

AP[®] Macroeconomics

Syllabus 1

Being students' first introduction to any kind of economics, both macroeconomics and microeconomics run throughout the year. The classes meet three times a week, for two 80-minute classes and one 40-minute class. There are about 15 students in each section.

Teacher Resources

Macroeconomics cannot be well served by a textbook, simply because both the global economy and also the theory are often in a state of flux. This is particularly evident in the case of deflation, a twenty-first century phenomenon, that has not yet received the attention it deserves in economics literature.

Therefore, I have summarized and regularly update (sometimes even as I teach the topic!) each unit of the AP Macroeconomics syllabus for the students. Meanwhile, the students are encouraged to dip into books rather than read them in a linear fashion. They keep the primary textbook at home:

Michael Parkin, *Macroeconomics*, 7th ed. New York: Addison-Wesley, 2006.

The instructor's resources and the CD-ROM that accompany the Parkin text include study guides, test banks, PowerPoint files, and an interactive software package, called Economics in Action.

I also refer to N. Gregory Mankiw, *Principles of Macroeconomics*. 4th ed. (Cincinnati: South-Western, 2007), plus William J. Baumol and Alan S. Blinder, *Macroeconomics-Principles and Policy*, 10th ed. (Cincinnati: South-Western, 2006), and some of the online resources associated with Campbell R. McConnell and Stanley L. Brue, *Macroeconomics*, 16th ed. (New York: McGraw Hill, 2005).

I refer to too many Web sites—ranging from data sources to lecturers' class notes—to cite any single one as being especially useful. As with texts, I would simply suggest dipping into different sources as the need arises, while maintaining a healthy suspicion of any particular view.

Course Planner

UNIT 1 Basic Economic Concepts (Six 80-minute periods)

Scarcity, choice and opportunity cost [CR1]

The basic feature of economic life is that people (and economies) find themselves in a situation of scarcity relative to their wants, which are virtually unlimited. Therefore, they are forced to make choices, between economic goods, which are scarce and desirable. The major choices are what to produce, how, and for whom.

CR1—The course provides instruction in basic economic concepts.

Much of what people want can be produced, but in order to have more of a certain good, there must be a short-term reduction in the production of another good (because of scarce resources). This is the opportunity cost: namely, the highest-valued alternative that must be foregone in order to have more of the first good. (For example, the opportunity cost for you of spending an hour studying economics is the pleasure you would have gotten from reading a novel instead.)

All activities that satisfy people's wants and for which they are prepared to pay a price are called production, whose final output includes goods, services, and capital (factories, machines etc.).

The economic resources used in production are called the production factors. The amount of factors available (resource endowments) and the state of technology determine the position of the production possibility frontier/curve (PPF), which graphically shows scarcity, choices, and opportunity costs.

Any point inside the PPF represents a waste of resources as production of one good could be increased without decreasing the output of the alternative good (zero opportunity cost). Points on the PPF, therefore, show the potential level of output.

Because of the law of increasing costs (all units of any input are not equally productive in the output of different goods), the frontier is usually concave to the origin, i.e., the cost of good Y in terms of X increases as the production of Y increases.

Calculating opportunity cost from a PPF [CR1]

(The absolute value of the slope is actually the opportunity cost.)

CR1 —The course provides instruction in basic economic concepts.

We measure the unit opportunity cost of good X as: the quantity of good Y you must give up divided by the quantity of good X you will get. Note, therefore, that for two goods, the opportunity cost of good X is the reciprocal of the opportunity cost of good Y.)

Specialization & Comparative Advantage [CR1]

(Also see Unit 7)

Absolute advantage occurs when a country can produce more of a good than another country using the same level of inputs. In a two-good case one country may have an absolute advantage in producing both goods.

Comparative advantage is when a country can produce a good at a lower opportunity cost than another country. Therefore, even if one country has an absolute advantage in producing both goods, each country will still have a comparative advantage in producing one good.

When every country specializes in producing the good for which it has a comparative advantage and trades it for other goods, there are gains from trade (mutually advantageous trade) because such specialization and exchange allows trade and consumption (not production) at points outside the PPF, since global

output rises. The importing country can buy the good at a lower price than its own opportunity cost of production.

Dynamic comparative advantage occurs when production involves substantial learning by doing, which could change a country's static comparative advantage from primary products to manufactured goods.

Supply & Demand [CR1]

One way of allocating resources to resolve the economic problem of scarcity is through prices, determined by the forces of supply and demand.

CR1—The course provides instruction in basic economic concepts.

A movement along the supply or demand curve is the result of a change in the price (endogenous to the model), but a shift in the curve is the result of a change in an exogenous factor, such as income, weather, tastes, prices of other goods (complements and substitutes), costs of inputs, number of firms, etc.

An “increase in demand” means the demand curve has shifted out.

An “increase in the quantity demanded” means moving down along the demand curve (usually after a shift in S and to correct the resulting disequilibrium—surplus or shortage).

[CR1] Market equilibrium occurs where the demand and supply curves intersect. If the price is not at an equilibrium (disequilibrium with $S \neq D$), then there should naturally be a process of adjustment in both the price and quantities over time to attain equilibrium. This occurs because price functions as a rationing device to cut shortages (when there is excess demand: $D > S$) and as a signalling device to producers (the invisible hand) to increase or reduce production.

