Irish Fiscal Advisory Council
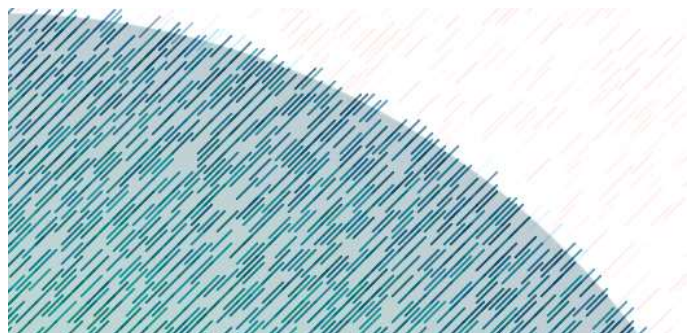
Is the Expenditure Benchmark up to Standard?

Procyclicality in the Measurement of Potential Output and the Future of the EU Fiscal Framework

Sebastian Barnes and Eddie Casey

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Background

- Consensus has been forming on a move to a spending rule with some kind of debt brake

  Beetsma et al. (2018); Feld et al. (2018); Darvas Martin and Ragot (2018); Bénassy-Quéré, et al. (2018); OECD (2018)

Outline

1. Why expenditure rules ?

2. Potential pitfalls
   - Estimation of medium-term potential
   - Other issues with current EB

3. Procyclicality in the current EB
   - What is the issue?
   - Why?
   - How much?
   - Does it matter?

4. Implications – a new approach to fiscal rules?

I. Potential benefits of expenditure rules

Any fiscal variable could be used as the target, however, some arguments in favour of spending rule:

- Revisions to allowable growth rate in a given year likely <u>less</u> than revisions to output gap
- Spending more directly under government control: does not rely on estimated tax elasticity
- Link to multiannual expenditure ceilings

II. Potential pitfalls – procyclicality of reference rate

Allowed Growth Rates under the Fiscal Rules based on _current_ data

% change year-on-year
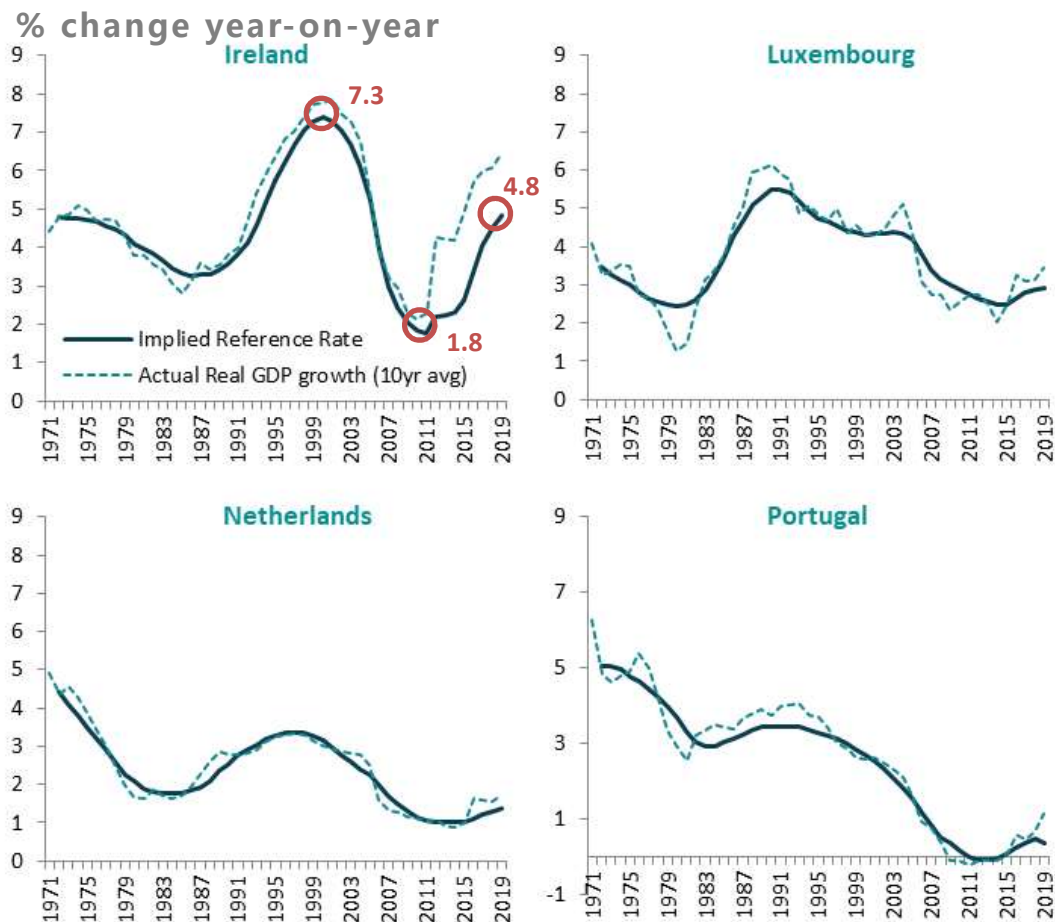
Sources: European Commission (Autumn 2017 estimates); authors' workings.
Note: Data show the implied Reference Rates based on ten-year averages of the estimated potential output growth rates, which are derived using the commonly agreed methodology.

