

Econ 270: Introduction and Brief Review of Principles¹

Before beginning the heart of the class, we will first discuss some more general material. More so than in microeconomics, two good Principles of Macroeconomics classes may cover very different ground. We will begin by going through a list of general economic concepts that will come up frequently throughout the term. Depending on your background, this may be mostly review or mostly new material. You may also notice that many elements of this list apply to microeconomics as well as macroeconomics.

You should also review using either *Jones* or your introductory text, the definitions of important macroeconomic variables (consumption, investment, inflation, etc.), as well as the methods and issues associated with measuring these variables (GDP, CPI, etc.). We will not, however, discuss this topic in class because it is largely mechanical and I believe that my lecture would not add enough value to justify using scarce classtime. A required homework assignment will cover this material.

The next set of notes will discuss some background material on why economists use models and how you should judge whether or not a model is useful.

A List of General (Macro?)Economic Concepts

1. Macroeconomics may be divided into several distinct subfields.

Macroeconomics is the study of entire economic systems, such as that of the United States, whereas microeconomics is the study of part of an economic system. This distinction, however, leaves macroeconomics as a vast field within economics. In practice, most macroeconomists specialize in some subfield of macroeconomics. These include:

Economic growth may fairly be described as long run macroeconomics. For example, explaining why living standards in the United States are currently so much better today than in 1776 is a question for economic growth. Likewise, the difference in living standards between the United States and Ethiopia is not the result of short run factors. It too is therefore an issue that is left for growth.

Business cycles refer to short run economics. Explaining why unemployment rose to 10% in the United States after the financial panic of 2008 is an issue for business cycles.

¹These are undergraduate lecture notes. They do not represent academic work. Expect typos, sloppy formatting, and occasional (possibly stupefying) errors.

Open economy macroeconomics refers to international macroeconomics. Understanding how a currency crisis in Southeast Asia or a debt crisis in Greece can affect the United States, for example, is an issue for open economy macroeconomics.

These subfields can be further divided between theoretical vs. empirical work:

Suppose that you want to understand the relationship between tax rates and aggregate unemployment, clearly a macroeconomic issue. There are two broad approaches that we can take. *Empirical Macroeconomics* attempts to understand this relationship through data. It is not as simple as just observing what happens to unemployment when taxes go up. Other factors have to be controlled for (*e.g.* productivity) and there are numerous other complications that must be dealt with.

Theoretical macroeconomics uses models to answer the same type of questions. We will discuss what constitutes a good model in detail later in the class. In short, we make a set of assumptions about how the world works. If our assumptions are good, then we will get interesting and potentially useful results. Bad assumptions, however, yield less useful results (Garbage in=garbage out). We then use math to obtain predictions.

Obviously, the theoretical examination of business cycles is among mankind's most noble callings. And anyone working in such an area professionally is certainly brilliant, a prince among men, and able to run really, really fast.

2. Theoretical macroeconomics needs empirical work in order to test competing models.

Mainstream economics is motivated by empirical work.² Most theoretical models seek to explain some important feature of the data. Even those that do not are usually attempting to develop a mathematical technique or modeling device that eventually can be used in a model that can be taken to the data.

Suppose, for example, that we have two competing models. One predicts that increasing the money supply increases the price level within 2 years. The other predicts a decrease in the price level. One way to discriminate between these models is to take them to the data. In this case, the data would overwhelmingly support the former and reject the latter. Theory needs empirical work in order to discriminate between competing models.

²Here "mainstream economics" includes almost all of the economics classes offered in most undergraduate and graduate economics programs. Some "heterodox" approaches such as Austrian or Marxist are less motivated by data and have become isolated from most contemporary economic research.

3. Empirical macroeconomics needs theoretical macroeconomics to establish causation.

Usually, the goal of empirical work is to establish causal relationships. Suppose, for example, that the data show that when interest rates decrease, taxes usually go down as well. It is tempting to conclude that lower interest rates cause lower taxes.³ But this is probably mistaken. By not looking at the state of the business cycle, we have failed to notice that both policies are probably a response to worsening macroeconomic conditions: Congress tends to cut taxes during recessions and the Fed tends to lower interest rates.

