Fiscal Policy

Unit 14: Unemployment and Fiscal Policy

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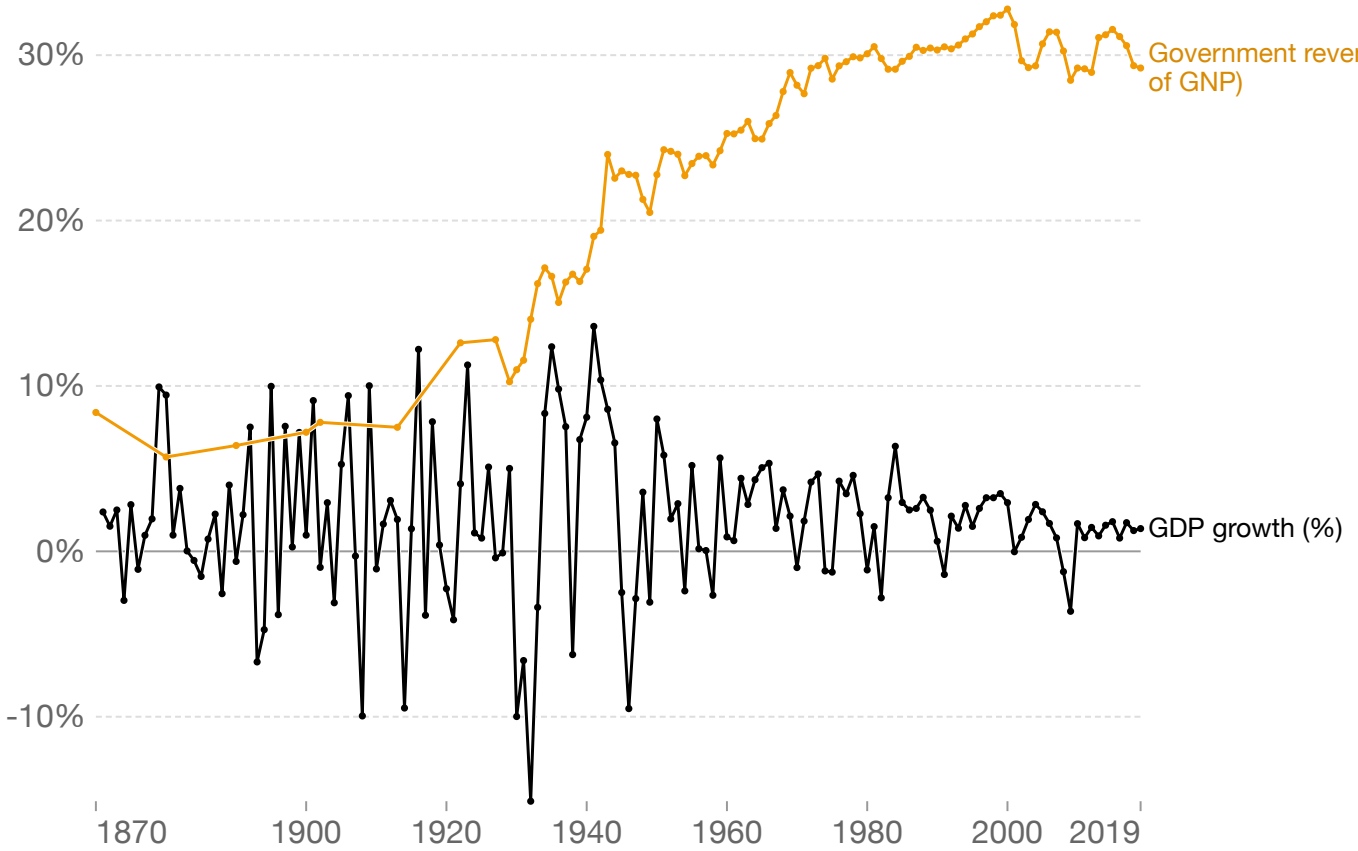
Fluctuations in output and the size of government, United States, 1870 to 2019

Unit 14 'Unemployment and fiscal policy' in The CORE Team, The Economy. Available at: https://tinyco.re/34772811 [Figure 14.1]



Source: Wallis(2000), BEA(2020), FRED(2020), Maddison Project(2018)
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Aggregate demand (GDP) can fluctuate due to consumption and investment decisions.

Sometimes the aggregate decisions of households and firms can destabilize the economy.

- How can the government stabilize the economy?
- Why might government policies be ineffective?
- How can we model the link between output and unemployment?

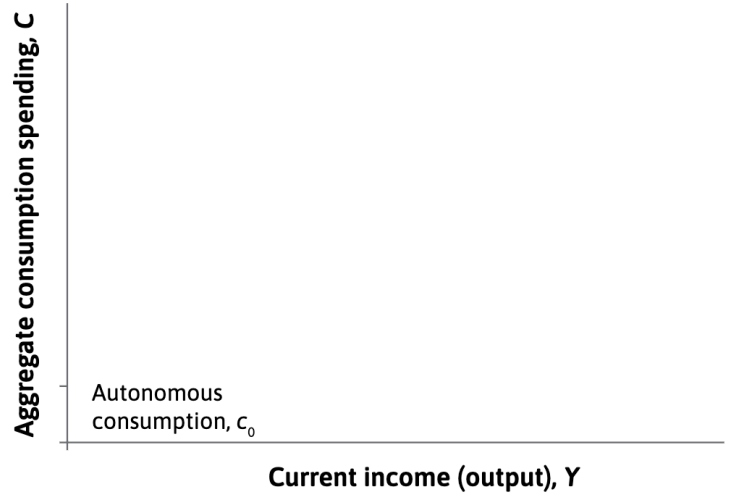
Use a model of aggregate demand to explain how government spending can stabilize the economy

The Multiplier model

Simple model that excludes the government and foreign trade. Then we only have consumption and investment.

$$C = c_0 + c_1 Y$$

- $c_0 \rightarrow$ **autonomous consumption**: how much people will spend, independent of their income.
- $c_1 \rightarrow$ **marginal propensity to consume (MPC)**: the effect of one additional unit of income on consumption.
- $0 > c_1 > 1$: only part of an increase in income is consumed; the rest is saved.



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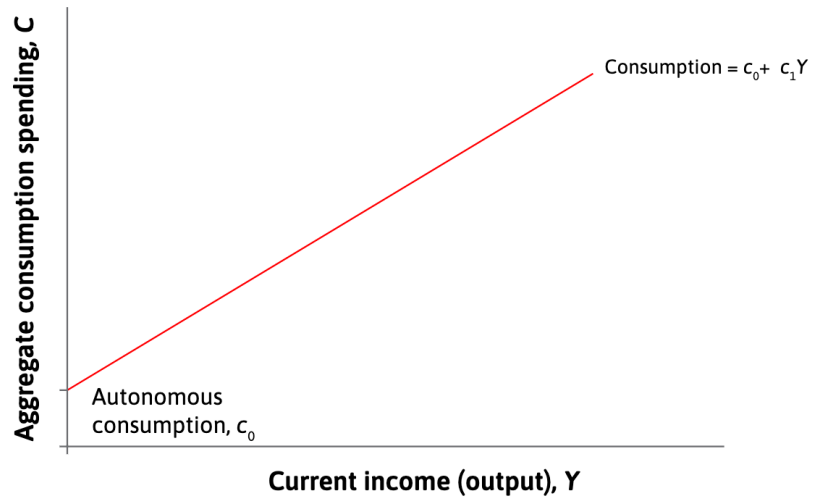

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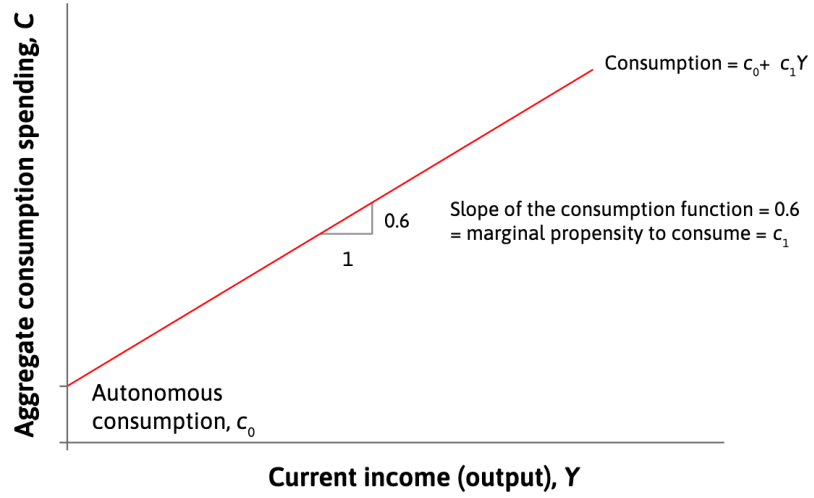
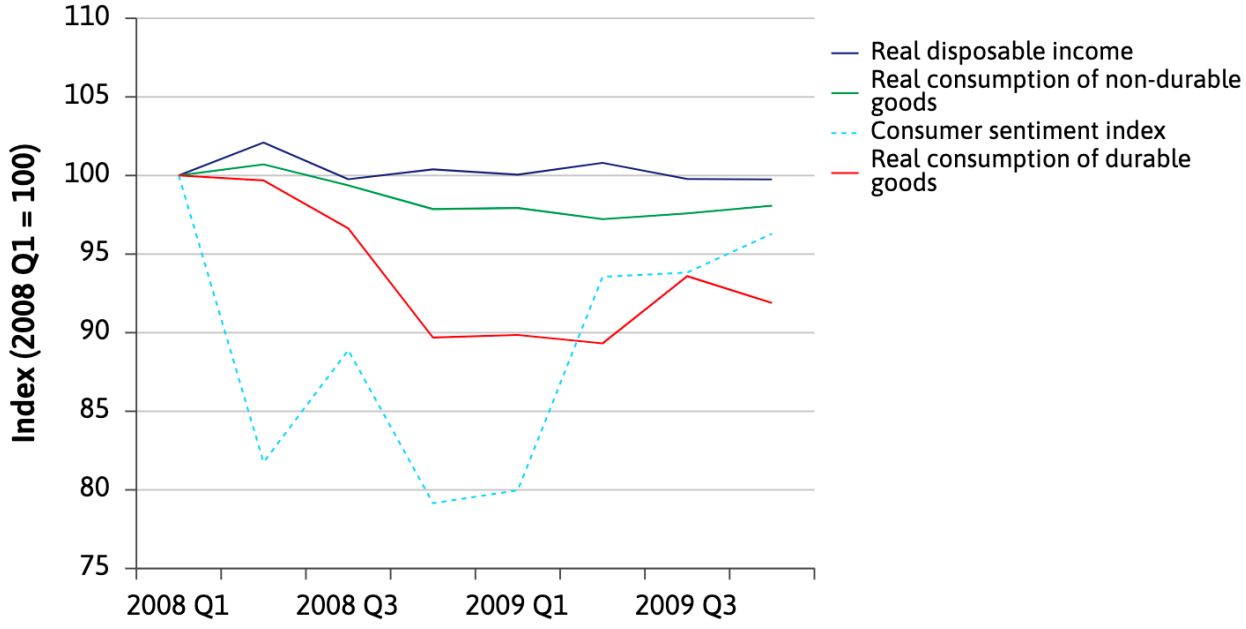


Consumption function

Marginal propensity to consume varies across people:

- poor households with credit constraints react a lot to variation in current income, so their MPC is large
- for wealthy households, current income matters little for current consumption, so their MPC is small

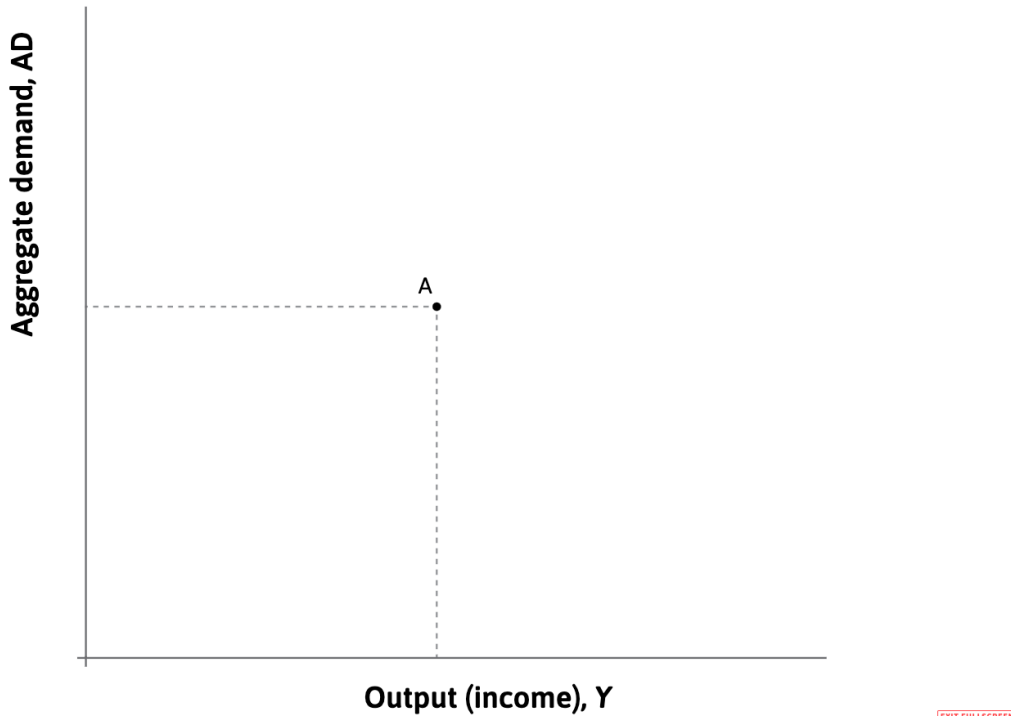
Expectations about future income are reflected in autonomous consumption.



Goods market equilibrium

$$output = aggregate\ demand\ for\ goods\ produced\ in\ the\ home\ economy$$

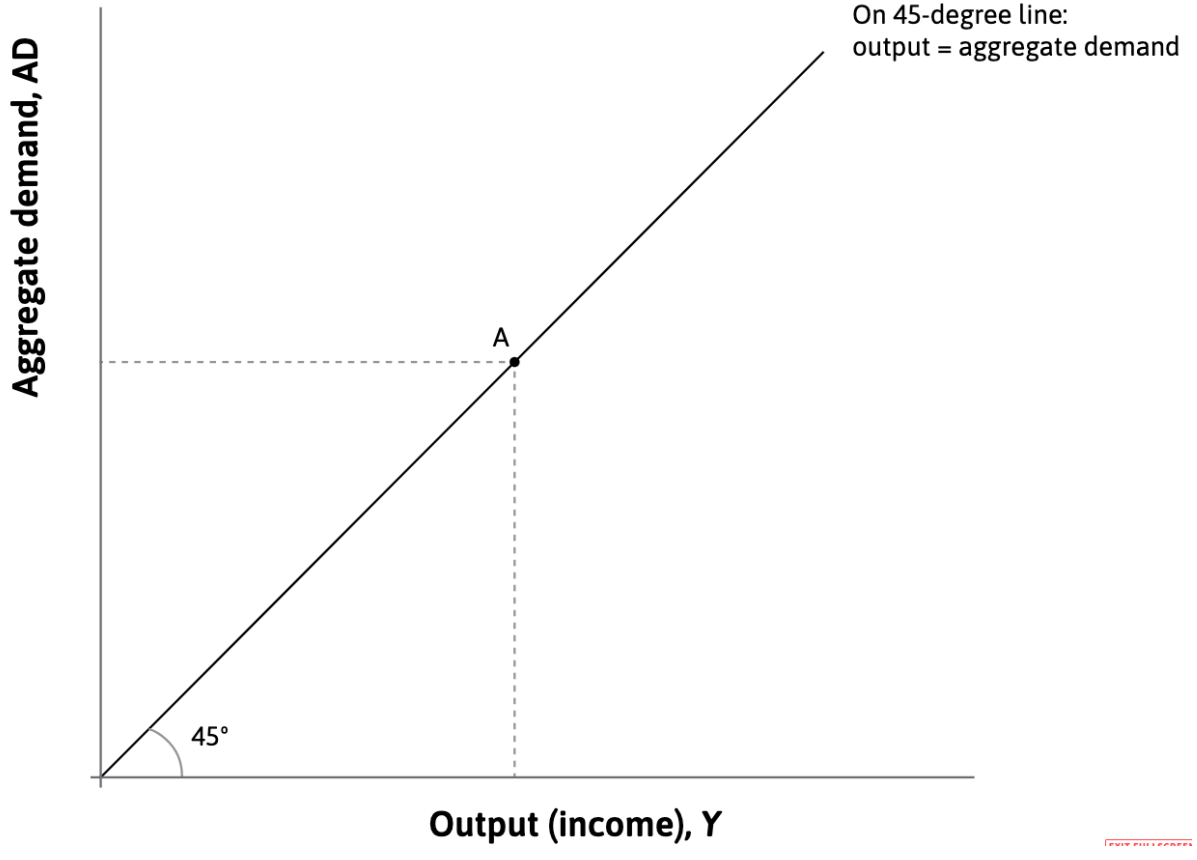
$$Y = AD$$



Goods market equilibrium: the economy will continue producing at that output level unless something changes spending behaviour.

Goods market equilibrium

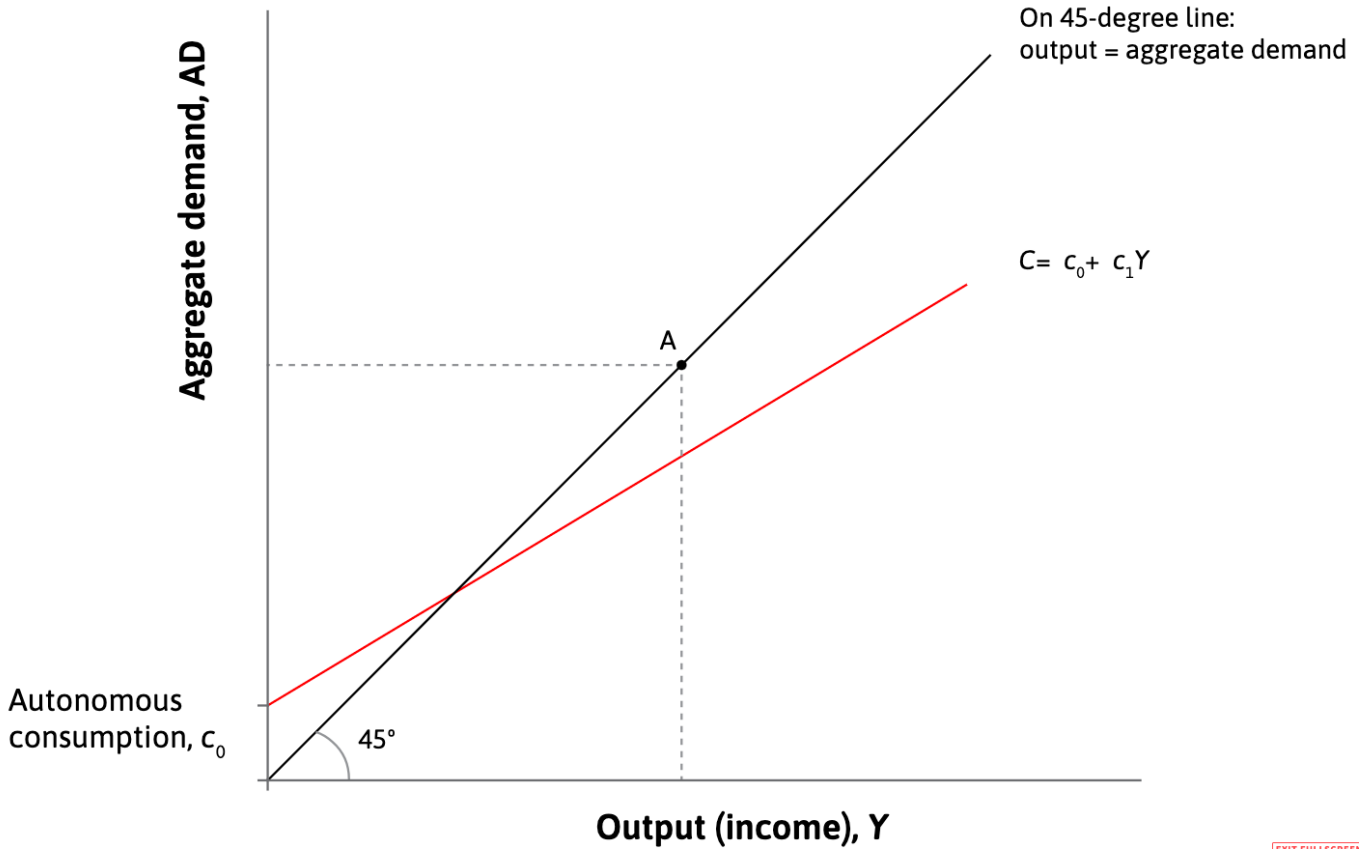
$$Y = AD$$



The 45-degree line from the origin of the diagram shows all the combinations in which output is equal to aggregate demand, meaning the economy is in goods market equilibrium.