A supply shock occurs when there is a sudden cut in the supply of a particular good (e.g. oil cuts or rice after a series of typhoons). As a result the supply curve shifts left \rightarrow equilibrium P up, Q down.

Main Economic Policy Objectives

It is generally agreed that a well-functioning economy is not troubled by either inflation or unemployment (recession). These problems persist, especially when trying to lower the government budget deficit or trade deficit and when seeking the long-term objective of steady economic growth.

UNIT 2 Measurement of Economic Performance (Eight 80-minute periods)

The Circular Flow [CR2]

There are four main players (sectors): households, firms, government, and international (ROW). The flow at one point in time is fixed, but it can be expanded (through the careful use of injections: I, G and X), which leads to higher living standards (growth in real GDP per capita). There is a monetary flow (expenditure and income) and a physical flow (in the opposite direction), but in real terms they are equivalent.

CR2—The course provides instruction in measurements of economic performance.

Real and Nominal Values [CR2]

The nominal value is what you first see: the interest rate, the wage, the calculated expenditure on output (GDP), asset prices, etc. When the nominal value has been adjusted for inflation, we have the real value, in terms of the goods and services that can actually be bought. If the nominal values are in terms of rates, we can find the real value by using the relationship:

Real rate = nominal rate – inflation rate
(e.g. interest rate or growth rate of GDP).

If the nominal values are simply values, we find the real value by:

Real value = nominal value / price index X 100 (e.g. real GDP, real wages)

Measuring National Income [CR2]

We measure the flow of final output (of goods and services) during one year to represent the economy's "pie" and, thus, economic performance. Therefore, the measurement does *not* include intermediate goods and second-hand goods (both would be double counting—except for the factor income paid to sales personnel.) Nor do financial goods (shares, bonds, etc.) contribute to Gross Domestic Product (GDP), because they do not reflect real output.

GDP measures the total output from factors of production (resources) located within the country (some factors may be owned by overseas residents).

Gross National Product (GNP) measures the total output from factors of production owned by the country's residents, so it includes income from overseas assets and subtracts income going overseas to foreign owners of assets.

Therefore, GDP + net factor incomes from abroad = GNP.

Net national product (or national income, which is usually measured at factor cost—prices net of taxes and subsidies), is GNP less depreciation or "capital consumption" because: Net I = Gross I – depreciation. It therefore measures the flow of national output (goods and services) that can be consumed or added to the stock of wealth (assets). GDP figures, however, are often used as a rough measure of national income. GDP can be measured in three ways, because the *circular flow* tells us that: Total expenditure is identical to total income is identical to total output

In the *expenditure approach*, we can obtain data (on consumption, investment, government purchases and net exports) more quickly than output data. But we call the result GDP rather than GDE.

We can also use the *income approach* to calculate GDI by adding up all wages (compensation of employees), interest, rent and profits (WIRP).

Of less significance is the *value-added* method, which in effect measures the actual output at each stage of production.

CR2—The course provides instruction in measurements of economic performance.

Price changes do not reflect different output levels. Therefore, nominal GDP (at current market prices) is divided by a price index (the GDP deflator or the Consumer Price Index (CPI)) and multiplied by 100 to yield *real* GDP.

Problems with GDP figures

- Actual output is not measured accurately. Household production, for example, does make a major contribution to national income, but this is not included in the GDP statistics because of measurement difficulties. Other omitted economic activities include criminal activities (such as drug deals), subsistence farming and work for which the income is not declared in order to avoid paying taxes.
- Welfare is not really measured at all. National income statistics are used to compare standards of living between countries and over time, but the statistics may be misleading. For example, changes in GDP do not provide any information on changes in the quality of goods, income distribution, composition of total output, environmental conditions, civil liberties, leisure time available.
- International comparisons of absolute GDP figures usually use the current exchange rate so that the figures have a common denominator (US dollars), but foreign exchange rates may not be a good indicator of the relative domestic purchasing powers of different currencies. Only the prices of goods and services traded internationally affect the exchange rate, which is also highly influenced by capital movements. (see Unit 7.)

Inflation (or deflation) is measured by percentage changes in the CPI (Consumer Price Index), which is based on a basket of goods paid for by a typical household. [CR2] The CPI is found from the change in expenditure on the basket of goods divided by expenditure on the same basket in the base year. Even though the basket is revised every five years in line with data yielded by a household expenditure survey, quality, outlet and substitution biases lead to the CPI being overstated after the base year.

CR2—The course provides instruction in measurements of economic performance.

In the case of the GDP deflator (nominal GDP/real GDP), the basket changes every year through a chained calculation. The average prices in any two consecutive years are used to calculate real growth between these two consecutive years and then the GDP deflator is estimated. Note that the GDP deflator, consequently, includes price changes for capital goods.

Inflation benefits borrowers (debtors), including the government, and penalizes creditors. It leads to uncertainty for businesses, which consequently are unwilling to invest for the future.

Inflation has recently been much lower than in the 1970s. This has introduced the fear of deflation, which penalizes borrowing firms and governments, because:

- weaker unions and higher unemployment levels have reduced pressure for wage hikes;

- wage rises have been associated with productivity gains;
- deregulation has reduced costs; and
- globalization makes it harder for producers to impose price hikes.

