



# A SEARCH FOR MORE ROBUST MEASURES OF TREND OUTPUT

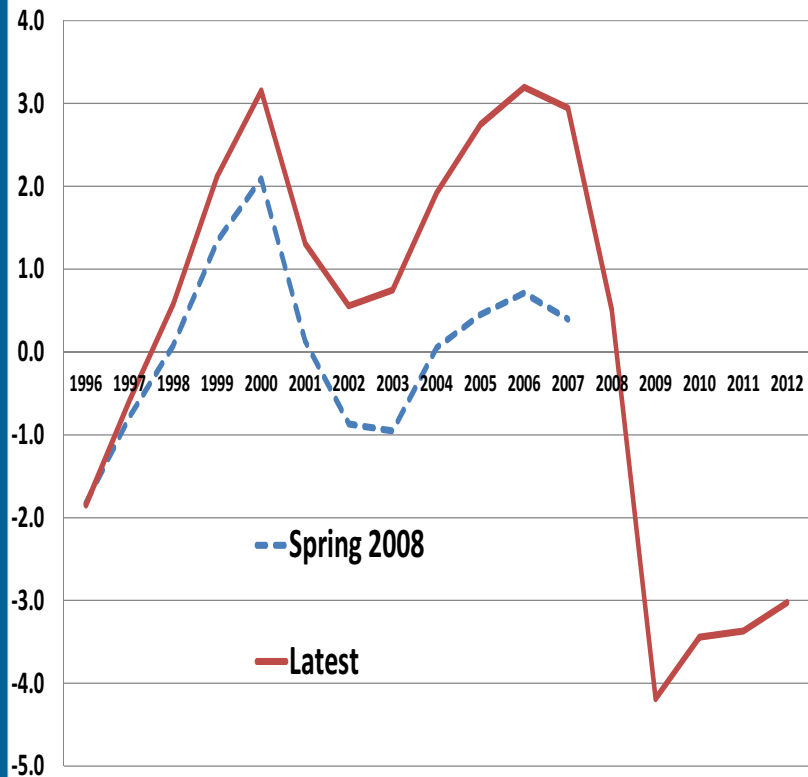
David Turner, OECD

**LINK Meeting, October 21-23, 2013**

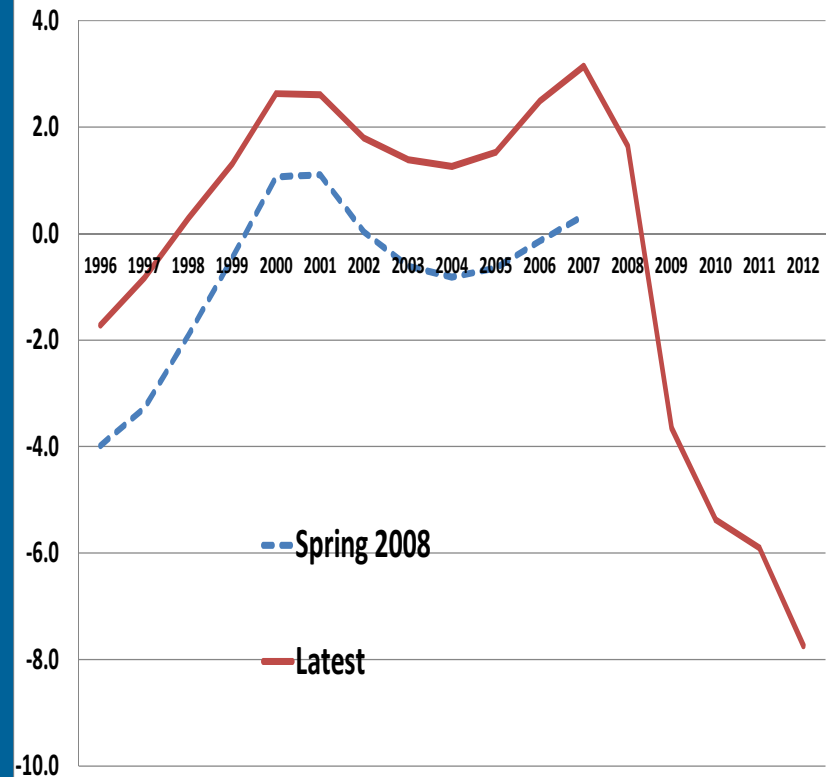


# OECD published estimates of the output gap (%)

## United States



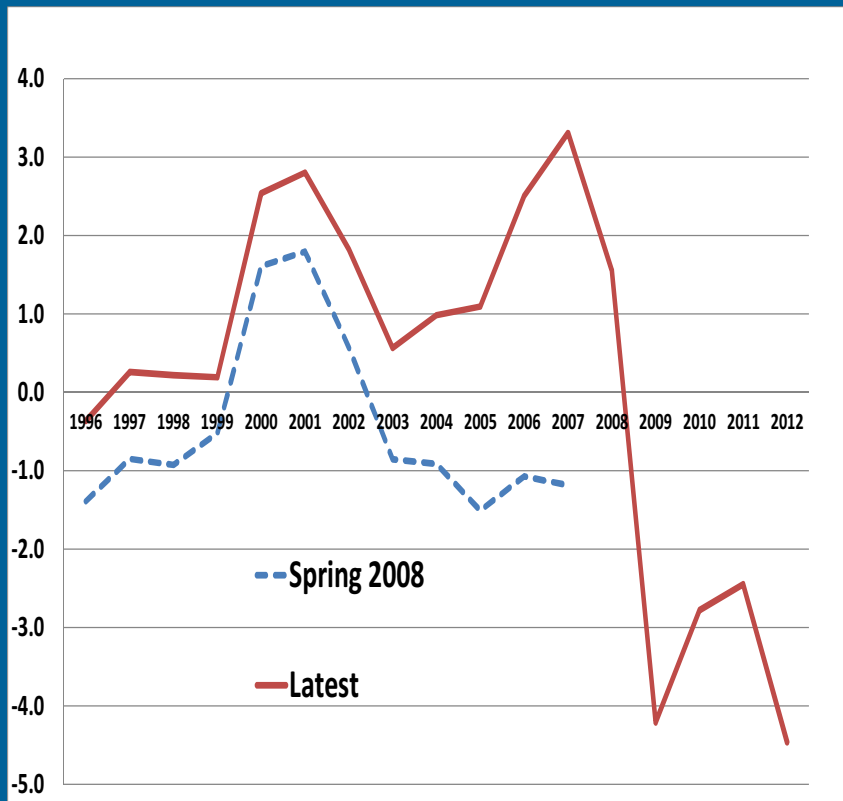
## Spain



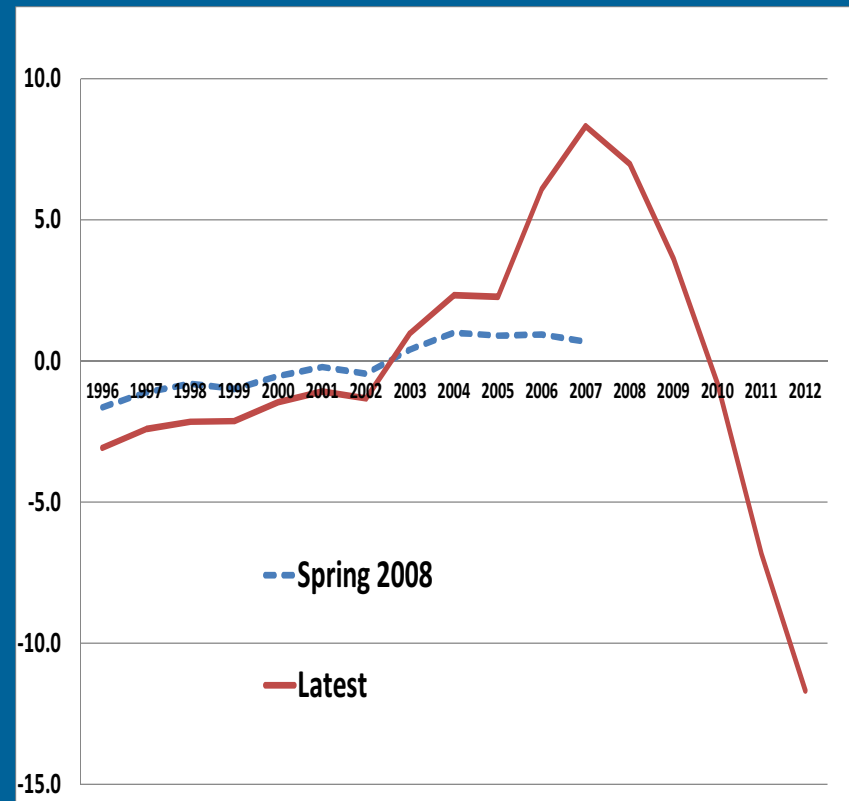


# OECD published estimates of the output gap (%)

## Italy



## Greece





## Raises conceptual & technical issues

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- **Conceptual** : No