Peak-to-Trough allowable reference rates
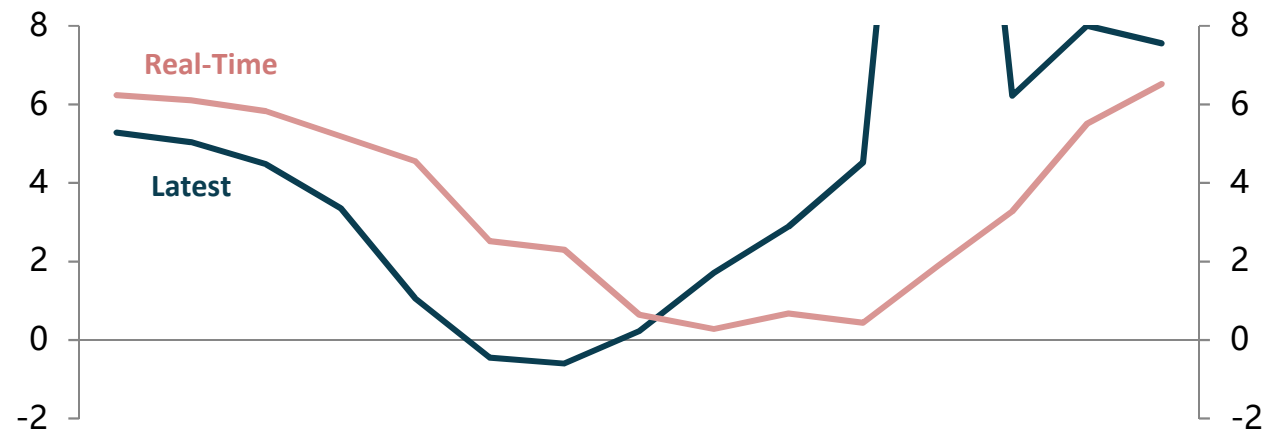% growth rates for ten-year averages of potential output estimates

