Universidad de Valladolid

ECO - UVa

Topic 7

Stabilization Policy

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Outline

1. The government.

2. Aggregate demand and fiscal policy.
   - Keynesian multiplier.

3. Money and banking.
   - Money supply, demand for money and equilibrium in the money market.

4. Aggregate demand and monetary policy.

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The government

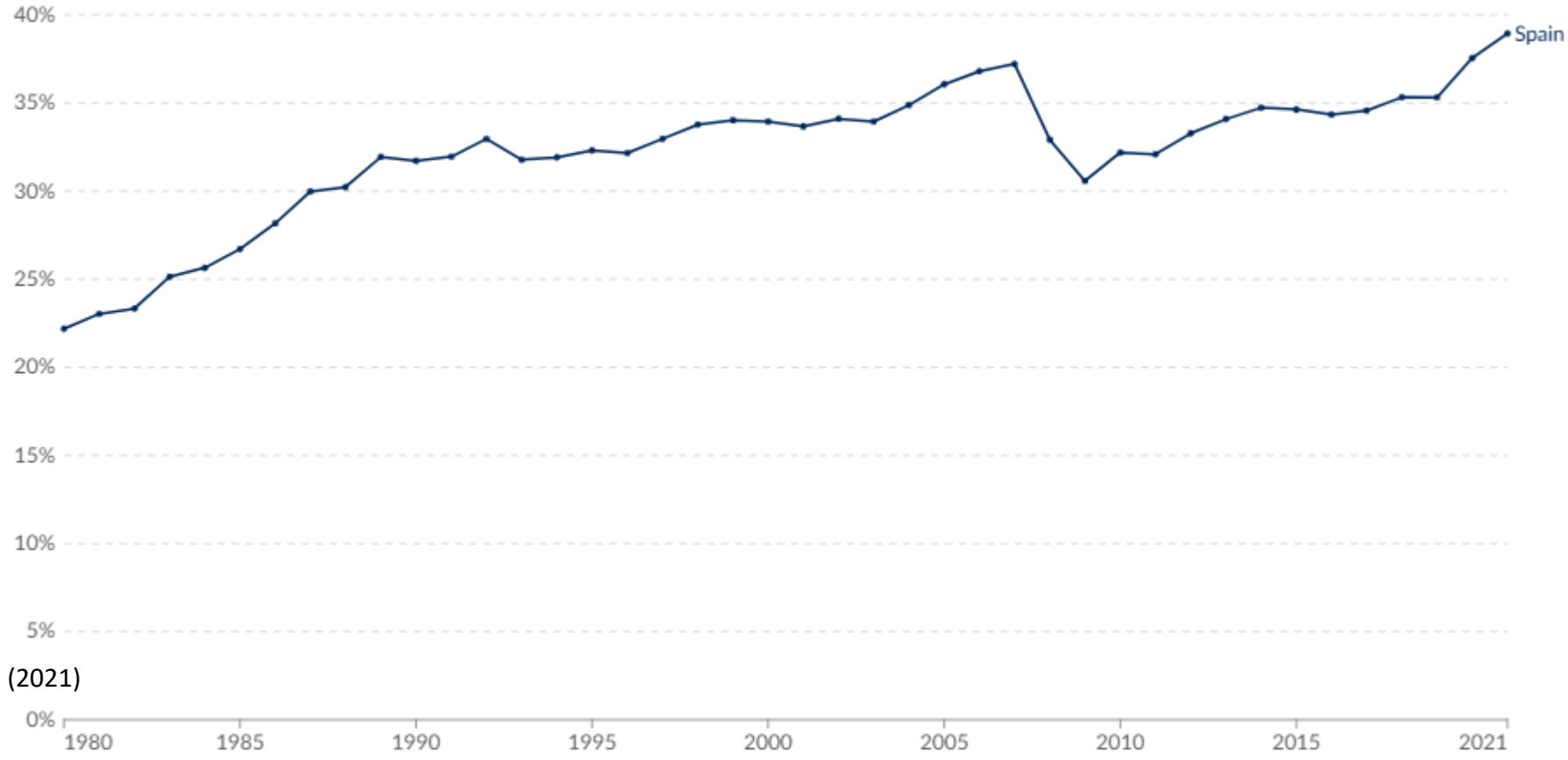
- Governments are now actively involved in the economies of countries.
  - They bring in a large amount of money through tax revenues.
  - They spend large sums of money on public spending and aid to society.

Government

- Tax collection of a government:
  - Personal income tax.
  - Corporate income tax.
  - Social security contributions.
  - Other taxes.

Government

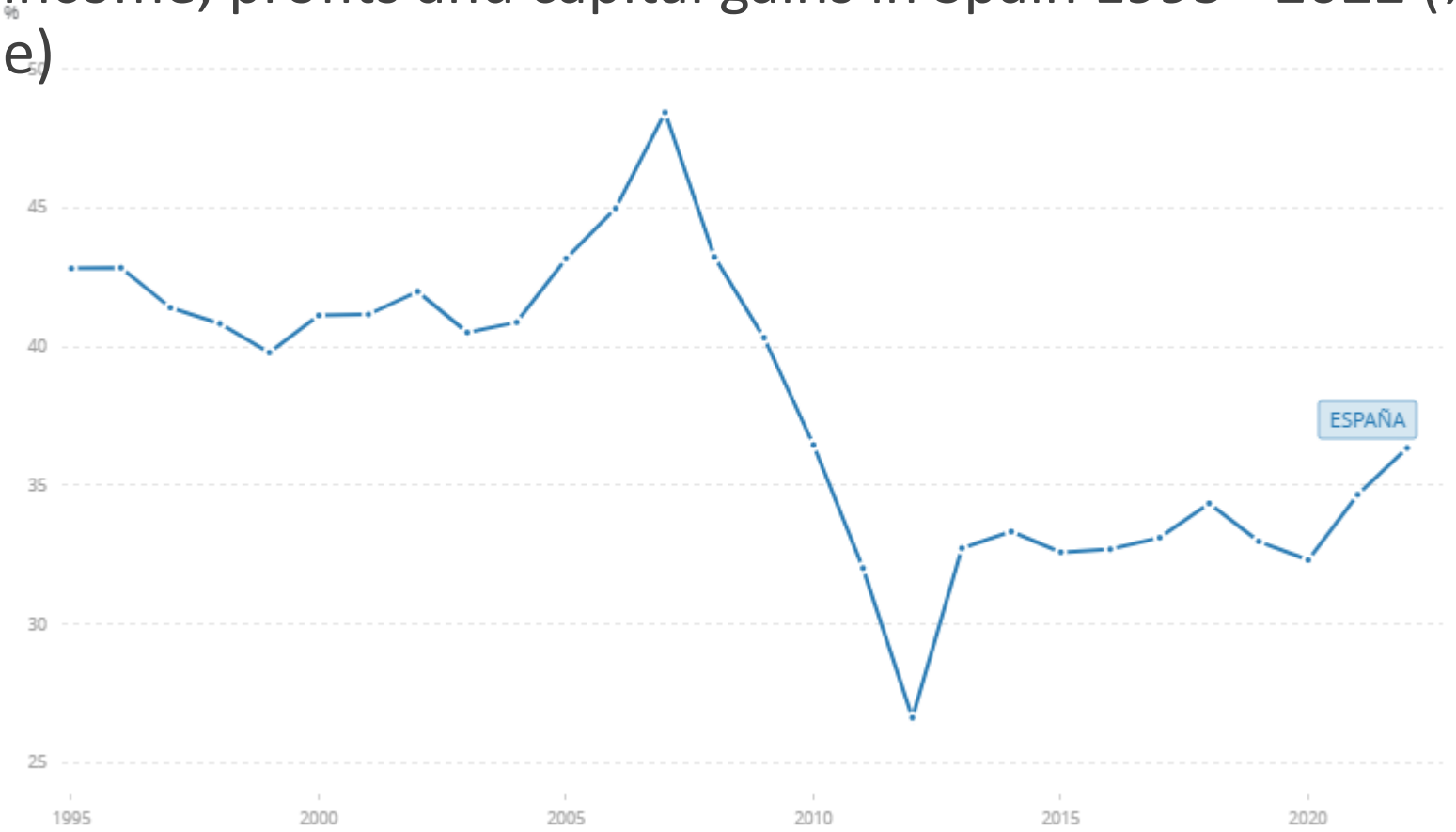
- Tax revenues in Spain 1980 - 2021 (% of GDP)



Source: Our World in Data (2021)

The government

- Tax on income, profits and capital gains in Spain 1995 - 2022 (% of revenue)



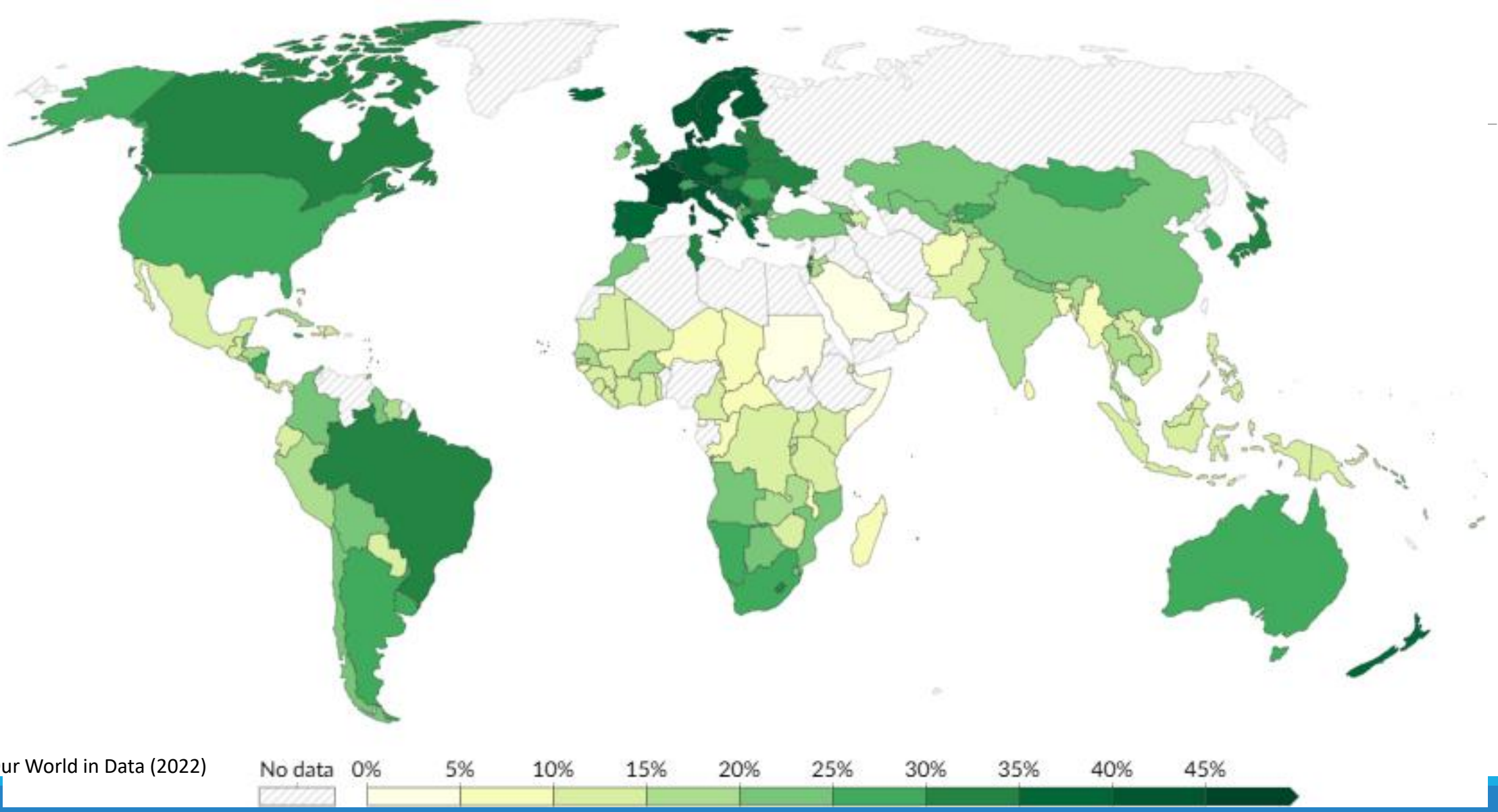
Source: World Bank (2023)

Government

- Income, profit and capital gains tax in Spain 1995 - 2022 (% of total taxes)

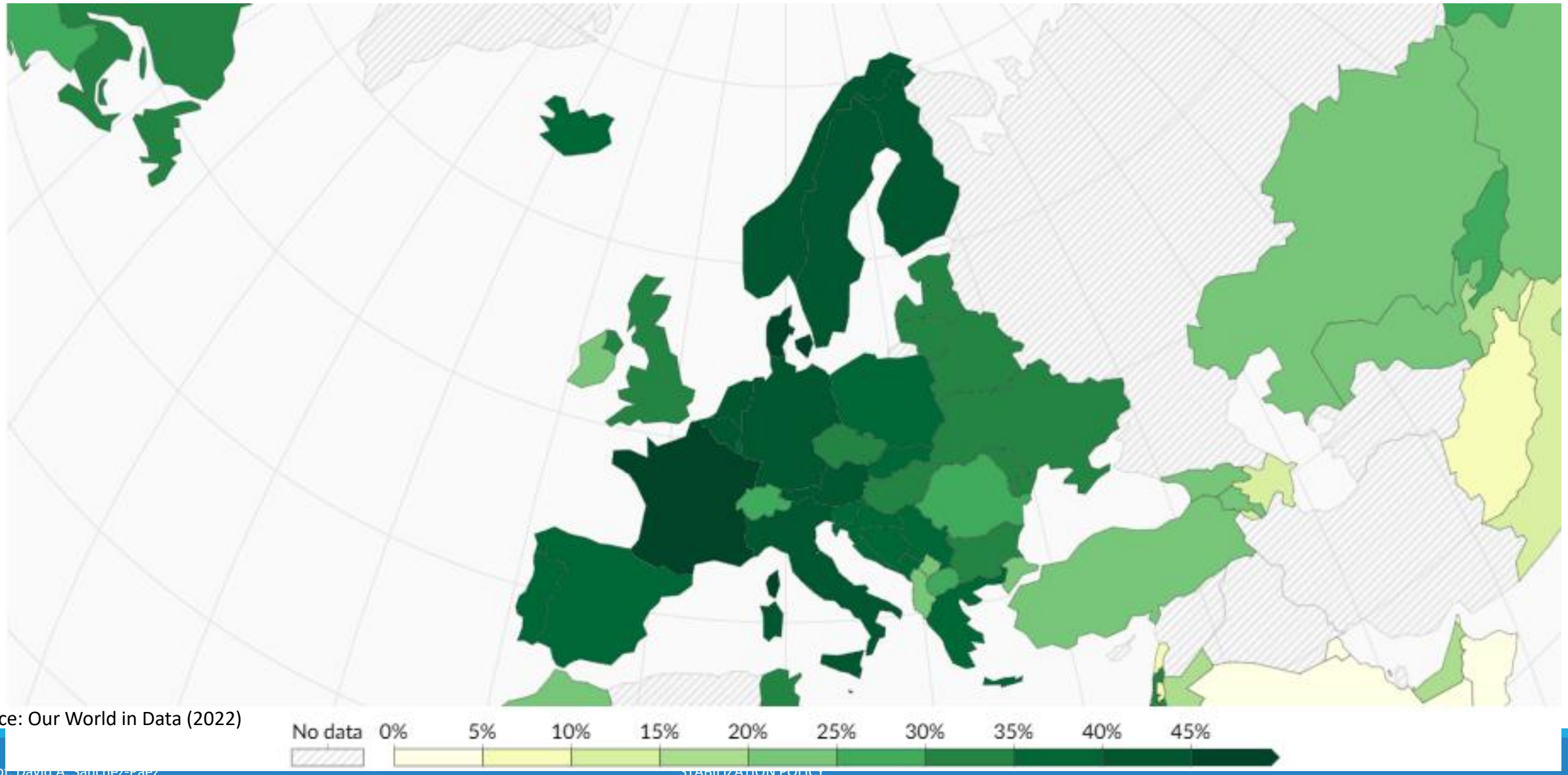
Source: World Bank (2023)

Government



Source: Our World in Data (2022)

The government



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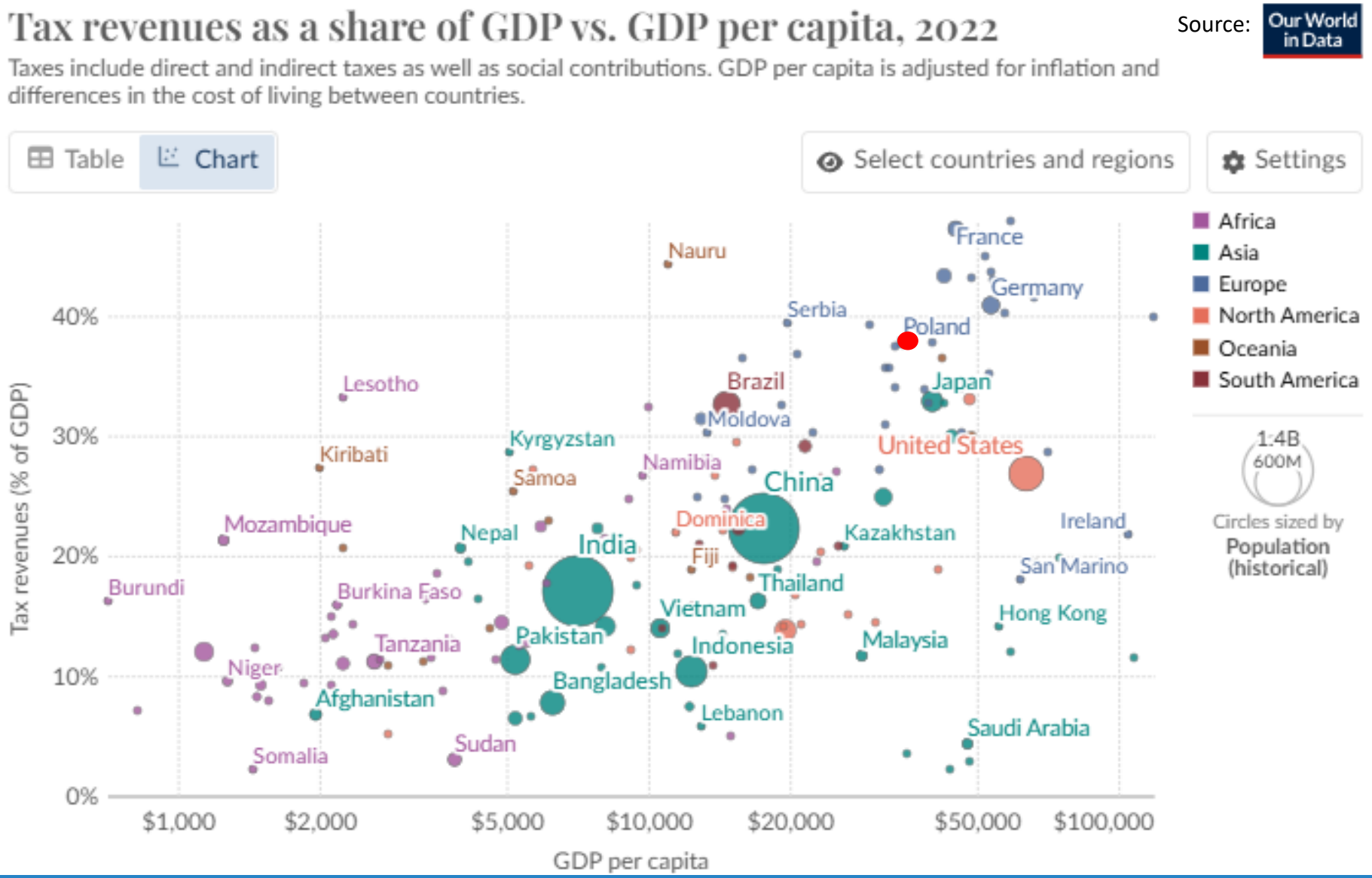
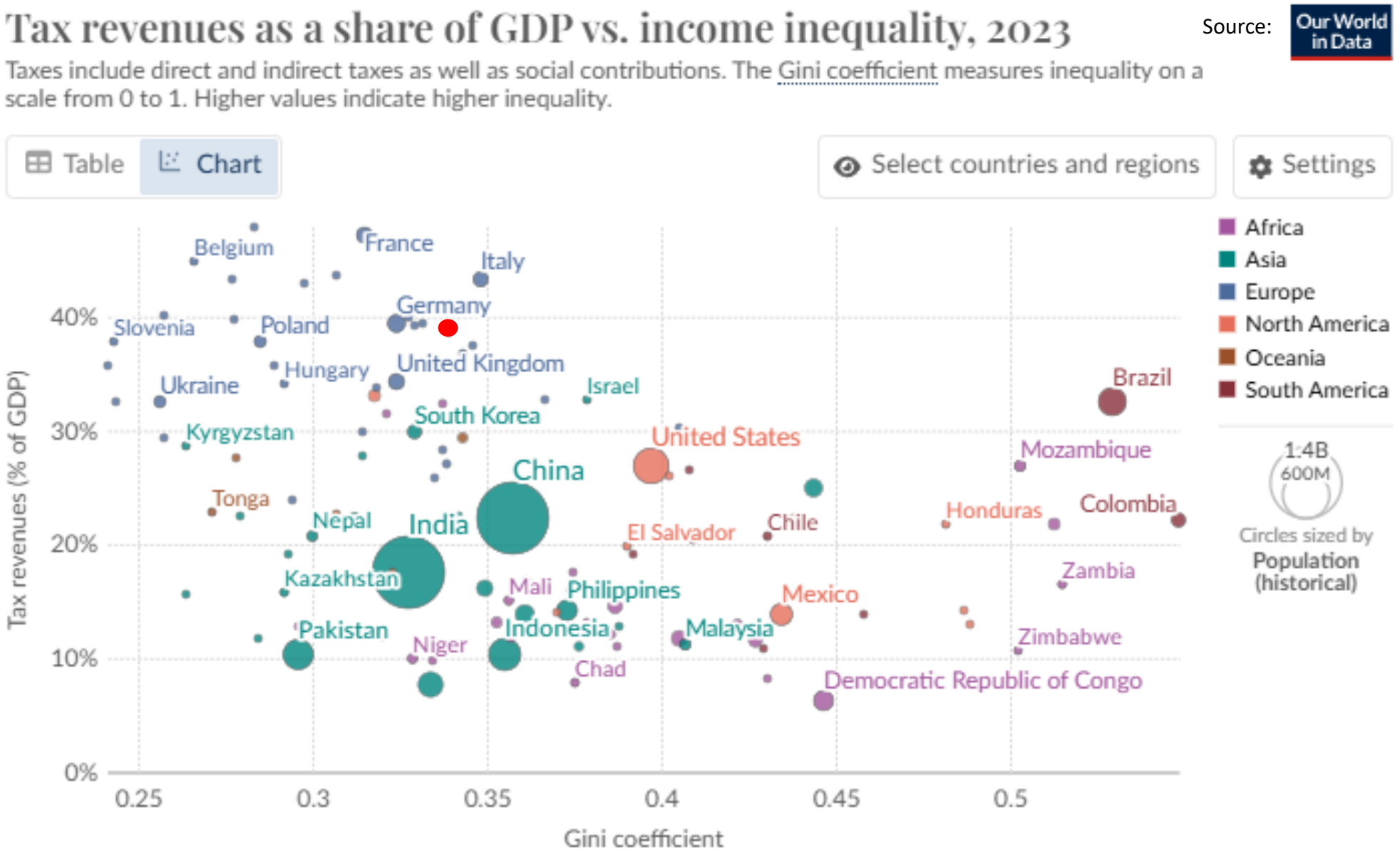


The government



Government

- Government spending:
  - Health.
  - Education.
  - Defense.
  - Government debt.
  - Social protection: Social security, subsidies and grants.

