

An important add-on learnt from the 2008 financial crisis and the sovereign debt crisis

Monetary independence and
government budgets

Monetary Independence and government budgets

- We have seen that when countries join a monetary union they lose their monetary independence and this affects their capacity to deal with asymmetric shocks.
- The loss of monetary independence has another major implication:
- it fundamentally **changes the capacity of governments to finance their budget deficits.**

The relevance of budget deficits

Budget deficits tend to increase automatically during a recession because of so-called automatic stabilizers that sustain income.

Booms and busts due to business cycle phases are what we called transitory shocks.

Automatic stabilizers

- Unemployment benefits
- Progressive taxation

How do they work?

They sustain income during downturns.

As they work, the government acts as a buffer: an increase in unemployment raises spending on unemployment benefits, leading to a larger public deficit (G)

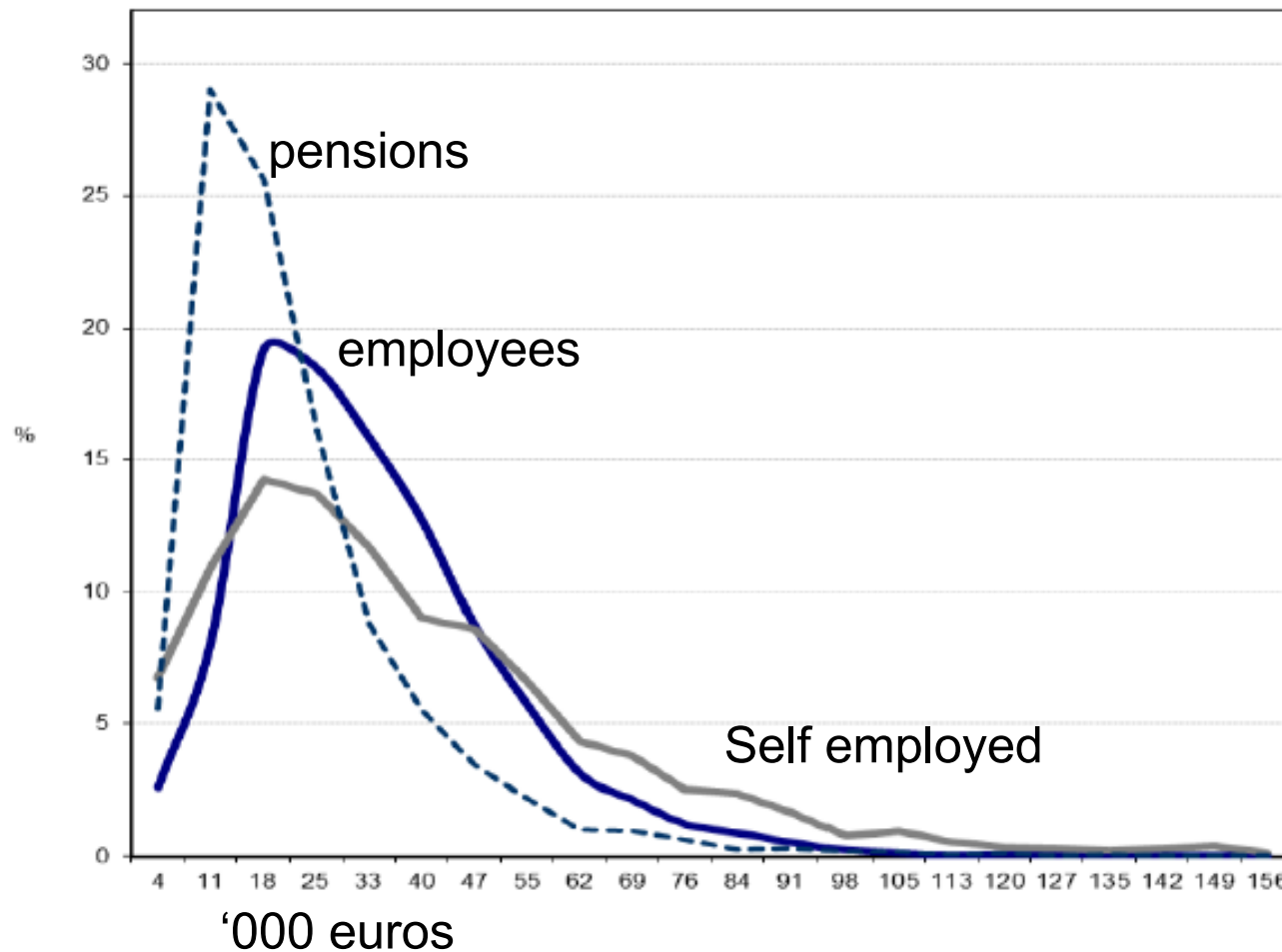
As income declines, income distribution shifts leftwards and the average tax rate (t) declines $\rightarrow$ Revenues (T) decline both because of t declines and because incomes (Y) have fallen.