Peak Growth Rates

Trough Growth Rates
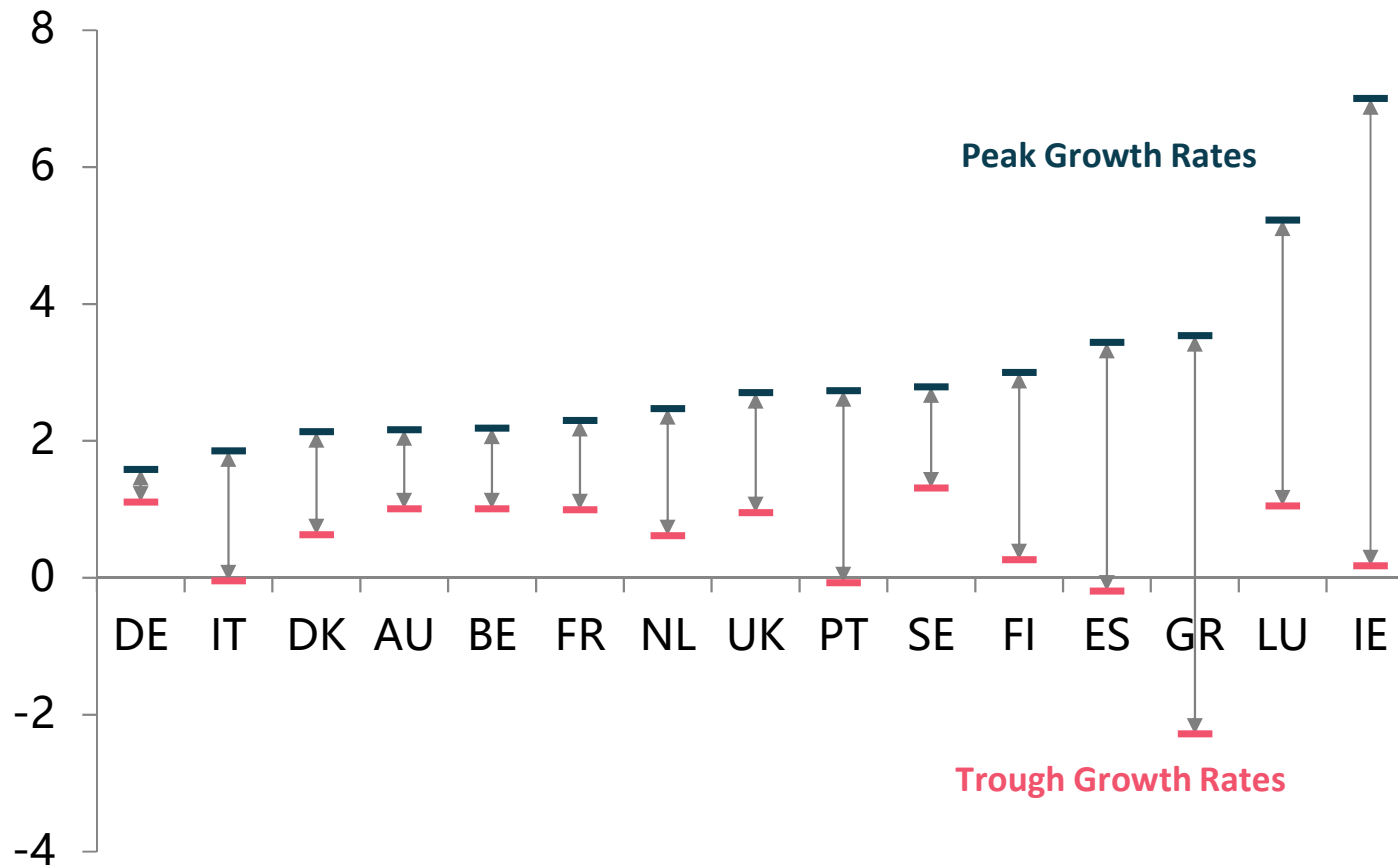
Real time estimation is difficult (and procyclical)

