UNIT 5

Long-Run Consequences of Stabilization Policies

The Phillips curve, money growth and inflation, deficits, crowding out, and economic growth

20–30%	8–10	7
EXAM WEIGHTING	CLASS PERIODS	TOPICS IN UNIT

Teacher presentation · Aligned to the College Board Course and Exam Description

What This Unit Covers

TOPICS IN THIS UNIT

- 5.1 Fiscal & Monetary Policy Actions in the Short Run
- 5.2 The Phillips Curve
- 5.3 Money Growth and Inflation
- 5.4 Government Deficits and the National Debt
- 5.5 Crowding Out
- 5.6 Economic Growth
- 5.7 Public Policy and Economic Growth

BIG IDEAS

- MEA — Economic Measurements: How does an economy grow?
- MOD — Models: What is the relationship between inflation and unemployment?
- POL — Policies: How do monetary and fiscal policies affect the economy in the long run?

WHY IT MATTERS

Public policy can affect output, the price level, and employment in the short run — but this unit examines the LONG-RUN implications: the inflation–unemployment relationship, the link between money growth and inflation, the consequences of debt, and the determinants of economic growth.

20–30% of the AP Exam multiple-choice and free-response score

TOPIC 5.1

Fiscal and Monetary Policy Actions in the Short Run

Enduring Understanding POL-1 — Fiscal and monetary policy have short-run effects on macroeconomic outcomes.

LEARNING OBJECTIVES: POL-1.F — Explain the effects of combined fiscal and monetary policy actions.

Combining Fiscal and Monetary Policy

A combination of fiscal and monetary policies can be used together to restore full employment.

The Two Toolkits Together

FISCAL policy (government spending and taxes) and MONETARY policy (the central bank's interest-rate tools) can be used in combination — both expansionary, both contractionary, or in opposing directions.

What the Combination Affects

Together, fiscal and monetary policy can influence aggregate demand, real output, the price level, AND interest rates. The interest-rate effect is where the two tools interact most.

Why the Mix Matters

The policies can reinforce each other or offset each other. For example, expansionary fiscal policy tends to raise interest rates, while expansionary monetary policy lowers them — the net effect on rates depends on the mix.

Policy Mixes for the Two Output Gaps

Match the combined policy direction to the gap — then trace the effect on output, prices, and interest rates.

RECESSIONARY GAP

- **Use EXPANSIONARY fiscal + monetary policy.**
- Fiscal: increase government spending and/or cut taxes.
- Monetary: increase the money supply / lower the policy rate.
- Both shift AD right → output rises toward Yf, unemployment falls.
- Monetary easing offsets the upward pressure fiscal expansion puts on interest rates.

INFLATIONARY GAP

- **Use CONTRACTIONARY fiscal + monetary policy.**
- Fiscal: decrease government spending and/or raise taxes.
- Monetary: decrease the money supply / raise the policy rate.
- Both shift AD left → output falls toward Yf, price-level pressure eases.
- The combined effect on the economy is stronger than either policy alone.

TOPIC 5.2

The Phillips Curve

Enduring Understanding MOD-3 — The Phillips curve represents the relationship between inflation and unemployment.

LEARNING OBJECTIVES: MOD-3.A — Define the short-run and long-run Phillips curves. MOD-3.B — Explain short-run and long-run responses.

The Short-Run and Long-Run Phillips Curves

The Phillips curve plots the relationship between the inflation rate and the unemployment rate.

- The SHORT-RUN Phillips curve (SRPC) slopes DOWNWARD — it shows the short-run trade-off between inflation and unemployment.
- The economy is always operating somewhere ALONG the SRPC.
- The LONG-RUN Phillips curve (LRPC) is VERTICAL at the natural rate of unemployment.
- Long-run equilibrium is where the SRPC and LRPC intersect — there is no long-run trade-off.

KEY TAKEAWAY

SRPC slopes down (short-run trade-off); LRPC is vertical at the natural rate. The vertical LRPC mirrors the vertical LRAS — no long-run trade-off.

