EconPol Annual Conference 2021

The State of Fiscal Resilience – How Prepared is Europe for Future Crises?

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Motivation and context

- High debt levels throughout developed world, combined with low (close to zero) interest rates.
- Underlying issue: does it still make sense to talk about debt sustainability if r<g?
- Key point is convexity of cost of debt combined with uncertainty about growth and state of financial markets.

Avant propos: general background

Key issue to keep in mind

Why should sustainability be a problem? Interest rates < growth rate, secularly (Schularick) and today. (Need 'something else' to create sustainability problem outside 'excessive' primary deficits.) But Mauro (2019) shows many defaults even with r<g.

'Cannot sleep soundly even if r<g.

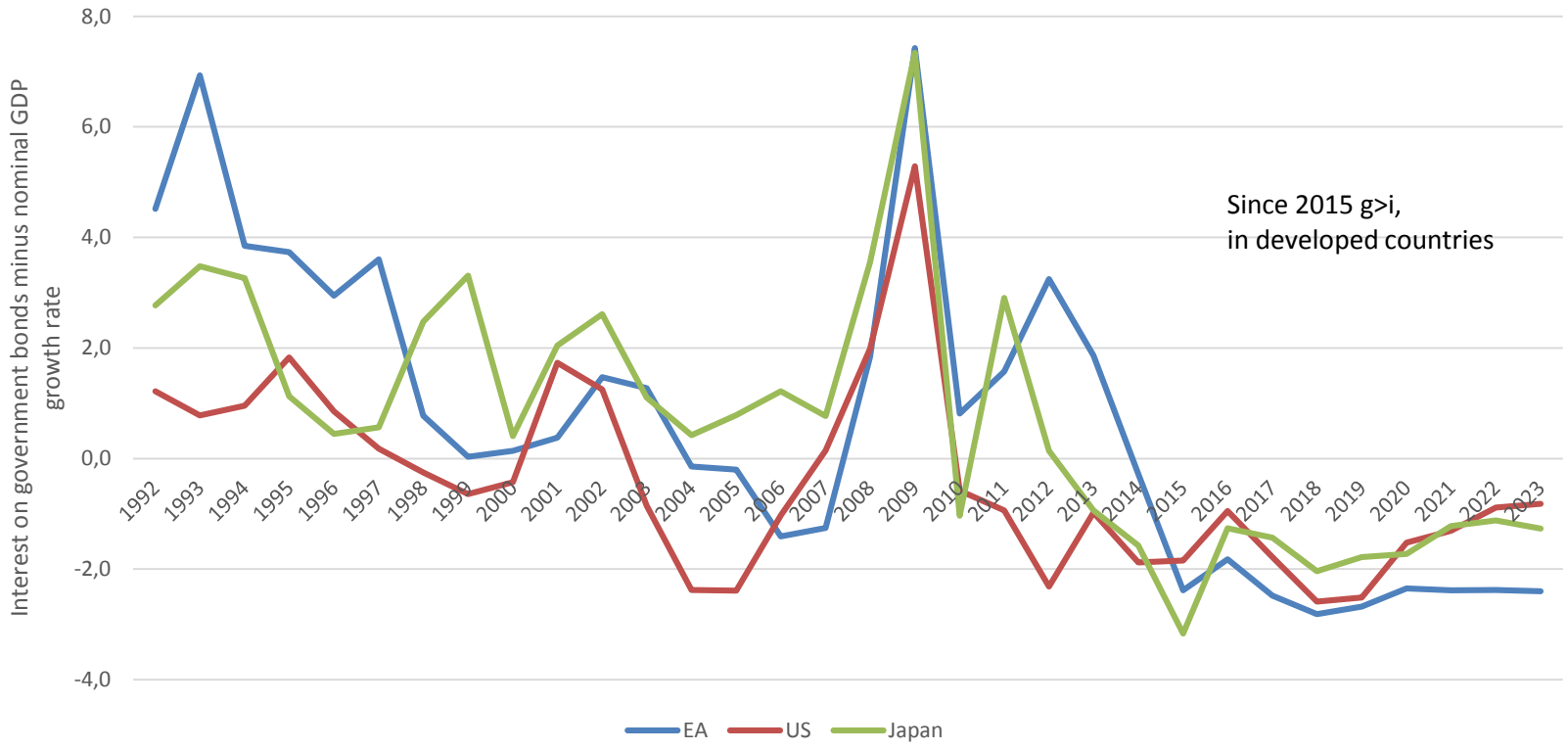
Domestic Debt vs Foreign Debt

An important side issue for the euro area

Importance of public debt depends crucially on whom is it owed to:

- Domestic residents: not net debt at the level of society (higher risk premium no impact on aggregate consumption: bond holders = tax-payers). Defaults on domestic debt rare!
- Foreigners: debt service = transfer (requires net exports, i.e. usually a reduction in consumption).
- With large cross-border holdings a large part of public debt in euro area is foreign debt.