Real-time v latest estimate(s) of potential output growth
% change year-on-year

Ireland

Netherlands
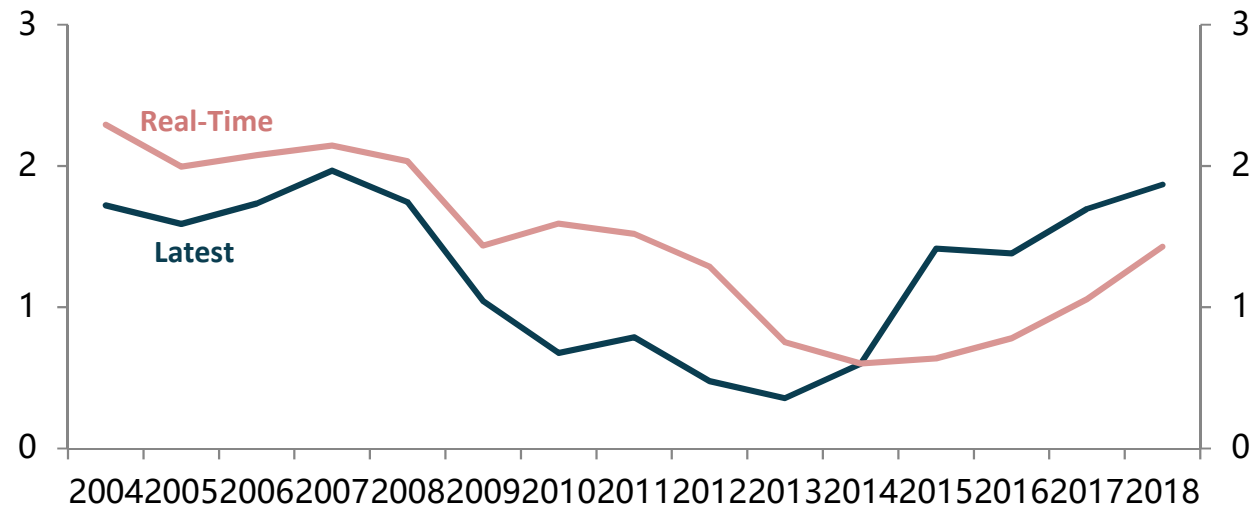
Other potential pitfalls

1. Ratchet Effects

   – "ratcheting up" = breaches (if sanctioned) get incorporated into the base
   – "ratcheting down" = lower spending lost forever

2. Treatment of investment

   – Investment exclusion designed for "one-offs" but serious distortion if investment if procyclical

3. "Negative convergence margin"

   – overachieve MTO structural balance
   $\Rightarrow$ faster expenditure growth permitted

Designing rules is complicated and involves trade-offs

III. Procyclicality?

What is the issue with procyclicality for fiscal rules?

(1) Ineffective cyclical stabilisation, boom/bust in public finances

- Procyclicality in the limits set by the rules could mean that excessively loose fiscal policy is allowed in good times.

- Business cycle asymmetry can aggravate this:
  - Booms typically last longer than recessions (unsustainably large increases in expenditure over a relatively long period followed by need for sharply lower spending growth in a more condensed period of time.

(2) Hysteresis

- Procyclicality has lasting negative impacts on economic output if leads to (erroneous) consolidation and permanent losses of years of output (Fatás, 2018

Why Does Procyclicality Arise?

- In practice, potential—as estimated—gets pulled in the same direction as actual output. Why?

- Filtering

- Extension methods

- NAWRU and migration

- Use of actual capital stock

- **Filtering/extension methods:**
  - CAM variables are extended further ahead beyond the standard two-year forecast horizon as a part-solution to end-point bias problem.
  - However, the ***forecast errors may be procyclical and extension methods are typically quite crude***. Several are variants of a random-walk such that recent levels of a given variable will drive the extended outturns for that same variable, implying a procyclical pattern.
  - This approach leads to <u>predictable</u> revisions to estimated potential output and procyclicality

How much procyclicality?

Method

- We regress observed potential output revisions on the actual output (real GDP) revisions observed:

$$Rev_t^{potential} = \alpha + \beta Rev_t^{actual} + \varepsilon$$

- We include country fixed effects as well as year dummies.

- Similar to Fatas (2018) but focusing on growth rates.

Data – pseudo-real time approach

- European Commission's CIRCA website on its past forecasts of both potential growth rates and actual output growth rates.

- We compile revisions data for 15 Member States for 15 years (2004 – 2018).

- Spring forecast vintages used as released by the European Commission. We take the forecasts for year t+1 and compute their subsequent revision as inferred from the forecast for the same target year in year t.

- The approach is limited to individual years (rather than a whole profile because EC only consistently publishes t+1 forecasts).

Main result

Revisions to Potential Output (Full Panel)

Percentage point revisions to potential output growth rates (1-year-ahead forecasts)

	EU 15	EU 15	EU 15 (excl. fin crisis)	EU 15 (excl. fin crisis)
1-year forecast revision for GDP	0.30*** (0.01)	0.36*** (0.03)	0.28*** (0.02)	0.32*** (0.03)
Constant	.04 (0.05)	.08*** (0.02)	.04* (0.02)	.05*** (0.01)
Observations	225	225	195	195
Countries	15	15	15	15
Adj. R-Squared	0.69	0.71	0.44	0.49
Durbin-Watson Stat	1.55	1.66	1.44	1.64
Country FEs	N	Y	N	Y
Time FEs	N	Y	N	Y

Sources: AMECO; authors' own calculations.
Note: Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Financial crisis defined as years 2008 and 2009, with these years excluded in stated

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Does this vary by country size ?

