Chapter 5: Macroeconomics

Introduction

1. Macroeconomics: defined as the study of the economy as a whole.
2. Macroeconomics considers the effects of factors such as inflation, economic growth, unemployment, interest rates, and exchange rates.
3. Asset Class: defined as a broad grouping of similar types of investments, such as shares, bonds, real estate, and commodities.

Gross Domestic Product and the Business Cycle

1. Gross Domestic Product (GDP)
    a. Gross Domestic Product (GDP): defined as the total value of all final goods and services produced in a country over a given period of time.
        i. GDP is often described relative to a country's population, which gives GDP per capita.
        ii. GDP and population are related in larger countries, so GDP per capita can give a better sense of the difference in average wealth when comparing countries.
    b. There are two main ways that GDP is calculated (both of which are based on summing):
        i. Income Approach:
            1. Calculated as the sum of income in the country. This is known as Gross Domestic Income, and should be equal to GDP calculated by expenditure.
        ii. Expenditure (spending) Approach:
            1. GDP = C + I + G + (X - M)
                a. Where:
                b. C = Consumption
                c. I = Investment
                d. G = Government Spending
                e. X = Exports
                f. I = Imports
                g. (X - M) = Net exports
            2. Consumption (household spending) is typically the largest component of GDP and can be up to 70% of it.
    c. Real vs. Nominal GDP
        i. Changes in GDP arising from changes in price without accompanied changes in quantity are not considered changes in production.
        ii. Nominal GDP is a calculation of GDP which uses current price and quantity levels.
        iii. Real GDP is a calculation of GDP which accounts for the differences in price by using previous price levels, which gives a more accurate description of how GDP is changing over time. (This is also known as "Constant Dollar GDP")
        iv. Raises in Real GDP indicate a rise in average income and living standards.

2. Economic Growth
    a. Economic Growth is measured by the percentage change in real output (typically Real GDP) for a country. This is a method of determining changes in income and living standards.
    b. The GDP Growth Rate is determined by:
        i. The growth of the labor force,
        ii. Productivity Gains (representing units of output per unit of labor), and
        iii. The availability of capital (factors of production aside from labor.)
    c. Generally speaking, GDP Growth Rate is most affected by productivity gains. Productivity is a function of the efficiency of a worker and the availability of technology. As technology advances, labor becomes more efficient, productivity is gained, and output is increased.
        i. Note that productivity gains can result in lower demand for labor and increased unemployment if it is not offset by increase in demand for goods and services.
    d. Changes in the labor force vary across countries:
        i. Developed countries typically have ageing populations and low birth rates, so potential labor force grows at slower rates and can even decline. This means that GDP will grow at a slower rate unless the labor force changes are offset by productivity gains.
        ii. Some countries have declining populations, which must be accompanied by increases in productivity and technology in order for GDP growth to be positive.
    e. As economics/countries go from developing to developed, their growth rates tend to slow and typically rest in the 2 - 3 % range.
    f. The relative growth rates of a country's GDP and population both directly affect GDP per capita. Ceteris paribus, increases in GDP cause GDP per capita to increase. Ceteris paribus, increases in population will cause a decrease in GDP per capita. The overall effect when both GDP and population are changing ultimately lies in their relative magnitudes / proportions.

3. The Business Cycle
    a. Business Cycles: are defined as economy-wife fluctuations in economic activity. Although these are considered to be cycles, they are neither smooth nor predictable, and they also last a number of years. The phases of a business cycle typically include: expansion, peak, contraction, trough, and recovery. What constitutes each of these phases and at what point cycles transition through phases are points of debates among economists.
    b. Expansion:
        i. During expansion, output increases. This is typically accompanied by:
            1. Rises in inflation and interest rates (inflation being defined as an increase in price levels). Interest rates rise as a result of the demand for greater financing for spending and investment.
            2. High levels of employment, low levels of unemployment. This allows workers to demand higher wages, which puts further pressure on costs and prices.

