Macroeconomics

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Macroeconomics: Introduction and History

Economics in general is the study of how agents (people, firms, nations) use scarce resources to satisfy unlimited wants. Macroeconomics is the branch of economics that concerns itself with market systems that operate on a large scale. Where microeconomics is more focused on the choices made by individual actors in the economy (individual consumers or firms, for instance), macroeconomics deals with the performance, structure, and behavior of the entire economy. When investors talk about macroeconomics, discussions of policy decisions like raising or lowering interest rates or changing tax rates are discussed. (For related reading, see *Understanding Microeconomics.*)

Some of the key questions addressed by macroeconomics include: What causes unemployment? What causes inflation? What creates or stimulates economic growth? Macroeconomics attempts to measure how well an economy is performing, understand how it

works and how performance can improve.

While the term "macroeconomics" is not all that old, going back to Ragnar Frisch in 1933, many of the core concepts in macroeconomics have been the focus of study for much longer. Topics like unemployment, prices, growth, and trade have concerned economists almost from the very beginning of the discipline, though their study has become much more focused and specialized through the 1990s and 2000s.

Likewise, it is difficult to name any sort of founder of macroeconomic studies. John Maynard Keynes is often credited with the first theories of economics that described or modeled the behavior of the economy, elements of earlier work from the likes of Adam Smith and John Stuart Mill clearly addressed issues that would now be recognized as the domain of macroeconomics. (For related reading, see *Giants Of Finance: John Maynard Keynes.*)

Although microeconomic ideas like game theory are clearly quite significant today and the decision-making process of individual agents like firms is still an important field of study, macroeconomics has arguably become the dominant focus of economics – at least as it applies to the investment process and financial markets.

Macroeconomics: Schools Of Thought

The field of macroeconomics is organized into many different schools of thought, with differing views on how the markets and their participants operate.

Classical – Classical economists hold that prices, wages, and rates are flexible and markets always clear. As there is no unemployment, growth depends upon the supply of production factors. (Other economists built on Smith's work to solidify classical economic theory. For more, see *Adam Smith: The Father Of Economics.*)

Keynesian – Keynesian economics was largely founded on the basis of the works of John Maynard Keynes. Keynesians focus on aggregate demand as the principal factor in issues like unemployment and the business cycle. Keynesian economists believe that the business cycle can be managed by active government intervention through fiscal policy (spending more in recessions to stimulate demand) and monetary policy (stimulating demand with lower rates). Keynesian economists also believe that there are certain rigidities in the system, particularly "sticky" wages and prices that prevent the proper clearing of supply and demand.

Monetarist – The Monetarist school is largely credited to the works of Milton Friedman. Monetarist economists believe that the role of government is to control inflation by controlling the money supply. Monetarists believe that markets are typically clear and that participants have rational expectations. Monetarists reject the Keynesian notion that governments can "manage" demand and that attempts to do so are destabilizing and likely to lead to inflation.

(Learn how Milton Friedman's monetarist views shaped economic policy after World War II. For more, see *Monetarism: Printing Money To Curb Inflation.*)

New Keynesian – The New Keynesian school attempts to add microeconomic foundations to traditional Keynesian economic theories. While New Keynesians do accept that households and firms operate on the basis of rational expectations, they still maintain that there are a variety of market failures, including sticky prices and wages. Because of this "stickiness", the government can improve macroeconomic conditions through fiscal and monetary policy.

Neoclassical – Neoclassical economics assumes that people have rational expectations and strive to maximize their utility. This school presumes that people act independently on the basis of all the information they can attain. The idea of marginalism and maximizing marginal utility is attributed to the neoclassical school, as well as the notion that economic agents act on the basis of rational expectations. Since neoclassical economists believe the market is always in equilibrium, macroeconomics focuses on the growth of supply factors and the influence of money supply on price levels.

New Classical – The New Classical school is built largely on the Neoclassical school. The New Classical school emphasizes the importance of microeconomics and models based on that behavior. New Classical economists assume that all agents try to maximize their utility and have rational expectations. They also believe that the market clears at all times. New Classical economists believe that unemployment is largely voluntary and that discretionary fiscal policy is destabilizing, while inflation can be controlled with monetary policy.

Austrian – The Austrian school is an older school of economics that is seeing some resurgence in popularity. Austrian school economists believe that human behavior is too idiosyncratic to model accurately with mathematics and that minimal government intervention is best. The Austrian school has contributed useful theories and explanations on the business cycle, implications of capital intensity, and the importance of time and opportunity costs in determining consumption and value. (For related reading, see *The Austrian School Of Economics.*)

Macroeconomics: Microeconomics Foundation

While there are relatively clear definitions separating microeconomics and macroeconomics, the reality is that both sections of economics draw heavily from certain shared underlying concepts. Both are underpinned by the reality that there are unlimited wants and only limited resources to meet them.

Economics holds that maximizing welfare is a key goal in all economic pursuits. Welfare can be broadly defined as the maximum enjoyment of resources for the minimum output of effort (work, labor, or capital). Welfare is measured in part by consumer and producer surpluses – consumer surplus is calculated as the difference between the price a consumer is willing to

pay and the actual price, while the producer surplus is the difference between the sales price and the price the producer would have accepted.

Scarcity and choice are primary factors in macroeconomics. Scarcity does not mean the same thing as "shortage"; scarcity means that a good or service is in demand with a limited amount of resources - there is excess demand at a price of "zero" and therefore the equilibrium price is always above zero. (For related reading, see *5 Economic Concepts Consumers Need To Know.*)

In comparison, a shortage is a situation where demand exceeds supply and there are impediments to the price rising enough to clear the excess demand – trucks to resupply a store may be late and the store is unwilling (or unable by law) to raise prices. In that case, there will be a temporary shortage of goods. Scarcity is a driving force in economics, as there is little trouble in allocating goods and services that are either limitless or valueless.