Goods market equilibrium

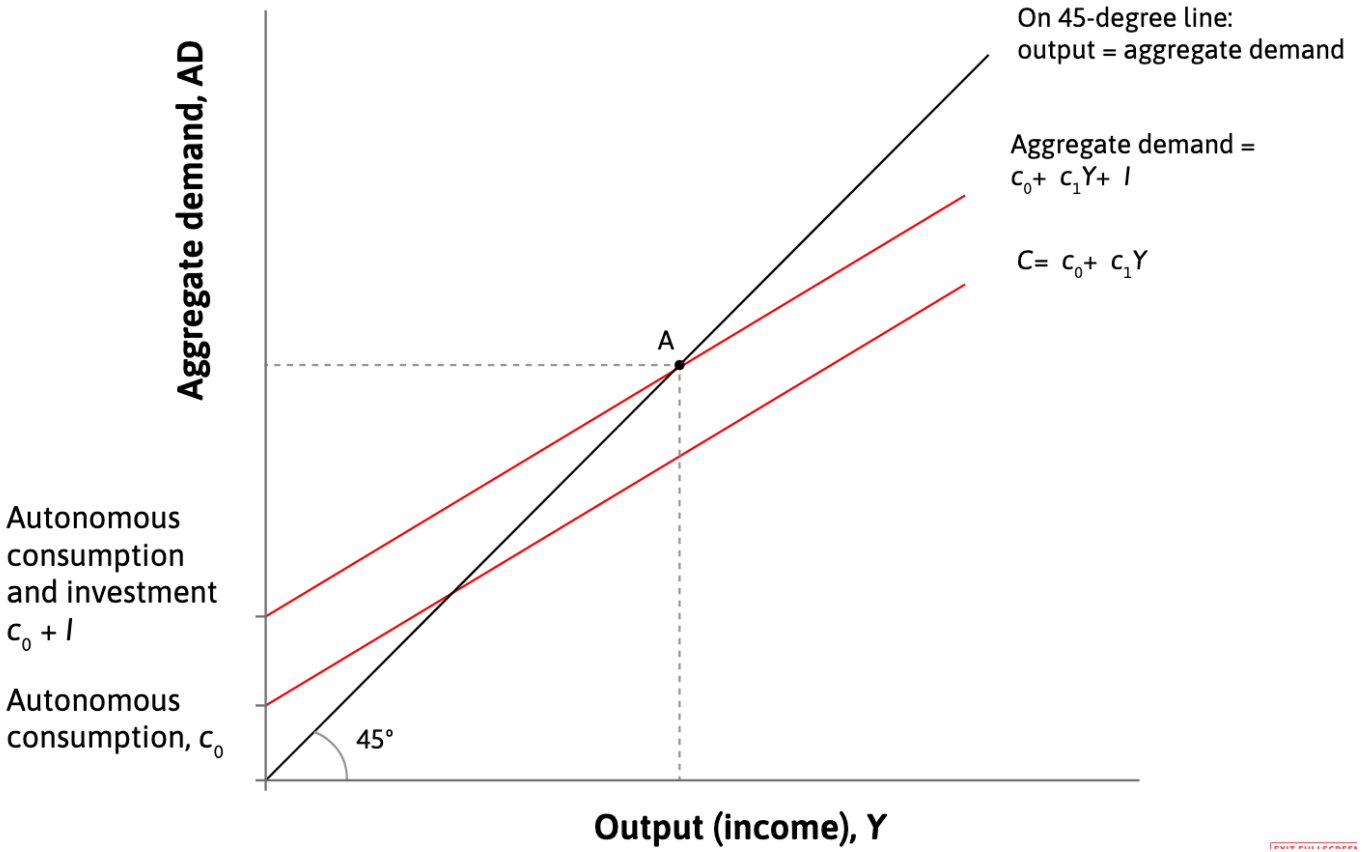
$$Y = AD = c_0 + c_1 Y$$



The first component of aggregate demand is consumption, which is represented by the consumption line.

Goods market equilibrium

$$Y = AD = c_0 + c_1 Y + I$$



Adding investment to the consumption line simply leads to a parallel upward shift of the aggregate demand line.

The multiplier process

Changes in output can be greater than the initial change in aggregate demand.

This is because of the circular flow of expenditure, income, and output.

$$Y = AD = C + I = c_0 + c_1 Y + I$$

$$\Rightarrow Y - c_1 Y = c_0 + I \iff Y \cdot (1 - c_1) = c_0 + I$$

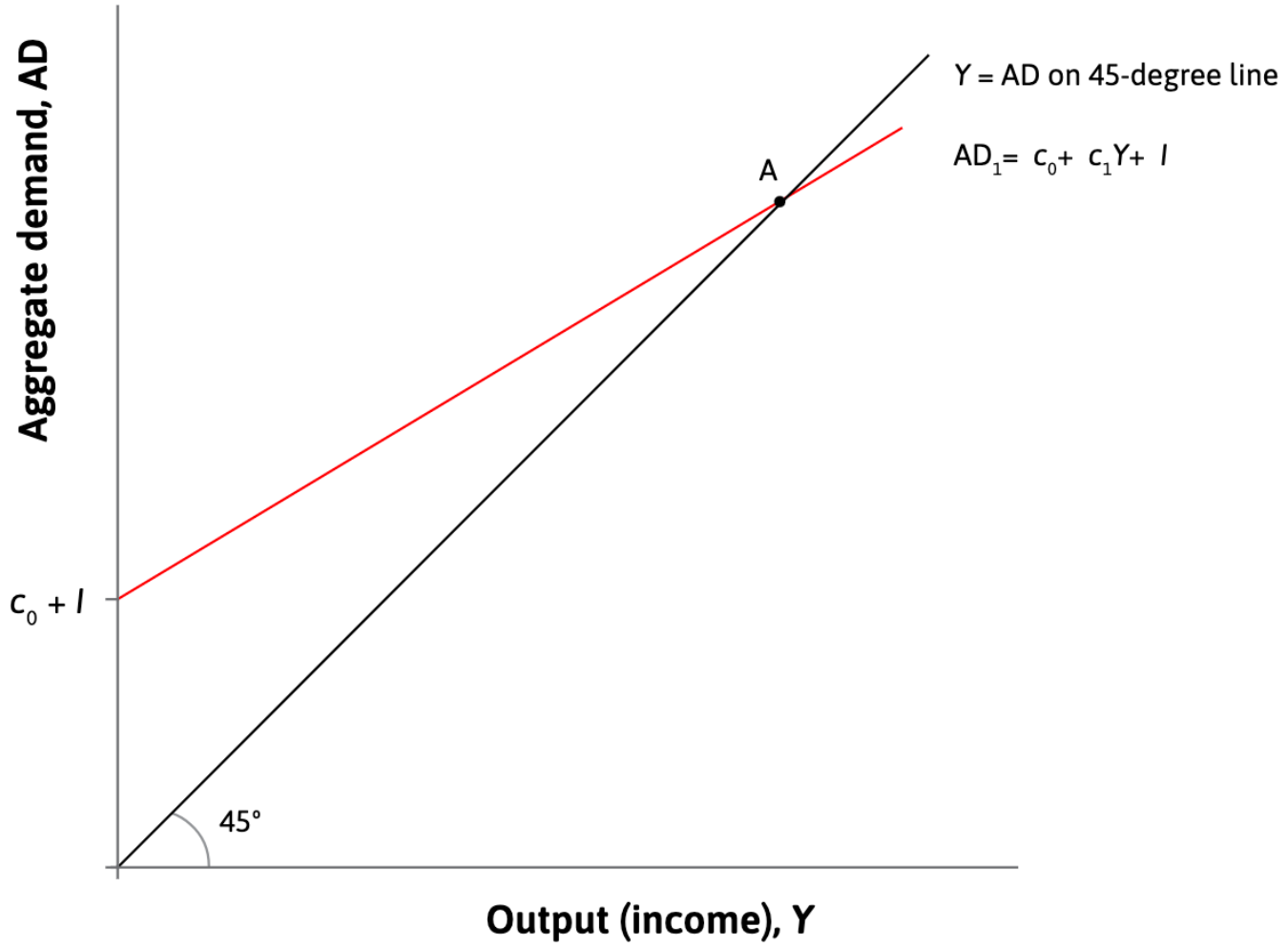
$$\iff Y = \frac{1}{(1 - c_1)} \cdot (c_0 + I)$$

The multiplier represents the relative magnitude of this change.

- multiplier = 1: the increase in GDP = the initial increase in spending
- multiplier > (<) 1: the total increase in GDP > (<) the initial increase in spending

Decrease on investment $\rightarrow$ lower spending $\rightarrow$ lower production and lower incomes $\rightarrow$ firms will fire workers $\rightarrow$ further decline in spending

The multiplier process



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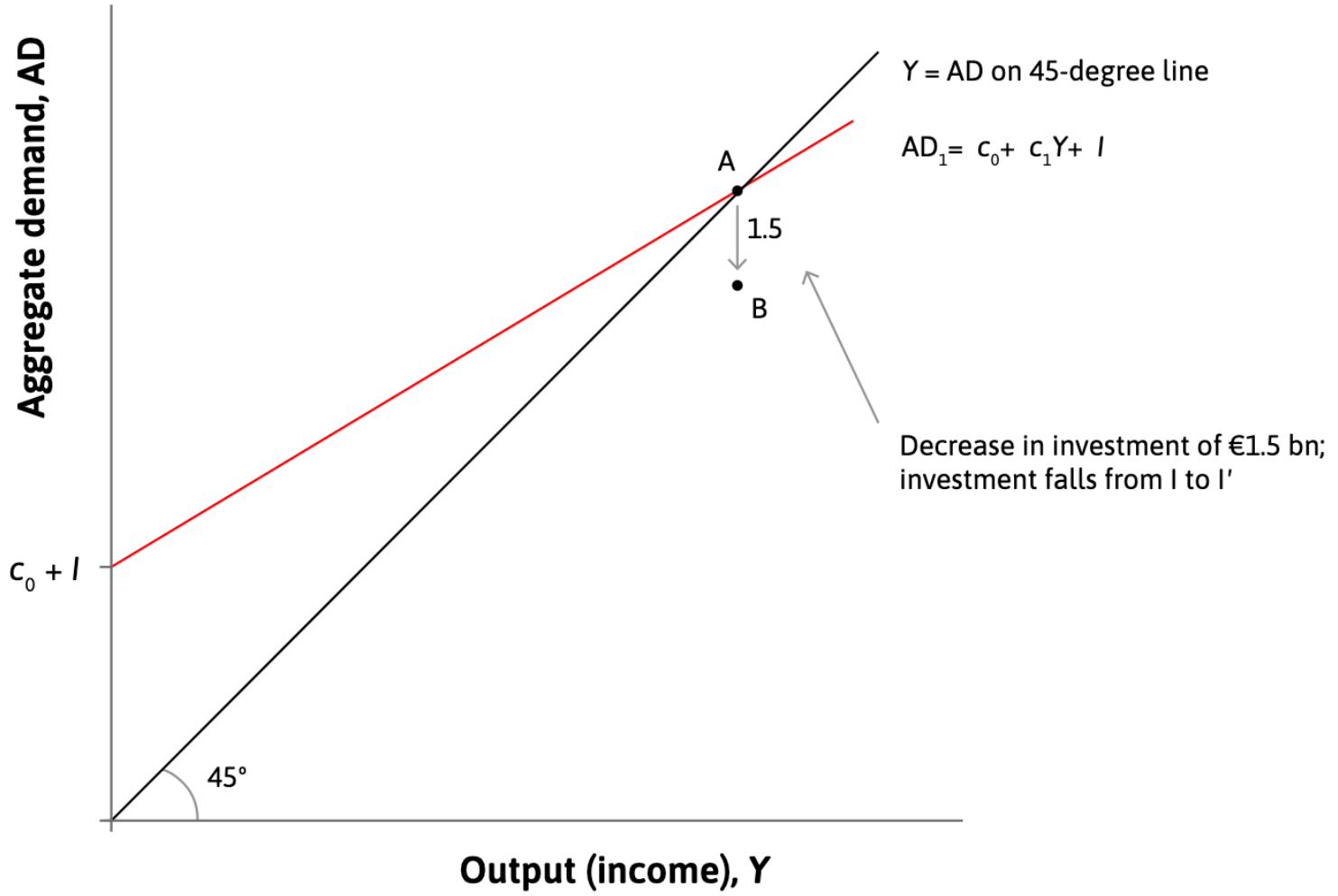

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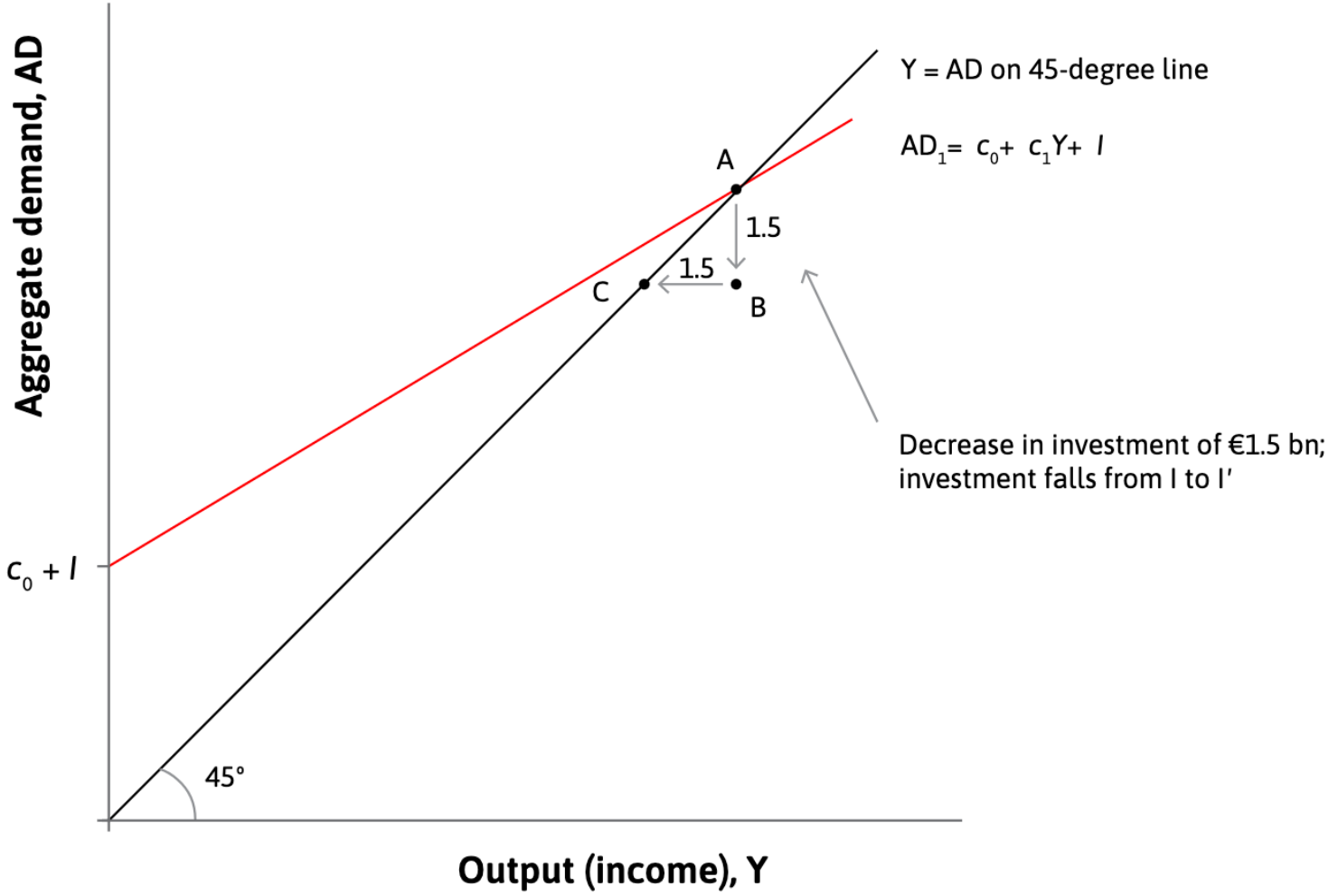

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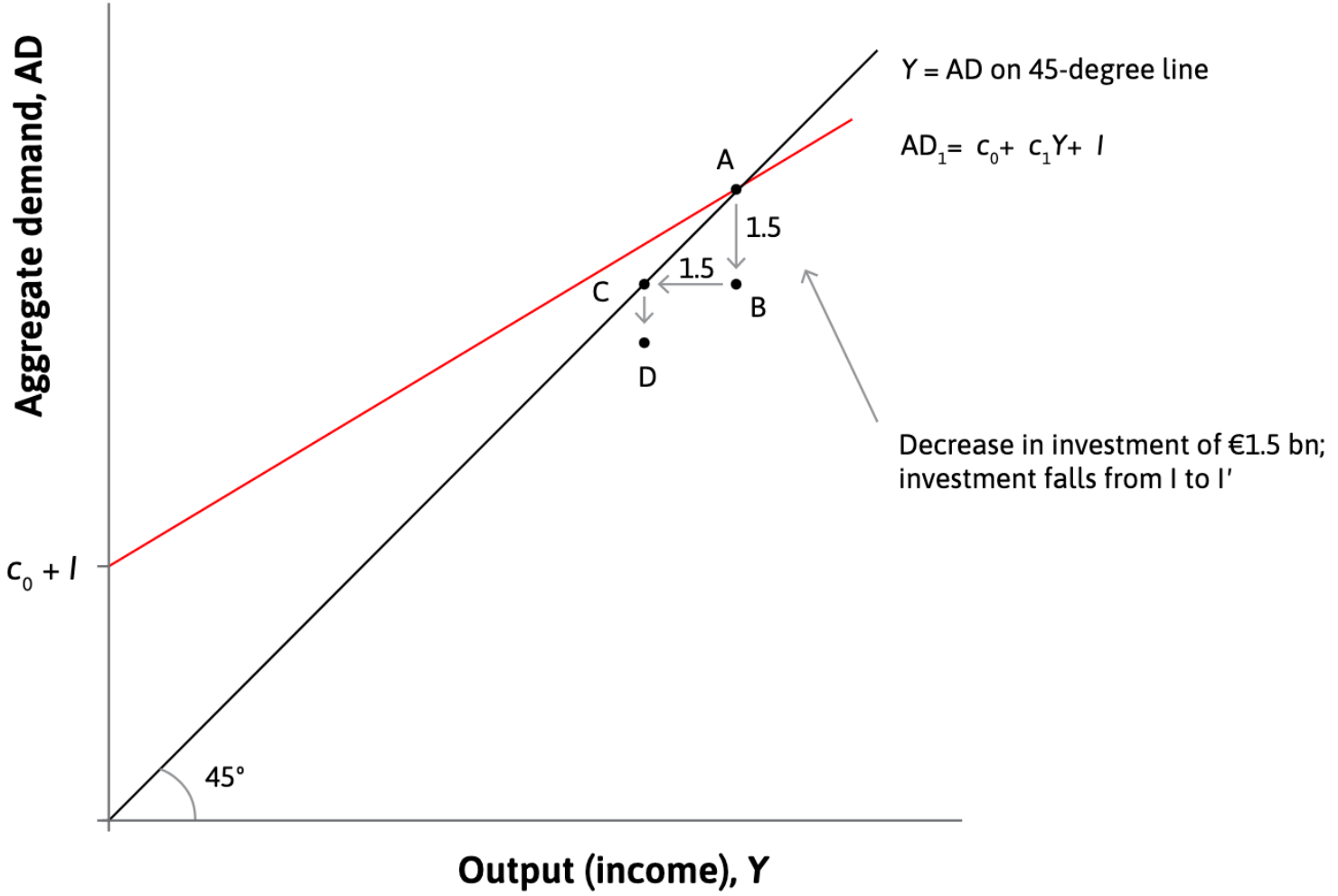

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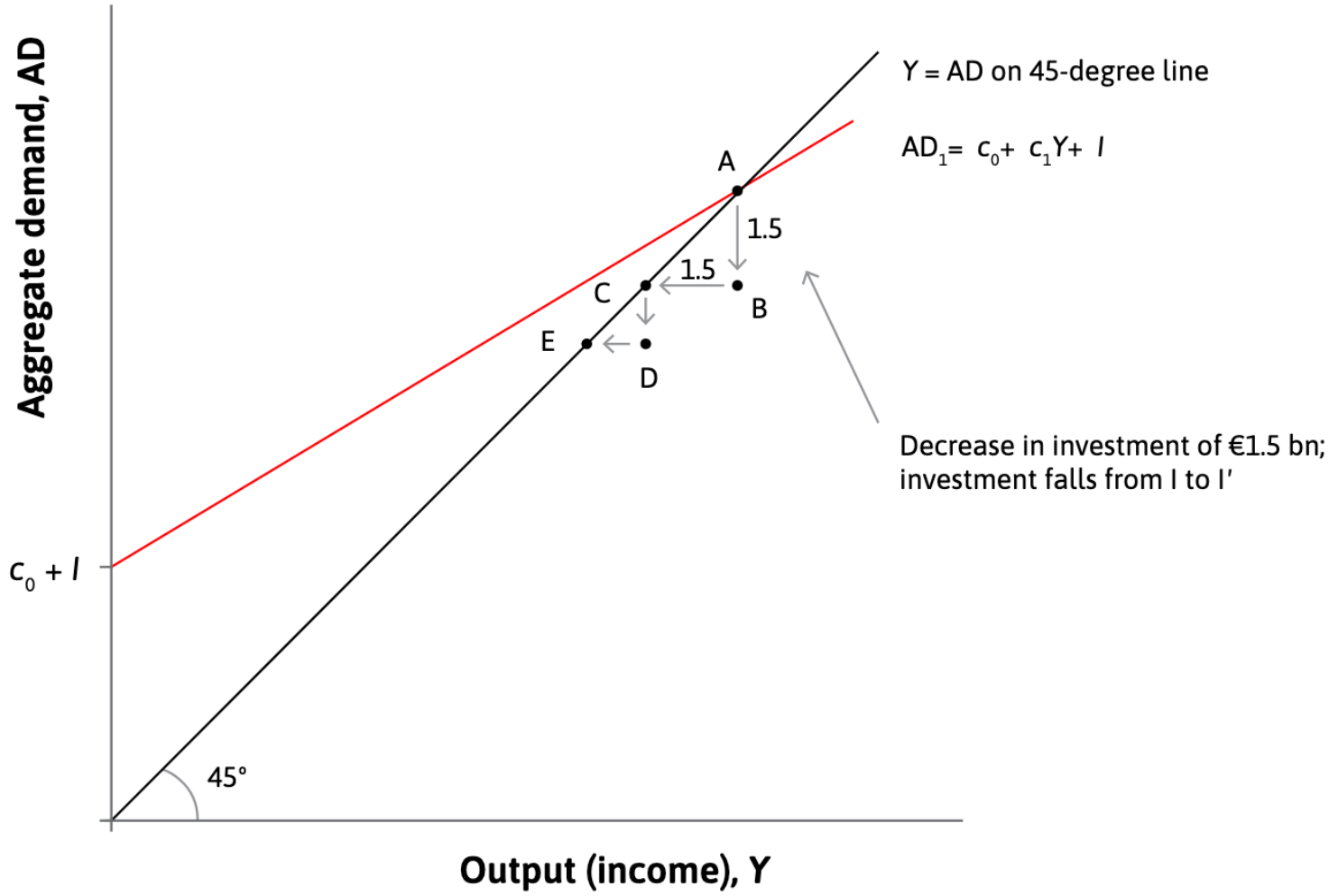

