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PERSPEKTIVEN FÜR EINE GELD- UND FINANZPOLITIK IN EINER INSTABILEN WELT

Welche Rahmenbedingungen braucht eine resiliente Wirtschaft?

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IEP@BU
Institute for European Policymaking

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Resilience: the metapher

- Popular image of willow bending the wind, but oak breaking in a storm.
- Key to willow's survival is not only flexible branches, but also extensive root system that anchors trunk.
- Strong roots are key for survival during crisis and healthy development during normal times.
- How often and how severe the storms?

- Correct guess of Maastricht: stable prices and sound finances strengthen resilience (Widerstandskraft).

Resilience versus adaptability

- Essential element of survival: adaptability to unforeseen circumstances.
- Wieder-standskraft versus Widerstandskraft
- Euro crisis needed adaptability (ESM, BU, etc) nourished by strong roots.

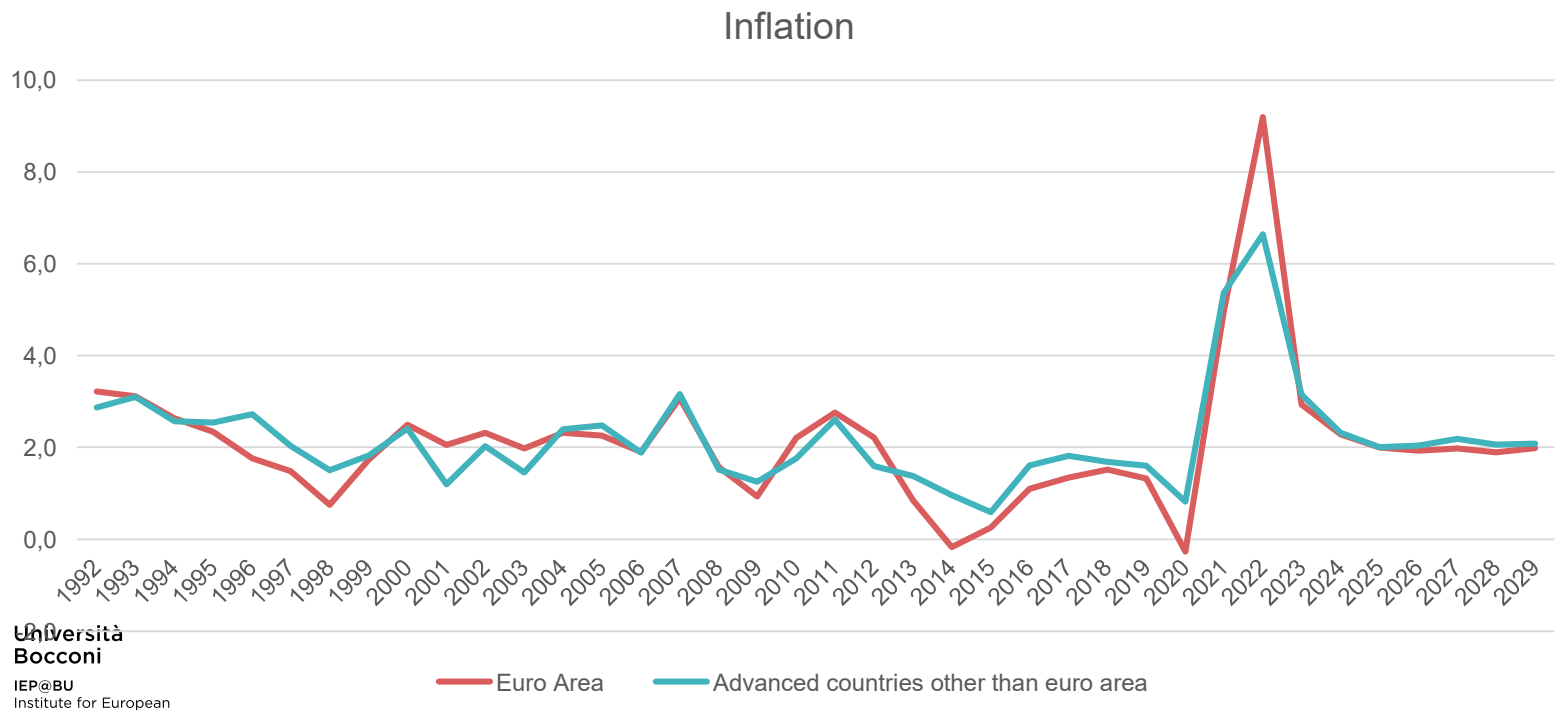
Did the Maastricht framework succeed?

—Benchmark should be other countries at similar level of development and subject to similar shocks.