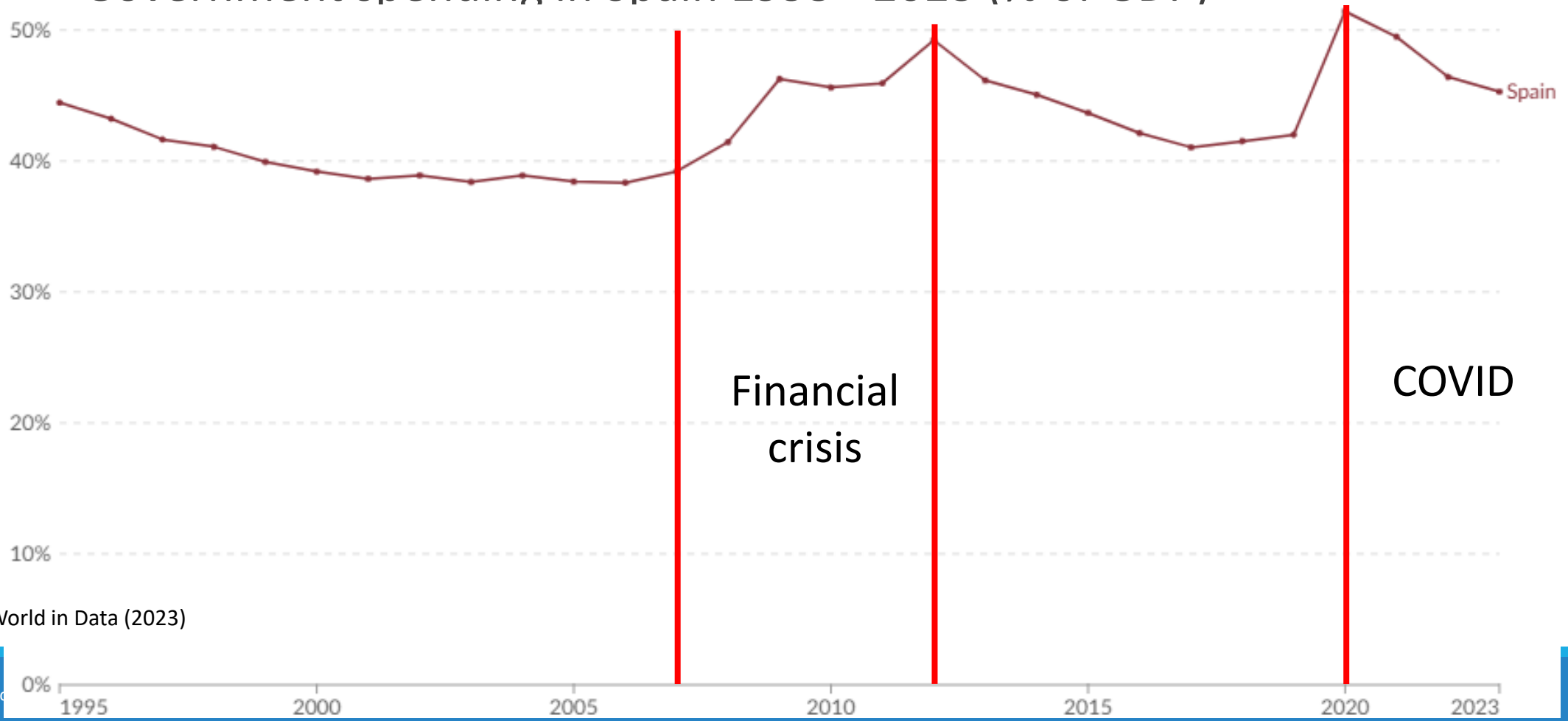
Government

- Government spending in Spain 1850 - 2023 (% of GDP)

Source: Our World in Data (2023)

Government

- Government spending in Spain 1995 - 2023 (% of GDP)



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The government

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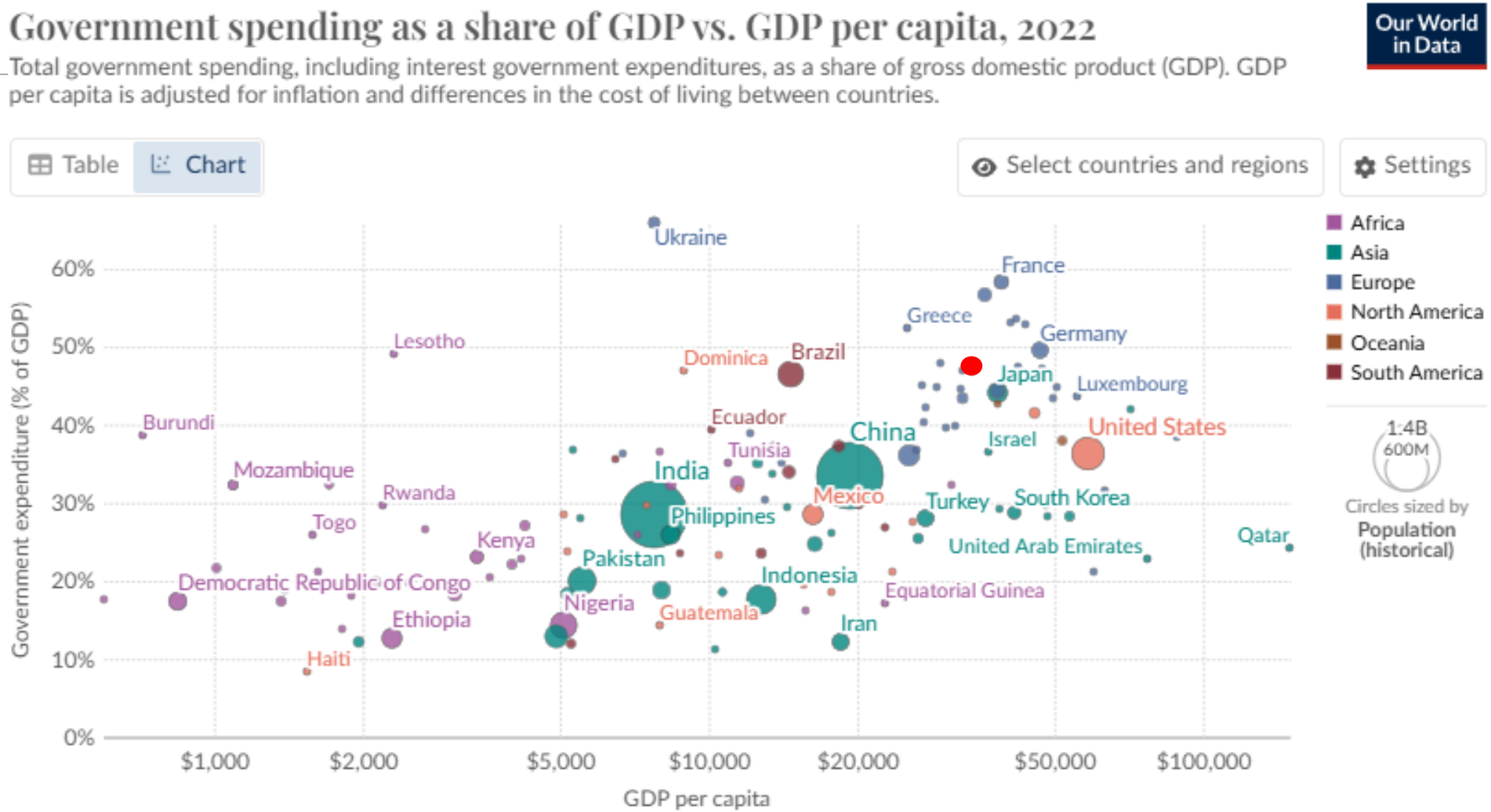

The government

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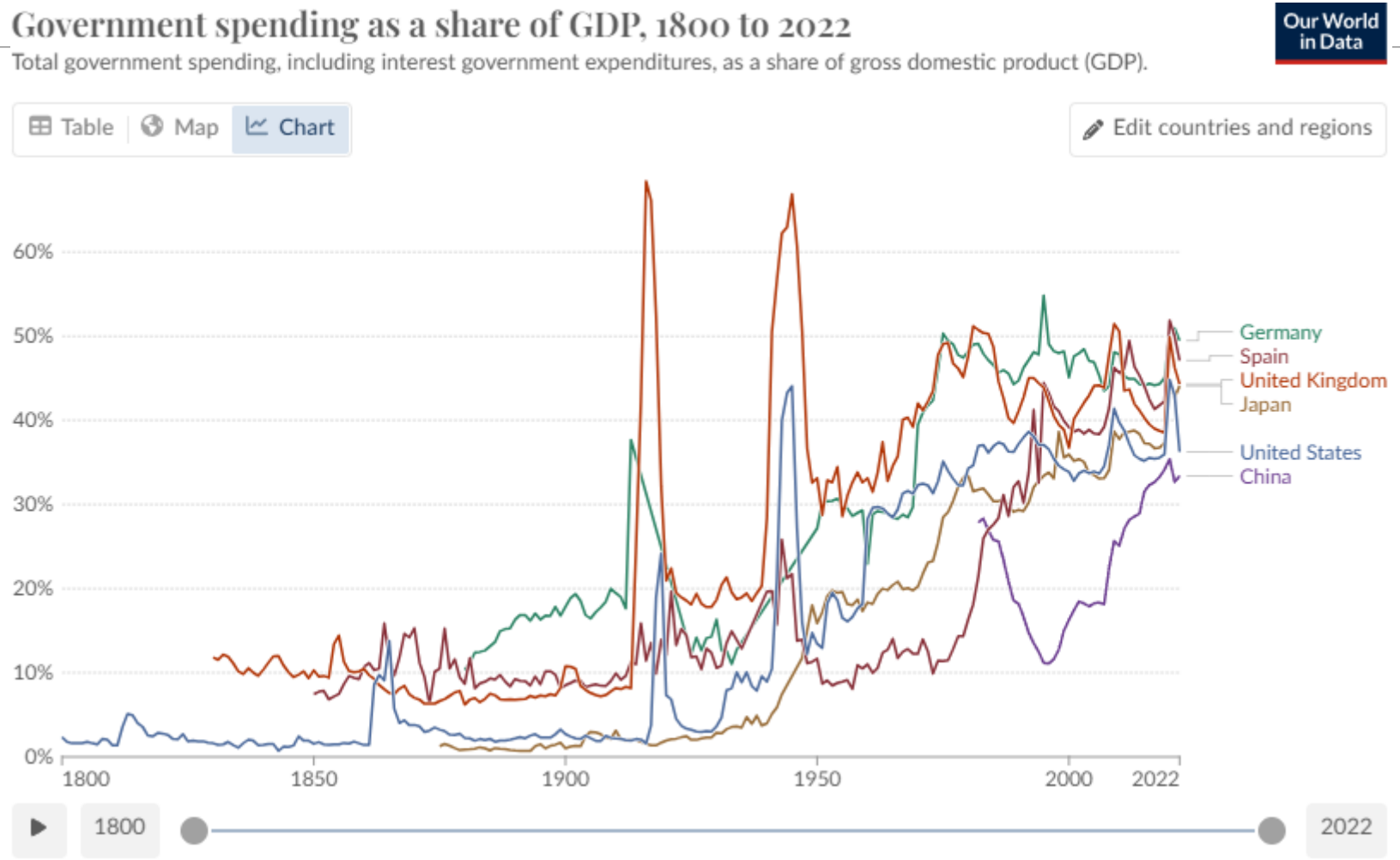
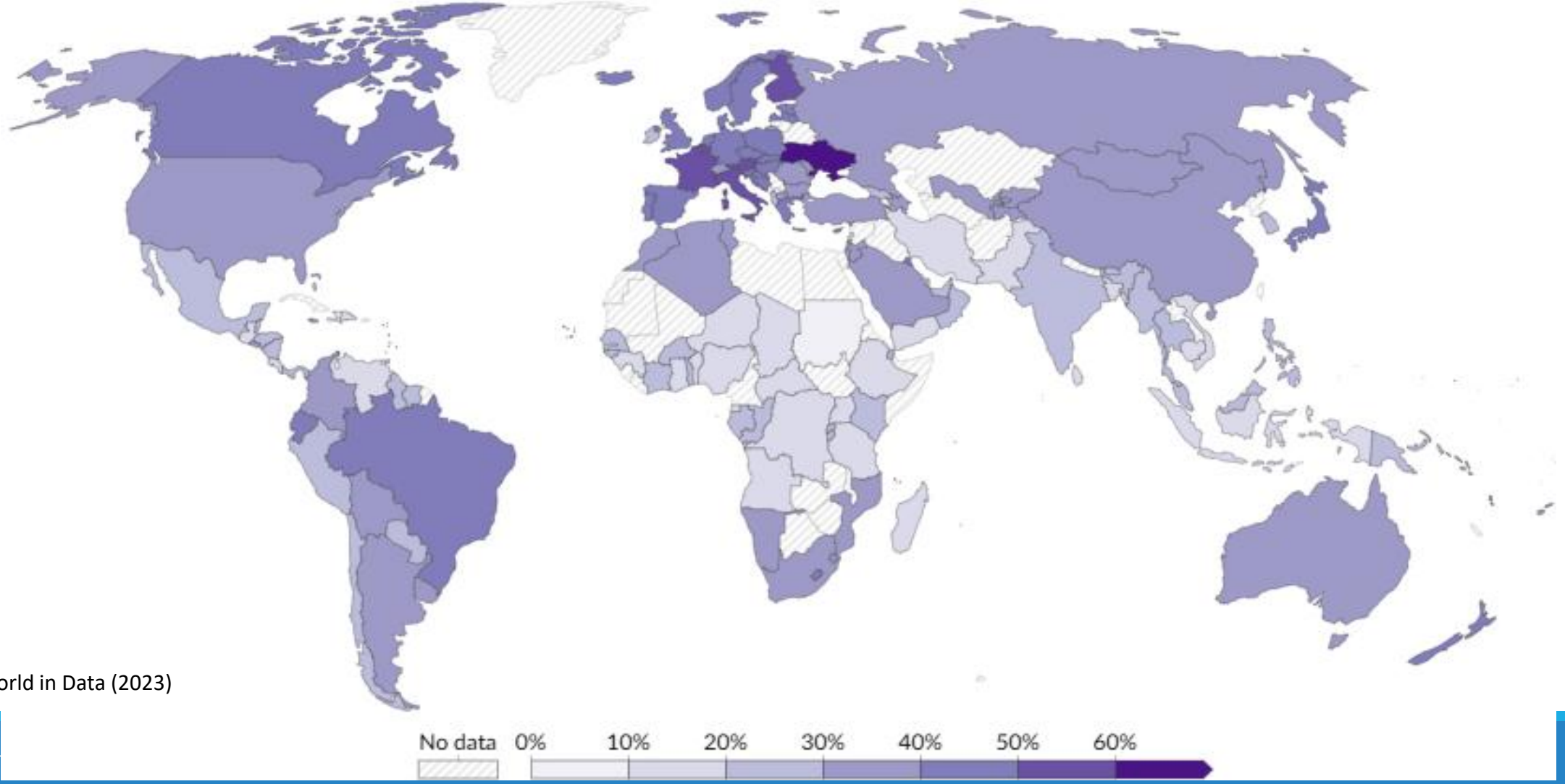


Government

Government Spending (%GDP, 2023)



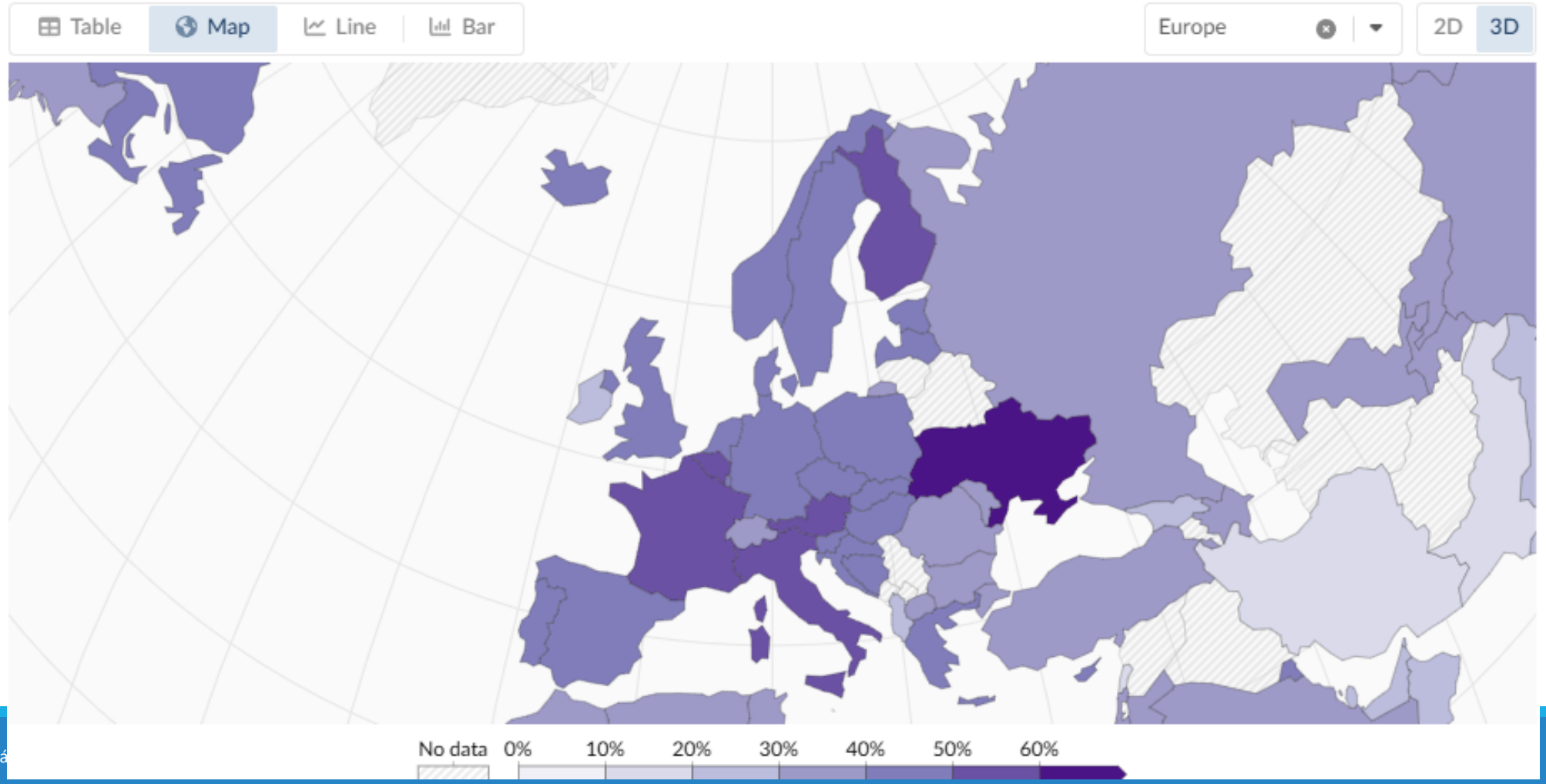
Source: Our World in Data (2023)

The government

Source: Our World in Data

Government spending as share of GDP, 2023

Total government spending, shown as a share of gross domestic product (GDP). It includes interest paid on government debt.



The government

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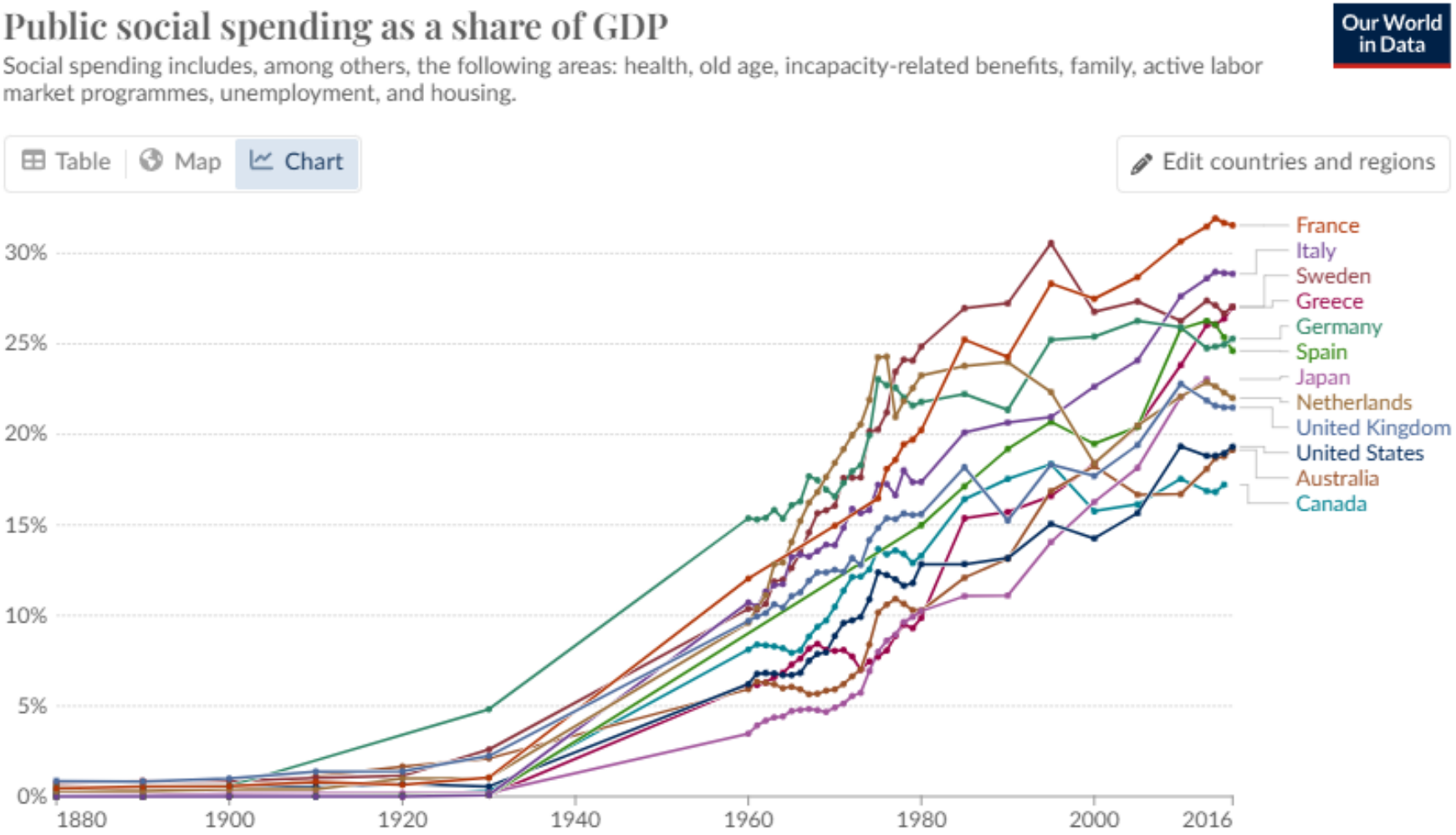
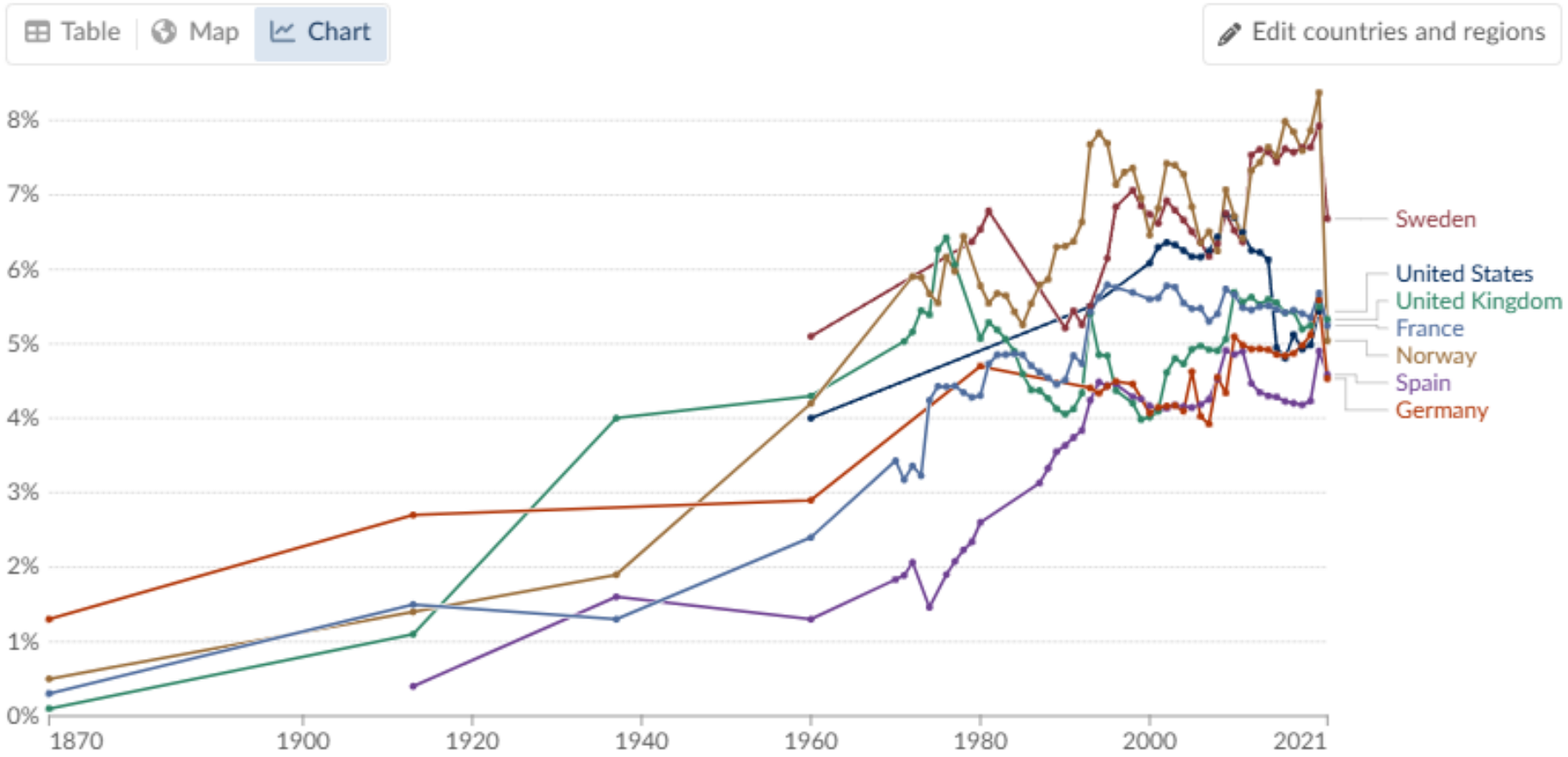


The government

Source: Our World in Data

Public spending on education as a share of GDP

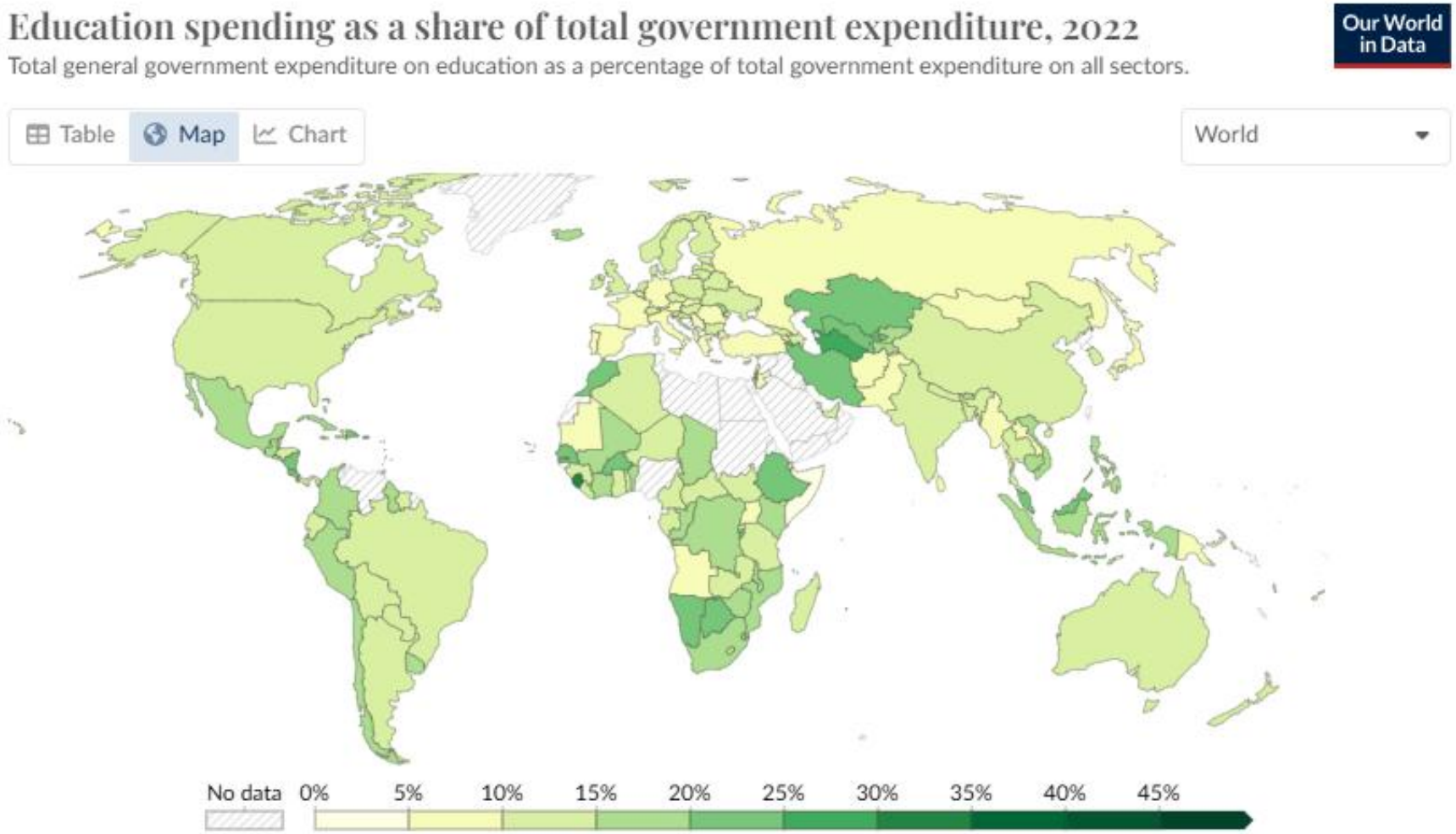
Total general government expenditure on education (all levels of government and all levels of education), given as a share of GDP.