Reading the Phillips Curve Model

Long-Run Equilibrium

Where the SRPC crosses the LRPC. Unemployment equals the natural rate; the economy is at full-employment output. This corresponds to long-run equilibrium in the AD–AS model.

Points LEFT of Long-Run Equilibrium

Unemployment is below the natural rate and inflation is high — this represents an INFLATIONARY gap. The economy is overheating.

Points RIGHT of Long-Run Equilibrium

Unemployment is above the natural rate and inflation is low — this represents a RECESSIONARY gap. Cyclical unemployment is positive.

Demand Shocks vs. Supply Shocks on the Phillips Curve

Whether an event moves the economy ALONG the SRPC or SHIFTS it depends on the type of shock.

- DEMAND shocks → MOVEMENT ALONG the SRPC. A rise in AD moves the economy up the curve: lower unemployment, higher inflation.
- SUPPLY shocks → SHIFTS of the SRPC. A negative supply shock shifts the SRPC outward — higher inflation AND higher unemployment at once.
- Factors that change the NATURAL RATE of unemployment shift the LRPC.
- A negative supply shock shifting the SRPC out is the Phillips-curve picture of stagflation.

KEY TAKEAWAY

Demand shock = move ALONG the SRPC. Supply shock = SHIFT the SRPC. A change in the natural rate = shift the LRPC.

Connecting AD–AS and the Phillips Curve

The Phillips curve is not a new theory — it is the AD–AS model translated into inflation–unemployment space.

1 AD shift ↔ Movement along SRPC

An increase in AD raises output and the price level and lowers unemployment — that is a move UP the SRPC. A decrease in AD is a move DOWN the SRPC.

2 SRAS shift ↔ Shift of SRPC

A negative SRAS shock (higher costs) raises the price level and lowers output — that SHIFTS the SRPC outward. A positive SRAS shock shifts it inward.

3 LRAS shift ↔ Shift of LRPC

A change in full-employment output (a shift of LRAS) means a change in the natural rate of unemployment — which SHIFTS the vertical LRPC.

TOPIC 5.3

Money Growth and Inflation

Enduring Understanding POL-3 — There are long-run implications of monetary and fiscal policy.

LEARNING OBJECTIVES: POL-3.A — Explain why inflation is a monetary phenomenon; define and apply the quantity theory of money.

Inflation Is a Monetary Phenomenon

The Long-Run Cause of Inflation

Sustained inflation results from increasing the money supply too rapidly, for a sustained period. Likewise, sustained deflation comes from shrinking the money supply too rapidly.

The Neutrality of Money

When the economy is at full employment, a change in the money supply has NO effect on real output in the long run — it only changes the price level. Money is 'neutral' in the long run.

Money Growth Sets the Inflation Rate

In the long run, the growth rate of the money supply determines the growth rate of the price level — the inflation rate — according to the quantity theory of money.

The Quantity Theory of Money

The quantity theory is captured by the equation of exchange — a relationship students must be able to apply.

THE EQUATION OF EXCHANGE

$$M \times V = P \times Y$$

M = money supply, V = velocity of money, P = price level, Y = real output. The left side is total spending; the right side is the nominal value of output.

SOLVING FOR ANY VARIABLE

$$M = PY / V \quad \cdot \quad P = MV / Y \quad \cdot \quad V = PY / M$$

Given any three quantities, solve for the fourth. In the long run, with V stable and Y at full employment, a rise in M raises P proportionally.

TOPIC 5.4

Government Deficits and the National Debt

The difference between a one-year shortfall and the accumulated total — and why it matters.

LEARNING OBJECTIVES: POL-3.B — Define the budget surplus/deficit and national debt; explain the burden of the debt.

Deficits, Surpluses, and the National Debt

Budget Deficit or Surplus

The government budget balance for a single year = tax revenues minus (government purchases + transfer payments). A DEFICIT means spending exceeds revenue; a SURPLUS means revenue exceeds spending.