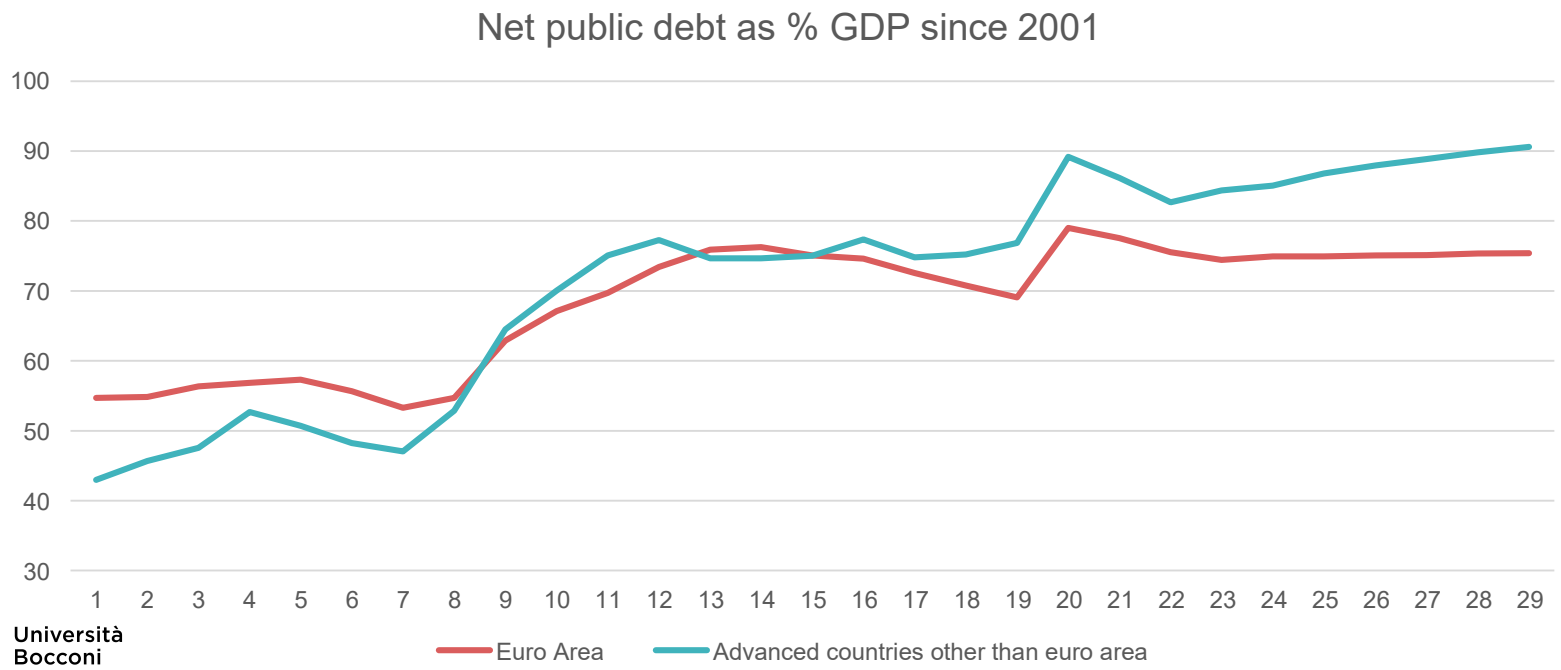
=>

1. Inflation performance average.
2. Public debt more stable

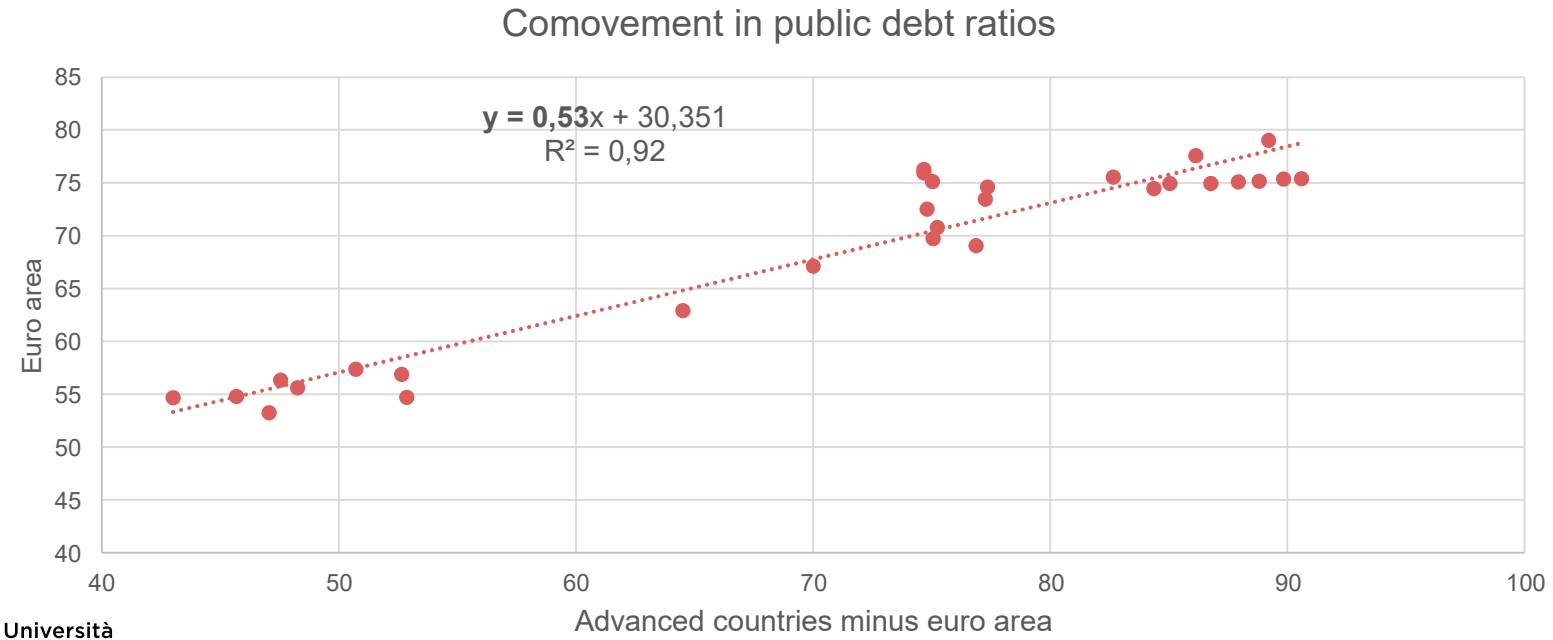
Euro area versus rest of developed countries: Inflation trends almost identical