Revisions to Potential Output (Sub-Groups)

Percentage point revisions to potential output growth rates (1-year-ahead f...

|	Large MS	Large MS	Large MS (excl. fin crisis)	Small MS	Small MS	Small MS (excl. fin crisis)
1-year forecast revision for GDP	0.26*** (0.04)	0.22*** (0.09)	0.31*** (0.07)	0.31*** (0.02)	0.37*** (0.04)	0.32*** (0.04)
Constant	0.02 (0.03)	0.00 (0.05)	0.04 (0.01)	0.05 (0.03)	0.08*** (0.02)	0.05*** (0.01)
Observations	90	90	78	150	150	130
Countries	6	6	6	10	10	10
R-Squared	0.67	0.65	0.56	0.69	0.73	0.49
Durbin-Watson Stat	2.14	2.12	2.23	1.41	1.50	1.54
Country FEs	N	Y	Y	N	Y	Y
Time FEs	N	Y	Y	N	Y	Y

Sources: AMECO; authors' own calculations.
Note: Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. "Large MS" sub-group consists of DE, FR, IT, ES, and UK. "Small MS" country sub-group consists of PT, GR, IE, LU, FI, SE, BE, DK, AU, and NL. Financial crisis defined as years 2008 and 2009, with these years excluded in stated regressions.

Results (Country-by-Country)

Sensitivity of Potential Output to Actual Output
Estimated coefficients of percentage point revisions to potential output growth rates
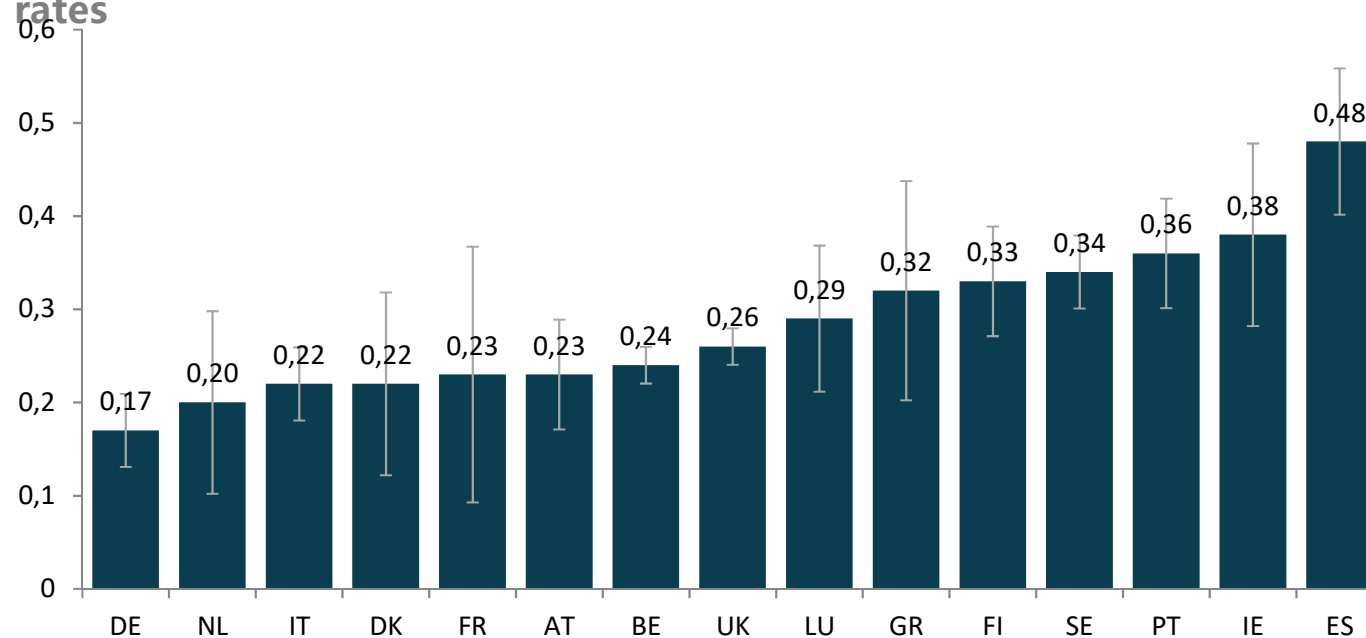
Sources: AMECO; authors' own calculations.
Note: Coefficients on individual country regressions are shown (all statistically significant at 95 per cent level of confidence). Standard error bands are shown for 95 per cent confidence interval. Caution is warranted as sample is only 15 observations for each country.