The unemployment rate is measured by the number of those unemployed (seeking a job and able to work) divided by the number in the labor force (employed and unemployed). [CR2]

CR2—The course provides instruction in measurements of economic performance.

$$\text{Unemployment rate} = \text{Unemployed} / (\text{Employed} + \text{Unemployed}) \times 100.$$

To be unemployed, one must be looking for work and able to work. Therefore, housekeepers, students, retired persons, etc., are not included. Nor does the measure include *discouraged workers* who have given up and left the labor force.

There are two main ways of measuring the number of unemployed:

- A labor force survey (United States and Japan). A person is considered to be employed even if only one hour was worked in the survey week.
- Counting those registered as unemployed at public employment agencies (UK).

Unemployment is a waste of resources (i.e., inside the PPF below potential real GDP). It also requires extra transfer payments (social security) from the government and therefore is a cost to the taxpayer.

Kinds of Unemployment (resulting from different causes):

1. cyclical, demand deficient (may need appropriate policies)
2. frictional (still “full employment” and good for productive resource allocation)
3. structural/technological (need training, job mobility)
4. seasonal (cannot be remedied by macro policies)
5. disguised, i.e., underemployment, and discouraged workers, who do not appear in the official data (need better data, for example, on job openings to applications ratio)

The natural rate of unemployment consists of frictional, seasonal and structural unemployment. It is often considered tantamount to “full” employment in macroeconomics, because the labor market has “cleared” at the prevailing wage rate, though there are mismatches in labor skills and available jobs.

UNIT 3 National Income and Price Determination (Ten 80-minute periods)

Aggregate Demand and Aggregate Supply Model [CR3]

CR3—The course provides instruction in national income and price determination.

Aggregate demand is made up of consumption, planned investment, government expenditure (including public investment) and net exports:

$$AD = C + I_p + G + (X-M) \quad (\text{NB: } I_p \text{ is planned investment})$$

Therefore,

$$AD + I_u = GDP$$

AD slopes down because of wealth effects on savings and substitution effects on net exports, so higher prices lead to a lower quantity of AD. Thus a price rise leads to:

- a) lower real wealth (accumulated savings in the form of bonds) → higher savings and lower real C
- b) higher export prices (and render import prices relatively cheaper) → lower net exports
- c) higher money demand → higher interest rates (lower bond prices) → investment falls

AD shifts in response to other factors, namely changes in autonomous spending and subsequent multiplier effects. (See below.)

Aggregate supply shows the total output of the economy. Determinants of AS include changes in input prices, productivity (from technology), the legal and institutional environment and the quantity of available resources. Stagflation results when AS falls (shifts left). The long-run AS curve is vertical at potential real GDP (on the PPF with only structural and frictional unemployment, which is tantamount to “full employment”).

The shape of the short-run AS curve differs between:

- a) the classical view (almost vertical), which assumes that the economy automatically adjusts to shocks and that, therefore, real output is determined by supply factors (resources and technology);
- b) the Keynesian view (horizontal or sloped), because prices and wages are “sticky” downwards; and
- c) the rational expectationist view (vertical) that the short-run AS curve keeps shifting in response to wage change, because workers immediately demand higher wages when prices rise.

The intermediate range is sloped because producers respond to higher prices in the short run by increasing their output. Also there could be intermediate

bottlenecks or output can only be increased in the SR before maintenance and other costs rise.

$AS = AD + I_u$ so unplanned investment (changes in inventories) are included and AS represents actual GDP (as on the circular flow)

If $AD > AS$, then inventory levels fall, resulting in rising prices and increases in output.

If $AD < AS$, inventories are swelling leading to falling prices and cuts in output.

The short-run equilibrium ($AD = AS$), which determines the level of GDP, may not necessarily be at the “full employment” (about 4 percent unemployment) level of GDP on the LRAS schedule. If equilibrium is below the full employment level there is a recessionary gap. If equilibrium is above the full employment level, there is an inflationary gap. [CR3]

CR3—The course provides instruction in national income and price determination.

Note: Since leakages always equal actual (not planned) injections,

$$S + T + M \equiv I + G + X,$$

by adding C to both sides, we can conclude that in equilibrium with no changes in inventories (i.e. $I_u = 0$)

$$AD = Y \equiv C + S + T.$$

Keynes' Model of Income Determination and Induced Consumption

In the simple model (without government and trade), disposable income is allocated either to consumption or to saving:

$Y_d = C + S$ but S is not necessarily equal to planned investment.

Consumption is assumed to be a linear function of income:

$$C = a + bY_d \quad 0 < b < 1$$

The marginal propensity to consume is b.

Autonomous consumption (a) changes in response to changes in expected future income, in interest rates and in wealth. If a falls, then the consumption function and AE shift down, which leads to a new lower equilibrium level of real GDP—a recession. Induced consumption (and imports) change as income (level of economic activity or GDP) changes.

Note that I, G and X are all considered to be autonomous, so their levels are independent of income.

Household consumption (and thus savings) is a function of disposable income: (Y minus T) and investment is autonomous. Savings and investment are brought into equilibrium through changes in output following changes in inventories.

The classical economist's (and now neoclassical) view was that a recessionary gap could be closed through falls in resource prices (including wages) so that “full employment” equilibrium would be attained. But Keynes argued that prices are

inflexible downwards (“sticky prices”) because of rigid costs, especially prices of imported materials (on long-term contracts) and wages; so the AS may not shift right, in response to a fall in AD, and thus equilibrium could occur at less than full employment.