Euro area versus rest of developed countries: Public debt increases less



Euro area versus rest of advanced countries: common shocks, but public debt increases less



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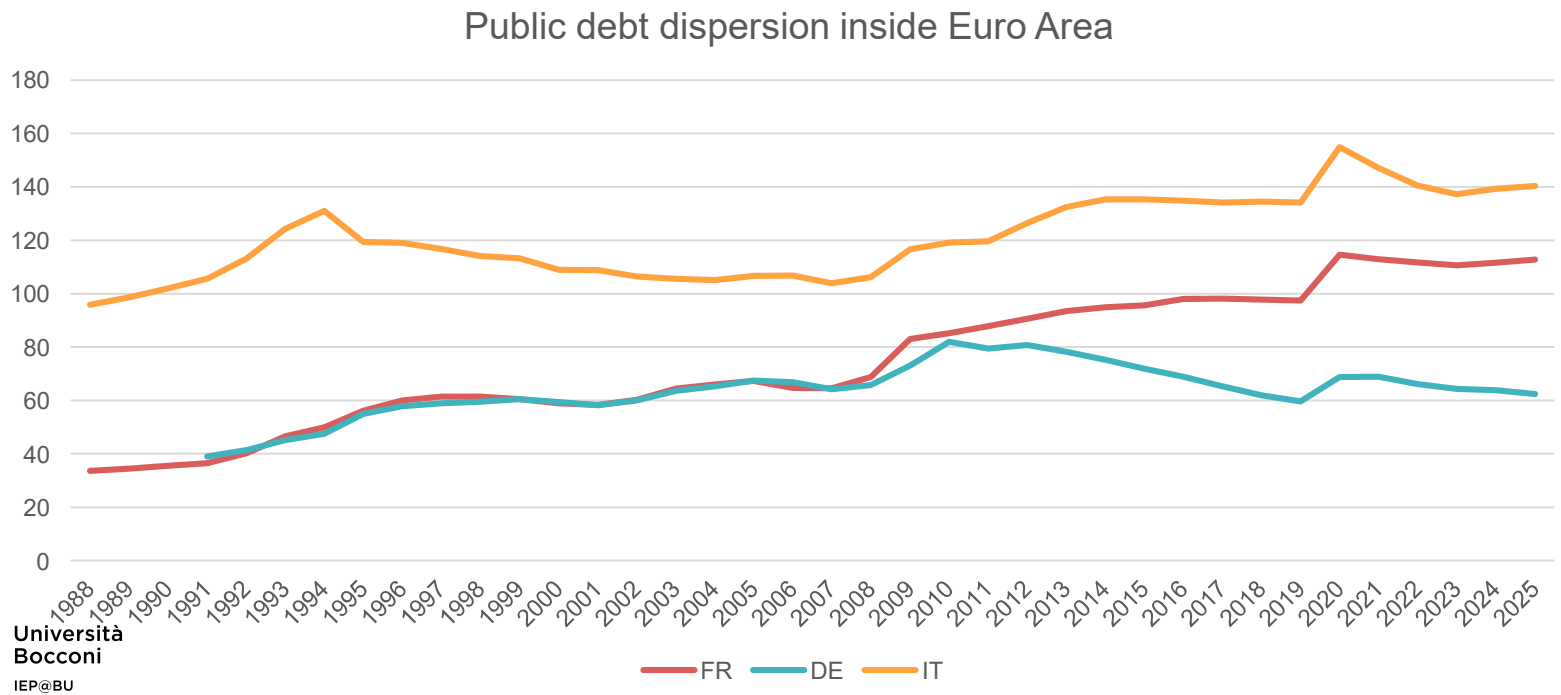
Euro area average meaningless