The government

Source:

Our World in Data

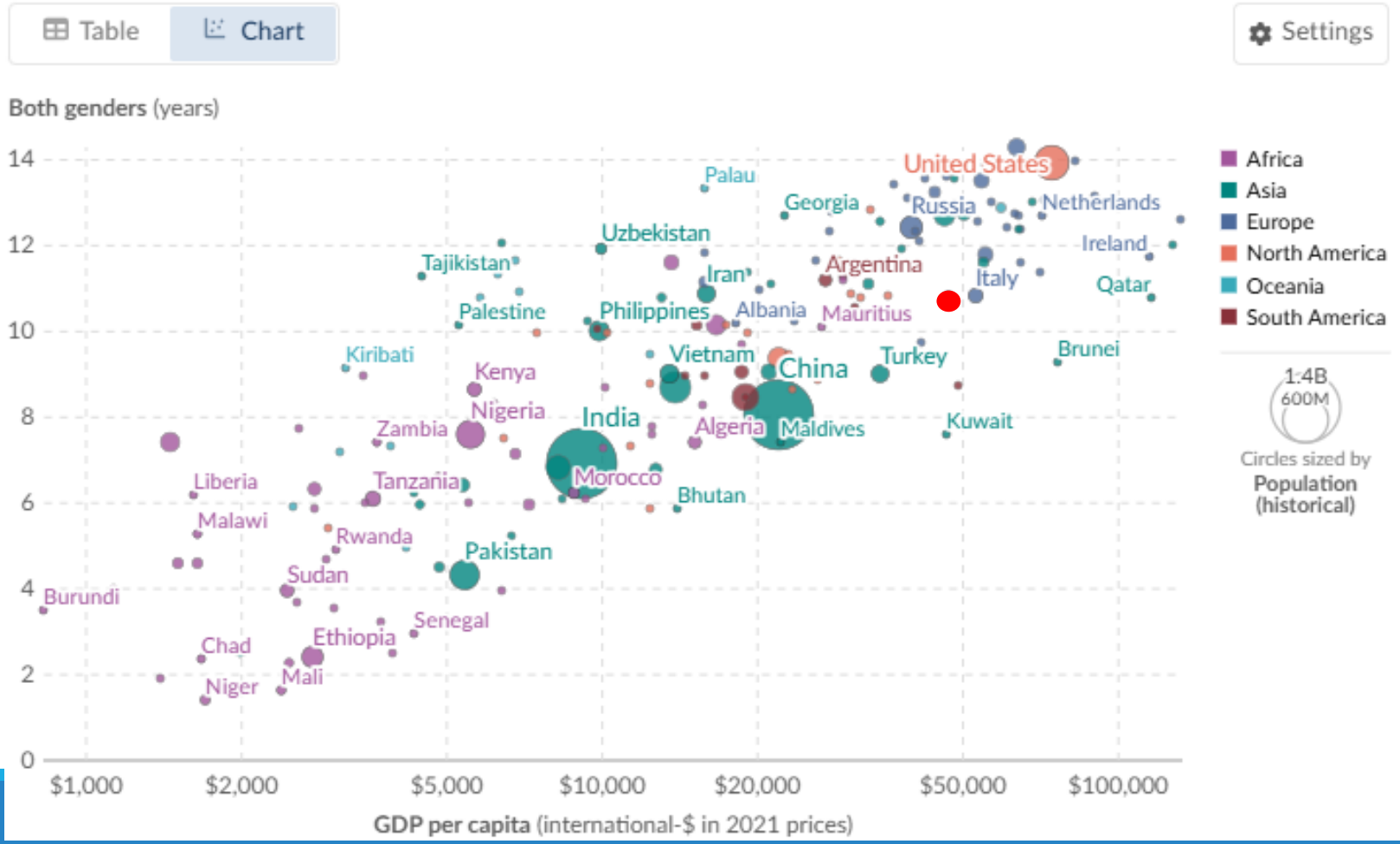


The government

Source: Our World in Data

Average years of schooling vs. GDP per capita, 2023

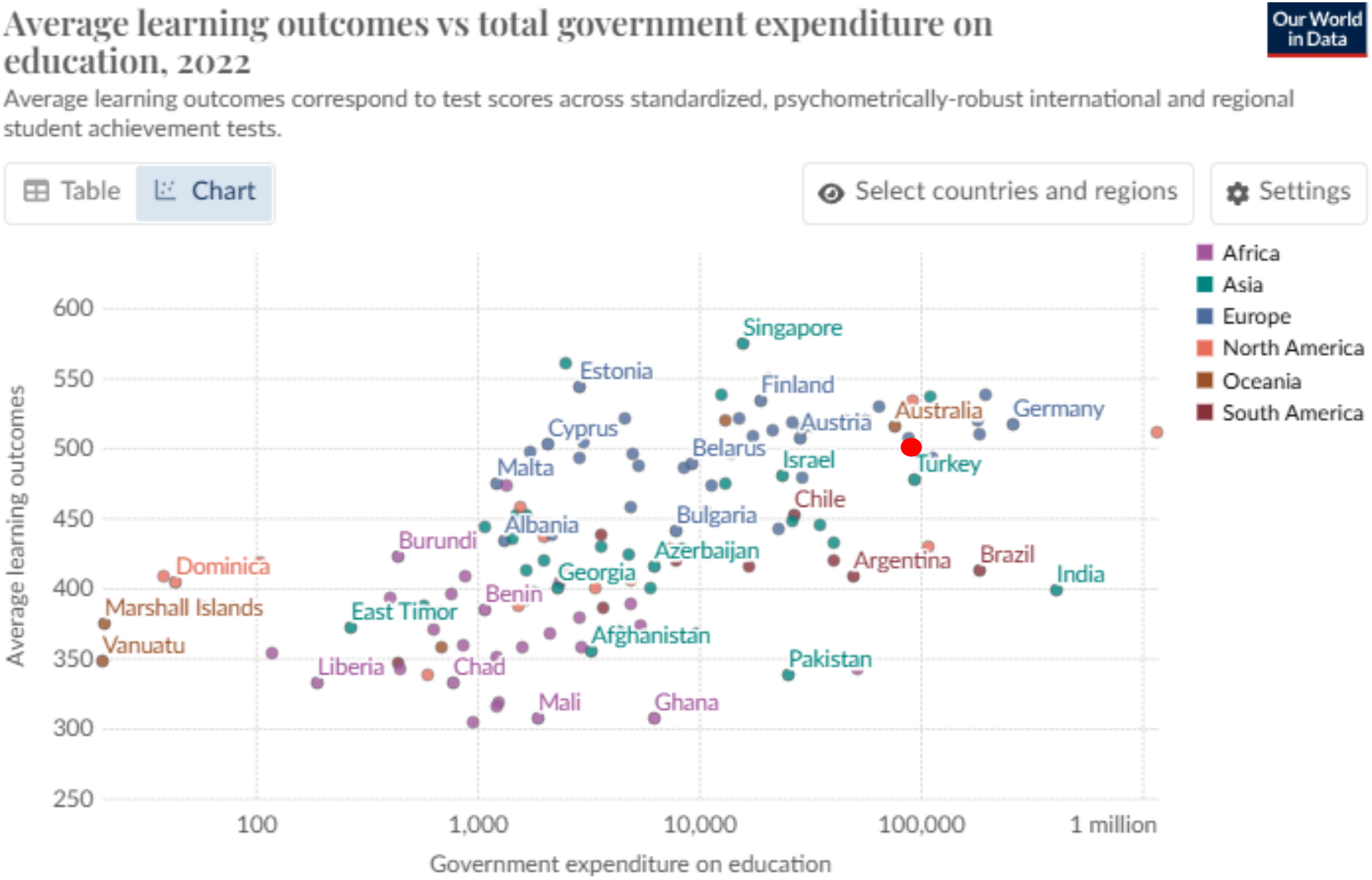
The average years of schooling completed by individuals aged 25 and older. GDP per capita is adjusted for inflation and for differences in living costs between countries.



The government

Source:

Our World in Data

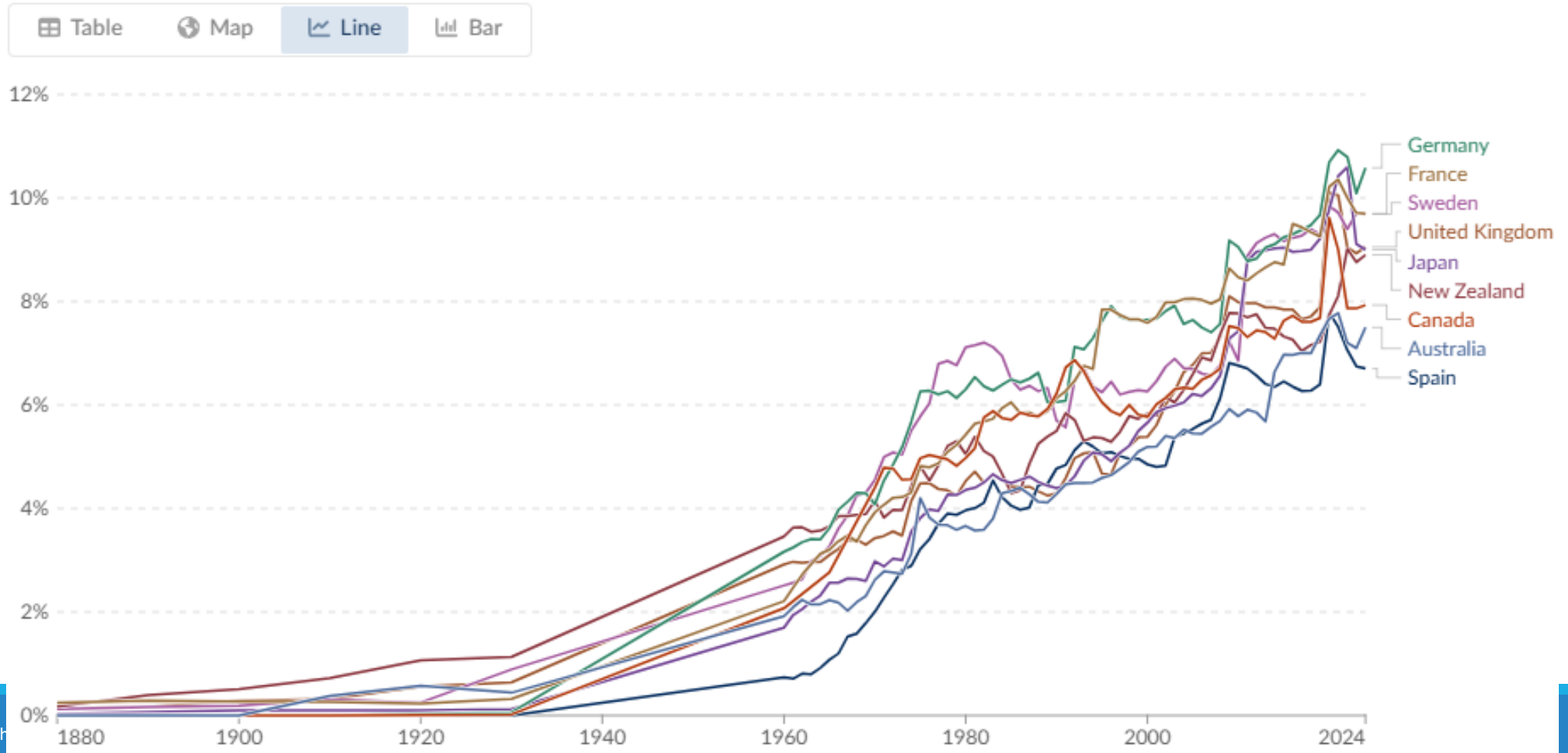


The government

Source: Our World in Data

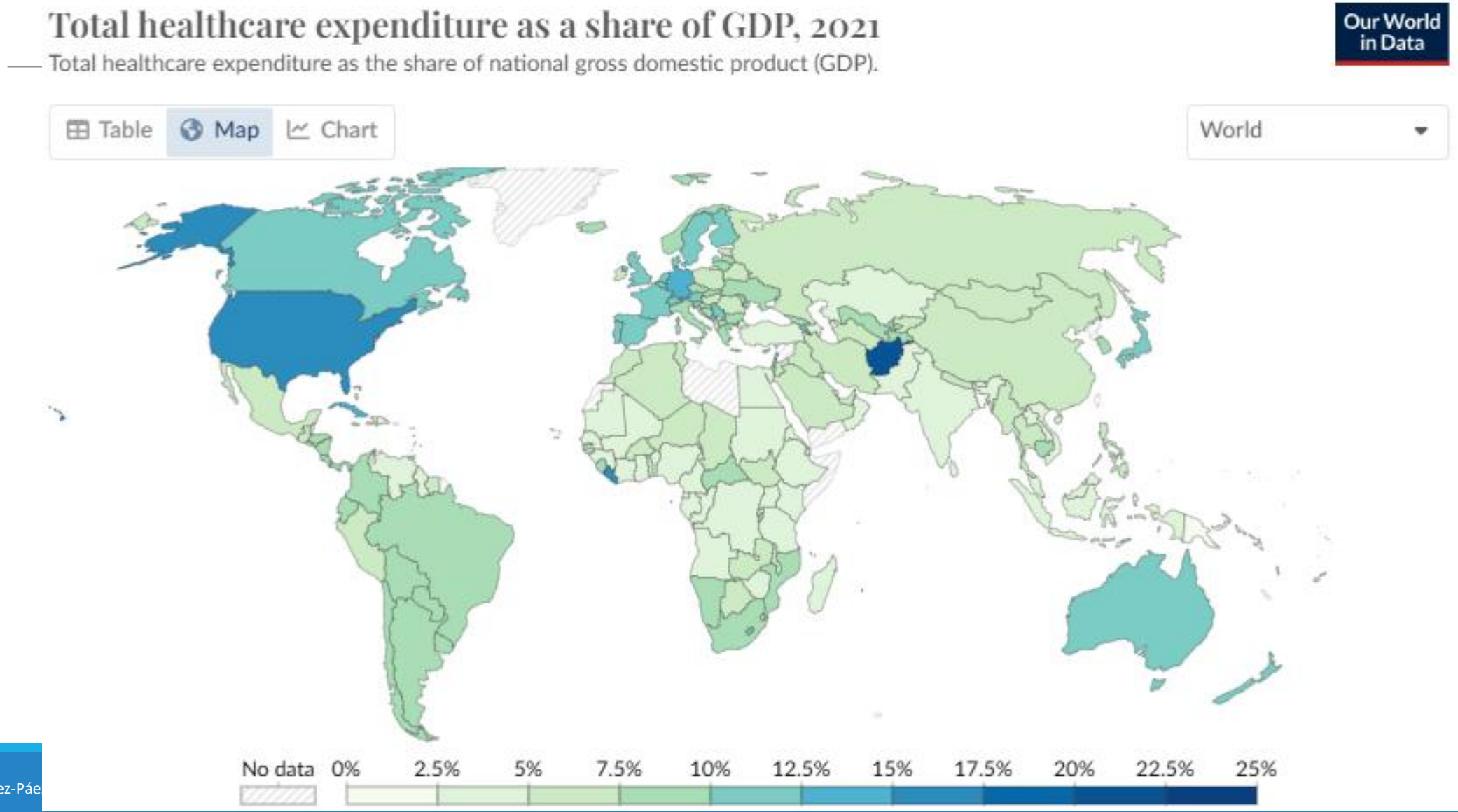
Government health spending as a share of GDP, 1880 to 2024

This metric captures spending on government funded health care systems and social health insurance, as well as compulsory health insurance.



The government

Source: Our World in Data



The government

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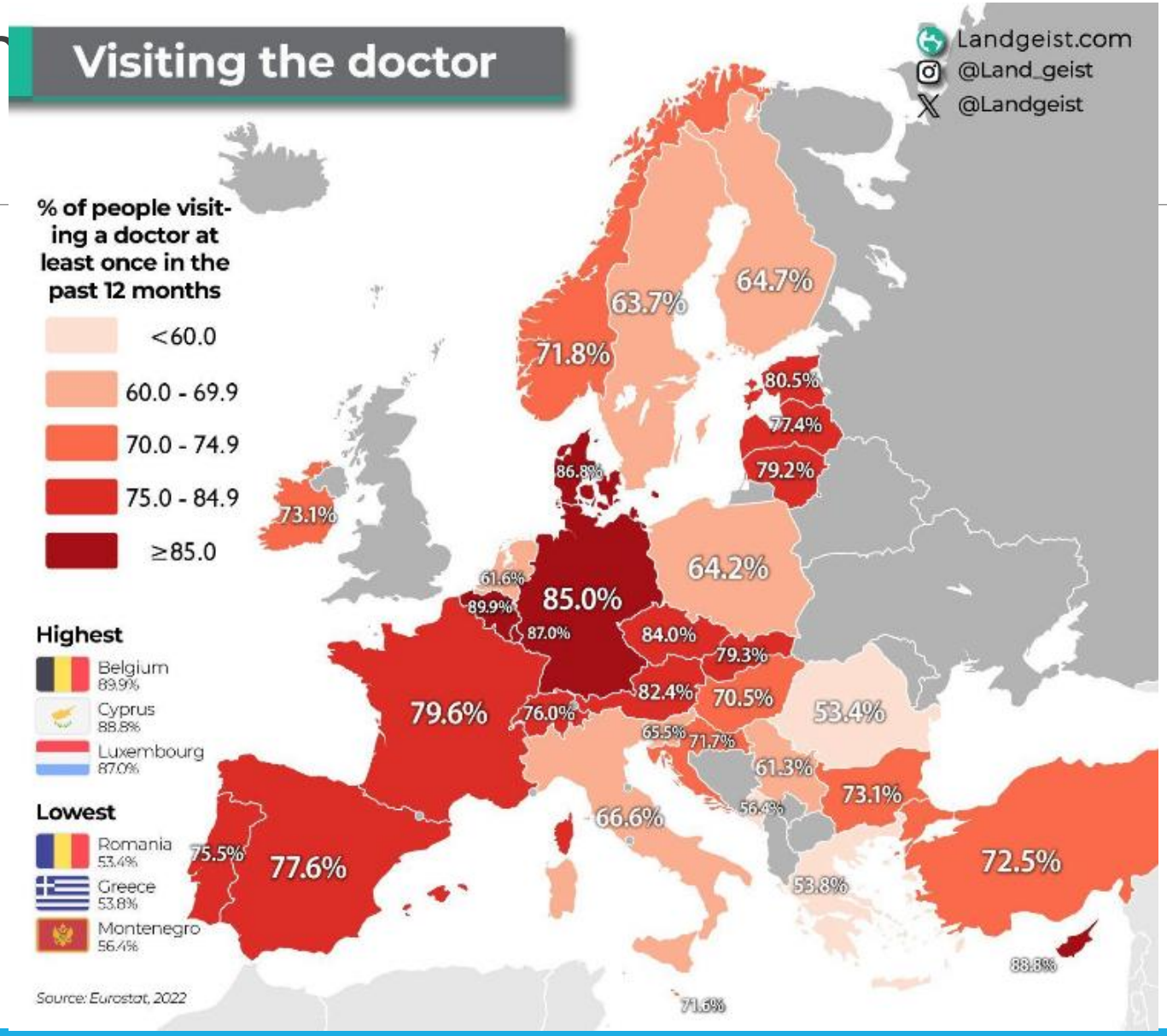

Visiting the doctor
Landgeist.com
@Land_geist
@Landgeist
% of people visiting a doctor at least once in the past 12 months
<60.0
60.0 - 69.9
70.0 - 74.9
75.0 - 84.9
≥85.0
Highest
Belgium 89.9%
Cyprus 88.8%
Luxembourg 87.0%
Lowest
Romania 53.4%
Greece 53.8%
Montenegro 56.4%
Source: Eurostat, 2022
63.7%
64.7%
71.8%
80.5%
77.4%
79.2%
86.8%
73.1%
64.2%
61.6%
89.9%
85.0%
87.0%
84.0%
79.3%
82.4%
70.5%
79.6%
76.0%
53.4%
65.5%
71.7%
61.3%
73.1%
56.4%
66.6%
75.5%
77.6%
53.8%
72.5%
88.8%
71.6%

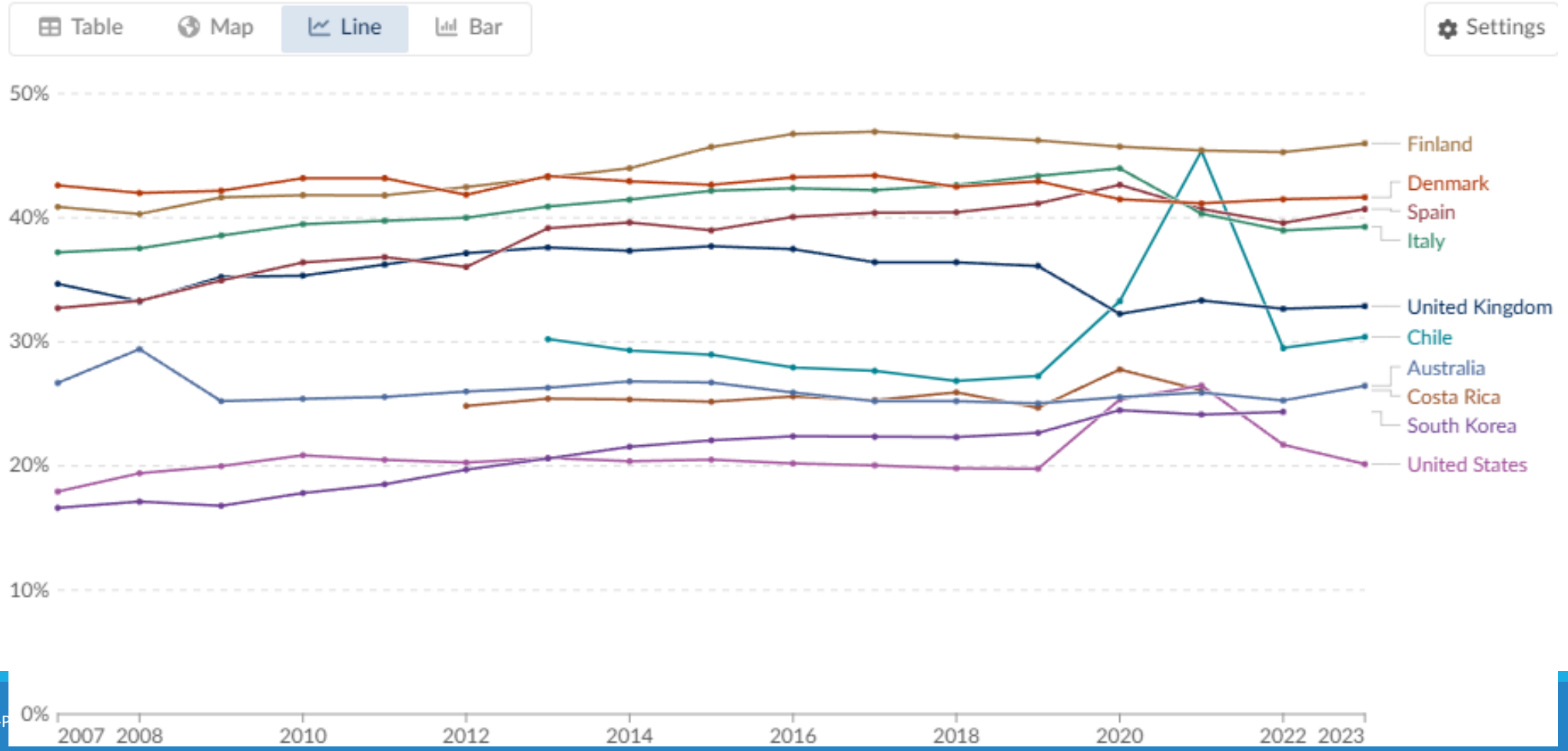
The government

Source:

Our World in Data

Social protection spending as share of total government spending

Social protection includes the following main areas: sickness, disability, pensions, housing, unemployment, family and children.