warning signal from inflation, despite build-up of unsustainable imbalances.
- **Technical** : can other information be used to anchor real-time estimates of potential?

**=> Can financial variables or capacity utilisation anchor measures of trend output for many OECD countries?**



## Estimating “finance-neutral” gaps

$$1) y_t = y_t^* + \beta(y_{t-1} - y_{t-1}^*) + \sum_{j=1}^J \alpha_j(x_{jt} - \bar{x}_j) + \varepsilon_t$$

$$2) \Delta y_t^* = \Delta y_{t-1}^* + v_t$$

$y$  = real GDP,  $y^*$  = potential

$x_j$  = financial imbalance indicators (real house price growth, real credit growth, real interest rates ... + ?)

**Can method of Borio et al. (2013) be applied generally across many countries?**



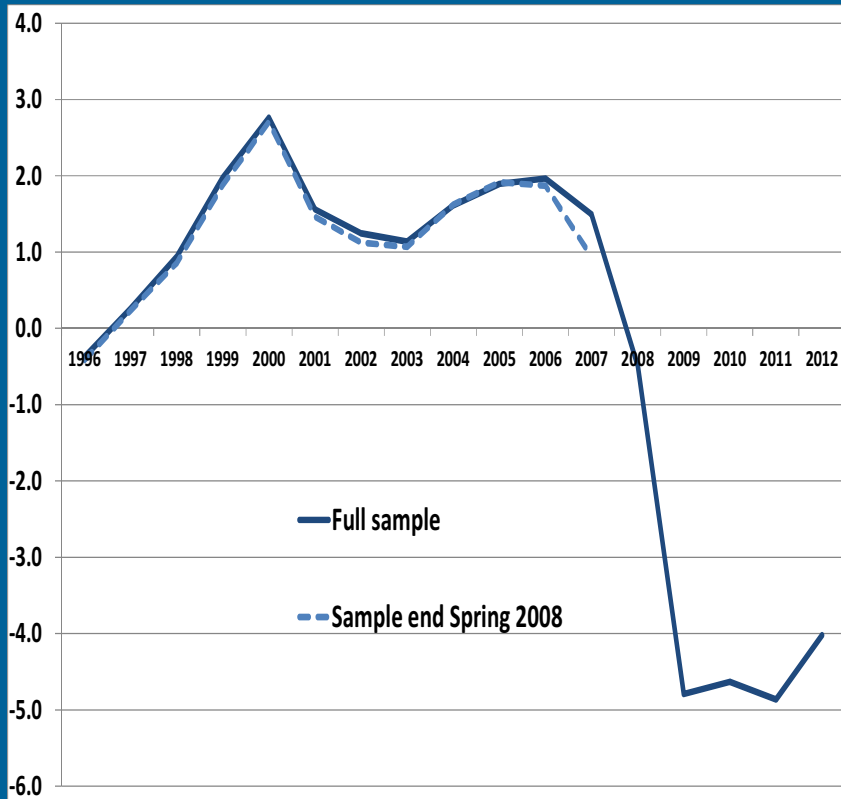
## Summary of results: mixed

	USA, UK, IRL, ESP	GRC, PRT, ITA, JPN, (CAN) + ....
<b>Statistical significance of credit &amp; housing imbalance indicators</b>	<b>Yes</b>	<b>Less so, Marginal</b>
<b>Plausible narrative (pre-crisis over-heating ..)</b>	<b>Yes</b>	<b>Not</b>
<b>Reduces Real-time revisions</b>	<b>Yes</b>	<b>Not much</b>

