The Influence of Monetary and Fiscal Policy on Aggregate Demand; The Short-Run Trade-off between Inflation and Unemployment

Charles University, Prague

April 17, 2024, Principles of Economics II

Aggregate Demand Curve

- C+I+G+(X-M)

- Wealth effect
- Interest rate effect
- International Trade effect

Effect complementary but not necessarily equal- case of the U.S.

- Shifts in AD (and AS) can cause fluctuations in the national output and price levels.

- Monetary and Fiscal Policies can influence price levels and output via AD

What is the difference?

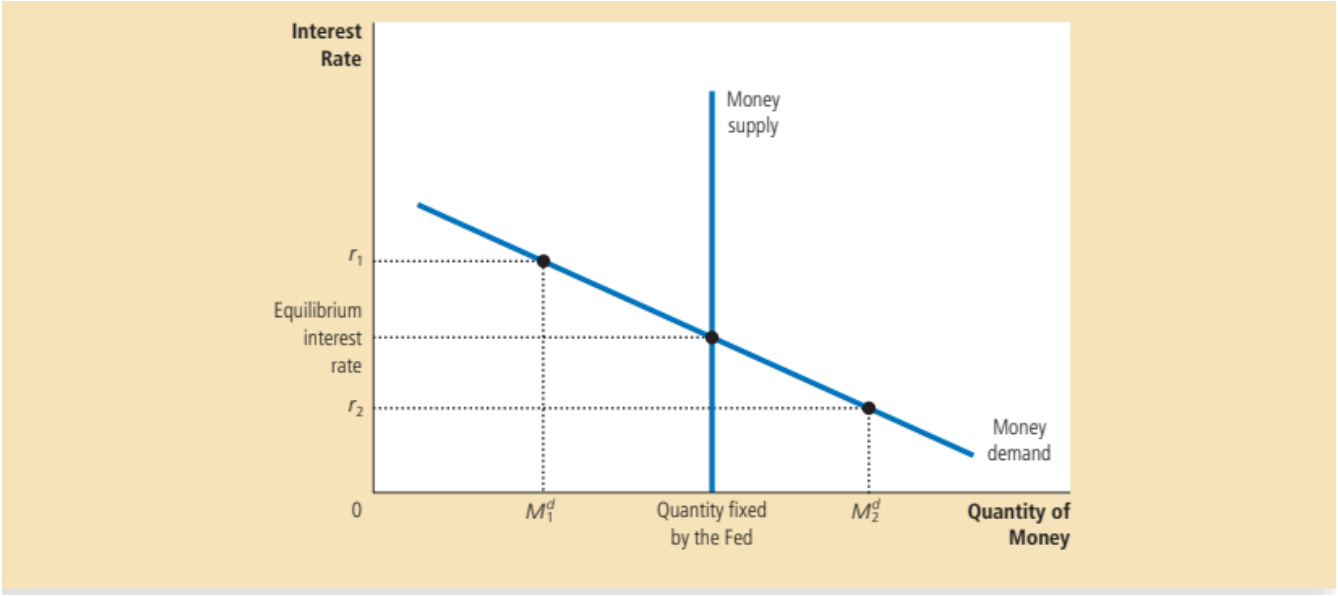
Liquidity Preference Theory (Keynes)

- Interest rate adjusts to supply and demand of money
- Nominal v Real interest rate (equal when inflation = 0%)
- We assume expected inflation is constant in the short-run
- Money Supply (Ms) controlled by central banks (sovereign bond transactions, lending rate, reserve requirements)

Liquidity Preference Theory (Keynes)

- Money Demand (Md) based on interest rate (opportunity cost of holding cash instead of an interest-bearing bond)
- Equilibrium- Interest rate adjusts to balance Ms and Md, otherwise people adjust portfolio of assets

Liquidity Preference Theory (Keynes)



Why is the money supply curve vertical?

Liquidity Preference Theory (Keynes)

- Impact on AD: If Md increases, interest rates increase. Higher interest rates increase cost of borrowing and increase incentive to save -> Decreased investment

Sidebar- Why target interest rates and not money supply?

- Money supply is hard to measure
- Money demand fluctuations can affect AD and price levels anyway
- Monetary policy can be described either in terms of the money supply or in terms of the interest rate
    - When an interest rate target is set, federal bond traders are basically told “Conduct whatever open-market operations are necessary to ensure that the equilibrium interest rate equals 6 percent.”

Fiscal Policy

- Fiscal policy: is the use of government purchases, taxes, and transfer payments to alter(change) RGDP and the price level.
- When government spending (for purchases of goods and services and transfer payments) exceeds tax revenues, there is a budget ***deficit***.
- When tax revenues are greater than government spending, a budget ***surplus*** emerges.

Expansionary and Contractionary Fiscal Policy

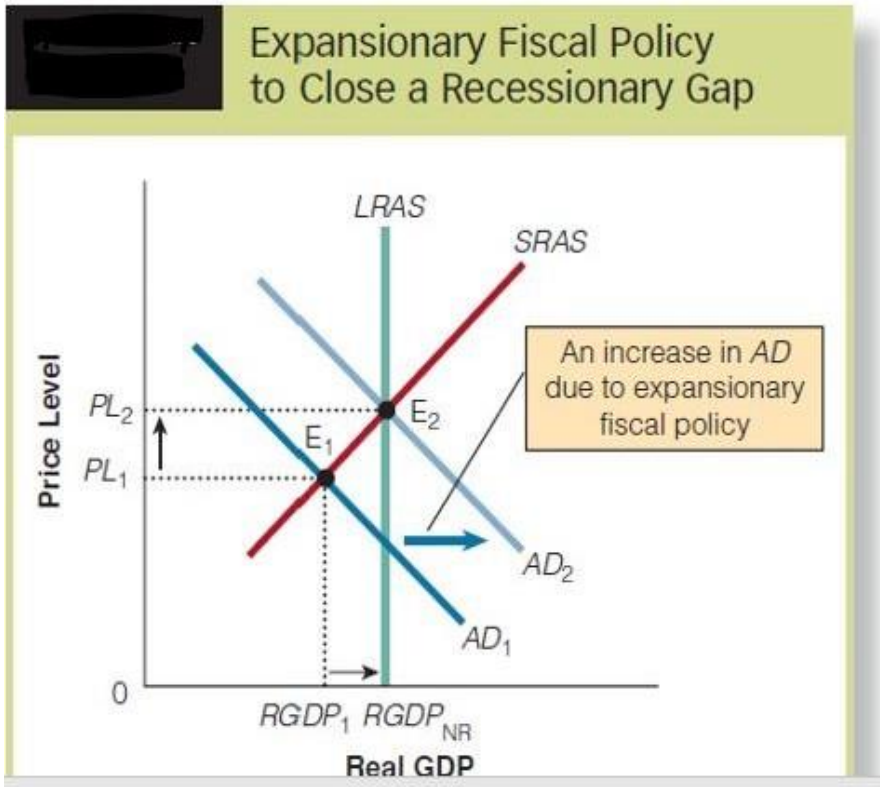
- When government wishes to stimulate (expansionary policy) the economy by increasing AD, it may:
  - Increase government purchases of goods and services,
  - Increase transfer payments (like social security payments, pensions, scholarships etc.),
  - Lower taxes,
  - Use some combination of these approaches.
- Thus, expansionary fiscal policy is associated with increased government budget deficits.
- Link to the COVID example from the AD-AS lecture- *contractionary/recessionary gap*
- The inverse intervention is contractionary fiscal policy