Progressive taxation

- Progressive taxation: tax rate rises with income.
- Usual when taxation levied on individual income.
- Income brackets and tax rates are defined by governments and differ across countries and time.
- Progressive taxation implies that the average tax rate changes as the income distribution changes, e.g. as income grows or declines during cycles.
- This makes it an important automatic stabilizer

Example of an income distribution: right skewed

Italy: income distribution in 2010 (ISTAT)



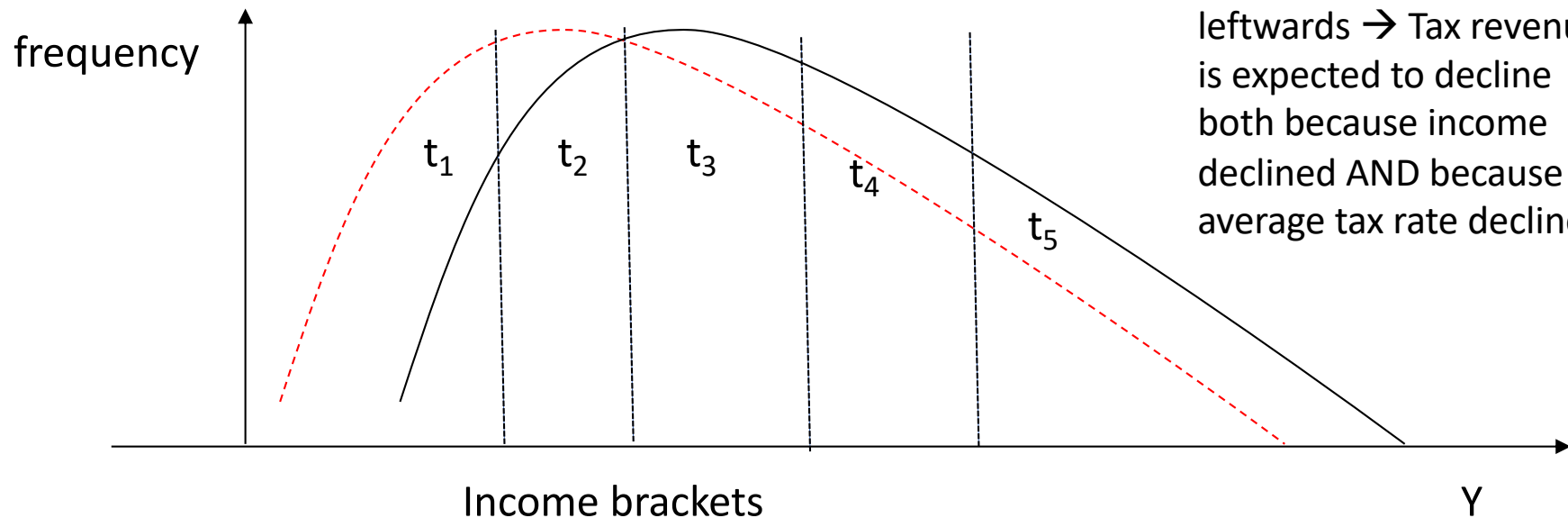
Income distribution and progressive taxation

Progressive taxation is defined by the income brackets and the tax rate of each bracket

- Average income tax rate is a weighted average of the tax rates

$$t = \sum_{i=1}^n t_i \frac{Y_i}{Y}$$

- Tax revenues: $T = \sum_{i=1}^n t_i Y_i$



The dashed red line represents a negative income shock.

Income distribution shifts leftwards → Tax revenue is expected to decline both because income declined AND because the average tax rate declined

Remember that:

- Response of Government revenues and expenditures to the business cycle is also a relevant policy indicator.
- It serves to compute the Cyclically Adjusted Budget Balance (CAB) (see lectures on fiscal policy)
- In a monetary union there may be **little scope for stabilization policies** at the national level (rules + existing budgetary stance).
- In addition, **business cycle movements may be exacerbated** as government budgets lose their automatic stabilizing capacities
 - This may happen when governments are forced to implement austerity policies.
- Differences in these kind of policy interventions feed asymmetries within the Monetary Union

Monetary independence and budgets

- As deficit increases during a recession, the expectations of financial investors on the capacity of the government to repay the maturing debt become very important
- In a monetary union governments issue debt in currency over which they have no control.
 - What does it mean?
 - The Central Bank is the CB of the **whole** currency area, not of every single member state and it is independent of governments of member states
- It follows that governments cannot guarantee that the bondholders will always be paid out at maturity.
 - On the contrary, in independent countries the CB (usually) stands ready to provide liquidity in times of (liquidity) crisis.

→ financial markets acquire power to force default on these member countries. *How?*

Two possible scenarios

- In a MU like EZ, investors' portfolios contain Government bonds of the various member states.
- During an asynchronous business cycle, two possible scenarios can emerge:
 - **if investors trust** the MU, they can buy more bonds from the member country that is issuing new ones (recession) and reduce those of the country that is booming and whose deficit declines
 - **if investors do not trust** the MU and distrust the recessionary member state, they refuse to buy more of its bonds and actually sell what they already have in the portfolio and buy those of the country that is booming

Monetary union is fragile

- When investors **distrust** a particular member government, they will sell the bonds issued by that sovereign, thereby lowering its price (or raising the required interest rate) and triggering a **liquidity crisis**.
- This may in turn set in motion a **solvency crisis**, i.e. with a higher interest rate the government debt burden increases, forcing the government to reduce spending and increase taxation → forced budgetary **austerity** (restrictive fiscal policies)
- It becomes more likely that the government only choice will be to stop servicing the debt → **sovereign debt crisis**
- Notice: If a sovereign debt crisis occurs in the absence of severe weaknesses in economic fundamentals, it is likely to reflect a **self-fulfilling debt crisis**

Difference between liquidity and solvency crisis

Liquidity crisis: the state temporarily lacks the cash or liquid assets to meet its short-term financial obligations perhaps due to market conditions or panic-driven behaviour by creditors

solution: short-term borrowing or temporary support from external lenders, like international institutions.

