FIYS 197 FOUNDATIONS OF ECONOMIC THINKING
Rob Lemke
Department of Economics
Lake Forest College
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VIII. Macroeconomics – The Basics (Taylor Chapters 21 – 25)

1. Introduction.

Macroeconomics focuses on the economy as a whole, including issues like growth, unemployment, inflation, and the balance of trade.

Goals:

1. Economics growth (improved standards of living).
2. Low unemployment.
3. Low inflation.
4. Sustainable balance of trade.

Models:

1. Aggregate Demand / Aggregate Supply
2. Keynesian Model
3. Neoclassical Model

Policy Tools:

1. Monetary Policy
2. Fiscal Policy

We will discuss each of these in turn over the remainder of the semester.

2. Gross Domestic Product.

Macroeconomic policy is concerned with a nation's well-being. What do we mean by well-being? How should it be measured? It can't be measured in any perfect way. Well-being includes a lot of things, including leisure time, family closeness, TV programs, job opportunities, etc.

By necessity, economists focus on something that can be measured, and in particular, in the value of goods and services produced in an economy. This too is not perfect as only market goods and services will enter the calculation. Thus, this omits quality issues and own-production issues.

Gross Domestic Product (GDP) is the value of all final goods and services produced within a country in a given year. GDP in the United States is over $14 trillion.

Example: Farmer, Miller, Baker.

    The Set-Up.
- o   Farmer uses land seed. Provides labor. Sells wheat for $400.
- o   Miller pays $400 for wheat. Provides labor. Sells flour for $1,000.
- o   Baker pays $1,000 for flour. Provides labor. Sells bread for $2,000.
- o   Store pays $2,000 for bread. Provides labor and shelf space. Sells bread for $2,800.
- o   People pay $2,800 for bread.

    What is the GDP from this example?
- o   Farmer: $400 of goods and services.
- o   Miller: $600
- o   Baker: $1,000
- o   Store: $800
- o   **Total: $2,800**

    So, how else can GDP be computed?
- o   Value of final goods produced: Store sells bread for $2,800.
- o   Value of final goods bought: People pay $2,800 for bread.

    It is these last two ways that the government actually goes about measuring GDP.

In any economy,

$$Y = C + I + G + (X - M).$$

We add exports, because they are produced in the United States, even though they are not consumed here. We subtract imports because they are consumed here, though they were not produced here. Thus, we can readily see that GDP = Y = the value of goods produced in a country, not the value of goods consumed. In the U.S. economy, though things have changed over time,

- o   C comprises about 70% of GDP,
- o   I comprises 15% of GDP,
- o   G comprises 20% of GDP,
- o   X comprises 10% of GDP,
- o   M comprises -15% of GDP.

For the record, X – M is the **trade balance**. When X – M is positive, exports exceed imports, and the country is said to have a **trade surplus**. When X – M is negative, imports exceed exports, and the country is said to have a **trade deficit**.

What goes into C?

- o   **Durable goods** make up about 15% of C,
- o   **Non-durable goods** make up about 15% of C.
- o   Services make up about 60% of C.
- o   Housing & buildings make up about 10% of C

Is it bad to have so much of consumption be comprised of services rather than of manufactured goods?

> No, for at least two reasons. First, if we value services, then we should prefer them to manufactured goods. Would you rather have a heart transplant or another DVD? Second, services do not require the same kinds of natural resources as manufactured goods do.

3. **International Comparisons**

Frequently economists compare GDP in two dimensions – across time and/or across countries. When comparing GDP across time, we must take into account **inflation**, that is price increases over time. When comparing GDP across country, we need to adjust for each country's currency by using exchange rates. We will worry about this later.

When comparing GDP across countries, one must use exchange rates (or some other means) to convert GDPs measured in yen, reals, pesos, euros, etc. into a common currency, say dollar.

Exchange rates are stated in terms of how many units of one currency one unit of another currency can buy. For example, 1 U.S. dollar can purchase 0.67 British pounds, or, equivalently, 1 British pound can purchase 1.5 dollars. It is important to understand what number is being reported. Also, it must be that the exchange rates are reciprocals of one another.

> Hint: the words *per U.S. dollar* means to put the dollar sign in the denominator.

If 1 U.S. dollar is worth 200 yen, then how much is 100,000 yen worth?

> 1 dollar = 200 yen → 1 yen = 1 dollar / 200 → 100,000 yen × (1 dollar / 200 yen) = $500.

A **weaker dollar** means that a dollar is less valuable, i.e., it purchases less. In this case, a weaker dollar purchases fewer units of another currency.

> Example: If 1 U.S. dollar currently purchases 0.67 British pounds, but then the dollar "falls" or becomes less valuable, 1 U.S. dollar will then purchase fewer than 0.67 pounds.

What is the implication of international trade when exchange rates change?

> Example: Suppose a value meal costs $5 or £5. Further suppose that 1 dollar can be exchanged for 0.5 pounds. Then an American must pay $5 for a meal in the U.S. or $10 for a meal in London. At this exchange rate, London is extremely expensive. Now suppose the dollar "gets stronger." In fact, conditions change so that 1 dollar can purchase 0.8 pounds. Now an American while still paying $5 for a meal in the U.S. can pay $8 for a meal in London.

> The implication is that a stronger dollar makes foreign goods (i.e., imports) cheaper for Americans to buy.