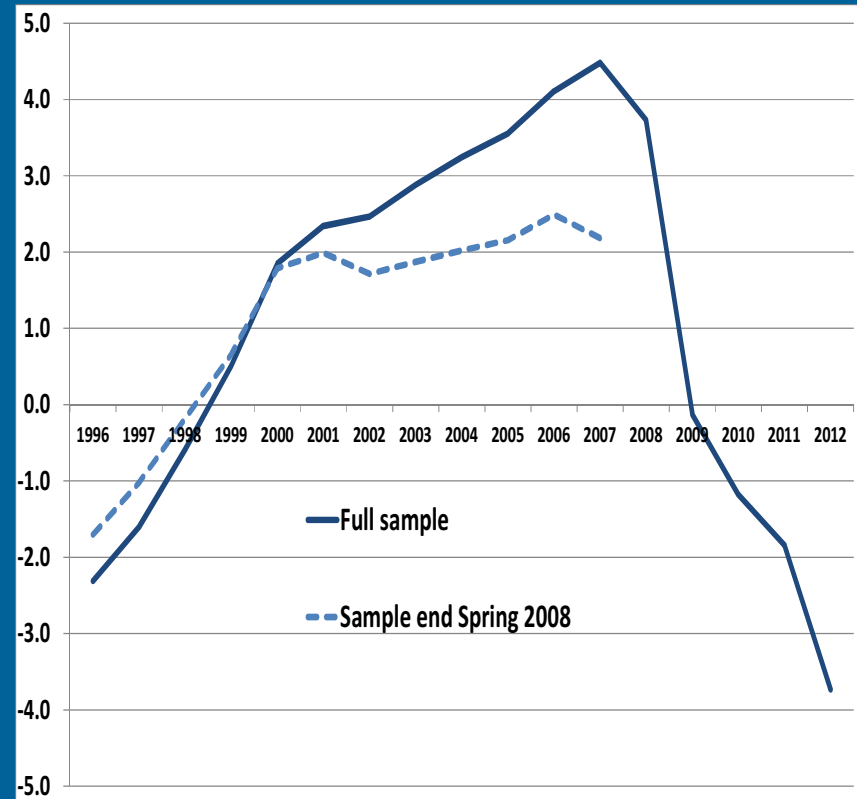


## (2) Financial variables do anchor output gap estimates for some countries

### United States



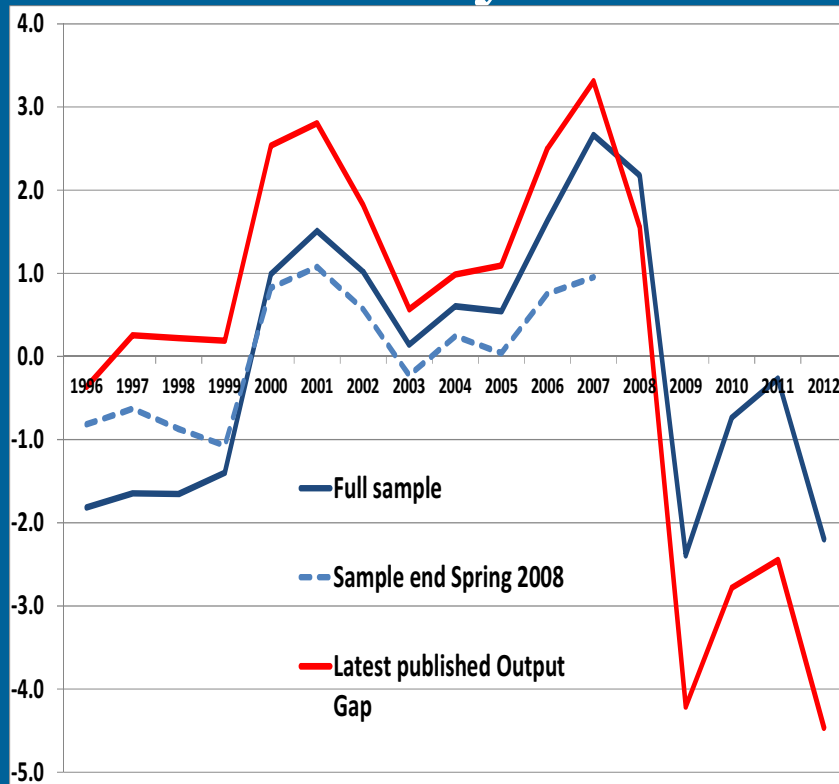
### Spain



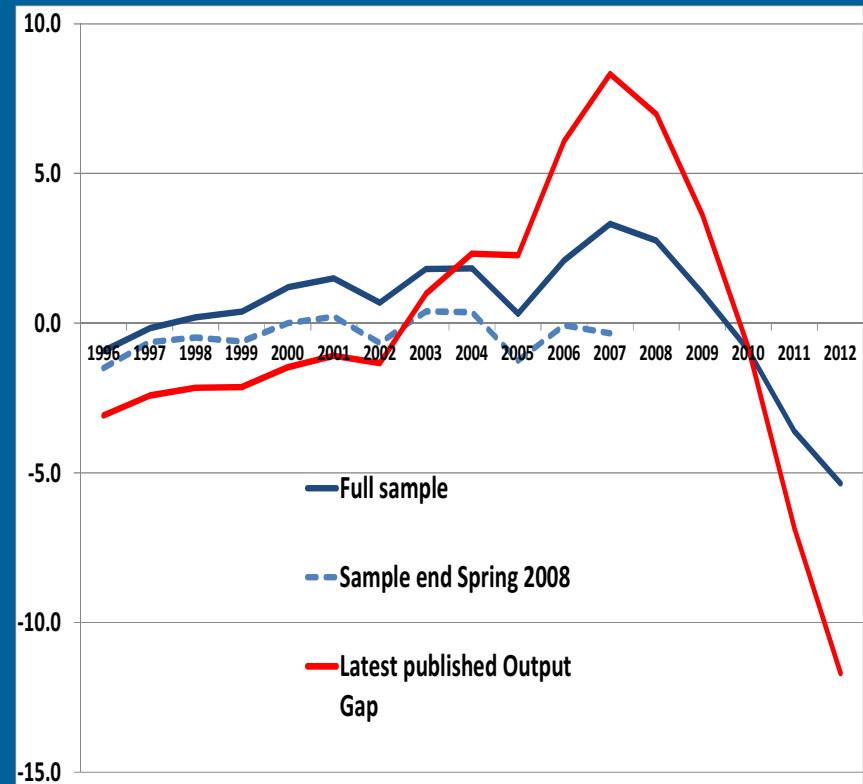


## (2) But doesn't work so well for other countries ....