Results (Country-by-Country)

Revisions to Potential Output
Percentage point revisions (1-year-ahead forecasts)

Potential output (vertical axis)

Actual output (horizontal axis)

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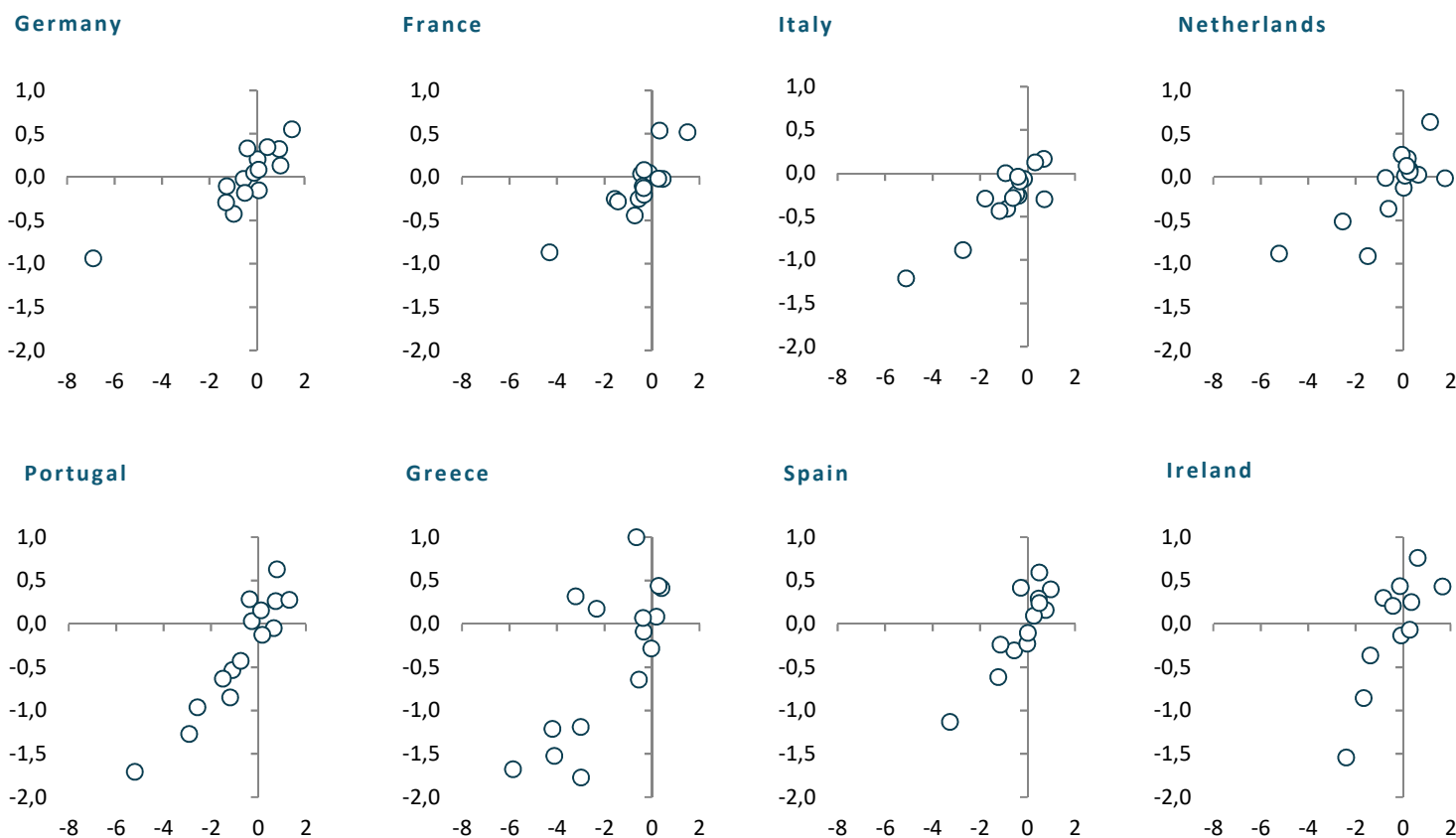
Expansions vs Recessions