The same analysis can be used to determine the cost (or price) of potential imports.

> Lesson: when the value of the dollar falls, U.S. exports become a good deal to foreigners, while imports to the United States become more expensive. Thus, a weaker dollar should help alleviate a trade deficit.

> The implication is that a weaker dollar makes foreign goods more expensive to Americans, and U.S. goods cheaper for foreigners.

4. Economic Growth

Broadly defined, **economic growth** refers to an increase in GDP, which at least positively correlated with an improved standard of living. Comparisons regarding economic growth within a country over time or across countries must be made at the *per person* (or *per capita*) level, otherwise GDP will increase (or decrease) simply because of changes in population. Ultimately, we want economic growth to reflect an increase in **productivity** due to more physical capital, more human capital, or better technology.

Per capita GDP in the United States in 2007 was over $40,000. In Mexico it was just over $7,000. This means that the average person in the United States can produce (and can consume) over 5 times the goods and services that the average person in Mexico can.

GDP comparisons are made using exchange rates. This is not analogous to price levels. The **purchasing power parity index** can also be used to convert GDP numbers to better reflect purchasing power. Although the gap narrows when adjusting by purchasing power parity, large differences still remain.

Suppose growth in the United States average 2% over the next 50 years, and it averages 5% in Mexico. In 50 years, a GDP per capita comparison will yield:

> U.S. 2058 per capita GDP = $40,000(1.02)^{50} = $108,000
> Mexico 2058 per capita GDP = $7,000(1.05)^{50} = $81,000

The lesson is that developing countries have a long way to go to catch up. The idea that developing countries will eventually catch up is called **convergence**. People disagree whether convergence is inevitable, likely, or unlikely. There are some good examples – South Korea and Japan, just to name two. But there are also some cases that people thought would have converged by now – Mexico and Brazil, for example.

The best way to think of economic growth is with an **aggregate production function**. Growth is the product of increased human capital (education and skills), increased capital per worker, and technology. **Capital deepening** refers to an economy building up more capital per worker or more human capital per worker. There has been substantial human capital and physical capital deepening in the United States over the last 50 years.

> 1960: College degree = 6%.   2005: College degree = 22%.
> 1960: $16,000 of capital per worker.   2005: $36,000 of capital per worker.

Empirically, developing countries need to have more capital deepening to catch up to developed countries, but they find it difficult. This is a significant reason why the world economies haven't demonstrated more convergence.

5. <u>Unemployment</u>

Someone is **unemployed** only if they are an adult, without a job, would like a job, and have been searching for a job recently. An employed person is anyone who worked at least 1 hour for pay last week or worked at least 15 hours for free last week.

In the United States, the adult population is usually taken to be everyone age 16 or older. Of this population, people **not in the labor force** include students, the disabled, retired persons, and, generally, people who do not want a job (e.g., stay-at-home parents). The **labor force** consists of all employed persons plus all unemployed persons.

- o **Labor Force Participation Rate** = Labor Force / Adult Population.

    The U.S. labor force participation rate is about 66.2% overall. For males it is almost 75%, while it is 60% for females. The labor force participation rate is over 92% for males between 45 and 54, but is only 44% for women between the ages of 20 and 24.

- o **Unemployment Rate** = Unemployed / Labor Force.

    In the United States in 2006, there were roughly 229 million adults. Of these, 151 million were in the labor force. Of these, 144 million were employed. From these statistics we have:

    2006 labor force participation rate = 151 / 229 = 66%.
    2006 unemployment rate = 7 / 151 = 4.6%.

Notice that in the United States, when the unemployment rate increases by 0.1 percentage points (say from 4.6% to 4.7%), an additional 150,000 people are unemployed. If the unemployment rate increases by 1 percentage point (say from 4.6% to 5.6%), an additional 1.5 million people are unemployed.

Note the large numbers for the U.S. economy. Even when unemployment is only 5%, over 7 million people are looking for work. Most of these will find a new job within 4 weeks, and almost all will do so within 26 weeks, but some will be unemployed for a long, long time.

There are three types of unemployment – frictional, structural, and cyclical.

Frictional unemployment occurs naturally as people switch jobs voluntarily and as firms enter and exit the market place. Frictional unemployment, though personally difficult, is actually a good sign for an economy. Frictional unemployment is an indicator that resources (labor) are being assigned to their most productive uses (firm match).

Structural unemployment occurs when worker skills do not match the needs of firms. For example, an economy may have trained many people to be civil engineers, but recent technology developments or progress in international trade may cause the economy to need fewer civil engineers and more software engineers. In this case, many civil engineers will lose their job. Eventually the economy will produce more software engineers, but until this time, unemployment will exist. Structural unemployment can be very severe, and it can take a long time for an economy to correct. Of course, a capitalistic economy will probably correct it much faster than a command and control economy.

Cyclical unemployment is the unemployment that occurs as the economy goes through contractionary periods. That is, cyclical unemployment moves counter-cyclically with economic activity. When the

economy is expanding, cyclical unemployment is naturally low as firms are increasing wages and trying to hire more workers. When the economy is contracting, cyclical unemployment is naturally high as firms are slow to hire workers (and may be quick to fire them).

Whereas frictional unemployment is essentially good, both structural and cyclical unemployment are painful for an economy. Solving structural unemployment problems is good for the economy. Not a ton can be done about cyclical unemployment other than trying to limit contractionary periods in an economy.