Why bother with sustainability? Financing conditions for governments remain (and can be expected to remain) very favorable (i<<g)



Source: IMF (WEO) and AMECO

Cost of public debt convex (an illustration)

Cost of public debt:

Interest rate = risk free rate + risk premium.

Risk premium = market risk aversion*debt/GDP ratio

Debt service burden = interest rate * debt

$$= \text{risk free rate} * \text{debt} + \text{risk aversion} * (\text{debt})^2$$

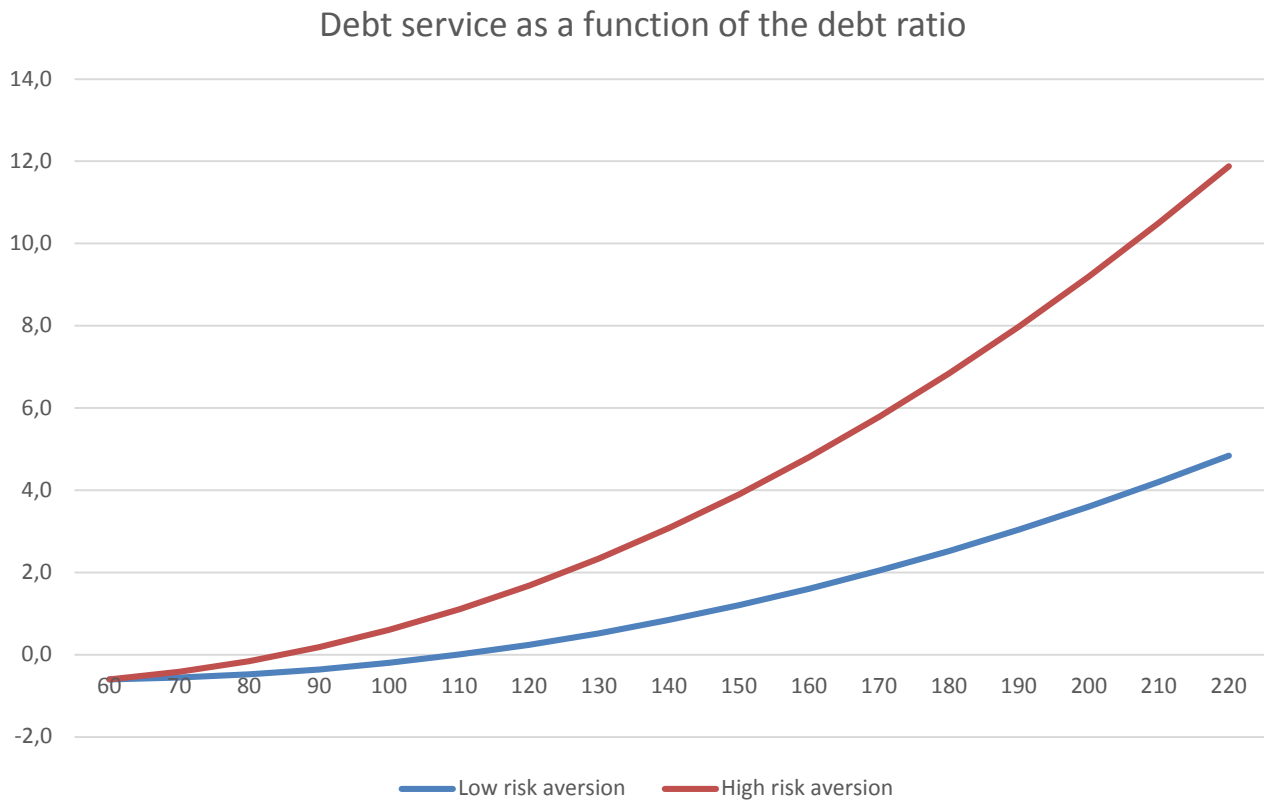
Second term is convex.

Marginal cost = risk free rate + 2*risk aversion* debt

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.

