate expenditures (which will also increase or decrease aggregate demand, see above), and aggregate supply and subsequently the level of GDP, unemployment, and inflation. As we will discuss in notes 12, there is great disagreement on the effectiveness of the different policies, or how long it would take them to become fully effective, which only complicates arguments about which of these policies are more consistent with our underlying values, e.g., what is more important, controlling inflation or reducing unemployment, promoting economic growth or a more equitable distribution of income.

Note that most of the above methods of shifting AD will also affect the deficit of the government, an issue which is of increasing importance in the current dispute raging among politicians. We will discuss this issue further in notes 11.

Caution: I believe that the nature of unemployment and an increasing need to create jobs for older

workers and disabled workers will require new approaches to job creation. Not only will additional jobs need to be created, but they will need to be jobs that persons with limited skills and/or physical or mental limitations can accomplish. We/you need to think about ways to accomplish this.

Figure 8-4
Aggregate Expenditures
Function

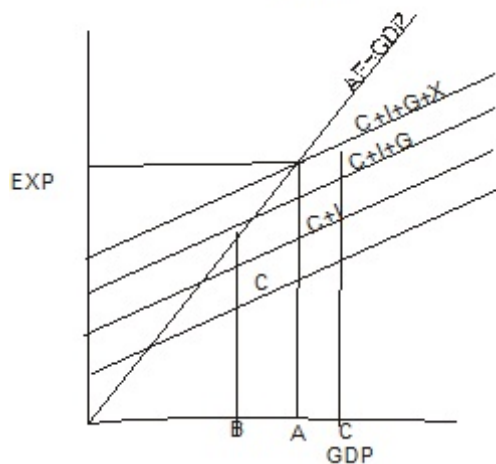


The Keynesian Expenditure Theory- the AE/AI

model: *Optional, I will ask no questions on the exam concerning the following material.*

You recall that **nominal** GDP on the expenditures side is measured by $GDP = C + I + G + X$. The right half of this expression represents all of the various ways in which expenditures for goods and services can take place. In national income accounting, the I in the above equation refers to both planned and unplanned investment. In the expenditure/Keynesian model, we use the same formula, but the I refers only to planned investment and does not include unintended inventory change as it does in the national income accounts.

Figure 8-5
Aggregate Expenditures
Function



Reminder: Planned investment is sometimes defined as “*ex ante*” investment. “*Ex post*” investment, in contrast, includes “*ex ante*” investment as well as unplanned inventory change. In national income accounting, investment is defined as *ex post* investment, and in the expenditure/Keynesian model, it is defined as *ex ante* investment. This difference has befuddled students for as long as I can remember

Now, let us take the simplest expenditure/Keynesian model.

It assumes the following:

$C = f(GDP)$ = Consumption function

$G = \underline{G}$ = Government function

$I = \underline{I}$ = Investment function

$X = \text{Exports minus Imports}$

In the **simplest** version of this model, it is assumed that G and I are fixed amounts, net exports are a fixed amount, and that C will rise with peoples’ income (which is assumed to be heavily correlated with GDP). Since they are fixed in amount, they can each be added vertically to the consumption function (figure 8-4). The line, C+I+G+X, represents aggregate expenditures (AD) on domestic production **at each level** of GDP. Note that X can be negative since imports can be greater than exports. In consequence, C+I+G+X can be smaller than C+I+G.

Now we are ready for the grand finale. Into figure 8-4, insert the line representing the balancing equation shown in figure 8-1. This brings us to figure 8.5. It may look simple, but it has provided the basis for a great deal of economic thought and public policy.

The only level of GDP in this graph that is stable is at point A. If you follow the vertical line **up** from point A, you see that the level of AE at this point is identical to GDP (the amount produced). Suppose GDP was at point B. Then, following the vertical line upward, it is apparent that AE lies above the AE=GDP line,

inventories would decline, and there would be pressure to produce more. Conversely, if GDP was at point C, then AE would lie below the balancing equation line, inventories would rise, and there would be pressure to reduce production. Only point A represents an equilibrium level of GDP under the Expenditure/Keynesian model. Note that unlike supply and demand analysis where we begin with a given price on the vertical axis to determine how much will be supplied, we here begin with a given GDP on the horizontal axis and determine how much would be expended at that level of GDP. No wonder economics students are sometimes confused.

This is a stable equilibrium. There is no pressure to increase or decrease employment since everything that is produced is sold. This stable equilibrium, however, could also exist with substantial unemployment and large idle savings sitting in banks

Do we need to consider G and I and X as fixed? No, and it makes no difference to our model. Actually, it makes sense to regard G, which is usually determined a year in advance, as fixed. Investment, however, probably does increase as GDP rises. This is easily shown by slanting the investment curve a little more upward sloping (investment rises as GDP rises) and then add I vertically to G and C and X. In addition, the excess of imports over exports (X) probably increases as GDP rises as citizens have more money to spend on imports. This also is easily shown in the above model by letting X increase as GDP rises.

Review Questions

1. Lay out the AS and AD curves.
- 2 Distinguish between aggregate demand and aggregate expenditures given the way that we have defined the terms.
3. What are the subcomponents of AD
4. Are these components the same ones as for AE
5. Explain what happens to the AD schedule if planned expenditures (AE) exceed actual output?
6. What were the major assumptions of Keynes that differed from those of classical economists?
7. Identify leakages and injections, and explain their affect on Aggregate Expenditures, nominal GDP, and real GDP.