The **natural rate of unemployment** is the rate of unemployment that can be said to occur "naturally" on average when cyclical unemployment is minimal. Put differently, we would not expect the actual unemployment rate to dip below the natural rate of unemployment (or at least not dip below it very far or for very long). The natural rate includes the "natural" amount of frictional unemployment, plus some structural unemployment and very little cyclical unemployment.

If one looks at **Exhibit 23-2** on page 427, you will notice that the unemployment rate in the United States moves around quite a bit historically. In the 1980s, it was thought that the natural rate was 5.5%. During the expansionary period of the 1990s, economists revised their expectations to say that the natural rate of unemployment was now 4.5%. The main reasons for the adjustment were that the Internet allowed for quicker and better job searches (lowering frictional unemployment), a younger population (the baby boomers were in their prime working years), and technology developments were lowering the amount of structural unemployment as workers could be retrained quickly and still have valuable skills.

The unemployment rate (or the natural rate of unemployment) varies across regions or countries for several reasons having very little to do with definitions of the labor force or the unemployed. Differences arise primarily due to labor policies that affect frictional and structural unemployment (or just circumstance).

- o People between the ages 35 and 55 are much more likely to be employed than younger or older workers, because people in this age bracket are more tied to the labor market as others also depend on their income.
- o People are more likely to be unemployed the better unemployment benefits are, as people have less of an incentive to return to work as they would be giving up lucrative benefits.
- o People are more likely to be unemployed the more difficult it is to fire people, as firms are more reluctant to hire new workers.
- o People are more likely to be employed the more educated/productive they are, as not working is more costly when one is more productive (because wages are attached to productivity).
- o People are more likely to be unemployed the less mobile they are – both physically and skill-wise, as they are less likely to find and obtain good job matches.

6. Inflation

Inflation refers to a general increase in prices. **Deflation**, which occurs rarely in the United States, refers to a general decrease in prices. Prices can increase over time for various reasons. Largely they increase because of changes in the money supply and because of short-run phenomenon that cause real short-term changes in prices but not much long-term change. In the long-run, though, all prices increase

When something is valued in terms of current prices, it is a **nominal value**. When the value of something is adjusted for inflation, it is a **real value**. In particular, when calculating real values, one will always take a particular year's dollar value, so it might be said, for example, "real incomes measured in 2000 dollars."

Because we are thinking at the macro level, we don't think of a single price, such as the price of gas, increasing over time. Rather, we think of the general level of prices, or the **price level**, increasing over time. The government defines a typical basket of goods, and then prices that basket each month in several locations. The price level then reflects the price of that particular basket over time. The price level, or **price index**, can be referred to as the **cost of living**.

There are several significant problems with this idea of a price index or level.

- o It is difficult to account for changes in quality.
- o It is difficult to account for different baskets for different types of people in different regions. For example, the basket is simply different for a family with 2 babies than the basket for a retired couple in poor health.
- o People can change their purchasing over time to reflect a changing budget line. (It is estimated that at least half of the increase in prices reflected in government published price indexes is avoided by changing purchasing habits.) This is called **substitution bias**.

Although the U.S. government publishes many different **priced indexes**, the main one is the **Consumer Price Index (CPI)**. We will construct a price index from data on the price of a basket, but keep in mind that the government does this, people don't. The point is for you to be able to take what the government publishes, which is the actual CPI, and to use it to calculate inflation rates and real values.

Year	Nominal Price of Basket	Price Index (2004 dollars)	Inflation Rate
2001	**$1,200**	$100 \cdot 1,200 \div 1,750 = 68.6$	N. A.
2002	**$1,320**	$100 \cdot 1,320 \div 1,750 = 75.4$	$(75.4 - 68.6) / 68.6 = 0.099 = 9.9\%$
2003	**$1,500**	$100 \cdot 1,500 \div 1,750 = 85.7$	$(85.7 - 75.4) / 75.4 = 0.137 = 13.7\%$
2004	**$1,750**	$100 \cdot 1,750 \div 1,750 = 100.0$	$(100.0 - 85.7) / 85.7 = 0.167 = 16.7\%$
2005	**$1,800**	$100 \cdot 1,800 \div 1,750 = 102.9$	$(102.9 - 100.0) / 100.0 = 0.029 = 2.9\%$

Exercise for home: Compute the price index has the base year been 2002. Show that the inflation rates are the same when using this new index.

Now, for further practice, take the following price index and calculate the inflation rate, and the real value of average income for the year.

Year	CPI (1982 base)	Nominal Average Income	Inflation Rate	Real 1998 Average Income
1994	**148.2**	**$32,000**	N. A.	$(163.0 / 148.2) \cdot 32,000 = \$35,296$
1995	**152.4**	**$34,500**	2.8%	$(163.0 / 152.4) \cdot 34,500 = \$36,900$
1996	**156.9**	**$35,000**	3.0%	$(163.0 / 156.9) \cdot 35,000 = \$36,361$
1997	**160.5**	**$37,000**	2.3%	$(163.0 / 160.5) \cdot 37,000 = \$37,576$
1998	**163.0**	**$38,500**	1.6%	$(163.0 / 163.0) \cdot 38,500 = \$38,500$

In 1960, a hamburger, fries, and coke cost $0.35, and the CPI was 29.6. In 2006, the same food cost $2.50 in the form of a happy meal and the CPI was 201.6. Which meal cost more?