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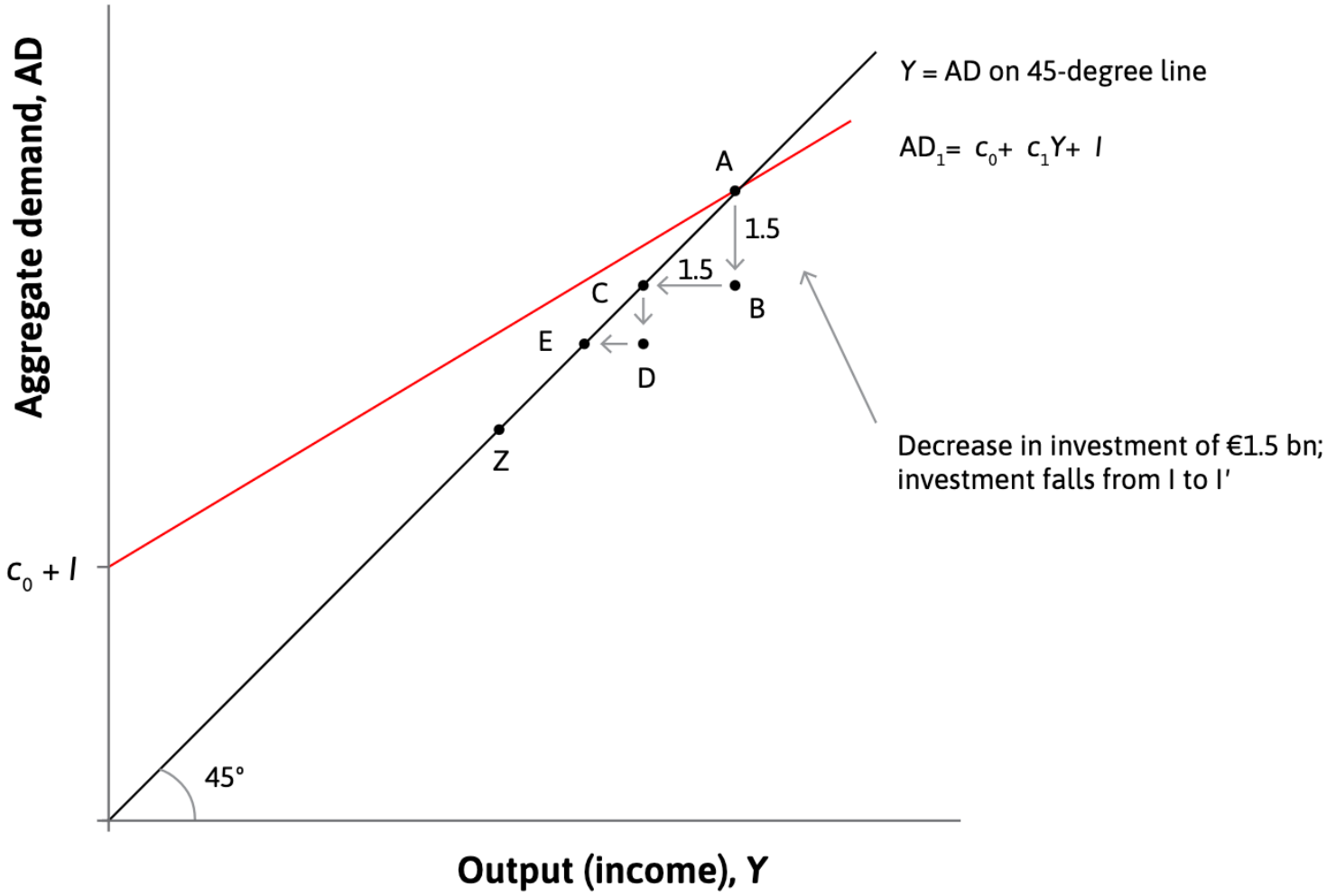

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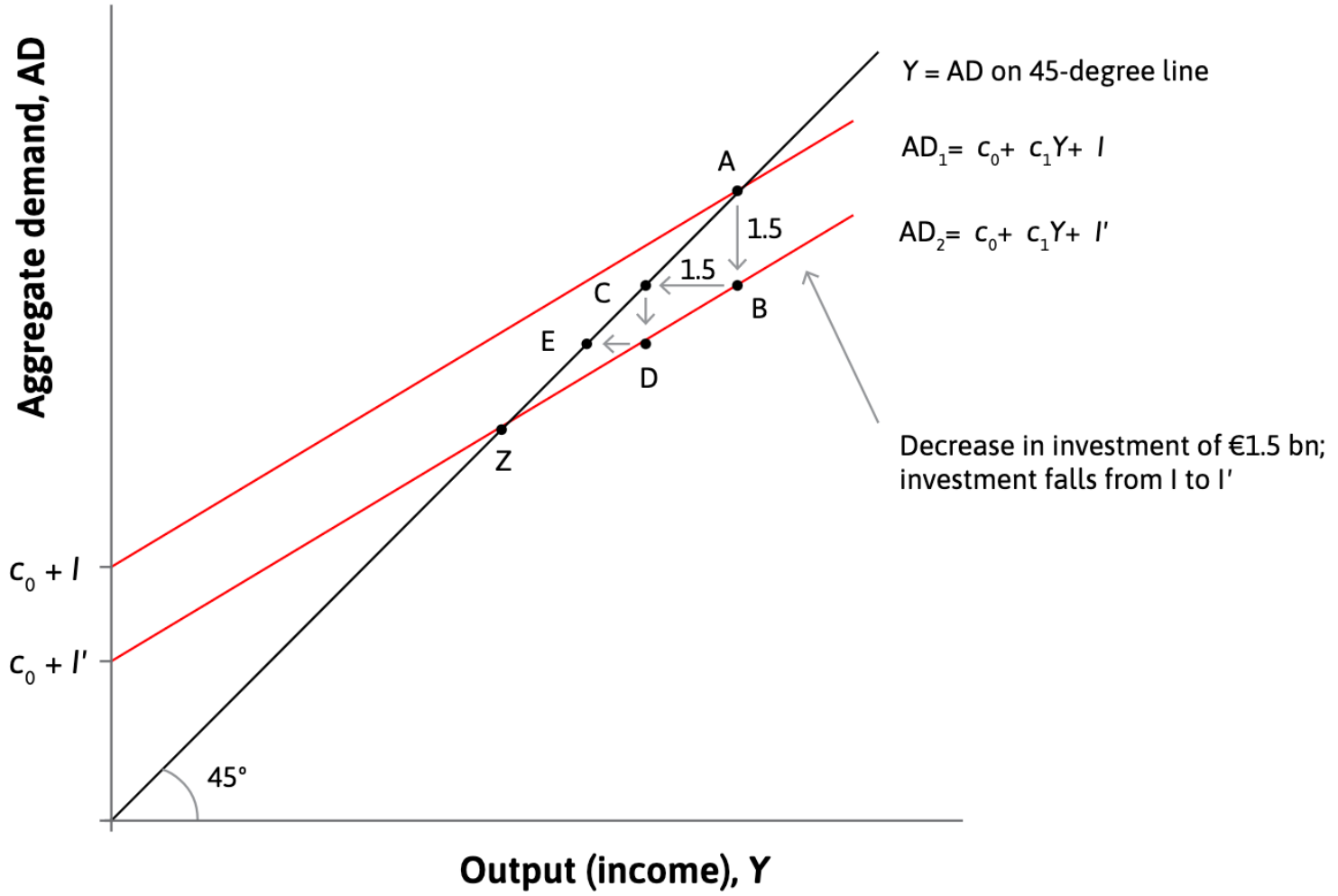

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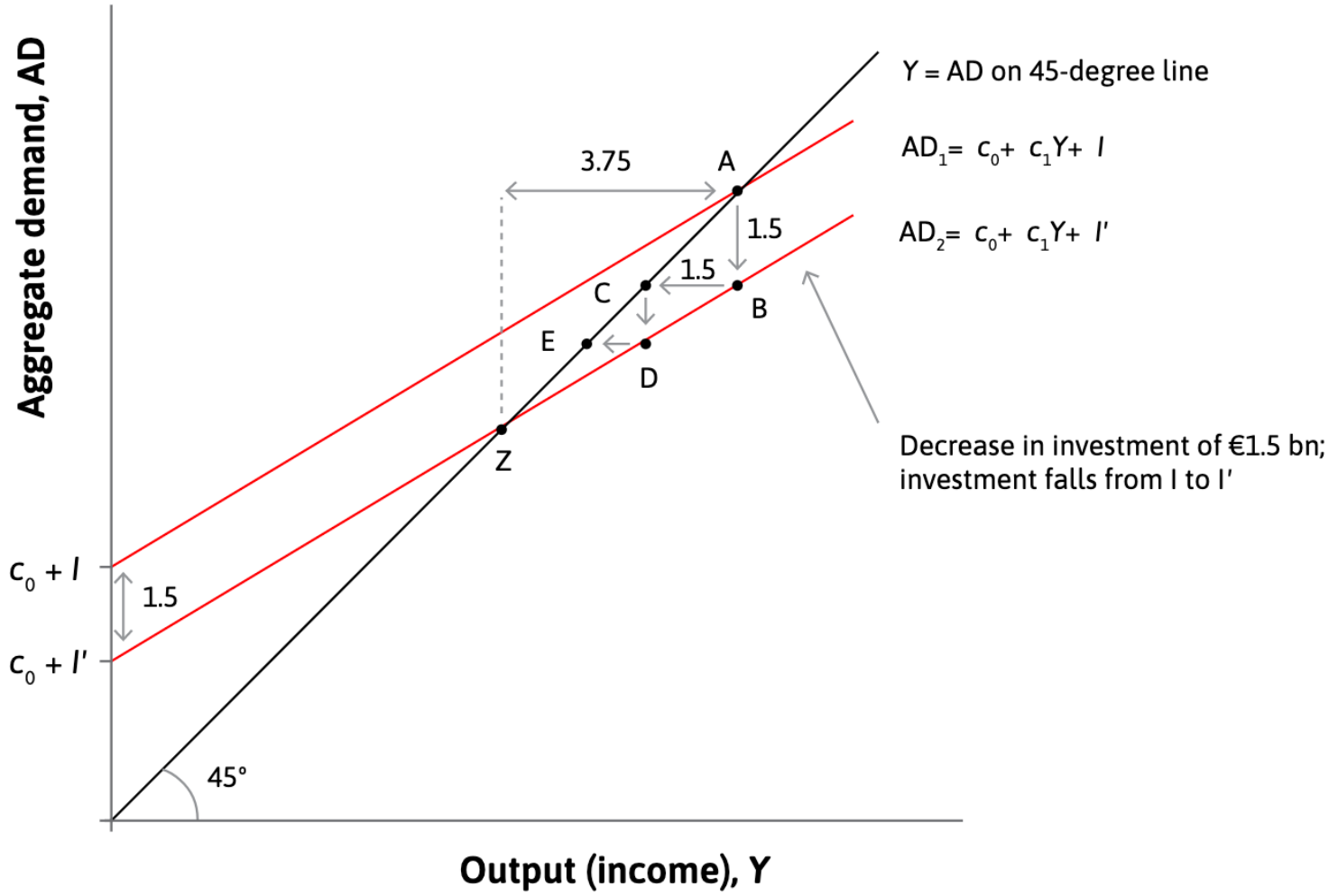

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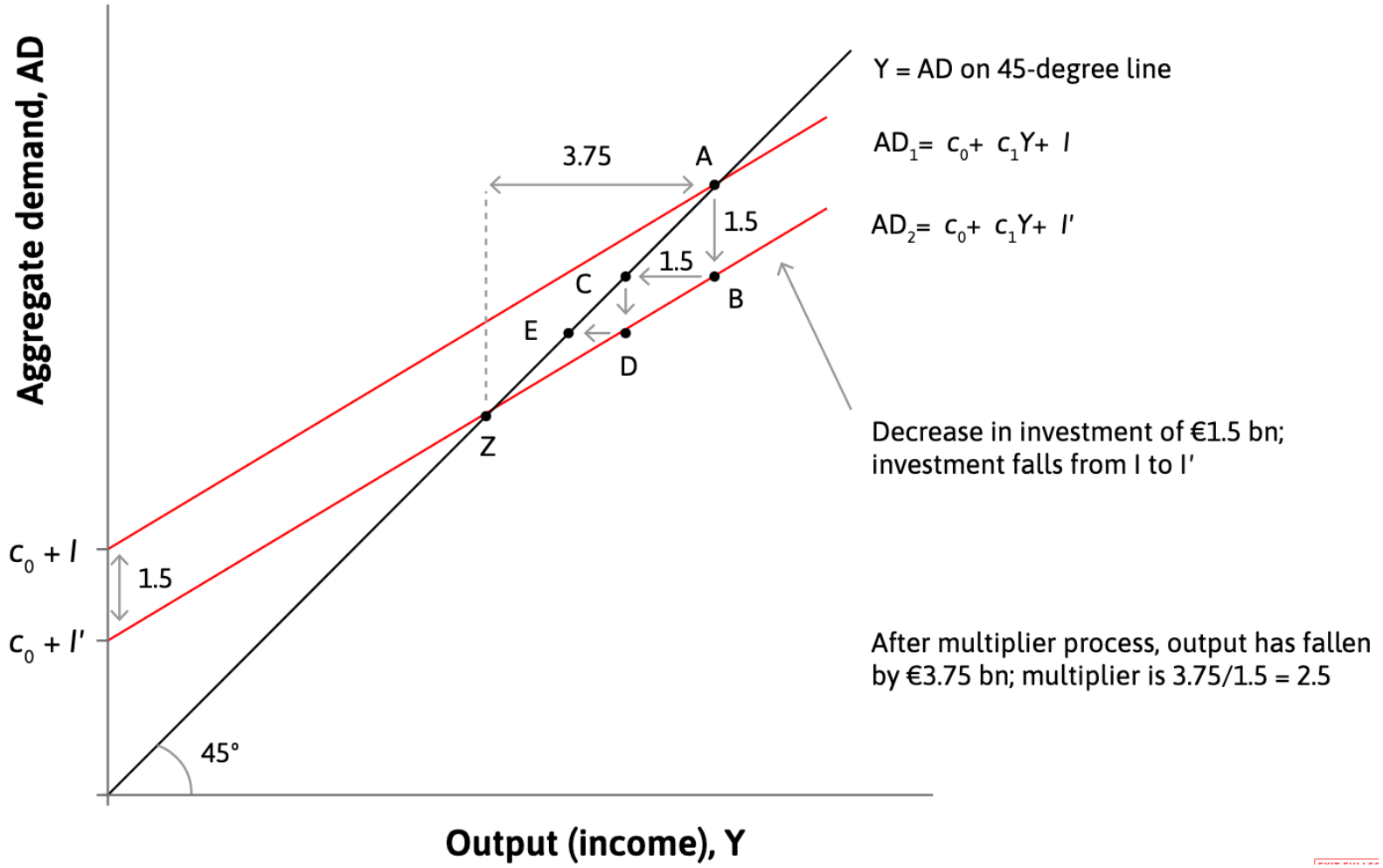


- Credit constraints and consumption smoothing is reflected in the **slope of the AD curve** and the **size of the multiplier**.
- But consumption and saving behaviour can also shift the aggregate demand curve.

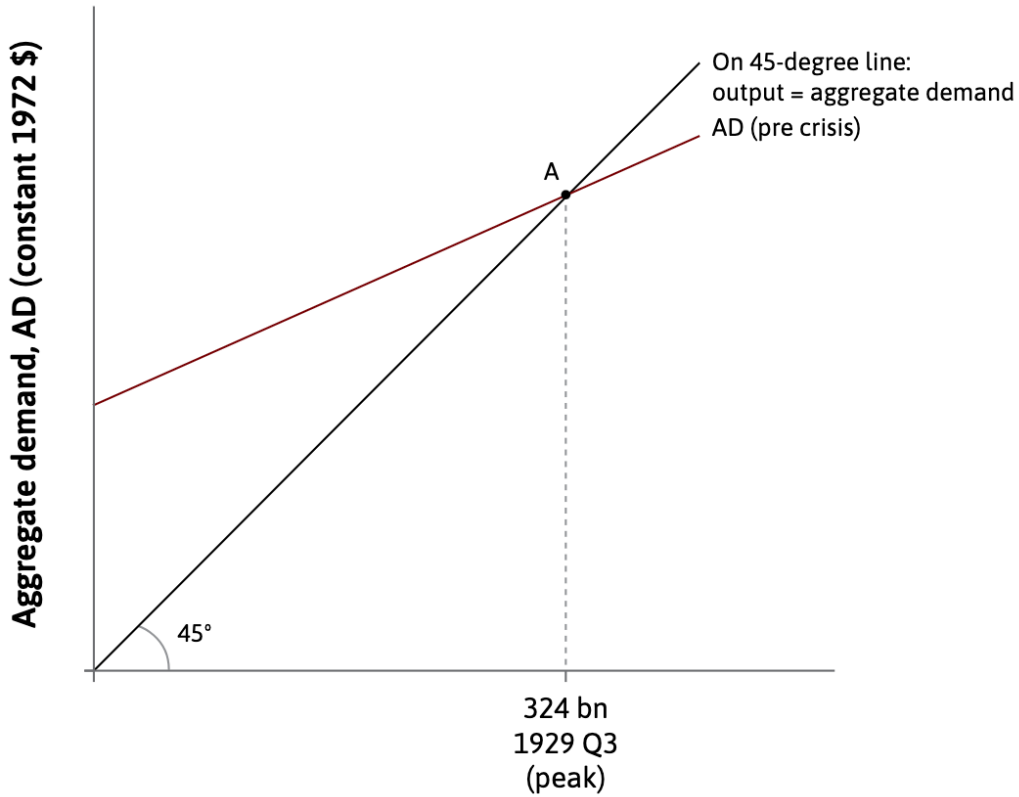
$$Y = AD = c_0 + c_1 Y + I$$

Fall in house prices

→ bad news for a household with a mortgage

→ they may choose to save more (precautionary saving)

→ their autonomous consumption would fall



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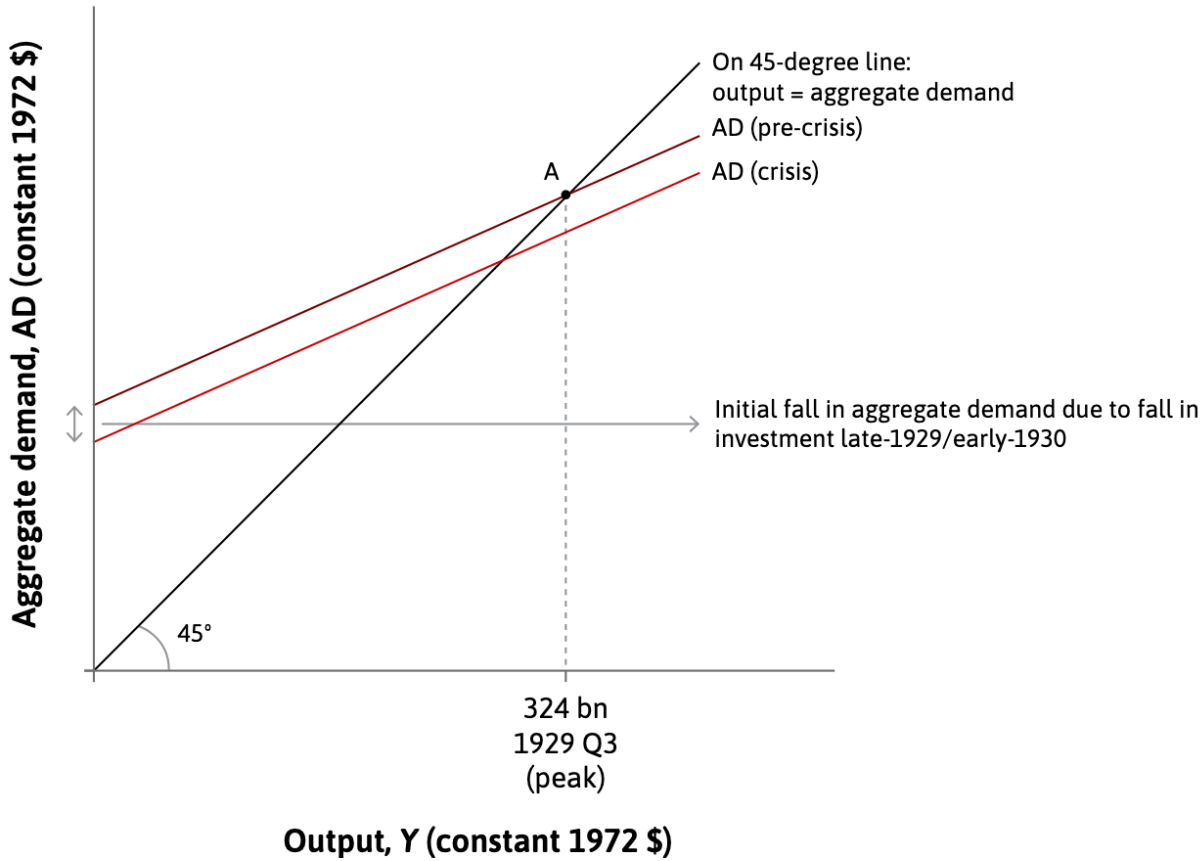