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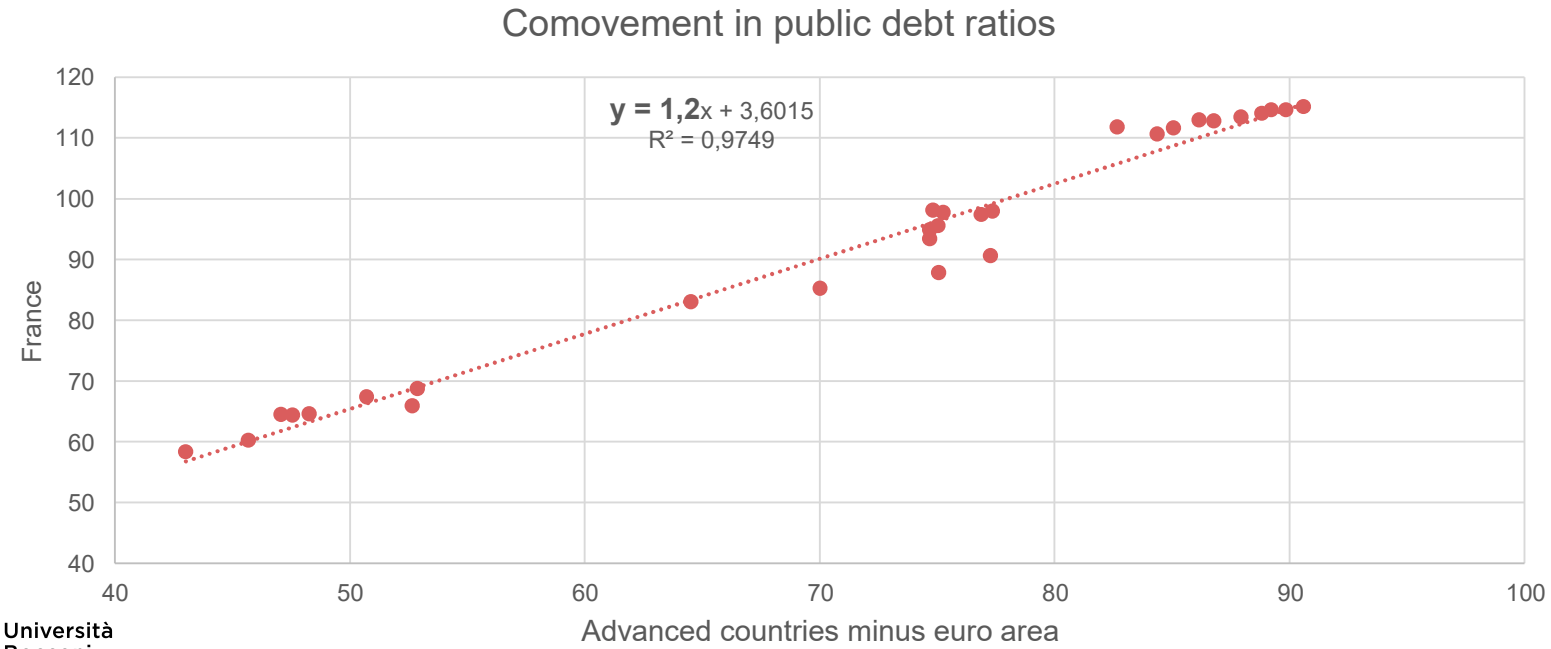
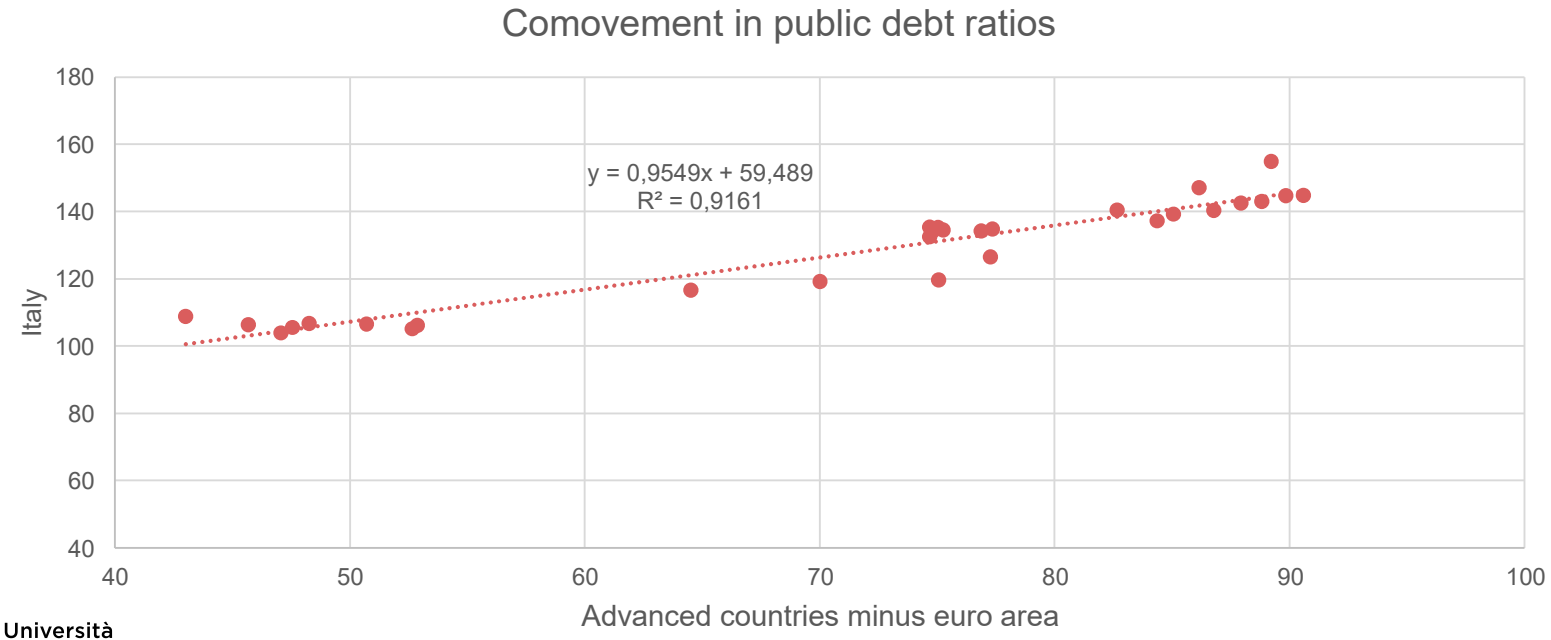
