

# AGGREGATE DEMAND AND AGGREGATE SUPPLY

## I. AGGREGATE DEMAND

a. AD is a schedule or curve that shows the quantities of real domestic output (Real GDP) that buyers collectively want to purchase at each price level. The relationship between the price level (as measured by the GDP price index) and the amount of real output demanded is INVERSE or NEGATIVE.

b. Review figure 14.1 on page 333

- i. Ceteris parabis, a change in the price level will change the amount of total spending and therefore change the amount of Real GDP demanded by the economy.
- ii. If “other things” besides a change in price level change, the entire aggregate demand will change and SHIFT the curve.
  1. These are called DETERMINANTS OF DEMAND.
  2. The categories of determinants (spending) are the same as those in national income and product accounts (Ch 12).

c. CONSUMER SPENDING

- i. If consumers decide to buy more output at each price level, the aggregate demand curve will shift to the right (figure 14.2 on page 334).
- ii. Several factors contribute: real consumer wealth, household borrowing, consumer expectations and personal taxes.

1. CONSUMER WEALTH – Total dollar value of all assets owned by consumers in the economy less the dollar value of their liabilities (debts).

a. Consumer wealth sometimes changes suddenly and unexpectedly due to surprising changes in asset values;  
WEALTH EFFECT

2. HOUSEHOLD BORROWING- Consumers can increase their consumption spending by borrowing

a. The aggregate demand curve will shift to the left if consumers increase their savings rate to pay off their debts.

3. CONSUMER EXPECTATIONS- When people believe their future real incomes will rise, aggregate demand will increase and the aggregate demand curve will shift to the right.

4. PERSONAL TAXES - A reduction in personal income tax rates raises the take-home income and increases consumer purchases at each possible price level.

d. INVESTMENT SPENDING

i. Increases in investment spending at each price level boost aggregate demand and decreases in investment spending reduce it.

1. Investment decision is a marginal benefit/marginal cost decision.
  2. It is an expected rate of return not a guaranteed rate of return.
  3. Expected return,  $r$ , declines as firms undertake more investment.
  4. The marginal cost to the firm is reflected in the explicit costs of borrowing money from others or the implicit cost of using its own retained earnings to make the investment. Real interest rate,  $i$ .
  5. A firm will invest up to the point where  $r=i$  in order to exhaust all investment possibilities for which  $r$  exceeds  $i$ .
- ii. REAL INTEREST RATES- Ceteris parabis, increases in real interest rates will lower investment spending and reduce aggregate demand; the opposite is also true.
- iii. EXPECTED RETURNS- Higher expected returns on investment projects will increase the demand for capital goods and increase aggregate demand. The aggregate demand curve will shift to the right. Following are the factors for expected returns:
1. FUTURE BUSINESS CONDITIONS – If firms are optimistic, increases aggregate demand due to more investment.
  2. TECHNOLOGY- new and improved technologies enhance

expected returns on investment and thus increase aggregate demand.

3. DEGREE OF EXCESS

CAPACITY- a rise in excess capacity- unused capital- will reduce the expected rate of return on new investment and hence decrease aggregate demand.

4. BUSINESS TAXES- an increase in business taxes will reduce after-tax profits from capital investment and lower expected returns; lowers aggregate demand.

5. The variability of interest rates and investment expectations makes investment quite volatile.

e. GOVERNMENT SPENDING – in increase in government spending, without changes in tax collection or interest rates, will increase aggregate demand and move aggregate demand curve to the right.

f. NET EXPORT SPENDING – changes in EXCHANGE RATES (prices of foreign currencies in terms of one's own country's currency) affects aggregate demand

i. When the dollar DEPRECIATES (declines in value) against foreign currencies, it takes more dollars to buy foreign goods, so foreign goods become more expensive. Depreciation will increase net exports (imports are more expensive than exports) and increase aggregate demand. The opposite is true for currency appreciation.

## II. AGGREGATE SUPPLY

- a. Aggregate supply is a schedule or curve showing the relationship between price level and the amount of real domestic output that firms in the economy can produce.
  - i. In the IMMEDIATE SHORT RUN, both input prices and output prices are FIXED.
  - ii. In the SHORT RUN, input prices are FIXED, but output prices are VARIABLE.
  - iii. In the LONG RUN, both input prices and output prices are VARIABLE.
  - iv. Different degrees of “sticky prices” determine how total output varies with the price level in the immediate, short and long run.