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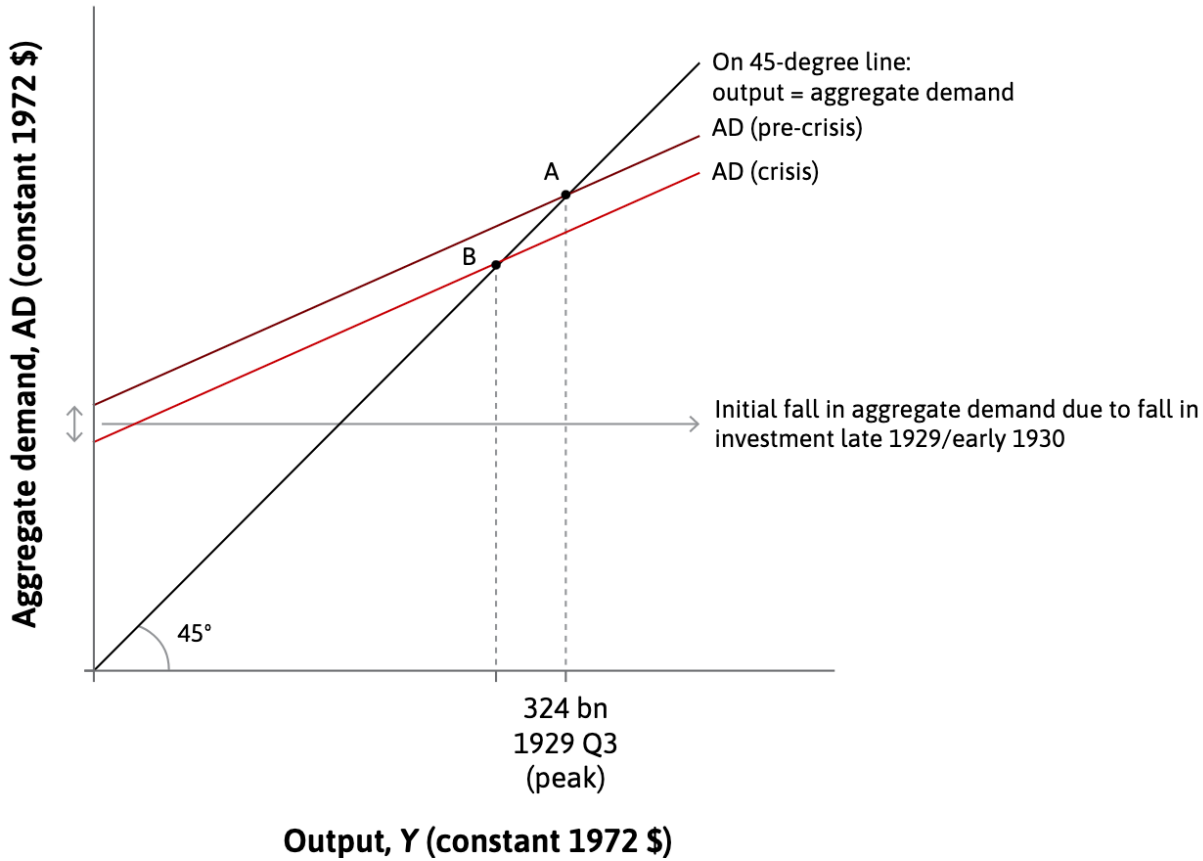

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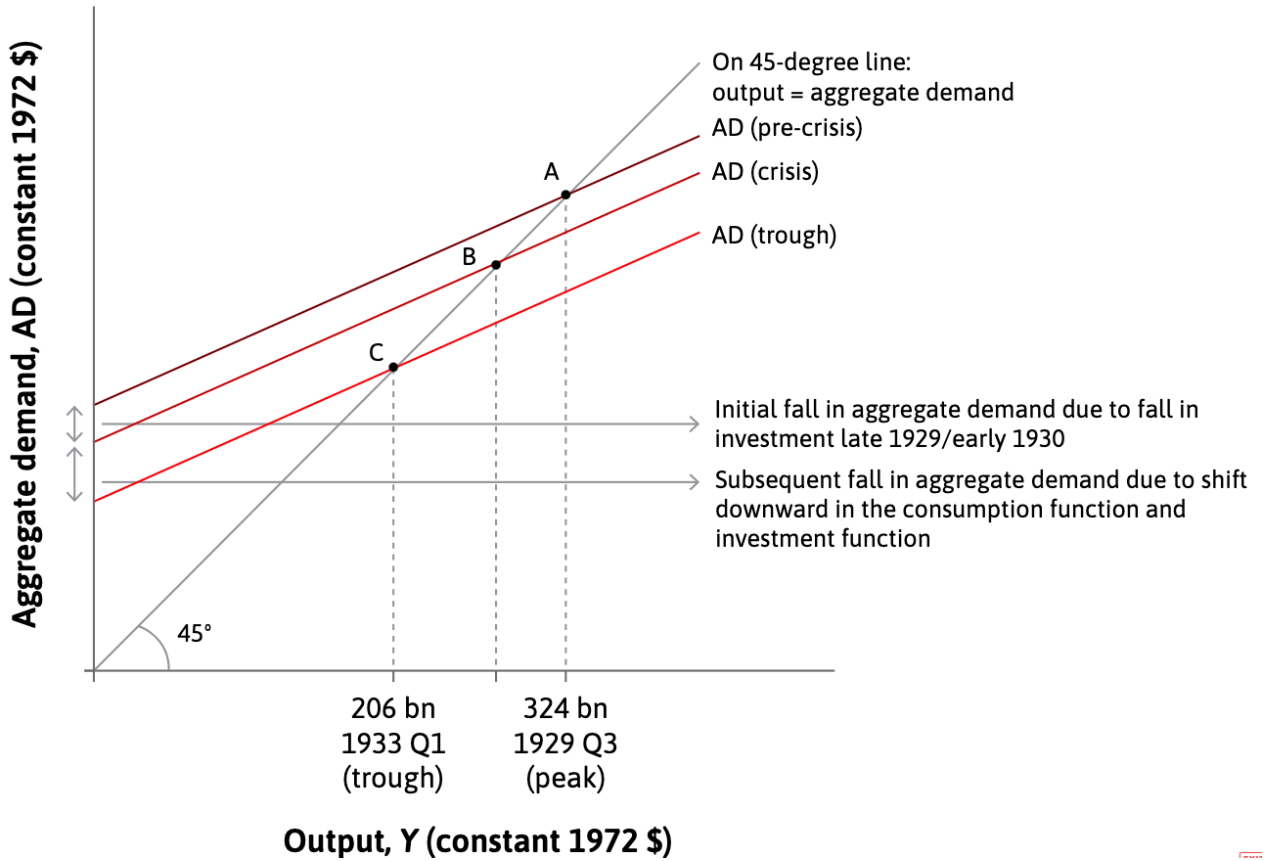

Household Wealth

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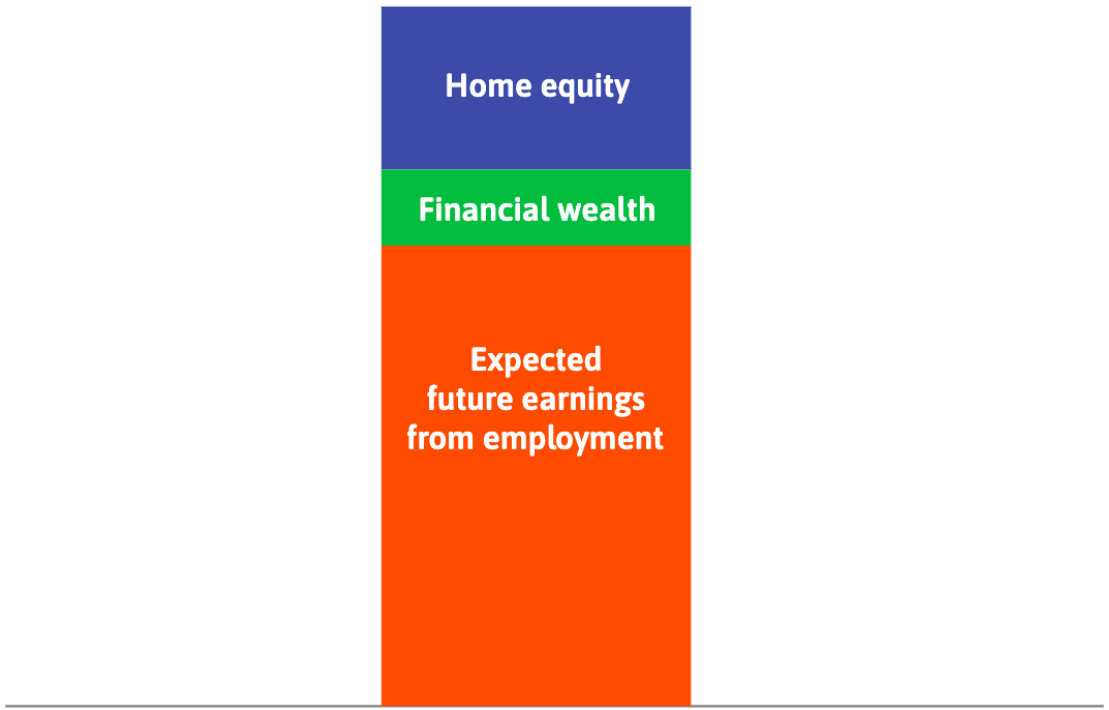

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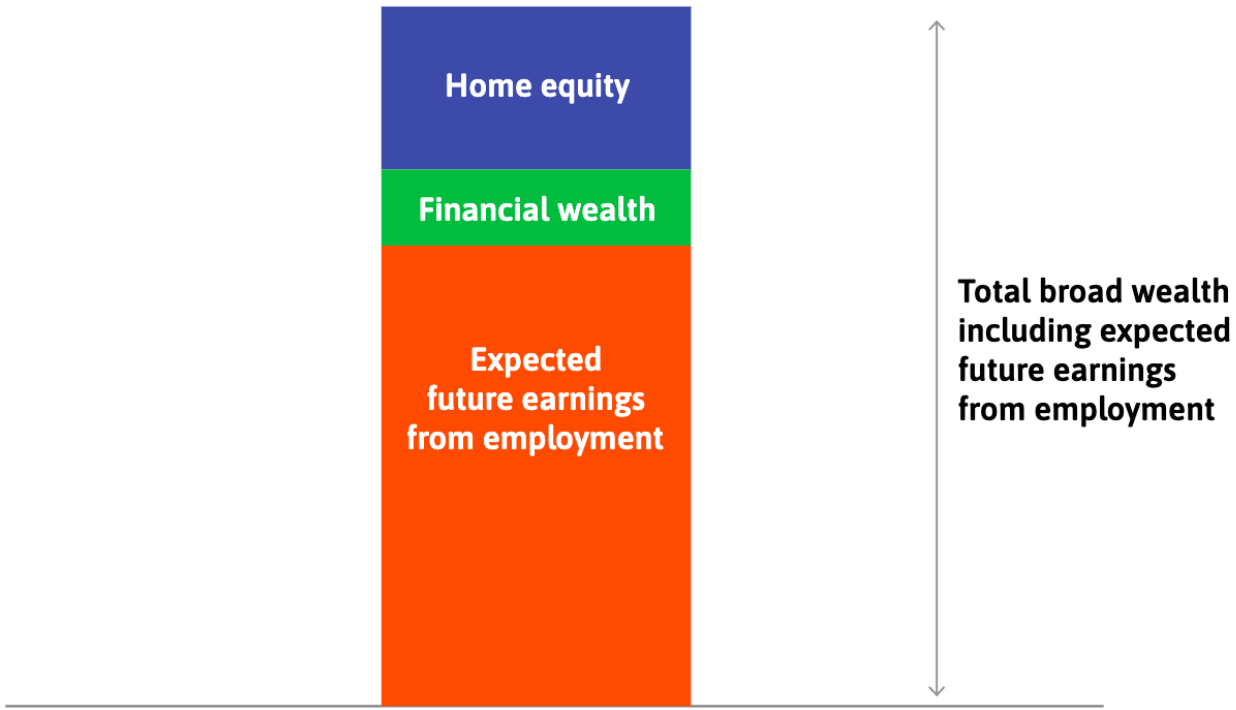

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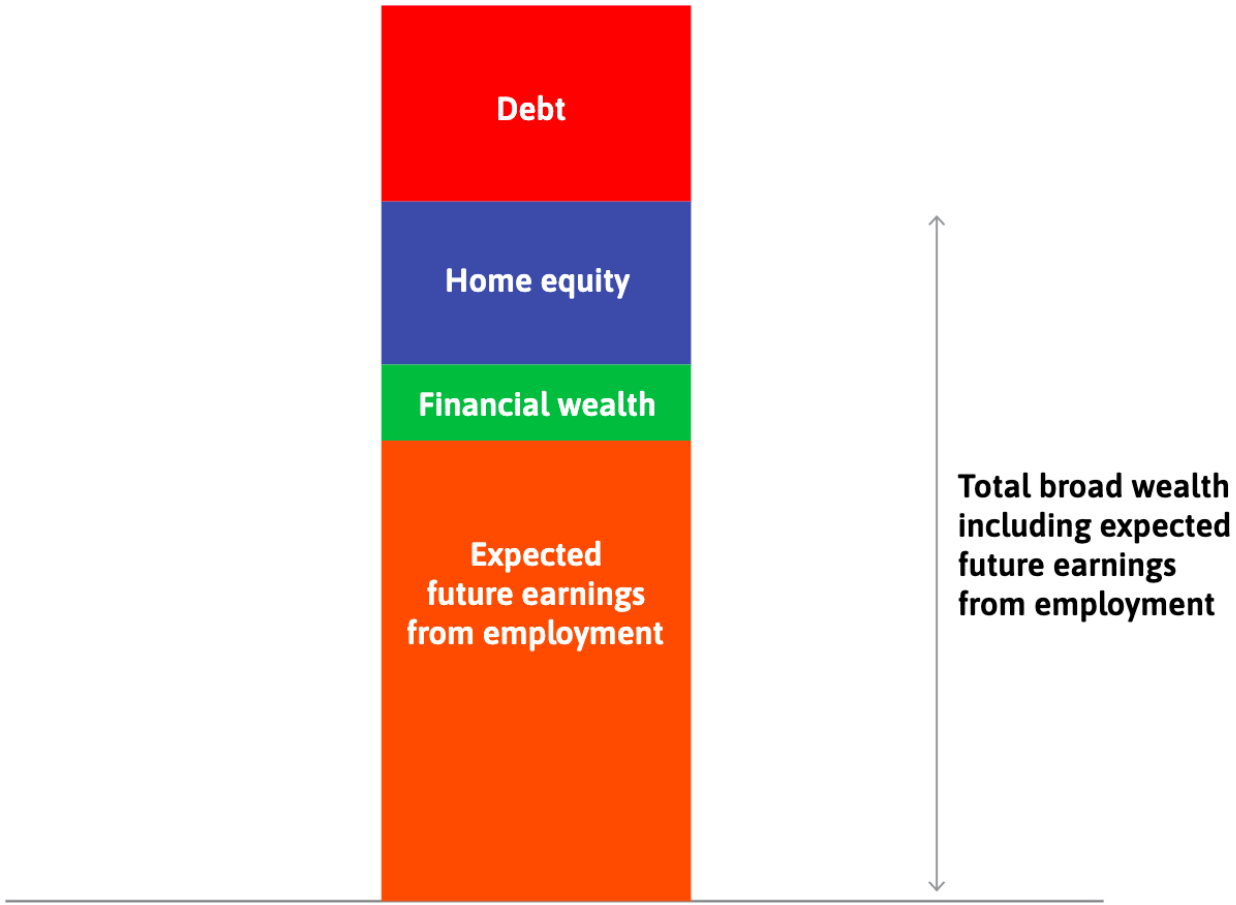

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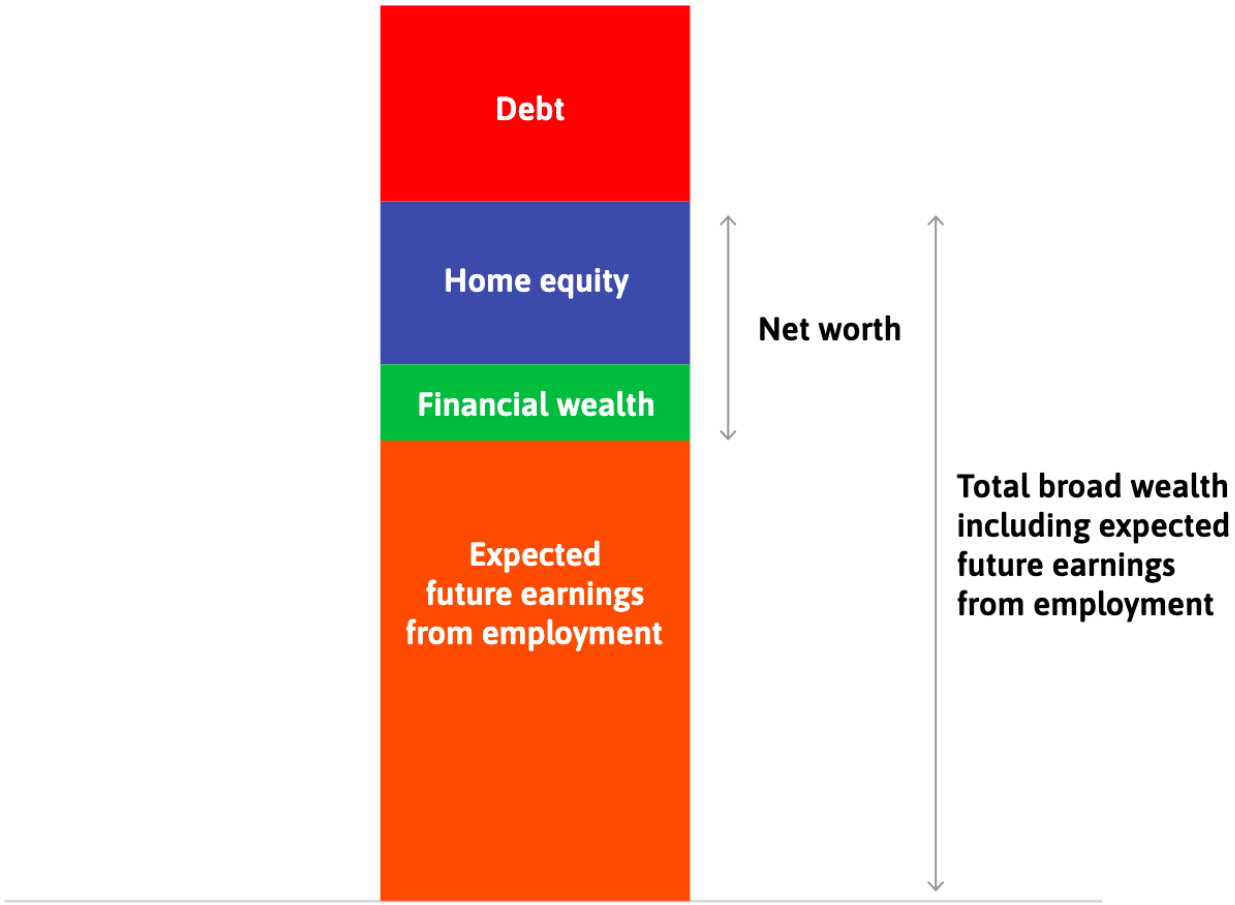