Marginalism is likewise a critical concept in macroeconomics. Marginalism refers both to the effect per unit of a small change in any variable, as well as the process of weighing only the costs and benefits that are directly related to a particular decision. For instance, it only makes sense for an economic agent to act when the marginal benefit is higher than the marginal cost.

Macroeconomics: Supply, Demand and Elasticity

Demand

Demand is driven by utility – the pleasure or satisfaction that a consumer obtains from consuming a good or service. Total utility is a function of the quantities of goods/services consumed and the quantities of work done. What is more relevant is the notion of marginal utility – the additional utility that comes from consuming one additional unit of a good or service. This feeds into the law of diminishing marginal utility – at some point, marginal utility will always decrease. (For related reading, see *Economic Basics: Utility.*)

Consumers maximize their utility by consuming up to the point where the marginal utility is at zero. Consumption is a byproduct of disposable income, where disposable income equals gross income minus net taxes. Expressed differently, disposable income is also equal to the sum of consumption and saving.

There are a variety of equations that can express individual consumption. A person's marginal propensity to consume is largely determined by income, as that marginal propensity equals the change in consumption divided by the change in disposable income. Similarly, a person's marginal propensity to save can be measured as the change in savings divided by the change in disposable income. At all times, then, the marginal propensity to consume and to save must equal "1."

What determines the rate of consumption and savings? Wealth plays a role, as higher wealth

leads to more consumption. Consumer expectations also play a significant role; if consumers expect economic conditions to worsen, they will spend less and save more. Household debt is also a factor, as debt represents future consumption brought forward into the present. Finally, taxes and transfers also impact consumption – the more people are taxed, the less they consume, while higher transfer payments from the government can increase consumption.

The total demand for goods and services within an economy is the aggregate demand. Aggregate demand (often expressed as "Y") is the sum of consumer demand, investment spending, government spending, and net exports. The curve of aggregate demand is downward-sloping, as demand declines as prices increase. (For related reading, see *Understanding Supply-Side Economics.*)

Demand can be influenced by a variety of factors. Some of the most significant demand factors include:

- Increase/decrease in real wealth – As consumers' wealth increases, they demand more goods. This rate of increase does slow at higher levels of wealth, though, as more income is devoted to savings (future consumption).

- Decrease/increase in real interest rate – Interest rates are in many respects the price of money and higher rates discourage consumption.

- Increase/decrease in optimism – As consumers feel better about the economy (and by extension, their job and earnings prospects), they spend more.

- Increase/decrease in expected inflation – Inflation erodes the value of unspent money; when consumers expect higher rates of inflation (or rather, the higher prices that make up inflation), they will consume today rather than see their money buy less in the future.

- Higher/lower real incomes abroad – If foreigners earn more, they can spend more money on trade goods (imports).

- Reduction/increase in exchange value of currency – A stronger currency encourages more spending on imported goods as they become cheaper.

Supply

The counterpart to aggregate demand is aggregate supply – the total amount of goods and services that are produced in an economy at a given price level. There are a variety of combinations of goods and services that can be produced in an economy and the production possibilities curve illustrates the maximum output that can be achieved in an economy (assuming full employment and full resource utilization). Full production is predicated on using resources in a maximally efficient way. (Gain a deeper understanding of supply and demand. For more, see *Economics Basics: Demand and Supply*)

Firms maximize their profits by producing up to the point where the marginal revenue of the next good sold is equal to the marginal cost of producing it. Likewise, a similar philosophy is at work when firms consider whether to make new investments. For a business to make an investment, the expected real rate of return must be equal to or higher than the real cost of investment. Consequently, higher rates generally depress investment activity.

There are numerous factors that can influence supply:

- Increase/decrease in resources – When the availability of materials is a limiting factor in production, an increase in resources allows for a greater supply of goods or services.

- Improvements in technology/productivity – Better technology and/or productivity allow producers to create more goods at a lower price.

- Changes in efficiency of resource use – Better efficiency means that suppliers can produce more goods or services from the same resource base.

- Decrease/increase in resource prices – As the cost of resource inputs declines, suppliers can offer more goods/services at the same price.

- Reduction/increase in inflation – Inflation increases the cost of production; lower inflation allows for a greater supply of goods at the same price.

- Favorable/unfavorable supply shocks – Favorable supply shocks increase the profitability of production for suppliers, while a negative supply shock (an embargo, for instance) can significantly curtail a company's access to supplies and ability to produce goods.

When supply and demand are equal (when the two curves intersect), the market is said to be in equilibrium. At all times, both consumers and producers look to maximize their utility. Consumers maximize their utility by consuming goods with a positive marginal utility; suppliers maximize their utility by producing goods and services where the marginal revenue is greater than the marginal cost. (For more, see *Marginal Benefit and Marginal Cost.*)

Elasticity

Elasticity refers to the degree to which the demand and supply curves react to changes in price. Expressed as the equation, elasticity equals % change in quantity / % change in price. This means that highly elastic goods and services will see significant changes in demand/supply with very small changes in price.