Why is Fiscal Policy needed?

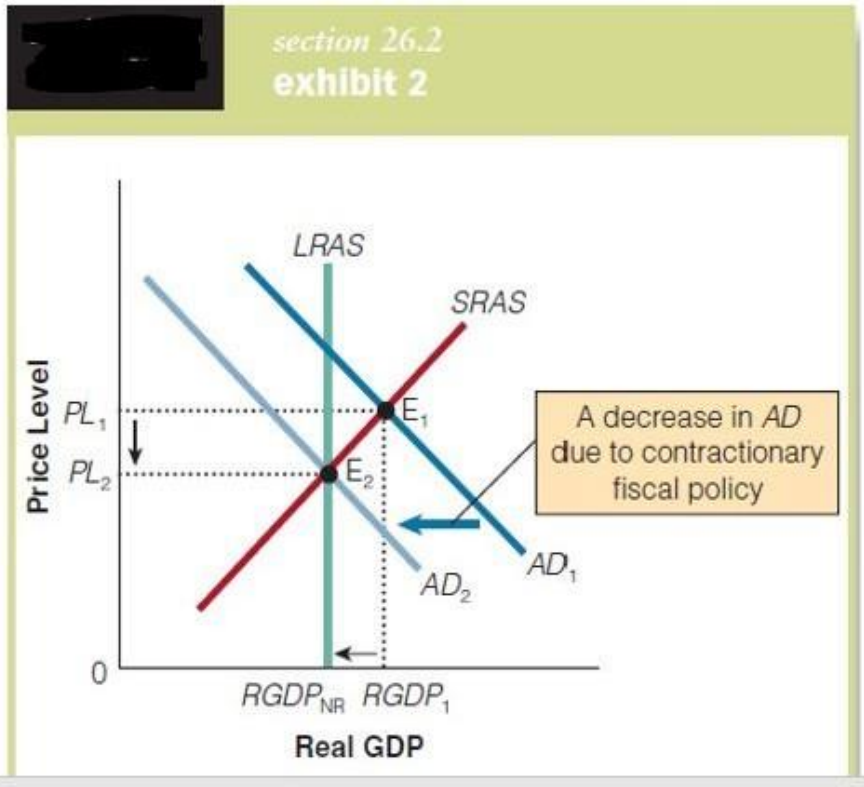
Macroeconomic Problem	Fiscal Policy Prescription	Fiscal Policy Tools
Unemployment (Slow or negative RGDP growth rate—below $RGDP_{NR}$)	Expansionary fiscal policy to increase aggregate demand	Cut taxes Increase government purchases Increase government transfer payments
Inflation (Rapid RGDP growth rate—beyond RGDP)	Contractionary fiscal policy to decrease aggregate demand	Raise taxes Decrease government purchases Decrease government transfer payments