The multiplier results from subsequent rounds of induced spending that occur after autonomous spending changes. Thus it is the sum of an infinite geometric progression: $1/(1-b)=1/mps$.

Since multiplier \times change in autonomous spending = change in GDP (or Y),
or multiplier = change in GDP/change in autonomous spending

Price Effects and the Multiplier

Even in an economy with unemployed resources, there are bottlenecks in some supply areas which lead to price rises. One can then demonstrate that a rightward shift in the AD function due to an injection of investment (or G or X) does not lead to the full multiplier effect.

The horizontal distance that AD shifts indicates the full multiplier (two steps) without the price effect, but the new equilibrium with an upward sloping short run AS curve is one step back.

This price effect is often called “crowding out” and is analyzed in terms of the impact on investment.

Rise in AD \rightarrow higher prices \rightarrow higher money demand \rightarrow higher interest rates \rightarrow lower investment

In the long run, the neoclassical argument would be that the short-run AS function shifts left as nominal wages rise in response to price rises, and so real GDP returns to its potential level on the vertical LRAS function, but at a higher price level. Thus in the long run, the value of the multiplier is zero.

Aggregate Expenditure Keynesian Model (no longer discussed in much detail)

The 45-degree line is equivalent to AS (real GDP or AE plus inventories), while the aggregate planned expenditure function (AE) crossing it is equivalent to AD, but with the assumption of fixed prices.

The only equilibrium path of output that can be maintained is the output level at which households will voluntarily continue to save exactly as much as businesses will voluntarily continue to invest. But since quite different people are carrying out planned investment and savings, it is always possible (after an autonomous change) for these two amounts to differ, leading to disequilibrium, in which unplanned investment (changes in inventories) is not zero. The vertical distance between the 45-degree line and AE represents unplanned investment. If inventories are building up (AE below 45-degree line at level of income above equilibrium), then producers cut back output and income falls in a movement along the 45-degree line.

The multiplier is easily visualized on the model, because an increase in autonomous spending is shown by an equivalent vertical shift in AE. At the existing level of income, unplanned investment will then be negative as inventories fall. Output, consequently, rises to a new equilibrium level of income (GDP), as shown on the horizontal axis. Thus the multiplier is simply the greater horizontal change divided by the original vertical shift.

Even though the Keynesian AE function assumes fixed prices, a rise in prices can be shown by a downward shift in the function and vice versa. Thus an increase in autonomous spending which shifts up the AE function is followed by a smaller “bounce” down (two steps up, one step slipping back).

There is a neat way, therefore, of drawing both models (with the Keynesian on top!) whereby different price levels are associated with three parallel (upward sloping) AE functions. The higher is the price level, the lower is the AE function, because higher prices are associated with a decrease in the quantity of AD.

The different equilibrium points between the 45-degree line (or AS in terms of national income) with the three AE functions can be extended vertically down (dotted lines) to a single AD function in another graph. It is then clear that higher prices are associated with a decrease in the quantity of AD (real GDP on the horizontal axes of both models). [CR9]

CR9—The course teaches how to generate, interpret, label, and analyze graphs, charts, and data to describe and explain economic concept

UNIT 4 Financial Sector (Eight 80 minute periods)

Financial Assets

As well as (liquid) money (in cash and demand deposits), there are other kinds of financial assets, such as savings accounts, stocks (shares), and bonds, which earn a return. The return (usually the real interest rate) compensates us for deferred consumption, since present consumption is worth more to us than in the future. Thus there is a “time value of money”: access to money now is worth more than the promise of it at a future date!

We also need to be compensated for inflation if we defer consumption by transferring our money to another financial asset. Therefore, **the nominal interest rate = the real interest rate + the inflation rate.**

The Money Market [CR4]

Money itself does not earn a return, but it has the special features of being a “medium of exchange”, a “unit of account” and a “store of value.” Note that money is itself a kind of commodity with an opportunity cost equal to the rate of interest, because we do have the choice of putting it into a savings account.

CR4—The course provides instruction in the financial sector.

Thus the money market, through a system of demand and supply, determines the quantity of money in circulation and the prevailing rate of interest: **r** or **i**. The latter then helps determine the level of investment (and of interest-sensitive consumption), which affects the equilibrium level of real GNP.

Note that there is an inverse relationship between the interest rate and bond prices, because bonds are traded at prices that differ from the face value. The bond price brings the percentage yield on a bond into line with interest rates.

The money supply is determined through the mechanics of *credit creation* (fractional reserve banking leads to a banking multiplier, equal to one over the required reserve ratio), with the central bank and private banks both playing important roles. [CR4]

CR4—The course provides instruction in the financial sector.

There are both narrow and broad definitions of the money supply. The Monetary Base is just the sum of notes, coins (cash) and banks' deposits at the central bank. M1 is "cash and demand deposits (plus travelers' checks)", while M2 adds in saving deposits.

Generally for the purpose of a theoretical analysis of the money market, we assume that the liquid M1 represents the money supply, but in applied economics, M2 is commonly used. One problem is that as financial products have become increasingly diversified, the nature of the money supply and its impact on interest rates and real GDP are less transparent.