We have $0.35 * 100 / 29.6 = $1.18 in 1983 dollars and $2.50 * 100 / 201.6 = $1.24 in 1983 dollars. Thus, the food cost more in 2006 than in 1960, but not by much.

Given that inflation is the norm, a graph of nomial and real GDP over time has some intutitive characteristics.
- o Nominal GDP is steeper than real GDP.
- o Real GDP is measured in the year's dollars as determined by the nominal and real intersection.
- o Real GDP exceeds nominal GDP to the left of the intersection; reverse to the right.

[Draw the graph 1960 to 2005: Nominal $500 billion to $14 trillion; real 200 dollars from $2.2 trillion to $10 trillion; $10 trillion in 2000.]

Inflation Hurts:
- o People holding cash.
- o People on fixed incomes.
- o People/foreigners holding bonds.
- o Most workers as wages rarely keep up with inflation.
- o Faith in one's economy.

Inflation Helps:
- o Debtors (homeowners).
- o The government when in debt.

7. **Trade Balance**

The **trade balance** is the dollar value of exports minus imports (trade balance = X – M). When the trade balance is positive, so that exports exceed imports, a country is said to have a **trade surplus**. When the trace balance is negative, so that imports exceed exports, a country is said to have a **trade deficit**.

Is a trade deficit bad? We will see later.

The **current account** is a balance sheet tracking financial flows (or flows of currency, hence "current account") in and out of a country. The exact opposite ledger is called the **capital account**. The current account includes exports and imports of goods, services, income payments, and transfers.

U.S. 2006 Current Account (in billions)

	Exports	Imports	Balance
Goods	$1,024	$1,860	-$836
Services	$413	$342	$71
Income Payments	$622	$629	-$7
Transfers	$0	$84	-$84
Current Account Balance			-$856

Thus, the U.S. 2006 current account had a $856 billion deficit, while concurrently the U.S. 2006 capital account had a $856 billion surplus. Historically, the U.S. runs trade surpluses and deficits, though we have been in deficit since 1991. Presently the current account deficit is about 6% of GDP.

How does the trade balance relate to other macroeconomic variables? This is answered by looking at the **national saving and investment identity**. Recall that

$$GDP = Y = C + I + G + (X - M).$$

Money leakages from the U.S. economy for consumption goods are: $S + T + M$

Non-consumption injections into the U.S. economy are: $I + G + X$.

Ultimately, leakages and injections offset one another, yielding:

$$S + T + M = I + G + X$$

where the right hand side represents money out while the left hand side represents money in. Another way to look at this identity is to consider the supply of and demand for financial capital.

       Supply of Financial Capital: $S + (M - X)$.

       Demand for Financial Capital: $I + (G - T)$

Supply equaling demand yields the national saving and investment identity: $S + (M - X) = I + (G - T)$. Rearranging, we have:

$$M - X = (I - S) - (T - G),$$

which can be described as:

<p align="center">Trade Deficit = Net Domestic Investment – Government Savings.</p>

This equation is very helpful in understanding how currency must flow (i.e., how the trade balance is affected) when certain macro variables change. In particular:

o   Domestic investment ↑ with no change in savings or government savings → trade deficit ↑.

o   Domestic savings ↓ with no change in investment or government savings → trade deficit ↑.

o   Government savings ↓ (government deficit ↑) with no change in domestic investment or savings → trade deficit ↑.

Finally, return to the earlier question. Are trade deficits bad? It really depends on what is causing them. In moderation, probably not – what if we called it a capital surplus? Then people may support a trade deficit. There are two striking problems, however:

1. A capital surplus can mean we are purchasing capital goods or consumption goods. Purchasing consumption goods, though included in the capital account, is not the same as purchasing capital investment.

2. An increasing trade deficit can arise from lower savings (domestic or government), which is not ideal.

IX. Macroeconomic Models (Taylor Chapters 26 – 28)

1. Aggregate Demand – Aggregate Supply.

Say's Law stipulates that *supply creates its own demand*. The idea is that when firms make goods and services, they pay workers, investors, etc., and these payments create the money/income that allows people to purchase the goods and services created.

Keynes' Law stipulates that *demand creates its own supply*. Keynes actually never said this so formally. The idea is that firms will only provide goods and services when there are consumers who are demanding said goods and services. For this to happen, people must have jobs and receive decent wages.

Aggregate Supply (AS) relates the total amount of goods and services supplied in an economy at different price levels, holding all else fixed (and in particular, holding technology and the price of factors of production fixed). The AS curve is shallow for a while, but then it increases sharply just before the economy reaches **potential GDP**, and increases extremely sharply after that.

Aggregate Demand (AD) relates the total amount of goods and services demanded in an economy at different price levels, holding all else fixed. It is generally thought of as $AD = C + I + G + X - M$. In general, AD is thought to be fairly steep as people need to consume regardless of the price level. The AD curve slopes downward due to:
- The **wealth effect** whereby wealth can purchase fewer goods as the price level increases.
- The **interest rate effect** whereby it is more expensive to finance the purchase of goods and services as the price level increases.
- The **foreign price effect** whereby foreign goods are relatively cheaper as the price level increases.