Solvency crisis: a State's total liabilities exceed its ability to repay them in the long term; borrowing more will not resolve the issue because the fundamental fiscal imbalance makes the debt unpayable in the long run

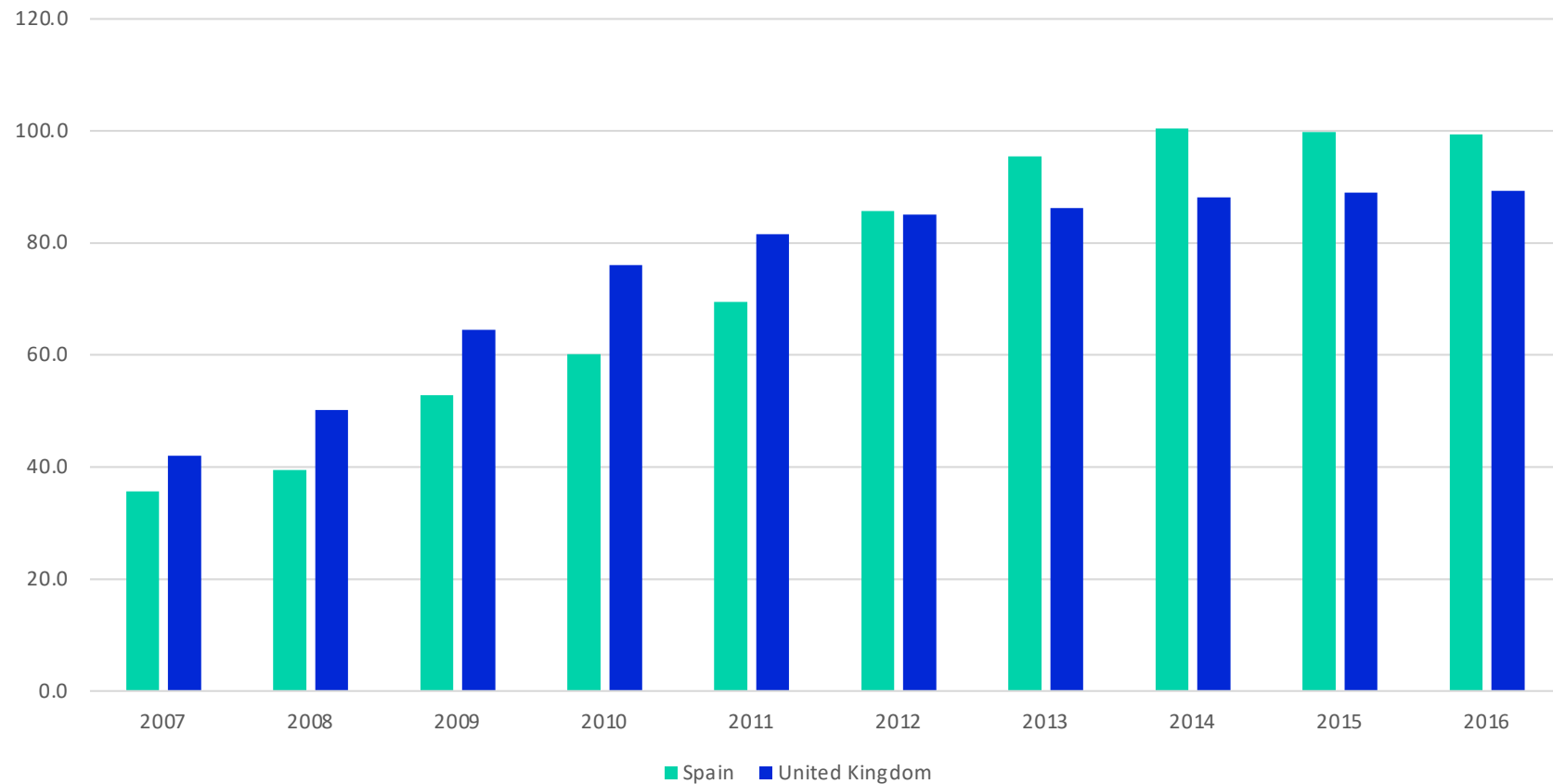
solution: drastic measures, such as debt restructuring, austerity measures, or, in extreme cases, default.

Self-fulfilling debt crisis

- If a country experiences a sovereign debt crisis despite relatively sound economic fundamentals, the crisis is likely to be self-fulfilling:
 - pessimistic market expectations increase sovereign spreads, weaken public finances, and ultimately make default more likely.

