

A Primer on the Aggregate Supply--Aggregate Demand Model of Output and Price Level Determination

Aggregate Demand Curve (AD) – shows the relationship between aggregate (i.e., all forms) of expenditure and the aggregate price level.

Expenditures made by; households is called consumption (C), firm spending is referred to as investment (I). Governments also make expenditures (G). If the economy is open, there is foreign trade, then expenditures on exports (X) are a component of total expenditures, but imports (Z) steer funds away from domestic spending and must be subtracted from aggregate spending. Consumption is fostered by greater income, lower interest rates, and real wealth (value of assets relative to the aggregate price level) holding. Investment – spending on plant and equipment - responds to change in the interest rate and alterations in profit expectations. A rosier view of the future on the part of firms, an improvement in profit expectations, increased investment. Moreover, a rise in the interest rate or the cost of borrowing funds leads to less investment spending. Exports are influenced by tastes and preference, price, and the value of currency. A rise in the aggregate price level leads to a reduction in aggregate spending, and hence a negatively sloped aggregate demand curve, because higher prices make a nation's goods relatively more expensive so exports fall and real wealth declines resulting in less consumption spending.

There are two aggregate supply curves. The Long Run Aggregate Supply Curve (AS^{LR}) depicts the amount of aggregate output that can be produced if all inputs available for use in production (i.e., capital stock [K], technology [F], natural resources [N], and labor [L]) are fully utilized. Thus, AS^{LR} reveals the level of output at full employment – this curve is often referred to as the “*potential output*” curve. Economists assume that the amount of inputs or factors of production an economy has at a moment in time is unrelated to the aggregate price level, so the AS^{LR} curve is vertical or fixed.

The Short-Run Aggregate Supply Curve (AS^{SR}) shows the amount of aggregate output that profit maximizing firms will collectively generate at alternative levels of the aggregate price level given that their decision options are constrained by some inputs – notably physical capital, and technology – being fixed. If prices collectively rise, *ceteris paribus* (i.e., all other factors affecting profitability unchanged) then total revenue would rise and hence profits would increase since elements influence productivity and costs are fixed. By the same logic, if the price level is held constant and input costs fall – such as the wage rate – then costs are declining with total revenues unchanged which expands profits and provides an incentive for firms to collectively produce more (i.e., AS^{SR} shifts to the right). Similarly, if something changes in the short-run that increased worker productivity such as workers completing formal training programs or an improvement in worker motivation and focus – then output and total revenue would expand without a change in costs leading to greater profits and expansion of AS^{SR} .

The Aggregate product market is in short-run equilibrium when a price level arises where the quantity (i.e., point on the curve) of AD and quantity of AS^{SR} are equivalent. If this is not the case, if there is a shortage (a greater aggregate quantity demanded at the price level than the amount of aggregate output at the price level) and price will rise. This in turn leads to a rise in output (i.e., move up along AS^{SR}) and a fall in expenditures (i.e., move up along AD) until short-run equilibrium is realized. If the short-run equilibrium output level falls short of potential output or AS^{LR} then a recession occurs – there is a recessionary gap reflected by the difference between the full employment level of output and the actual output level. Ultimately, unemployed members of the work force offer to work for lower wages lowering the amount that employed workers receive. The associated decline in costs improves profitability for firms resulting in output expansion or a shift of AS^{SR} to the point where a new short-run equilibrium is established, but now at full employment (i.e., at the equilibrium aggregate price level the quantity of demand or expenditures is equivalent to the short-run level of output which matches the level of output when all inputs are fully employed).

A Primer on the Conventional – Neoclassical – Theory of Employment Determination

Economists typically assume that the managers of firms make decisions so as to maximize firm profitability. This entails making choices so that the marginal costs of an action are equivalent to the marginal benefits – if not behavior could be altered and either losses would fall or profits would rise. A standard assertion is that the wage paid to workers is set in a labor market and that an individual firm must pay this wage to acquire labor – they are wage (i.e., price) takers. Thus, firm managers face the challenge of hiring the amount of labor that maximizes profits, given the wage they must pay workers. They find this level of employment by determining the amount of labor where the marginal costs and marginal benefits of labor are equivalent.

The cost of an additional unit of labor – marginal cost of labor (MCL) - is the nominal hourly wage rate (w) if other labor costs such as fringe benefits are ignored; for simplicity this is a common assumption. The benefits of hiring an additional unit of labor – the marginal benefit of labor (MBL) – is the gain in output associated with an additional unit of labor, called the marginal product of labor (MP_L) evaluated at the equilibrium aggregate price level (P). Thus, the value of the additional output derived by hiring an additional unit of labor is; $MBL = MP_L * P$. A profit maximizing firm will hire labor (L) so that,

$$(1) \ MCL = MBL$$

Which can be rewritten as,

$$(2) \ w = MP_L * P$$

Dividing both sides of equation (2) by P allows the condition for profit maximization to be expressed as

$$(3) \left(\frac{w}{P} \right) = MP_L$$

Equation (3) says that firms should hire labor so that the real wage $\left(\frac{w}{P} \right)$ is equal to the additional output created by the last unit of labor acquired. When factors such as the firms' physical capital stock (K), the technology used by the firm (F), and worker motivation rises and the MP_L increases; so the real wage (i.e., the amount of goods and services a worker can purchase if they work an additional hour; a measure of economic well-being) must rise an equivalent amount if employment is unchanged. If employment increases – and other output determinants are held constant – then the productivity of labor (i.e., the MP_L) falls, since there are now more units of labor using the existing amount of capital and other inputs. This is called the law of diminishing returns to labor. If an increase in employment reduces the MP_L than workers at profit maximizing firms are paid less in real terms.