Introduction to AS/AD Analysis

Our analysis of economic growth focused on long-run tendencies of the aggregate economy. We now turn our attention to cyclical deviations from these tendencies.

Our description of cyclical deviations will be divided into two basic components: a description of expenditures (Aggregate Demand) and production (Aggregate Supply).

**Aggregate Demand:** characterizes the behavior of aggregate expenditures (AE) as a function of the aggregate price level (P). By definition,

\[ AE = C + I + G + NX. \]

The construction of the AD curve features two components:

- a behavioral description of the relationship between P and AE;
- the imposition of the equilibrium requirement \( AE = Y \), which yields the familiar

\[ Y = C + I + G + NX. \]

**Formal definition of AD:**

All combinations of P and Y such that \( AE = Y \).
Behavioral Description of AD

Slope: the interaction of AE and P.

P affects AE through its impact on interest rates (i). Think of i as representing the price of holding (or obtaining) dollars. Like any price, i is determined by the interaction of supply and demand. In this case, what is relevant is the supply and demand of dollars, measured in real terms.

M: nominal money supply

M/P: real money supply

Ceteris paribus, an increase in P reduces M/P, hence increasing i.

As i increases, I decreases (because the cost of obtaining loanable funds increases), hence AE decreases.

Hence on the demand side of the model, we have a negative relationship between prices and (the demand for) Y: in (P,Y) space, the AD curve has a negative slope:
Location of AD.

Anything other than price that affects AE affects the location of AD.

For example, holding P fixed at \( P_0 \), if M decreases, \( M/P \) decreases, and hence as discussed above, i increases, I decreases, and finally AE decreases.

Other variables that matter (remember, hold P fixed):

G, T, TR.
Aggregate Supply

Definition: All P, Y combinations that firms are willing to produce given their objective to maximize profits, holding other things fixed.

Depending on what "other things" are being fixed, we have three alternative descriptions of AS.

**Short-Run Agg. Supply:** All P, Y combinations that firms are willing to produce, holding costs of inputs to production fixed, as well as the stock of physical capital.

Regarding *input costs*:

Recall that Y is the value of all *final* goods and services produced in the economy. It does not include *intermediate* goods (goods used to produce other goods, or inputs to production).

Because P represents the average level of the final goods comprised in Y, it does not reflect costs of intermediate goods, including the cost of labor (wages -- W).

Hence holding input costs such as W fixed, as P increases, real input costs decrease (W/P falls), hence firms find it profitable to increase Y.
*Long-Run Agg. Supply:* All P, Y combinations that firms are able to produce, given the current stock of physical capital and the level of technological progress. Input costs are flexible in this case.

Examples of physical capital: steel mills, heavy machinery, etc.

Alternative definition: the total quantity of Y the economy is capable of producing given the fully efficient use of all currently available productive resources (including labor). Given this definition, LRAS is often referred to as defining the *full-employment level of output*. Since the current stock of productive resources in predetermined, it is independent of changes in current prices, hence in P, Y space, LRAS is vertical:

*Very Long-Run Aggregate Supply:*

Characterizes the evolution of LRAS over time, allowing for changes in the current stock of productive resources (notably physical capital, but also labor), as well as for technological advances.
Diagram of the AS/AD Model

IS Model:
i, Y combos such that AE = Y

LM Model:
i, Y combos such that money supply = money demand

AD Model:
all P, Y combos such that IS = LM

AS Model:
all P, Y combos such that firms max. profits

P, Y determined
Linking the AS/AD model with the Phillips Curve

Shifts in AD translate into movements along a given Phillips Curve.
Shifts in AS translate into shifts in Phillips Curves.