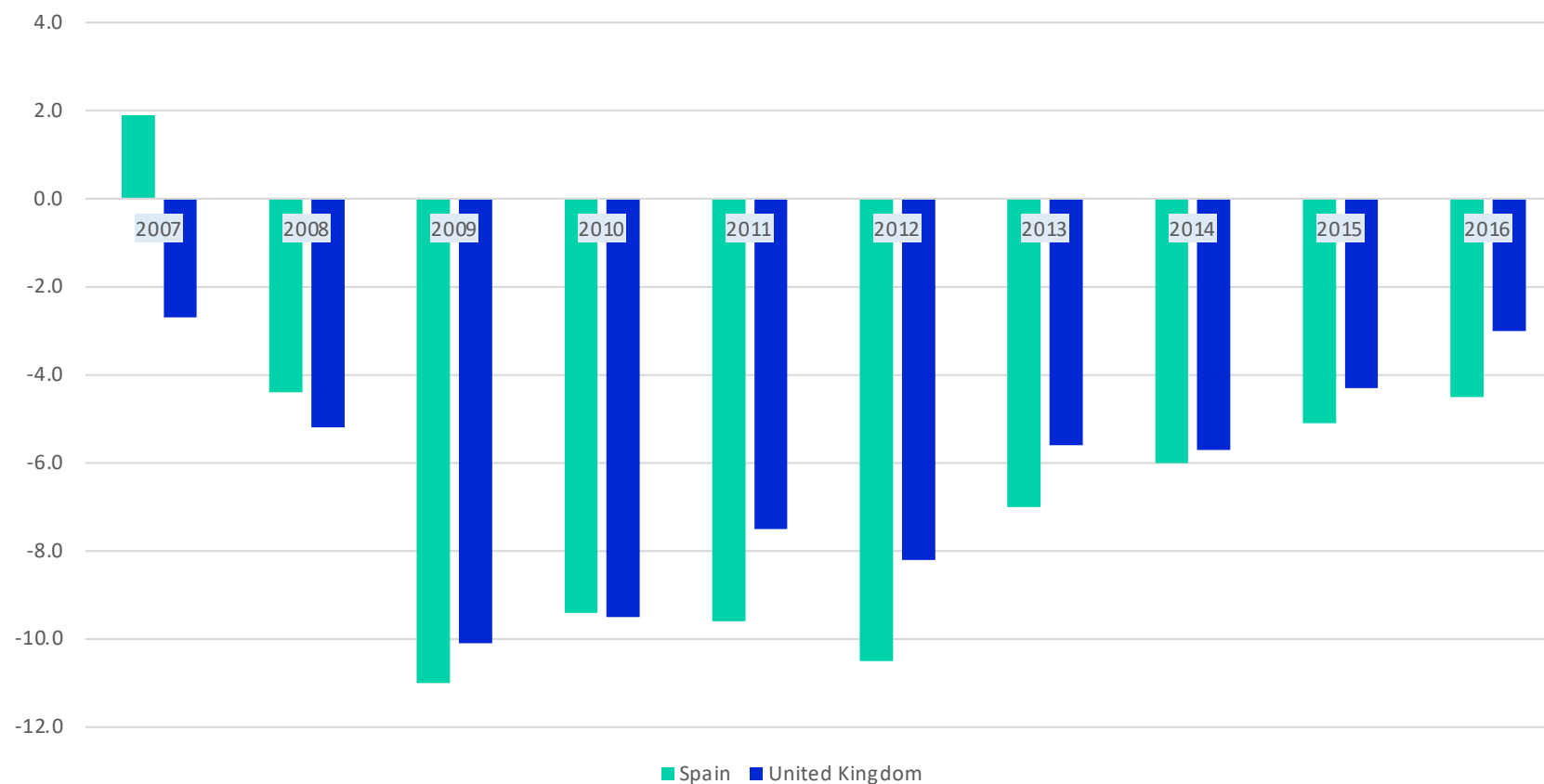
The case of UK (“stand-alone” country)
vs
Spain (member of monetary union)

