

## **HONP-103-01 Global Civilization: Intro to Macroeconomics II**

### **Macroeconomic Goals**

Countries' governments pursue three macroeconomic goals:

- *Full employment*: Using all available resources for production.
- *Stability*: Avoiding inflation and/or fluctuations in the economy.
- *Growth*: Lessening the problem of scarcity by increasing production capabilities.

These goals conflict, so we cannot reach them at the same time. More conflicts result from pursuit of the micro goals of *efficiency* (reasonable allocation--so, not all sardines and sneakers, but other goods that people value) and *equity* (reasonable distribution--so, not filthy rich people and poor people, but more middlingly wealthy people).

Efficiency and equity are calculated on a relatively short timescale of years or decades; when we begin to think about efficiency and equity across longer time periods, it becomes more difficult to predict the preferences of generations far into the future. Because we are missing a complete set of future preferences, we can pursue the substitute goal of reasonable *scale*.

If our economy is small relative to the size of necessary natural resources, we don't really have to think about scale. Think of a boat--it needs to have the weight well distributed (allocative efficiency), but it also can only carry a certain amount of weight before it sinks (scale). That is its *carrying capacity*. Similarly, the economy can only be so large before it exceeds the carrying capacity of the natural world, under the current level of available technology. So, once we start to approach the scale that brings us near carrying capacity, it becomes a goal we need to consider.

### **Stability: Avoiding Inflation and Deflation**

Inflation is a stability problem that typically results because there is more demand for goods than the economy can produce. The problems that inflation causes include:

- Future prices become increasingly uncertain.
- Financial assets such as money, bank accounts, stocks and bonds decrease in value with higher prices.
- Income and wealth are haphazardly redistributed because prices change at different rates.

- Hyperinflation<sup>1</sup> can reduce production because money becomes almost worthless and people revert to barter exchanges.

Inflation has many causes, but the simplest to understand is an over-supply of money caused by the government issuing more money than the economy is actually capable of using. Moderate levels of inflation, even up to 15%, can still be compatible with economic expansion.

The opposite of inflation, **deflation**, can be pretty bad too. Deflation means a general decline in average prices. That sounds good at first, right? Things cost less? But if you expect something to cost less in the future than it does now, you are more likely to put off buying it until later. So sales are low, producers do not receive enough orders and have to lay people off, and higher unemployment leads to even less desire or ability to consume. Plus, there's no way you would want to take out a loan to invest, because as prices fall the purchasing power of money grows, so the amount of money you have to pay back is growing in value each year. If this sequence of events known as a *deflationary spiral* gets started, before you know it, you're back in the Great Depression.

### **Stability: Avoiding big swings in the business cycle**

The macroeconomy is unstable. It has periods of falling production, rising inflation, and/or high unemployment. Business cycles are recurring expansions and contractions of the aggregate economy. *Expansion* is a general period of increasing economic activity, or rising production, which is associated with low or falling unemployment and high or rising inflation. *Contraction* is a general period of decreasing economic activity, or falling production, which is associated with high or rising unemployment and low or falling inflation. A period in the 1970s that upset everyone in the U.S. and in many other parts of the world was a period of *stagflation*, characterized by stagnant (not increasing) economic activity and high inflation.

The government as a public body enacts *counter-cyclical* policies to stabilize the business cycle--that is, during an expansion, it tries to cause a contraction, and during a contraction, it tries to cause an expansion. You may have heard of the government's key macroeconomic stabilization policies: *fiscal policy* is the use of government spending and

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<sup>1</sup> The world record of hyperinflation, previously held by post-war Hungary at 12.95 quadrillion percent per month, or prices doubling every 15.6 hours, may have been recently broken by Zimbabwe. See "Inflation levels in Zimbabwe are running at 13.2 billion per cent a month and could reach an all-time world record within weeks." By Sebastien Berger, Southern Africa Correspondent, the *Daily Telegraph*, [http://www.zimbabwesituation.com/nov14\\_2008.html#Z2](http://www.zimbabwesituation.com/nov14_2008.html#Z2)