Graphical Illustration

Expansionary FP to Close a Recessionary Gap



Contractionary FP to close Inflationary Gap



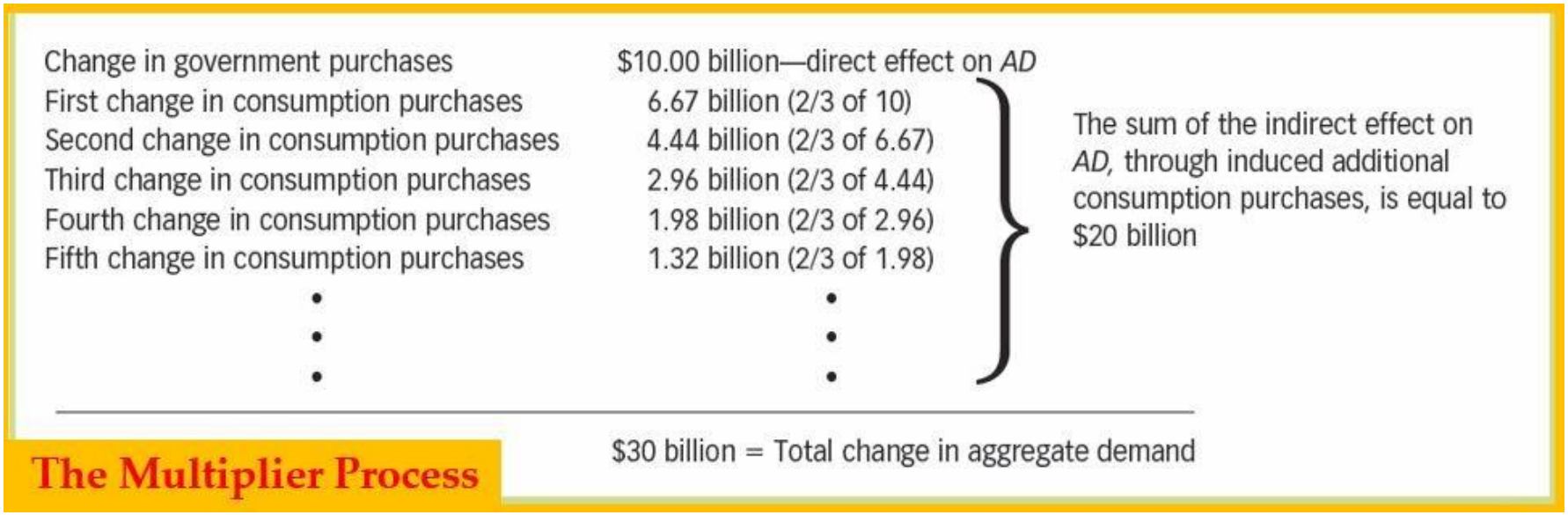
Marginal Propensity to Consume and Save

- Marginal Propensity to Consume (MPC)
  - MPC = Change in consumption / Change in additional income
- Marginal Propensity to Save (MPS)
  - MPS = Change in saving / Change in additional income
- Generally speaking, MPC and MPS ratios give info about which part of additional income in economy is spent or saved
- Therefore, MPS + MPC = 1

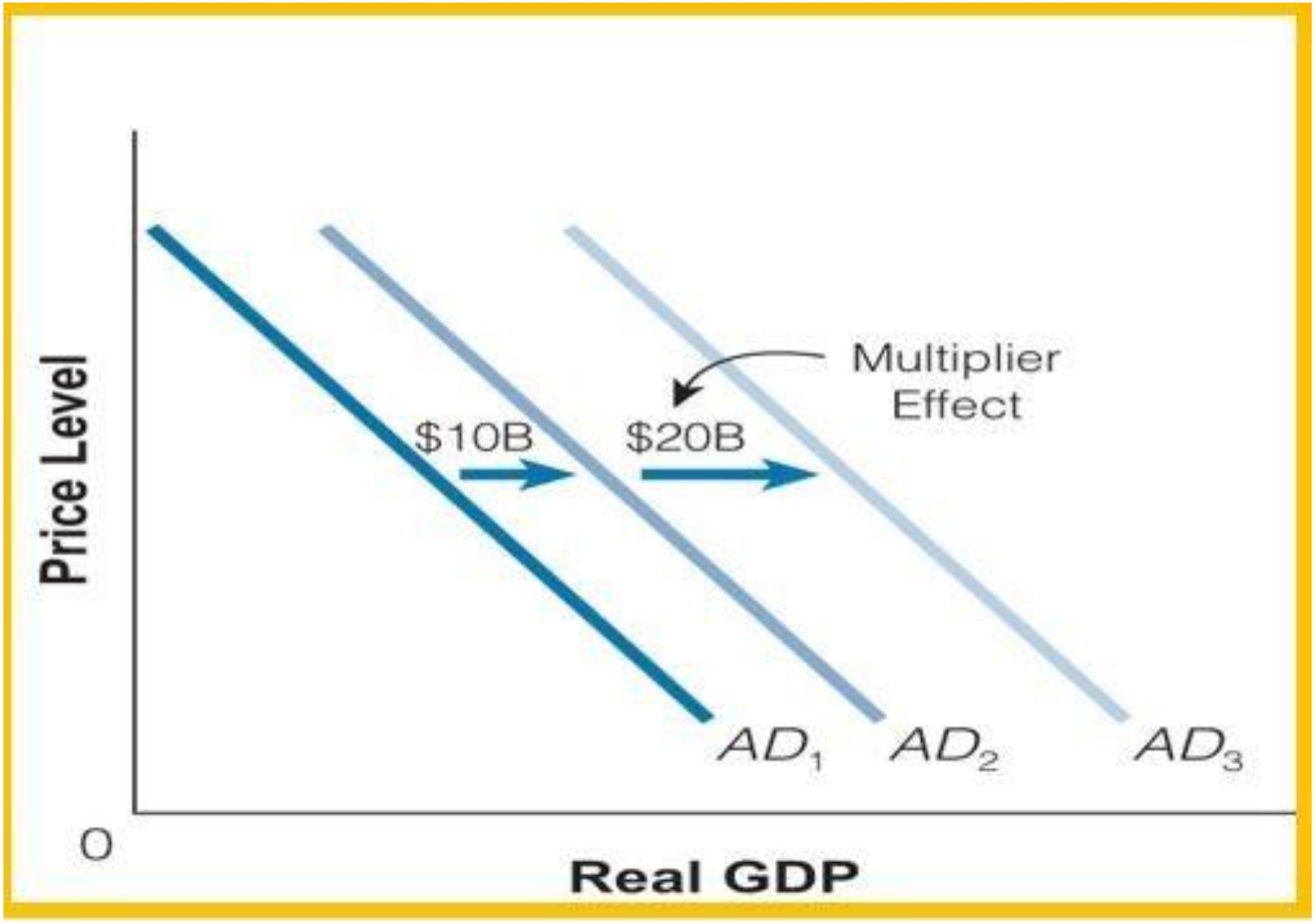
Multiplier Effect (ME)

- ME = 1/(1-MPC) or 1/MPS
  - ME measures the magnitude of the impact of extra income in economy
  - Answers to the question ”What is be the impact of additonal government spending on GDP?”
- If MPC in an economy is 0.9 (or 90 percent), the ME is 10.

