Chapter 2
National Income Accounting

2.1.Basic Concepts and Methods of Macroeconomic Analysis

a. Measuring the Value of Economic Activity: Gross Domestic Product

The single most important measure of overall economic performance is *Gross Domestic Product (GDP)*. The GDP is an attempt to summarize all economic activity over a period of time in terms of a single number; it is a measure of the economy's total output and of total income. In other words GDP is the value of all final goods and services produced in the economy in a given time period *(note that GDP is a flow not a stock)*.

Real GDP versus Nominal GDP

Valuing goods at their market price allows us to add different goods into a composite measure, but also means we might be misled into thinking we are producing more if prices are rising.Thus, it is important to correct for changes in prices. To do this, economists value goods at the prices at which they sold at in some given year. This is known as *real GDP*. GDP measured at current prices is known as *nominal GDP*.

The GDP Deflator

The GDP deflator is the ratio of nominal to real GDP:

$$GDP\ Deflator = \frac{Nominal\ GDP}{Real\ GDP}$$

The GDP deflator is a measure of the general price level.

GDP and GNP

There is a distinction between GDP and gross national product (GNP). GNP is the value of final goods and services produced by domestically owned factors of production within a given period. The difference between GDP and GNP corresponds to the net income earned by foreigners. When GDP exceeds GNP residents of a given country are earning less abroad than foreigners are earning in that country. *In simple words, GDP is territorial while GNP is national.*

Gross and Net Domestic Product

Capital wears out, or depreciates while it is being used to produce output. *Net domestic product (NDP)* is equal to GDP minus the *capital consumption allowance*, a measure of depreciation.

GNP and welfare measurement

Traditionally, growth is measured as the relative change in GNP per capita. The basic idea is that GNP per capita measures the current and the future per capita welfare. GNP equals (in a closed economy) consumption plus gross investment. Current welfare is then measured by current consumption, and the change in future consumption opportunities caused by current saving –and-investment decisions is measured by current investments. Obviously, GNP is not an appropriate

measure of welfare. Besides the fact that it doesn't incorporate equity issues (both intra and intergenerational equity), it also suffers from other drawbacks. In this connection, the following seems to be the most important failure:

- GNP is not a net concept. We are interested in net investment and therefore in NNP.
- Conventional net investments do not include changes in most natural assets, although they are indispensable for human welfare
- Consumption as conventionally measured does not include environmental damage.

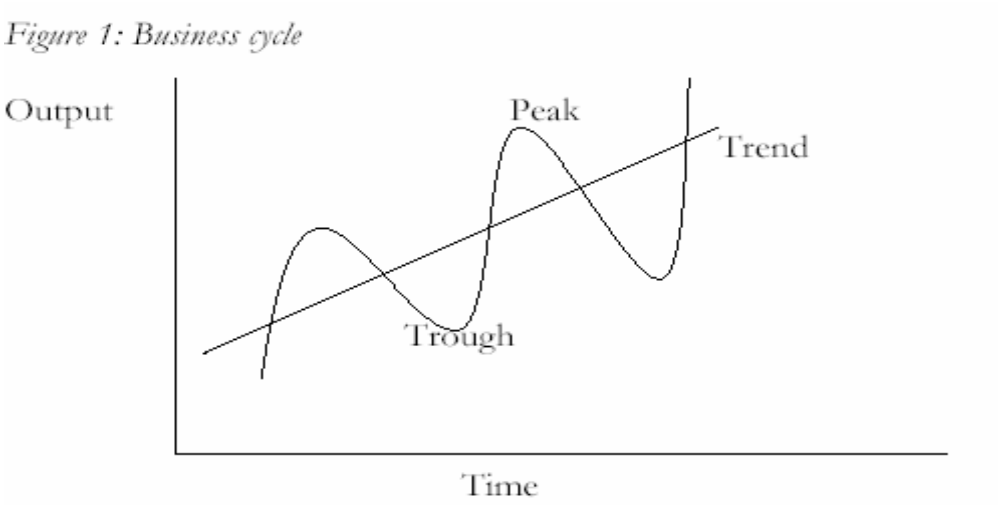
These and other perceived drawbacks of GNP as a welfare measure have created a number of studies on how to redefine the standard National Accounts in order to improve the informational content of NNP. In this connection Dasgupta and Maler (1991), Hartwick (1990, 1992) and Maler(1991) have tried to develop a theoretical framework for accounting system. It turns out that the 'correct' measure should be constructed as follows:

NNP = consumption
- current environmental damage
+ Net investment in real capital
+ Net change in the value of Human capital
+ Net change in the value of the stock of natural capital

The Business Cycle and the Output Gap

Inflation, growth, and unemployment are related through the business cycle. The business cycleis the more or less regular pattern of expansion (recovery) and contraction (recession) ineconomic activity around the path of trend growth. At a cyclical peak, economic activity is high relative to trend; and at a cyclical trough, the low point in economic activity is reached. Inflation,growth, and unemployment all have clear cyclical patterns.

Figure 1: Business cycle



The trend path of GDP is the path GDP would take if factors of production were fully employed. Over time, real GDP changes for the two reasons. First, more resources become available which allows the economy to produce more goods and services, resulting in a rising trend level of output. Second, factors are not fully employed all the time. Thus, output can be increased by increasing

capacity utilization. Output is not always at its trend level, that is, the level corresponding to full employment of the factors of production. Rather output fluctuates around the trend level. During expansion (or recovery) the employment of factors of production increased, and that is a source of increased production. Conversely, during a recession unemployment increases and less output is produced than can in fact be produced with the existing resources and technology. Deviations of output from trend are referred to as the ***output gap***.