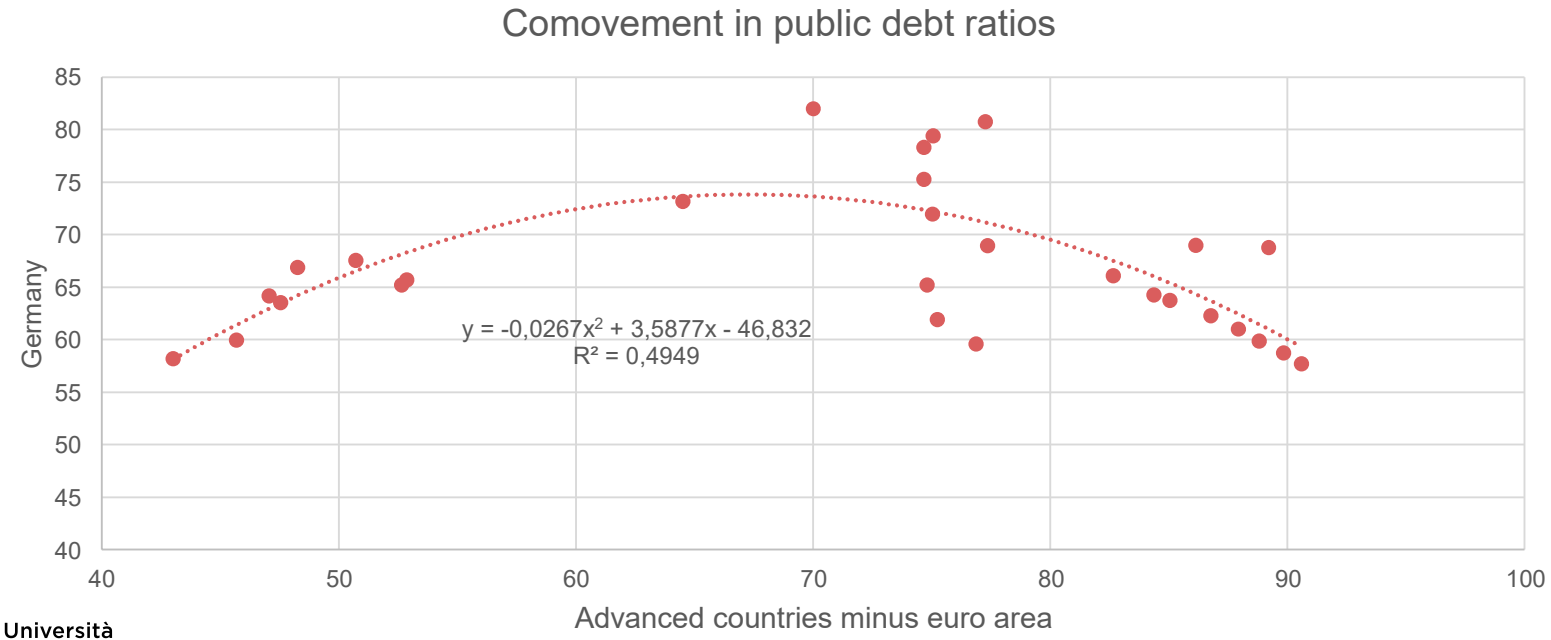
EA individual countries different reaction to common shocks: France