Equilibrium, as in all models, is the intersection of aggregate supply and aggregate demand.
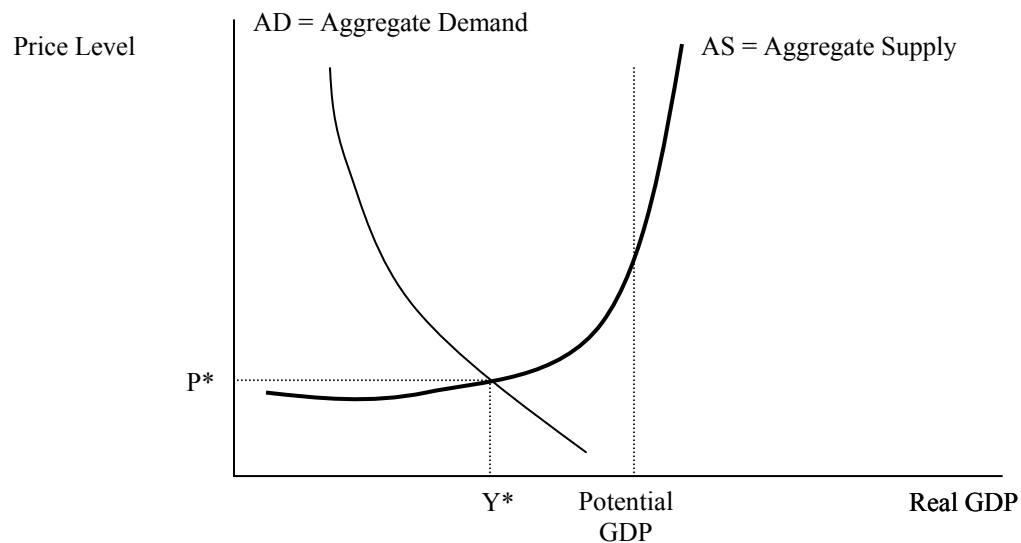
Shifts in Aggregate Supply: Aggregate Supply will shift out with an increase in productivity.

Shifts in Aggregate Demand: Aggregate Demand will shift out when C, I, G, or X (or –M) increase.

- o One way to increase consumption (C) is by lowering taxes. This raises a standard question. Should the government lower taxes or increase government spending (G) if it wants to increase aggregate demand? There is no clear answer. Some people advocate lowering taxes, because it allows people to spend on what is most valuable (rather than, say, buying a $400 hammer). Others argue it is better to increase government spending, because it will all be spent, rather than potentially saved. It can also be spent on particular projects of use to the United States.

- o **Keynes' Law** is most appropriate during the short run(usually recessions), when AD intersects AS on the shallow portion of AS. In this case, we need to spur AD to recover to potential GDP equilibrium. Keynes would also argue, however, that focusing attention on AD during an expansion (by running a budget surplus) is also a good (and necessary) action.

- o **Say's Law** is most appropriate during the long run (usually expansionary periods), when AD intersects AS on its steep portion. In this case, the supply side of the economy is going to determine continued growth.

2. **The Keynesian Perspective (Chapter 27)**

"In the long run, we are all dead." Keynes argued for policy makers to focus on the short run, recessions or expansions.

Keynes' Reasoning:

- o The most fundamental argument in Keynes is that prices and wages do not adjust quickly. In the short run, if not also in the long run, wages and prices are sticky downwards. That is, workers are not quick to accept a wage decrease, and firms are not quick to lower prices.

- o It is unclear why wages and prices are sticky. Potentially for behavioral/psychological reasons. Potentially because of imperfect information – it is a difficult coordination problem to solve.

- o The implication is that AD can intersect AS substantially below potential GDP.

[Draw a graph of price level stickiness and recession (page 510).]

Keynes' Policy Proposal:

- o Keynes' primary policy proposal was simply to increase AD during recessionary periods, either through ↑G or ↓T. That is, during recessions, the government should run a deficit. He would prefer to increase G rather than lower T, arguing that the government needed to make sure the money was indeed spent.

- o Equally important, Keynes argued that during expansionary periods the government should run a surplus. In good times, that is, ↓G or ↑T. This is the part of Keynes that most policy makers have ignored.

o The **permanent income hypothesis** stipulates that people make consumption decisions based on their expected future or lifetime income. Thus, changes in taxes that are perceived to be permanent have a much greater effect on AD than do perceived temporary changes. In application, a $1,000 one-time rebate will not increase AD as much as an announced $500 permanent reduction in annual taxes, for example.

The Multiplier:

o Suppose GDP is $200 billion below potential GDP. By how much should government spending be increased or taxes be decreased? The gut reaction is to change either by $200 billion, but this is not correct.

o Suppose income increases by $100. Households will pay some in taxes. They will also save some. They will inevitably spend some of the money on foreign goods as well. Ultimately, of the $100, maybe $60 is spent on domestic goods and services. But this $60 is then income for others. They ultimately spend $36. This turns into $36 of income, of which the recipients also spend 60%, or $21.6. And so on. The point is that money gets spent over and over. Let *NL* (net leakage rate) be the percent of income not spent on domestic GDP. In this case, $NL = 40\% = 0.4$. The amount of new income generated by a $1 injection is then $1 / *NL*. This is the multiplier. The book defines *F* to be the fraction of income spent on domestic goods and services, so that $F = 1 - NL$, or that $F + NL = 1$. In this case:

$$\text{Multiplier} = \frac{1}{NL} = \frac{1}{1-F}.$$

o If GDP is $200 billion below potential GDP, and the multiplier is 2.5, then the government injection should satisfy:
Injection x Multiplier = Potential GDP – Actual GDP.
Injection x 2.5 = $200 billion
Injection = $80 billion.