The output gap measures the gap between actual output and the output the economy could produce at full employment given the existing resources. Full employment output is also called ***potential output***.

Output gap ≡ potential output – actual output

When looking at the business cycle fluctuation, one question that naturally arises is whether expansions give way inevitably to old age, or whether they are instead brought to an end by policy mistakes. Often a long expansion reduces unemployment too much; causes inflationary pressures, and therefore triggers policies to fight inflation- and such policies usually create recessions.

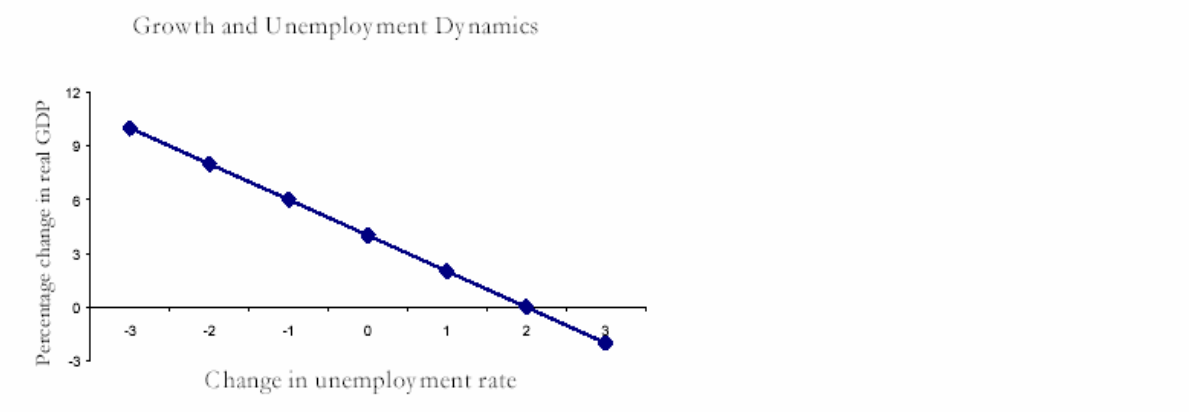
Okun's Law

A relationship between real growth and changes in the unemployment rate is known as Okun's law, named after its discoverer, Arthur Okun. Okun's law says that the unemployment rate declines when growth is above the trend rate.

$$\Delta u = -x(y_a - y_t)$$

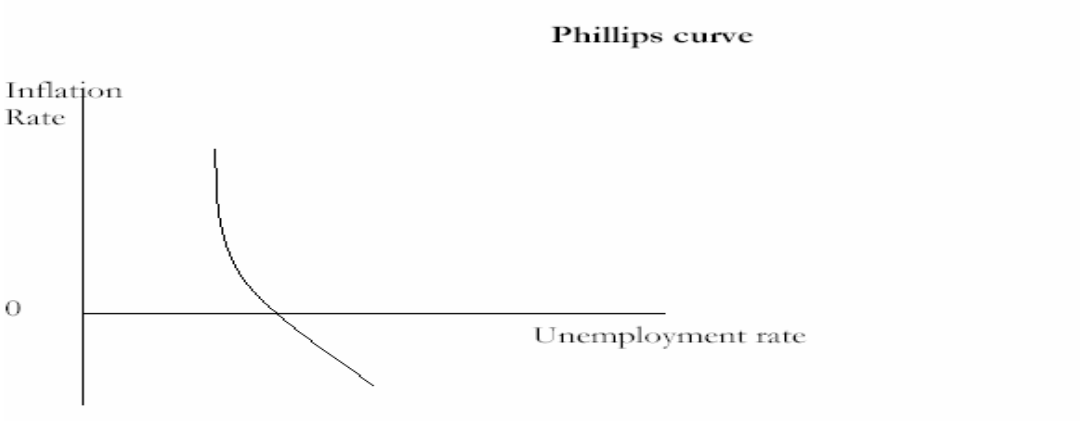
where Δu is change in unemployment, x the magnitude in which unemployment declines due to a percentage point growth, y_a actual growth rate of output, and y_t is trend output growth rate.

The figure below shows the Okun's law relationship between unemployment and growth in output.



Inflation –Unemployment Dynamics: The Phillips Curve

The Phillips curve describes the empirical relationship between inflation and unemployment: the higher the rate of unemployment, the lower the rate of inflation. The curve suggests that less unemployment can always be attained by incurring more inflation and that the inflation rate can always be reduced by incurring the costs of more unemployment. In other words the curve suggests there is a trade-off between inflation and unemployment.



Case study: The Phillips curve for Ethiopia

Yohannes (2000), attempted to estimate the Phillips curve for Ethiopia by plotting the actual rate of inflation against the rate of unemployment and conclude that the higher the unemployment is the higher the inflation is. At least in the short run, inflation is positively related with unemployment, i.e. there is no tradeo ff between them. The traditional Phillips curve is not therefore applicable to Ethiopia. The policy implication is that it is not wise for the government to choose high unemployment in order to dampen inflation and vice versa. If it chooses higher unemployment it may end up in higher inflation. Since the economy is dominantly agrarian, characterized by production rigidities and market fragmentation, government policy to manage the economy from the demand side wouldn't be effective. The only solution to fight against inflation is therefore to support the working of the supply side and remove structural bottlenecks.