Elasticity can be influenced by a number of factors, including: the availability of substitutes (more substitutes = more elasticity), the amount of income available, and time. Elasticity is a

somewhat intuitive idea (people will pay almost any price for life-saving drugs, but may switch soda brands for a price difference of pennies), but it has many important applications. Elasticity plays a key role in determining the effect of changing prices on business revenue, the analysis of tax burden, the benefits of trade, and the effects of advertising. (For related reading, see *Economic Basics: Elasticity.*)

Macroeconomics: Money and Banking

Money can be thought of as any good that is widely used or accepted in the transfer of goods and services. Today, there are three common forms of money in use. Commodity money is a good whose inherent value serves as the value of money – gold or silver being one good example. Fiat money is a good whose value is less than the value of money it represents – paper money, for instance. Bank money consists of accounting credits that can be drawn on by the depositor – checking accounts, for instance. (For more, see *What Is Money?*)

Money serves multiple functions in an economy. Money is first and foremost a medium of exchange. When all parties in an economy will accept money, it eliminates the need for a double coincidence of wants that goes with barter – that is, both parties have to want what the other is offering. Accordingly, money as a medium of exchange is much faster and more convenient in commerce.

Money also is supposed to hold value over time. A dollar bill or gold coin will still be valuable tomorrow or a year from now, but a fish has very little value after a couple of days because of decomposition.

Finally, money also provides a convenient unit of account. If someone quotes a price of $100 everyone will understand the value that represents. In comparison, 4.5 pounds of tungsten may have the same value, but quoting prices in tungsten is not useful as hardly any consumers can relate to the value it represents. (For related reading, see *The History Of Money: From Barter To Banknotes.*)

Demand for money is determined by the price level and the level of activity within an economy. Interest rates effectively serve as the cost of money, and rates are determined by the demand for money – when demand for money falls (often because economic activity has declined), rates fall and when demand for money increases, rates rise.

The Fed and the Banking System

In most countries money is supplied by the central bank. In the United States the central bank is the Federal Reserve. The Federal Reserve not only supplies money and sets the price of money through a variety of mechanisms, but also regulates the banking system of the United States. (For related reading, see *How The Federal Reserve Manages Money Supply.*)

Banks are institutions that effectively buy and sell money - “buying” money from depositors,

who give up the utility of spending that money in exchange for interest and safe-keeping and "selling" money to borrowers in the form of loans.

The United States, and virtually all Western economies, operates a fractional reserve banking system. This is a banking system where banks hold a government-determined minimum amount of cash or "safe" securities (called the required reserve) determined as a percentage of the bank's deposits. Banks are then free to loan the remainder to customers.

Required reserves also lead to an economic concept called the money multiplier. As the name suggests, a multiplier is a system where an initial is magnified through the system. The money multiplier is expressed as the equation: 1 / required reserve ratio. In the case of a banking system with a 10% required reserve, for instance, every $1 deposited with a bank ultimately leads to $10 in the money supply (1 / .10) as the deposited money is loaned out, re-deposited, loaned out again and so on. (For more, see *The Multiplier Effect.*)

Monetary Policy

While fiscal policy is conducted by a nation's government, monetary policy is handled by a country's central banks (which have varying amounts of independence around the world).

In the United States, monetary policy is largely conducted through three mechanisms – open market operations, reserve requirements and interest rates (in the form of discount rates).

Open market operations refer to the buying (or selling) of Treasury securities by the Federal Reserve. If the Fed wishes to increase the money supply, it goes into the market and buys securities. Conversely, by going into the market and selling securities, the Fed can remove liquidity and decrease the money supply. (For more, see *How The U.S. Government Formulates Monetary Policy.*)

Altering the reserve ratio either increases or reduces a bank's capacity to lend. By law, all banks must retain a specified minimum percentage of deposits, while remaining free to loan the remainder. When the reserve ratio is increased, banks are unable to make as many loans and the money supply decreases (and vice versa when the ratio is decreased).

Finally, the discount rate is the Fed's mechanism for essentially setting the price of money. By raising or lowering the Fed Funds rate, the Federal Reserve can induce banks to borrow more or less money, money which can in turn be lent out to the banks' customers and increase the money supply. (For more, see *How Interest Rates Affect The Stock Market.*)

Keynesian arguments argue that monetary policy can be used to influence aggregate demand, lessening the severity or length of recessions and slowing growth before an economy becomes overheated. The theory is that lower rates stimulate more consumption from consumers and more investment from businesses and vice versa for higher rates.

Monetarists do not support this view. Monetarists largely believe that changing the money

supply does not produce any long term changes in GDP and only impacts price levels (increasing or decreasing inflation). In other words, by raising or lowering rates through monetary policy, governments risk inflation and destabilizing the economy, but cannot produce any sustained change in growth.

These arguments about the efficacy of monetary policy revolve in large part around a concept known as the velocity of money. The velocity of money basically refers to the frequency with which a unit of money is spent in a given period of time; the higher the velocity, the smaller the supply of money can be for a given level of economic activity. Monetarists hold that velocity does not change quickly or often (if at all) and that an increase in money supply simply increases prices. (For related reading, see *What Is The Quantity Theory Of Money?*)

Macroeconomics: Economic Systems

Within the study of macroeconomics, there are certain basic goals for economic systems. Generally speaking, desirable goals include economic growth, full employment, economic efficiency (achieving the maximum output for the available resources), price stability, and balanced trade. Most economists would also include economic freedom (the right to freely choose to work, invest, and consume according to one's inclinations) as a key goal and some would also point to an equitable distribution of income as a worthwhile goal.

When considering the concept of market efficiency, it is also important to note the existence of those who basically oppose the notion that free markets are the desirable mechanism for allocating resources. In particular, egalitarianism holds that every participant in an economy should get an equal share, untying compensation from productivity.

