

# Hoisington

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## Quarterly Review and Outlook Appendix

Second Quarter 2008

### A Primer on Aggregate Demand and Aggregate Supply Curves

The aggregate demand and aggregate supply curves are part of a general equilibrium model that simultaneously determines the economy's price level for all final goods and services and the volume of real GDP. The price level (P) is on the vertical axis and real GDP (Y) is on the horizontal axis (Exhibit 1). The price level is a weighted average of the prices of all goods and services that comprise GDP. The aggregate demand (AD) and aggregate supply (AS) curves pertain to a specific point in time, which in this example is 2008. This allows users of the model to look at sequential changes over time.

The aggregate demand curve gives the quantity of goods and services demanded at each price level. Behaviorally, the aggregate quantity of goods and services demanded is a function of the price level. The aggregate quantity demanded

is the sum of the plans by the household, business, government and foreign sector to buy real consumer goods and services, real investment goods, real goods and services of the government and real net exports of goods and services of the global sector. Since consumer expenditures accounted for 70% of real GDP in the first quarter, consumer spending plans are the most dominant component of the aggregate demand curve.

Plans to buy vary as aggregate prices change, resulting in a movement along the aggregate demand curve. The premise of the aggregate supply curve is that individual sellers produce more at higher prices and less at lower prices. Aggregate supply is simply the sum of all real output supplied by all firms in the economy at various price levels. The volume that each firm is willing to supply depends on, or is a function of, the price received. A change in the price level, thus, causes a movement along the aggregate supply curve. In general, firms will supply more goods the higher the price paid unless they are at a full capacity (and then it is physically impossible to increase output).

Equilibrium in the short-run occurs at the intersection of the aggregate demand curve and the short-run aggregate supply curve, which is point C in Exhibit 1, with the price level at 1.00 and the real GDP at \$14 trillion. Nominal GDP would also total \$14 trillion. If the price level is greater than that where the curves (and schedules) intersect, firms are willing to supply more goods and services than are demanded, leading to an excess supply that causes the price level to decline.

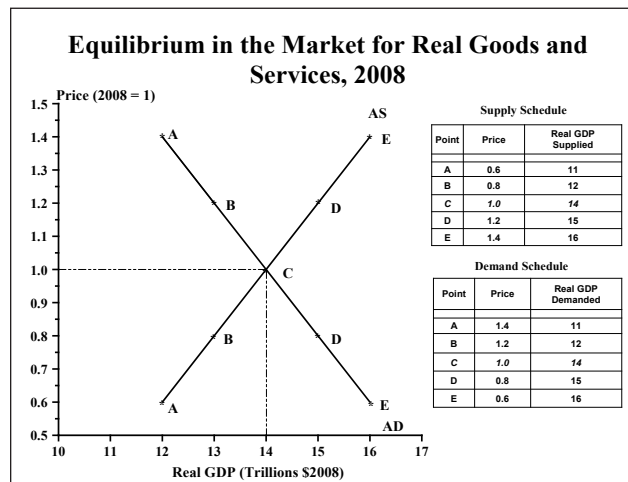


Exhibit 1

## Why the Aggregate Demand Curve Slopes Downward

The shape of the aggregate demand and aggregate supply curves is identical to the individual demand and supply curves. The microeconomic demand curve slopes downward because people substitute one good for another when the price of one item increases relative to another. Contrarily, if the price of one item goes down relative to others, consumers buy more of that item because it is cheaper. If the price of personal computers rises, consumers would find ways to buy fewer PCs by either enhancing their existing PCs or by making more extensive use of software. But this does not work for an economy-wide demand curve since such a curve pertains to the GDP output in aggregate terms. As GDP covers all currently produced goods and services, there are no ways to make substitutes between currently produced goods and services. Since the aggregate demand curve is determined by the price level, there are no relative prices.

However, two important substitutes for currently produced goods and services of the domestic economy exist: 1) money and 2) goods and services produced outside of the United States. The aggregate demand curve slopes downward because we can substitute these for domestically produced goods and services.

The aggregate demand curve can be related to Fisher's equation of exchange which states that  $M$  (the stock of money)  $\times$   $V$  (the velocity of money) =  $P$  (the price level)  $\times$   $Y$  (real GDP), where the right hand term is also nominal GDP. This equation can be rearranged to:

$$Y \text{ divided by } V = M \text{ divided by } P.$$

This causes the downward slope of the AD curve and is determined by the level of the nominal or current dollar money supply and the price level.

A rise in the price level reduces the real money supply and boosts interest rates. Conversely, a fall in the price level increases

the real money supply, reduces interest rates, and raises the amount of real goods and services demanded, so real GDP is elevated.

Another reason for the AD curve's negative slope is that the volume of exports and imports is influenced by the price of domestic goods and services, relative to the price of goods and services produced abroad. An increase in the relative price of domestic items reduces these purchases, resulting in an increased buying of imports. The higher relative prices also result in a decrease in exports, and therefore a decrease in GDP. Conversely, a decline in the relative price of domestic items boosts their sales on world markets, causing net exports and consequently GDP to rise. So as a result of foreign purchases, planned GDP expenditures are negatively related to the aggregate price level.

