Introduction to Macroeconomics

Whereas microeconomics typically studies small groups of firms or households, macroeconomics is the study of entire economic systems. This means that ideally all economic agents (households, firms, and policy makers) are accounted for in the analysis.

The best example of an economic system is the entire global economy which, of course, has no economic interactions with any outside economic agents. So any study of the world's economy as a whole is unambiguously macroeconomics in contrast to microeconomics. Often, we might study the economy of a single country such as the United States. The U.S. economy is not a complete economic system, there are important interactions with other economies. In practice, however, the U.S. economy is considered close enough to a complete economic system so that is almost always considered macroeconomics. We can then look at increasingly smaller units: regions, states, cities, etc. At some point, there is a grey area. By the time we get to municipalities, we are firmly in the domain of microeconomics.

Macroeconomics itself can be divided into distinct sub fields, defined by the types of questions that they ask:

1. Why are some countries so much wealthier than others and why are developed countries so much wealthier today than they were centuries ago?

One of the most striking observations in economics is how much wealthier some countries are than others. According to the International Monetary Fund, U.S. real per-capita (per person) national income was $89,100 in 2025. The poorest country in the world was South Sudan where per capita national income was just $251. This difference is obviously profound and is unrelated to short term factors such as the Great Recession or covid-19 recession.

Similarly, economic conditions in the current U.S. do not compare to those in 1776. National income, leisure time, life expectancy, etc. are all much higher today than back then.

Both of these are long run questions. The study of why these long run differences in macroeconomic conditions arise, and how policy might affect them is known as the study of *economic*

growth. This term requires some care. Economic growth is also used to describe the change in Gross Domestic Product (a measure of national income). One must pay attention to the context to know which definition is being used.

2. In developed economies like the United States, national income has grown, on average, by about 3% over the past several decades.[1] Sometimes, however, growth is much lower, or even negative (we call these periods recessions) in the short term, while at other times it is higher. Why do these short run fluctuations occur?, and how policy might prevent or minimize them is the study of *business cycles*.

Economic downturns exhibit a large number of undesirable macroeconomic feature. Wage growth stagnates, unemployment and underemployment increase, home foreclosures rise, etc. Chances are, most or all students in this class know someone who suffered one of these effects during either the Great Recession or the covid-19 recession. Some industries and households, however, do better during recessions (*e.g.* bankruptcy lawyers).

3. How do macroeconomic events in one country affect the economies of other countries? This is known as *open economy macroeconomics.*

American policy makers have paid a great deal of attention to debt crises in Ireland, Greece, etc. in recent years. This is because events in one economy can propagate (spread) into others. Open economy macroeconomics, and the closely related field of international finance, study how and why this process occurs.

4. What is the relationship among macroeconomics and financial markets? This is known as *macro-finance* or *money & banking.* Suppose that we observe, at the same time, stock prices fall and the economy entering a recession. Did the stock market decline cause the recession? Did the recession cause the stock market decline? Or is it both? Or neither.? This subfield tries to understand these types of relationships.

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[1]Although average growth seems to have fallen closer to 2% in recent years. This is a major source of concern for economic policy makers.

These subfields are defined by the questions that they ask. Within each field, both theory and empirical work may be used to answer these questions.

Some General Things to Keep in Mind about Macroeconomics

A few general things to keep in mind as we now turn our attention to the heart of the class:

1. No single macroeconomic variable is welfare. Welfare is what we use to do *normative* analysis which states which outcomes are better than others. But measuring welfare is subjective. We would likely agree, that if everything else is unchanged, policies that increase national income improve welfare. We could probably agree on the same claim for policies that improve environmental quality. But there would likely be major disagreement over how a measure of welfare should weigh these two factors. The same would be true for any number of other variables: inflation, equity, government services, etc.

The models of this class generally make predictions about how policies might affect some of these variables. But they will be *positive* in that they are descriptive instead of making specific policy recommendations. They stop short of making normative statements. Nevertheless, you can use them to help guide you into making judgments about if a policy is good or bad by thinking about what the model predicts, how confident you are of the model, and how much you value (in terms of welfare) the changes to macroeconomic variables that the model predicts. Two students might reach similar conclusions about the former two, but disagree about policy because they have very different notions of welfare.

2. We must distinguish between growth effects, level effects, and volatility.

Suppose that average national income is $100 and growing at 3% per year. Suppose that I offered you a choice between immediately doubling national income and leaving the growth rate unchanged, or increasing the growth rate from 3% to 4% but leaving the initial level of income unchanged at $100.

If I double income, then after 100 years, national income will equal $200 * (1.03)^{100} = \$3845$ If I take the extra growth, then after 100 years income will equal $100 * (1.04)^{100} = \$5050$. So the

answer to which is better depends on how patient we are, the extra growth is better in the very long run, but the doubling of national income, known as a level effect, is better in the short run.

This example illustrates an important point, seemingly small changes to the growth rate compound and eventually have very large effects. A quick way to see this is to use an approximation known as *the rule of 70*. For small growth rates (say under 10%), it predicts that 70 divided by the percentage growth rate is about the time it will take to double the value of a variable.