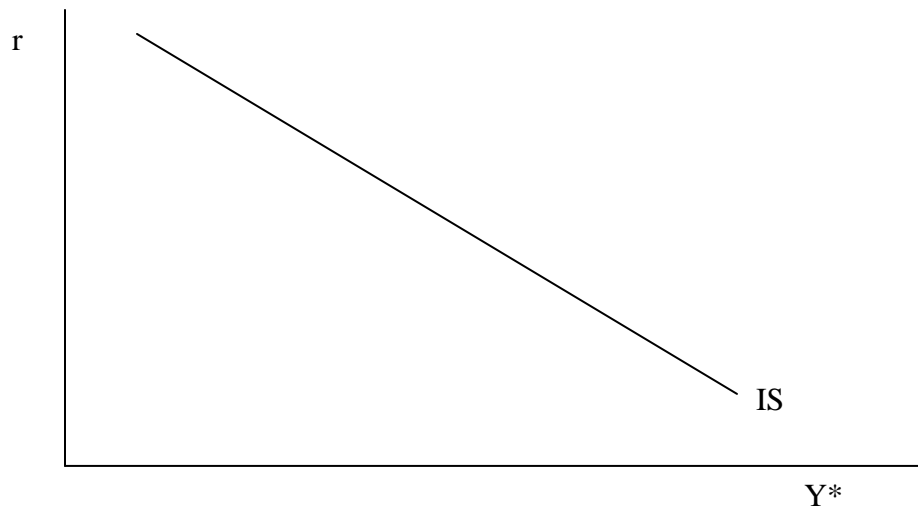
taxes to stabilize the economy. *Monetary policy* is the use of the amount of money in circulation to stabilize the economy.

Why do government spending, taxes, and the amount of money in circulation have an effect on production?

First, government spending is one component of overall production. It puts money into people's pockets that they can turn around and spend. Taxes, which are used to pay for government spending, reduce disposable income and therefore the amount that people can spend. Similarly, if the government borrows to fund its spending, then the money that it borrows might not be available to fund private investment. So the government has to choose very carefully *how much* it will tax as well as *how* (so as not to distort choices too badly) and *what* it will spend its revenues on (in theory, things that the country needs and that the private sector could not produce on its own).

To understand monetary policy, we will have to take a closer look at how financial markets work. One of the big things investment (I) depends on is interest rate (which we'll call  $r$ , meaning we are looking at the *real* interest rate--which is the nominal interest rate minus inflation). The higher  $r$  gets, the lower I goes. Why? There are two types of investors in the economy: those who need to take out a loan to make the investment, and those who have money and are looking for places to put it. Both of these types of investors will look for the highest-return projects first. So, roughly speaking, the more they invest, the less return they will get on their investment. They quit investing when the return on their last investment is equal to the interest rate (the cost of either taking out a loan or the opportunity cost of failing to make a loan). The lower the interest rate, the more people can keep investing before returns diminish down to  $r$ . The higher the interest rate, the sooner returns hit  $r$ . Remember, too, that investment is a component of aggregate demand, so if I goes up, aggregate demand ( $Y^d$ ) and thus equilibrium output go up.

To sum up, all else being equal, we expect a bigger overall output  $Y^*$  for a lower real interest rate  $r$  and a smaller  $Y^*$  for a higher  $r$ . (See graph on next page.)



Every point on the line (let's call it IS because it has to do with investment and savings) is a possible equilibrium between interest rates and output. Where will we end up?

Or, how does the interest rate depend on output?

For that, we are going to have to take a look at the financial markets. Imagine you have some money and two choices of how to hold that money: as cash or as bonds. You can use cash right away to buy stuff, but with bonds the money won't be available for a while. In return for the inconvenience of not having *liquidity*, though, you get some rate of interest. (Liquidity is the ability to pay right away. Cash is completely liquid, but other forms of wealth, such as houses, are highly *illiquid*.)

This scenario comes from Keynes's theory of liquidity preference:

"The rate of interest at any time, being the reward for parting with liquidity, is a measure of the unwillingness of those who possess money to part with their liquid control over it. The rate of interest is not the "price" which brings into equilibrium the demand for resources to invest with the readiness to abstain from present consumption. It is the "price" which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash."