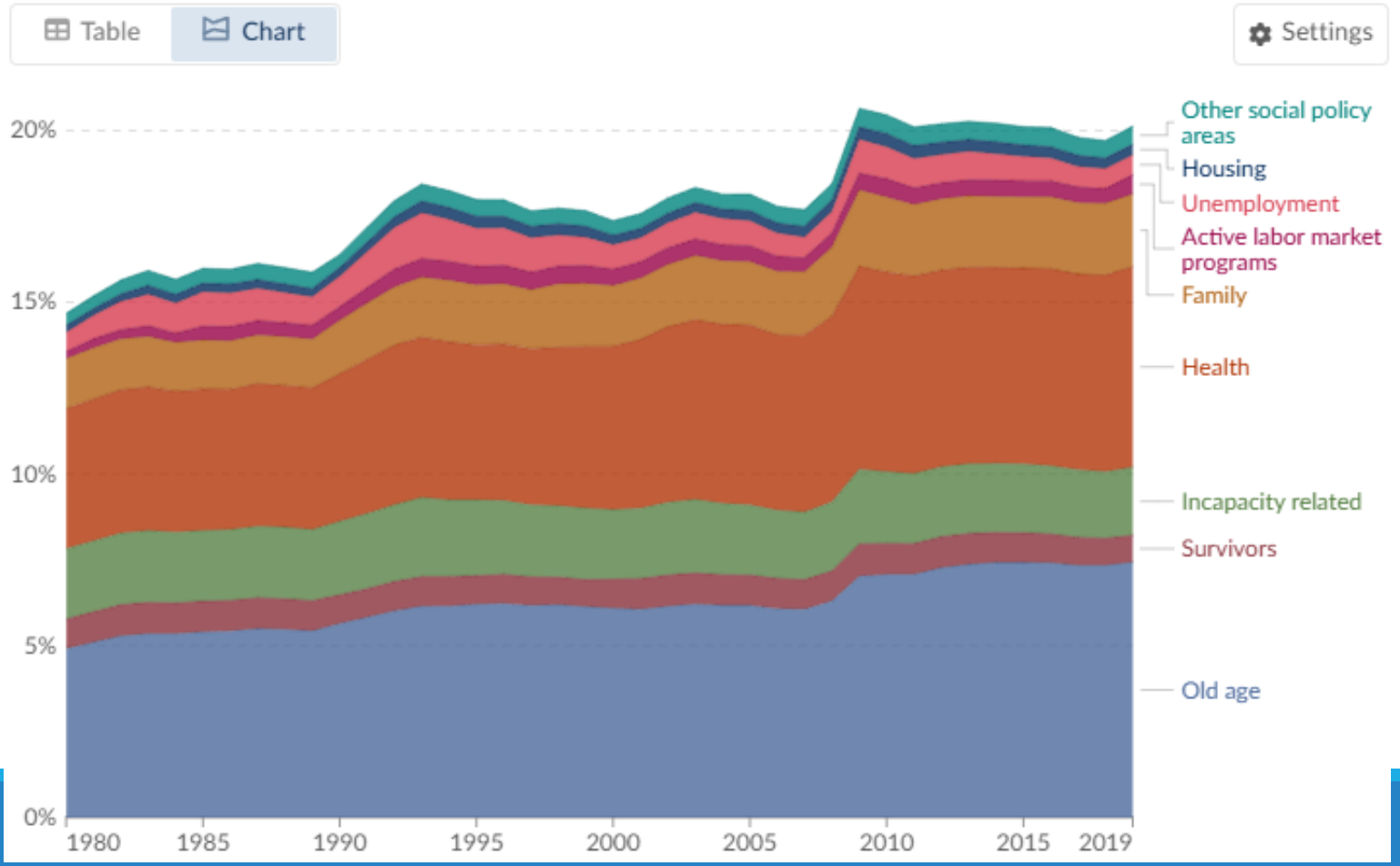


The government

Source: Our World in Data

Social spending as share of GDP, OECD countries, 1980 to 2019

Public social spending covers financial flows controlled by the general government, such as social insurance and social assistance payments.



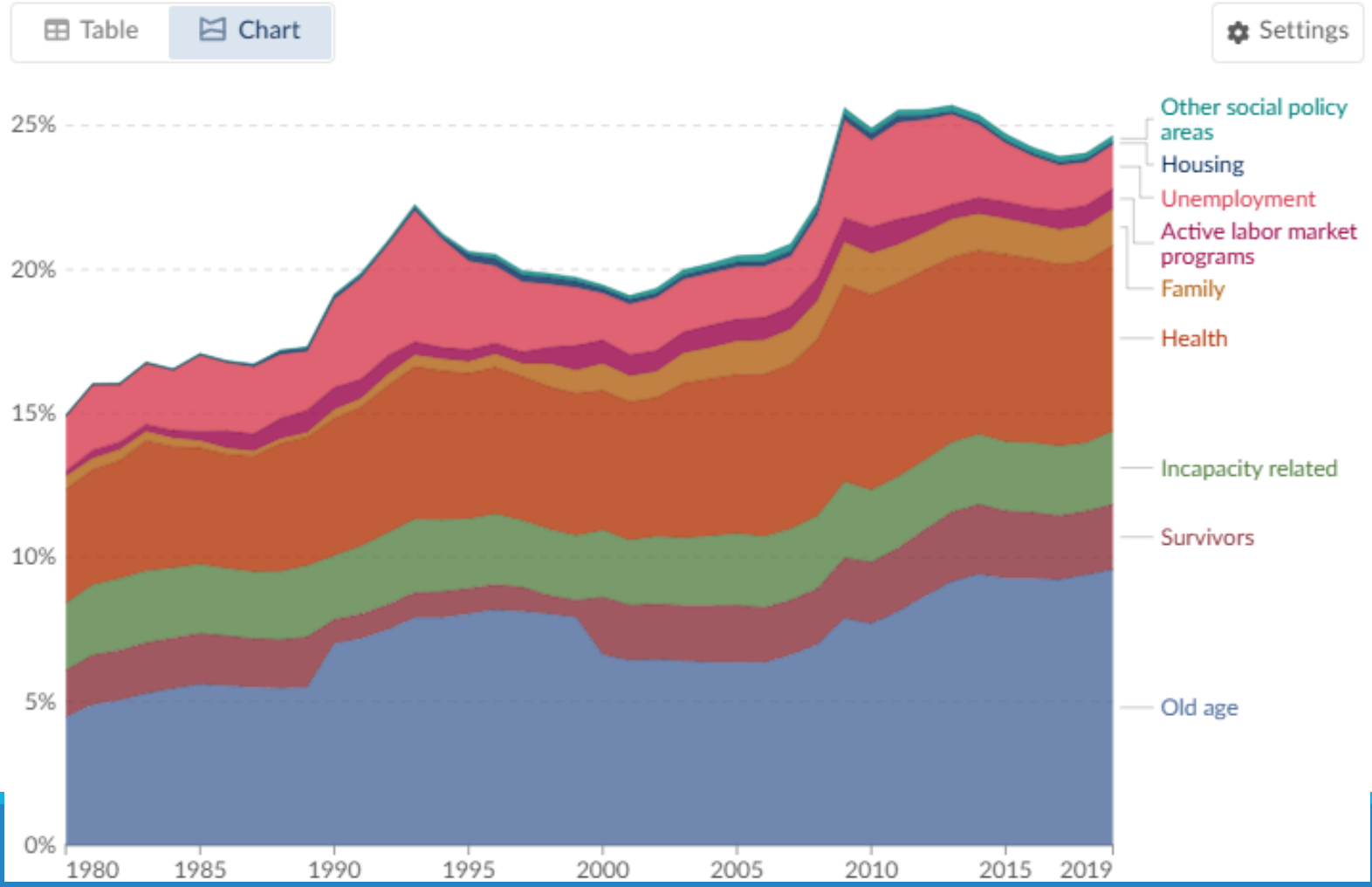
The government

Source:

Our World in Data

Social spending as share of GDP, Spain, 1980 to 2019

Public social spending covers financial flows controlled by the general government, such as social insurance and social assistance payments.



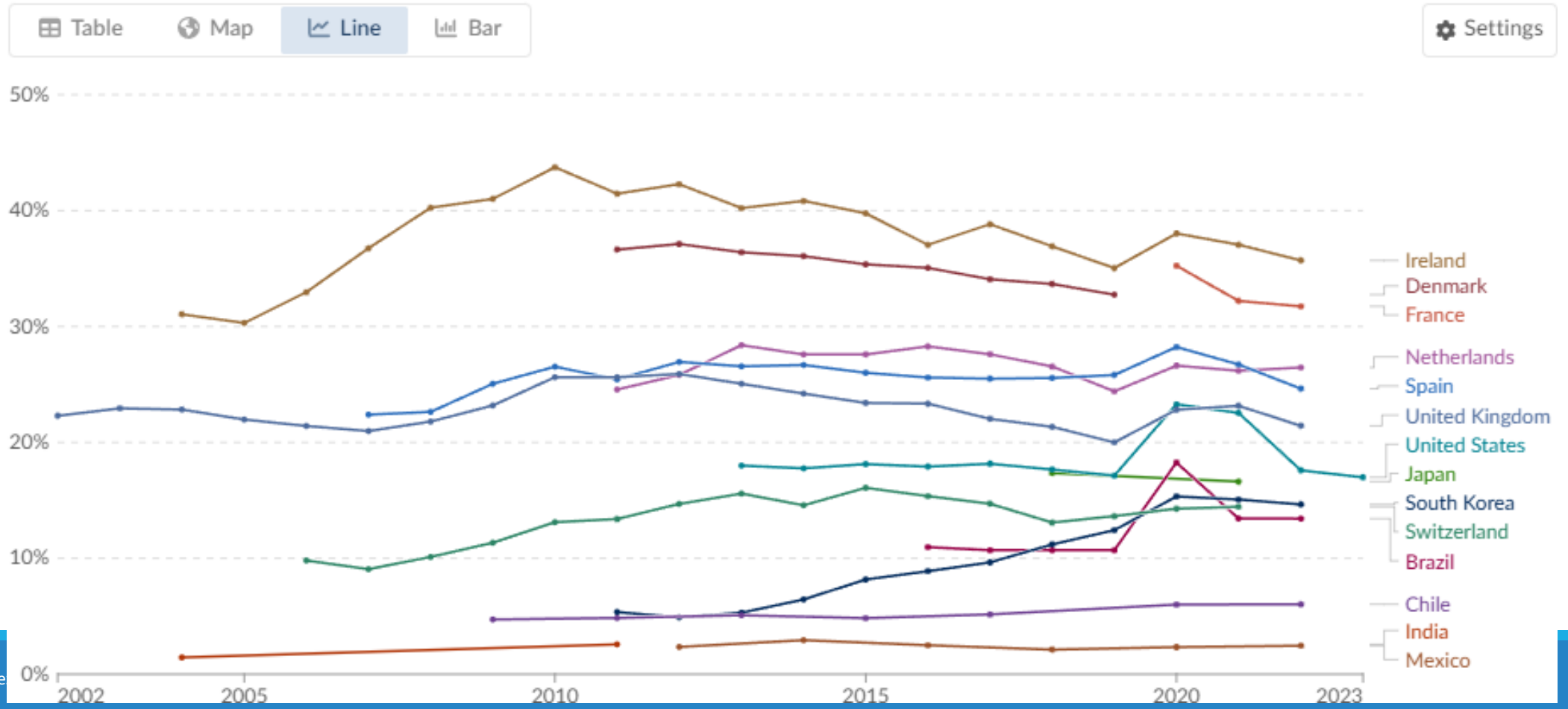
The government

Source:

Our World in Data

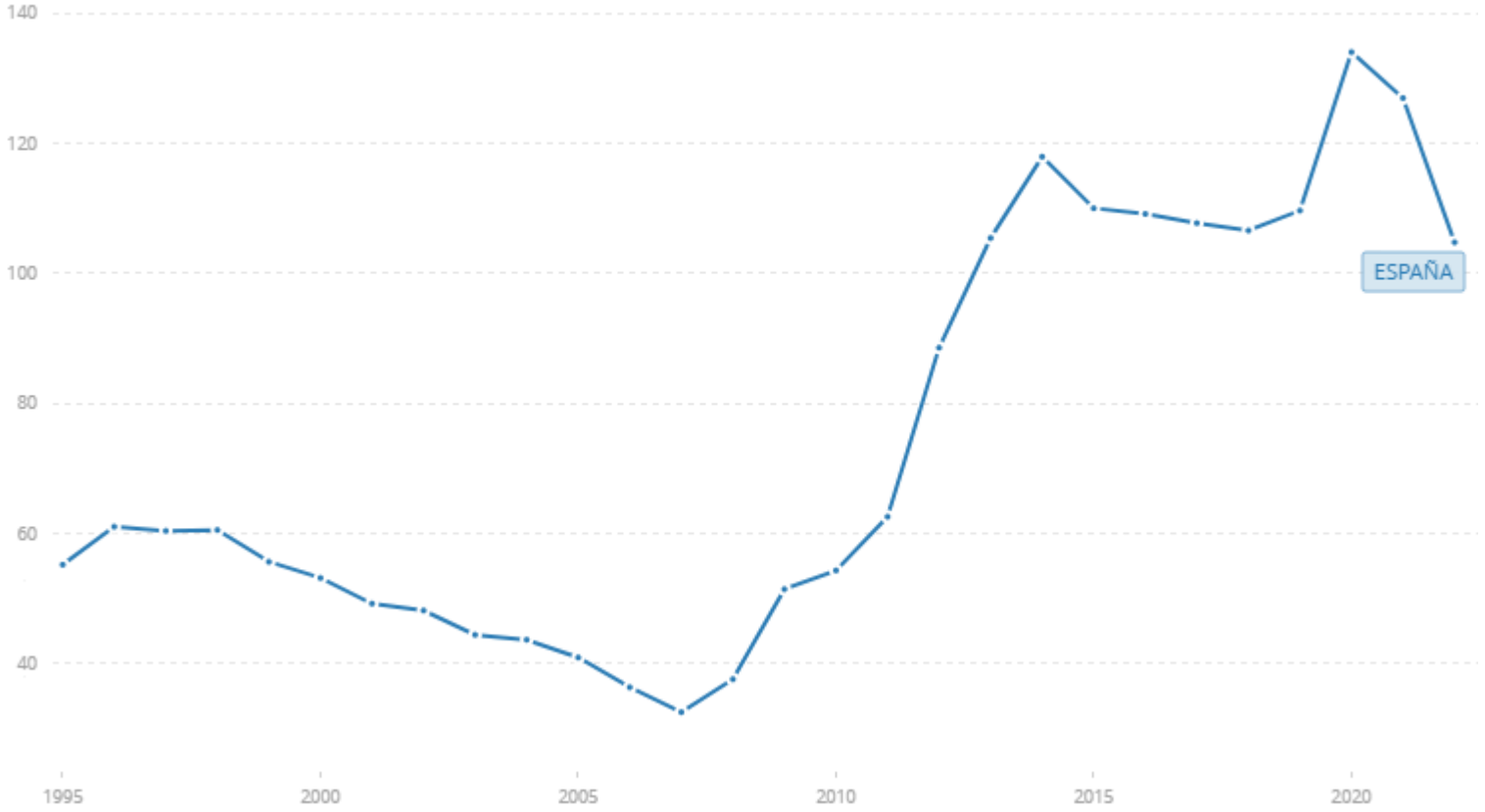
Reduction in income inequality before and after tax

Percentage reduction in the Gini coefficient of income when measured after taxes and benefits, as compared to before taxes and benefits.



Government

- Central government debt in Spain 1995 - 2022 (% of GDP)



Source: World Bank (2023)

Government

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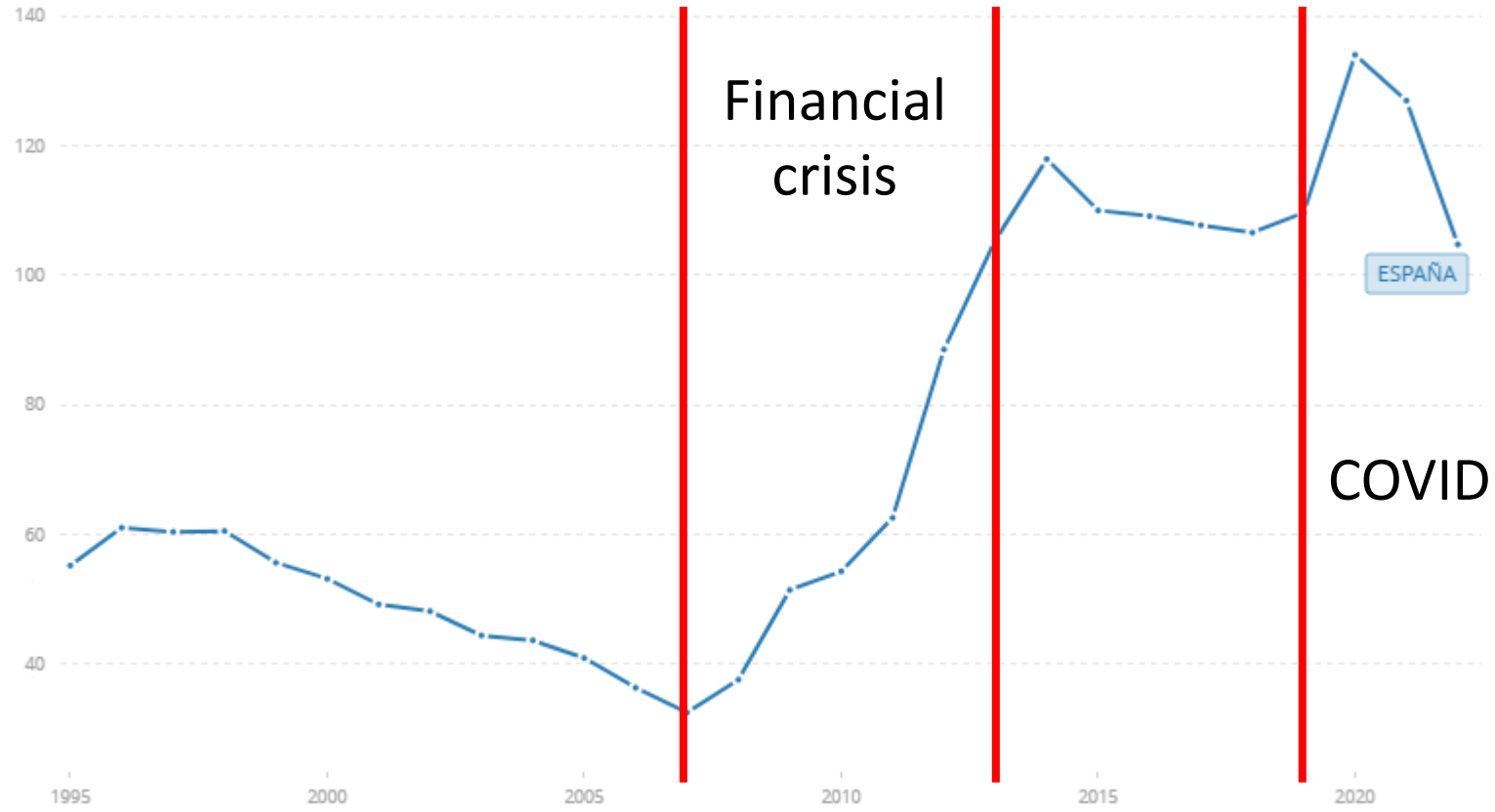

Source: World Bank (2023)

The government

- Interest payments on Spanish debt 1995 - 2022 (% of spending)

Source: World Bank (2023)

Outline

1. The government.

2. Aggregate demand and fiscal policy.
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Fiscal policy

- The government directly influences the equilibrium level of Y in two ways:

  1. Through **government spending**: **G**.

  2. Through **taxes** and **transfers**: **T** and **TR**. Hence, through $\mathbf{Y_D}$.

- These are fiscal policy interventions: government policy with respect to the level of G, TR and T.

Expansionary fiscal policy

- Expansionary fiscal policy: a fiscal policy that increases aggregate demand.

1. Increase in **government spending** (**G**).
2. Decrease in **taxes** (**T**): increase in $\mathbf{Y_D}$.
3. Increase in **transfers** (**TR**): increase in $\mathbf{Y_D}$.

Contractionary fiscal policy

- Contractionary fiscal policy: a fiscal policy that reduces aggregate demand.

1. Decrease in **government spending** (**G**).
2. Increase in **taxes** (**T**): decrease in $\mathbf{Y_D}$.
3. Decrease in **transfers** (**TR**): decrease in $\mathbf{Y_D}$.

Fiscal policy

- Can expansionary fiscal policy actually work?

1. "Government spending always crowds out private spending": crowding-out.

2. "Government borrowing always crowds out private investment spending"

3. "Government budget deficits lead to reduced private spending"

The Keynesian multiplier

- By how much does an increase in autonomous spending raise the equilibrium aggregate level of output?

- Since in equilibrium **Y = AD**, one might think that the relationship is 1 to 1, but **it is not**.

- If ***Y*** increases, increases as a function of ***MPC***, i.e. increasing ***Y*** increases ***C*** only by the fraction **c**.

The Keynesian multiplier

- Increases in ***Y*** correspond, then, to:

$$\Delta Y = \frac{1}{1-c}\Delta\bar{A} = \Delta AD$$

- The cumulative change in aggregate spending equals a multiple of the increase in autonomous spending, which is:

$$\frac{1}{1-c}$$

The Keynesian multiplier

- Therefore, the multiplier is $\frac{1}{1-c}$ = α

- The **multiplier** is the ratio of the change in real GDP caused by an autonomus change in aggregate spending to the size of that autonomus change.

- For example, if ***c*** = 0.9, the multiplier will be 10. This means that an increase in ***G*** by 1,000 leads to an increase in ***Y*** of 10,000.

Aggregate demand and fiscal policy

- Recall:

$$Y_D = Y + TR - T$$

$$C = \bar{C} + c(Y + TR - T)$$

Aggregate demand and fiscal policy

- Assuming that ***G*** and ***TR*** are constant and that taxes are proportional to income, then: G = $\overline{G}$, TR = $\overline{TR}$ y T = **tY**.

$$C = \overline{C} + c(Y + \overline{TR} - \mathbf{tY})$$

$$C = \overline{C} + c\overline{TR} + c(1 - t)Y$$

- Note that ***TR*** increases autonomous consumption as a function of ***MPC***. On the other hand, the tax rate decreases ***C***.