So if national income growth is 1%, it will take about $70/1 = 70$ years to double. If national income growth is 2%, then it will take about $70/2 = 35$ years to double. Policies that dramatically increase growth rates are very hard to find. But if found and implemented, their effects are very important.

The business cycle refers to how stable national income is around its level. If national income is certain to be $100, there is no business cycle and the economy is very stable. If, however, it is more likely to be $95 or $105 than $100, it is much more volatile. There are many reasons why volatility is costly and we will pin these down more as the class develops. But one simple reason is that people are risk averse. If I offered each of you $1 million for sure or a coin flip where you get $2 million if head and squat if tails, almost all of you would choose the former. You prefer the stable outcome to the volatile one.

Policies or events may affect any of the growth rate, level, or volatility of the economy.

Figure **??** shows a simple plot of U.S. per-capita national income where recessions are shaded.[2]

3. Rational behavior on the microeconomic level does not necessarily lead to desirable outcomes on the macroeconomic level.

This point is really just a re-statement of the discussion of our previous discussion of market failures. The macroeconomy is full of externalities, public goods, etc. As we discussed, individual

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[2]Source: Federal Reserve Bank of St. Louis

Figure 1: U.S. Real National Income Per Capita
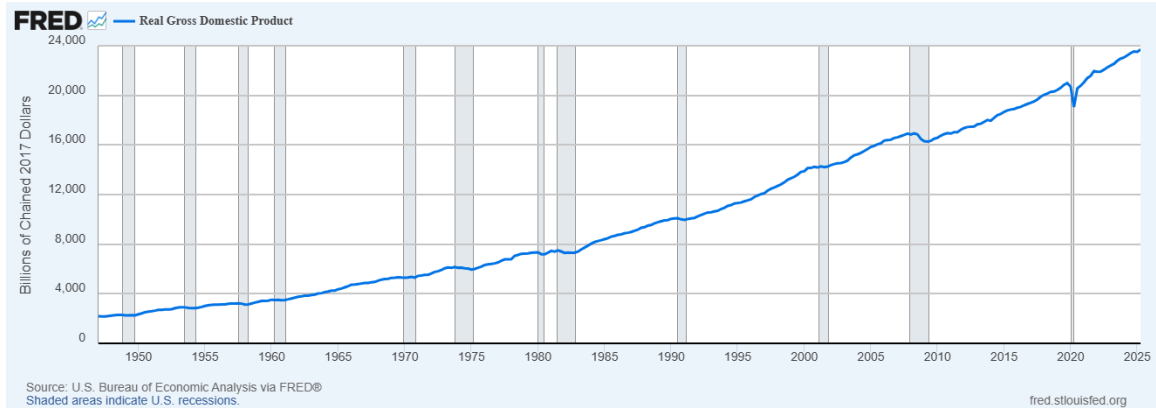
utility and profit maximization does not always result in good outcomes. You should not leave this class with the mistaken belief that free markets always lead to optimal outcomes.

4. In practice macroeconomic policy cannot eliminate all distortions and take the economy back to a truly Pareto efficient state.

While students probably disagree over the scope of public goods, there clearly are some (*e.g.* national defense). Ideally the government will provide the right amount of public goods. These must be financed, now or in the future, through taxation. It is possible that taxes could be done through lump sum taxes, where everyone pays a fixed amount independent of their income. At current rates of spending, a lump sum tax would require something around a $10,000 per adult tax. In an economy with significant income heterogeneity, this is obviously infeasible. Distortionary taxes, like an income tax, are thus necessary. This is thus one case where policy makers must balance the impact of multiple distortions, eliminating either one is not practical.

Another example is with externalities. There are a great many small externalities. If you smoke a cigarette in your car, a tiny fraction of the smoke may escape increasing my cancer risk by a very, very, small amount. Few would support government intervention for such small externalities, especially given that enforcement is costly, and probably has to be paid for with distortionary taxes.

In practice, major macroeconomic policies entail tradeoffs. Be especially skeptical of those promising panaceas or simple answers to complex problems.

5. Macroeconomic policies produce both winners and losers.

Obviously, a large economy like the United States has a great deal of heterogeneity over income, preferences, etc. Suppose we raise taxes to pay for a new government benefit. Taxpayers who are unlikely to use the service are made worse off. Households who pay little tax, but who will benefit from the service, will be made better off. Policy should not be judged by anecdote as it will always be possible to find someone who has been harmed. Instead, the tradeoff should be carefully accessed, are the benefits to the winners worth the costs to the losers?

6. We cannot look at just the paths of variables to determine the success of policies.

Consider a simple example. Smallpox breaks out in January and 10,000 people die. Policy makers immediately push re-vaccination against the virus. 20,000 people die in February and March and then the outbreak is over. Now suppose that I claim the policy failed because smallpox deaths increased after it was initiated. Obviously I am a moron. A policy must be judged by the hypothetical outcome that would have occurred had an alternate approach been taken. Determining the nature of hypothetical outcomes may be hard, but it is necessary to fairly judge a policy.