Risk aversion key for cost of high debt



Consequences of variable risk premia

Uncertainty in risk premium

Debt service burden is a function of the degree of risk aversion and the square of the debt ratio.

$$= \text{risk free rate} * \text{debt} + \text{risk aversion} * (\text{debt})^2$$

Marginal cost of higher risk aversion increases with square of deb ratio.

A positive correlation between risk premium and risk free rate increases variability in debt service cost.

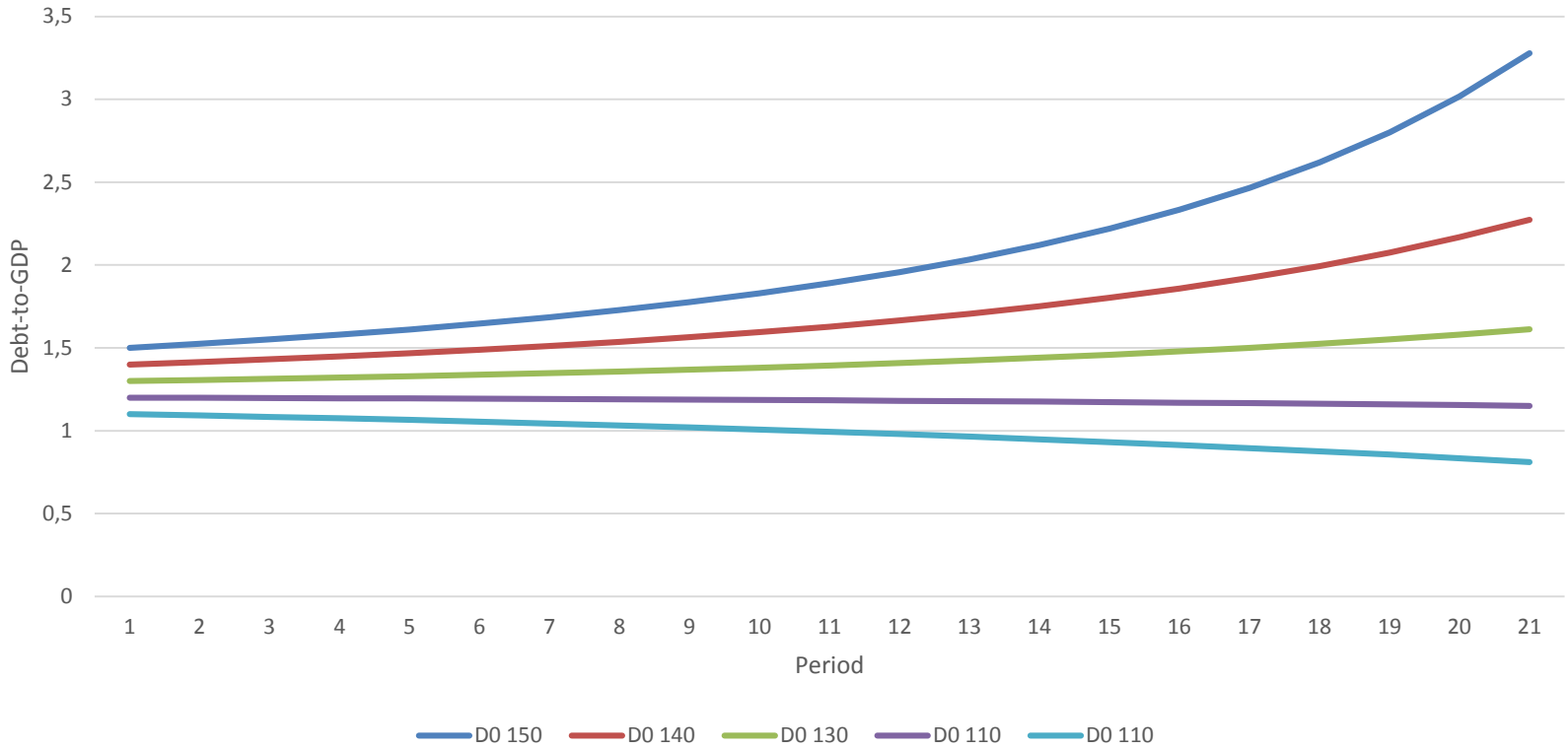
(Intertemporal) Consequences of 'convexity'

- 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**

Feed-back mechanism on risk premium and debt levels:

Interest rate = risk free + risk premium (debt/GDP)