ME of Government Spending - Expans. FP



ME of Government Spending - Expans. FP



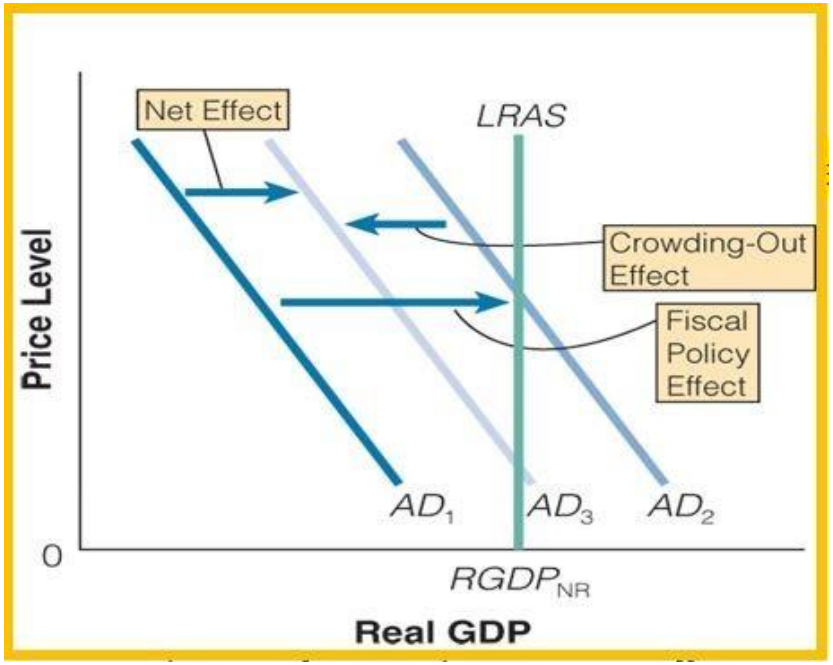
ME in Tax reforms

The ME of Tax cut income is lower than the government purchases

- The income gained from tax cuts does not have ***direct*** impact on GDP, it is included GDP after the first consumption
  - Then the ME of tax cuts = 1/(1-MPC)*Add.Income - Add.Income
  - In other words, If tax cut is 10 billion USD, and MPC = 2/3, the initial increase in consumption spending from the tax cut would be 2/3*10B = 6.67B.
  - ME = 3*10B - 10B = 20B
  - or (imagine); ME = 6.67 x 2/3 + 4.44 x 2/3 + 2.96 x 2/3 +…… = 20B

Crowding-Out Effect

- When the government borrows money to finance a deficit (after expansionary fiscal policy), it increases the overall demand for money in the money market, driving interest rates up.
  - The higher interest rate will decrease private spending on goods and services, and as a result, the impact of the increase in government purchases may be smaller than we first assumed.

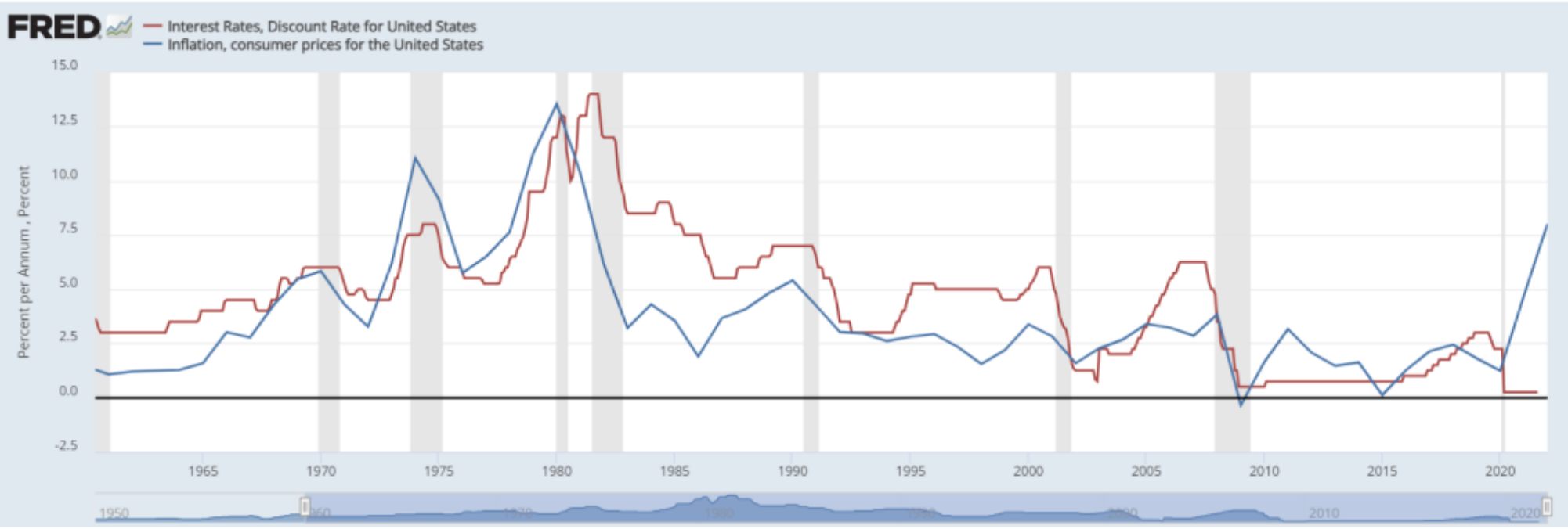


Monetary Policy

- Monetary policy (MP): is the use of central bank's policy tools to stabilize the economy.
  - Expansionary and Contractionary MP
- As in the FP, the purpose of Expansionary MP is to stimulate the economy and achieve the targeted inflation rate.
  - *The usual target inflation rates across countries is usually around 2% to 3%*