Aggregate demand and fiscal policy

- Recall that AD = C + I + G + NX

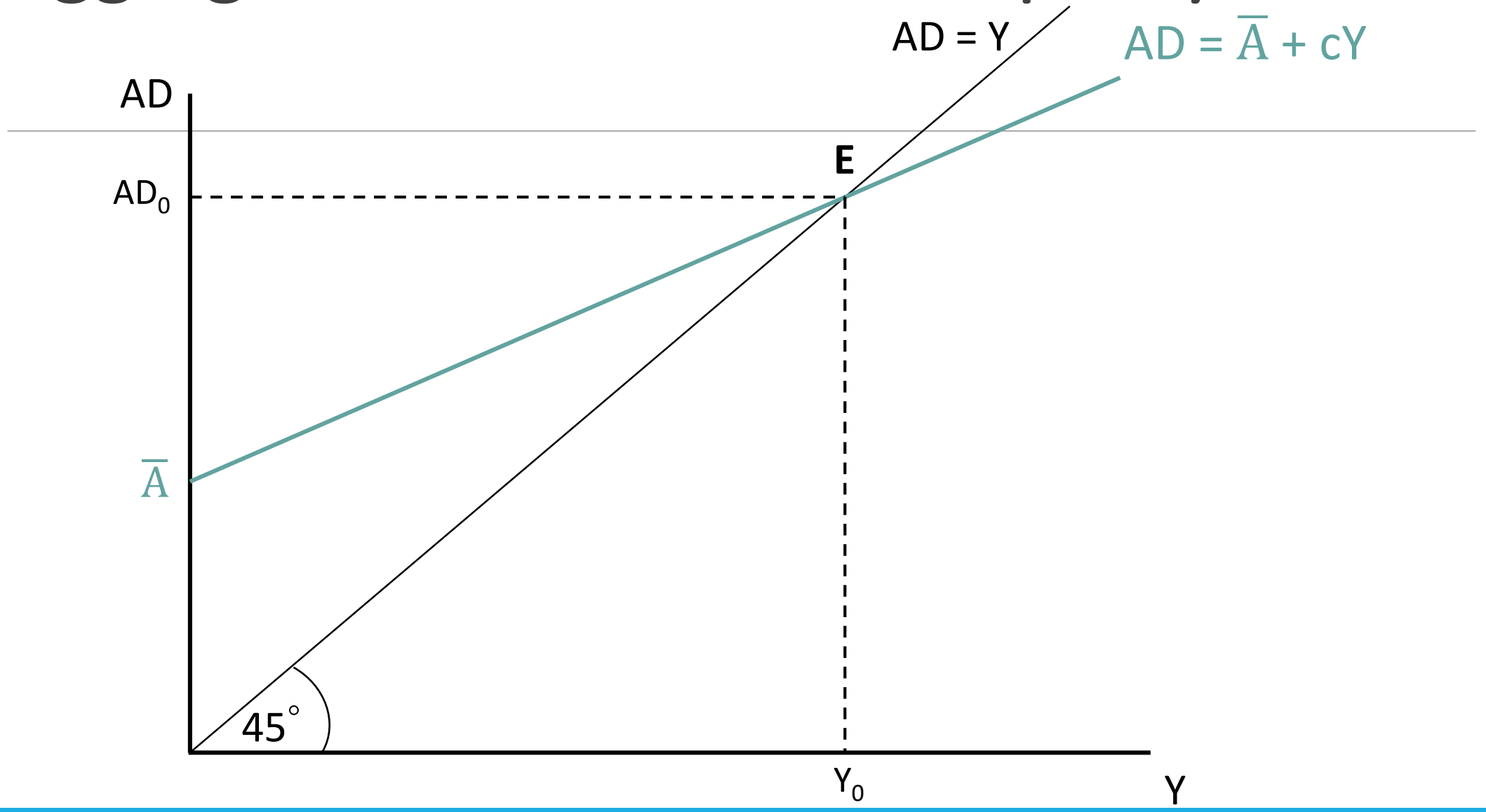
- Then,

$$AD = [\bar{C} + c\overline{TR} + c(1 - t)Y] + \bar{I} + \bar{G} + \overline{NX}$$

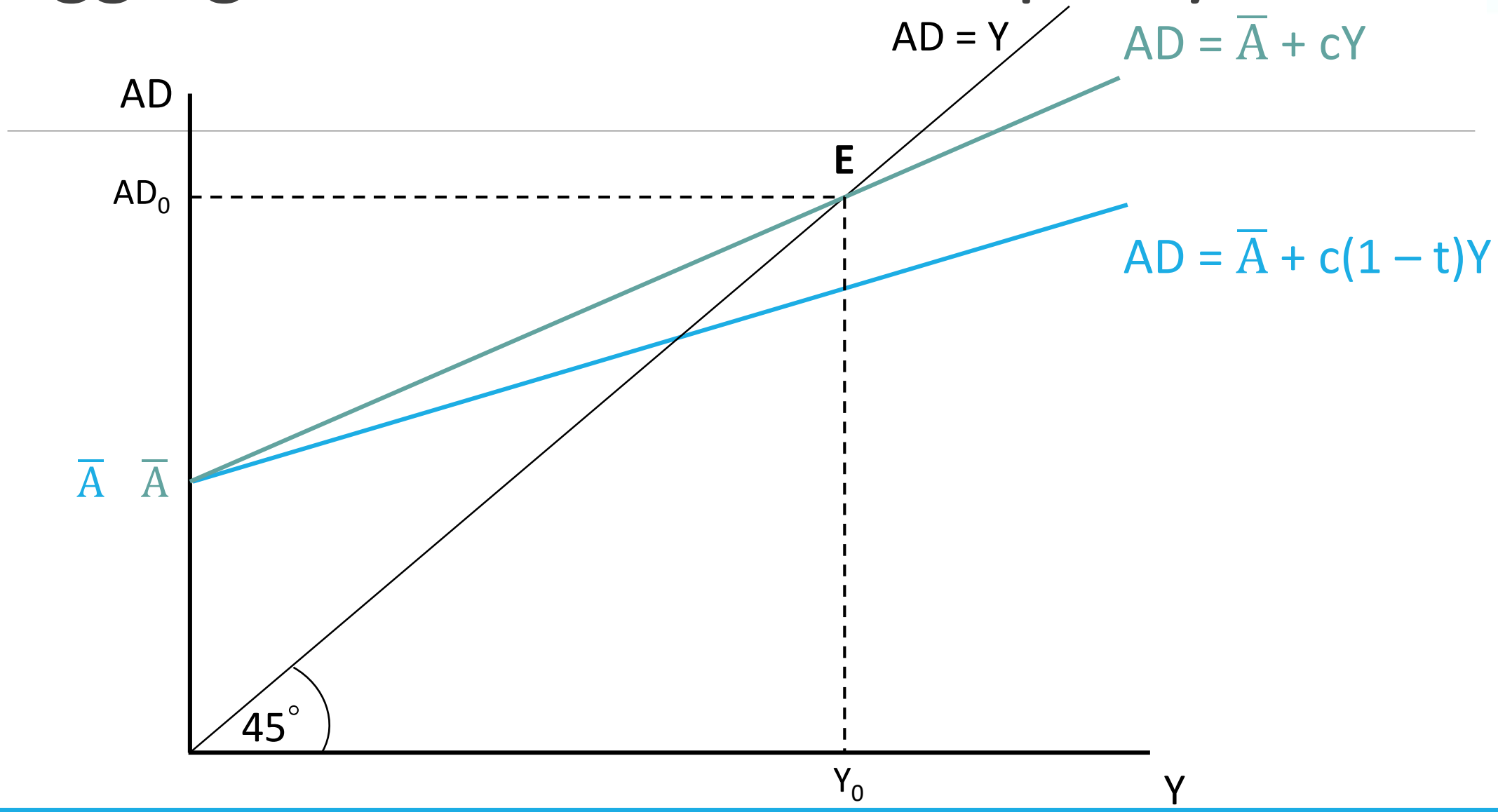
$$= [\bar{C} + c\overline{TR} + \bar{I} + \bar{G} + \overline{NX}] + c(1 - t)Y$$

$$= \bar{A} + c(1 - t)Y \text{ ; donde } \bar{A} = [\bar{C} + c\overline{TR} + \bar{I} + \bar{G} + \overline{NX}]$$

Aggregate demand and fiscal policy



Aggregate demand and fiscal policy



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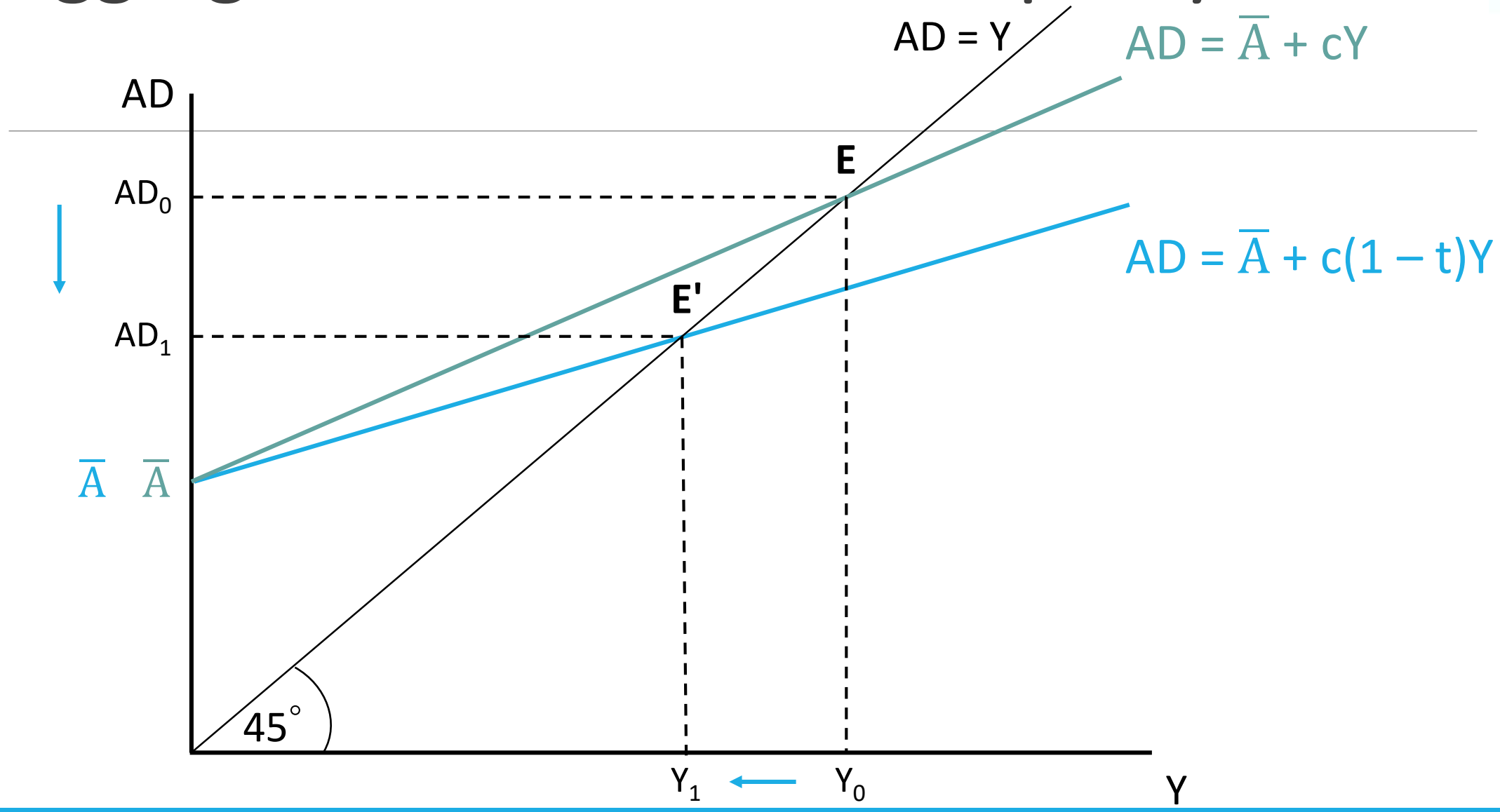
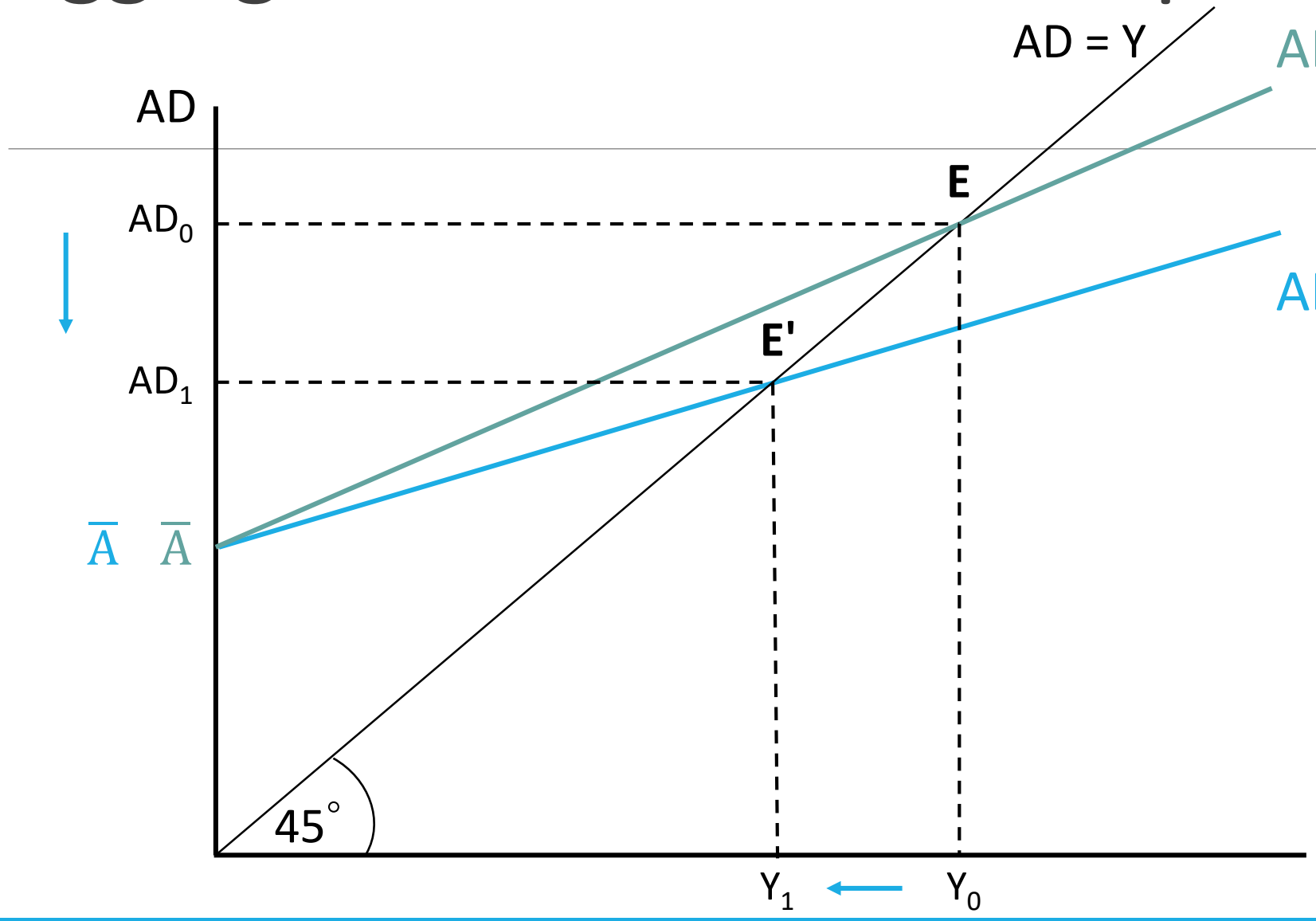


Aggregate demand and fiscal policy



AD = $\overline{A}$ + c(1 – t)Y

En el equilibrio:

Y = AD

Y = $\overline{A}$ + c(1 – t)Y

Y [1 – c(1 – t)] = $\overline{A}$

$$Y = \frac{1}{1 - c(1 - t)} \overline{A}$$

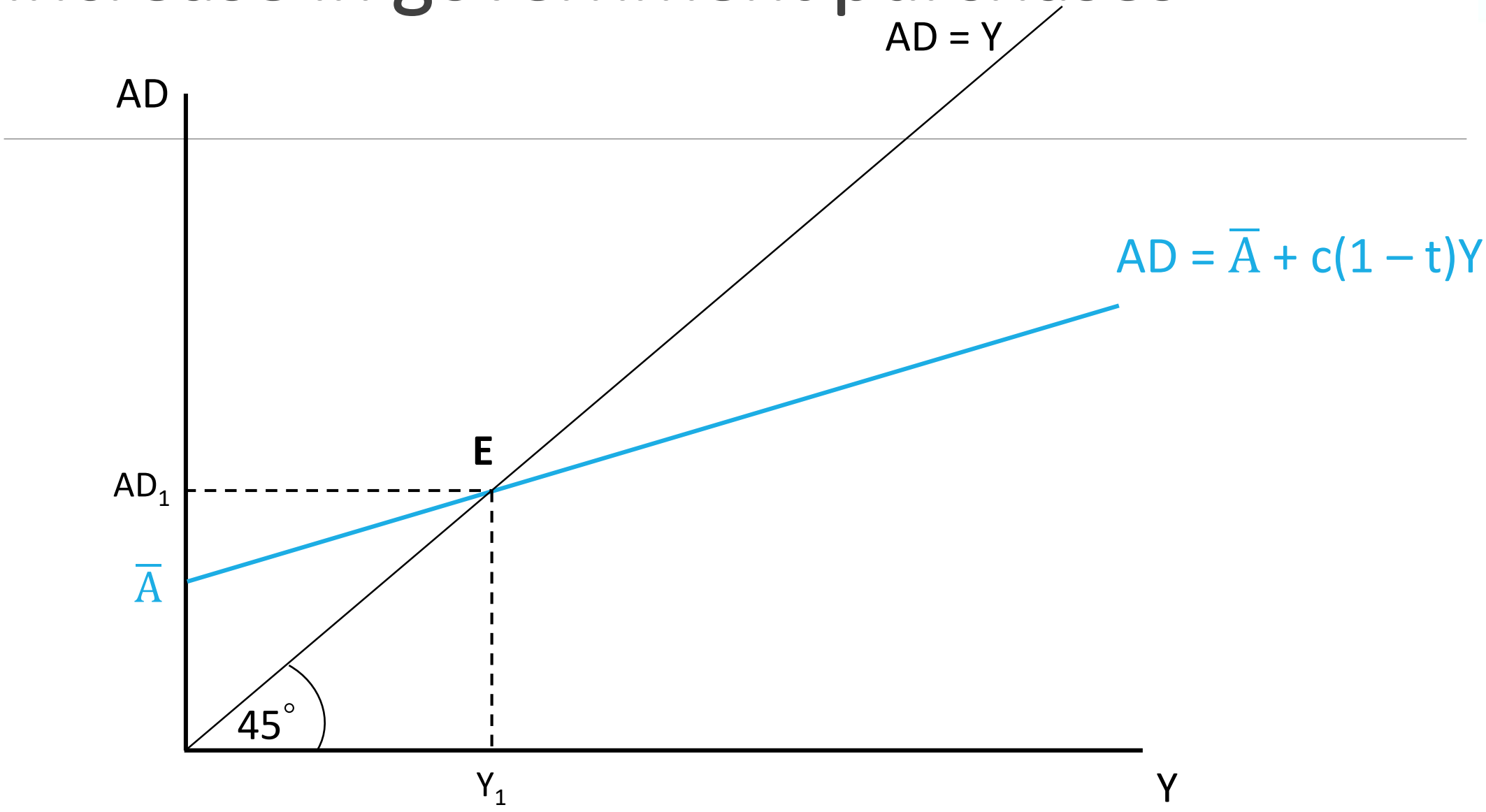
Fiscal policy and Keynesian multiplier

Now, the multiplier is $\alpha = \frac{\mathbf{1}}{\mathbf{1} - \boldsymbol{c}(\mathbf{1} - \boldsymbol{t})}$

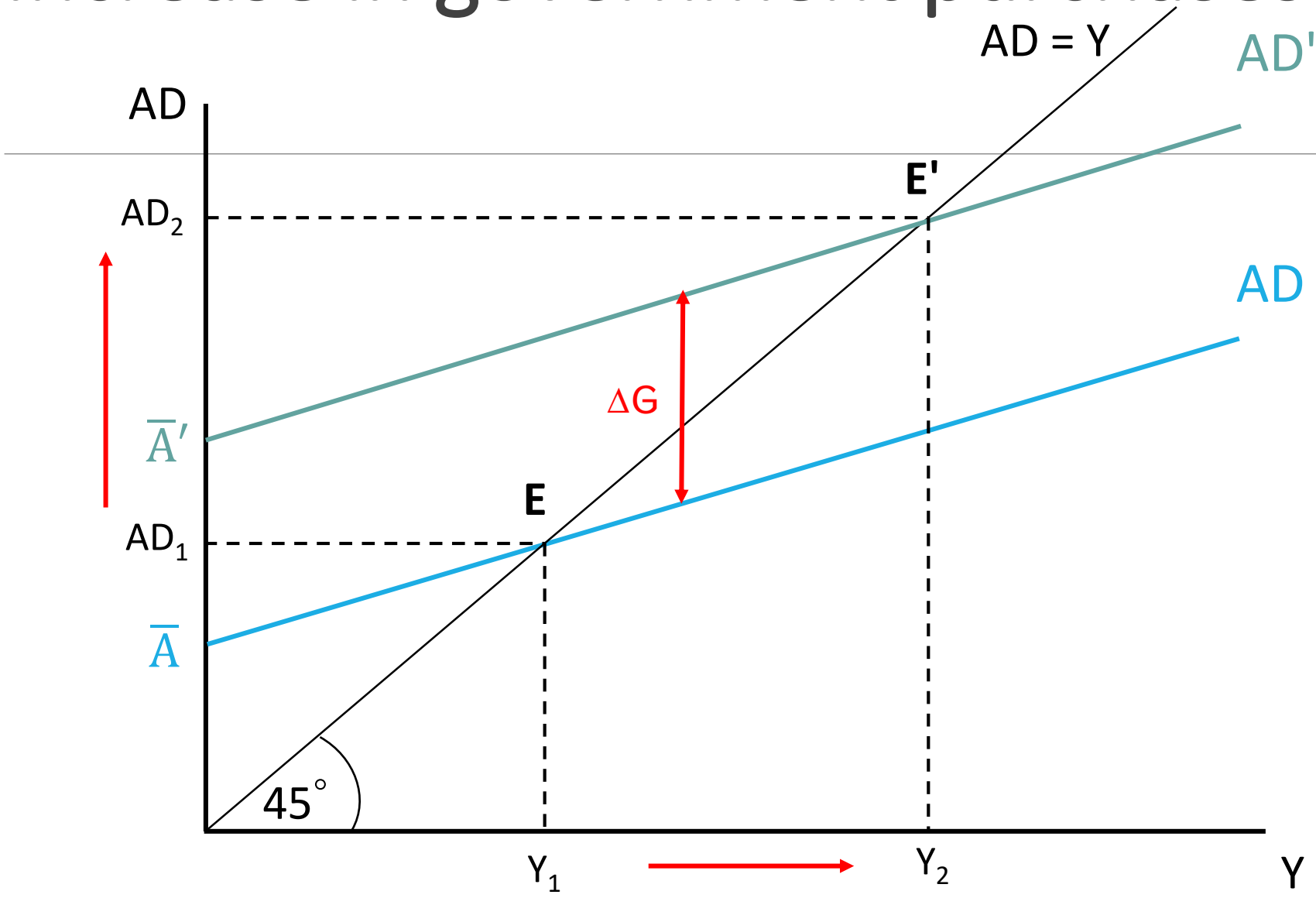
Change in government spending: $\Delta Y = \frac{1}{1 - c(1 - t)} \Delta G$

Change in transfers: $\Delta Y = \frac{1}{1 - c(1 - t)} c\Delta TR$

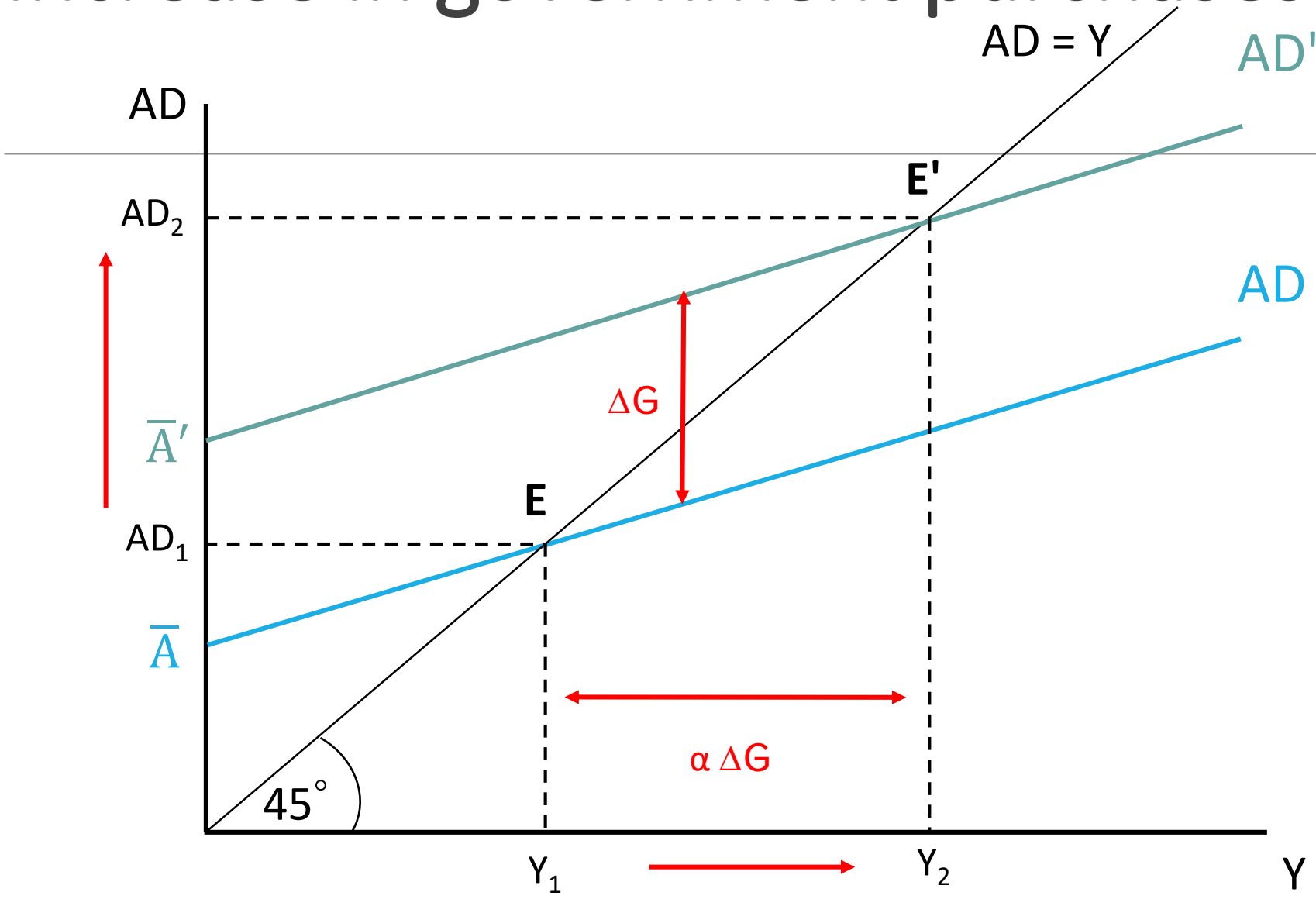
Increase in government purchases



Increase in government purchases



Increase in government purchases



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Concept of money

- **Money**: **any asset** that can easily be used **to purchase** goods and services.
- **Liquid asset**: if it can be easily converted into **cash**.
- **Cash in circulation**: banknotes and coins in the hands of citizens.
- **Checkable bank deposits**: bank accounts. Payments can be made with debit cards, digital payments and checks.

Roles of money

1. **Medium of exchange**: it is an asset that individuals acquire for the purpose of trading goods and services rather tan for their own consumption. There is an official currency in each country.

2. **Store of value**: it is a means of holding purchasing power over time.

3. **Unit of account**: it is a measure used to set prices and to make economic calculations.

Types of money

- **Commodity money**: a good that is used as a medium of exchange that has intrinsic value in other uses.
  - Gold or silver.
  - Barter goods.

- **Commodity-backed money**: currency.
  - Backed money: means of payment with no intrinsic value but guaranteed to be exchanged for a valuable good (e.g. gold standard).
  - Fiat money: means of payment whose value derives solely from its official status as a means of payment (e.g., today's coins).

Money supply: monetary aggregates

- **Money supply**: the total value of financial assets in an economy that are considered money.

- **Measurement of the money supply**:
  - M1: is the sum of cash and checkable bank deposits.
  - M2: M1 + near-moneys + short-term deposits.
  - M3: M2 + money market funds.

- M1, M2 and M3 are known as **monetary aggregates**. Onwards, we will focus on **M1**.