        3. Overall increase in demand for goods and services.
   c. Peak:
      i. During a peak, economic growth reaches its maximum for the cycle and begins to slow, or contract. This can be accompanied by:
         1. Actions by the central bank of a country to slow economic growth and inflation.
         2. Decreased consumer confidence resulting from increasing prices of oil, decreasing prices of real estate, and/or declining equity markets.
         3. Peaks can also be brought on by natural disasters and geopolitical events.
   d. Contraction:
      i. During contraction, the rate of economic growth decreases. It is possible for economic growth to become negative during contraction, and this can cause recession. This can be accompanied by:
         1. Decreasing growth rates of inflation and decreases in interest rates.
         2. Increasing unemployment rates and decreasing employment rates.
         3. Actions on behalf of the central government of the central bank to try to stimulate the economy through various means.
      ii. *The precise definition of a recession used by economists varies. In Europe, it is considered to be two quarters of negative economic growth. In the US, it is considered to be a significant decline in economic activity spread across the economy, lasting more than a few months, and should be visible in real GDP, real income, employment, industrial production, and wholesale/retail sales.
   e. Trough and Recovery
      i. A trough marks the end of a contraction phase and the beginning of economic recovery. During a trough, the economic growth rate stabilizes and stops contracting. This is typically accompanied by increases in interests rates (to support borrowing and investment) and increases in employment and economic output.

4. Causes of the Business Cycle
   a. The business cycle is affected by the four components of GDP previously mentioned (consumption, investment, government spending, and net exports.) Changes in one of these components and their resulting effect can be magnified due to the interrelated nature of the four components.
   b. The business cycle can also be affected by things other than the four components. For instance, changes in prices of key commodities, such as oil, can have an impact on the cycle. The same is true for equities in financial markets and financial institutions.
   c. The Multiplier Effect: refers to the positive effect of fiscal and monetary policy on consumer and government spending when the government or central bank attempt to increase spending through policy measures.

5. Global Nature of the Business Cycle
    a. Growth of international trade, increased mobility of labor, and more interconnected financial markets has resulted in the business cycles of countries becoming more closely affected and aligned with each other.
    b. Cycles in different economies can be transmitted to one another through foreign trade and international financial markets. (Think about the international effects of changes in net exports and price levels in both consumer and financial goods and services.)
    c. The same is true for the phenomenon of borrowing and lending in global financial markets, as well as for the actions of governments and central banks on monetary and fiscal policy. Policies can be coordinated internationally through the promotion of effective laws on international financial markets and trade policy.

6. Economic Indicators
    a. Economic Indicators: measures that offer insight into economic activity. They are alternatives to Real GDP, and they are advantageous because they are easier to measure and are measured/reported more frequently. They are often measured/reported by private institutions and are used in economic forecasting.
    b. Industrial Production: measurements of the production of manufacturing, mining, and utility companies. This does not include agricultural and service sectors, which are also beneficial economic indicators.
    c. Various other economic indicators include:
        i. Average weekly hours of production workers
        ii. Initial claims for unemployment insurance
        iii. Durable product orders
        iv. Retail sales
        v. Construction for commercial and residential real estate
    d. Sentiment Surveys are a useful economic indicator that can be helpful in assessing consumer confidence about various economic entities. They have the following limitations:
        i. They measure general attitudes rather than providing quantitative information about spending and output.
        ii. The sample used for surveys will be imperfect. The sampling errors can be large or small and of different varieties, which will each affect the results in specific ways.
        iii. Surveys can ask for general attitudes about the direction of various indicators, but may not be able to communicate magnitude.
    e. Categorization according to time:
        i. Lagging Indicators: signal a change in economic activity after output has already been changed.
        ii. Coincident Indicators: reveal current economic conditions, but do not have predictive value.
        iii. Leading Indicators: signal changes in the economy in the future, and are considered useful for economic prediction and policy formation.
    f. Index of Leading Economic Indicators: are collections of leading indicators.