Percentage of Public Debt/GDP



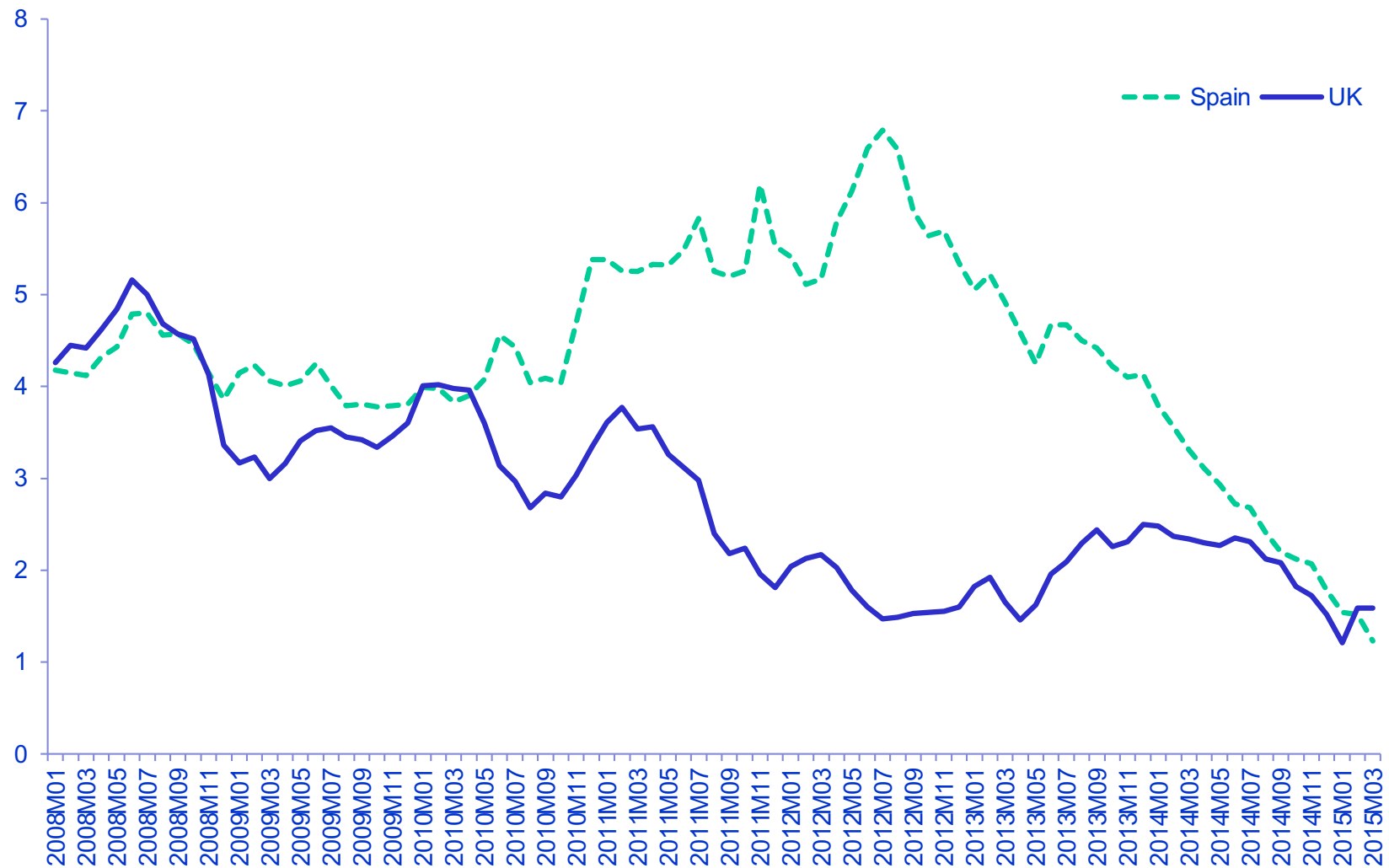
Source Eurostat

Percentage of Deficit(-) or Surplus (+) to GDP



Source Eurostat

10 year government bond yield Spain and UK



UK Case

- Suppose investors fear default of UK government
 1. They sell UK govt bonds (bond prices fall and yields increase)
 2. Some investors move their funds abroad → sell pounds in exchange for foreign currencies.
 3. This puts downward pressure on sterling → pound depreciates
 4. Notice: **role of forex**, competitiveness improves.
 5. Moreover, the **Bank of England** tolerates depreciation and may lower the policy interest rate
 6. Capital outflows are reduced and may revert
 - The weaker pound reduces incentives for further capital outflows and may attract new investors seeking undervalued UK assets.
 7. The pool of liquidity will be gradually reinvested in UK assets, including govt securities
 8. If necessary, Bank of England **can purchase** UK govt bonds, i.e. it can act as a lender of last resort to the sovereign
- Investors cannot trigger liquidity crisis for UK government and thus cannot force default (Bank of England is superior force)
- Investors know this: thus, they will not try to force default.

Spanish case

- Suppose investors fear default of Spanish government
 - They sell Spanish govt bonds (yields increase)
 - Proceeds of these sales are used to invest in other eurozone assets
 - Note: no foreign exchange market and floating exchange rate to stop this
 - Spanish money stock declines; pool of liquidity for investing in Spanish govt bonds shrinks
 - Where will the liquidity (in euros) be reinvested?
 - There is no Spanish central bank that can be forced to buy Spanish government bonds
 - Liquidity crisis possible: the Spanish government cannot fund bond issues at a reasonable interest rate
 - Can be forced to default
 - Investors know this and will be tempted to try

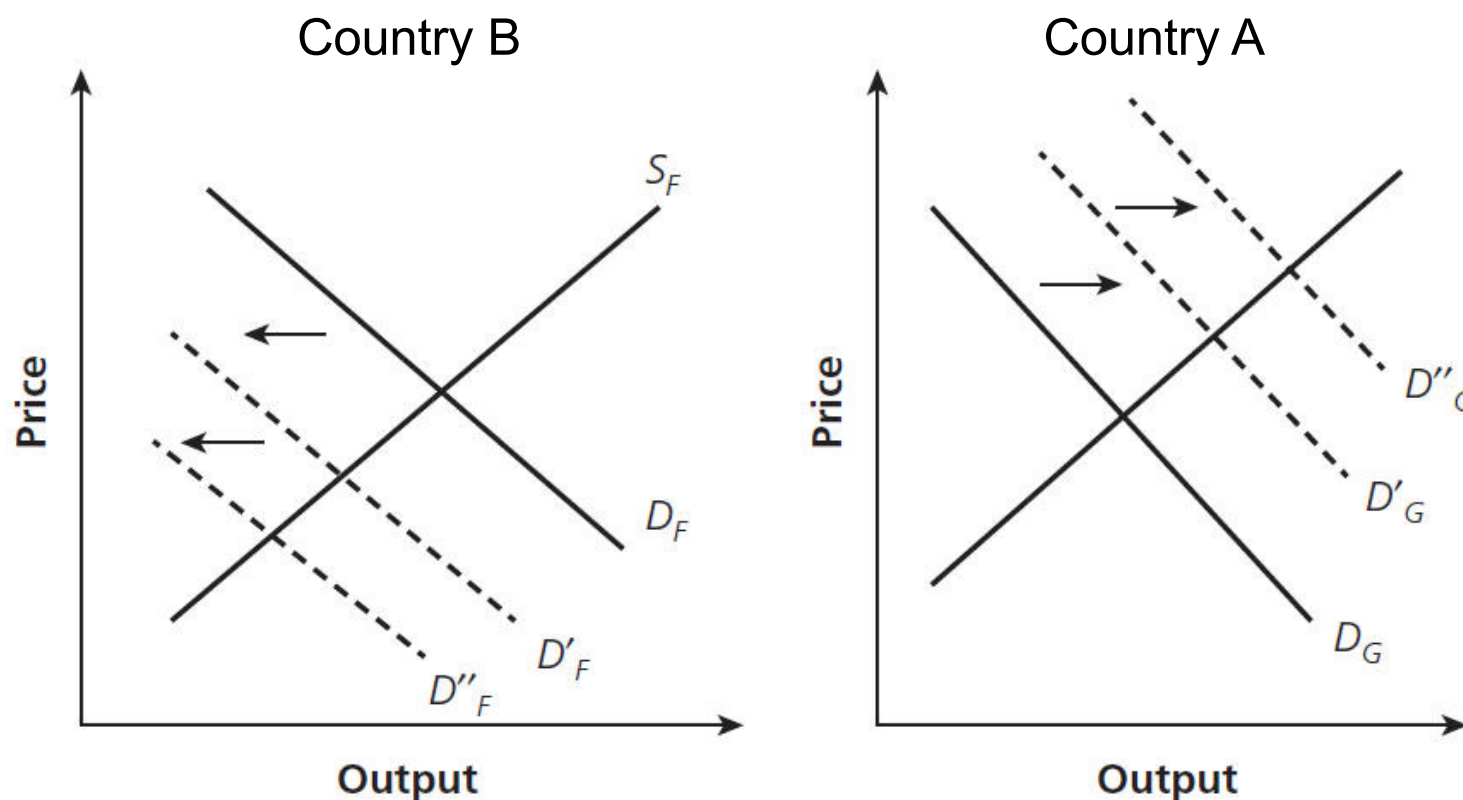
- Paradoxical situation: joining a MU weakens the position of a country vis-à-vis financial markets
- Situation of Spain is reminiscent of situation of emerging economies that have to borrow in a foreign currency and thereby become financially fragile.
- These emerging economies face the same problem, i.e. they can suddenly be confronted with a “**sudden stop**” when capital inflows suddenly stop leading to a liquidity crisis
 - see Calvo, et al., 2006 (**Liability dollarization**); Eichengreen, Hausmann and Panizza: **Original Sin**. Defines a situation whereby a country is unable to borrow abroad in its own currency. “Capital flows are more volatile and prone to reversal. Countries burdened with original sin have lower credit ratings and hence more tenuous access to international capital markets than their levels of indebtedness and other creditworthiness indicators would lead one to predict” (EHP, 2005).