The National Debt

The accumulation of all past borrowing. A government ADDS to the national debt every year it runs a deficit. The deficit is a yearly FLOW; the debt is the total STOCK.

The Cost of Carrying Debt

A government must pay INTEREST on its accumulated debt. That interest adds to the debt and increasingly diverts funds away from other possible uses.

The U.S. National Debt, 2000–2025

Real data shows how the accumulation of annual deficits builds the national debt over time.

- Each year's deficit adds to the total — the debt has risen steadily for decades.
- The debt jumped sharply after the 2008–09 financial crisis and again during the 2020 COVID recession.
- Recessions widen deficits: tax revenues fall while spending on stabilizers and stimulus rises.
- A growing debt means a growing interest bill — a long-run claim on future budgets.

KEY TAKEAWAY

The national debt is the sum of all past deficits. It rises fastest during recessions, when revenues fall and spending climbs.

The Burden of the National Debt — A Balanced View

Whether the national debt is a serious 'burden' is genuinely debated. Students should understand both sides.

Concerns About the Debt

Rising interest payments divert funds from other uses; government borrowing can crowd out private investment; debt held by foreigners means future interest flows abroad; large debt may constrain future policy.

Counterpoints

Much debt is owed to a country's own citizens; borrowing can finance productive investment (infrastructure, education) that raises future output; deficits are appropriate during recessions to support the economy.

What Economists Watch

The debt relative to GDP — an economy's ability to service debt depends on the size of its economy — and whether borrowing funds consumption or productive investment.

TOPIC 5.5

Crowding Out

How government borrowing can reduce private investment — and slow long-run growth.

LEARNING OBJECTIVES: POL-3.C — Define crowding out; explain how fiscal policy may cause it.

Crowding Out in the Loanable Funds Market

When the government borrows to finance a deficit, it competes with private borrowers for loanable funds.

- A government running a deficit typically BORROWS to finance its spending.
- Government borrowing increases the demand for loanable funds → demand shifts RIGHT.
- The equilibrium REAL interest rate rises.
- A higher real interest rate reduces interest-sensitive private investment — that reduction is CROWDING OUT.

KEY TAKEAWAY

Government borrowing → higher demand for loanable funds → higher real interest rate → less private investment. That is crowding out.

Crowding Out: Short-Run and Long-Run Effects

The Definition

Crowding out is the adverse effect of increased government borrowing: it raises the real interest rate, which reduces interest-sensitive private-sector spending — especially investment — in the short run.

The Long-Run Cost

Less private investment today means a lower rate of physical capital accumulation. With less capital being built, the economy's long-run economic growth is slower.

Why It Connects the Unit

Crowding out is the bridge between deficits (5.4) and growth (5.6): it shows precisely how today's fiscal choices can reduce tomorrow's productive capacity.

TOPIC 5.6

Economic Growth

Enduring Understanding MEA-2 — The economy fluctuates in the short run, but can grow in the long run.

LEARNING OBJECTIVES: MEA-2.B — Define and explain the measures and determinants of growth; calculate per capita GDP and growth.

Measuring Economic Growth

The Standard Measure

Economic growth is measured as the growth rate in REAL GDP PER CAPITA over time. Using real GDP removes inflation; using per-capita figures accounts for population.

Why Per Capita Matters

Total real GDP can rise simply because the population grew. Real GDP PER CAPITA tracks output per person — a far better proxy for average living standards.

Labor Productivity

Output per employed worker is a measure of average labor productivity. Rising productivity is the engine of sustained growth in per-capita income.

The Aggregate Production Function

The aggregate production function links the quantity of labor employed to the real output the economy produces.

- Aggregate employment and aggregate output are directly related — more workers produce more output, holding other factors constant.
- The function typically curves: each additional worker adds output, but at a diminishing rate.
- Improvements in technology or in capital per worker SHIFT the whole function UPWARD.
- After such a shift, the same amount of labor produces more output — that is a productivity gain.

KEY TAKEAWAY

More employment moves you ALONG the production function; better technology or more capital SHIFTS it up. Productivity gains are upward shifts.