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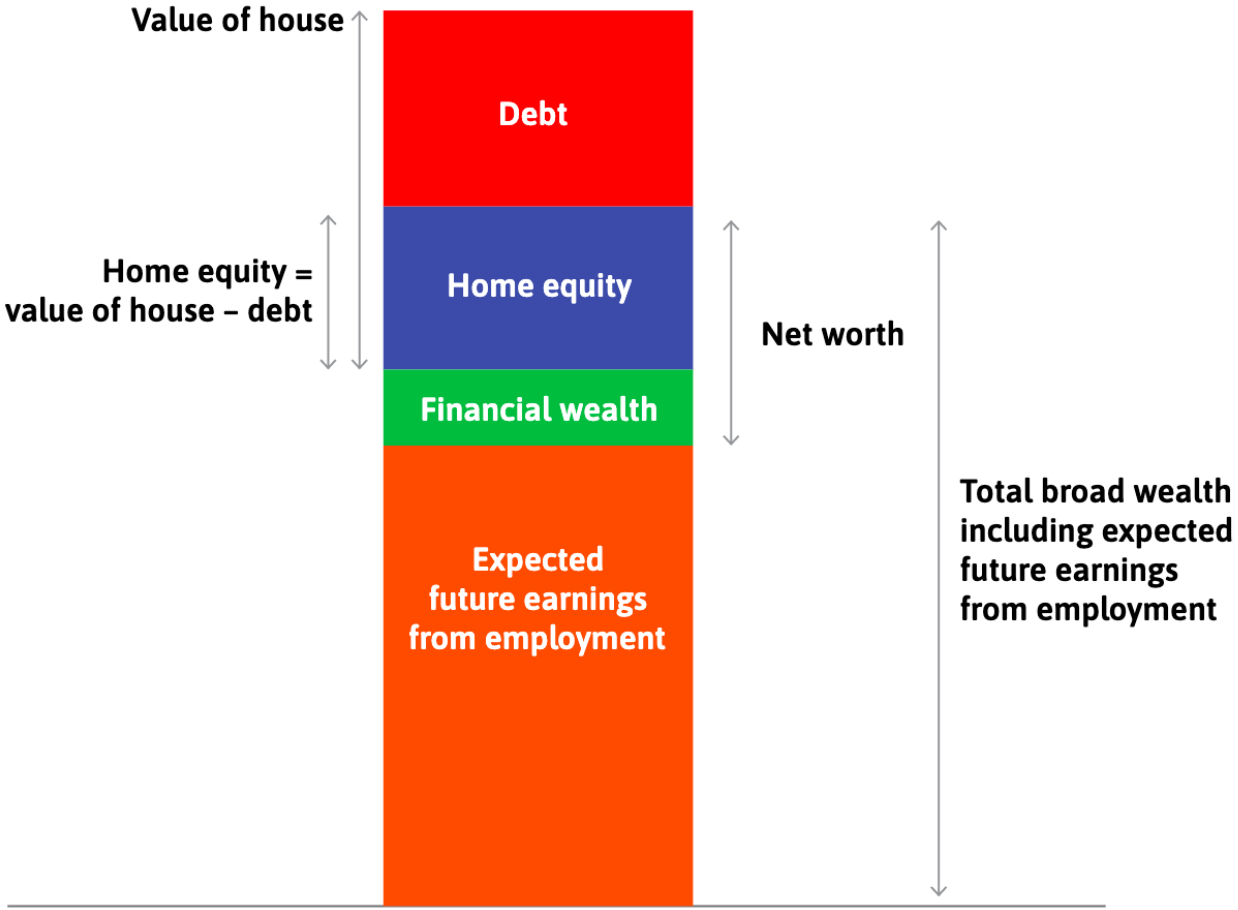

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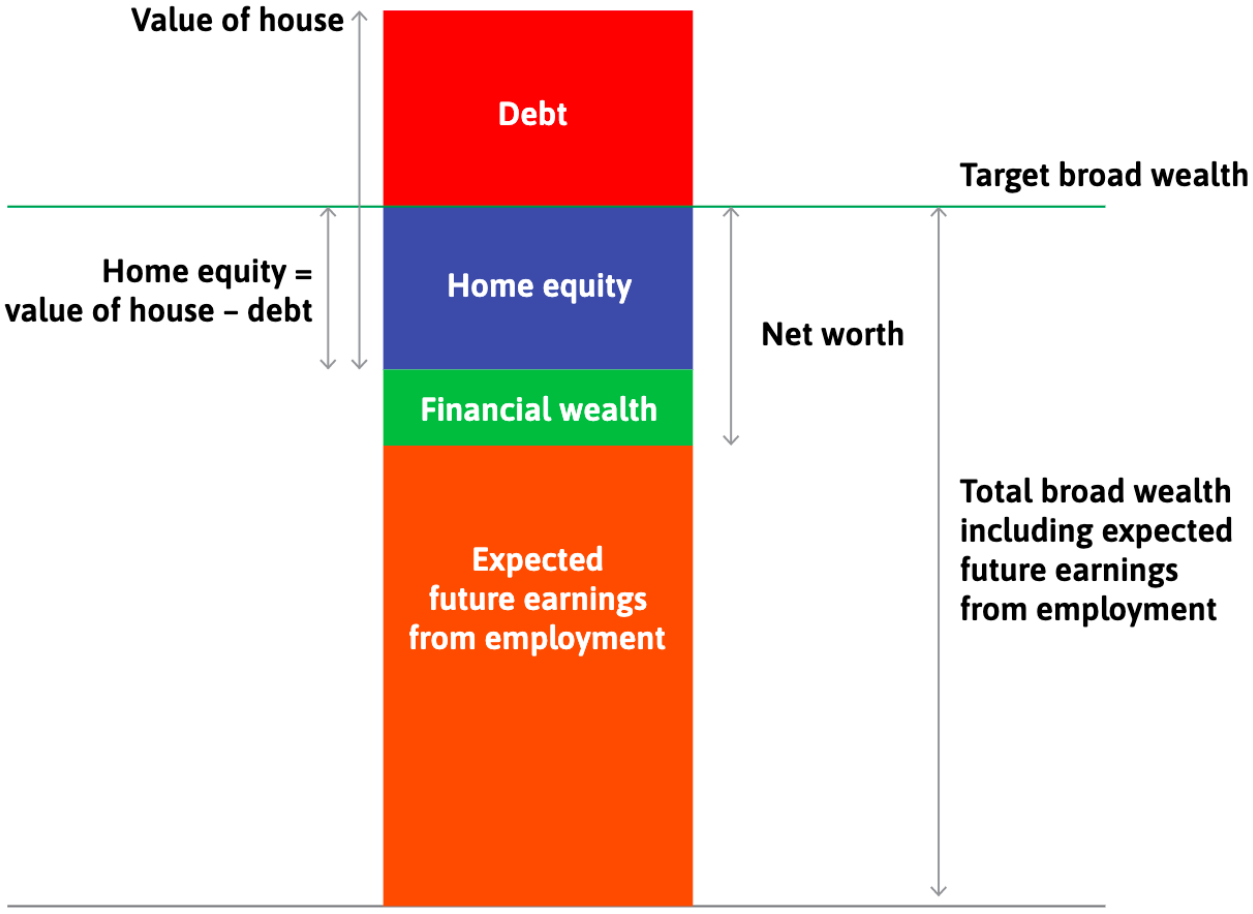
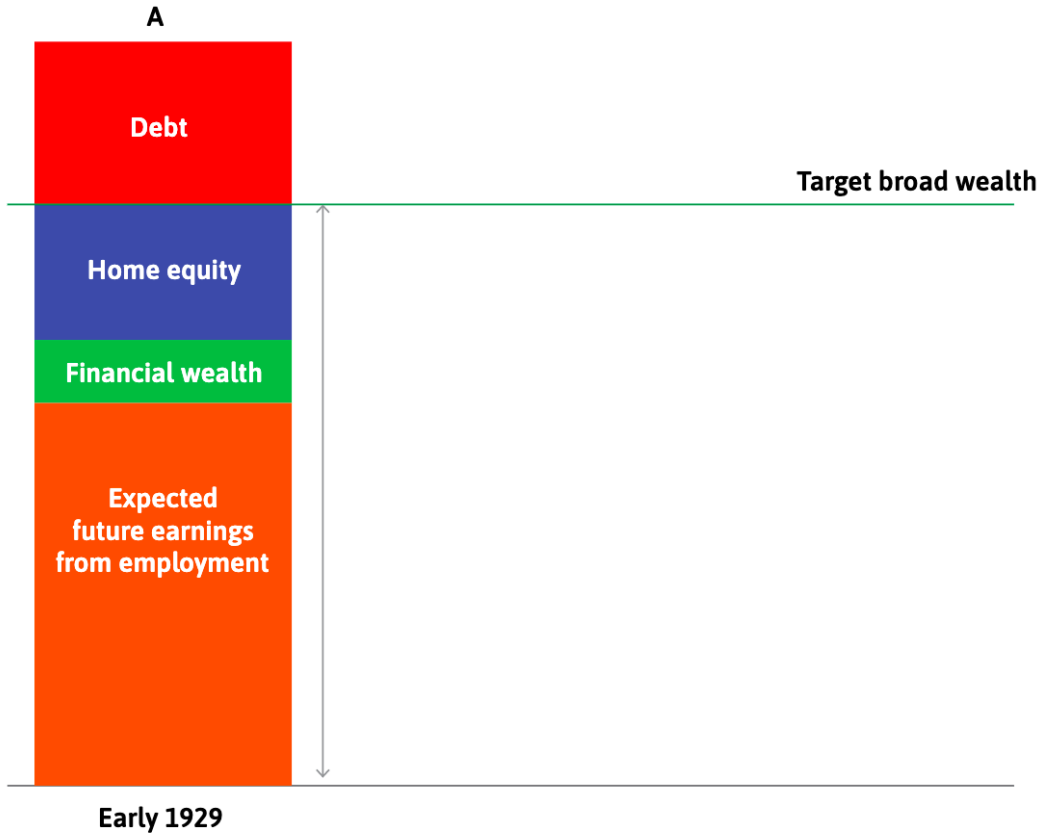


Target wealth: the level of wealth that a household aims to hold, based on its economic goals (or preferences) and expectations.

Precautionary saving: An increase in saving to restore wealth to its target level.



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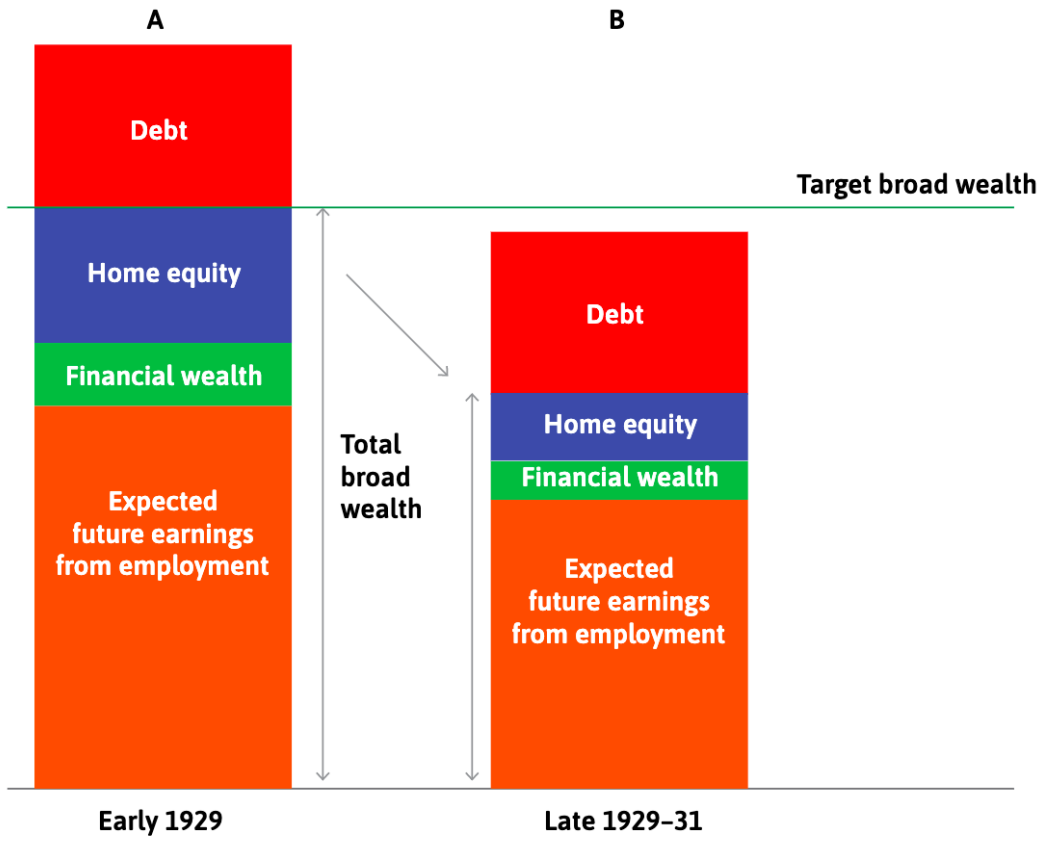

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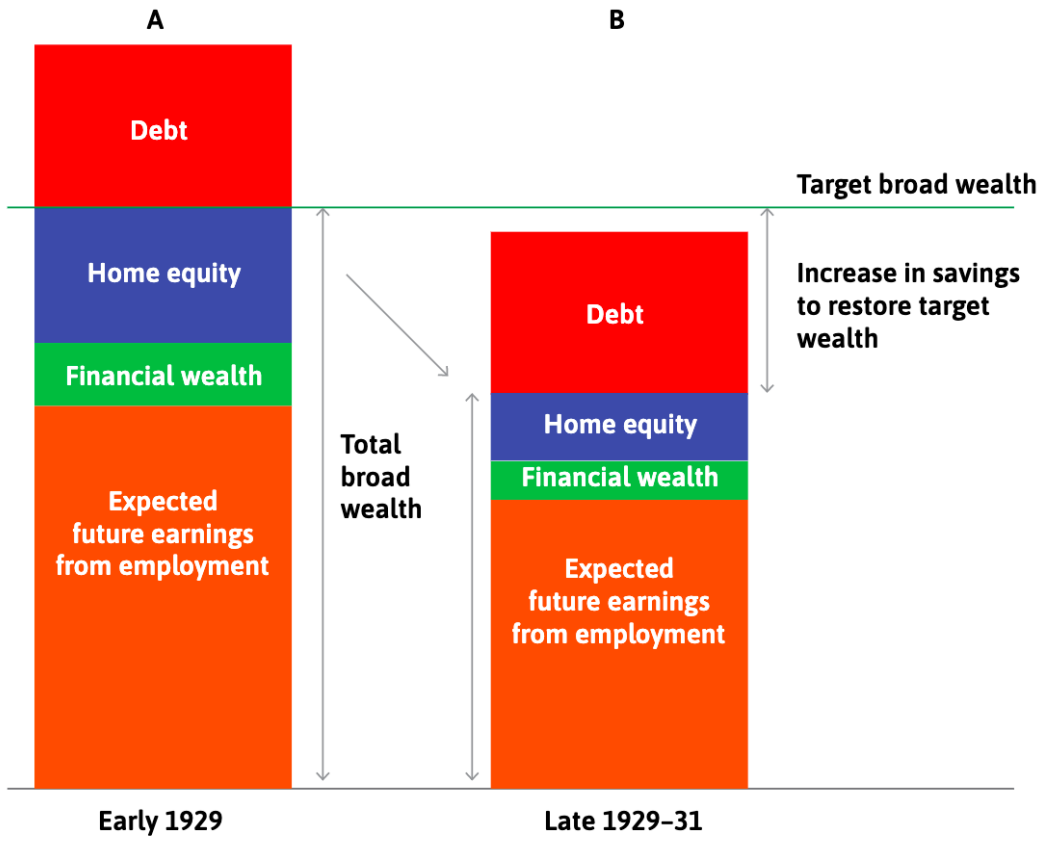


- A fall in expected earnings will lead to cut in consumption (precautionary savings) to restore target wealth.
- Changes in house prices affect consumption through 1) changes in household wealth (home equity), and 2) changes in credit constraints -lower house value makes it more difficult to borrow (greater credit constraint)-.

Investment

Volatility of investment vs the smoothness of consumption spending. How do firms make investment decisions? What to do with accumulated profits?

- *Dividends*: Allocate the funds to managerial or employee salaries, or to dividends for owners.
- *Saving*: Buy an interest-bearing financial asset such as a bond, or retire (pay off) existing debt.
- *Investment abroad*: Build new productive capacity in another country.
- **Investment at home**: Build new capacity in the home country.

- Owner's discount rate:

$$\rho$$

- Interest rate on assets:

$$r$$

- Net profit rate on investment:

$$\Pi$$

- Consume the extra income (dividends) if

$$\rho > r \geq \Pi$$

- Save the extra income/repay debts if

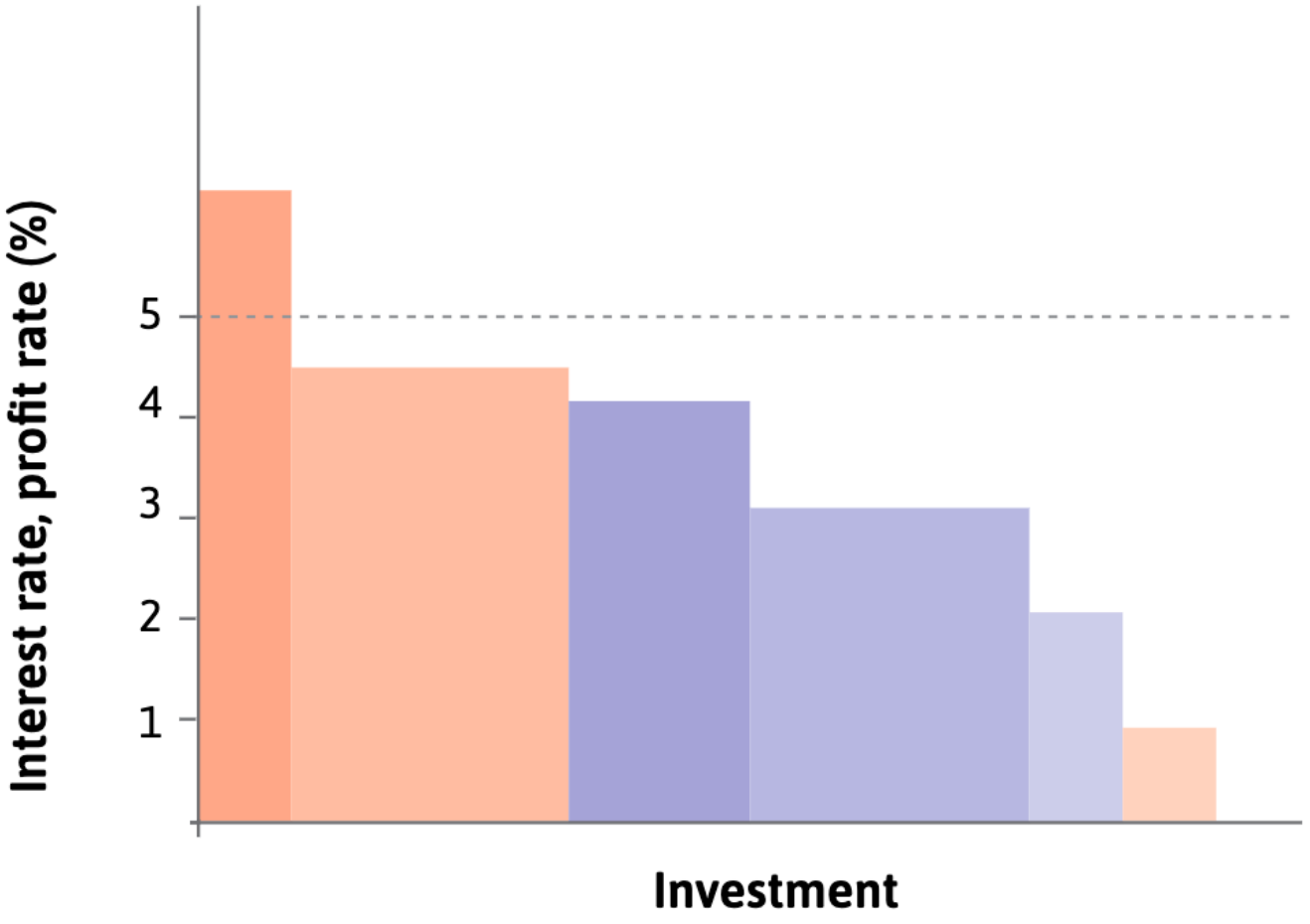
$$r > \rho \geq \Pi$$

- Invest (at home or abroad) if $\Pi > \varrho \geq r$

$$\Pi > \rho \geq r$$

A lower interest rate makes investment more likely.

Higher expected rate of profit $E(\Pi)$ increases investment, holding r constant.