The determinants of money demand (liquidity preference) are difficult to analyze. It can be flat or steep, and it shifts when P and Y change. [CR4]

Note the following:

- 1) As the interest rate rises (the price of bonds falls), the quantity of money demand decreases because other financial assets (savings accounts) become more attractive than cash; so the demand curve is downward sloping (*asset & speculative demand for money*).
- 2) As prices or incomes rise, the demand curve shifts out because there is more demand for cash balances (what you have in your pocket). (*transaction demand for money*).
- 3) There is also a *precautionary demand for money* (keeping cash for a rainy day). Therefore changes in confidence will lead to shifts in the money demand curve.

In the money market, the nominal interest rate is being determined, because nominal money is on the horizontal axis. Moreover, when inflation occurs, the money demand curve shifts to the right, thereby increasing the nominal interest rate.

The Loanable Funds Market and Crowding Out [CR4]

Unlike in the short-term money market, the long-run real interest rate is determined by the supply and demand of loanable (investment) funds.

The supply is a function of household savings (plus in some cases of government savings, which may be negative.) The demand for loanable funds comes from both the corporate sector and the government, when it runs a budget deficit (expansionary fiscal policy).

When $G > T$ → budget deficit → Demand for loanable funds rises (or S falls) → real interest rate rises → corporate investment in plant and equipment falls.

Thus private investment is crowded out by the government's expansionary fiscal policy.

There is also an indirect crowding-out effect in the money market, even when there is no budget deficit. When real GDP and prices rise, money demand shifts to the right, resulting in the rise of the nominal interest rate.

Monetary Policy (to control the money supply) [CR4]

The Central Bank (CB, or Fed), which is the lender of last resort, conducts monetary policy through its control over the money supply. Its tools, which can make either an expansionary (easy) or a contractionary (tight) policy, are:

1. Open Market Operations: buying/selling government bonds, which increases/decreases the excess reserves of the commercial banks.
2. Changing the discount rate (at which CB lends to banks): lowering/raising.
3. Changing the required reserve ratio (leading to banking multiplier): lowering/raising. This is a powerful and blunt instrument for changing the reserve positions of banks, so it is not used often.

CR4—The course provides instruction in the financial sector.

Keynesian View

Money supply (M_s) rises → r falls → investment & consumption rise → AD rises. Keynesians argue that the *speculative demand for money* is particularly important. People tend to hold cash when they expect bond prices to fall (interest rates to rise) in the future. As a result the money demand curve would be rather flat (elastic) and the velocity of circulation (V) is unstable. V equals nominal GDP divided by the money supply. If $V = 6$, then the average wage earner is basically keeping two months' pay in the form of liquid money (cash and mostly demand deposits). Empirically V has not been stable since the 1990s.

If money demand (M_d) is more sensitive (elastic) to changes in the interest rate—the curve is flatter—then changes in the money supply are less effective in changing the interest rate.

In the extreme case Keynesians believe there might be a liquidity trap when M_d becomes flat (very sensitive to changes in r) and r can fall no further. They also consider M_d is unstable (it shifts as the price level (P) and income (Y) change) and that the investment schedule may be steep, which would indicate that investment is not sensitive to changes in the interest rate. As a result, changes in the money supply will only have a small, indirect effect on AD.

Monetarist View

Monetarists in general believe that the economy is inherently stable, and that there are severe lags in the effects of policies, meaning a contractionary action meant to cool down a boom might hit in the throes of a recession. In other words, they believe that discretionary policies are destabilizing.

Changes in the money supply do not affect real variables (interest rate, level of investment), but instead simply encourage more spending (real balance effect), which leads to higher prices without any increase in output. Thus, monetarists believe that the (classical) quantity theory of money (equation of exchange) is valid, because V (velocity) is stable (as well as money demand).

$$MV = PQ \text{ (= nominal GNP)}$$

Because **nominal** GDP rises but not real GDP, the main impact of an expansionary monetary policy is on prices (boosting inflation) following an increase in spending.

Since inflation is “the worst enemy,” according to most monetarists, their recommended policy is simply to follow a non-discretionary “monetary rule” whereby the money supply should only expand at the same rate of growth as real GDP (an “accommodating” policy) at a rate set between about three and five percent. The monetarists argue that a stable growth in the money supply will allow “expectations to be rational” without any “money illusion.”

Monetarists see the link between the money supply and spending (nominal GDP) as strong and direct. What is confusing is that while monetarists do not advocate changes in the money supply except at a steady pace to match the growth in real output, they seem to think that money demand is not sensitive to changes in the interest rate (inelastic) and investment demand is sensitive.

Given their beliefs, monetary policy is a strong tool for affecting AD, but they do not like to use it for fine-tuning the economy because of the risk of sparking off an inflationary spiral. They argue that in the long run, the only impact will be on the price level with no effect on real output.

Milton Friedman (of the Chicago School) argues that: “Inflation is primarily a monetary phenomenon, produced by a more rapid increase in the quantity of money than in output.” He also asserts that the failure of the central bank (Federal Reserve System in United States) to increase the money supply was the major cause of the Great Depression in the 1930s. In other words, money is almost all that matters in determining the stability and growth of the economy because it has a powerful and direct effect on prices and nominal GDP

The Keynesians, however, believe that the Great Depression could have been averted if the government had engaged in more government spending and income tax cuts (fiscal policy), while monetary policy should have played second fiddle. The New Keynesians see a role for monetary policy in reducing the impact of crowding out through pursuing an expansionary monetary policy at the same time as fiscal policy is managing AD. [CR8]

CR8—The course promotes the understanding of aggregate economic activity; the utilization of resources within and across countries; and the critical evaluation of determinants of economic progress and economic decisions made by policy makers.