Illustration: Dynamic evolution of debt-GDP ratio from different starting levels



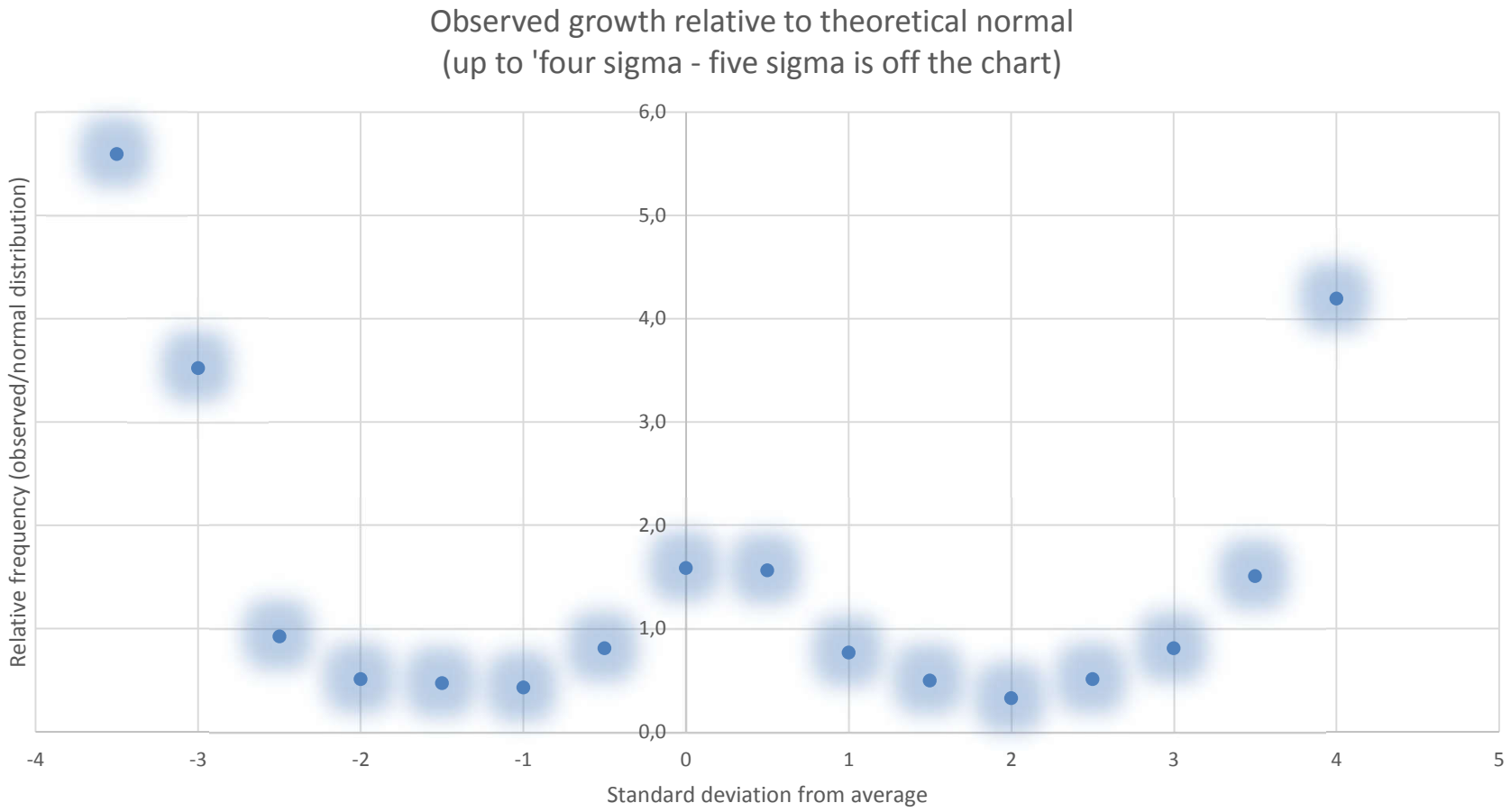
Source: own calculations assuming 3% primary surplus, risk free rate equal to growth rate and risk premium increasing with 4 basis points for every percentage point increase in debt ratio above 60% of GDP

Note: D0 110 stands for Debt at time 0, equals 110% of GDP, D0 120 stands for Debt at time 0, equals 120% of GDP etc.

Consequences of 'convexity': 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**
- History shows distribution of growth rates 'fat tailed'.