While egalitarianism may be an extreme means of dealing with inequalities economies, these inequalities are important. Inequalities can arise from differences in abilities, differences in human capital, discrimination, individual preferences, market power and simple luck. Generally speaking, even the staunchest laissez faire economists oppose discrimination as it interferes with the efficient operation of the economy.

The Gini ratio is one commonly-used metric for economic inequality; in particular it measures the inequality of income distribution across an economy. (For more, see *The Gini Index: Measuring Income Distribution.*)

While there is still some academic interest in command and communist economics, and a fairly thriving interest in mixed economies (where there is a mix of government planning and market economics), most economic theory focuses on market systems. Market systems feature private property and economic participants are motivated by self-interest to maximize their happiness and profits.

Perfect competition is a market in which there are many small independent consumers and

producers. Firms produce standardized products and there are no barriers to entry or exit. Firms competing in perfect competition are price-takers. By and large, perfect competition is a thought object (having no barriers to entry or exit is rare), but the market for freelance writing comes close. (For more, see *Perfectly Competitive Markets.*)

In a monopoly, there is a single producer and there are no close substitutes to that product. In a monopoly there are extremely high barriers to entry (if not outright prohibition of competition) and firms are price-setters without government intervention.

As most readers will realize, true perfect competition and true monopoly are quite rare in actual practice. More common, though, are monopolistic competition and oligopolies.

Monopolistic competition features a relatively large number of firms offering differentiated products. Barriers to market entry and exit are relatively low. Oligopoly sees a few large producers competing in a market, with either differentiated or standardized products. There are relatively significant barriers to entry, and some mutual interdependence among the producers. (For related reading, see *Economic Basics: Monopolies, Oligopolies, and Perfect Competition.*)

Macroeconomics: Inflation

Inflation is a key concept in macroeconomics, and a major concern for government policymakers, companies, workers and investors. Inflation refers to a broad increase in prices across many goods and services in an economy over a sustained period of time. Conversely, inflation can also be thought of as the erosion in value of an economy's currency (a unit of currency buys fewer goods and service than in prior periods).

In the United States, the Consumer Price Index (CPI) is among the most commonly-used measures of inflation. The CPI uses a so-called “market basket” of goods to measure the changes in prices experienced by average consumers in the economy. Economists and central bankers will often subdivide the CPI into so-called “core inflation,” a measure that excludes the price of food and energy.

The Producer Price Index (PPI) is a measure of inflation that tracks the prices that producers obtain for their goods. Though a long-followed economic statistic, the change in composition of some economies away from manufacturing and towards services is eroding the value of this statistic. (To learn more about inflation and its indicators, check out *Using Coincident And Lagging Indicators*)

The GDP deflator is another option for measuring prices and inflation. As the name suggests, the GDP deflator is a price measurement tool that is used to convert nominal GDP to real GDP. The GDP deflator is a broader measure than the CPI, as it includes goods and services bought by businesses and governments.

While there is little consensus on the "right" rate of inflation for an economy (or even if inflation is necessary at all), there is little disagreement in the differing impacts of expected and unexpected inflation. When inflation is expected, agents in the economy can plan for it and act accordingly – businesses raise prices, workers demand higher wages, lenders raise interest rates, and so on.

Unexpected inflation is considerably more problematic. When inflation is higher than expected, it tends to hurt workers, recipients of fixed incomes, and savers. In contrast, unexpected inflation often benefits companies (who can raise prices quickly without needing to raise wages in tandem) and borrowers (who can repay their debts with money that is now worth less than when they borrowed it).

Over the long term, unanticipated inflation can cause a number of problems for an economy. Businesses will invest less in long-term projects because of the uncertainty of returns, price information becomes distorted, and consumers will spend more time trying to protect themselves from inflation and less time engaging in productive activities. Periods of inflation also tend to redirect investment from businesses and toward hard assets, thus depriving companies of the capital they need to grow and expand. (For more on inflation, read *What You Should Know About Inflation*)

What causes inflation is also a key argument in economic theory. Some economists believe that there are different types of inflation – cost-push and demand-pull inflation. Cost-push inflation is supposed to be a type of inflation caused by rising prices in goods or services with no suitable alternatives. An oft-cited example of this inflation is the oil crisis of the 1970's. Cost-push inflation is largely a Keynesian argument, as monetarists do not believe that increased prices for goods and services lead to inflation absent an increase in the money supply.

Demand-pull inflation is a rise in the price of goods and services created by aggregate demand in excess of aggregate supply, sometimes referred to as "too much money chasing too few goods". As with cost-push inflation, monetarists argue against the existence of demand-pull inflation absent changes in the money supply. (To help identify the differences between cost-push and demand-pull inflation, read *Cost-Push Inflation Versus Demand-Pull Inflation*)

Macroeconomics: The Business Cycle

The business cycle is the pattern of expansion, contraction and recovery in the economy. Generally speaking, the business cycle is measured and tracked in terms of GDP and unemployment – GDP rises and unemployment shrinks during expansion phases, while reversing in periods of recession. Wherever one starts in the cycle, the economy is observed to go through four periods – expansion, peak, contraction, and trough.

Recession is typically used to mean a downturn in economic activity, but most economists use a specific definition of "two consecutive quarters of declining real GDP" for recession. By comparison, there is no formal definition of depression. While recessions have averaged around 10 months in length since the 1950s, the recovery/expansion phases have a much wider range of lengths though around three years is relatively common.

