Why do changes in the aggregate demand and aggregate supply bring about changes in the price level and real GDP?

Change in Aggregate Demand

- A change in a determinant of demand does not cause an equal change in aggregate demand.
- E.g.: When firms become optimistic about the future and begin to spend more on investment, the resulting increase in aggregate demand is not equal to the increase in investment.

Multiplier: the effect on income of a change in autonomous spending, such as investment (I), exports (X), government spending (G), or autonomous consumption (C).

5.7 Determinants of Real GDP and the Price Level

Change in Aggregate Demand (continued)

- E.g.: Firms spend $10 billion on investment.
  - Initial effect is an increase in income for the contractors, suppliers, and their employees who provide the investment goods.
  - Some of their income will be paid in taxes, some will be saved, some will be spent on imports, and a significant portion will be spent on domestically produced goods and services.
5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

Change in Aggregate Demand (continued)

Assume 40% of income is paid in taxes, saved, or spent on imports, leaving 60% ($6 billion) to be spent on consumption of Canadian goods and services.

When that $6 billion is spent on domestic consumption, it creates $6 billion in income for the providers of the consumption goods and services, and this amount is again broken down into another round of spending on taxes, savings, imports, and consumption. The cycle continues.

Spending/Consumption increases

Initial round $10.0 billion
Second round $6.0 billion
Third round $3.6 billion
Fourth round $2.2 billion
Fifth round $1.3 billion
All subsequent rounds $1.9 billion

A.K.A. Total increase in real GDP $25.0 billion
Multiplier = total increase in income/initial spending
= 25/10
= 2.5

From the incomes earned from the initial spending:
- If the portion spent on domestic production was higher, the multiplier would be higher
- If the portion spent on taxes, savings, and imports was higher, the multiplier would be lower
5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

Change in Aggregate Demand (continued)
- Graphical representation of the multiplier effect:
  - Aggregate demand shifts right (increases) from AD$_1$ to AD$_2$
  - If price level (and interest rate) remain constant, then a multiplier of 2.5 results from the increase in real GDP from $800 to $825 (point A shifts to become point B)
  - The multiplier only has this full effect if the aggregate supply curve is horizontal, signifying a recession
  - Instead, the AS curve is generally upward sloping due to rises in the price level (P$_1$ to P$_2$), leading to a smaller increase in equilibrium real GDP (here, $815 at point C$) –

5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

Change in Aggregate Supply
- Recall that a change in factor prices influences aggregate supply without affecting potential GDP
- A decrease in factor costs, decrease in the prices of raw materials, decrease in money wage levels, or decrease in business taxes leads the aggregate supply curve to shift to the right, resulting in a decrease in the price level and an increase in real GDP
- If any of the factors of production moves in the opposite direction, then a leftward shift results, thus signifying an increase in the price level and a decrease in real GDP

5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

Change in Aggregate Supply (continued)
- E.g. A decrease in the price of imported oil leads to improved profitability for a firm
  - Aggregate supply curve shifts right from AS$_1$ to AS$_2$
  - Price level drops from P$_2$ to P$_1$
  - Level of real GDP rises from Y$_1$ to Y$_2$
5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

Change in Aggregate Supply (continued)
• Recall that a change in productivity influences both aggregate supply (and thus real GDP) and potential GDP
• E.g., Assume that an economy is already operating at full-employment real GDP when an influx of immigration leads the labour force participation rate to increases

5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

Change in Aggregate Supply (continued)
• An increase in labour force size increases aggregate supply (the curve shifts from AS₁ to the right to become AS₂) and potential GDP (which also moves to the right)
• The result is a decrease in the price level (from P₁ to P₂) and an increase in the level of real GDP (from Y₁ to Y₂)
• This leads to a recessionary gap since the new level of equilibrium real GDP is below the new level of potential GDP (Y₃)
• Actual real GDP has grown, but potential real GDP has grown more

5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

Is the economy self-adjusting?
• If an economy is able to adjust wages and prices to changing demand and supply, then it is likely to move to a full-employment situation quickly and thus recover from a recession
• If prices and wages do not change in the short run, recessionary or inflationary gaps can be indefinite
• Economists largely reject both these extremes
• While prices and wages are often inflexible in the short run, they eventually adjust to changing conditions
5.7 DETERMINANTS OF REAL GDP AND THE PRICE LEVEL

**Is the economy self-adjusting? (continued)**

- Example of adjustment process for an economy experiencing an inflationary gap:
  - Economy is at equilibrium (AD intersects AS at real GDP $Y_3$)
  - Real GDP is above potential level ($Y_{FE}$), so economy is above full (natural rate) employment (thus workers easily find jobs, but firms have trouble securing labour)
  - Nominal wages rise
  - Firms produce more than their normal capacity
  - The AS curve shifts left, pushing up the price level and pushing down real GDP until the economy is now at potential (aka full employment) GDP
  - Equilibrium is where AD again intersects AS, at real GDP $Y_4$

**Is the economy self-adjusting? (continued)**

- Example of adjustment process for an economy experiencing a recessionary gap:
  - Economy is at equilibrium (AD intersects AS at real GDP $Y_1$)
  - Real GDP is below potential level ($Y_{FE}$), so unemployment is higher than the natural rate (firms easily find labour, but workers compete for few jobs)
  - Nominal wages decline
  - Firms can make more profit, so they start to produce more and thus must hire more workers
  - The AS curve shifts right, pushing up real GDP to the potential (full-employment) level and pushing down the price level
  - Equilibrium is now where AD intersects the new AS

The difficulty with this model is that in reality, while price and wage levels do seem to increase year to year, they rarely decrease.

Instead, it is helpful to remember that rather than the nominal wage level dropping, it rises, but as a slower pace than the price level.