### b. AGGREGATE SUPPLY IN THE IMMEDIATE SHORT RUN

- i. The immediate short run can run from a few days to a few months.
  - 1. 75% of the average firm’s cost is wages and salaries- almost always fixed by long-term labor contracts.

- ii. With output prices fixed and firms selling however much customers want to purchase at those fixed prices, the IMMEDIATE SHORT RUN AGGREGATE SUPPLY CURVE IS A HORIZONTAL LINE

- 1. See figure 14.3 on page 340.
- 2. The horizontal shape implies that the total amount of output supplied in the economy depends directly on the volume of spending that results from the price level  $p_1$

3. The amount of output might be higher or lower than the economy's full-employment output level  $Q_f$
4. Firms will respond to changes in total spending only as long as output remains fixed; as soon as firms are able to change their product prices (output prices), they can respond to changes in aggregate spending not only by increasing or decreasing output, but also by raising and lowering prices.

c. AGGREGATE SUPPLY IN THE SHORT RUN

- i. The SHORT RUN is a period of time during which output prices are flexible but input prices are either totally fixed or highly inflexible; it is any period of time where this is occurring.
- ii. Review figure 14.4 on page 341; the SHORT-RUN AGGREGATE SUPPLY CURVE, AS, slopes UPWARD because, with input prices fixed, changes in the price level with raise or lower real firms' profits.
- iii. In the short-run there is a POSITIVE relationship between price level and output. Where price levels can increase, output levels will increase
- iv. The curve is not constant; it is relatively FLAT (recession) at output levels BELOW full employment, and relatively steep (inflation) at levels ABOVE full employment.

- v. Per-unit production = total input cost / units of output
- vi. As the economy expands in the short-run, per-unit production generally rise because of reduced efficiency. But the extent of that rise depends on where the economy is operating relative to its capacity.
  1. When below full employment, there is large amounts of unused machinery and equipment – little upward pressure on per-unit production.
  2. When economy is operating above full employment level, most resources are already employed. There is significant pressure on per-unit production. Under these conditions, total input costs rise more rapidly than total output.

d. AGGREGATE SUPPLY IN THE LONG RUN

i. The LONG RUN is the time horizon over which BOTH input prices and output prices are flexible. It begins when the short-run ends. It can be several weeks to a few years in the future.

ii. The LONG RUN AGGREGATE SUPPLY CURVE IS VERTICAL AT THE ECONOMY'S FULL EMPLOYMENT LEVEL.

1. Review figure 14.5 on page 342; the vertical nature of the curve means that in the long run the economy will produce the full employment output level no matter what the price level is...why? When both

price levels and output levels were flexible, profit levels will always adjust to give firms exactly the right profit incentive to produce exactly the full-employment output level,  $Q_f$

2. The only way to produce above full-employment is to have overtime work, which raises per-unit production
3. High demand will raise input prices; overworked employees and demanding raises; will move to full-employment level
4. The line is vertical because the economy will produce at full employment levels once input prices adjust exactly the match changes in output prices.

e. FOCUSING ON THE SHORT RUN

- i. The reason for focusing on the short run is that it will help explain the business cycle in the simplest possible way.
- ii. The upward slope of the short run AS curve is the only version of aggregate supply that can handle simultaneous movements in both real output (GDP) and price levels (input levels)

III. CHANGES IN AGGEGATE SUPPLY

- a. Review figure 14.6 on page 344
  - i. Review the list of factors that collectively position the aggregate supply curve. They are the DETERMINANTS OF AGGREGATE SUPPLY and they shift the curve when they change.

- ii. When per-unit production costs change for reasons other than changes in real output, the aggregate supply curve shifts.
- b. INPUT PRICES – Input or resource prices- to be distinguished from the output prices that make up the price level- are a major ingredient of per-unit production costs therefore a key determinant of aggregate supply
  - i. DOMESTIC RESOURCE PRICES- wages and salaries make up about 75% of business costs.
    1. Labor supply increases because of substantial immigration. Wage and per-unit costs decrease and shift the short run AS curve to the right.
    2. Labor supply decreases because of rapid increases in pension income. Wage and per-unit costs increase and shift the short run AS curve to the left.
    3. Prices of land and capital also shift the short run AS curve.
  - ii. PRICES OF IMPORTED RESOURCES
    1. Added supplies of resources- domestic or imported – typically reduce per-unit production costs. A decrease in the price of imported resources increases U.S. aggregate supply, while an increase in their price decreases aggregate supply; example – OPEC in the ‘70s
    2. Exchange rate fluctuations will alter price of imported resources; if dollar APPRECIATES, import prices decrease and aggregate

supply increases. If dollar DEPRECIATES, import prices increase and the aggregate supply decreases.