Monetary union is fragile

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- This may in turn set in motion a **solvency crisis**, i.e. with a higher interest rate the government debt burden increases, forcing the government to reduce spending and increase taxation → forced budgetary **austerity**.
- This amplifies the initial shock
- More likely that the government will stop servicing the debt (**self fulfilling debt crisis**)

Amplification of asymmetric shocks

If the shock was initially asymmetric, as markets lose trust in country B government, the **asymmetric shock is amplified** in both country B and country A



Asymmetric shock are amplified as capital flows across member states

Negative shock	No shock
Investors sell government bonds of the member country hit by a negative shock and distrusted	Investors are likely to buy government bonds of the country they trust
This leads to a reduction of the price of the related bond and to an increase of its interest rate. A liquidity crisis arises	This leads the government bond price to increase and the interest rate to decline
Aggregate demand curve shifts further to the left → amplification of the negative shock	Aggregate demand curve shifts upwards to the right → amplification of the positive shock

Interest rate changes tend to destabilize the system

Note: **short term interest rate** is common to all member states as it is set by CB for the whole union.

Long term government bond rates diverge if investors attach different risks of holding bonds issued by different governments.

Long-term government bond yield=

Expected future short-term interest rate (monetary policy)

+ term premium (maturity → inflation, interest rate, liquidity)

+ credit risk premium (default, redenomination or depreciation)

Investors distrust and spreads

What are the characteristics of a safe asset?

A safe asset has three properties

01

It has limited risk by giving the holder the same payoff across a variety of future scenarios. It is easy to sell across people with different beliefs and tastes about risk