The problem is that there are an infinite number of factors to consider. We therefore can never be completely sure that variable A causes variable B. Empirical work can never establish causation with probability 100%. But if done carefully, it may be able to do so beyond a reasonable doubt. This is where theory comes in. If an economist is able to expertly conduct empirical work, and back her results up with a plausible economic model or economic intuition, then she stands a fair chance of convincing the profession of a causal relationship.

Basic macroeconomic models predict that more money increases prices. Because this theory is convincing, the empirical work showing the same result has been accepted as establishing a causal relationship between money and inflation with near (but not complete) certainty.

4. No single macroeconomic variable is welfare.

Welfare is a vague variable that economists use to rank different outcomes, including those that may result from different policies. A policy that improves welfare is preferable to one that does not. Although theoretical models may yield clear results about welfare, measuring welfare in practice is highly subjective. It seems clear that, all else equal, more GDP, or more consumption increases welfare. But no two people in this class would likely agree on how best to approximate welfare based on these variables. Furthermore, a good approximation of welfare would have to add in other variables. Some candidates include equality, leisure time, life expectancy, environmental quality, individual freedom, and the New York Jets win percentage (which will probably be very low this year. Sigh).

This may seem like an obvious concept. But students and policy makers often make the mistake of implying that Policy A is a good policy because it increases GDP. That is only part of the analysis. To decide if a policy is good, you need to figure out how it affects all of the relevant variables, and then decide how those changes relate to welfare.

³For students who have had a class on econometrics, I am just talking about omitted variable bias here.

It is easy to find examples where a policy that increases GDP reduces welfare. For example, suppose that all Americans are required, under penalty of death, to mine coal for 10 hours each Saturday. Assuming that such a policy increases GDP, it is doubtful that many households would support its enactment.

A more plausible example is the recent debate over extending unemployment compensation beyond the usual six month limit. Most macroeconomists believe that more generous unemployment benefits increase GDP in the short run, but decrease it in the long run. Certainly quantifying these effects and determining the net effect on GDP is an important component of this debate. But many (certainly not all) commentators made the mistake of implying that GDP equals welfare. The original motivation behind unemployment insurance was not to alter GDP, but instead to share risk across households so that any individual household is unlikely to bear too great of a burden during an economic downturn. Any discussion of extending unemployment compensation that focused on welfare instead of GDP needed to include this aspect as well as the effect on GDP.

5. Free markets are Pareto efficient, under certain circumstances.

Microeconomic theory includes the first fundamental theorem of welfare economics which may be viewed as a formal version of Adam Smith's invisible hand. Informally, this theorem states that if there is a competitive market for everything, then equilibrium will be Pareto efficient. This condition is known as *complete and competitive markets*.

Complete and competitive markets is a challenging concept. It goes beyond the idea that there is a market for every good and service that exists. Suppose for example that a producer creates pollution when manufacturing its product. Complete and competitive markets requires that there be a market for this pollution. Likewise, suppose that I wish to insure myself against the risk that my firm will be destroyed a a pack of zombies. Complete and competitive markets requires that I must be able to insure against this risk.

If complete and competitive markets do not exist, then there is no reason to believe that equilibrium will be Pareto efficient. Obviously, complete and competitive markets do not exist in reality. Free market economists, those who favor minimal government intervention in the economy instead often argue that deviations from complete and competitive markets are usually too small to merit intervention, or that the government is unable to properly fix cases of market failure.

Economists are trained to think about whether or not markets are complete and competitive. If they are not, then the field tends to propose solutions that correct the distortion (from complete and competitive markets). While not exhaustive, the following list includes many of the most common distortions that motivate economists to support government intervention as opposed to a free and unregulated market:

i. Market power. Recall from Principles of Microeconomics that suppliers (be they firms producing goods and services or households supplying labor) exploit market power by restricting supply in order to drive up prices. Likewise, when demanders have market power, they restrict demand in order to drive down prices. In both cases, this behavior results in deadweight loss (you probably saw a graph that represented this, in the case of monopoly, as lost consumer and producer surplus).