Money supply: role of banks

1. Central Bank:

   - The **institution responsible** for fiat money system.
   - **Oversees the banking system**: banking regulation.
   - "**Bank of banks**": lender of last resort.
   - **Regulates the money supply** of the economy: open market operations.
     - Buying and selling of public debt: exchange of money for government bonds.

Money supply: role of banks

2. Banking regulation (reserves):

- **Deposit insurance**: guaranty that a bank's depositors will be paid even if the bank cannot come up with funds.
- **Capital requirements**: regulators require more assets than the value of the bank deposits.
- **Reserves requirements**: rules that determine the minimun **reserve ratio** for banks.
- **Discount window**: an arragement in which Central Bank is ready to lend money to Banks in trouble.

Money supply: role of banks

3. Commercial banks:

- Channel **savings** into **investment**.
- They are **financial intermediaries**.
- They can **create liquidity** so they are not obliged to keep full backing of deposits (reserves).
- **They modify the volume of money supply**.

Money supply: determining the money supply

- Banks perform a dual function:

1. **They reduce** the money supply: they withdraw money from the economy through deposits.

2. **They increase** the money supply: they add money to the economy through lending.

Money supply: determining the money supply

- Let us assume that Mary has $1,000 and that there are no banks.

- Therefore, the money supply (amount of money in the economy) will be $1,000.
  - **Cash in the hands of the public is equal to the money supply**.

- Suppose the first bank opens in the country and Mary deposits her money in the bank.

Money supply: determining the money supply

- The bank's T-account will be:

Assets			Liabilities	
Reserves	1,000		Deposits	1,000

The money supply is still $1,000

Money supply: how banks create money

Suppose the bank is required by law to keep **20%** of deposits in **reserves**.

Knowing this, John **borrows** $800 from the bank to fix his car.

The bank's new T-account will be:

Assets			Liabilities	
Reserves	200		Deposits	1,000
Loans	800			

The money supply is now $1,800: $1,000 in deposits and $800 that John owns.

Money supply: how banks create money

John pays the mechanic and he decides to deposit the $800 in the bank:

Assets			Liabilities	
Reserves	1,000		Deposits	1,800
Loans	800			

The money supply is still $1,800.

Money supply: how banks create money

The bank knows it must keep 20% of deposits in reserves, so it gives loans for the remaining 80%:

Assets			Liabilities	
Reserves	360		Deposits	1,800
Loans	1,440			

How much is the new money supply?

Money supply: how banks create money

The bank knows it must keep 20% of deposits in reserves, so it gives loans for the remaining 80%:

Assets			Liabilities	
Reserves	360		Deposits	1,800
Loans	1,440			

Money supply is now $2,440: $1,800 in deposits + 640 in loans.

Money supply: how banks create money

Those who received the $640 deposit that money in the bank:

Assets			Liabilities	
Reserves	1,000		Deposits	2,440
Loans	1,440			

The money supply remains $2,440.

Money supply: how banks create money

The bank again lends the 80% it is allowed by law:

Assets			Liabilities	
Reserves	488		Deposits	2,440
Loans	1,952			

How much is the new money supply?

Money supply: how banks create money

The bank again lends the 80% it is allowed by law:

Assets			Liabilities	
Reserves	488		Deposits	2,440
Loans	1,952			

Money supply is now $2,952: 2,440 in deposits + 512 that were granted in loans.

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800				

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		
Deposit 3	640				

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		
Deposit 3	640	=	800 * 0.8		

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		
Deposit 3	640	=	800 * 0.8	=	(1,000 * 0.8) * 0.8

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		
Deposit 3	640	=	800 * 0.8	=	(1,000 * 0.8) * 0.8
Deposit 4	512				

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		
Deposit 3	640	=	800 * 0.8	=	(1,000 * 0.8) * 0.8
Deposit 4	512	=	640 * 0.8		

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		
Deposit 3	640	=	800 * 0.8	=	(1,000 * 0.8) * 0.8
Deposit 4	512	=	640 * 0.8	=	(800 * 0.8) * 0.8

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8		
Deposit 3	640	=	800 * 0.8	=	(1,000 * 0.8) * 0.8
Deposit 4	512	=	640 * 0.8	=	(800 * 0.8) * 0.8
				=	[(1,000 * 0.8) * 0.8] * 0.8

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8	=	$1{,}000 * (0.8)^1$
Deposit 3	640	=	800 * 0.8	=	$1{,}000 * (0.8)^2$
Deposit 4	512	=	640 * 0.8	=	$1{,}000 * (0.8)^3$

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8	=	$1,000 * (0.8)^1$
Deposit 3	640	=	800 * 0.8	=	$1,000 * (0.8)^2$
Deposit 4	512	=	640 * 0.8	=	$1,000 * (0.8)^3$
Deposit 5	409,60			=	$1,000 * (0.8)^4$

Money supply: how banks create money

Summarizing,

	Amount				
Deposit 1	1,000				
Deposit 2	800	=	1,000 * 0.8	=	$1,000 * (0.8)^1$
Deposit 3	640	=	800 * 0.8	=	$1,000 * (0.8)^2$
Deposit 4	512	=	640 * 0.8	=	$1,000 * (0.8)^3$
Deposit 5	409,60			=	$1,000 * (0.8)^4$
...					
Deposit N				=	$1,000 * (0.8)^{N-1}$

Money supply: how banks create money

Money supply (M) =

$$1000 + 1000(0.8) + 1000(0.8)^2 + 1000(0.8)^3 + \ldots + 1000(0.8)^n =$$

$$1000\,[1 + (1 + (0.8) + (0.8)^2 + (0.8)^3 + \ldots + (0.8)^n\,] =$$

$$1000 \left\lfloor \frac{1}{1-0.8} \right\rfloor = 1000 \left\lfloor \frac{1}{0.2} \right\rfloor = 1000\,[5] = \mathbf{5{,}000}$$

Money supply: how banks create money

Money supply (M) =

$1000 + 1000(0.8) + 1000(0.8)^2 + 1000(0.8)^3 + \ldots + 1000(0.8)^n =$

$1000\,[1 + (1 + (0.8) + (0.8)^2 + (0.8)^3 + \ldots + (0.8)^n\,] =$

$1000 \left[\frac{1}{1-0.8}\right] = 1000 \left[\frac{1}{0.2}\right] = 1000\,[5] =$ **5,000**

From an initial money supply of 1,000, the banks increased the money supply to 5,000.

Money supply: how banks create money

Money supply (M) =

$1000 + 1000(0.8) + 1000(0.8)^2 + 1000(0.8)^3 + \ldots + 1000(0.8)^n =$

$1000\,[1 + (1 + (0.8) + (0.8)^2 + (0.8)^3 + \ldots + (0.8)^n\,] =$

$$1000\left[\frac{1}{1-0.8}\right] = 1000\left[\frac{1}{0.2}\right] = 1000\,[5] = \mathbf{5{,}000}$$

From an initial money supply of 1,000, the banks increased the money supply to 5,000

Money supply: how banks create money

Money supply (M) =

$$1000 + 1000(0.8) + 1000(0.8)^2 + 1000(0.8)^3 + \ldots + 1000(0.8)^n =$$

$$1000\,[1 + (1 + (0.8) + (0.8)^2 + (0.8)^3 + \ldots + (0.8)^n\,] =$$

$$1000\left[\frac{1}{1-0.8}\right] = 1000\left[\frac{1}{0.2}\right] = 1000\,[5] = \mathbf{5{,}000}$$

The reserve ratio

From an initial money supply of 1,000, the banks increased the money supply to 5,000

Money supply: money multiplier

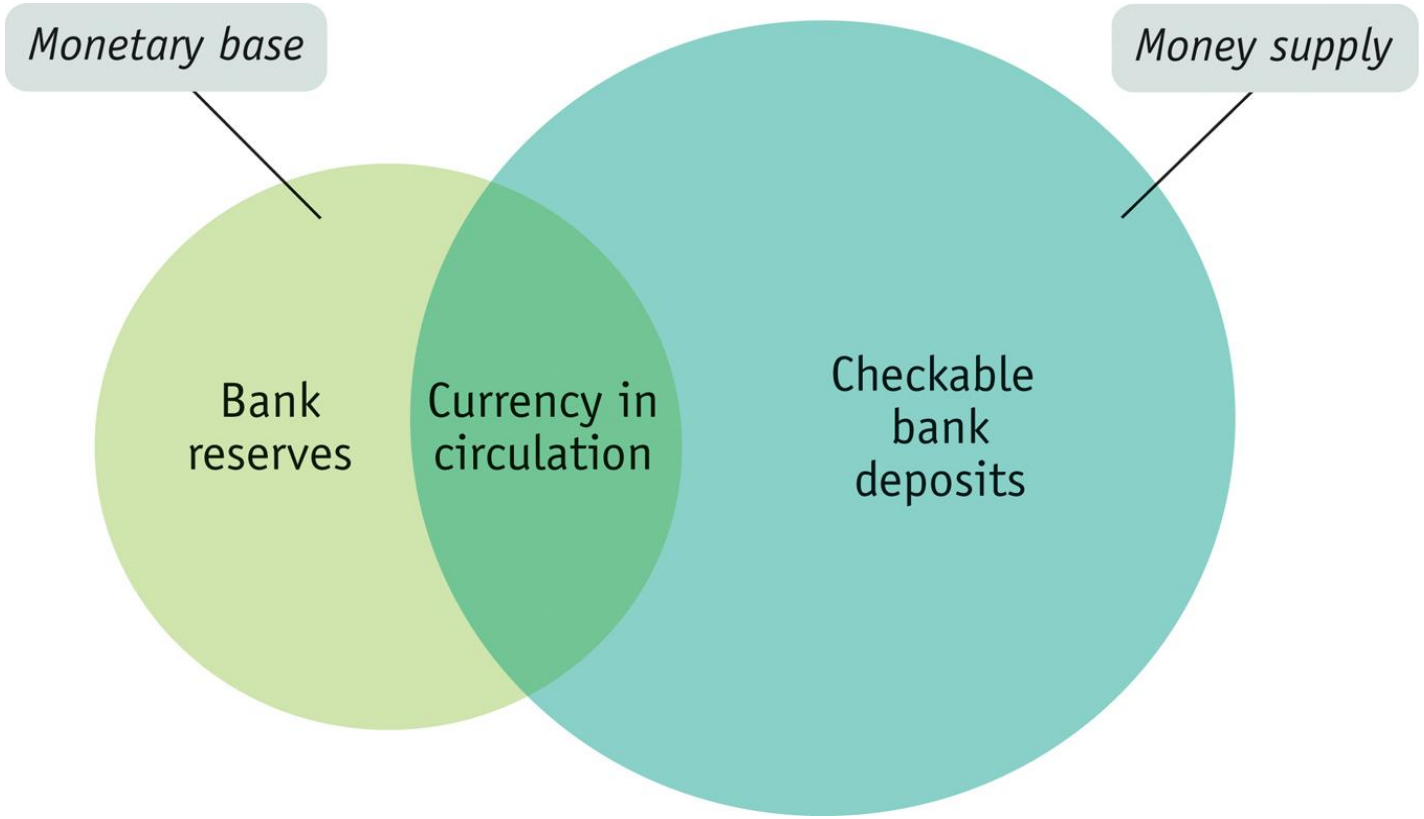
- If the initial money supply is $\mathbf{M_0}$ and the final money supply is $\mathbf{M_1}$, then:

$$\mathbf{M_1} = \frac{\mathbf{1}}{\boldsymbol{r}}\mathbf{M_0}$$

- That means that $\frac{\mathbf{1}}{\boldsymbol{r}}$ is the money multiplier (***mm***).

- Where $\boldsymbol{r}$ is the reserve ratio.

Monetary base vs. money supply



Source: Krugman and Wells (2023)

Money supply: monetary multiplier

- So far we have assumed that **people deposit ALL** the money they receive, but this is unrealistic.
- People have money in their bank accounts, **but also cash** in their hands.
- **Monetary base** (**H**): currency (bills and coins) in circulation and bank reserves.
- There is a relationship between ***H*** and ***M***: through ***mm***.

Money supply: monetary multiplier

- For the model we need: deposits (**D**)

  cash (**E**)

  reserves (**R**)

$$M = D + E$$

$$H = E + R$$

$e = \frac{E}{D}$ = ratio of cash to deposits.

$r = \frac{R}{D}$ = ratio between reserves and deposits (reserve ratio).

Money supply: monetary multiplier

$$\mathrm{M} = \mathrm{D} + \mathrm{E} \Rightarrow \frac{\mathrm{M}}{\mathrm{D}} = \frac{\mathrm{D}}{\mathrm{D}} + \frac{\mathrm{E}}{\mathrm{D}} \Rightarrow \mathrm{M} = (1 + e)\mathrm{D}$$

$$\mathrm{H} = \mathrm{E} + \mathrm{R} \Rightarrow \frac{\mathrm{H}}{\mathrm{D}} = \frac{\mathrm{E}}{\mathrm{D}} + \frac{\mathrm{R}}{\mathrm{D}} \Rightarrow \mathrm{H} = (e + r)\mathrm{D}$$

Dividing both equations:

$$\frac{\mathrm{M}}{\mathrm{H}} = \frac{1 + e}{r + e}\frac{\mathrm{D}}{\mathrm{D}}$$

$$\mathrm{M} = \frac{1 + e}{r + e}\mathrm{H}$$

Money supply: monetary multiplier

$$\mathrm{M} = \frac{1+e}{r+e}\ \mathrm{H}$$

$$\mathrm{M} = mm\ \mathrm{H}$$

Where, $\frac{1+e}{r+e} = mm$

- **The money supply is the monetary base amplified by the monetary multiplier**.
- The Central Bank creates the monetary base and it is the public (banks and individuals) that interacts to modify the money supply.

Money supply: instruments for monetary regulation

1. Reserve ratio:

- Fraction of bank deposits that a bank holds as reserves.
  - Mandatory reserves required by the Central Bank.
  - There are additional reserves that are voluntary.

- If the Central Bank **increases** the **reserve ratio**, it withdraws money from the economy and the **money supply decreases**.

Money supply: instruments for monetary regulation

2. Discount rate:

- **Interest rate** charged by the Central Bank to private banks for loans.
- Private banks borrow from the Central Bank **when they have lower amounts of reserves than required**.
- If the **discount rate decreases**, banks borrow more and thus have more money to lend to customers: **money supply increases**.

Money supply: instruments for monetary regulation

3. Open-market operations:

- Purchase or sale of government debt carried out by the Central Bank:
  - When **selling government debt**, the Central Bank delivers government bonds and receives money in exchange: it **decreases money supply**.
  - When **buying government debt**, the Central Bank delivers money and receives government bonds in exchange: it **increases money supply**.
    - The money it delivers is new money: it prints banknotes to pay the bonds.

Demand for money

- People demand money to spend: **the demand for money depends on income**.
- Remember: **the interest rate is the opportunity cost of holding money**.
- If there are bonds that offer a high interest rate, people prefer to buy financial assets.
  - **Inverse relationship between money demand and interest rate** (negative slope).
- The demand for money is a function of **real money stock** $\left(\frac{M}{P}\right)$: the price level matters.

Demand for money

- Thus, the demand for money (**DM**) is:

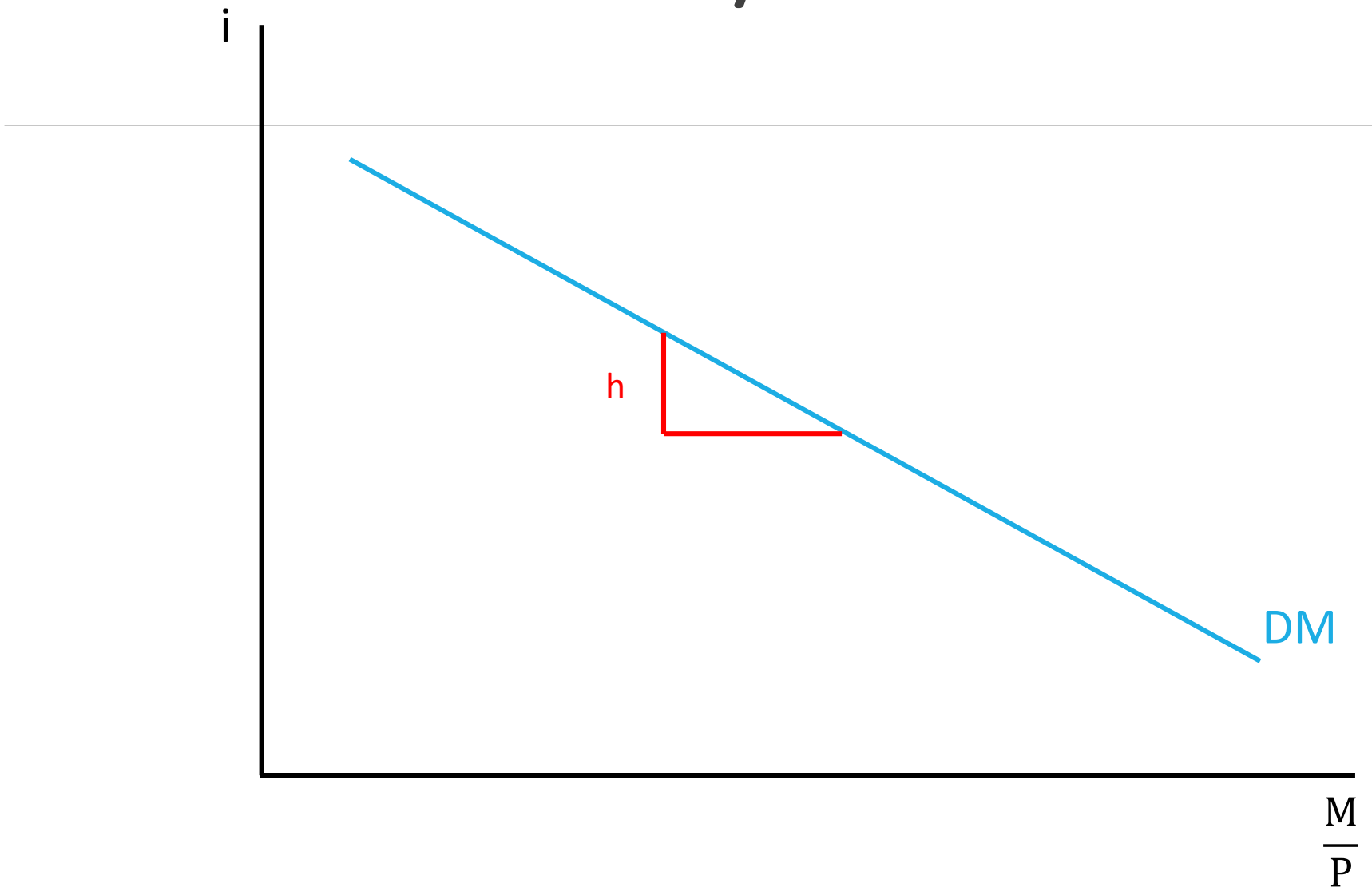
$$\mathrm{DM} = k\mathrm{Y} - h\mathrm{i}$$

Where,

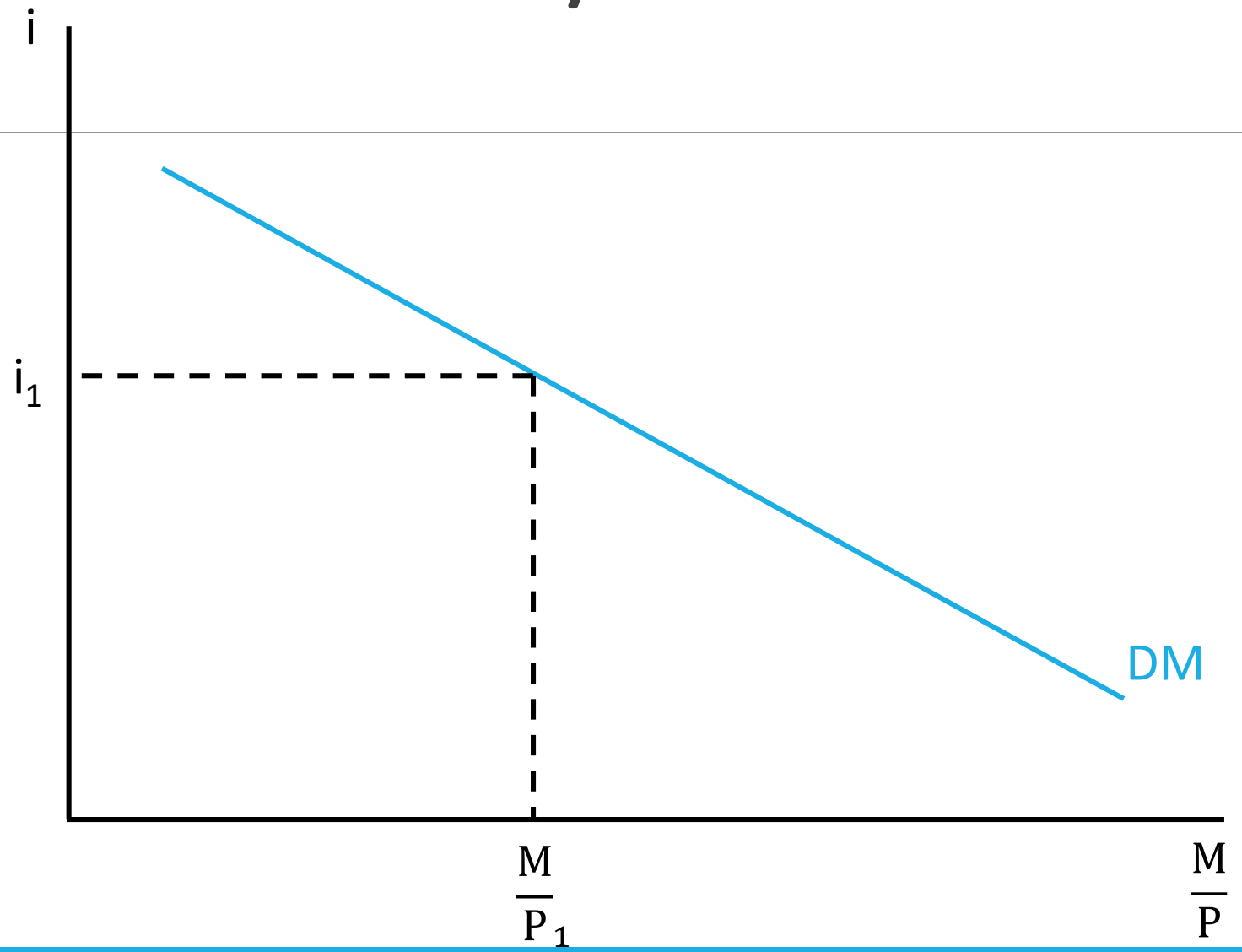
$k > 0$: sensitivity of the demand for real balances to the level of income.

$h > 0$: sensitivity of the demand for real balances to the interest rate.