Fat tails in growth, particularly on the left side



Conclusions

1. Just looking at the debt service burden today not useful in assessing what level of public debt should be consisere safe.
2. Cost of public debt likely to increase more than proportionally with debt ratio (risk premium increases and probability of speculative attack increases).
3. Marginal cost of debt > interest rate.
4. Need to take into account 'fat tail' uncertainty. Even small likelihood of extreme event needs to be taken seriously because costs would be catastrophic.

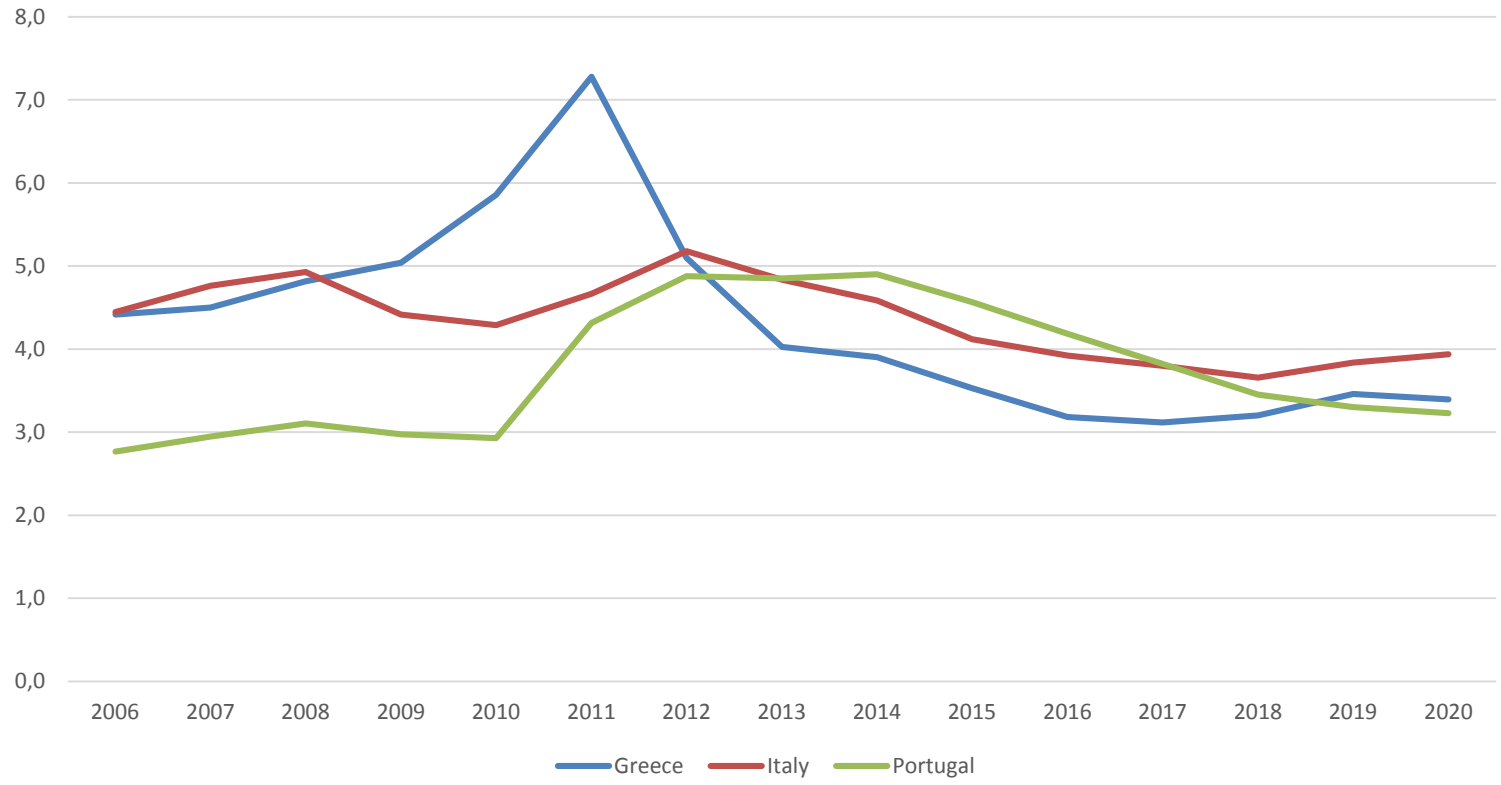
Never compare a multiplicative, systemic, and fat-tailed risk to a non-multiplicative, idiosyncratic, and thin-tailed one.