UNIT 5 Inflation, Unemployment & Stabilization Policies (Ten 80-minute periods)

Phillips Curve, Inflation and the Natural Rate of Unemployment [CR5]

Keynesian economists believe that the two policy objectives of maintaining full employment *and* stable prices were incompatible. Evidence for this belief was provided by the downward sloping (inverse) Phillips curve with a trade-off between the inflation rate (on the vertical axis) and unemployment rate.

CR5—The course provides instruction in inflation, unemployment, and stabilization policies.

However, starting in the 1970s many countries experienced both rising levels of unemployment and increasing rates of inflation at the same time (so-called “stagflation”), which appeared to arise from the Phillips curve shifting outwards. The explanations offered were:

1. supply shocks, such as a more militant attitude by labor unions and cost-push pressures that are not related to wage demands (e.g. higher import prices for materials);
2. the distinction between unexpected inflation (short-run PC) and an anticipated rate of inflation (see below). When inflation is fully anticipated, nominal wages rise at the same rate as prices, so companies no longer have the extra profit incentive to hire extra labor.

The modified Phillips model has a long-run curve (LRPC) that is vertical at the natural rate of unemployment (see below). There are downward-sloping short-run curves because of money illusion (see below), but ultimately, after an expansionary policy that temporarily lowers the overall unemployment rate, the economy returns to the vertical line at a higher rate of inflation.

The *natural rate of unemployment* (NAIRU: nonaccelerating-inflation rate of unemployment) is that which, given the existing structure of the labor market, equates the demand for and supply of labor when GDP is equal to potential (“full” employment) GDP. NAIRU is made up of frictional and structural unemployment, which are consistent with a stable rate of inflation because they are caused by other factors, such as movements between jobs and changes in economic structure. Supply siders (*see below*) also argue that NAIRU could be reduced with fewer regulations, less labor union power, fewer unemployment benefits, and more labor mobility.

Inflation and Expectations

The difference between the short-run and long-run aggregate supply curves (and similarly for the Phillips curves) arises because of different expectations. In the short run, a higher rate of inflation is not anticipated, so producers interpret price rises in relative terms and respond with higher output and increased employment. Once expectations match reality, then the short-run Phillips curve (SRPC) shifts out (SRAS to left) and we return to the long-run vertical slope at potential GNP. [CR8]

CR8—The course promotes the understanding of aggregate economic activity; the utilization of resources within and across countries; and the critical evaluation of determinants of economic progress and economic decisions made by policy makers.

Thus unanticipated inflation (usually demand-pull) leads to a (short-run) reduction in unemployment (moving along the SR Phillips curve or upward-slop-

ing part of AS beyond LR equilibrium). This occurs because businesses think that the price rise signals higher demand for their own products and rising profits (*money illusion*), so they increase output. Since there is a fall in real wages, employed workers are hurt, while employers prosper.

When inflation is unanticipated, nominal interest rates will not be sufficiently high to compensate lenders and savers for the loss in the value of their assets. In other words, when the money plus nominal interest is returned to them, they will not be able to buy the quantity of goods and services equivalent to what they could have bought when they made the loan or put their money into a savings account. However, those who are borrowing for capital investment benefit in the short run, until inflation becomes anticipated.

Anticipated (expected) inflation shifts the SR Phillips curve to the right (SRAS to the left), because of cost-push inflation in the form of wage rises, as labor unions—now without any money illusion—insist on wage hikes to compensate for price rises and higher demand for labor. (Similarly, nominal interest rates have to be increased.) To stop the SRPC shifting right, therefore, there may have to be policies to restrain labour union rights and activities.

Expected inflation may also engender demand-pull inflation as consumers rush to buy before expected price hikes. Thus a cost-push and demand-pull inflationary spiral could easily emerge.

Business Fluctuations and Policy Lags [CR5]

Since neither investment nor net exports are induced, they may fluctuate unexpectedly, which will shift aggregate demand (AD) and lead to short run changes in real GDP. Discretionary fiscal and monetary policies aim to tame the business cycle and bring actual and potential GNP in line with each other.

CR5—The course provides instruction in inflation, unemployment, and stabilization policies.

The timing of contractionary (or expansionary) policies becomes very difficult due to lags in information, decision making and implementation. Economic data are not necessarily reliable and will always be a few months out of date. The government may believe that the economy is overheating and so pursue a tight monetary policy, but in fact private investment has begun to fall and so the higher interest rates simply worsen the incipient recession.

If, on the other hand, the government pursues expansionary fiscal and monetary policies when the economy is already approaching full employment, then it risks sparking off an inflationary spiral as expectations of higher prices rise. Inflation can be caused by both demand-side (AD rises) and cost-push (AS falls) factors.

Fiscal Policy (See Unit 4 for monetary policy) [CR5]

There are additional significant lags in the political process (as well as the possibility of “pork barrel” spending) in pursuing fiscal policies: namely, discretionary changes in government expenditure (G) and taxes (T) with the aim of managing AD. Thus fiscal policy is not appropriate when AS shifts leftward in the case of a supply shock, leading to stagflation.