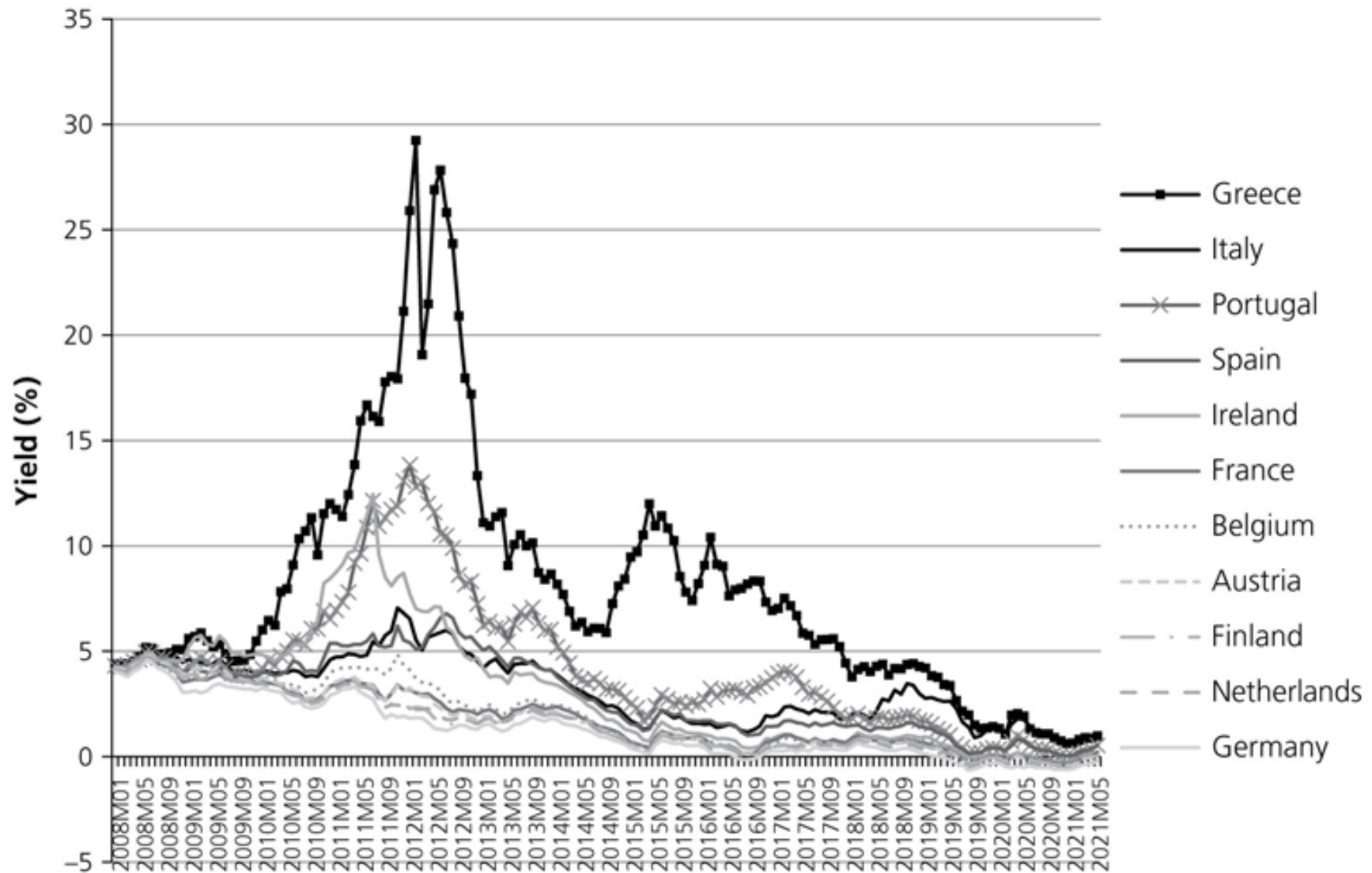
02

During times of crisis, it's low risk and high liquidity are particularly valuable in insulating the holder from risk

03

An asset is safe if it is considered by all to be safe which makes trading very liquid and implies that the price will not fall