The movement of the economic through business cycles also highlights certain economic relationships. While growth will rise and fall with cycles, there is a long-term trend line for growth; when economic growth is above the trend line, unemployment usually falls. One expression of this relationship is Okun's Law, an equation that holds that every 1% of GDP above trend equates to 0.5% less unemployment.

The relationship between inflation and growth is not as clear, but inflation does tend to fall during recessions and then increase through recoveries. (To learn more about the business cycle, see *Recession: What Does It Mean To Investors?*)

While the business cycle is a relatively simple concept, there is great debate among economists as to what influences the length and magnitude of the individual parts of the cycle, and whether the government can (or should) play a role in influencing this process. Keynesians, for instance, believe that the government can soften the impact of recessions (and shorten their duration) by cutting taxes and increasing spending, while also preventing an economy from "overheating" by increasing taxes and cutting spending during expansion phases.

In comparison, many monetarist economists disagree with the notion of business cycles altogether and prefer to look at changes in the economy as irregular (non-cyclical) fluctuations. In many cases, they believe that declines in business activity are the result of monetary phenomena and that active government inflation is ineffective at best and destabilizing at worst.

There are numerous other alternate theories on the business cycle and its causes/influences. Real business cycle theorists, for instance, believe that it is external shocks like innovation and technological progress that drive cycles, and that issues like excessive overcapacity can drive downturns. Other theorists suggest that excess speculation or the creation of excess levels of bank capital drive business cycles. (To learn more about the Keynesian theory, check out *Can Keynesian Economics Reduce Boom-Bust Cycles?*)

Macroeconomics: Unemployment

Labor is a driving force in every economy – wages paid for labor fuel consumer spending and the output of labor is essential for companies. Likewise, unemployed workers represent wasted potential production within an economy. Consequently, unemployment is a significant

concern within macroeconomics.

"Official" unemployment refers to the number of civilian workers who are actively looking for work and not currently receiving wages. Given that official unemployment statistics specifically exclude those who would like to work but have become discouraged and ceased looking for employment, the true unemployment rate is always higher than the official rate.

Within the unemployment number are several sub-types of unemployment.

- Frictional unemployment results from imperfect information and the difficulties in matching qualified workers with jobs. A college graduate who is actively looking for work is one example. Frictional unemployment is almost impossible to avoid, as neither job-seekers nor employers can have perfect information or act instantaneously, and it is generally not seen as problematic to an economy.

- Cyclical unemployment refers to unemployment that is a product of the business cycle. During recessions, for instance, there is often inadequate demand for labor and wages are typically slow to fall to a point where the demand and supply of labor are back in balance.

- Structural employment refers to unemployment that occurs when workers are not qualified for the jobs that are available. Workers in this case are often out of work for much longer periods of time and often require retraining. Structural unemployment can be a serious problem within an economy, particularly in cases where entire sectors (manufacturing, for instance) become obsolete. (For more on unemployment, read *The Unemployment Rate: Get Real*)

While high unemployment is undesirable, full employment (meaning zero unemployment) is neither practical nor desirable. When economists talk about full employment, frictional unemployment and some small percentage of structural unemployment are excluded. Economists do not generally believe it is practical or desirable to have 100% employment in an economy.

In particular, the Phillips curve highlights why this is so. Generally there is a relationship between inflation and unemployment – the lower the rate of unemployment, the higher the rate of inflation. While a variety of factors can alter the curve (including productivity gains), the essential take-away is that neither a zero-unemployment or zero-inflation scenario is viable on a long-term basis.

There is also a tradeoff between employment and efficiency. Businesses maximize their profits when they produce the largest number of goods possible at the lowest price possible. In some cases, though, labor is more expensive (less efficient) than capital equipment. Consequently, there is always a trade-off between the cost and productivity of labor and that of labor-substituting capital equipment and that effectively reduces the number of jobs

available. Likewise, structural employment is a recurrent problem as technology progresses – workers find their skills no longer match the needs of the employers and must update their training as industries adopt new technologies. (To learn more about the Philips curve, check out *Examining The Phillips Curve*.)

Macroeconomics: Economic Performance and Growth

Income is one of the most significant factors in measuring economic performance, and gross domestic product (GDP) is the most commonly used measure of a country's economic activity. In short, GDP reflects the value of all final goods and services legally produced in an economy in a given time period.

The distinction between final goods and intermediate goods is an important one. A tomato sold to a ketchup manufacturer would NOT be included in the GDP number, while a tomato sold in a store as produce WOULD be included, as it represents the final use of that good. It is also worth noting that trade in illegal goods and services are also excluded from GDP figures.

There are two ways of approaching GDP – the expenditure approach and the resource cost-income approach. The expenditure approach totals the amount spent on goods and services during a year, while the resource cost-income approach adds up the payments made to suppliers of resources and other inputs that go into goods and services.

The expenditure approach is arguably more common, and it breaks GDP into four commonly watched components – personal consumption, gross profit domestic investment, government spending, and net exports to foreigners. Personal consumption has long been the largest component of GDP in the United States, and is made of household spending on goods and services. Domestic investment refers to spending on fixed assets (capital expenditures) and additions made to inventories during the year.

By comparison, under the resource cost-income approach, compensation paid to employees is the largest component of GDP, with depreciation, indirect taxes, interest, corporate profits, and the income of the self-employed following. (To learn from the past, check out *A Review Of Past Recessions*)

Going a step further, there are other types of analysis that can be applied to GDP. Real GDP is the broadest view of an economy's output, and the one most widely used by economists. Real GDP differs from nominal GDP in that it attempts to adjust for rising price levels to determine what amounts to changes in the volume of activity in an economy.