Keynesian theory indicates that relatively high levels of unemployment may be reduced by fiscal measures that increase AD (planned aggregate expenditure) through the multiplier. (See Unit 3.) Many economists, however, now believe that such discretionary measures are likely to affect prices rather than output even when there is excess capacity, because:

- In the short run, the supply of many goods may be inelastic (a vertical curve—the classical view).
- Unions may look on such measures as a “green light” to boost wages higher than productivity gains, which leads to a rise in the expected rate of inflation—as in the rational expectationists’ view.
- When $G > T$, there is a budget deficit and bonds have to be issued (government borrowing) and interest rates, will rise thereby “crowding out” private investment. In the loanable funds market, either D shifts right or S shifts left as government savings fall. Accumulated deficits over time will result a higher national debt.

Balanced Budget Multiplier

Nonetheless, it is possible for the government to increase both G and T by the same amount so that there is no deficit and no upward pressure on interest rates. There will still be a multiplier equal to 1, because people not only cut their *consumption* to cope with the tax hike but also reduce their savings. Thus during a recession the government could increase G and increase taxes by equivalent amounts with GDP rising by the same amount, because every \$1 extra tax only leads to a 75-cent cut in consumption (when the mpc equals 0.75).

CR8—The course promotes the understanding of aggregate economic activity; the utilization of resources within and across countries; and the critical evaluation of determinants of economic progress and economic decisions made by policy makers.

Automatic Stabilizers

In a recession, unemployment benefits automatically increase and tax payments fall (as incomes decrease). As a result G rises and T falls (vice versa during inflation).

So along with the discretionary policy choices above, the government’s budget results in automatic stabilizers operating in the economy, namely:

- a) Transfer payments adjust to changes in unemployment, with the result that the multiplier effect of an autonomous drop in aggregate demand is reduced and the resulting recession is less severe.
- b) Direct income and business taxes dampen an inflationary economy, because the percentage rises in nominal incomes and profits are taxed, often at a higher rate when taxes are progressive.

(N.B. When taxes are lump-sum or regressive, e.g., flat taxes, they do not act as an automatic stabilizer.) [CR8]

Fiscal and Monetary Mix [CR5]

For example, a contractionary fiscal policy (G down, T up) and a tighter monetary policy (M_s down \rightarrow r up) are used to deal with an inflationary gap. The net effect

CR5—The course provides instruction in inflation, unemployment, and stabilization policies.

on interest rates (both nominal and real) is indeterminate, because the surplus on the government budget will put downward pressure on interest rates.

Confidence is an important factor that is not yet properly incorporated in economic theories. But economic forecasters know that business and consumer confidence can make a big difference in determining whether an economic policy is successful. Keynesians argue that government management of AD should engender confidence, while Monetarists would say that discretionary policies are destabilizing. The latter believe that the absence of inflation is most important for engendering confidence.

UNIT 6 Economic Growth & Productivity (Five 80-minute periods)

Growth is the main macroeconomic target, because it increases the amount of real GDP in the long run and pushes out the PPF (long-run aggregate supply curve). Also it is a way of tackling the dilemma of stagflation. Real economic growth depends on human and natural resources, capital goods, technology and the right “environment for enterprise.” [CR6]

CR6—The course provides instruction in economic growth and productivity.

The model shows that an increase in net (planned) investment (not just replacement investment) leads to an increase in the [CR6] human and physical capital stock, which is a resource that increases productivity (output per unit of labor) and thereby allows a higher level of potential real GDP (as LRAS shifts right). Higher productivity stems from more education (human capital investment) or technology or better management.

The policies required are:

1. Lower real interest rates from an expansionary monetary (but not fiscal) policy.
2. Lower corporate tax rates (to allow businesses to reinvest their profits).
3. Tax breaks for businesses that invest in plant and equipment (i.e. tax incentives).
4. Deregulation that lowers costs for businesses.
5. Higher savings that increase the supply of loanable funds. (Therefore taxes on consumption are preferred to taxes on business or savings e.g., dividend or capital gains taxes).
6. Effective research and development in order to achieve technological progress. [CR6]

Keynesians and monetarists agree that the LR aggregate supply curve can be shifted out (the LRPC in) through productivity growth, technological advances, labor training and better labor mobility. Growth is usually measured by steady changes in real GDP per capita. [CR8]

CR8—The course promotes the understanding of aggregate economic activity; the utilization of resources within and across countries; and the critical evaluation of determinants of economic progress and economic decisions made by policy makers.

For long-run economic growth [CR6] without inflation it is necessary that there should be an increase in potential GDP through an outward shift of the aggregate supply curve along with the PPF. To achieve that, there must be an increase in labor productivity (or immigration or technology), which is possible through higher capital investment and better labor mobility. For more investment the economy needs lower interest rates and also a reasonable level of saving.

CR6—The course provides instruction in economic growth and productivity.

Once again, there are policy conflicts. Keynesians would argue that if aggregate demand is deficient for long-run growth (because of a lack of consumer and business confidence), then the government should intervene with expansionary fiscal and monetary policies. They believe that inflation won't be too serious because of sticky prices and wages. Even if there were inflation, it would be short-term until the AS curve shifts out on the back of greater investment in capital stock.

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Monetarists (and RE economists) would say that government intervention leads to a misallocation of resources (partly through crowding out), and that the price system is flexible and works well to allocate resources efficiently so that investment is carried out in the right places to maximize productivity gains. They favor supply-side policies, because of the danger of higher AD leading to inflation. This would distort the workings of the price system and destabilize long-run prospects, especially when inflation is anticipated because of government expansionary policies. [CR8]

UNIT 7 International Trade & Finance [CR7] (Eight 80-minute periods)

CR7—The course provides instruction in the open economy (international trade and finance).