Market power means that markets are not competitive (they may still be complete). The resulting allocation need not be efficient. As a result, market power may provide a microfounded reason for macroeconomists to support intervention instead of a free market. This is the motivation behind antitrust laws which may break up a firm with excessive market share or which prohibit a closed union shop (where only existing members of a trade union may be considered for an available position). Another theoretical solution to market power by producers is an employment subsidy which incentivizes them to hire more labor.

ii. Externalities. Recall from Principles of Microeconomics that externalities refer to cases where private producers do not experience the full cost or benefit of their production. Pollution is the classic example of a negative externality. If uncorrected, producers do not have to pay the full social cost of their production because these omit the cost to the rest of society. The classic policy solution is to internalize the externality, that is align the private and social costs. This may include taxing production or implementing a permit (cap and trade) system that creates a market for the pollution. In this example, markets are incomplete. The market for pollution is missing.

An important externality in macroeconomics results from production spillovers. In this case, one firm's production creates innovations and new methods that make every other firms' production more fruitful. This is a positive externality where the market for innovation is missing. A standard policy response is for devices that incentivize greater production, possibly in the form of tax breaks for firms who engage in research and development.

iii. Public Goods. Recall from Principles of Microeconomics that public goods are those

which exhibit nonrivalry of consumption and non-excludability. That is, my consumption of a public good does not affect your ability to consume that good. National defense is the classic example. All citizens benefit from national defense, whether they want it or not.

Suppose that you were given the choice of how much in taxes to pay for national defense. You would probably choose zero, because any amount that you could contribute is unlikely to have a tangible effect on your security. The problem is that everyone else would also choose zero, resulting in zero aggregate national defense, leaving the United States open to conquest from global powers such as Andorra, the Maldives, and the Blue Goose Tavern. This is the standard problem with a public good. A free market will result in too little production of the private good, the market is not competitive.

The standard solution to this problem is for the government to provide the public good.

iv. Imperfect Information. Efficiency requires that both buyers and sellers have adequate information regarding the price and nature of the good or service that is for sale. With imperfect information the market may fail. A classic example of imperfect information is *adverse selection* where an informed agent's actions have a negative action on uninformed agents. Consider a market for car insurance where the insurer sets a common price but cannot observe the quality of individual drivers. We might expect that only bad drivers would buy this policy while good drivers are willing to self-insure. It is possible that adverse selection will drive all suppliers out of the market causing the market to fail. The standard solution in this specific example is to require all drivers to buy insurance (known as an individual mandate). A similar mandate is scheduled to go into effect in the health insurance market in the next few years.

When two economists disagree over a policy issue, often the core cause of disagreement boils down to a disagreement over the nature of market failures which cause complete and competitive markets to not apply. Economists who see only small market failures, tend to oppose major intervention in the economy. Those which see larger market failures tend to support greater intervention.

It should be noted, however, that economists can also disagree over which Pareto efficient is best. Suppose, for example, that we must distribute \$1,000,000 among this class. One Pareto efficient equilibrium is to divide it equally among all of us. Another is to give it all to me (obviously the right one). It is perfectly legitimate to argue that even if markets are complete and competitive, intervention is appropriate to move the economy to the neighborhood of a better Pareto efficient equilibrium.

6. Inflation may or may not matter.

The social costs of increased unemployment or reduced output are obvious. But the social costs of price instability are more subtle. Consider the following extreme case: All prices increase by 100%. Because wages are prices, the purchasing power of labor is unaffected. Because interest rates are a price, the nominal value of all interest bearing assets doubles. The real cost of housing (home prices divided by the price level) is unchanged. It is therefore the case that nobody is worse off. In general, unexpected and even inflation is probably not cause for significant concern.

But if inflation is uneven and unexpected, then it will generally be socially costly. Suppose, for example, that wages increase much less than prices for goods and services. In this case, workers are made worse off and households that rely on income from capital are better off. Or suppose that there is a fixed and identical amount of Scotch and Bourbon in the world and everyone always gets twice as much utility from Scotch as opposed to Bourbon. An efficient relative price would therefore be $\frac{P_{Bour}}{P_{Sco}} = \frac{1}{2}$. But if the prices of each whisky do not change at the same rate, then it will not be possible for this efficient price to be maintained. In this case, inflation causes relative price distortions.

It is also important to note that deflation (negative inflation) is undesirable as well. In many macroeconomic models, a 5% inflation is equally costly as a 5% deflation. Many economists believe, however, that deflation may actually be worse. Later in the class, we will see how lower prices can increase the real value of outstanding debt. This has the effect of limiting access to credit, a detrimental effect that does not occur with inflation.