Economists observe not only the absolute level of GDP, but its growth over time. In fact, most discussions of GDP are undertaken in terms of growth. Going another step further, It is often useful to examine GDP in the context of its relationship to the number of participants in an

economy.

GDP per capita often correlates to the standard of living and the extent of economic development in a country. The U.S. and China, for instance have similar GDPs in absolute terms, but the per capita GDP in each country is much different and reflects the much higher standard of living in the United States.

There are some drawbacks and limitations to the use of GDP. GDP excludes any unpaid activity as well as illegal activity, so it cannot account for the value of all economic activity in a nation. GDP also fails to account for reductions in quality of life and losses to natural disasters or crime. The destruction wrought by an earthquake, for instance, would not be accounted for in GDP accounting, but the rebuilding efforts would be counted. Likewise, even per-capita GDP does not necessarily reflect the wealth of the typical citizen, as a majority of low-earning citizens could be offset by a small group of very high earners. (For more on GDP, read *High GDP Means Economic Prosperity, Or Does It?*)

There are other significant measures of income to consider. National income refers to the total income paid to owners of human capital (wages for labor) and physical capital, and includes both domestic and foreign income. National income can also be calculated as the sum of wages, interest, self-employment income, rent, and business profits.

Personal income, in contrast, is the income received by individuals; it excludes corporate profits and social security taxes, but adds back transfer payments (like Social Security), interest, and dividend. Disposable income is personal income that is actually available for spending or saving; it is personal income net of personal income taxes.

Models of Growth

While the large majority of economists basically agree with the use of metrics like GDP and GDP per capita as measures of growth, there is considerably less agreement in how to explain how economies grow over time.

Some models hold that growth is exogenous – long-term growth is determined by factors external to the economy. Other models post that growth is endogenous – long-term growth is determined by factors within the system. More specifically, there are models like the Harrod-Domar model that examine the consequences of fixed capital and labor ratios and the propensities to save. This model highlights the problems of rigidities in the capital/labor ratio and savings rate. By comparison, the Solow model holds that growth in GDP is explained by population increases, technical progress, and increased investment. As with many economic models, these are not so much predictive as explanatory; seeking to identify the impact of certain variables and conditions.

While economic growth is clearly an important objective for most governments, most economies do not operate at their full potential. Often there is a gap between the amount of GDP actually produced and the potential GDP that the economy could produce with full

employment and full resource utilization – this gap is called the output gap (or the GDP gap). (For examples of some fast growing economies, see The 6 Fastest-Growing Economies)

Macroeconomics: Government - Expenditures, Taxes and Debt

Externalities

In a market economy there are important differences between public and private goods. Private goods are considered "rival and excludable" - one person consuming a good means that another cannot, and those who do not pay for the good/service are excluded from consuming them. In contrast, public goods are non-rival and non-excludable; multiple people can enjoy them simultaneously and non-payers are not excluded. This creates what is called the free-rider problem, an externality that means that non-payers cannot be excluded from enjoying the good or service.

Externalities can be positive or negative, and they are often used as an example of where government interference in the economy can do good. In all cases, externalities are positive or negative effects that are not captured by the normal price mechanism of a market economy. Companies that pollute, for instance, do not pay anything extra for the damage they do to the environment. Likewise, those who work in their yard and beautify their neighborhoods may increase property values for others with no direct compensation back to them.

To deal with externalities, governments can use their powers of taxation and subsidy. Taxation can be used to impose costs on negative actions (negative externalities) with an eye towards reducing the occurrence and/or using the proceeds of the tax to remediate the damage done. Likewise, a subsidy can encourage positive externalities to continue and expand. In practice, however, there are considerable inefficiencies to taxation and subsidies and they rarely produce the desired effects in a cost-effective manner.

Externalities are not the only reason that governments impose taxes on their citizens. Taxes fund government operations that range from the provision of collective services (military and police services, courts, roads, etc.) to a variety of transfer payments that are aimed at stabilizing economic activity (unemployment insurance and earned income credits) and reducing poverty. (For more on the government use of taxes and spending, check out *What The National Debt Means To You*.)

Taxes

When considering taxes, it is important to understand the difference between marginal and average tax rates. Marginal rates refer to the tax rate in effect on the last dollar earned, while the average tax rate is the product of total taxes paid divided by total taxable income.

There are three major types of taxes in the U.S. tax system. Progressive taxes result in higher average rates as income increases; personal income tax is a common example. Regressive taxes result in lower average tax rates as income falls; sales tax is commonly used as an

example. Proportional taxes maintain a constant rate irrespective of income. (To learn how taxes started in the US, see *The History Of Taxes In The U.S.*)

Implications of Taxation and Government Spending
Broadly speaking, fiscal policy is the use of taxation and government spending for the purposes of macroeconomic goals. Fiscal policy can be expansionary, that is aimed at growing the economy and increasing employment, or contractionary (aimed at slowing the growth of the economy). Expansionary fiscal policy features increased government spending and/or decreases in the tax rates, while contractionary policy is the opposite (lower government spending and/or higher tax rates).

Government economic actions are not without consequences, however.

When governments increase their spending, crowding out can occur – government spending reduces available funds and increases the cost of capital, leading many businesses to abandon expansion projects. Likewise, when a government spends in excess of receipts (a deficit) and must borrow funds to finance that deficit, crowding out can occur.