Fiscal Policy

Monetary Policy

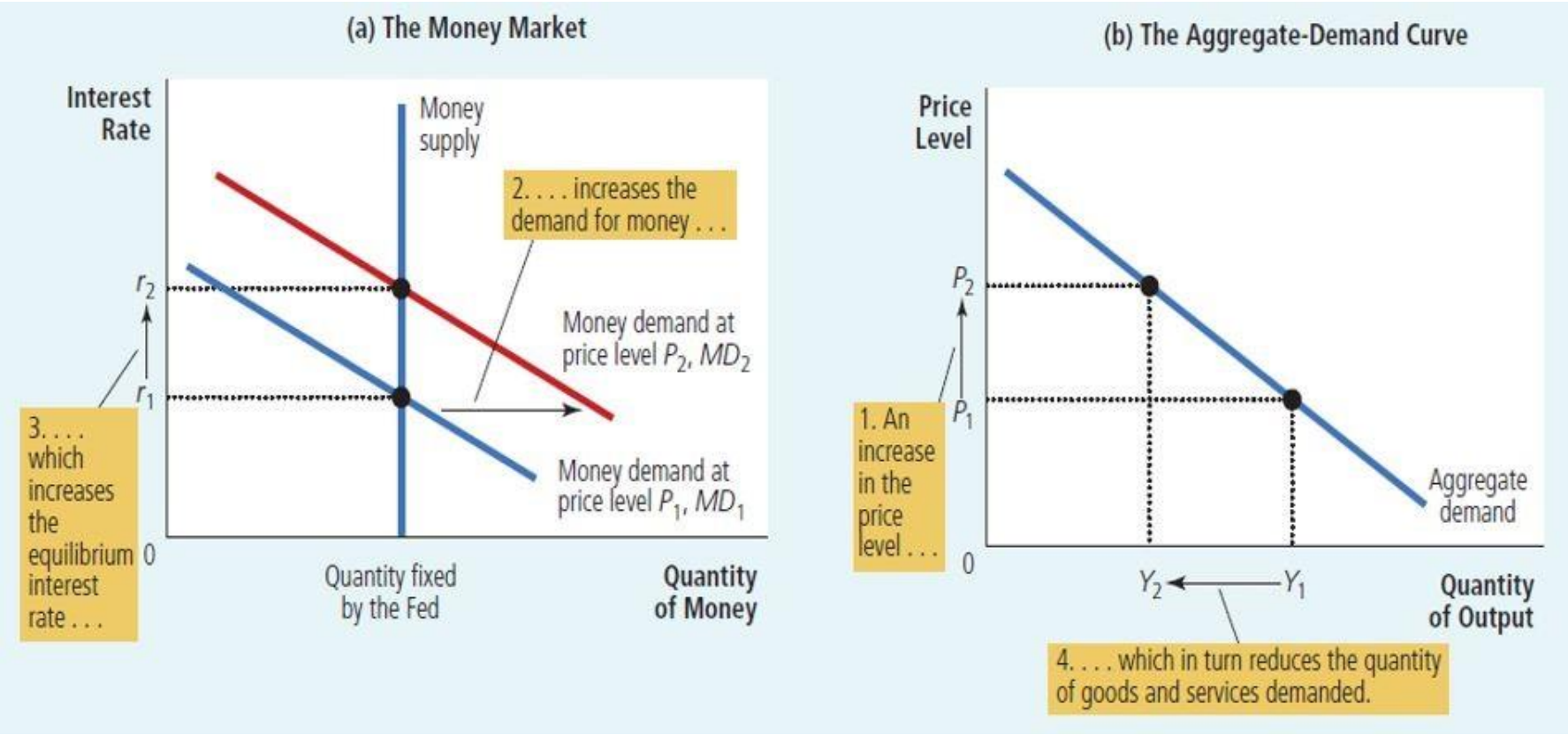


Expansionary Monetary policy tools – Increase the Money Supply

Policy tools are:

- decrease the interest rates
- buy more bonds (or other financial securities)- Quantitative easing
- decrease the reserve requirement ratio for commercial banks

Money Demand and Supply

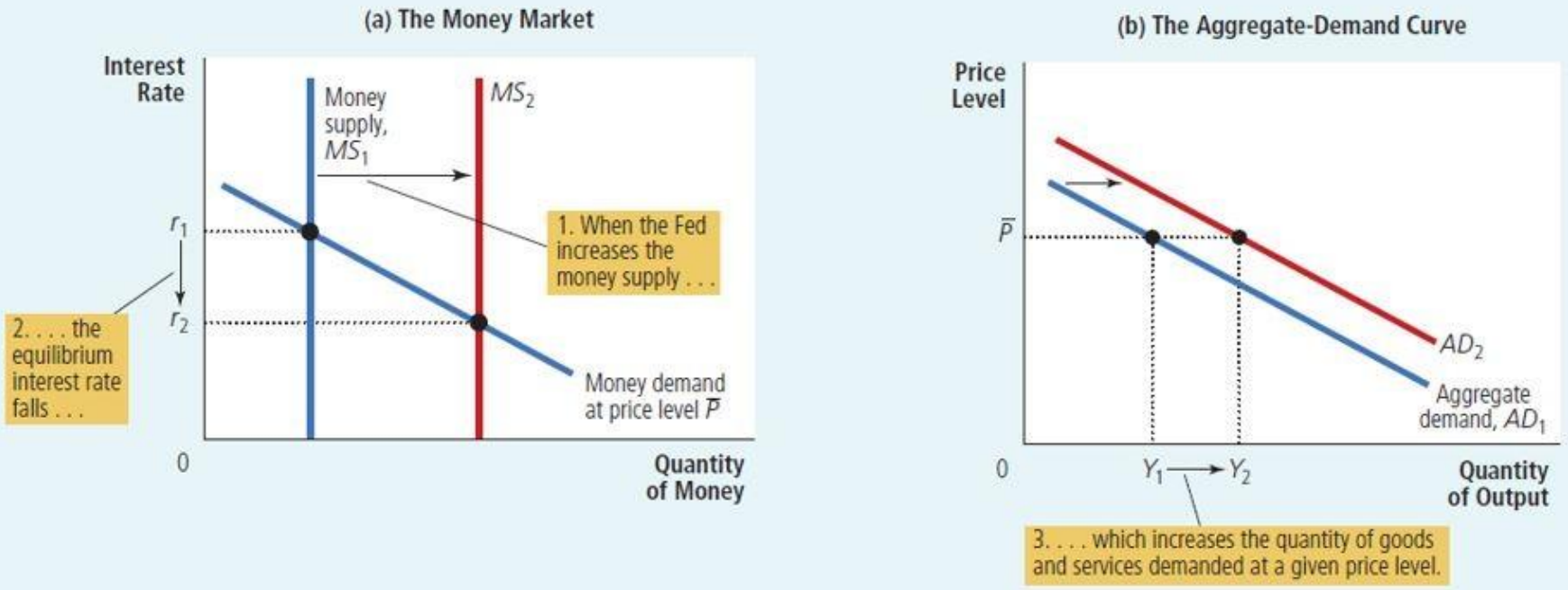


Impact of Money Supply

FIGURE 3

A Monetary Injection

In panel (a), an increase in the money supply from MS_1 to MS_2 reduces the equilibrium interest rate from r_1 to r_2. Because the interest rate is the cost of borrowing, the fall in the interest rate raises the quantity of goods and services demanded at a given price level from Y_1 to Y_2. Thus, in panel (b), the aggregate-demand curve shifts to the right from AD_1 to AD_2.