EA individual countries different reaction to common shocks: Italy



EA individual countries different reaction to common shocks: Germany



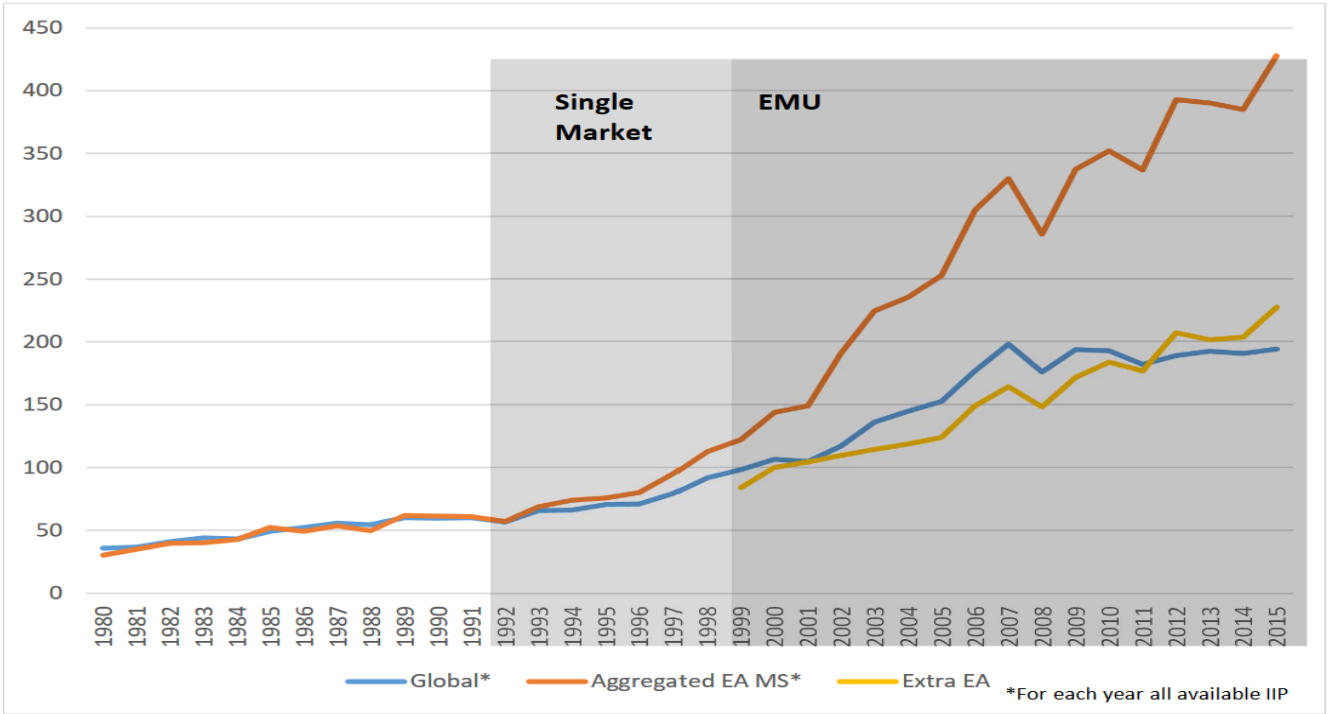
Vulnerabilities remain

- High (record) of public debt levels in some euro area countries.
- Main thesis here that the cost of debt is convex (in the debt ratio).

- Plus several realizations of x sigma events over last years, both growth and interest rates (should be less of a surprise if one looks at history, see below).
- Increased acknowledgement of tail risks needed.
- Increased importance of financial shocks because of huge increase in financial market size.

What the drafters of Maastricht did not see coming: explosion of cross border finance

Figure 1. IIP (assets) as % of GDP



Source: IMF.

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The key mystery: outright default >> costly than devaluation through inflation

1. Reducing value of public debt through (surprise) inflation does not rattle financial markets.
2. Cutting the nominal value of public debt even by a small amount creates mayhem in markets (Greece, etc.).
3. Market dynamics can accelerated/create situations where nominal default becomes likely.

Sources of convexity of cost of public debt

1. Debt service cost of public debt increases more than proportionally with debt if risk premium increasing function of debt.
2. High risk premium on public debt increases cost of capital of private sector, thus reinforcing negative impact on debt ratio.
3. Other source for convexity: Increasing marginal cost of tax revenues needed to service higher debt level.

Convexity of cost of public debt via the risk premium

Interest rate on public debt = risk free rate + risk premium.

Risk premium = function of market risk aversion and debt/GDP ratio.

Debt service burden = interest rate * debt

=> risk free rate *debt + risk premium * (debt)

Second term is convex.

Marginal cost = risk free rate + risk premium + debt*marginal effect of debt ratio on risk premium

Intuition behind ‘convexity’

- Higher debt means higher risk premium which has to be paid (after transition) on whole debt.
- Increasing debt thus has two costs: interest rate on the increased amount of debt + higher cost on all the existing debt
- **=> Marginal cost of debt>interest rate**
- **(and difference increases with debt level)**
- Average cost hides marginal cost! Marginal cost can be >0 even if risk free rate <0.

- N.b. Debt is implicitly net debt or net worth. In official statistics net debt equals financial debt minus financial assets, ignoring other assets (and liabilities). But data on net worth exists only for a limited number of countries. For a use of net worth see. Peppel Srebrny https://onlinelibrary.wiley.com/doi/full/10.1111/jmcb.13102

Simplest model of risk premium

- Corresponds to assumptions in DSA:
- $Average\ cost\ of\ debt \equiv i_t = r_t + \alpha(b_t - threshold)$
- Where i_t = (average) interest rate on public debt,
- r_t = risk-less rate
- b_t = public debt as percentage of GDP.
- The second term, the risk premium, is key.
- Key parameter α represents the marginal impact of higher debt on the risk premium = risk aversion.
- Usually applies only above threshold (60 or 90 % of GDP?)

Model of risk premium II

- Total debt service cost is given by :
- $Interest\ expense \equiv\ b_t \cdot i_t$

$$= b_t\, r_t + \alpha(b_t^2 - thresholdb_t)$$

- Interest rate expenditure (as a % of GDP) thus increases with the square of the debt to GDP ratio, b^2.
- The marginal cost of debt is:
- $Marginal\ cost\ of\ debt\ \equiv \frac{\partial(interest\ expense)}{\partial(b)} = r_t + \alpha(2b_t - threshold)$

$$Marginal\ cost -\ Average\ cost = \alpha b_t$$

Model of risk premium III

- Trivial implication, the difference between marginal cost and interest rate is given by:
- $Marginal\ cost - \ Average\ cost = \alpha b_t$
- Difference increases in debt level.
- Not ‘seen’ directly by political system and thus ignored.

(Intertemporal) Consequences of ‘convexity’

- Debt can spiral out of control even with constant fiscal effort (constant primary surplus).
- Mechanism: Assume initially the primary surplus is not enough to cover debt service. Debt will then increase. But higher debt means higher debt service cost, accelerating the increase in debt.

=> Higher debt = higher probability of negative debt spiral

- This ‘doom loop’ works even if r<g, just assume initial deficit large enough to more than compensate the favorable r<g, then increasing debt ratio leads to higher rates, etc. Explains Mauro (2019) that many defaults even with r<g on average.