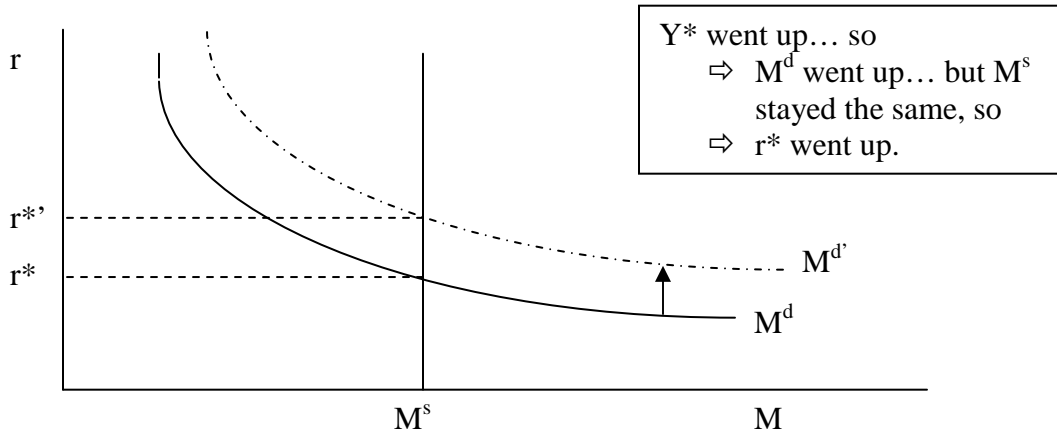
(Keynes, *General Theory of Employment, Interest and Money* (1936) 1964 reprint, New York: Harcourt Brace: p.167)

So when interest rates are high, people will prefer more bonds and less money. When interest rates are low, people will prefer the liquidity of cash to holding their money in bonds that don't pay much. Let's call the amount of money (as opposed to bonds) demanded " $M^d$ ".  $M^d$  will be less

the greater the interest rate, and more the lower the interest rate. (That isn't the whole story with money demand; we'll come back to it.)

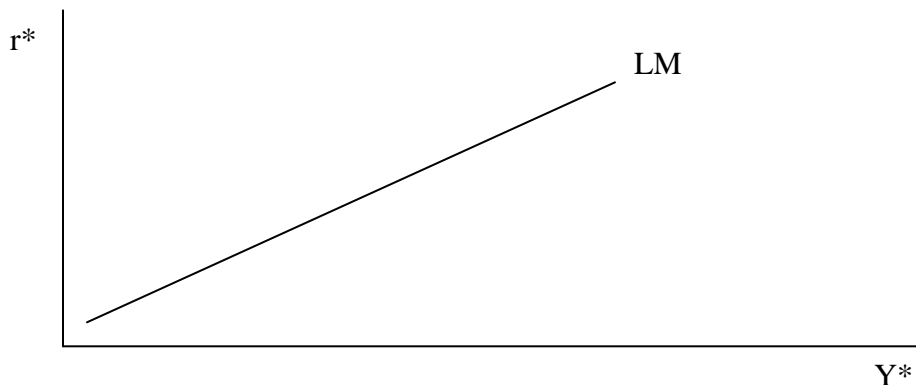
What about money supply? That does not depend on interest rates. It is just some fixed amount that the government (Federal Reserve) decides,  $M^s$ .

If we graph interest rate on one axis and money on the other, then, it'll look something like this:



What does all this have to do with output? We saw that as the interest rate rises, the demand for money falls (as people prefer to buy interest-bearing bonds). But if there is an increase in output  $Y$ , people demand *more* money (because people need money to conduct more transactions). With a fixed money supply, however, an increase in output will shift money demand up and result in a higher rate of interest at equilibrium.

Let us again graph all of the possible equilibriums between output and interest rate--this time from the financial markets. We can call that line of equilibriums LM because it has to do with liquidity and money.