## Factors that Shift the Aggregate Demand and Aggregate Supply Curves

In addition to movements along the curve, the entire AD or AS curves can shift from one position to another and establish a new equilibrium as shown in Exhibit 2. The non-price determinants of buying plans--such as monetary conditions (nominal stock of money as well as its velocity), government spending and taxes, wealth, exchange rates, foreign demand and expectations of the economy's participants -- have the power to shift the entire aggregate demand curve. For

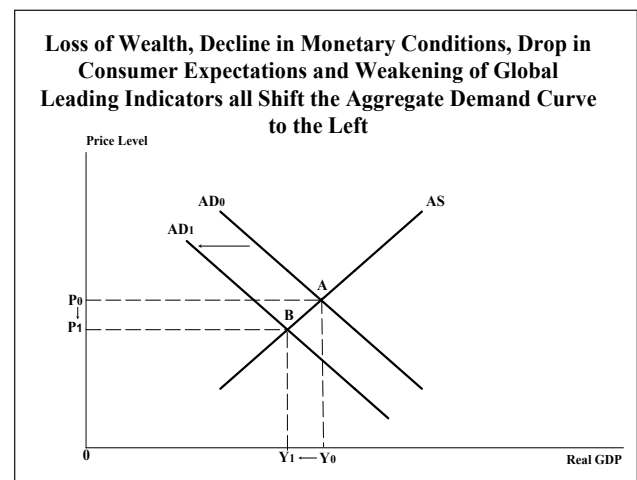


Exhibit 2

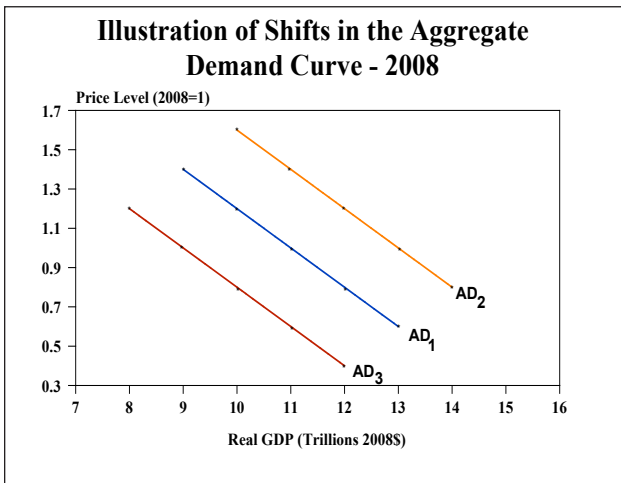


Exhibit 3

example, a loss of asset wealth we see currently in the housing and equity markets would shift the entire curve leftward from AD1 to AD3 (Exhibit 3). Such a shift indicates that, at each price level, the desired real GDP is less than before. If the massive increase in the budget deficit is expansionary, after taking into account the adverse consequences of financing the deficit (which is highly uncertain), there would be a rightward shift from AD1 to AD2. As the Exhibit indicates, at each price level, the amount of desired real GDP is greater than before.

The aggregate supply curve can shift in response to changes in rents, wages or raw material costs. If rents or wages rise, the short-run aggregate supply shifts inward. Contrarily, if rents, wages, or raw material prices fall, the short-run aggregate supply shifts outward. For example, if wage rates fall, there is an outward shift from AS1 to AS2 in Exhibit 4, making the amount of potential output greater for every price level, and serving to reduce inflation. For example, if the cost of raw materials rises, AS1 shifts inward to AS3 in Exhibit 3, increasing the potential for inflation. The portion of the AS1 curve covered by points A to E is what is considered by economists to be the normal portion of the short run AS curve,

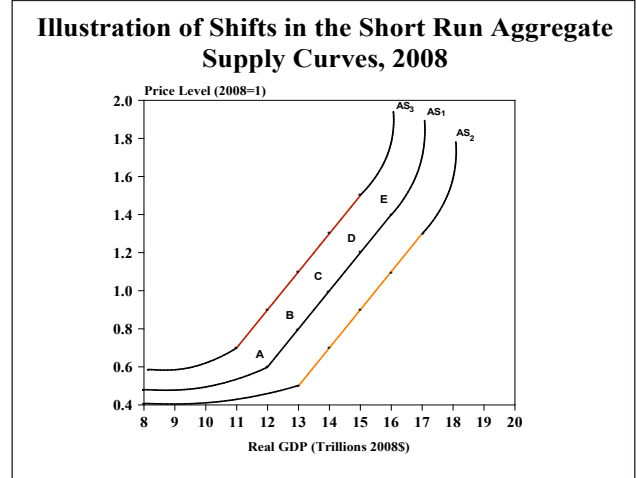


Exhibit 4

a subject beyond the scope of this discussion.

### Summary

The economy-wide demand and supply curves are called the aggregate demand and supply curves. The short-run aggregate supply curve shifts from flat to upward sloping to vertical. Under normal conditions, the aggregate supply curve slopes upward and to the right over the short-run, while over the long-run it is vertical. Factors that can shift the aggregate supply curve include changes in the following: the availability of the domestic factors of production, the imported factors of production, the productivity of workers in the domestic economy, technology, and incentives. The aggregate demand curve slopes downward and to the right. Important shift factors of aggregate demand include: changes in monetary, fiscal, and international conditions and expectations. Equilibrium in the short-run occurs at the intersection of the aggregate demand curve and the short-run aggregate supply curve. The aggregate demand and supply curves can be used to understand many important issues in macroeconomics in an objective manner.

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