Revisions to Potential Output (Full Panel)

Percentage point revisions to potential output growth rates (1-year-ahead

	Expansions	Expansions	Recessions	Recessions
1-year forecast revision for GDP	0.26*** (0.03)	0.31*** (0.04)	0.32*** (0.03)	0.36*** (0.07)
Constant	0.05* (0.02)	0.05*** (0.00)	0.06 (0.05)	0.18 (0.19)
Observations	180	180	45	45
Countries	15	15	15	15
R-Squared	0.32	0.38	0.82	0.84
Durbin-Watson Stat	1.45	1.66	2.20	3.54
Country FEs	N	Y	N	Y
Time FEs	N	Y	N	Y

Sources: AMECO; authors' own calculations.
Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. We define recessions as years in which two or more quarters are defined as in recession by the Euro Area Business Cycle Dating Committee. This gives us the "Recession" years 2008, 2009, and 2012.

Does it help to use 10-Year Averages?

Revisions to Potential Output (Full Panel)

Percentage point revisions to ten-year averages of potential output growth rates (1-year-ahead forecasts)

	EU 15	EU 15	EU 15 (excl. fin crisis)	EU 15 (excl. fin crisis)
1-year forecast revision for GDP	0.16*** (0.01)	0.23*** (0.03)	0.20*** (0.02)	0.29*** (0.03)
Constant	0.04 (0.02)	0.08*** (0.02)	0.04* (0.02)	0.06*** (0.02)
Observations	225	225	195	195
Countries	15	15	15	15
R-Squared	0.51	0.60	0.37	0.50
Durbin-Watson Stat				
Country FEs	N	Y	N	Y
Time FEs	N	Y	N	Y

Sources: AMECO; authors' own calculations.

Note: Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Financial crisis defined as years 2008 and 2009, with these years excluded in stated regressions.

Does this procyclicality matter?

Spending revisions for a single year

Net Spending Implications Arising from Procyclicality

Country	Ten-Year Avg. Rev to Potential for 1p.p. GDP Rev (p.p.)	Corrected Government Expenditure Aggregate (€bn)	Spending Revision (€bn)[1]	Spending Revision (% change)[1]	Typical Real GDP Forecast Error [2]	Typical Spending Revision (€bn)[2]	Typical Spending Revision (% change)[2]
AT	0.11	€181	€0.20	0.11	0.96	€0.19	0.11
DE	0.08	€1,434	€1.09	0.08	1.62	€1.77	0.12
DK	0.13	€150	€0.20	0.13	1.21	€0.24	0.16
UK	0.12	€913	€1.13	0.12	1.35	€1.52	0.17
NL	0.12	€321	€0.40	0.12	1.34	€0.53	0.17
IT	0.10	€781	€0.77	0.10	1.7	€1.31	0.17
FR	0.15	€1,269	€1.95	0.15	1.17	€2.28	0.18
SE	0.18	€225	€0.40	0.18	1.04	€0.41	0.18
PT	0.16	€79	€0.13	0.16	1.14	€0.15	0.19
ES	0.19	€461	€0.89	0.19	1.02	€0.91	0.20
BE	0.13	€225	€0.30	0.13	1.5	€0.44	0.20
GR	0.20	€77	€0.15	0.20	1.19	€0.18	0.24
FI	0.18	€120	€0.22	0.18	1.58	€0.35	0.29
IE	0.20	€74	€0.15	0.20	2.56	€0.38	0.51
LU	0.23	€25	€0.06	0.23	2.66	€0.15	0.60

Sources: European Commission; authors' own calculations.
Note: Corrected Expenditure Aggregate is the measure of spending currently used in the fiscal rules for the Expenditure Benchmark base from which net spending can grow. [1] Revisions here refer to the percentage point revision to potential output growth rates (using the ten-year averages) for a given one percentage point revision in actual output (real GDP). [2] Estimates of typical forecast errors are taken from González Cabanillas and Terzi (2012) and cover the pre-crisis period, 1969-2007.