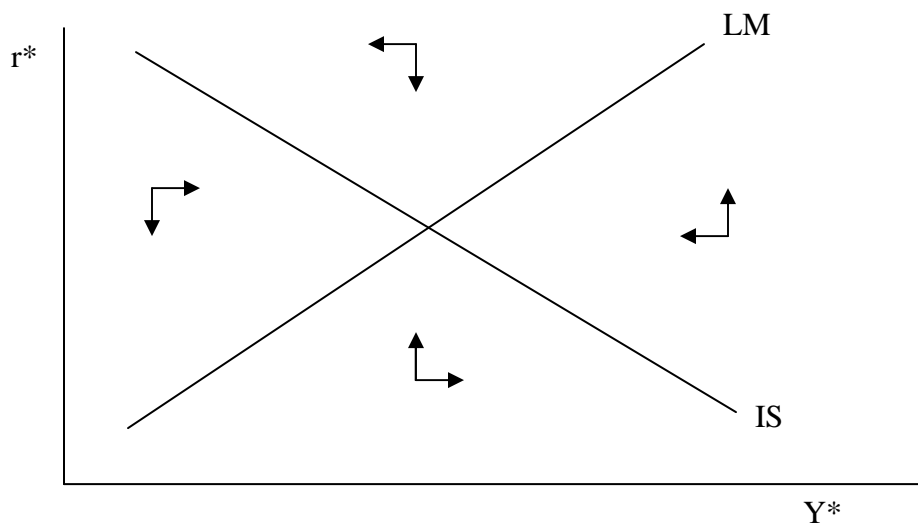


The relationship is that when we are looking at preferences for liquidity and money, as output  $Y^*$  goes up, so does  $r^*$ . Greater output leads to more demand for money and if the supply of money does not go up, then

the interest rate  $r$  rises to counteract the increased demand for money and draw people back to bonds.

Putting this graph together with the earlier IS graph gives you the famous IS-LM graph, which is one quick way of understanding a great deal of what Keynes came up with in his famous general theory.<sup>2</sup>

Remember, the IS line denotes equilibriums in investment (people taking out loans to buy machinery and factories and so on) and the LM line denotes equilibriums in the financial market (people with money deciding whether to keep their money liquid or put it into bonds). Let's imagine why, if you were off these lines, you'd get pushed back on and toward the equilibrium intersection.



Look first at the arrows pointing right, which are below the IS line. They are saying that at those points, the lower  $r$  will spur more investment and lead to a bigger output  $Y^*$ . The left-pointing arrows say the opposite: there, the  $r$  is too high and will diminish investment until you get a smaller  $Y^*$ . Now look at the arrows pointing up, which are below the LM line. They are saying that at those points  $Y^*$  is so big that it will cause demand for money to rise, so if the money supply stays constant, the interest rate  $r$  will have to rise to draw people to bonds instead of money. The arrows pointing down, above the LM line, tell the opposite story: at those points,  $Y^*$  is not so big, so the demand for money is not so big and bonds can pay a lower interest rate  $r$  and still attract enough buyers. These dynamics pushing left and right toward the IS line and up and down toward the LM line make us end up at the point where they cross.

<sup>2</sup> For a thorough discussion of IS-LM, see: <http://cepa.newschool.edu/het/essays/keynes/hickshansen.htm>.

Going back to government policy, then, gives us the following tools<sup>3</sup>: *fiscal* policy can increase spending and therefore push the IS line to the right, so we get bigger output (and also a higher interest rate). *Monetary* policy, by increasing the money supply, can push the LM line to the right, leading to a lower interest rate and greater output, or conversely, by decreasing the money supply, can lead to a higher interest rate and lower output.

### **Why do we want more output, i.e., growth?**

Growth is considered to be a major policy goal in every country. The idea is that more output means more satisfaction of people's wants and needs, and people's wants and needs are unlimited, so we need unlimited growth. The only things limiting output are available laborers, available capital, and available knowledge of how to combine them--but chiefly available capital.

In developed countries, we worry about how much people are saving to make money available for investment. In developing countries, we don't expect people to save, but we think making loans for investment in capital now will pay off in a lot of growth (and the ability to pay back the loans) later.