The Phillips Curve:

Because Keynesians focus on the short run, and in particular shifting out AD in the short run, the immediate question becomes: what is the tradeoff of doing this? The answer is found in a tradeoff between unemployment and inflation. In order to lower unemployment, the government must increase spending, which increases inflation. If the government wants to lower inflation, it will achieve this by letting unemployment creep up. The **short-run Phillips curve**, therefore, stipulates that there is a negative relationship between unemployment and inflation in the short run. The Phillips curve can shift when something fundamental to the economy, such as oil prices, changes.

[Draw some typical Phillips curves – close to origin in 1960s, further out in 1990s, way out in 1970s.]

3. The Neoclassical Perspective (Chapter 28)

The neoclassical view focuses on the long run. Neoclassicalists admit there can be short run recessions, but that policy needs to focus on achieving potential GDP in the long run. They believe the prices and wages will adjust as necessary in the long run, so that AD will intersect AS at full employment. The goal, therefore, needs to be to shift out AS (i.e., economic growth).

Neoclassical economists treat AS as being vertical in the long run. That is, the economy will achieve potential GDP, at any price level, in the long run as AD will always intersect at potential GDP.

[Draw vertical AS with AD intersections at various price levels. Page 540.]

Implications of the neoclassical framework:

- o Focus on policies promoting long-term growth rather than fighting a short-term recession.

- o Neoclassicalists tend to want to fight inflation rather than unemployment, as a low, constant inflation rate is good for long-term growth as business, consumers, workers, etc. can make better predictions about the future and the value of assets/investments.

- o The long-run Phillips curve is vertical at the natural rate of unemployment. [Graph this.]

X. Monetary Policy (Taylor Chapters 29 & 30)

1. Money and Banking (Chapter 29).

Money:

Money is anything that serves society in three functions – as a medium of exchange, as a unit of account, and as a store of value.

- o A **medium of exchange** is anything that is widely accepted as a method of payment.
- o A **unit of account** is a common way of measuring market values.
- o A **store of value** is something that serves as a way of preserving economic value so that it can be spent or consumed in the future.

Money must satisfy each of these three conditions simultaneously. That is not to say that other things are not used as payment (barter still exists) or others are not stores of value (precious metals). But nothing in the United States serves all three purposes at the same time other than U.S. currency.

We won't really care how we define the money supply. For the record, there are two traditional measures:

- o **M1** equals all currency + demand deposits/checking accounts + traveler's checks.
- o **M2** = M1 + savings accounts + time deposits + money market funds.

Banking Net Worth:

The primary function of **banks** in an economy is to facilitate the exchange of wealth (money) between savers and borrowers. That is, banks are a **financial intermediary**. Of course, the primary function of a bank from the bank's perspective is to make profit. Banks earn profit by paying interest on deposits and charging a higher rate of interest on loans. A bank's balance sheet indicates the three things banks do with deposits.

Assets			**Liabilities**	
Reserves	$2 million		Deposits	$10 million
Bonds	$4 million			
Loans	$5 million			
------	------	------	------	------
Total	$11 million		Total	$10 million

In this case, the bank's net worth is $11 million - $10 million = $1 million. The most important problem banks face is that even banks with positive net worth would find it difficult (or impossible) to honor all deposits at any given time. Historically, this is the source of financial crisis in the banking sector. The problem is compounded if the value of loans falls so that the bank's net value is in fact negative, in which case the bank literally could not honor all deposits, even if it could call in all loans. When people lose confidence in banks, a **run on banks** can occur, which spreads financial panic. A run on a bank is simply a time when more people demand their deposits than the bank can provide, regardless of its net worth. Of course, if banks did not invest in government bonds or loans, banks could not earn profit, and this would be bad for the economy as the economy needs banks to play their role of financial intermediary.

The Money Multiplier:

When banks lend out money, they are in effect increasing the money supply. Think of an economy having a single bank. This bank takes in deposits, keeps 20% and lends out the remaning 80%. Eventually this money lands in the hands of people who make deposits. The bank repeats the process, keeping 20% and lending out 80%. And so on.

Step 1: Deposits = $10 million.
Reserves = $2 million.
Loans = $8 million.
Total Assets = $10 million.

Step 2: Deposits = $10 + 8 = $18 million.
Reserves = $2 + 1.8 = $3.8 million.
Loans = $8 + 6.2 = $14.2 million
Total Assets = $18 million.

Step 3: Deposits = $18 + 6.2 = $24.2 million.
Reserves = $3.8 + 1.24 = $5.04 million.
Loans = $14.2 + 4.96 = $19.16 million
Total Assets = $24.2 million.

And so on.

The **money multiplier rule** is the following. If banks keep R percent of deposits in reserve, then the money supply will grow from m of currency into $M = m \div R$ dollars of money. The money multiplier, of course, depends on banks choosing to only keep R% of deposits. Economic conditions may cause banks to become more cautious. Similarly, the money multiplier applies only if economic agents deposit unused money in banks. Some money is inevitably held as cash for various reasons.