Spending revisions over a 5-year cycle

Net Spending Implications from Procyclicality

Country	Procyclical Spending Revision Over 5-Year Window (€bn)	% Change (Over 5 Years, Relative to Starting Expenditure Level)
AT	€1.0	0.5
DE	€8.8	0.6
DK	€1.2	0.8
UK	€7.6	0.8
NL	€2.7	0.8
IT	€6.6	0.8
FR	€11.4	0.9
SE	€2.1	0.9
PT	€0.7	0.9
ES	€4.6	1.0
BE	€2.2	1.0
GR	€0.9	1.2
FI	€1.7	1.5
IE	€1.9	2.6
LU	€0.8	3.0

Sizeable errors for some countries

This only accounts for revisions, only part of the picture

Sources: European Commission; authors' own calculations.
Note: Spending revisions here show an illustrative five-year cumulative impact on spending levels arising from procyclicality. We use potential output growth rates based on the ten-year averages as used in the application of the Expenditure Benchmark. Estimates are based on typical forecast errors, which are taken from González Cabanillas and Terzi (2012) and cover the pre-crisis period, 1969–2007.

IV. Implications

Potential fixes to the current rules

. The Role of the RDF in Correcting Towards the Sustainable Path

- - - - Allowable Path under the Fiscal Rules
—— Sustainable Path
—— Actual Path with Rainy Day Fund
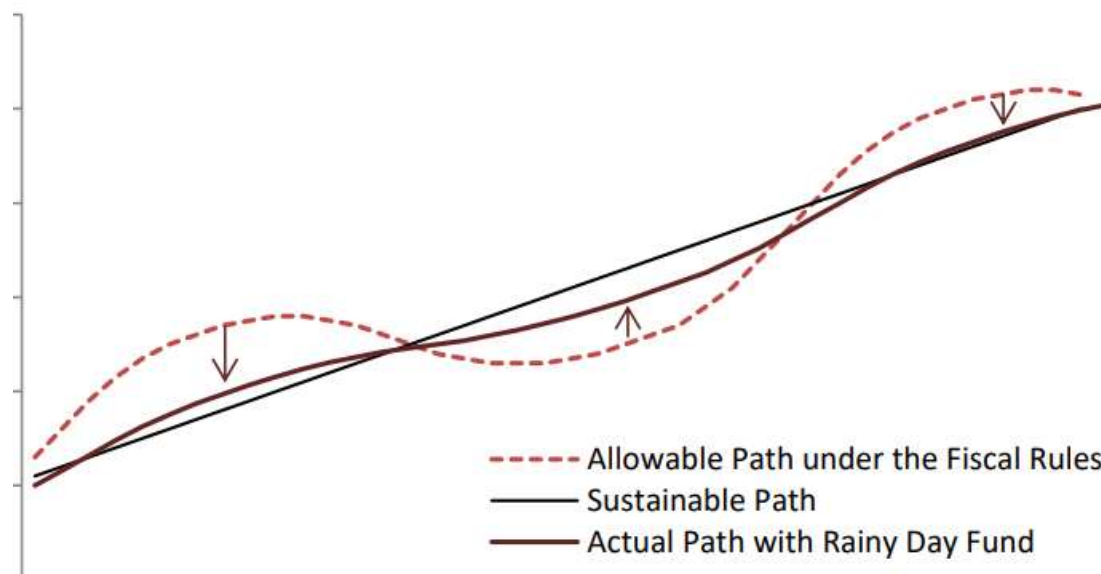
- Small institutional changes to allow for Rainy-Day Funds (Casey et al, 2018)
- Revise/replace the CAM

A new approach to fiscal rules?

- How we estimate potential output is still not very sophisticated and prone to procyclicality.
- Uncertainty => need a "learning" approach ("wicked problem")

- Best available (but imperfect) estimates of potential output projections at the centre of fiscal policy.
  - suite of models/judgement-based approach
  - role for IFIs
  - all forecasts should be published at least 5-years ahead

The design of the fiscal frameworks should recognise this uncertainty