— Nassim Nicholas Taleb, Skin in The Game

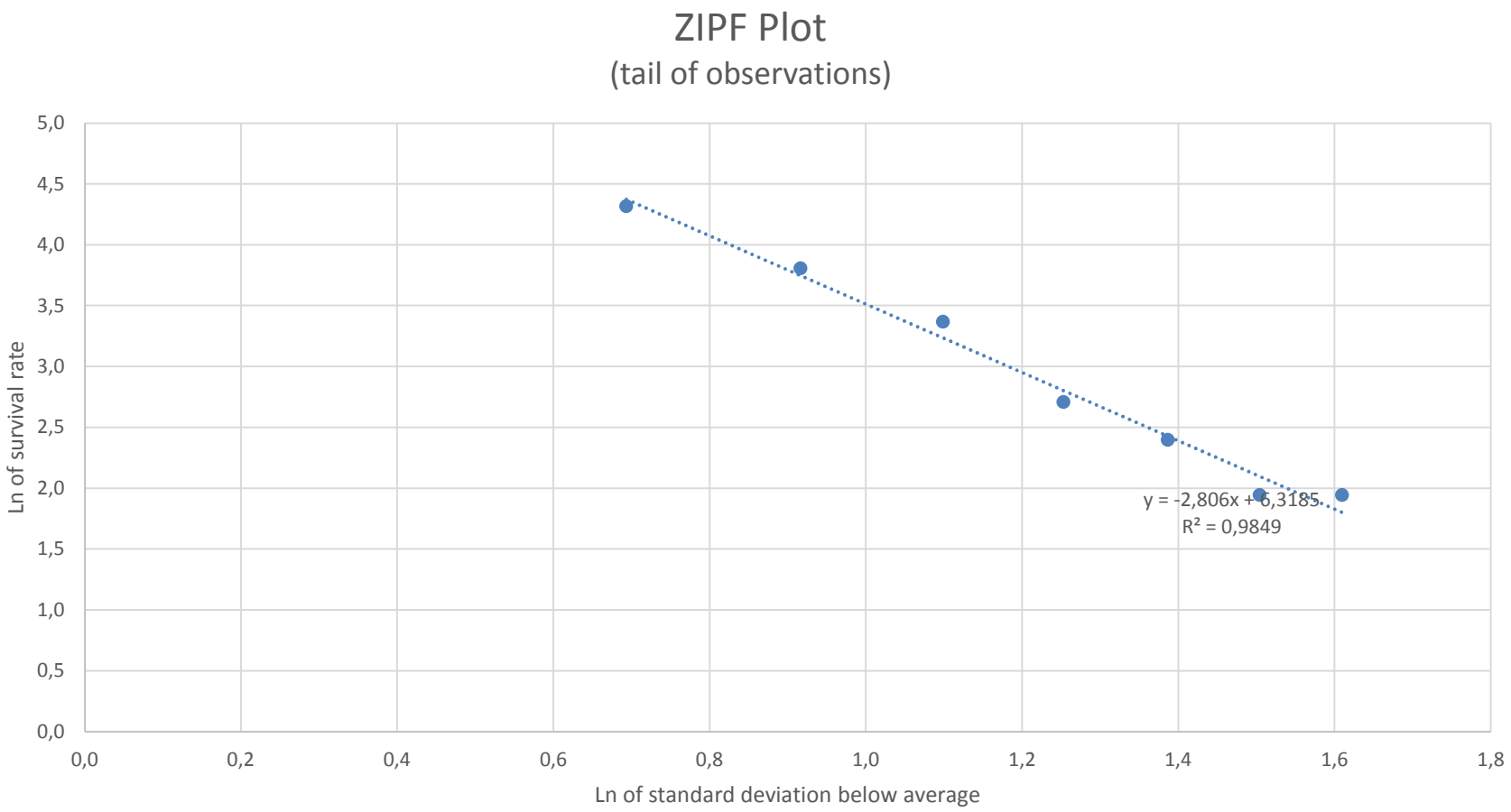
Supplementary material

1. Actual interest payments follow market rates with long lags.
2. ZIPF plot suggests Pareto left hand ‘tail’ for growth rates.
3. Past performance is no guarantee for the future: actual growth relative to last decade in EU

Ps. Actual interest payments as % GDP
Debt service cost does not yet reflect low rates



ZIPF plot suggests Pareto distribution



Past performance is no guarantee for the future

(little persistence in growth performance over time)