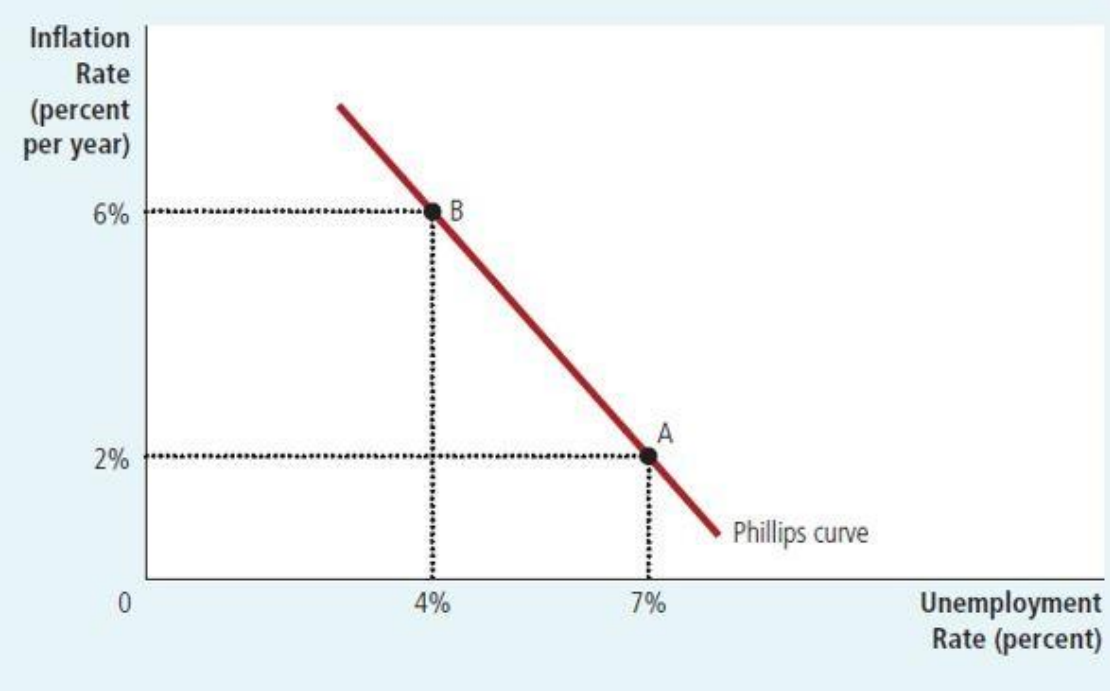


Philipps Curve

The relationship between inflation and unemployment

- Natural rate of unemployment depends on labour market features (minimum wage, union power, efficiency wages and job search effectiveness)
- Inflation rate depends on money supply (controlled by central banks) i.e. on the interest rate *(why?)*
- In the short run, there is a trade-off between inflation and unemployment
    - If policymakers expand AD, unemployment decreases but at the cost of rising price levels and inflation
- In the long run- inflation and unemployment are unrelated

The Philipps Curve from the 1950s



Initially studied to analyse implications for policymakers

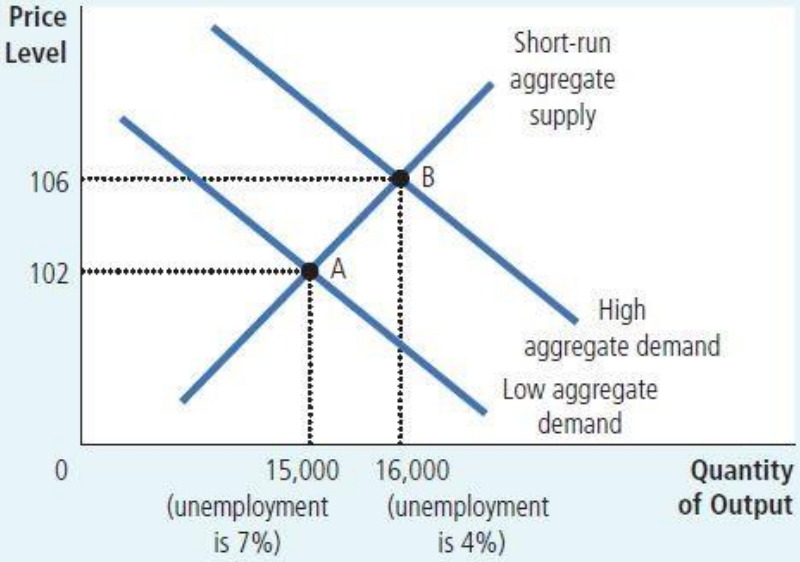
Philipps Curve and AD/AS

FIGURE 2

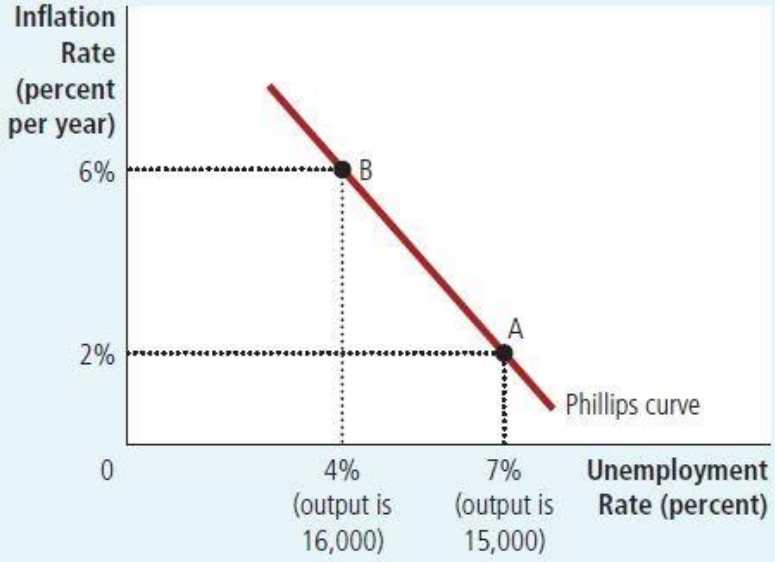
How the Phillips Curve Is Related to the Model of Aggregate Demand and Aggregate Supply

This figure assumes a price level of 100 for the year 2020 and charts possible outcomes for the year 2021. Panel (a) shows the model of aggregate demand and aggregate supply. If aggregate demand is low, the economy is at point A; output is low (15,000), and the price level is low (102). If aggregate demand is high, the economy is at point B; output is high (16,000), and the price level is high (106). Panel (b) shows the implications for the Phillips curve. Point A, which arises when aggregate demand is low, has high unemployment (7 percent) and low inflation (2 percent). Point B, which arises when aggregate demand is high, has low unemployment (4 percent) and high inflation (6 percent).