Inflation

1. Measuring Inflation
    a. Inflation is measured by the percent change in price levels over a given period of time. This calculation is done with a variety of different price indexes (which are baskets of goods and services that are meant to accurately represent price levels in some way.)
    b. Consumer Price Index (CPI)
        i. A Consumer Price Index is a measurement used to track the changes in prices of a "basket of goods" typically purchased by an individual consumer of a chousehold. The goods of the basket are then assigned weights, and the overall calculation is done and then compared to previous periods.
        ii. Note that the weights can change over time as consumer preferences change.
        iii. Note that inflation measured by a CPI will not be perfectly accurate if a consumer's preferences do not align with the basket of goods or the weights that are assigned to each good/class.
        iv. The US Core CPI is an index based on core inflation, and it does not include temporary volatility in the prices of commodities.
    c. Producer Price Index (PPI)
        i. PPIs are another measure of inflation and they measure the average selling price of products in the economy. They are broader than CPIs in that they include investment products, but they are narrower because they do not include services.
    d. Inflation Rates and Price Indices: different indices will produce different results for measurements of inflation. The relationship between CPIs and PPIs can be used to compare the relative changes in prices for consumers and producers. This can give some information about profitability.
    e. Implicit GDP Deflator: equal to the Nominal GDP divided by the Real GDP. This calculation is not held to base years, rather it is allowed to change and to include changes in consumer's consumption patterns.
2. The Effects of Inflation on Consumers, Businesses, and Investments
    a. Changes in price levels directly affect the behavior of consumers, households, and businesses. They can be exhibited in changes in spending, saving, and borrowing.
    b. Consumers:
        i. If consumers expect inflation and price levels to rise, they may spend and/or borrow more in the present in order to avoid paying higher prices. This has the potential to create short-term economic growth.
        ii. Consumers can benefit from inflation because of the fact that they can repay loans with money that is now worth less.
        iii. It is possible during times of inflation for price levels to rise at a rate that wages do not. In this situation, consumers have less buying power, which can then help break the inflationary cycle due to reduced demand and lowered prices.
    c. Businesses:
        i. Generally, inflation has a negative impact on businesses. Inflation makes forecasting, planning, and budgeting more difficult. Additionally, if consumers tend to spend and borrow in the event of inflation, access to capital for businesses

decreases. Simultaneously, profits may decrease due to rising business costs, and this can be made worse if businesses are unable to pass the costs onto consumers.

   d. Investments:
      i. Any financial investment paying a fixed cash amount will decrease in value in the event of inflation.
      ii. Interests rates also generally rise in the event of inflation, which leads to lower values in fixed income investments. Generally speaking, inflation hurts lenders and helps borrowers.
      iii. Equities have the potential to be good hedges in the event of inflation if the business is able to raise prices along with inflation.

3. Other Changes in the Level of Prices
   a. Deflation
      i. Deflation: is defined as a persistent and pronounced decrease in prices across most products. If consumers expect prices to fall, they will choose to save or invest, which can further promote the cycle of deflation. In response, revenues will decrease, business will hire and produce less, and unemployment will rise. This is a difficult cycle to break and often requires action on the part of the government, central bank, and financial institution to incentivize spending.
   b. Stagflation
      i. Stagflation: is defined as a situation in which there is high/increasing inflation that is not accompanied by economic growth. This can actually cause economic decline as a result of decreased consumption, decreased investment, decreased profits, and higher unemployment. There is a dilemma in addressing stagflation in that governments/central banks can either fight inflation risking further economic decline, or can stimulate the economy risking higher inflation.
   c. Hyperinflation
      i. Hyperinflation: is defined as a situation in which there is very high inflation that is brought on suddenly. In response, consumers will dramatically increase spending as a result of the expectation that their money will be worth even less in the future. Hyperinflation is very hard for governments and central banks to combat, but luckily is rare (it is typically associated with developing economies, but that is not strictly the case.)