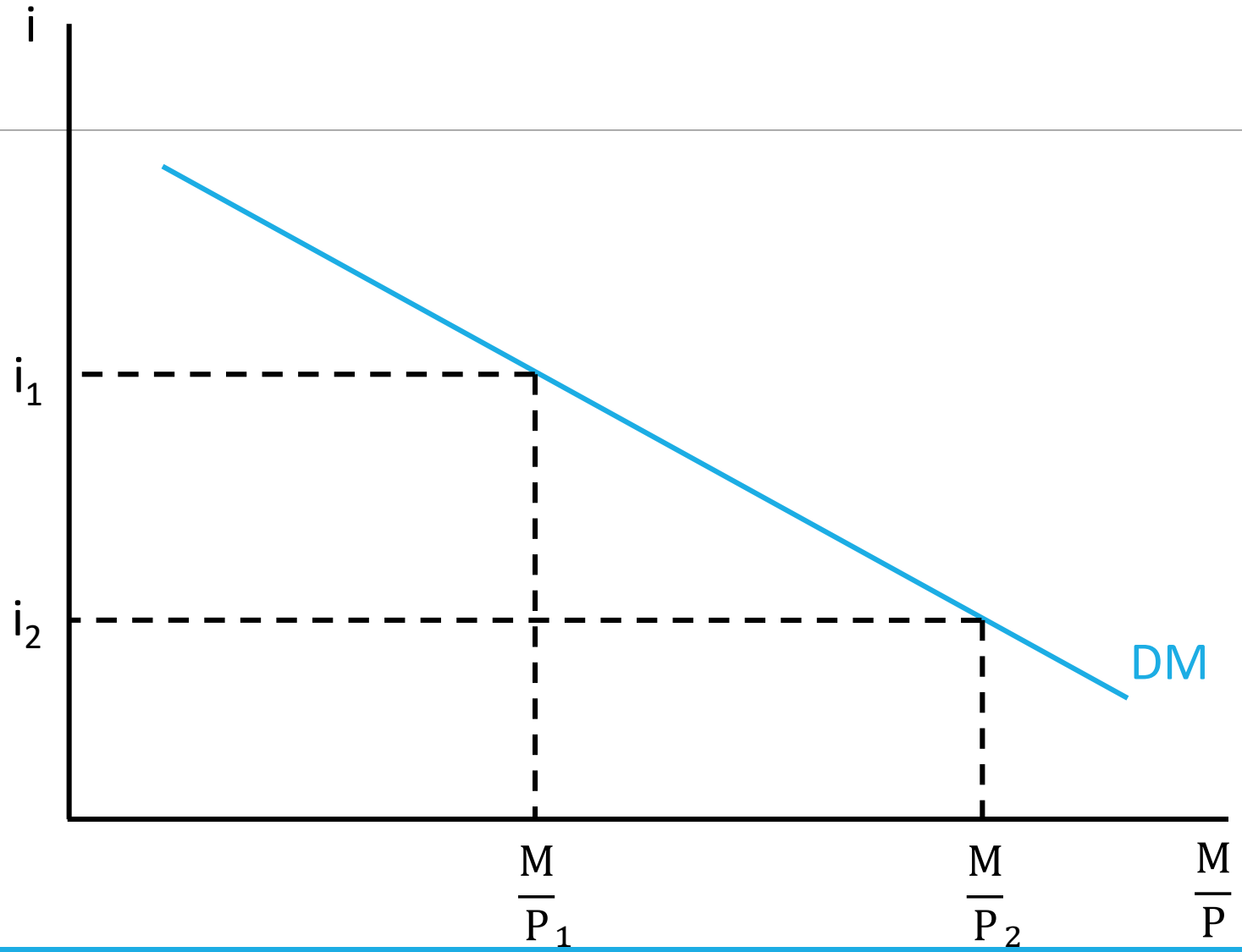
Demand for money



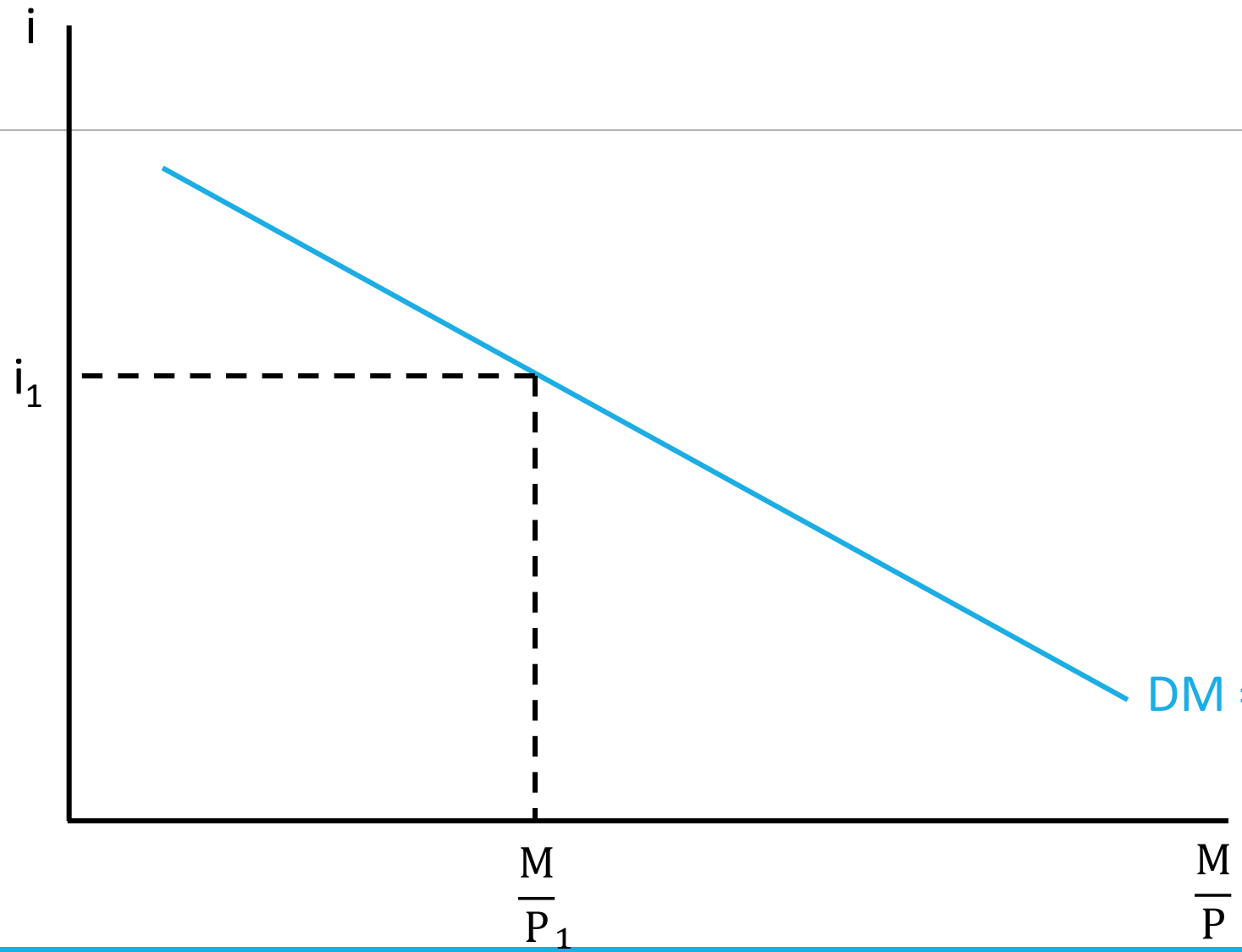
Demand for money



Demand for money: changes in the interest rate



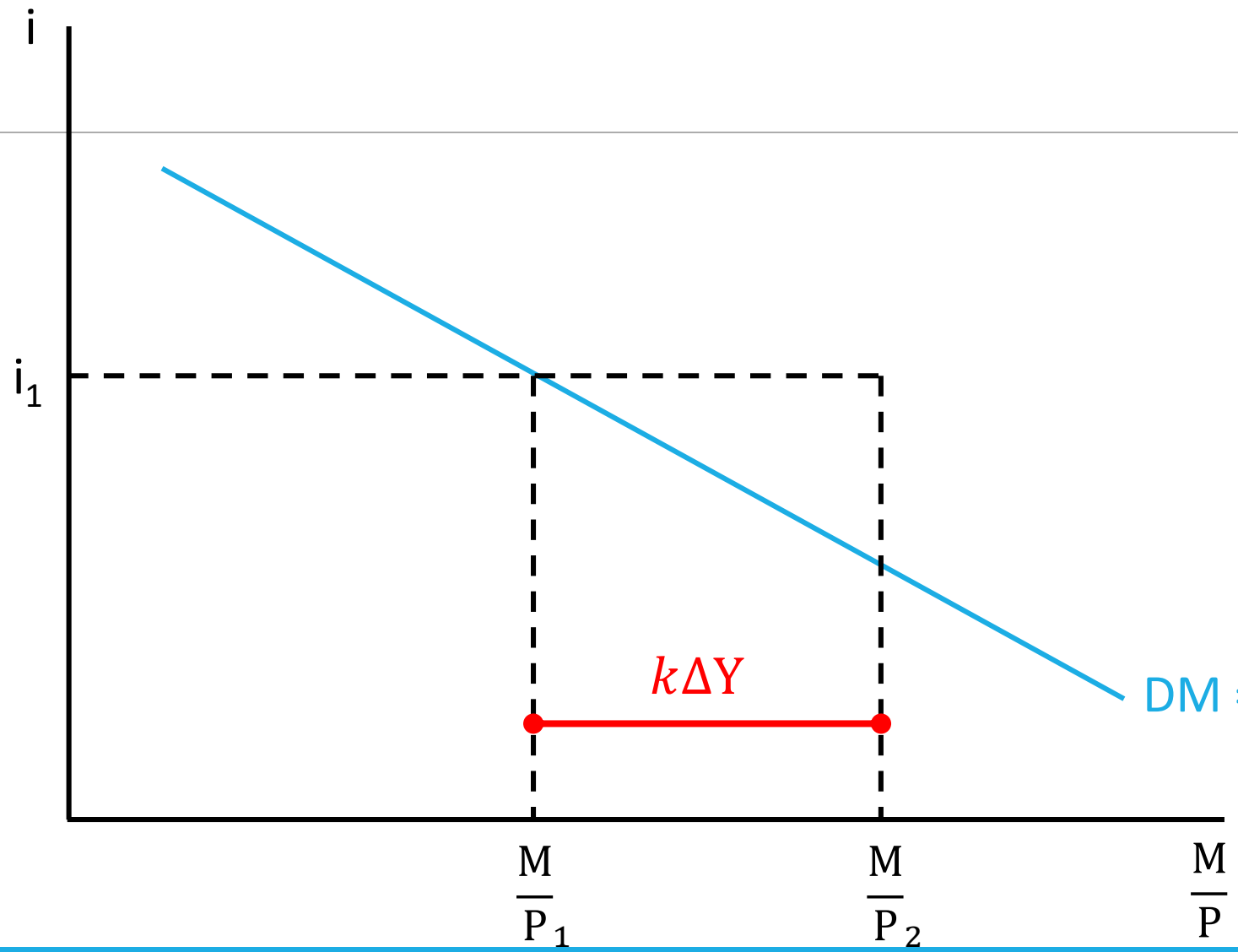
Demand for money: changes in income



$$\frac{\Delta DM}{\Delta Y} = k$$

$$\Delta DM = k\Delta Y$$

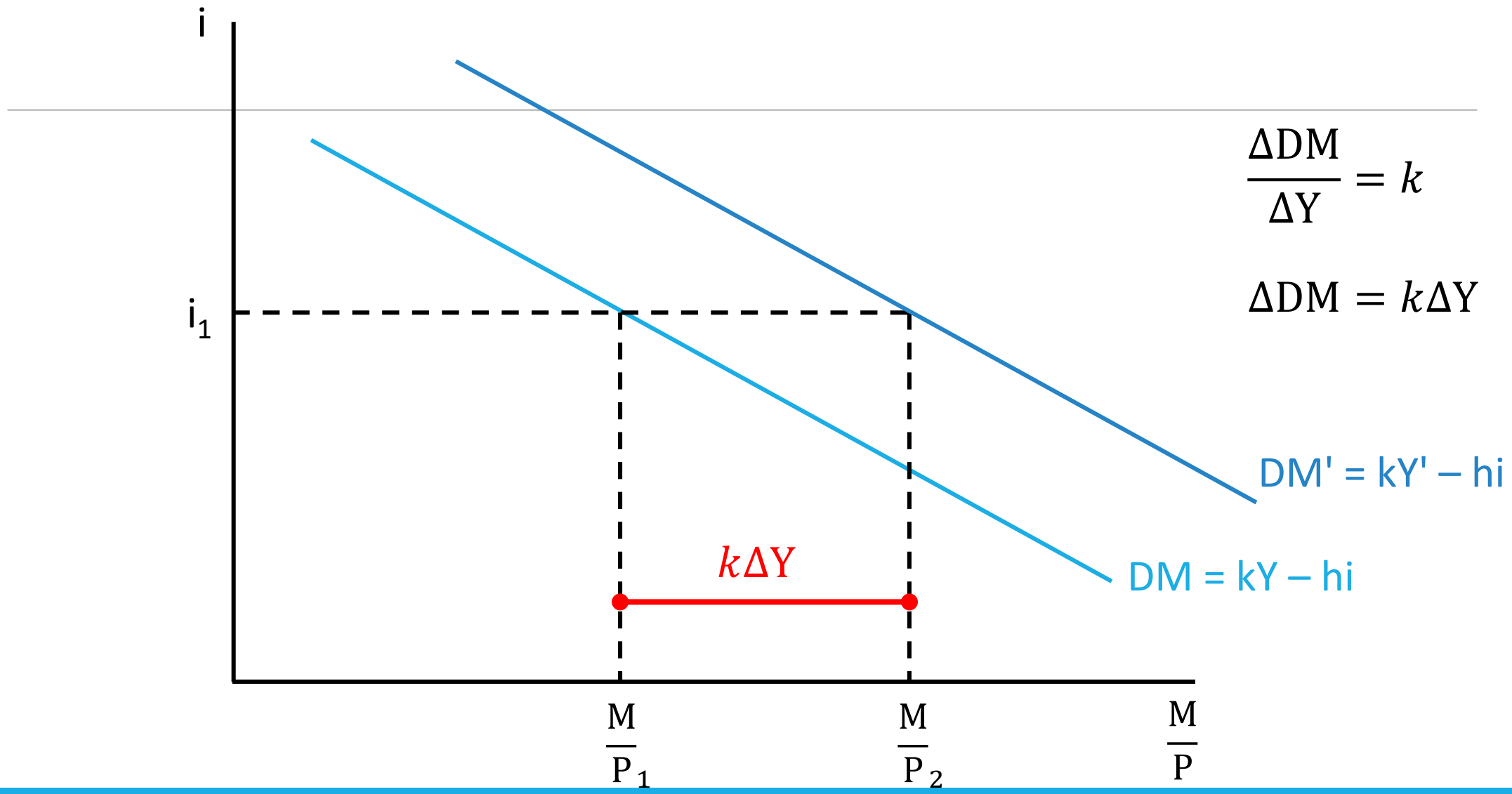
Demand for money: changes in income



$$\frac{\Delta DM}{\Delta Y} = k$$

$$\Delta DM = k\Delta Y$$

Demand for money: changes in income

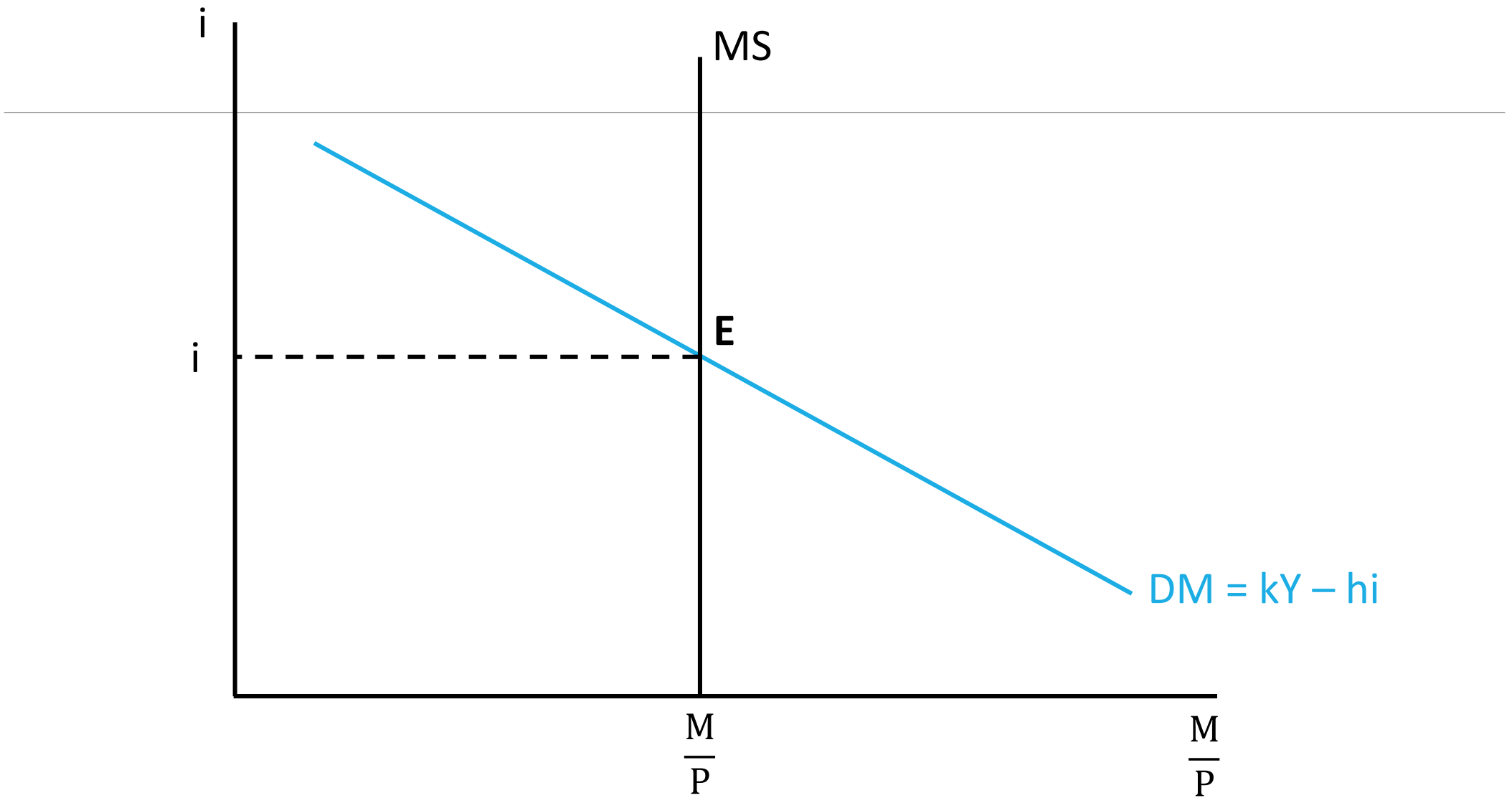


Money market equilibrium

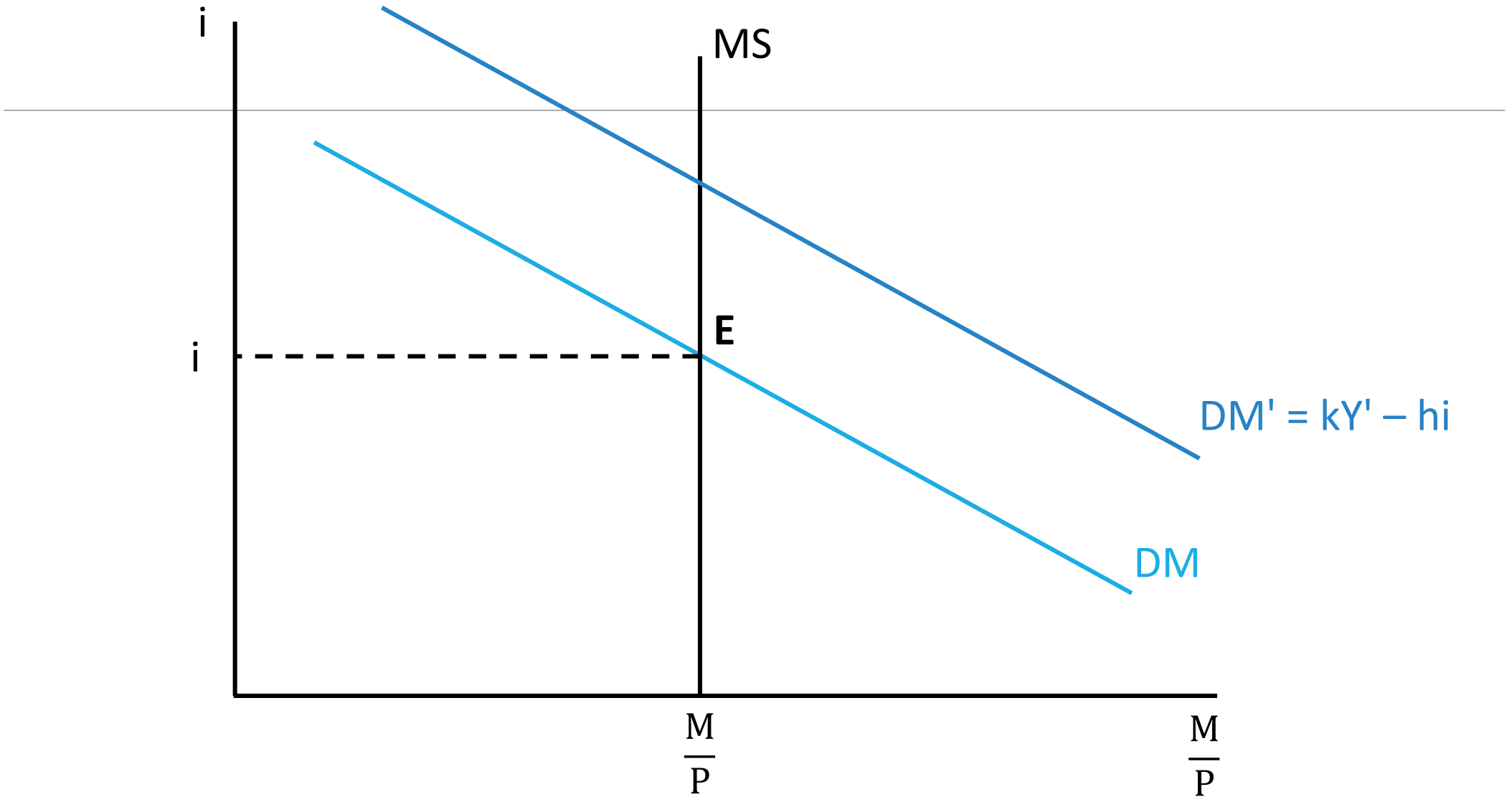
- The **demand for money** depends **inversely on the interest rate**.

- The **money supply** is fixed by the Central Bank and does so **independently of the interest rate**.