Some people don't agree with the ideas above. The counter-arguments are that after a certain point, more output does *not* satisfy people's wants and needs, since with marketing and advertising we constantly develop new wants, and since we always compare ourselves against what other people have. And even if greater output *were* necessary and desirable, growth cannot continue indefinitely because one of the necessary inputs--natural capital--is limited.

One definition of income is "the maximum amount that a community can consume over some time period and still be as well off at the end of the period as at the beginning." (Hicks 1946 *Value and Capital*) You can see that if you have a lot of money now and no money tomorrow, then it would be silly to count everything you get today as income without regard to your assets--if you don't have much, you should save some of today's income for tomorrow. In the bubblegum and haircuts story, households chose to save some of their income so that they could have as much (or more) bubblegum next year as they did this year.

Right now we are counting as income the money that we get from using up natural resources. But tomorrow we won't be able to use those resources to make money--you can't have your cake and eat it too. Or another example might be that calling depletion income would be like

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<sup>3</sup> All of this is a huge simplification, but hopefully a useful one.

burning the furniture to heat the house. Or here's another one (you all remember the Shel Silverstein book, *The Giving Tree*): if you have an apple tree that regularly produces 10 bushels of apples every year, then your income from that tree is 10 bushels a year. What happens if one year you cut down the tree and sell the lumber? Are the proceeds from the sale income, or just a liquidation of your productive asset?

This is a problem both in the developed world and in the developing world. At what point are the benefits from using natural capital outweighed by the costs? For an advanced and thorough look at this question, read *Beyond Growth* by Herman Daly.

One of Herman's Daly's contributions to rethinking the growth paradigm was to come up with an alternative measure of progress (in partnership with John Cobb, Jr.), which he called the "Index of Sustainable Economic Welfare." An organization based in California called Redefining Progress has its own alternative measure, called the Genuine Progress Indicator or GPI, which they propose as a replacement to GDP. Here is their argument for it.

From <http://www.rprogress.org/projects/gpi/whatswrong.html>

### **What's Wrong with the GDP as a Measure of Progress**

Since its introduction during World War II as a measure of wartime production capacity, the gross national product (now routinely measured as gross domestic product--GDP) has become the nation's foremost indicator of economic progress. It is now widely used by policymakers, economists, international agencies and the media as the primary scorecard of a nation's economic health and well-being.

Yet the GDP was never intended for this role. It is merely a gross tally of products and services bought and sold, with no distinctions between transactions that add to well-being, and those that diminish it. Instead of

#### Problems with the GDP:

I. GDP Treats Crime, Divorce & Natural Disasters as Economic Gain

II. GDP Ignores the Nonmarket Economy of Household & Community

III. GDP Treats the Depletion of Natural Capital as Income

IV. GDP Increases with Polluting Activities & Again with Clean-Ups

V. GDP Takes No Account of Income Distribution

separating costs from benefits, and productive activities from destructive ones, the GDP assumes that every monetary transaction adds to well-being by definition. It is as if a business tried to assess its financial condition by simply adding up all "business activity," thereby lumping together income and expenses, assets and liabilities.