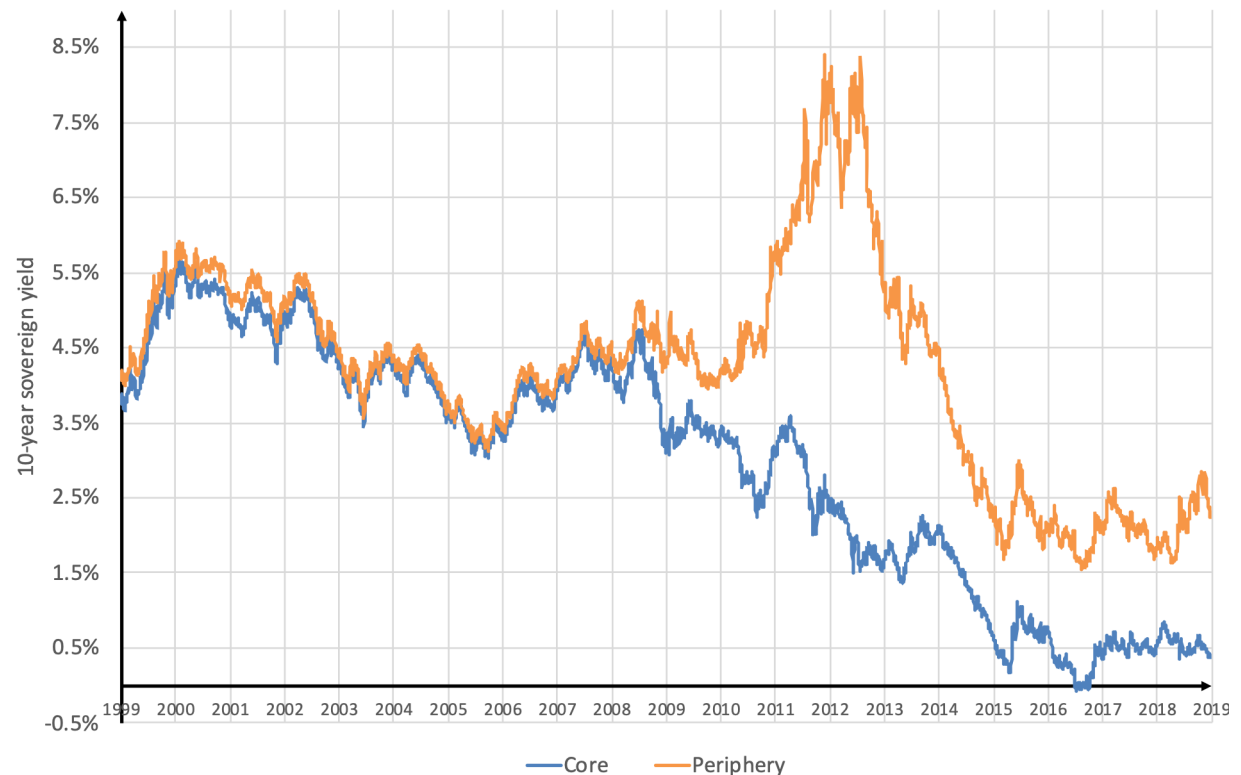
10 year government bond yield 2008-21



10-year sovereign yields

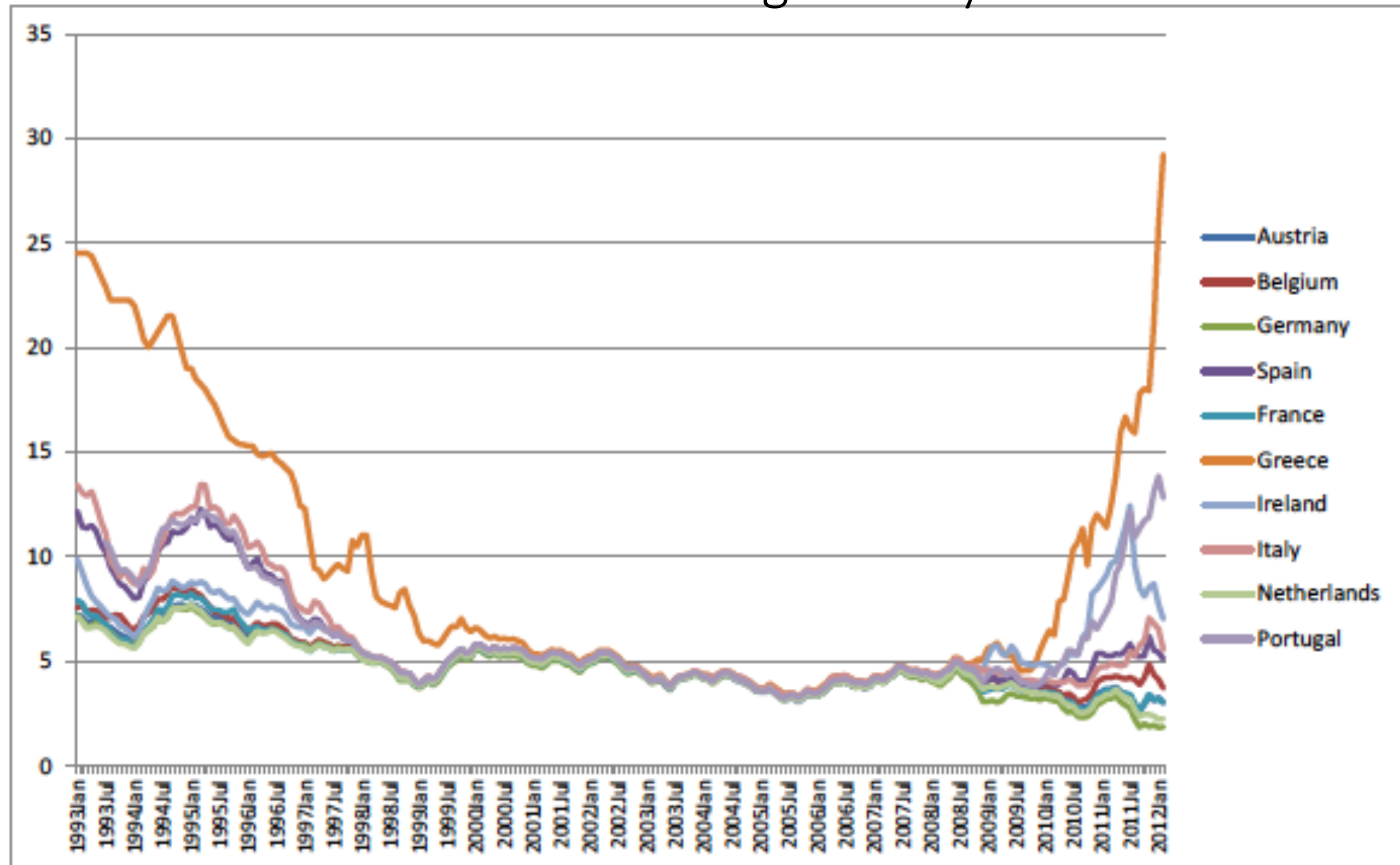
Periphery vs Core

- Before the crisis, both yields were approximately the same suggesting that all were deemed to be safe assets
- During 2010-2012, the two series diverged as **beliefs changed**
- There were large capital flows from the periphery to the core



Note: The aggregate variables by a weighted average of the country variables, with weights given by the GDP of each country, averaged over the period. Core: GER, FR. Periphery: SP, IT, IR, POR, GR

A longer backward looking view Euro Area Sovereign debt yields



Source: Shambaugh, The Euro's three crisis, Brooking Papers on economic Activity, Spring 2012

What explains the spreads before EMU?

Causes of gaps in sovereign yields

Exchange rate risk

- The exchange rate of the periphery currency can depreciate relative to the core
- But the introduction of the euro eliminated the perception of exchange rate risk
- However, this re-emerged as “denomination risk” where debt in euros could be redenominated into new national currencies worth less than the euro

Default risk

- The periphery was more likely to default than the core
- The Maastricht Treaty imposed a bail-out clause that made it formally illegal for other European institutions (ECB) to bail out countries
- This eliminated inflation risk
- But periphery bonds were not safe as they kept neither their payments across circumstances nor their safety during a crisis

Nest lectures: why an (expected) depreciation increases the risk premium

Further elements that amplify the asymmetric shock

- The banking crisis and the 'doom loop'
 - 2022 Nobel prize in Economics (Bernanke, Diamond and Dybvig)
- The austerity measures

Banking crisis

- When investors pull out from domestic bond market, interest rate on government bonds increases, and prices plunge.
 - domestic banks make large losses since they are normally large gov. bond holders
- Domestic banks are also caught up in a funding problem.
 - Domestic liquidity dries up (the money stock declines) making it difficult for domestic banks to roll over their deposits, except by paying prohibitive interest rates.
- Thus, the sovereign debt crisis spills over into a domestic banking crisis, even if the domestic banks were sound to start with.

The doom loop: what is it?

- A country is at risk of a doom loop when a shock to one part of its economic system is amplified by its effect on another part of the economy
- The riskiest link is between banks and government, i.e. the sovereign and its debt
- The second part of the doom loop is between banks and the economy
- The third part of the loop links the sovereign and the economy.

(Read: **Doom Loop** in Moodle)

Automatic stabilizers are switched off in MU

- This dynamics makes it very difficult for members of European monetary union to use automatic budget stabilizers.
- A recession leads to higher government budget deficits.
- This in turn leads to distrust of markets in the capacity of governments to service their future debt, triggering a liquidity and solvency crisis,
- which in turn forces them to institute austerity programs in the midst of a recession.