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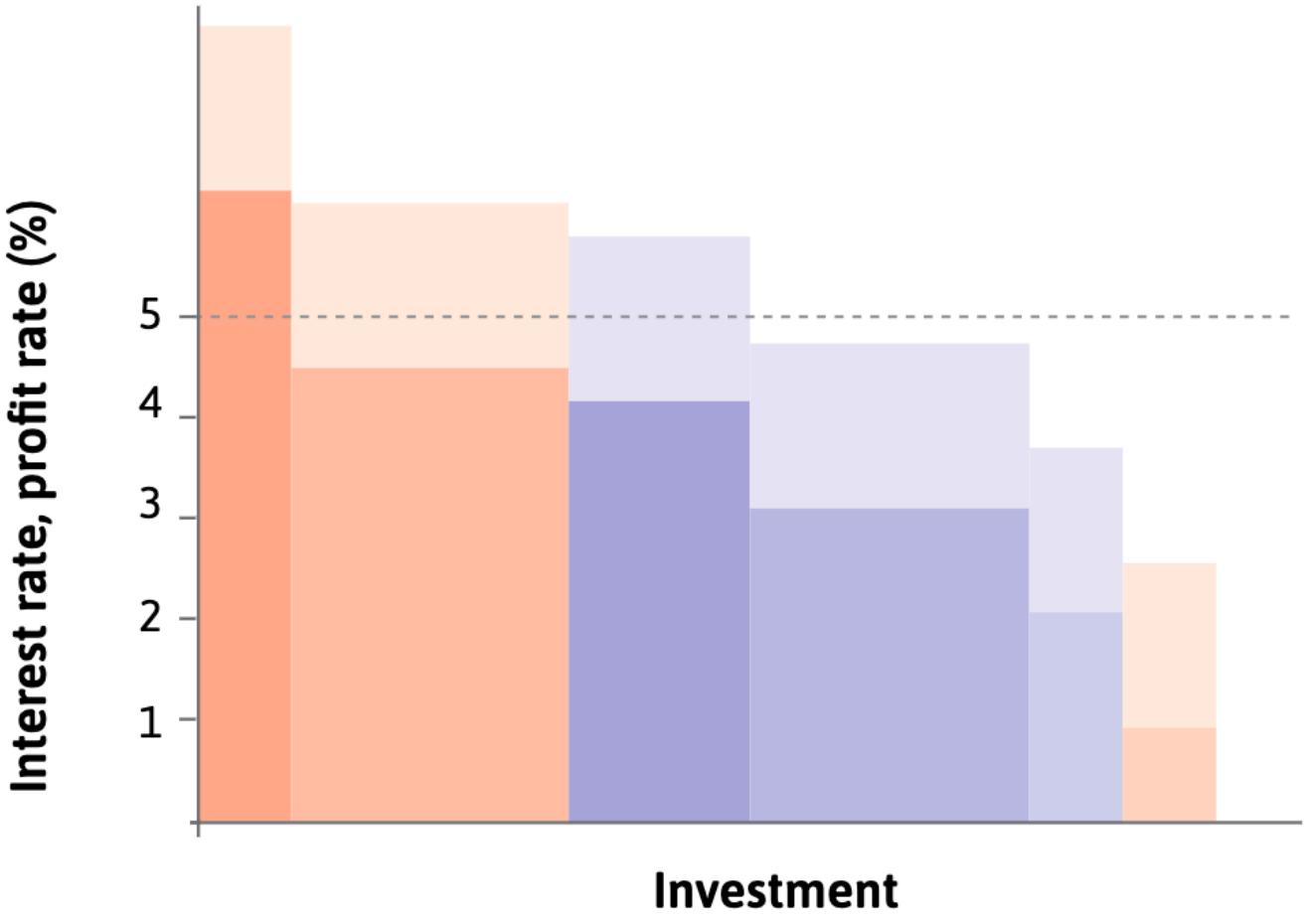
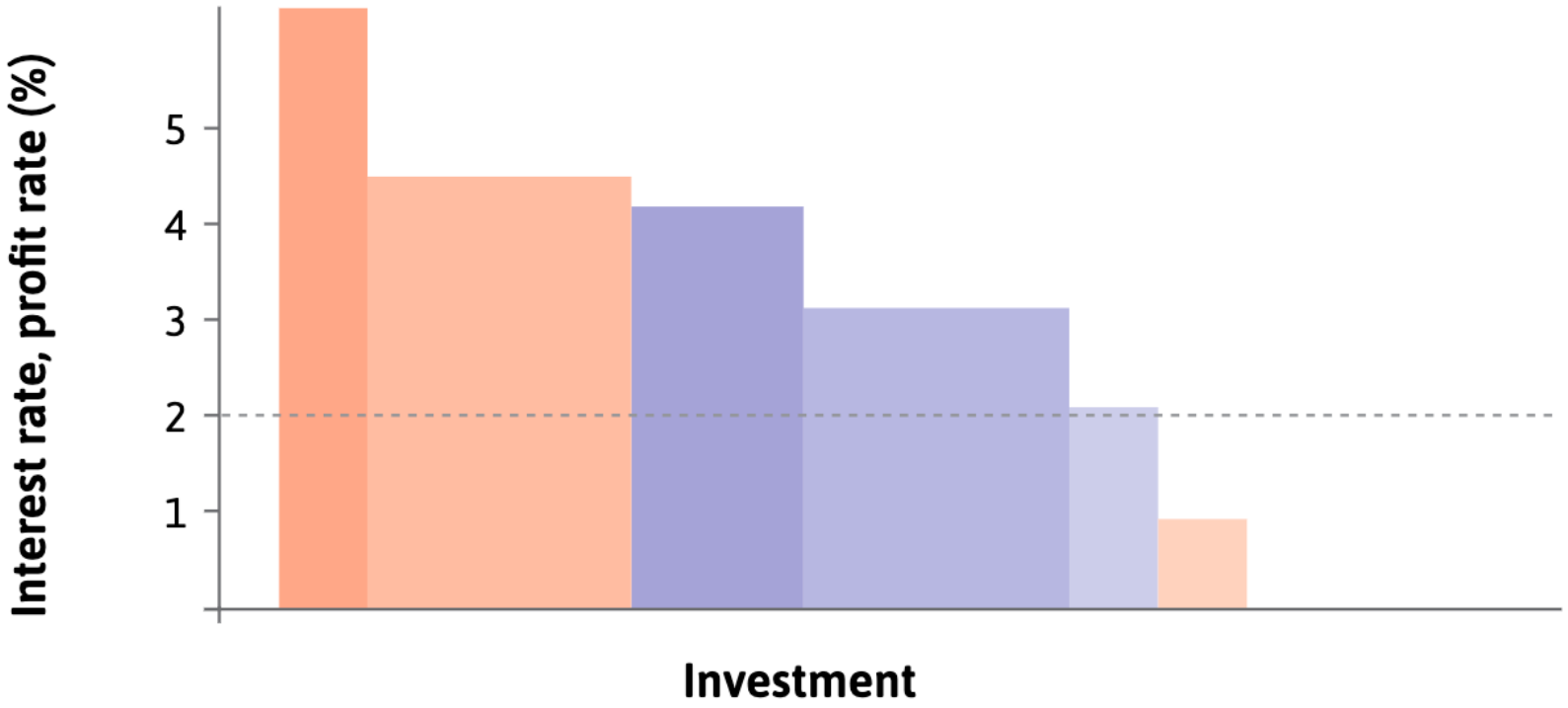


Improvement in business environment (such as fall in the risk of expropriation by the government) also increases investment.

Higher forecast demand raises the desired size of each project, so investment rises.



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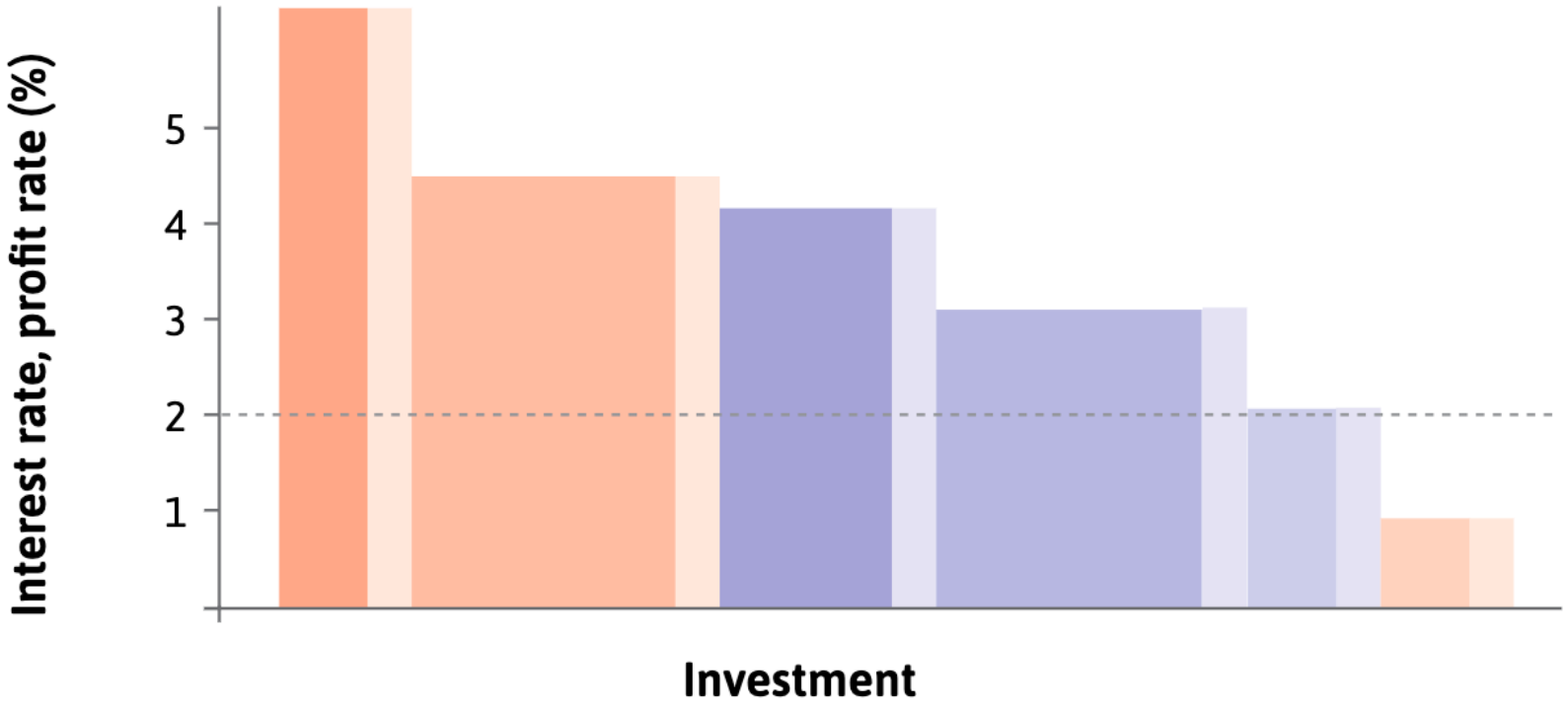
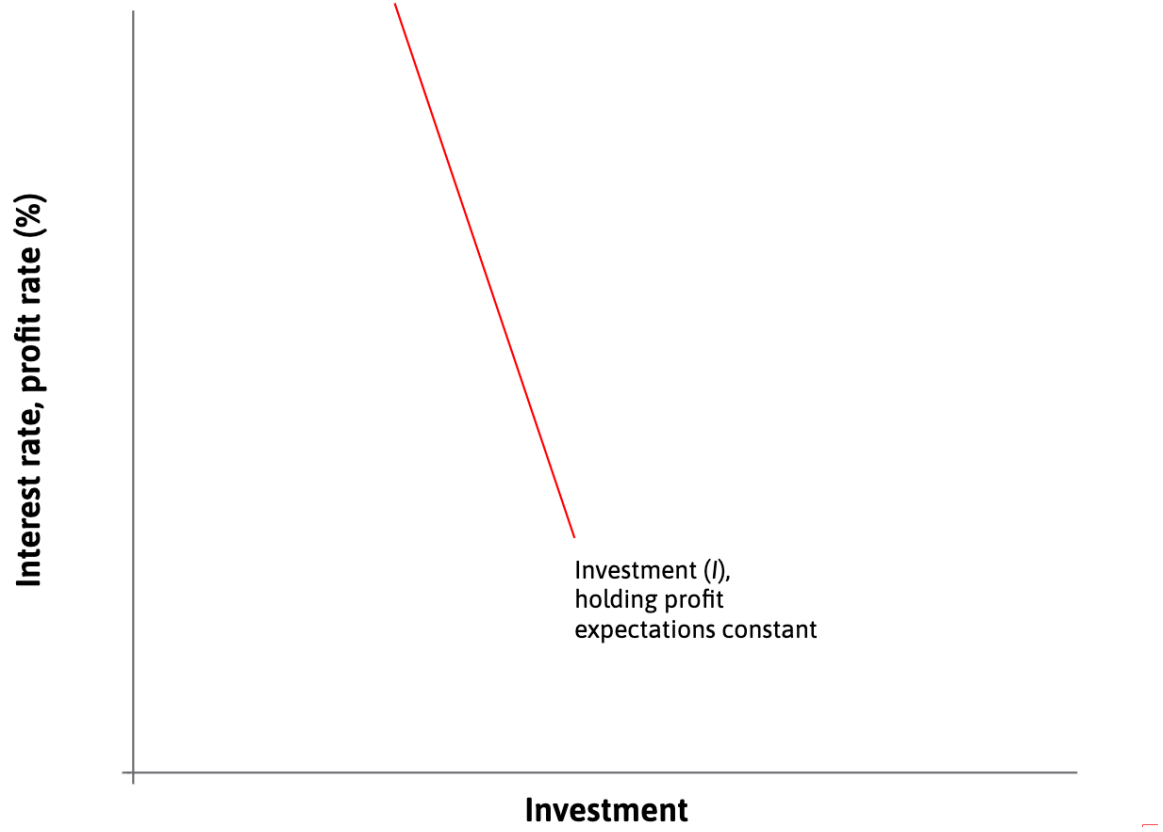


Aggregate investment function



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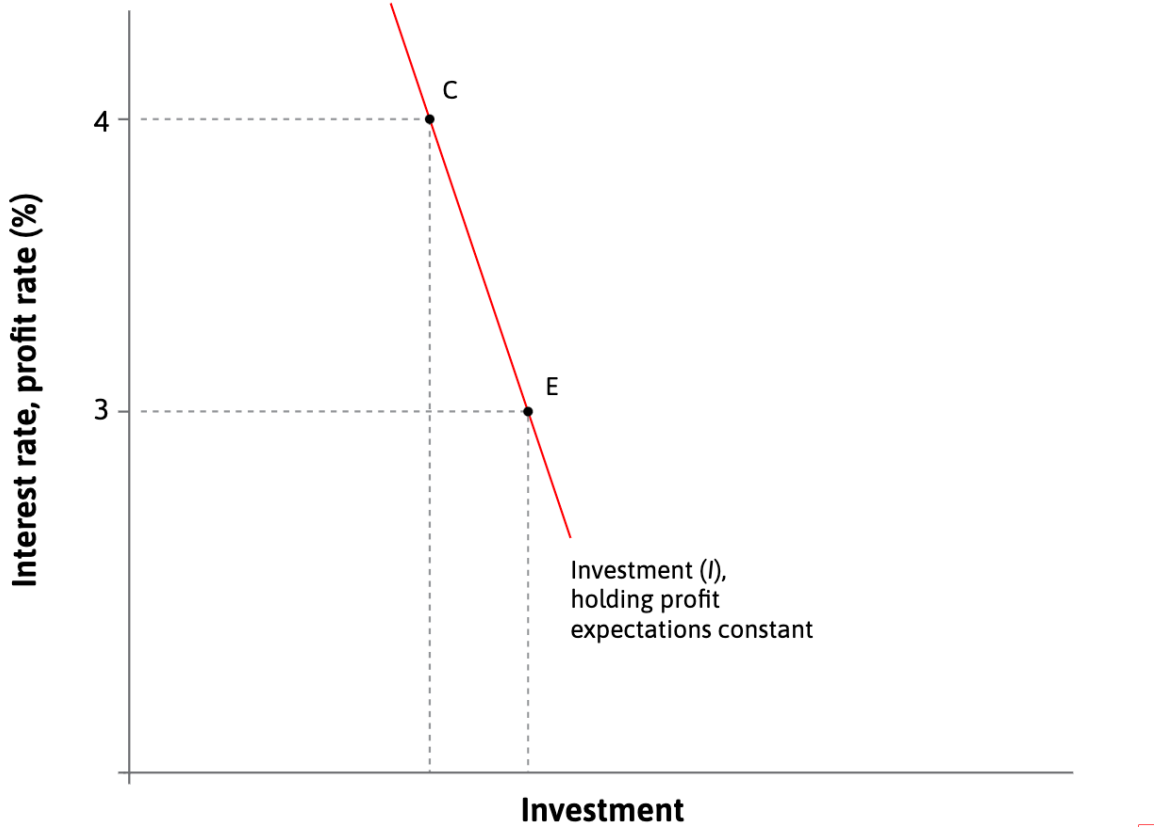

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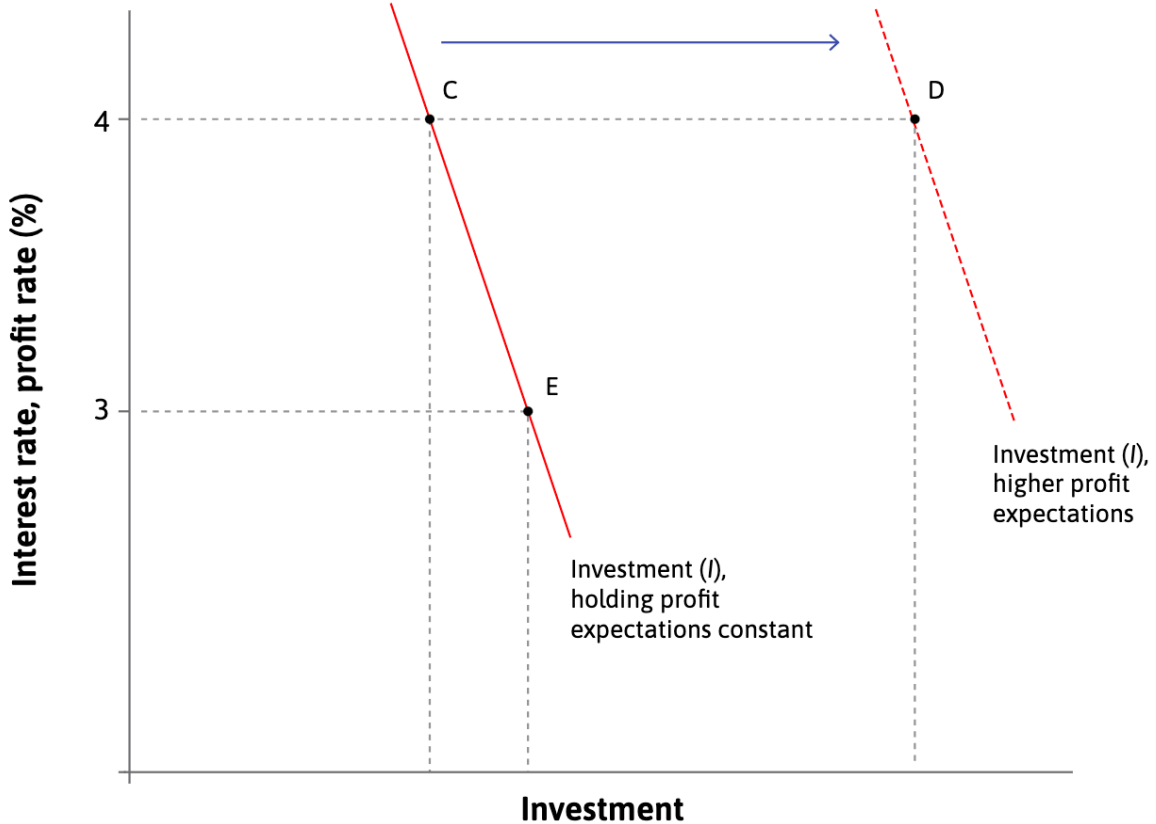


How investment spending in the economy as a whole depends on other variables (interest rate and profit expectations).

Investment is not very sensitive to interest rate. Instead, the shift factors are much more important.

Adding government and net exports to aggregate demand

$$AD = C + I + G + X - M$$

Government enters AD via

- Government spending: exogenous $\rightarrow$ shifts AD curve upwards

$$G$$

- Consumption **C**: household's MPC is out of disposable income (1-t)Y

$$C = c_0 + c_1(1-t)Y$$

- Investment: depends on the interest rate and after-tax rate of profit

$$I = I(r)$$

- Exports: exogenous

$$X$$

- Imports: depends on domestic income.

$$M = mY$$

Marginal propensity to import = The fraction of each additional unit of income that is spent on imports

$$AD = Y = c_0 + c_1(1-t)Y + I(r) + G + X - mY$$

The multiplier model (again)

$$AD = Y = c_0 + c_1(1-t)Y + I(r) + G + X - mY$$

Saving, taxation and imports are referred to as leakages from the circular flow of income. They reduce the size of the multiplier.

- some household income goes directly to the government as taxes
- some income is used to buy goods abroad

$$Y = \frac{1}{1 - c_1(1-t) + m} \cdot (c_0 + I(r) + G + M)$$

Smaller multiplier = flatter AD curve.