(a) The Model of Aggregate Demand and Aggregate Supply



(b) The Phillips Curve

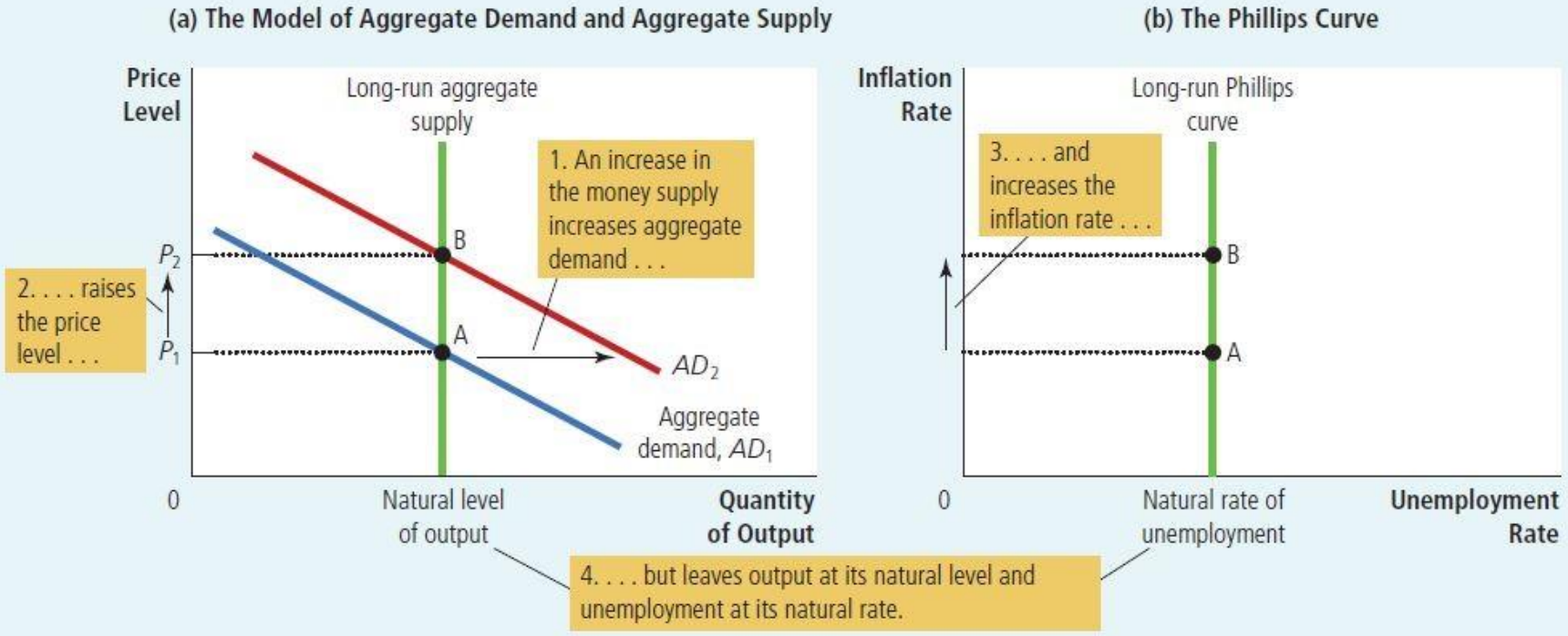


Philipps Curve in Long-Run

Panel (a) shows the model of aggregate demand and aggregate supply with a vertical aggregate-supply curve. When expansionary monetary policy shifts the aggregate-demand curve to the right from AD_1 to AD_2, the equilibrium moves from point A to point B. The price level rises from P_1 to P_2, while output remains the same. Panel (b) shows the long-run Phillips curve, which is vertical at the natural rate of unemployment. In the long run, expansionary monetary policy moves the economy from lower inflation (point A) to higher inflation (point B) without changing the rate of unemployment.

FIGURE 4

How the Long-Run Phillips Curve Is Related to the Model of Aggregate Demand and Aggregate Supply