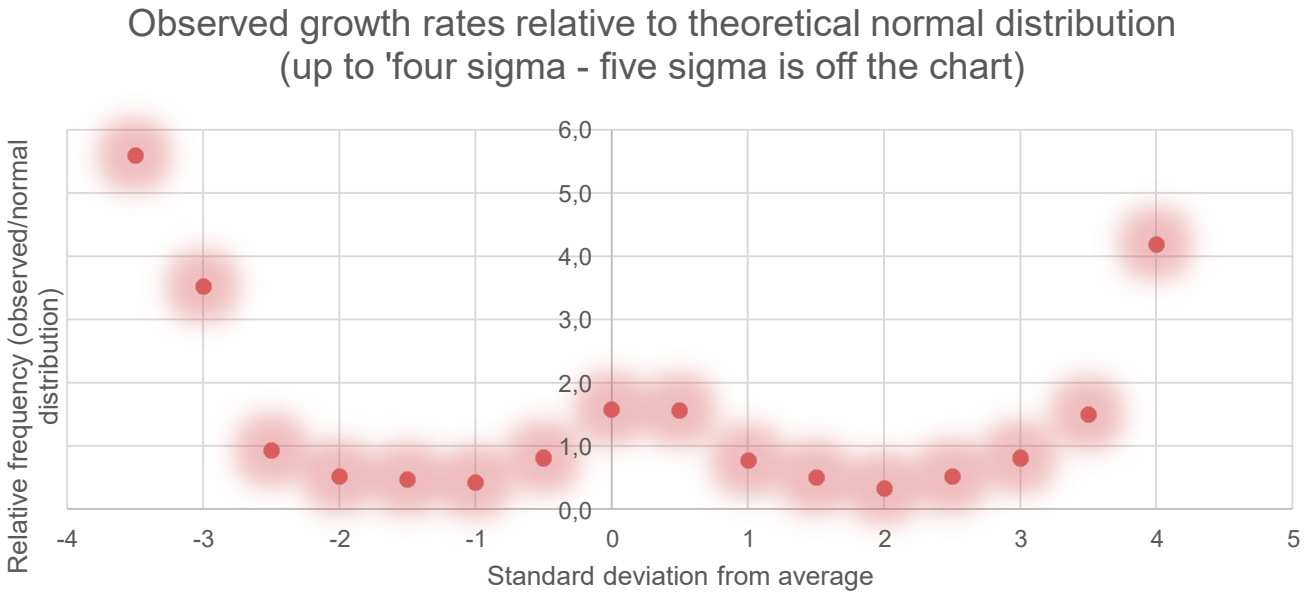
- Begs the question what is the ‘r’ in r<g?
- Market anticipates this doom loop and precipitates crisis?

Consequences of ‘convexity’: The danger from fat tails

- Large shocks can have catastrophic consequences when the cost of debt is convex.
- **=> Need to take into account extreme impact of low probability events**
- Where could tail events arise from? Interest rates, risk premium or growth.
- One key source: History shows distribution of growth rates ‘fat tailed’.

Fat tails in (annual) growth, particularly on the left side (last 150 years) Source: Gros 2021

https://www.econpol.eu/sites/default/files/2021-10/EconPol_Policy_Brief_38_Public%20debt%20uncertain%20world.pdf



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Conclusion, back to basics after 25 years of the euro

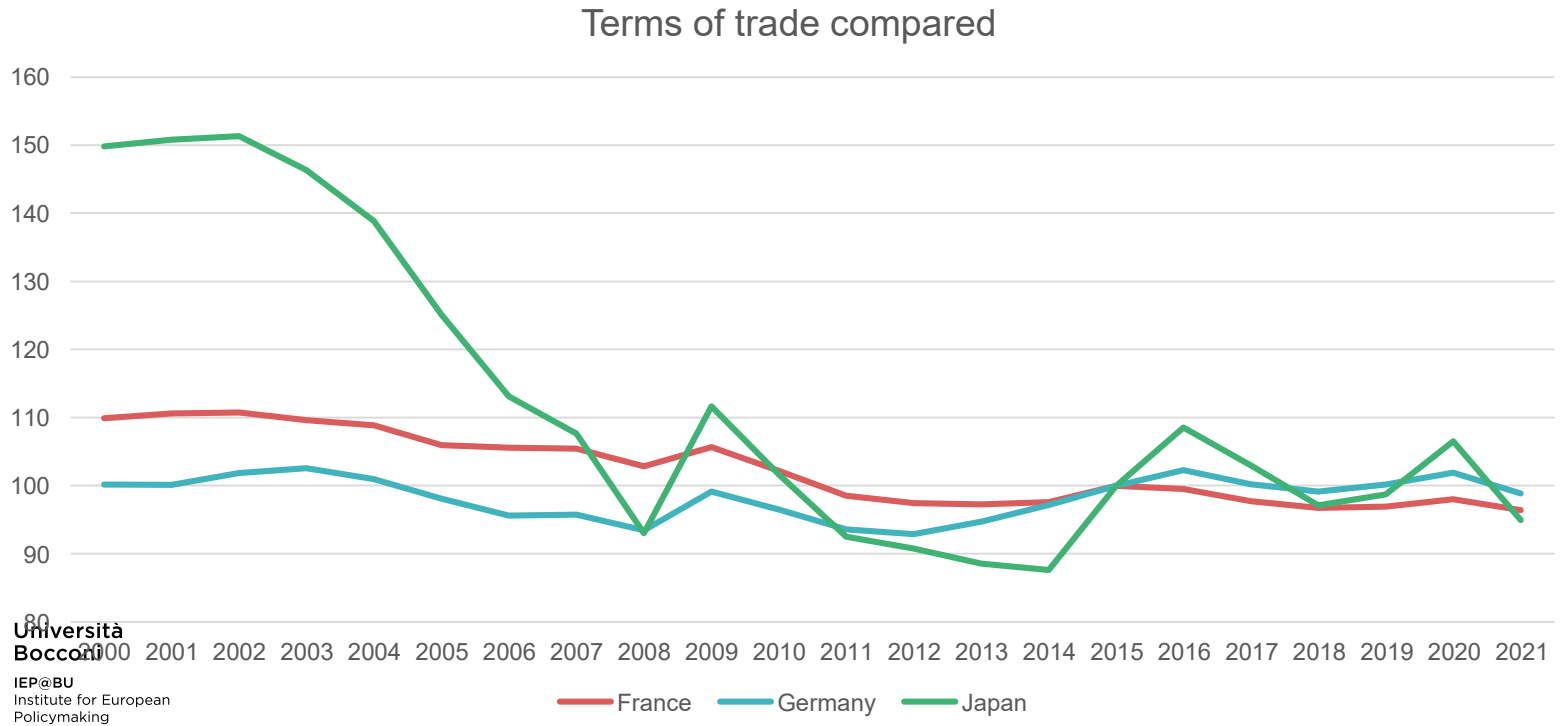
1. Inflation performance average. Construction of ECB nothing special.
2. Concern about public finance justified. But underlying problem of financial market size not recognized – but repaired in the midst of the crisis.
3. Cost of public finance convex, marginal cost of debt > interest rate.
4. Need to consider ‘fat tail’ uncertainty. Even small likelihood of extreme event needs to be taken seriously because costs would be catastrophic.
5. Euro so far resilient but remains vulnerable.