Stabilising the economy

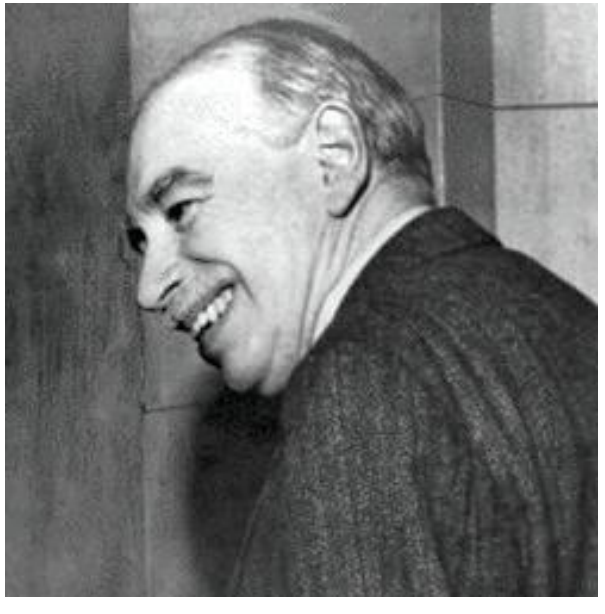
There are three main ways that government spending and taxation can dampen fluctuations in the economy:

- The size of government: government spending on consumption and investment is usually stable.
  - Higher tax rate lowers the multiplier
- Automatic stabilization mechanisms: Unemployment insurance helps households smooth consumption
  - Failure of private market because of correlated risk, hidden actions, hidden attributes
- **Fiscal policy**

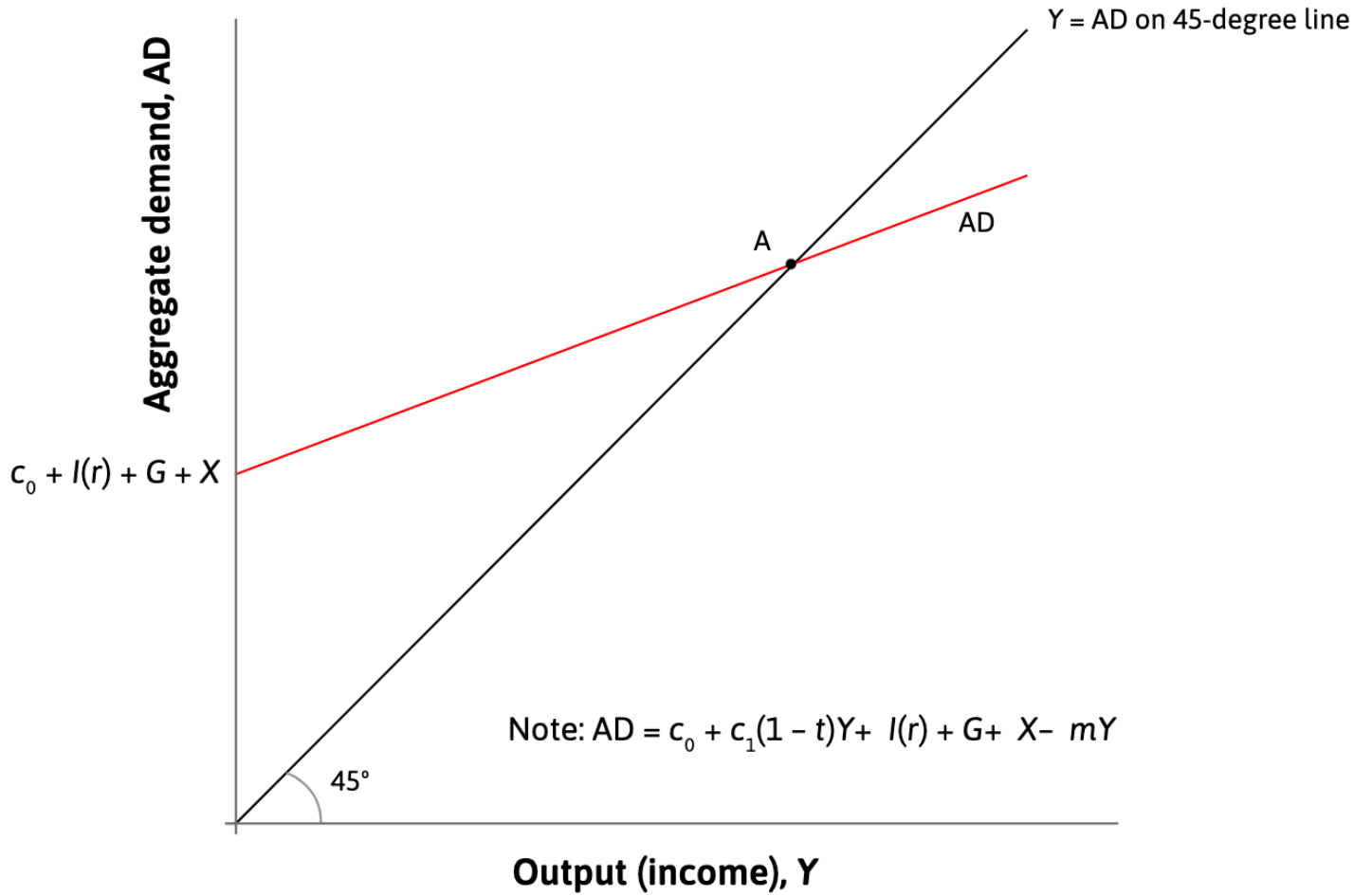
The paradox of thrift: the aggregate attempt to increase savings leads to a fall in aggregate income.

- A family worried about their falling wealth cuts spending and saves more
- But in the economy as a whole, spending and earning go together

Fallacy of composition: what is true for one part of the economy (a single household) is not true of the whole economy.



Fiscal stimulus



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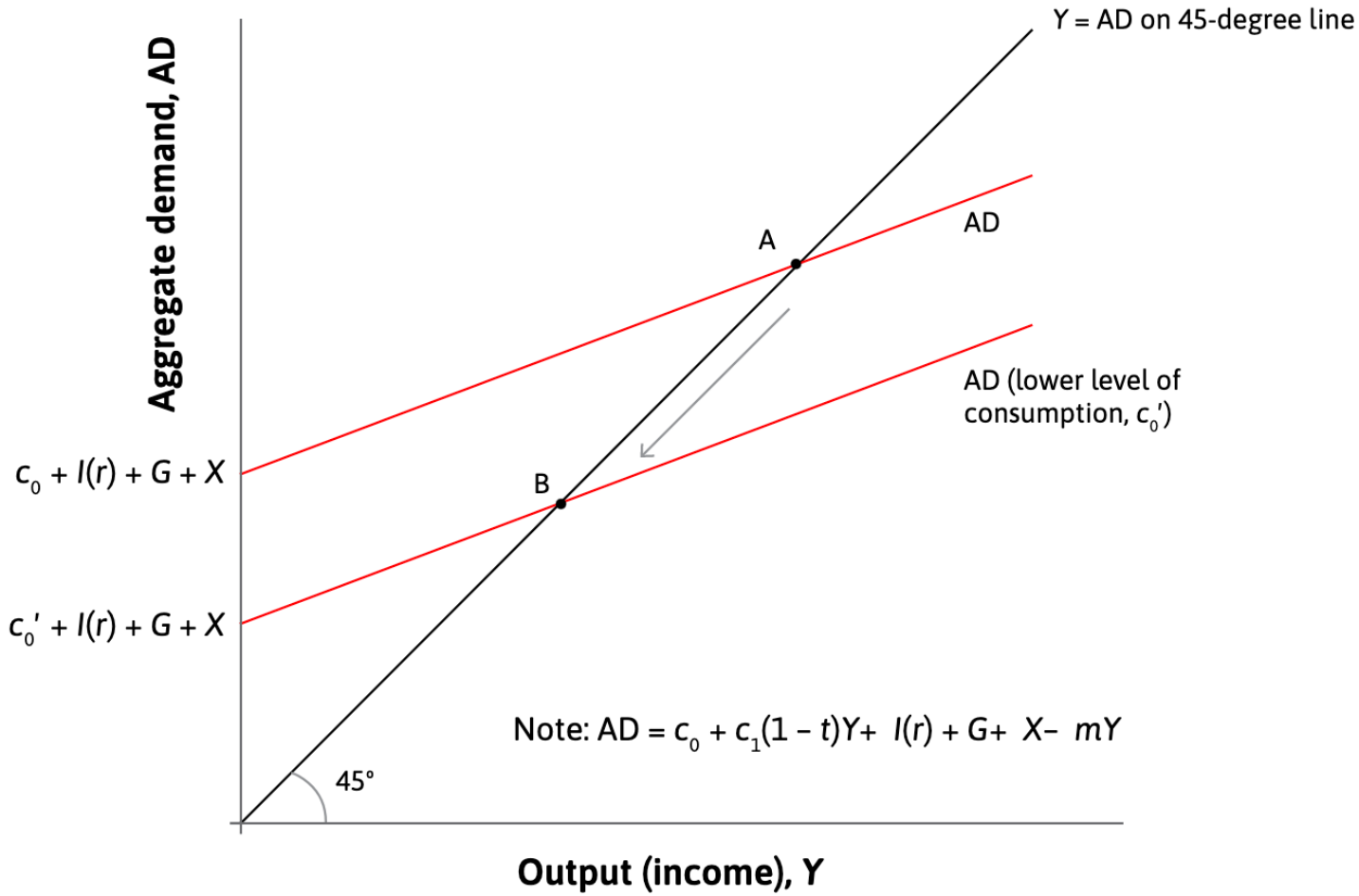
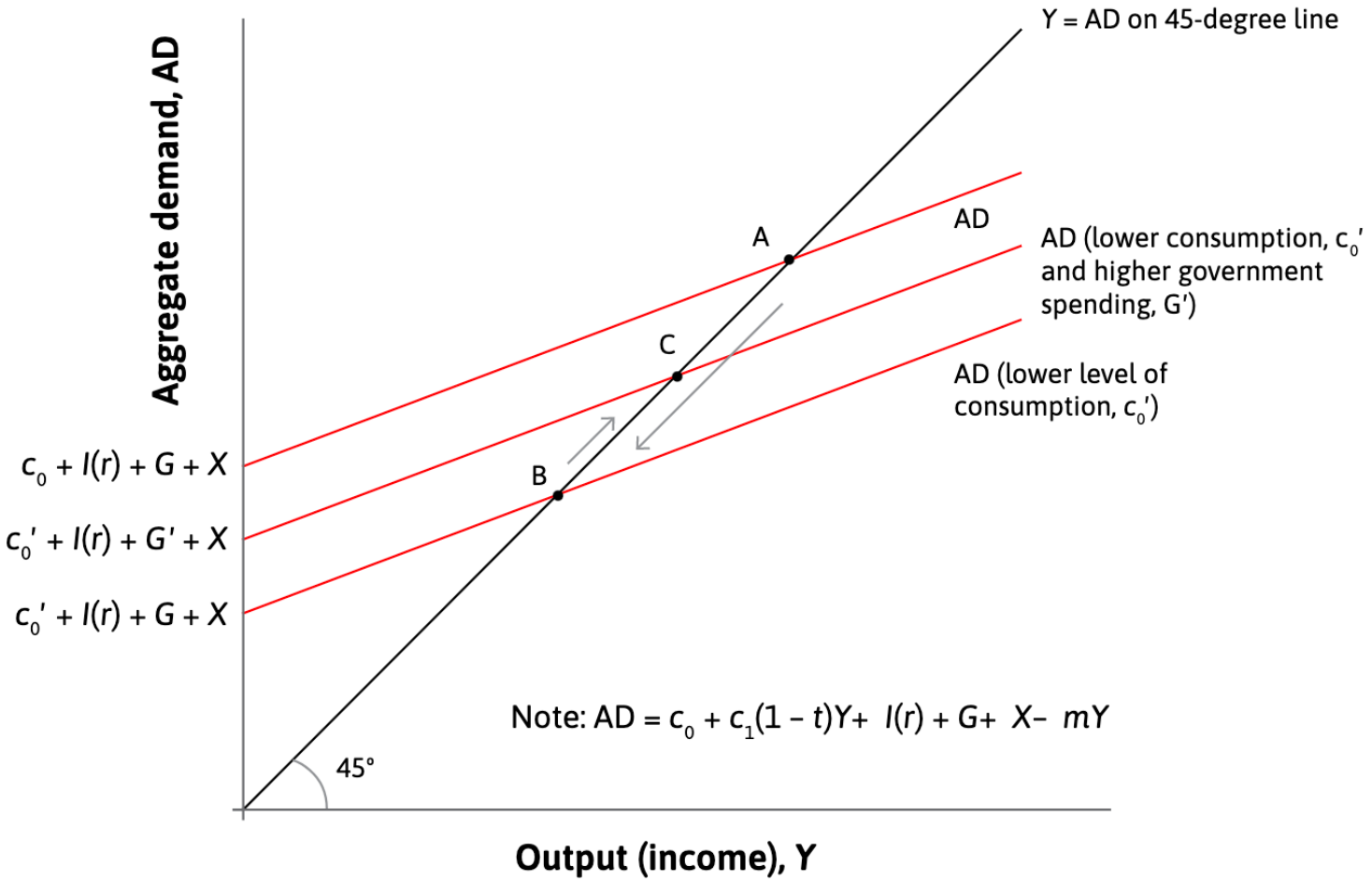


Cut taxes to encourage the private sector to spend more, or increase spending (G), which directly increases AD

Fiscal stimulus

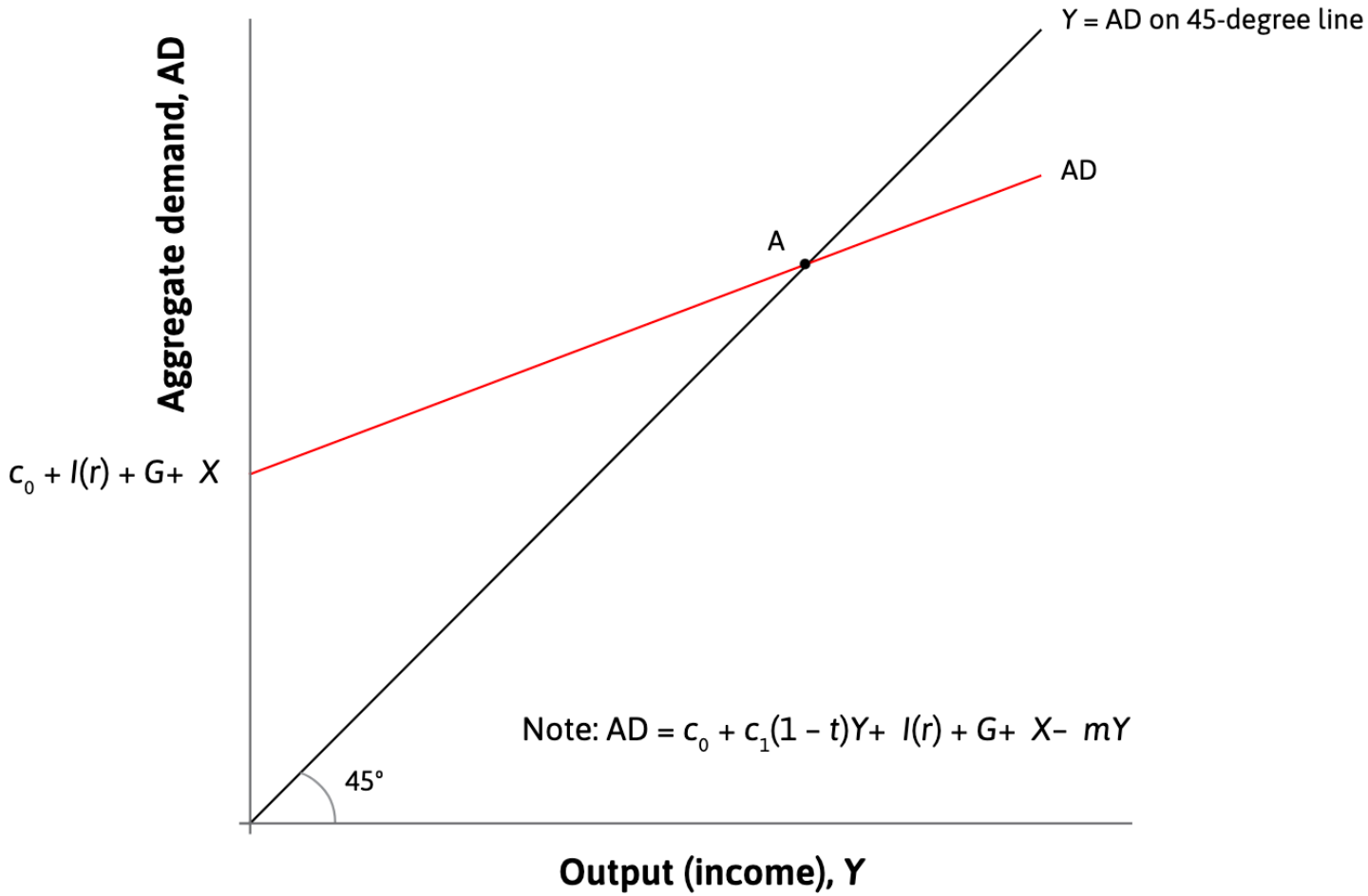


The rise in G operates via the multiplier, so the increase in Y will typically be greater than the increase in G.

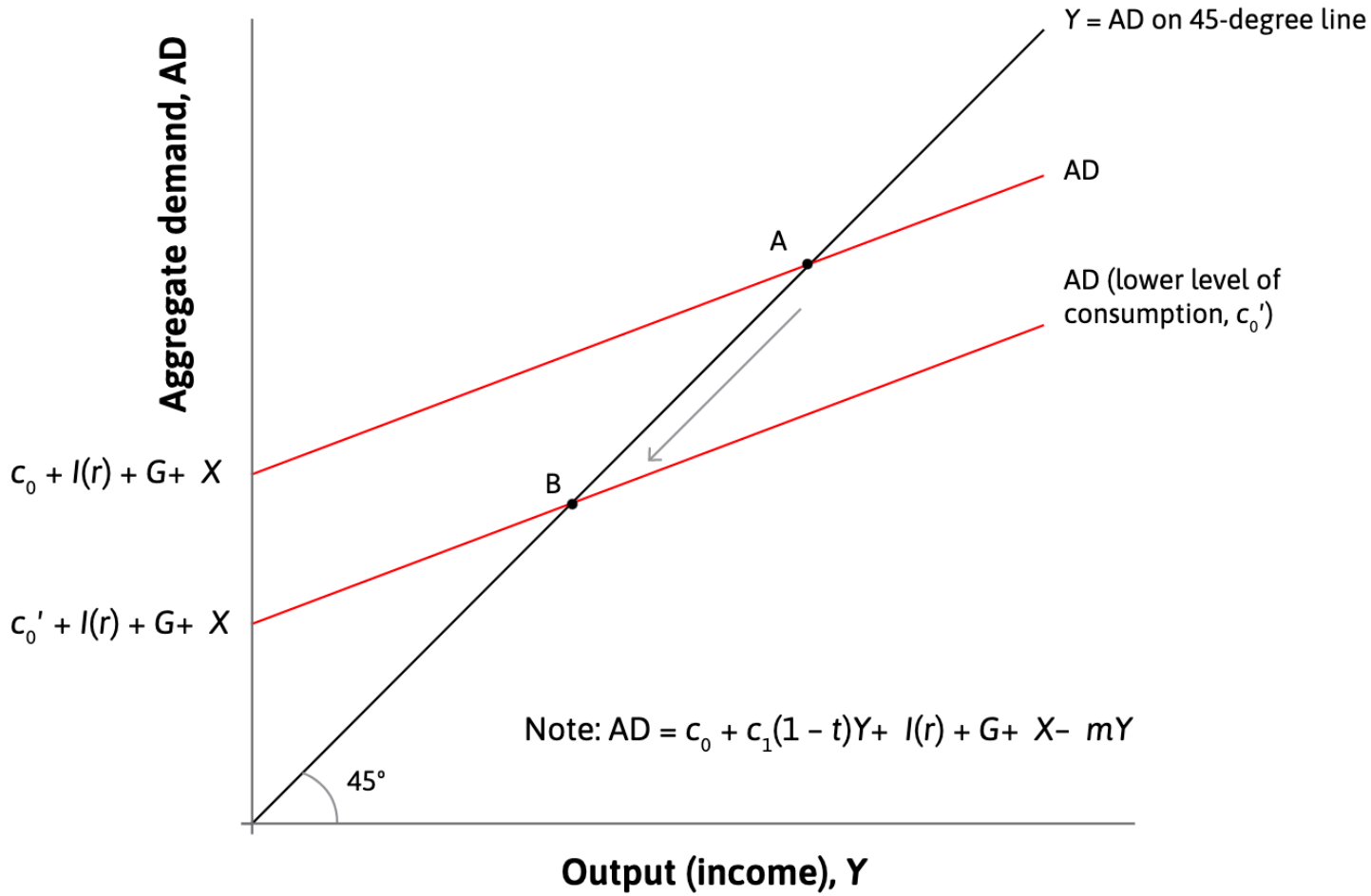
Financing fiscal stimulus

- In a recession, budget deficit is part of its stabilizing role.
- When government chooses to reduce its deficit, this may amplify fluctuations in the economy.

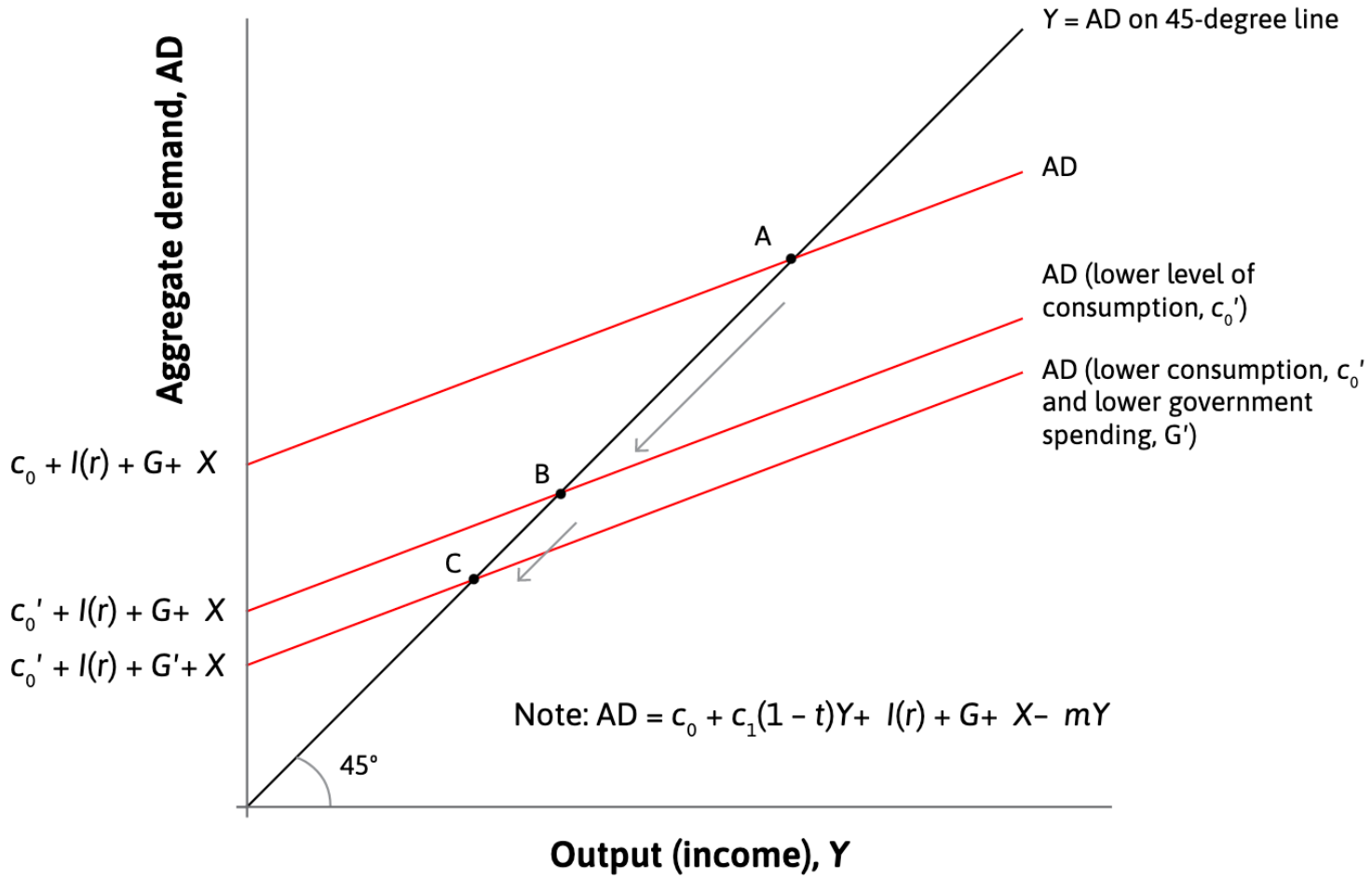
Austerity policy



Austerity policy



Austerity policy



Austerity policy can reinforce a recession by further reducing aggregate demand.