Likewise, taxation causes problems of its own. Taxes shift the equilibrium for goods and services away from its optimal level, therefore reducing consumer and producer surpluses. This reduction is called the deadweight loss and it basically represents the net benefit that is being sacrificed by society because of the presence of the tax. (For more on government spending, read *Do Tax Cuts Stimulate The Economy?*)

Tariffs are levies charged by a government on imported goods. Tariffs are not as significant to economies now as in years past; prior to the implementation of personal income taxes, tariffs were a major source of U.S. government revenue. There are principally two kinds of tariffs. Revenue tariffs are taxes levied on goods that are not produced domestically, while protective tariffs are levied on goods that are produced domestically.

As tariffs are essentially just a type of tax, there is deadweight loss here as well – consumers pay higher prices and consume less, and lose some of their consumer surplus in the process. At the same time, domestic producers increase their output.

There are definite trade-offs between government spending and taxing. Dollar for dollar, government spending has more impact than reducing taxes. This occurs because consumers almost never have a marginal propensity to consume of “1” and almost always withhold a portion of any tax cut and save it. (To learn more about tariffs, check out *The Basics Of Tariffs And Trade Barriers*.)

Debt and Deficits
From a macroeconomic perspective, government debt can be thought of as future spending brought forth into present time. Governments incur debt when their spending desires exceed their receipts from taxes and other income sources, and that debt is ultimately repaid through

a levy of taxes in excess of current spending.

Government debt can become problematic through both a crowding-out effect and through the deadweight loss of future taxation. When governments access debt markets, they effectively crowd out other would-be borrowers (like corporations) and force them to pay higher interest rates to attract willing creditors. With the higher cost of capital that results, corporations abandon or reject expansion plans that would otherwise have a positive expected economic return.

Governments have virtually no means of repaying debt other than through future taxation. While there is a multiplier effect to government spending, high levels of government debt essentially saddle future generations with the deadweight loss of higher taxation with no offsetting multiplier to the GDP from government spending (as that spending occurred years early when the debt was issued). To learn more about the deficit, see *Breaking Down The U.S. Budget Deficit*)

Macroeconomics: International Trade

International trade is the exchange of goods, services and capital across national borders. It is a multi-trillion dollar activity, central to the GDP of many countries, and the only way for people in many countries to acquire resources they require. Absent trade, consumers and suppliers are forced to either develop substitute goods or devote a large percentage of their income to acquiring products where demand is inelastic and domestic supply is inadequate.

Two of the key concepts in the economics of international trade are specialization and comparative advantage.

It seems readily apparent that countries can benefit from trade if each country does something better than the other (i.e. can produce goods or services at a lower cost). What if one company is more efficient in *every* good? This situation is called absolute advantage.

Even in situations of absolute advantage, though, there can be benefits to trade. As long as a country is not equally superior in all producing all goods, there will be different relative costs for producing various goods. This is where comparative advantage comes in; so long as the two countries have different relative efficiencies, the two countries can benefit from trade – the country with absolute advantage will still benefit by directing its resources to those goods where it is most productive and trading for the others.

Specialization refers to this process; countries (as well as individual businesses) can maximize their welfare by specializing in the production of those goods where they are most efficient and enjoy the largest advantages over rivals. (For more on advantages, check out *Competitive Advantage Counts*.)

A country's balance of payments basically tracks the financial flows between trading partners. The balance of payments includes the payments made for imports and exports, as well as financial transfers. Exports create a positive entry, while imports are a negative. That said, a balance of payments must always balance out at zero – a trade deficit (more imports than exports) must be balanced with foreign investments, declines in reserves, or increased debt; likewise, a trade surplus will be balanced out with financial outflows or increased reserves.

Within a nation's balance of payment is the current account. The current account is made up primary of a company's trade balance (exports minus imports), as well as net interest and dividends, and net transfer payments (like foreign aid). (To learn more on a nation's balance of power, check out *What Is The Balance Of Payments?*)

Impediments to Trade
While free trade is generally thought of as a positive, countries will periodically put up barriers to trade. Tariffs are taxes on imports that make imported goods more expensive and less competitive relative to domestically-produced goods. While national governments used to obtain a significant percentage of their receipts from tariffs (in the days before income taxes were common), tariffs today are more commonly used to protect domestic industries and/or to punish other countries for perceived wrongdoing (typically subsidizing local industries to the detriment of the importing country's industries).

Subsidies are transfer payments given by governments to domestic suppliers of goods or services. The motivation to provide subsidies is to increase production and/or lower prices for a country's consumers and/or to make domestically-produced goods more competitive with imports.

Quotas are limits on the amount of a good that can be imported in a given time period. Quotas serve a similar purpose to tariffs in that the increase the price of imported goods, but quotas can be even more severe as no additional goods are available once the quota level is reached. (For more on international trade, see *What Is International Trade?*)

Macroeconomics: Currency

For citizens of different countries to conduct trade, they have to buy and sell each other's currencies. The price of a nation's currency, expressed as an amount of a second country's currency, is referred to as the exchange rate. As exchange rates play a significant role in trade and capital flows, it is an important concept in macroeconomics.

The nominal exchange rate is the type of exchange rate that is referenced most often in business discussions. When reports talk of the dollar being worth 1.35 euros or 85 Japanese yen that is the nominal exchange rate. The real exchange rate is a bit more academic – it is the amount of goods or services from one country that can be traded for another country's goods and services. It can be expressed as the equation: (nominal exchange rate x domestic

price) / foreign price.

There are basically two types of international exchange rate systems – fixed and floating. In a fixed exchange system, countries establish the ratio of their currencies and then commit to maintaining those rates. A country supports fixed rates by buying (or selling) foreign reserves in response to changes in demand for the currency.