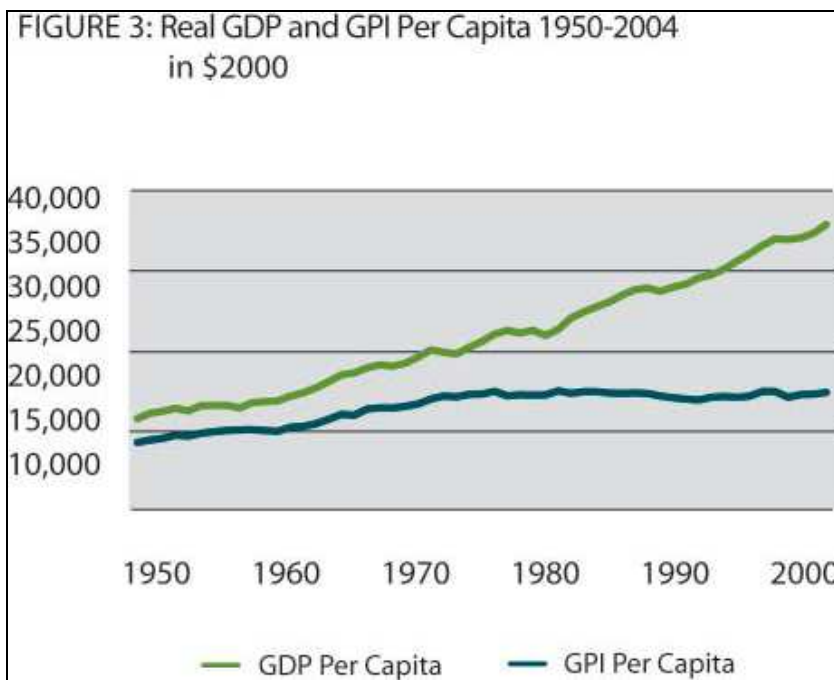
On top of this, the GDP ignores everything that happens outside the realm of monetized exchange, regardless of its



importance to well-being. The crucial economic functions performed in the household and volunteer sectors go entirely ignored. The contributions of the natural habitat in providing the resources that sustain us go unreckoned as well. As a result, the GDP not only masks the breakdown of the social structure and natural habitat; worse, it actually portrays such breakdown as economic gain.

An alternative measure is the “Genuine Progress Indicator” or GPI, which tries to fix these shortcomings of GDP. The idea is that we may disagree over how much weight to give to any of these concerns, but *some* amount is probably more accurate than zero. For more details, see [http://www.rprogress.org/sustainability\\_indicators/genuine\\_progress\\_indicator.htm](http://www.rprogress.org/sustainability_indicators/genuine_progress_indicator.htm).

Here is a picture of GDP per capita in 2000 dollars vs. the GPI per capita, 1950-2004. As you can see, GPI per capita has not been going up since about 1970, even though GDP per capita has been growing steadily during that time.



Source: “The Genuine Progress Indicator 2006: A Tool for Sustainable Development,” by Dr. John Talberth, Clifford Cobb, and Noah Slattery. Redefining Progress, February 2007, p. 19. <http://www.rprogress.org/publications/2007/GPI%202006.pdf>

You may think that alternative measures to GDP are solely the province of wild-haired radicals in the Bay Area. But the governments of many countries<sup>4</sup>, including European countries and China, and many international bodies such as the OECD, UN and World Bank have all also been working on alternative measurement systems. These alternative systems aim to provide a better guide to governments deciding on how to conduct economic development policies in ways that do not undermine future productivity.

One set of alternative measures promoted by the U.N., for example, is called the system of environmental and economic accounts (SEEA)<sup>5</sup>. The focus is on wealth, not income; that is, what are the assets upon which development depends? The World Bank used the SEEA measures to look at the total wealth of countries--including produced, natural, human and institutional capital--and estimated that human capital and the value of institutions (as measured by rule of law) constitute the largest share of wealth in virtually all countries. Income that depends on depleting natural resources, failing to help people achieve health and education, or maintaining dysfunctional institutions is, in their words, “illusory.”<sup>6</sup>

The bottom line: Sir John Hicks called the practical purpose of knowing your income “a guide for prudent conduct.” So if we want a good guide, we should choose a good way of measuring our actual income.

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<sup>4</sup> The U.S. Congress officially stopped developments of “green” accounting in 1994 or 1995, but did commission the report *Nature’s Numbers: Expanding the National Economic Accounts to Include the Environment*, edited by William D. Nordhaus and Edward C. Kokkelenberg. This report recommended recommending green accounting. You can read it for free online at [http://books.nap.edu/catalog.php?record\\_id=6374](http://books.nap.edu/catalog.php?record_id=6374).

<sup>5</sup> See <http://unstats.un.org/unsd/envaccounting/histbground.asp>.

<sup>6</sup> See *Where is the Wealth of Nations? Measuring Capital for the 21<sup>st</sup> Century*, World Bank, 2006, p. vii.