	Dampening mechanisms offset shocks (stabilizing)	Amplifying mechanisms reinforce shocks (may be destabilizing)
Private sector decisions	• Consumption smoothing	• Credit constraints limit consumption smoothing • Rising value of collateral (house prices) can increase wealth above the target level and raise consumption • Rising capacity utilization in a boom encourages investment spending, adding to the boom
Government and central bank decisions	• Automatic stabilizers (for example unemployment benefits) • Stabilization policy (fiscal or monetary)	• Policy mistakes such as limiting the scope of automatic stabilizers in a recession or not running deficits during low demand periods while not running surpluses during booms

How responsive is the economy to government spending?

- In reality, the multiplier also depends on:
  - rate of capacity utilisation (the phase of the business cycle): with fully employed resources, an increase in government spending would **crowd out** private spending
  - expectations of the private sector: the multiplier could be negative if rising fiscal deficit erodes consumer confidence

- After the 2008 Financial crisis, a heated political debate
  - Robert Barro: ≤ 0.8
  - President Obama's Council of Economic Advisors: ≈ 1.6
  - Alan Auerbach and Yuriy Gorodnichenko: **depends**
    - recessions: $\in (1.5, 2)$
    - expansions: ≈ 0.5

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Measuring the Output Responses to Fiscal Policy†

By Alan J. Auerbach and Yuriy Gorodnichenko*

A key issue in current research and policy is the size of fiscal multipliers when the economy is in recession. We provide three insights. First, using regime-switching models, we find large differences in the size of spending multipliers in recessions and expansions with fiscal policy being considerably more effective in recessions than in expansions. Second, we estimate multipliers for more disaggregate spending variables which behave differently relative to aggregate fiscal policy shocks, with military spending having the largest multiplier. Third, we show that controlling for predictable components of fiscal shocks tends to increase the size of the multipliers in recessions.
(*JEL* C32, E62, H20, H62, H63)

The government's finances

Revenue

- income taxes
- spending taxes (VAT, sales tax)
- wealth taxes (inheritance taxes)

Expenditure

- health
- education
- defence
- public investment (roads or schools)

Government primary deficit

$$primary\ budget\ deficit = G - T$$

$$Budget\ balance = T - G$$

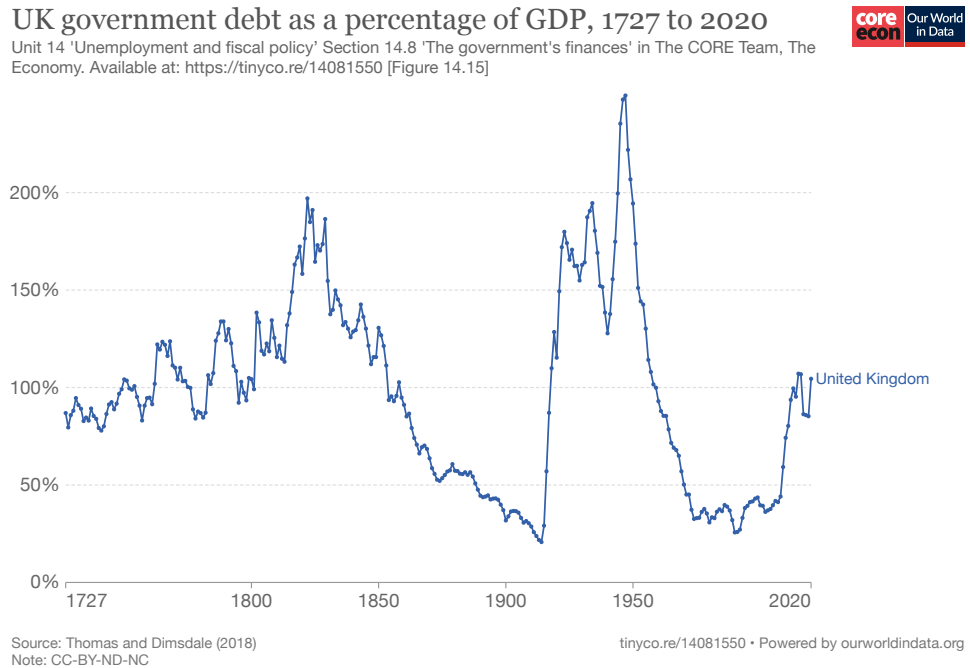
	Budget	
in balance: $G = T$	deficit: $G > T$	surplus: $G < T$

- procyclical
- the government must borrow to cover the gap between spending and revenue, by **issuing bonds**

Government debt

- **Government debt**: sum of all the bonds sold over time to finance budget deficit – matured bonds (repaid debt).
- **Sovereign debt crisis**: a situation in which government bonds come to be considered risky (default risk).

- A large stock of debt relative to GDP can be a problem because the government has to pay interest on its debt.
- There is no point at which the government has to pay off all its stock of debt—it can roll it over instead by issuing new bonds.
- Indebtedness can fall
  - if the primary budget balance is positive
  - if GDP is growing faster than government debt
  - if inflation is high (real value of debt falls)



Foreign markets and aggregate demand

- Fluctuations in the growth rate of important markets abroad influence the domestic economy via demand for exports.
- Demand for imports dampens domestic fluctuations.
- Foreign trade limits the use of fiscal stimulus if the marginal propensity to import is large.

Linking Aggregate Demand and unemployment

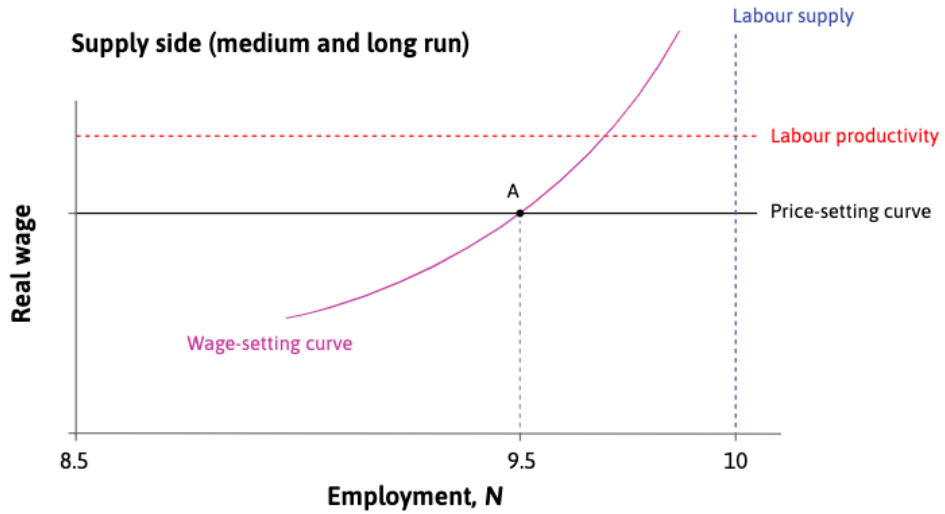
Supply-side = labour market model

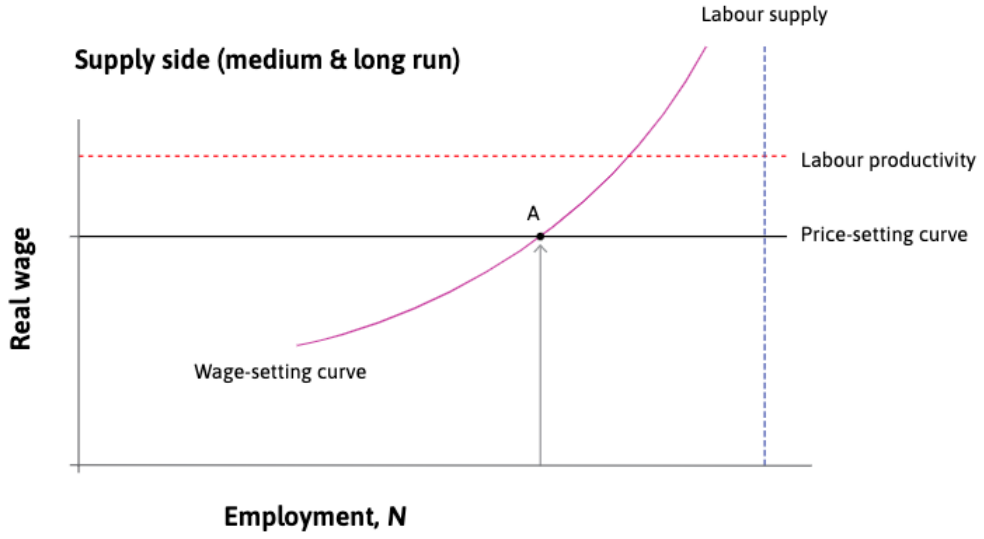
Medium-run model: wages and prices can change, but capital stock, technology and institutions are fixed

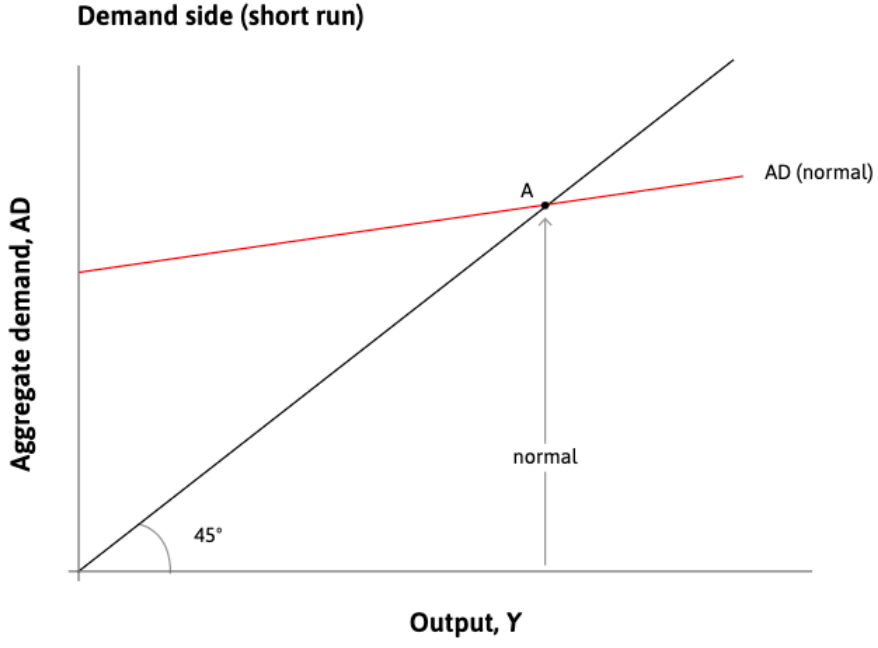
Demand-side = multiplier model

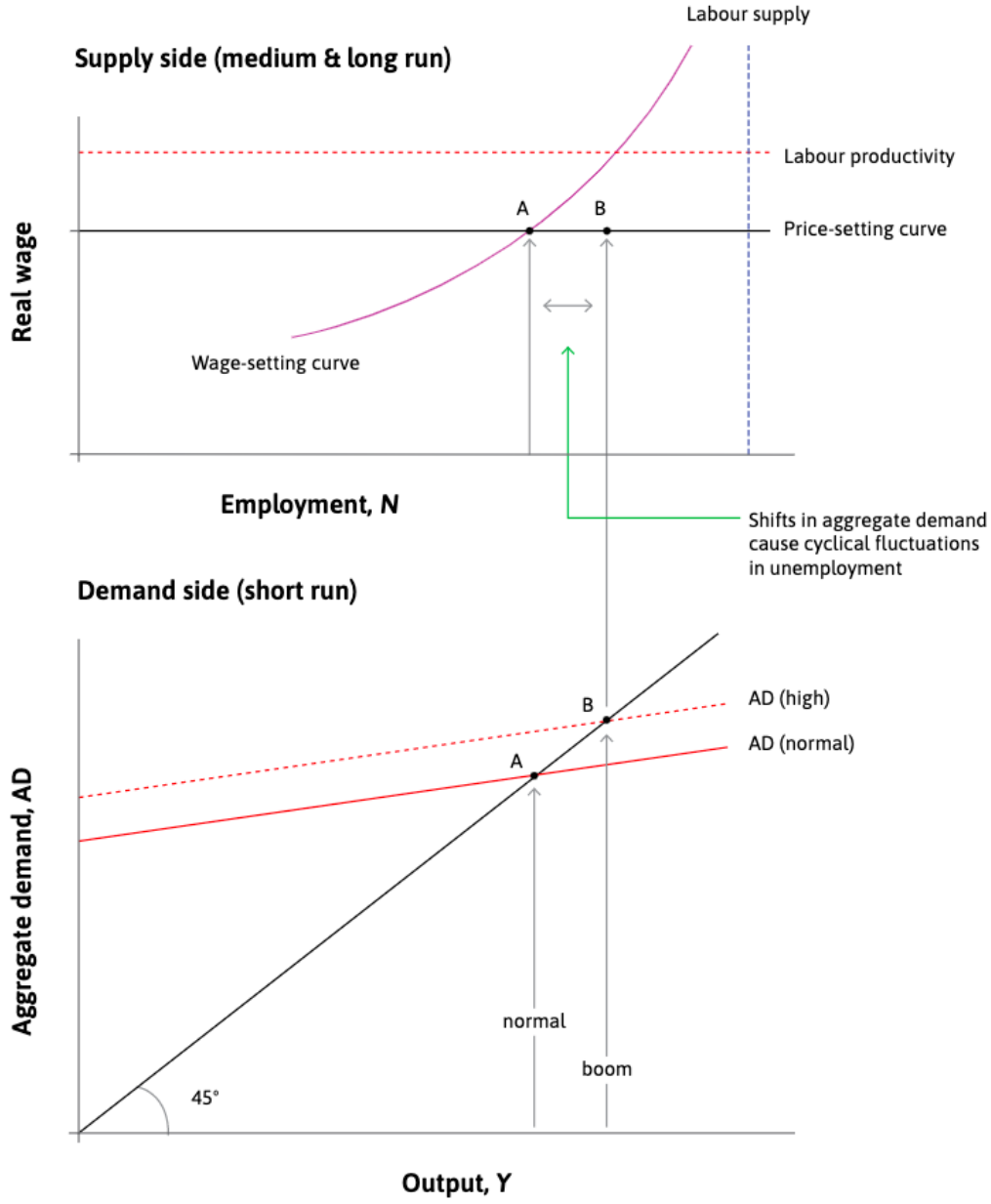
Short-run model: all variables fixed

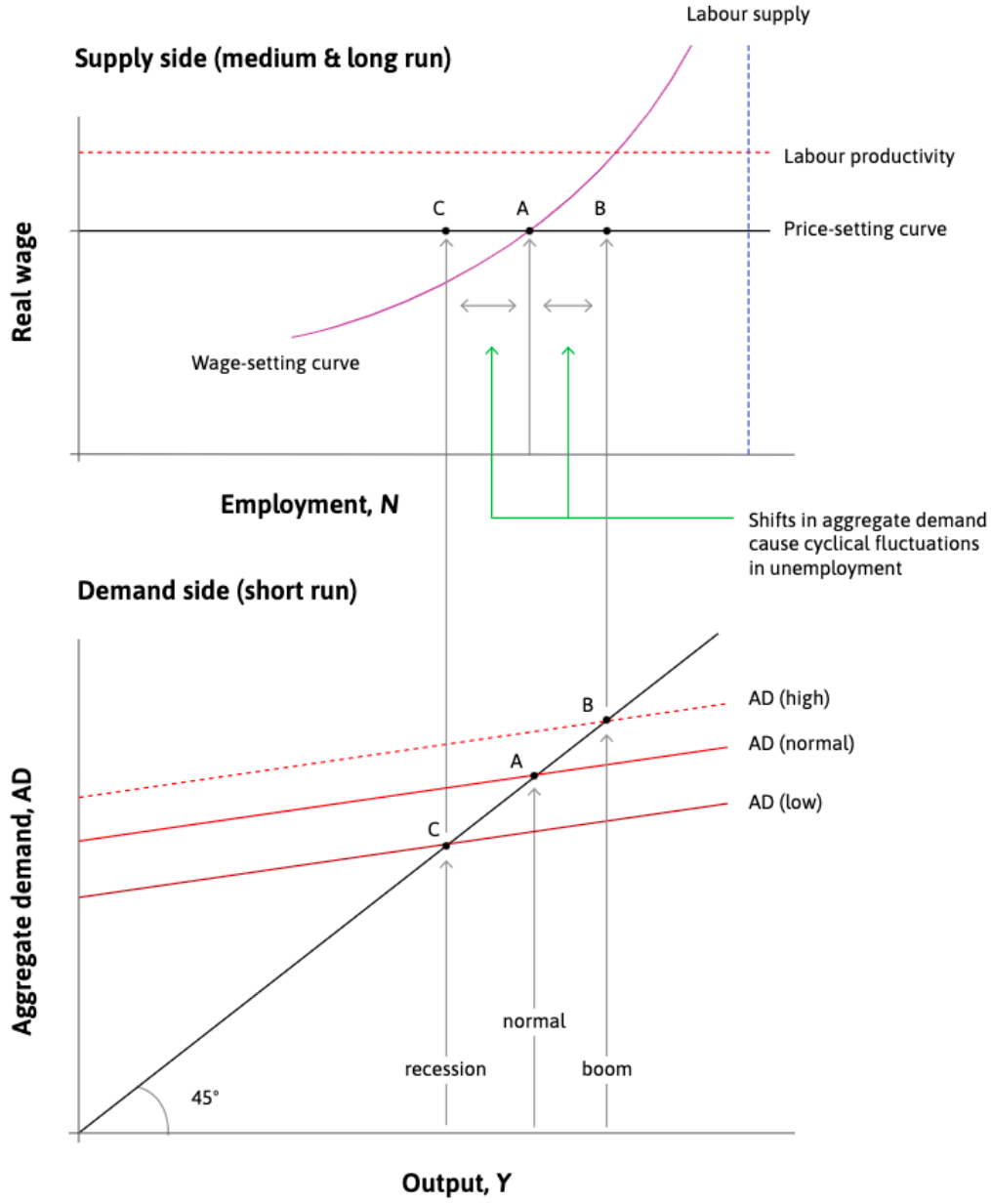
Production function connects employment (N) and output (Y)




Supply side (medium & long run)
Labour supply
Labour productivity
A
Price-setting curve
Real wage
Wage-setting curve
Employment, N


Demand side (short run)
AD (normal)
A
Aggregate demand, AD
normal
45°
Output, Y


Supply side (medium & long run)
Labour supply
Labour productivity
Price-setting curve
A
B
Real wage
Wage-setting curve
Employment, N
Shifts in aggregate demand cause cyclical fluctuations in unemployment
Demand side (short run)
AD (high)
AD (normal)
B
A
Aggregate demand, AD
normal
boom
45°
Output, Y


Supply side (medium & long run)
Labour supply
Labour productivity
Price-setting curve
C
A
B
Real wage
Wage-setting curve
Employment, N
Shifts in aggregate demand cause cyclical fluctuations in unemployment
Demand side (short run)
AD (high)
AD (normal)
AD (low)
B
A
C
Aggregate demand, AD
normal
recession
boom
45°
Output, Y

Summary

- The aggregate demand function and its components: $AD = C + I + G + NX$
- Shocks to aggregate demand are amplified by the multiplier
- Government can stabilise economic fluctuations
  - Automatic stabilisers
  - Fiscal stimulus – offset decline in aggregate demand from the private sector
  - Austerity policies amplify the negative demand shock
- Fiscal stimulus in a recession must be reversed in a boom to prevent government debt from escalating (sovereign debt crisis)

Next session

- The relationship between unemployment and inflation: The Phillips curve
- How governments use monetary policy to affect inflation
- Developing our model of aggregate demand: What happens to wages and prices in booms/recessions

Unit	Run	What is exogenous?	What is endogenous	Problem to be addressed	Appropriate policies	Model to use
13, 14	Short	Prices, wages, capital stock, technology, institutions	Employment, demand, output	Demand shifts affect unemployment	Demand side	Multiplier
14, 15	Medium	Capital stock, technology, institutions	Employment, demand, output, prices, wages	Demand and supply shifts affect unemployment, inflation and equilibrium unemployment	Demand side, supply side	Labour market; Phillips curve
16	Long	Technology, institutions	Employment, demand, output, prices, wages and capital stock	Shifts in profit conditions and changes in institutions affect equilibrium unemployment and real wages	Supply side	Labour market model with firm entry and exit