From day to day, there is minimal change in a fixed rate system – if the exchange rate between dollars and euros is fixed at 1: 1.25, businesses, governments and individuals can typically count on that rate being in force at any given time. This is often seen as convenient for companies conducting international trade as it removes the risk and unpredictability of exchange rates.

Fixed rates were commonplace throughout the 19th and 20th centuries, with gold serving as the underlying standard and the British pound serving as the global reserve currency (in other words, almost all countries would accept gold or British pounds to settle accounts). Near the end of World War 2, the Bretton Woods Agreement came into being and largely governed foreign exchange rates into the early 1970s, with fixed rates and the U.S. dollar becoming the new world reserve currency. In practice most countries have found that a fixed exchange system is too limiting and too expensive to maintain, and as of the early part of the 21st century, China is the only major economy to maintain such a system. (For more on Fixed exchange rates, check out *The Pros And Cons Of A Pegged Exchange Rate*.)

In contrast, a country can elect to allow the market to set the value of its currency. This is called a floating exchange rate system. If a country has floating exchange rates, foreign exchange rates are subject to the same rules of supply and demand as any other good. When there is increased demand for a currency, its value increases relative to other currencies. This demand can be driven by consumer tastes (a preference for goods from that country), relative incomes, relative inflation, and outright speculation.

Not surprisingly, exchange rates are typically significantly more volatile in a floating environment; some economists have estimated that rates have been at least twice as volatile since the end of the Bretton Woods system. (To learn more about the difference of Fixed and Floating exchange rates, read *Currency Exchange: Floating Rate Vs. Fixed Rate*.)

What determines exchange rates?

One theory, called purchasing power parity (PPP), holds that the ratio of two countries' exchange rates should equal the ratio of the prices of identical goods in those two countries. If a gold coin is worth $1 in the United States and the same gold coin would be worth 100 yen in Japan, PPP says that the exchange rate should be $1:100Y. By extension, then, purchasing power parity also holds that changes in relative inflation rates tie into changes in exchange rates.

This theory works mathematically and logically; if there was not such a state of parity, one

could buy goods in the “cheap” country, sell them in the more expensive country and reap risk-free profits.
In the real world, though, this theory does not strictly hold true. Not only are there expenses involved in shipping, but there are various trade barriers and tax issues involved. What's more, the notions of specialization and comparative advantage suggest that goods are not exactly the same – some countries can produce goods at lower cost than other countries. Still, when considering price levels on the whole this is less problematic and the theory is somewhat more useful.

One well-known application of purchasing power theory is the Big Mac Index. Created by *The Economist*, the Big Mac Index evaluates the under/overvaluation of foreign currency relative to current rates by examining the price of a Big Mac in various countries. In concept this should be a reasonably fair test of purchasing power theory, though local taxes, regulations, and farm policy to influence the comparisons. (For more on purchasing power parity, see *Hamburger Economics: The Big Mac Index*.)

Likewise, the interest rate parity concept is a useful theoretical construct that does not hold true in practice. In essence, interest rate parity holds that the returns from borrowing money in one currency (say dollars), exchanging it for another (yen), investing that currency in interest-earning assets denominated in that second currency (yen-denominated bonds), and purchasing a futures contract to convert back to dollars at maturity of the asset (the bonds) will be equal to simply buying and holding like interest-bearing assets in the original currency (a dollar-denominated bond in this case).

This concept implies that the differences in nominal interest rates correspond to the difference in rates of change of exchange rates. Now it is certainly true that there is a relationship between interest rates and foreign currency exchange rates. There is a phenomenon in international investing called “yield shopping” where investors seek out interest rates that seem to be in excess of what the exchange rates would indicate. Along these lines, an overvalued currency is associated with relatively low expected inflation and high expected real interest rates. Still, actual experience deviates from this model due at least in part to the fact that there are costs and taxes involved in these transactions and other factors can influence rates as well.

Interestingly, actual experience with real floating exchange rates has shown much less connection between real exchange rates and rates of growth in inflation and monetary supplies. In practice, fluctuations in real exchange rates reflect market forces and investor expectations.

Relative interest rates play a major role in exchange rates between countries. Higher rates will often have the effect of attracting capital to that country, increasing the demand for the currency and lifting the exchange rate. (To learn more on exchange rates, check out *6 Factors That Influence Exchange Rates*.)

Macroeconomics: Conclusion

Given the enormous scale of government budgets and the impact of economic policy on consumers and businesses, macroeconomics clearly concerns itself with significant issues. Properly applied, economic theories can offer illuminating insights on how economies function and the long-term consequences of particular policies and decisions. Macroeconomic theory can also individual businesses and investors make better decisions through a more thorough understanding of what motivates other parties and how to best maximize utility and scarce resources.

It is also important to understand the limitations of economic theory. Theories are often created in a vacuum and lack certain real-world details like taxation, regulation, and transaction costs. The real world is also decidedly complicated and their matters of social preference and conscience that do not lend themselves to mathematical analysis.

Even with the limits of economic theory, it is important and worthwhile to follow the major macroeconomic indicators like GDP, inflation, and unemployment. The performance of companies, and by extension their stocks, is significantly influenced by the economic conditions in which the companies operate and the study of macroeconomic statistics can help an investor make better decisions and spot turning points.

Likewise, it can be invaluable to understand which theories are in favor and influencing a particular government administration. The underlying economic principles of a government will say much about how that government will approach taxation, regulation, government spending, and similar policies. By better understanding economics and the ramifications of economic decisions, investors can get at least a glimpse of the probable future and act accordingly with a bit more confidence. For more information, check out *Explaining The World Through Macroeconomic Analysis*.)