Conclusion II

In future will need both

1. Widerstandskraft, und
2. Wieder-standskraft.

Japan as a warning: what happens if you stick to old technology (consumer electronics like VCR)



Supplementary material

1. ZIPF plot suggests Pareto left hand ‘tail’ for growth rates.

The prudent person rule

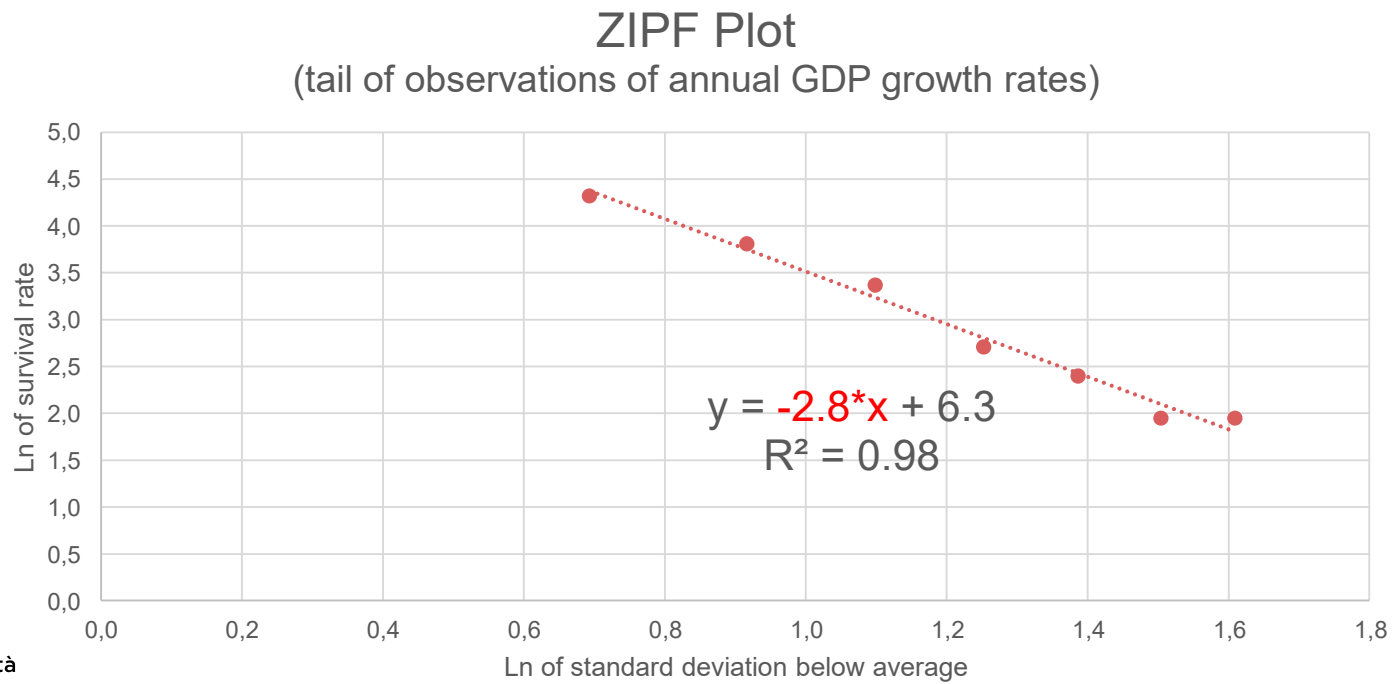
Never compare a multiplicative, systemic, and fat-tailed risk to a

non-multiplicative, idiosyncratic, and thin-tailed one.

Nassim Nicholas Taleb, “Skin in The Game”

ZIPF plot suggests Pareto distribution

https://www.econpol.eu/sites/default/files/2021-10/EconPol_Policy_Brief_38_Public%20debt%20uncertain%20world.pdf



Distribution of core inflation (OECD since 1980)