c. PRODUCTIVITY

- i. The second major determinant of aggregate supply is productivity, which is a measure of the relationship between a nation's level of real output and the amount of resources necessary to produce that output.

$$1. \text{ PRODUCTIVITY} = \frac{\text{TOTAL OUTPUT}}{\text{TOTAL INPUTS}}$$

- ii. With no change in resource prices, increases in productivity REDUCE the per-unit production cost of output.
- iii. By reducing per-unit production costs, increases in productivity shift the aggregate supply curve to the right (increase in aggregate supply).
- iv. Much rarer, decreases in productivity increase the per-unit production costs and therefore reduce aggregate supply (leftward shift of short run AS curve).

d. LEGAL-INSTITUTIONAL ENVIRONMENT

- i. BUSINESS TAXES – higher business taxes, such as sales, excise, and payroll taxes, increase per-unit production costs and reduce short run aggregate supply in much the same way wage increases do. Shifts the short run AS curve to the left.
- ii. BUSINESS SUBSIDIES – act as a “negative” tax and will decrease per-unit production costs and shift the short run AS curve to the right.

iii. GOVERNMENT REGULATION – More regulation increases per-unit production costs and shift short run AS curve to the left.

1. Supply side proponents of deregulation argue that less regulation reduces per-unit costs.
2. Deregulation that increases monopoly position or increases business failures will shift the short run AS curve to the left.

#### IV. EQUILIBRIUM PRICE LEVEL AND REAL GDP

a. Review figure 14.7 on page 347

- i. The intersection of the short run AD and AS curves is the economy's EQUILIBRIUM PRICE LEVEL AND EQUILIBRIUM REAL OUTPUT (REAL GDP)

ii. Review the example on page 347

b. CHANGES IN THE PRICE LEVEL AND REAL GDP

- i. If AD and AS increase proportionately over time, real GDP will expand and neither demand-pull inflation nor cyclical unemployment will occur.
- ii. From business cycles, this rarely occurs
- iii. Review the Applying the Analysis for both demand-pull inflation and cost-push inflation and the effect on the curves on figures 14.8 and 14.9 on pages 348-9.

c. DOWNWARD PRICE-LEVEL INFLEXIBILITY

- i. Why is the price level sticky or inflexible, particularly on the downside? Here are the reasons:
    1. FEAR OF PRICE WARS- If Oligopolists reduce price, competitors will match and lower prices, creating downward spiral.
    2. MENU COSTS – Because recession will relatively short, no need to go through all effort and disruption of lowering prices... “changing menu prices”
    3. WAGE CONTRACTS – Usually long term contracts, so firms won’t reduce prices if they can’t reduce wages.
    4. MORALE, EFFORT, AND PRODUCTIVITY – Reluctance of employers to reduce wages; creates low morale, effort and thus productivity.
    5. MINIMUM WAGE- Imposes a wage floor which employers cannot go below.
  - ii. CONCLUSION – In the U.S., the price level readily rises, but on reluctantly falls.
  - iii. REVIEW RECESSION AND CYCLICAL UNEMPLOYMENT: APPLYING THE ANALYSIS on page 352.
- d. THE MULTIPLIER EFFECT
- i. Assuming an economy has room to expand, an initial change in investment income changes aggregate demand and GDP (and thus income) by MORE than

the initial spending change. This is the MULTIPLIER EFFECT – the ratio of change in GDP to an initial change in spending.

1.  $\text{MULTIPLIER} = \frac{\text{CHANGE IN REAL GDP}}{\text{INITIAL CHANGE IN SPENDING}}$
2.  $\text{CHANGE IN REAL GDP} = \text{MULTIPLIER} \times \text{INITIAL CHANGE IN SPENDING}$
3. Review example on bottom of page 353.
4. Multiplier works in both ways; positive and negative.

e. SELF-CORRECTION

- i. There is some evidence that the price level and average level of wages are becoming more flexible downward in the U.S.. Intense international competition and declining power of the unions are undermining the ability of firms and workers to resist price and wage cuts when faced with falling aggregate demand.
- ii. In theory, fully flexible downward prices and wages would automatically “self-correct” in a recession.
- iii. Government and monetary authorities don’t wait for recessions to correct themselves. They focus on moving the aggregate demand curve outward to its original position by reducing interest rates or fiscal policy.