The Determinants of Growth — and the Link to LRAS

What Drives Productivity

Productivity is determined by the level of TECHNOLOGY and by PHYSICAL and HUMAN capital per worker. Output per person rises when each worker has more and better tools and more education and skills.

Physical vs. Human Capital

PHYSICAL capital = machines, equipment, infrastructure. HUMAN capital = the knowledge, skills, and health of workers. The production function shows output per capita rising with both.

Growth = Outward PPC = Rightward LRAS

An outward shift of the production possibilities curve is analogous to a RIGHTWARD shift of the long-run aggregate supply curve. Both represent an increase in the economy's maximum sustainable capacity.

Calculating Per Capita GDP and Growth

REAL GDP PER CAPITA

Real GDP per capita = Real GDP / Population

Output per person — the standard proxy for average material living standards.

ECONOMIC GROWTH RATE

Growth rate = (% change in real GDP per capita)

= (new − old) / old × 100. Example: real GDP per capita rising from $50,000 to $51,500 is 3% growth.

TOPIC 5.7

Public Policy and Economic Growth

Enduring Understanding POL-4 — Authorities and organizations institute policies that affect economic growth.

LEARNING OBJECTIVES: POL-4.A — Explain public policies aimed at long-run growth; define supply-side fiscal policies.

Public Policies That Promote Growth

Because productivity and the labor force drive growth, policies that strengthen them raise real GDP per capita over time.

Productivity & Labor Force Policies

Policies that improve productivity or raise labor force participation increase real GDP per capita and economic growth — for example, education and training, or measures that draw more people into the workforce.

Investing in Infrastructure & Technology

Government investment in infrastructure (roads, ports, communications) and in research and technology raises the economy's productive capacity and growth.

Human and Physical Capital

Policies that build human capital (education, health) and encourage physical capital accumulation (investment incentives) shift the production function up and LRAS right.

Supply-Side Fiscal Policy

Supply-side fiscal policies aim to influence aggregate supply and potential output — not just aggregate demand.

What Supply-Side Policy Is

Supply-side fiscal policies use the government's fiscal tools to influence the INCENTIVES that affect household and business economic behavior — such as the incentive to work, save, and invest.

What It Affects

Supply-side policies can affect aggregate demand, aggregate supply, AND potential output — in both the short run and the long run.

Examples and the Aim

Cuts in taxes on investment or labor income, or reduced regulatory costs, are intended to encourage more work, saving, and investment — shifting SRAS and LRAS rightward and expanding potential output.

Common Pitfalls & Exam Tips

Phillips: move vs. shift

Demand shocks move the economy ALONG the SRPC. Supply shocks SHIFT the SRPC. A change in the natural rate shifts the LRPC.

Connect Phillips to AD-AS

Left of the LRPC = inflationary gap; right of the LRPC = recessionary gap. The LRPC is vertical, like LRAS.

Deficit ≠ debt

The deficit is one year's shortfall (a flow). The debt is the accumulated total of all past deficits (a stock).

Crowding out uses loanable funds

Government borrowing shifts loanable funds DEMAND right, raises the REAL interest rate, and reduces private investment.

Growth = real GDP per capita

Measure growth with REAL GDP PER CAPITA. Growth shows as an outward PPC and a rightward LRAS shift.

Explain every link

Don't skip steps. Monetary policy → interest rates → spending → AD. The College Board penalizes leaps in reasoning.

Unit 5 — Key Takeaways

1. Fiscal and monetary policy can be combined to restore full employment and to manage interest-rate side effects.

2. The SRPC shows a short-run inflation–unemployment trade-off; the LRPC is vertical at the natural rate — no long-run trade-off.

3. In the long run, sustained money growth causes inflation; money is neutral ($M \times V = P \times Y$).

4. A deficit is one year's shortfall; the national debt accumulates all past deficits, carrying an interest burden.

5. Government borrowing raises the real interest rate and crowds out private investment, slowing long-run growth.

6. Economic growth — measured by real GDP per capita — comes from productivity gains and policies that build capital.