Example: If the FED injects $20 billion when the reserve requirement is 8%, the money supply could grow by as much as $20b \div 0.08 = \$250$ billion.

2. Monetary Policy (Chapter 30).

The FED:

The **FED (or Federal Reserve System)** is the **central bank** of the United States. It prints currency, conducts monetary policy, and serves as the bank for banks. There are 13 regional Federal Reserve Banks. Our class visited the Federal Reserve Bank of Chicago. In addition to printing money, clearing checks, etc., the FED regulates banks. It is through these regulations, in part, that the FED controls the money supply.

Monetary Policy Tools

Recall that **monetary policy** refers to the FED trying to adjust the money supply to stimulate or cool-off the economy. An increased money supply is thought to stimulate the economy, while a decreased money supply is thought to cool-off the economy.

The FED has at its disposal essentially 3 tools by which to control the money supply.

1. The FED can conduct **open market operations**. That is, the FED can buy or sell government bonds. When it sells bonds, it receives money in exchange for bonds. Thus, selling bonds lowers the money supply as currency is taken out of circulation. Alternatively, the FED can purchase bonds. When the FED purchases bonds, it gives banks money (currency) in exchange for bonds. This increases the money supply.

2. The FED sets the minimum reserve requirement that banks must obey. That is, the FED stipulates whether banks must keep 5%, 10%, or 15% of their deposits in reserve. As we have already seen, when the reserve requirement increases, the money supply decreases (and vice versa). In practice, the FED rarely uses the reserve requirement to control the money supply. In part because banks don't need to match the reserve requirement, rather, banks must match or exceed it. Ultimately, if banks are pessimistic and not lending out all of their potential deposits, lowering the reserve requirement will have no effect on the economy.

3. The FED requires banks to have a certain amount of money on hand, due to the reserve requirement, on a daily basis. Banks that come up short on this front must borrow (on a daily basis) from the FED itself. The rate the FED charges other banks is called the **discount rate**. The higher the discount rate, the more costly it is to come up short in deposits. Thus, a higher discount rate reduces the money supply as banks don't lend out marginal monies that may be needed to meet the reserve requirement. Likewise, the lower the discount rate, the less costly it is to come up short in deposits. Thus, a lower discount rate increases the money supply as banks lend out more marginal monies as banks are more willing to borrow from the FED.

In practice the FED doesn't control the money supply with the discount rate. Rather, banks almost always borrow from each other rather from the FED. The FED watches this rate, and when the FED announces an increase or increase in its targeted interest rate, it is this interest rate that the FED is talking about. In particular, the FED will conduct open market operations until the over-night interest rate charges by banks to banks hits this interest rate. This interest rate is called the **federal funds rate**.

Monetary Policy:

In review, the FED ostensibly can increase or decrease the money supply in three ways:

EXPANSIONARY MONETARY POLICY **Increase Money Supply**	**CONTRACTIONARY MONETARY POLICY** **Decrease Money Supply**
Purchase government bonds.	Sell government bonds.
Decrease the reserve requirement.	Increase the reserve requirement.
Lower the discount rate.	Raise the discount rate.

The money supply directly affects interest rates in an economy. Consider the market for loanable funds. Demand for loanable funds is taken as fixed. Expansionary monetary policy shifts the supply of loanable funds to the right, which lowers the interest rate. This should make sense. As more money is supplied, the price of money must fall, and the interest rate is the price of money. Similarly, contractionary monetary policy shifts the supply of loanable funds to the left, which increases interest rates.

[Draw a nice graph with dollars on the x-axis and the interest rate on the y-axis. See page 574.]

In terms of the AS – AD model, expansionary monetary policy lowers interest rates which will shift AD out as private investment increases. Contractionary monetary policy, on the other hand, increases interest rates which will shift AD in as private investment falls.

In review:

- $\uparrow M \rightarrow r \downarrow \rightarrow I \uparrow, C \uparrow \rightarrow P \uparrow$, real $Y \uparrow$.

- $\downarrow M \rightarrow r \uparrow \rightarrow I \downarrow, C \downarrow \rightarrow P \downarrow$, real $Y \downarrow$.

Real Interest Rates:

How low can the interest rates fall?

- Remember that interest rates are stated in nominal terms. The lender assumes the risk of inflation, while the borrower assumes the risk of deflation.

- Published interest rates (i.e., nominal rates) cannot fall below 0%. The reason is that at negative rates one would never invest funds. One would literally be better off saving money in your mattress or a safe.

- Real interest rates, however, which equal the nominal rate minus inflation, can be negative. If the nominal rate is 3% and inflation is 5%, then the real interest rate is -2%. Investors can be enticed to make this investment, even if they knew inflation was going to be 5%, because the alternative is to hold money and receive a -5% rate of return thanks to inflation.

Problems with Monetary Policy:

1. The FED can't force banks to lend out money during bad times. So lowering the reserve requirement or lowering the federal funds rate might not spur AD.

2. Monetary policy requires the circulation of money, which can take a while (1 to 3 years). Thus, monetary policy isn't a very quick remedy. In particular, the **velocity of money** determines in part the effectiveness of monetary policy.

$$\text{Velocity} = \text{nominal GDP} \div \text{money supply.}$$

   The velocity of money, therefore, is the average number of times money is spent in the year. The velocity of money has been known to increase or decrease for unclear reasons. The velocity of money increased steadily to about 6 in 1980. Since then, it has been much more erratic, ranging from 4 to 9.