Monetary and Fiscal Policies

1. Monetary Policy
   a. Monetary policy refers to the activities of the central bank that are aimed at influencing key macroeconomic variables, such as : Output / GDP, Price Stability, and Employment. This is achieved through changing influencing variables such as the money supply (how much money is in circulation) and credit (the amount of money that is available for borrowing and at what cost / interests).
   b. The aim is to regulate economic growth and inflation so that neither are outside of a healthy range. Lowering interest rates increases borrowing, investment, and consumption,

which together stimulate the economy, reduce unemployment, and increase inflation. Raising interest rates decreases borrowing, investment, and consumption, and conversely increases savings. This decreases economic growth, increases unemployment, and reduces inflation.

c. Open Market Operations:
    i. Relate to the purchase and sale of government notes and bonds.
    ii. A central bank can increase the money supply, and therefore stimulate the economy, by purchasing financial instruments (typically short-term government instruments) held by commercial banks. By giving commercial banks more cash, the money supply increases.
    iii. A central bank can decrease the money supply, and therefore decrease economic growth, by selling these same instruments to commercial banks. Because the banks then have less cash, the money supply decreases, limiting the credit line for the private sector.
    iv. Note that through doing this, the central bank is encouraging the commercial banks to change their lending interest rates.
d. Central Bank Lending Rates:
    i. Central banks are also able to establish and change the interest rates that they change commercial banks when lending. To stimulate economic growth, the central bank can lower the interest rates it charges to commercial banks. This is often accompanied by simultaneously lowering of interest rates charged by commercial banks in their lending practices (to individuals, households, businesses, and other banks.) The opposite is done for decreasing economic growth.
e. Reserve Requirements:
    i. Reserve Requirements are the percentage of total deposits that commercial banks are required to hold in cash. Central banks can increase economic growth by lowering the reserve requirements, therefore increasing the money supply. The opposite is done to decrease economic growth.
f. Limitations of Monetary Policy:
    i. The efficacy of monetary policy is debated. There are instances where low interest rates established by central banks are accompanied by slow economic growth. What is certainly true is that human psychology must be considered when thinking about the efficacy of monetary policy. For instance, if an economy is doing well and people are generally optimistic about economic growth, income, and employment, rising interest rates may be less effective in slowing economic growth as the rising cost of capital is disvalued. The opposite can also be true.

2. Fiscal Policy
    a. Fiscal Policy refers to actions on the behalf of governments to influence economic variables. This is achieved through changes in government taxation and spending.
    b. Role and Tools of Fiscal Policy:

        i. Expansionary policies seek to stimulate economic growth and do so by decreasing taxes (and therefore increasing income, consumption, etc…) and by increasing public spending on social goods and infrastructure.
        ii. The efficacy of measures like these is dependent on circumstance, magnitude, consumer outlook, and the status of the economy in the present.
    c. Limitations of Fiscal Policy:
        i. Time Lags: the recognition of changing economic circumstances, the decision to use fiscal policy, and the determination, implementation, and response of fiscal policy all take time. Economic variables can change within the time that this process requires to take place.
        ii. Unexpected Responses by Consumers and Companies: the intended response to fiscal policy by consumers may not always take place. Consumers may make decisions about spending, saving, borrowing, and repaying debt that were not intended, and the magnitude of changes in each of these behaviors are variable.
        iii. Unintended Consequences: due to the complexity and interrelated nature of economic variables, fiscal policy can lead to unintended consequences. For example, the stimulation of the economy can also lead to higher than intended inflation. Or, if the government competes too much with the private sector for the available money in savings, the private sector can get crowded out and investment on their part can decline.

3. Fiscal or Monetary Policy
    a. Economists are typically divided into two schools of thought regarding the efficacy of monetary and fiscal policy.
        i. Keynesians (named after John Maynard Keynes) believe that fiscal policy is a powerful tool that can successfully influence the economy if there is sufficient spare capacity in an economy. There is division among this group regarding whether or not monetary and fiscal policy can affect output and employment in addition to inflation.
        ii. Monetarists believe that fiscal policy has only a temporary effect on aggregate demand and that monetary policy is more effective for affecting the economy. Monetarists advocate for the use of monetary policy to influence GDP, inflation, and unemployment.
    b. In practice, both central banks and governments will usually respond to economic events, particularly if they are of a worrisome nature.