Comparative Advantage (revisited)

Since there are different factor endowments in different regions of the world, there is diversity in the conditions of production between different countries. Using the same resource (input) quantities, countries can produce different amounts. Moreover resources are relatively immobile between countries. It seems sensible for countries to specialize in the economic activities in which they have some kind of comparative advantage (lower opportunity cost) and to engage in international trade, since different commodities require different combinations of resources.

For a country to gain from international trade, the opportunity cost of obtaining certain goods through trade must be less than the opportunity cost of producing them domestically, in which case the country can consume beyond its production possibility frontier. In other words, “the terms of trade are lower than its own opportunity cost” or “it can import more cheaply than by making the good itself.” Thus, the mutually beneficial trading price lies between the two countries' different opportunity cost levels for a particular good. [CR8]

Note that we now have to consider whether the data provided are for output levels (in which case the opportunity cost for good A is simply the amount of B given up over the amount of A gained) or inputs. In the case of labor or acreage or raw materials used for a certain level of output, we instead put the amount of input used in for good A over the amount used for good B. The result, though less intuitive, is still the opportunity cost. Although specialization and trade lead to

a greater output in total, there are some arguments for restricting international trade through *quotas* and *tariffs* on imports in the case of *infant industries* and *strategic industries*. Moreover, if a country has a high degree of *specialization* in a product, then its economy is vulnerable either to changes in demand or to technical innovations elsewhere.

Balance of Payments [CR7]

The trade (in goods and services, including tourism) account is the major part of the current account, which also includes net investment income—profits, interest and dividends—and net transfer payments (overseas aid).

CR7—The course provides instruction in the open economy (international trade and finance).

Inflows and outflows of direct investment (as companies establish subsidiaries overseas) and portfolio investment (in shares and bonds) along with loans comprise the capital account.

Often, as in the case of Japan, a surplus on the current account (when exports exceed imports) is balanced by a deficit on the capital account (when the economy is effectively lending its savings overseas). When there is an imbalance on the two main accounts, the official settlements account has to be adjusted. A net deficit requires the use of official foreign exchange reserves held at the Central Bank (or borrowing from the International Monetary Fund.), which means that the balance on the official settlements is positive.

Exchange Rates [CR7]

A freely floating exchange rate will not bring about an automatic and rapid adjustment to a surplus or deficit on the current account of the balance of payments, because:

1. Resources are not perfectly mobile, so supplies of different goods and services cannot be quickly adjusted to the changes in relative prices as the exchange rate changes. There is a time lag, which is why the *J-curve* effect appears.
2. In the case of a deficit, the resulting fall in the exchange rate, which makes imports dearer could lead to cost-push inflation (→ export prices rise) and hence to further currency depreciation.
3. A deficit on an economy's current account is matched by a surplus on the capital account, as long as foreign financial investors are willing to seek returns through either portfolio or direct investment in the economy.
4. Floating exchange rates tend to encourage *speculation* (hot money flows) on the capital account, which can have a destabilizing influence on the balance of payments.

The Foreign Exchange Market [CR6]

Be careful to distinguish between the following:

1. Because of a trade surplus on the United States current account or inflow of foreign financial “investment” funds seeking higher real interest rates in the U.S., there is higher (derived) demand for dollars. This implies that the demand curve for U.S. dollars shifts out and the dollar appreciates (gets stronger) to remove the excess demand. In other words, the Yen/\$ rate is getting higher (the amount of yen we can buy with \$1 is greater) and the \$/Yen rate is getting lower (the dollar cost of yen is decreasing).
2. Because of a trade deficit on the U.S. current account or net outflow of U.S. “investment” funds seeking higher interest rates overseas there is a greater supply of U.S. dollars, which implies that the supply curve shifts out and the dollar depreciates (gets weaker) to remove the excess supply. In other words, the Yen/\$ rate is getting lower (the amount of yen we can buy with \$1 is less) and the \$/Yen rate is getting higher (the dollar cost of yen is rising).

The next stage is that in the case of number 1 above: The dollar appreciates, U.S. exports become more expensive in Yen and Euro-denominated terms for Japanese or European customers, so the amount of U.S. exports tends to fall. Meanwhile U.S. imports are getting cheaper for U.S. customers (creating better terms of trade), so the amount of imports increases. Both things tend to reduce the surplus on the current account of the balance of payments, after a time lag.

In the case of number 2 above: The dollar depreciates, U.S. exports are getting cheaper in overseas currencies and U.S. imports in dollar-denominated terms are becoming more expensive, leading to U.S. inflation. These things tend to reduce a deficit on the current account after the initial J-curve effect of a larger trade deficit wears off. (Exports are cheaper overseas, but they are not yet selling in a greater volume because of the time taken for overseas customers to respond to lower prices.)

Note that the balance of payments and hence the exchange rate will be affected by inflation rate differentials (because of export prices and relative prices for imports), real interest rate differentials (because of financial investment flows), and growth rate differentials (because imports are induced by income changes). Thus, fiscal and monetary policies have a major impact on exchange rates.

CR6—The course provides instruction in economic growth and productivity.