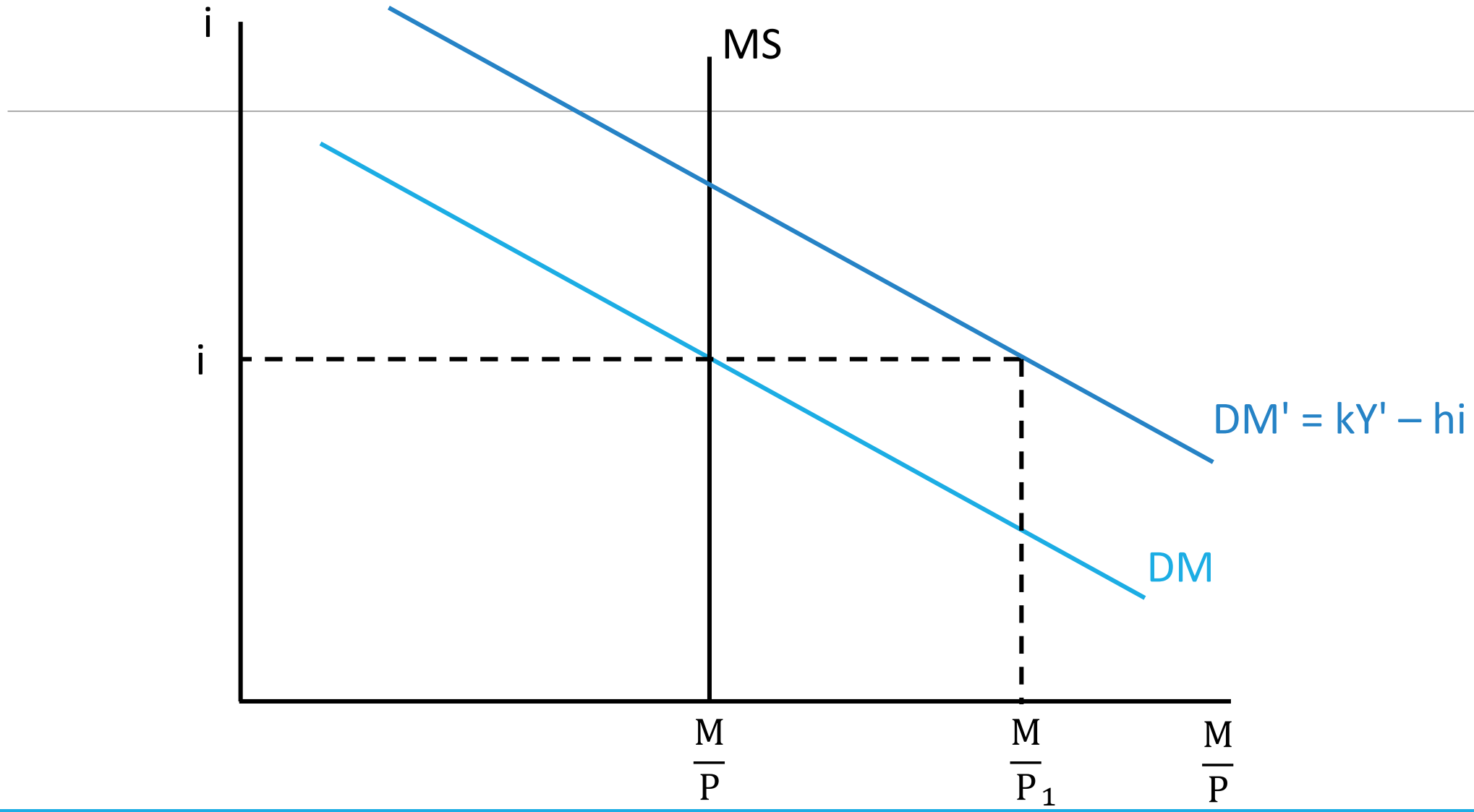
Money market equilibrium



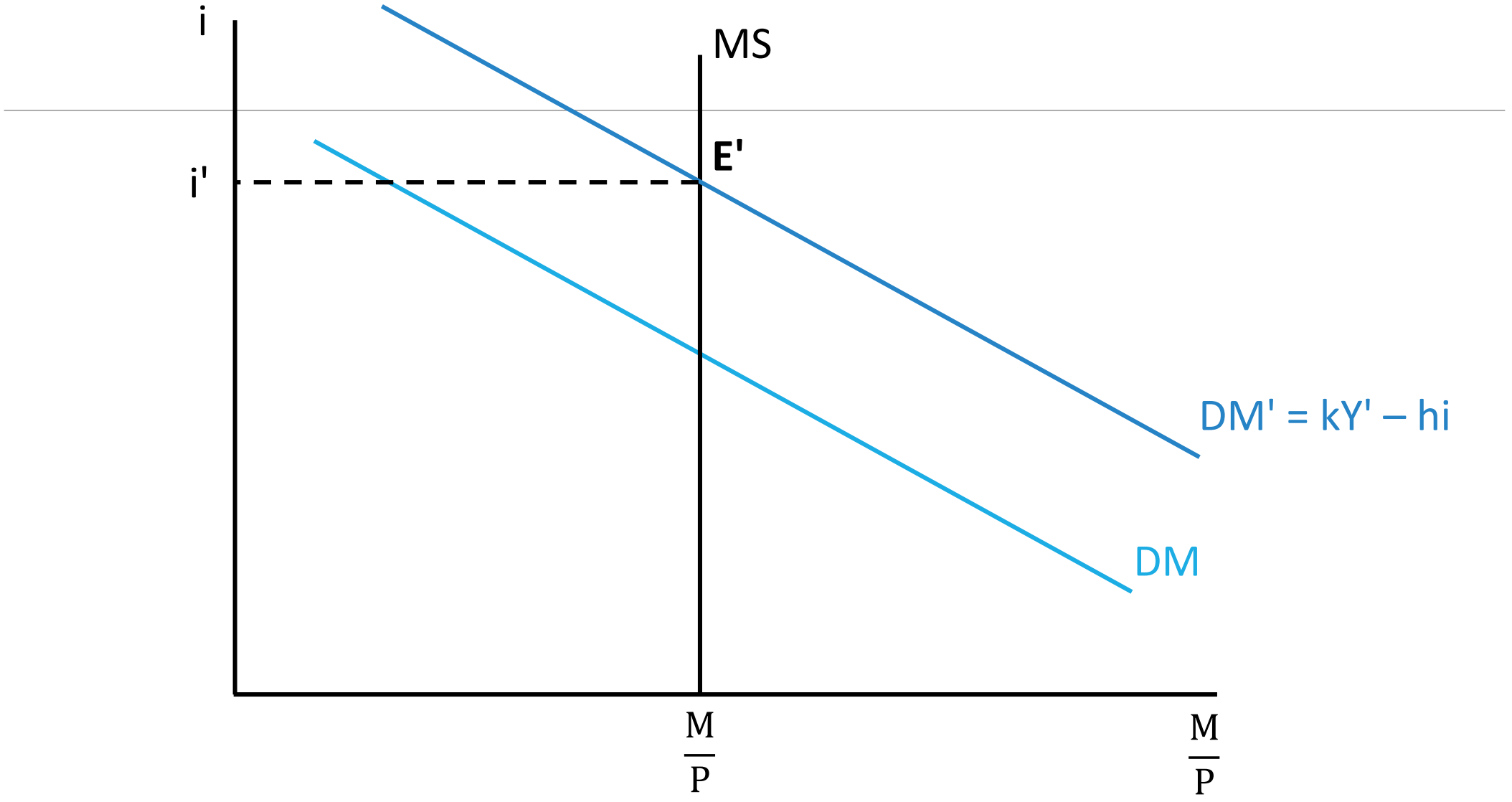
Money market equilibrium: increases Y



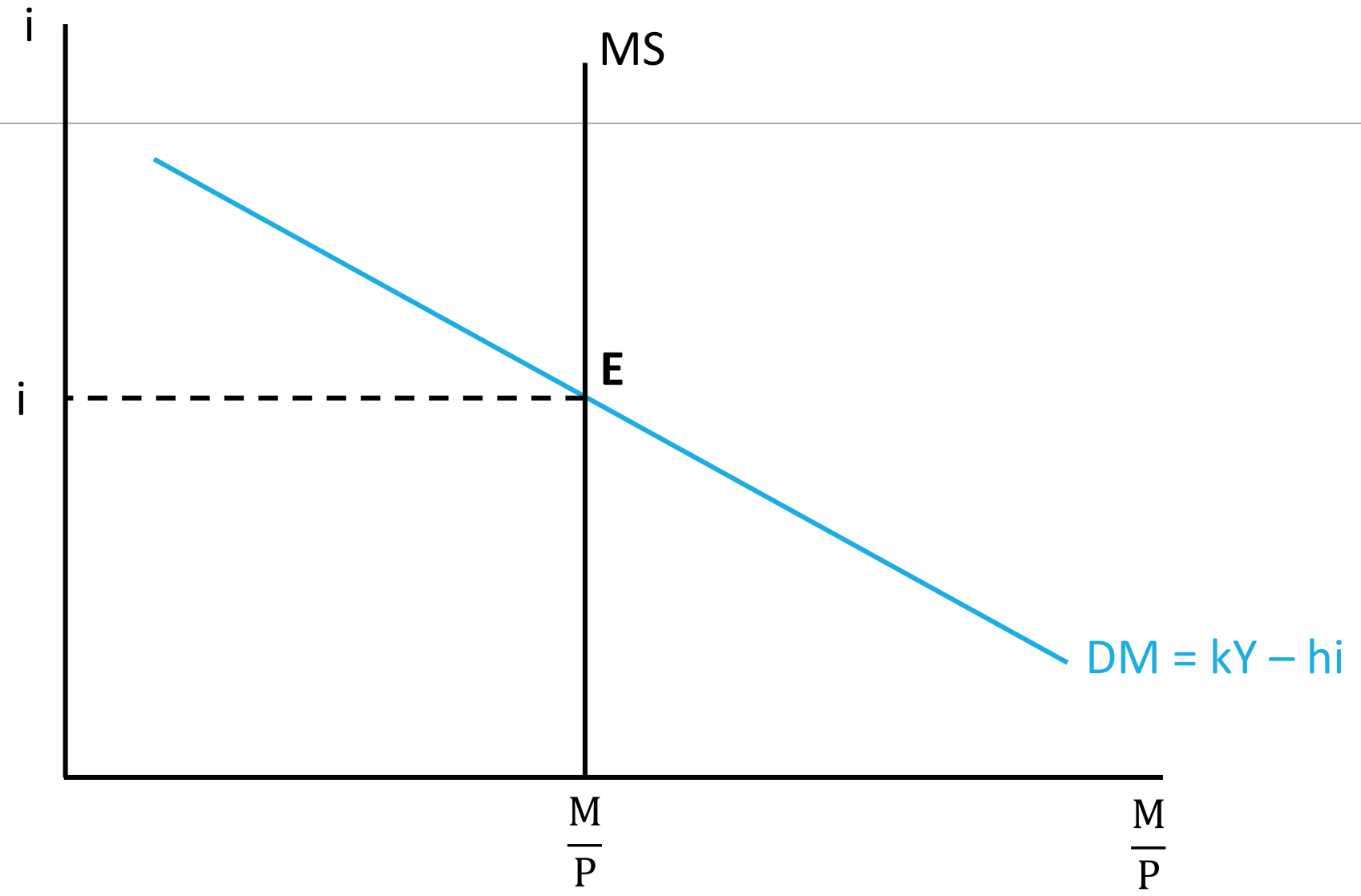
Money market equilibrium: increases Y



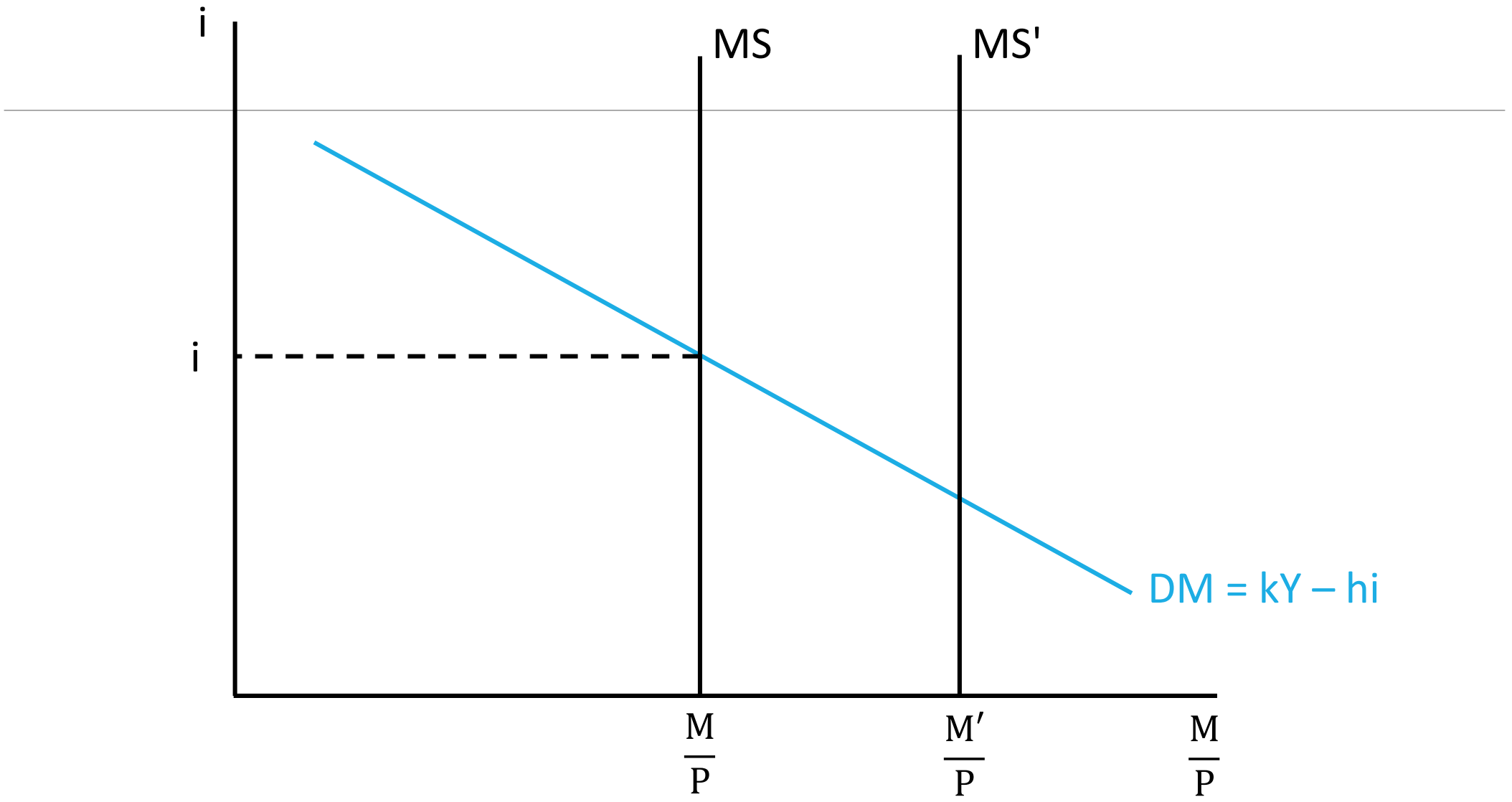
Money market equilibrium: increases Y



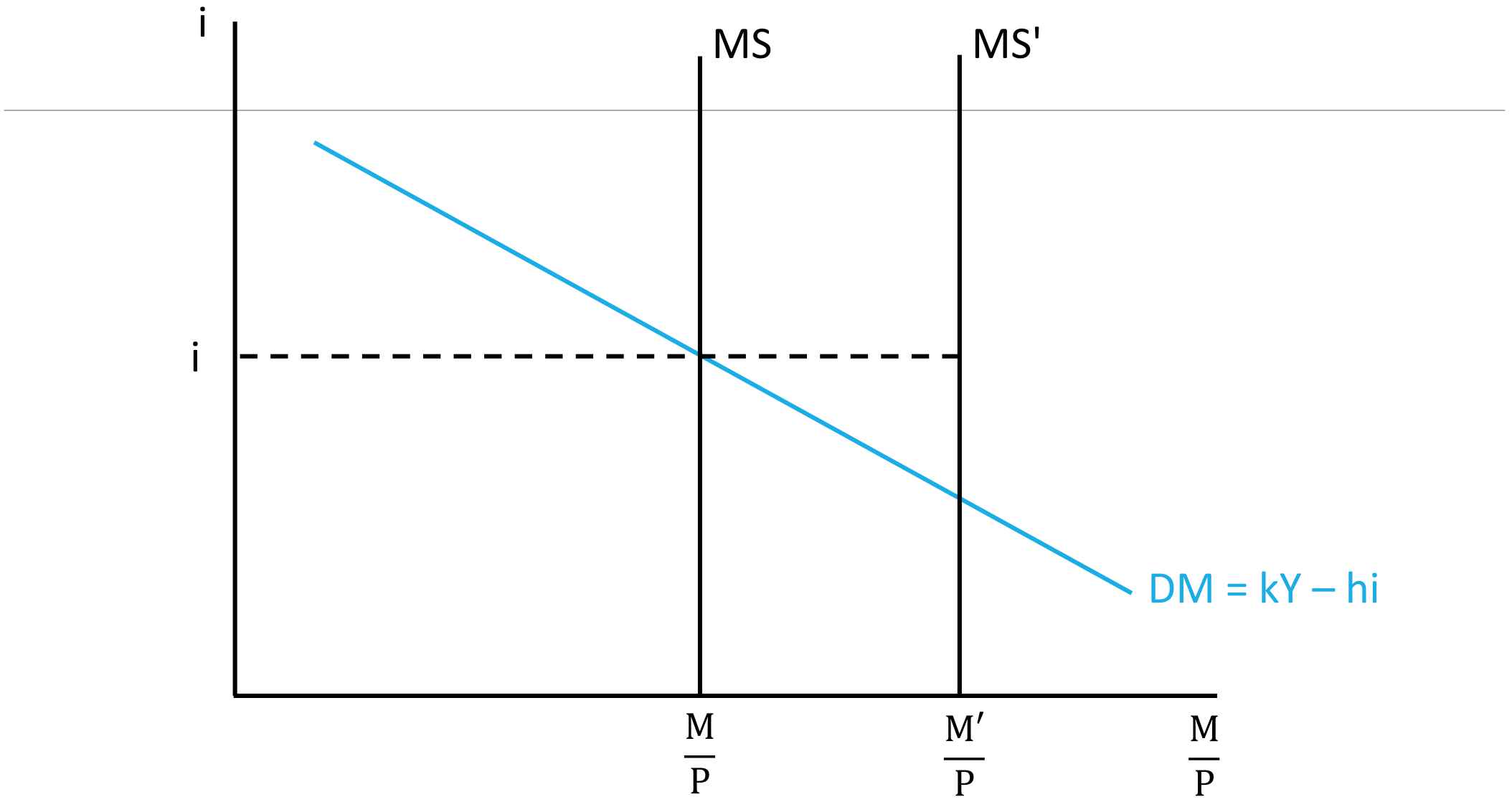
Money market equilibrium



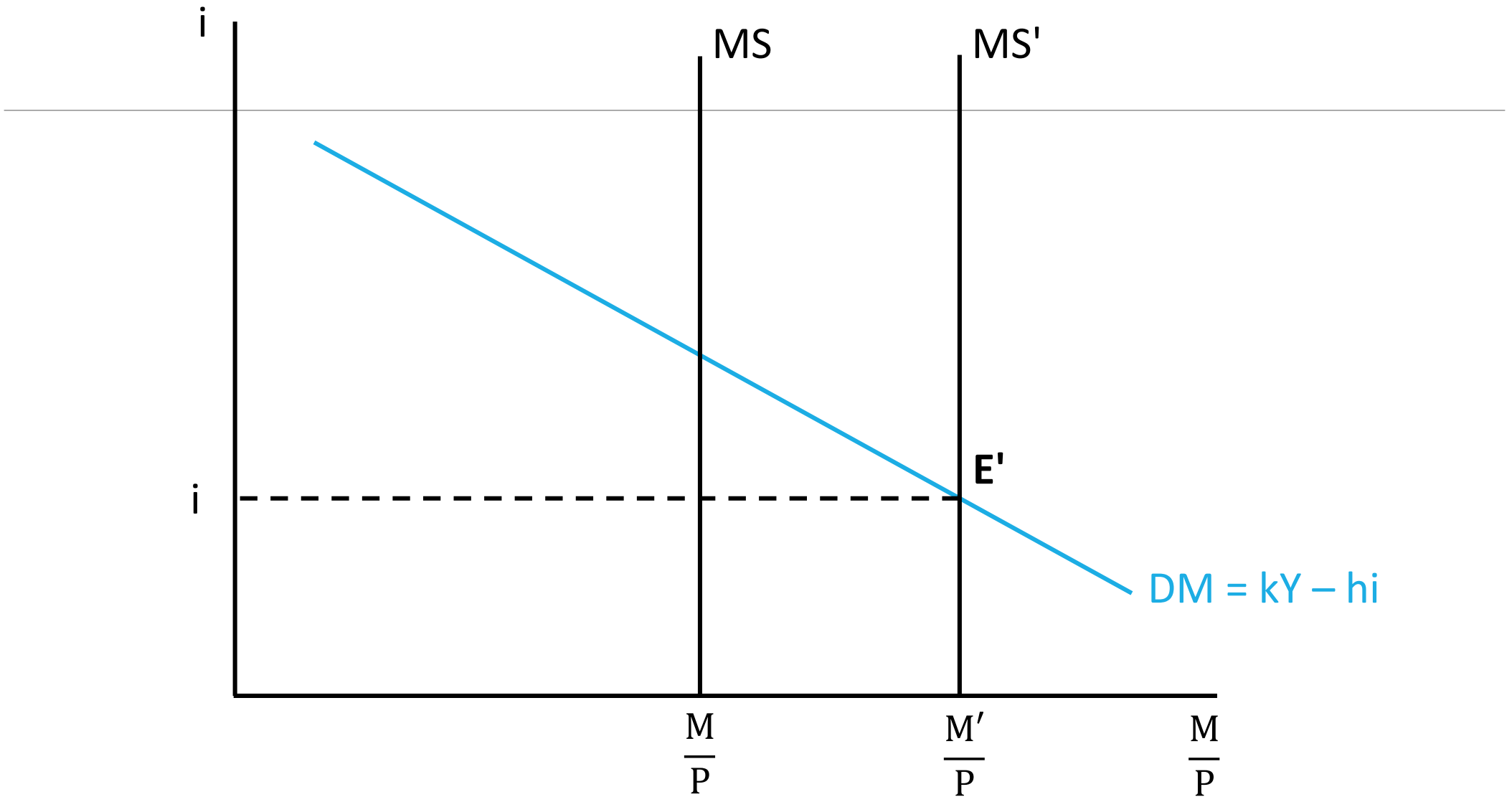
Money market equilibrium: increase in M



Money market equilibrium: increase in M



Money market equilibrium: increase in M



Outline

1. The government.

2. Aggregate demand and fiscal policy.
   - Keynesian multiplier.

3. Money and banking.
   - Money supply, demand for money and equilibrium in the money market.

4. Aggregate demand and monetary policy.

Monetary policy

- The monetary authority influences the equilibrium level of ***Y*** in two ways:

  1. Changes in the money supply.

  2. Changes in the interest rate.

- These are monetary policy interventions: government policy with respect to the level of ***M*** and ***i***.

Expansionary monetary policy

- Expansionary monetary policy: a monetary policy that increases aggregate demand.

1. Increase in the **money supply** (**M**): lowers the interest rate.

2. Decrease in **the interest rate** (**i**): ***I*** increases and ***S*** decreases, so ***C*** increases.

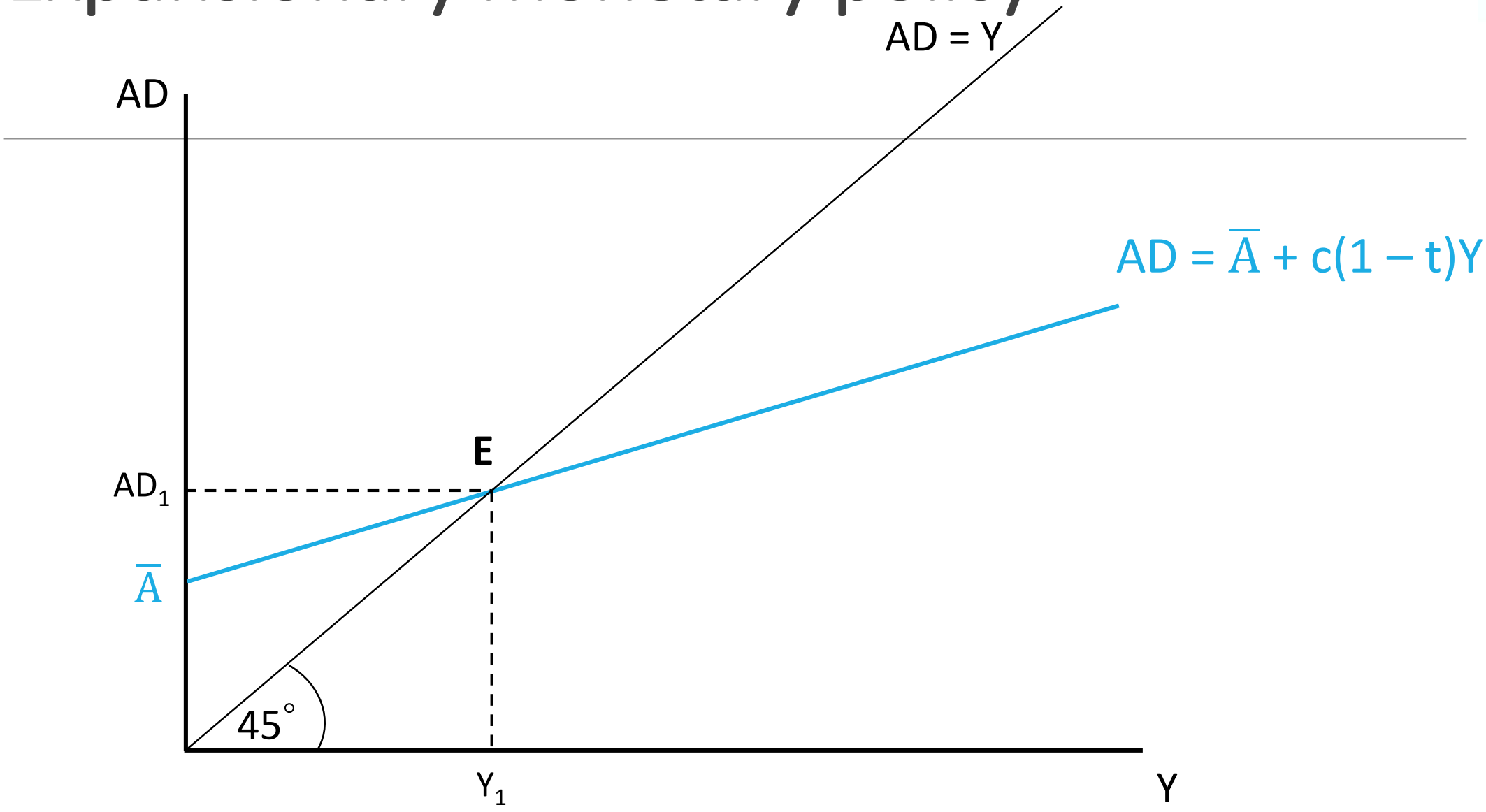
Contractionary monetary policy

- Contractionary monetary policy: a monetary policy that decreases aggregate demand.

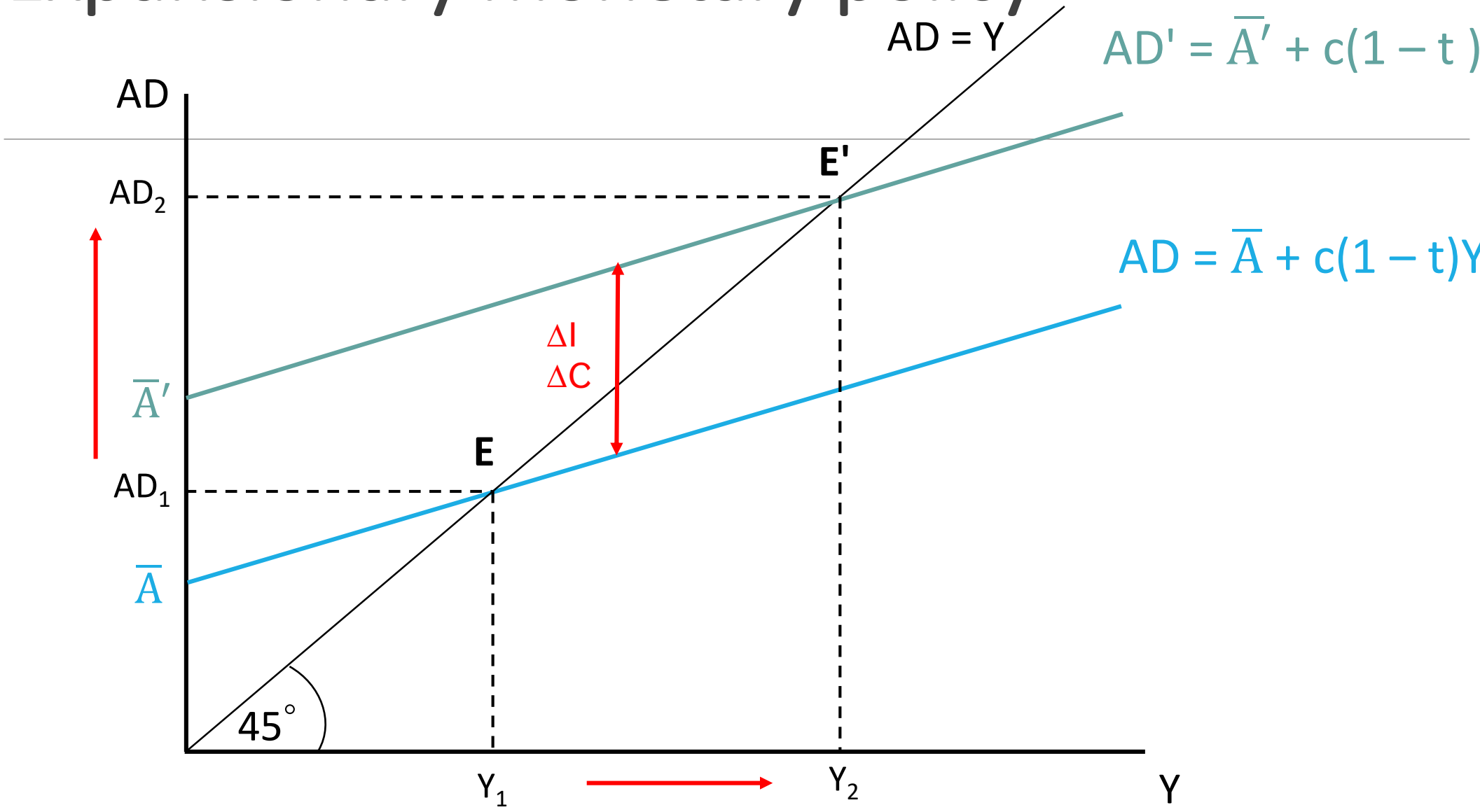
1. Decrease in the **money supply** (**M**): interest rate increases.

2. Increase in the **interest rate** (**i**) : ***I*** decreases and ***S*** increases, so ***C*** decreases.

Expansionary monetary policy



Expansionary monetary policy



Mandatory readings

- Krugman, P. and Wells, R. (2023). *Essentials of Economics*. MacMillan Learning. 6th edition.
  - Chapter 17: Fiscal policy.
  - Chapter 18: Money, banking and the Federal Reserve System.
  - Chapter 19: Monetary Policy.

Mandatory readings

- Dornbusch, R., Fischer, S. and Startz, R. (2018). *Macroeconomics*. McGraw-Hill Education. 13th edition.
  - Chapter 9: Policy preview.
  - Chapter 10: Income and spending.
  - Chapter 12: Monetary and fiscal policy.

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End of Topic 7

Stabilization Policy

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