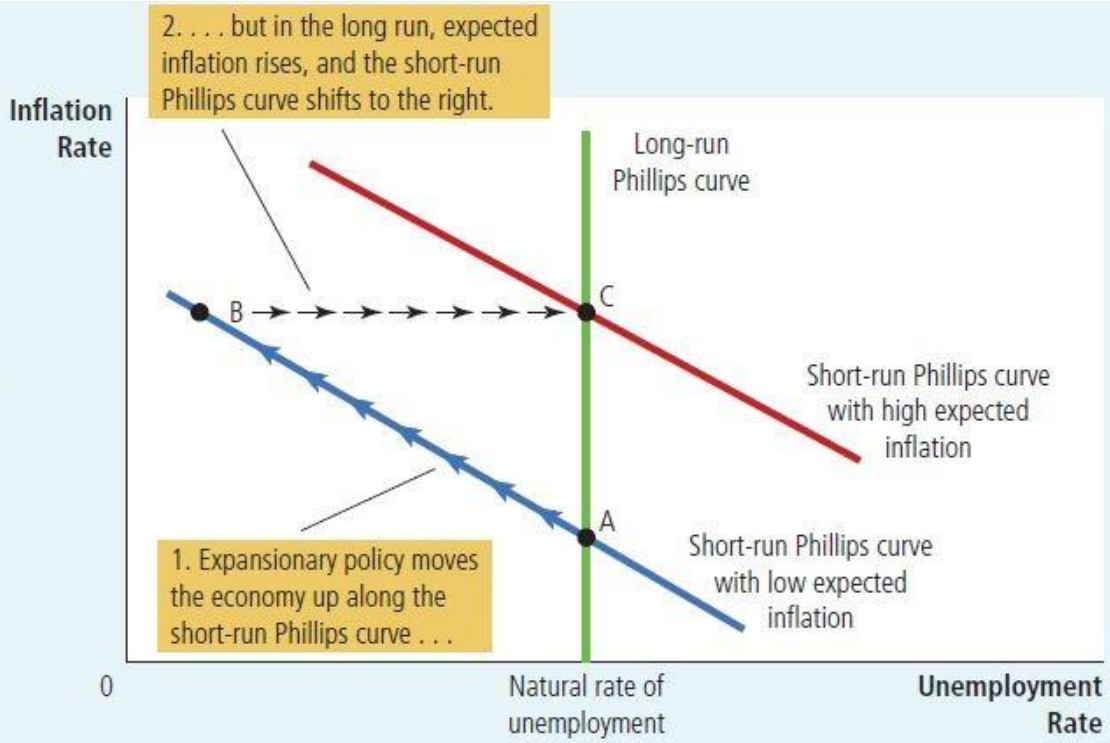


Philipps Curve in Short-Run

FIGURE 5

How Expected Inflation Shifts the Short-Run Phillips Curve

The higher the expected rate of inflation, the higher the curve representing the short-run trade-off between inflation and unemployment. At point A, expected inflation and actual inflation are equal at a low rate and unemployment is at its natural rate. If the Fed pursues an expansionary monetary policy, the economy moves from point A to point B in the short run. At point B, expected inflation is still low, but actual inflation is high. Unemployment is below its natural rate. In the long run, expected inflation rises, and the economy moves to point C. At point C, expected inflation and actual inflation are both high, and unemployment is back to its natural rate.



$$\text{Unemployment rate} = \text{Natural rate of unemployment} - a\left(\text{Actual inflation} - \text{Expected inflation}\right).$$

Philipps Curve in Long-Run

- Increase in money supply does not affect real variables like output and employment- it just alters prices and incomes proportionately

- Specifically, the money supply does not influence factors which determine unemployment rate

- In the long run, if money supply expands, inflation increases but unemployment tends towards its natural rate

- What is the “natural unemployment rate”?
  - A rate towards which the economy gravitates in the long run (depends on various factors but cannot be influenced by monetary policy)

Phillips Curve in the short run

- In SR, expected inflation is given so higher actual inflation reduces unemployment
- In LR, people expect inflation targeted by the central bank so actual inflation equals expected inflation and unemployment is at natural rate
- Based on the equation, there is no stable SR Phillips curve (different iterations based on various expected inflation rates)

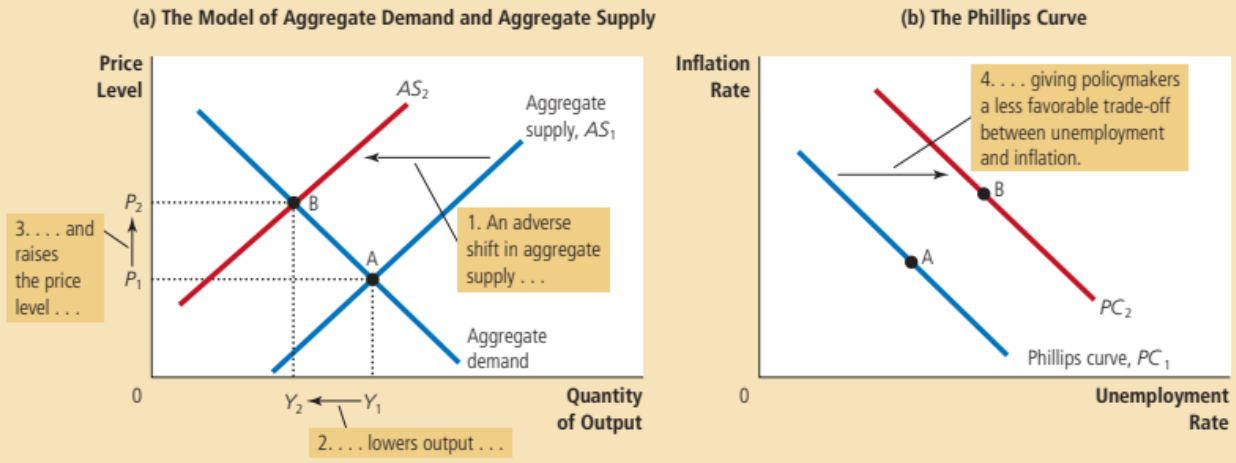
Phillips Curve and supply shocks

- Sudden increase in oil prices shifts AS to the left
- Firms need fewer workers -> unemployment rises but inflation also rises (i.e., Philipps curve shifts to the right)

Figure 8

An Adverse Shock to Aggregate Supply

Panel (a) shows the model of aggregate demand and aggregate supply. When the aggregate-supply curve shifts to the left from AS_1 to AS_2, the equilibrium moves from point A to point B. Output falls from Y_1 to Y_2, and the price level rises from P_1 to P_2. Panel (b) shows the short-run trade-off between inflation and unemployment. The adverse shift in aggregate supply moves the economy from a point with lower unemployment and lower inflation (point A) to a point with higher unemployment and higher inflation (point B). The short-run Phillips curve shifts to the right from PC_1 to PC_2. Policymakers now face a worse trade-off between inflation and unemployment.



Phillips Curve in the short run

- Policymakers faced with choice and trade-off between fighting inflation or unemployment
- Decide whether shift is temporary or permanent
  - Depends on people's expectations of inflation
- The case of 2021 United States- The FED started decreasing the interest rates much later than expected (to stimulate the post-lockdown economy) due to the expected negative impact on the labour market

Summary

- Monetary Policy: Central banks control interest rates and money supply.
- Fiscal Policy: Governments adjust spending and taxation to influence demand.
- Impact: Both policies shape aggregate demand, affecting employment and inflation.
- Phillips Curve: Illustrates the trade-off between unemployment and inflation.
- Balance: Policymakers aim to balance full employment and price stability.