3. Should monetary policy be used to target unemployment (potential GDP) or inflation? Most economists believe that monetary policy is best suited to target inflation. A low, constant, and predictable inflation rate allows an economy to grow steadily over time as economic agents can predict prices. Keynes might disagree. Still, many countries have passed laws requiring the central bank to **target inflation**. In the United States, the charge given to the FED includes valuing both low levels of inflation and unemployment – a tricky tradeoff given the Phillips curve.

XI. Fiscal Policy (Taylor Chapters 32 & 33)

3. Government Budgets (Chapter 32).

Over the last 50 years, the federal government has been responsible for spending between 15% and 20% of GDP. The four largest components typically are **social security, health care (Medicare & Medicaid), national defense,** and **interest on the debt**. Over this same time period, state and local government spending has increased from 10% of GDP to almost 20% of GDP. Education has accounted for just a small fraction of this, increasing from 4% to 6%, but keep in mind that the number of students in the system has fallen markedly. Per pupil expenditures have actually doubled over this time period.

When the government spends less money than it collects in taxes, T – G > 0, the government is said to run a **budget surplus**. When the government spends more money than its collects in taxes, G – T > 0, the government is said to run a **budget deficit**. The U.S. federal government last ran a budget surplus in 2001, but this includes the social security surplus.

Taxation

Whether the federal government runs a deficit or a surplus really depends on the amount of taxes collected as spending is fairly constant at 20% of GDP. The federal government collects most of its revenue from three sources:

- o **A progressive personal income tax**. (50%)
- o **A regressive payroll tax.** (40%)
- o **A corporate tax.** (10%)

Debt to GDP Ratio

Remember that federal deficits are not necessarily bad, especially if government spending is warding off a recession. Recently the U.S. government has run deficits on the order to 2% to 5% of GDP. The problem with continually running a deficit, however, is that the debt (the total amount owed) continues to grow. Presently interest on the debt is an enormous expenditure for the federal government (almost $500 billion per year). This prevents the government from spending on more necessary programs.

Should the government worry about having a $9 trillion debt?

- Need to look at debt as a percent of GDP. By this measure, debt to GDP is under 40%. It was over 100% at the end of World War II.

- The claim that households must balance their budget, and therefore governments should as well, is just wrong.

    - For one, households don't. Households borrow against future income to purchase homes and to afford a higher standard of living today. Governments should do this as well. Of course, when governments do this, they are taking from the next generation to give to the current generation, whereas households know that their future selves are still on the hook.

    - Second, governments can tax and they (hopefully) live forever. Both of these make a debt more manageable and more sensible.

Fiscal Policy

Expansionary fiscal policy is short-term policy that increases government spending or decreases taxes. Either policy shifts AD out, which increases output. This is the main idea behind Keynes. In contrast, **contractionary fiscal policy** is short-term policy that decreases government spending or increases taxes. Politicians are frequently hesitant to put the brakes on economic expansion, but they probably should. In part it would help reduce the debt.

There are some problems with fiscal policy.

- Fiscal policy is hard to time. The legislative process takes time. It also takes time for the money to be spent or given to potential consumers. Many anti-government folks would argue that the federal government acts so slowly that a fiscal stimulus almost always comes about after the economy has turned the corner on the recession.

- When the government borrows to finance the fiscal stimulus, interest rates increase, and this decreases private investment. Thus, the fiscal stimulus is, in part, offset by lower private investment which would have been good for the economy.

- Consumer, workers, and firms probably don't respond to temporary fiscal policy as they would permanent fiscal policy.

Because of these problems, many economists advocate for relying on **automatic stabilizers** to ward off recession or to cool off the economy during an expansion. An automatic stabilizer is a policy that automatically injects money into the economy during bad times and removes money from the economy during good times. The U.S. economy has several automatic stabilizers.

o The progressive tax structure – taxes automatically increase (decrease) when incomes increase (decrease).

o Unemployment benefits, welfare assistance, etc. – benefits increase (decrease) when unemployment increases (decreases).

4. **Government Borrowing and National Savings (Chapter 33).**

Recall the national savings and investment identity;

$$S + (M - X) = I + (G - T).$$

That is, private savings plus foreign savings (the trade deficit) equals private investment plus government borrowing (government investment). Thus, when government borrowing increases, either private investment must fall, private savings must increase, or the trade deficit must increase.

In particular, if private savings and the trade deficit remain fixed, then government borrowing is "financed" by reducing private investment. This would seem particularly bad as private investment is good. The idea that government borrowing replaces private investment is called **crowding out**. That is, government borrowing "crowds out" private investment.

The mechanism by which this happens is that the government competes for funds when it borrows, which shifts out the demand for loanable funds, which results in a higher interest rate. Money that once would have financed a 5% private project when government interest rates were 4% might not be funded if increased government borrowing increases the government's rate to 4.8% (because government loans are safer).

[Draw a graph of the loanable funds market. Pg. 649.]

Crowding out is less of a problem when the government spends its money on physical capital investments or investments into human capital. Many people disagree about how well (or poorly) the government spends its money and invests in capital projects and human capital.