### Italy



### Greece

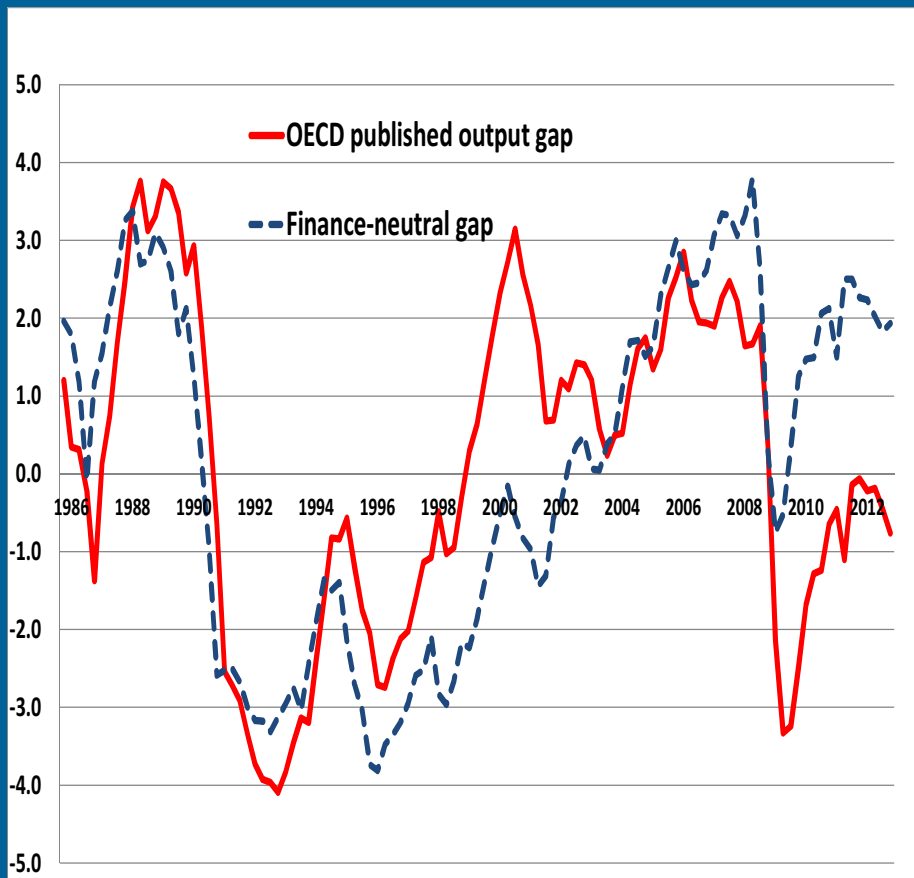






# (1)... And for some countries generates questionable results: e.g. Canada

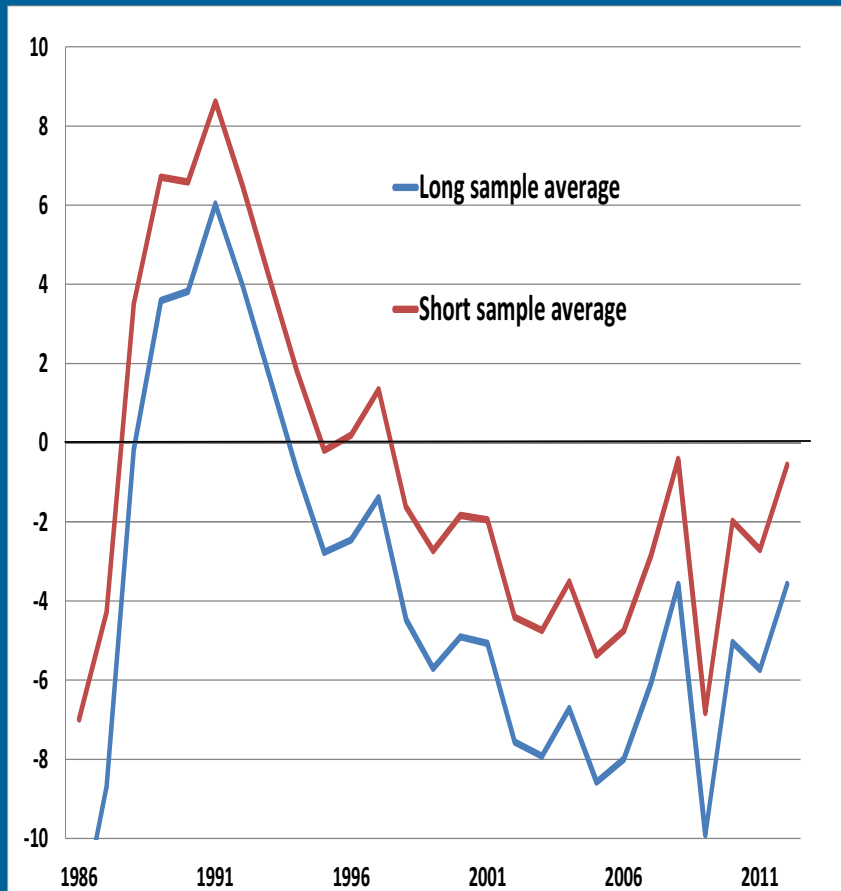
## Canada



- Real short-term interest rates and house price growth as significant financial variables
- => Continuous overheating for last 10 yrs apart from a couple of Qs in 2009 ??



## (2)... And for some countries generates questionable results: **e.g. Japan**



- Results very dependent on whether Real credit and house price growth average over long-sample (incl 70s) or shorter sample (from mid-80s)



## Can capacity utilisation provide the anchor?

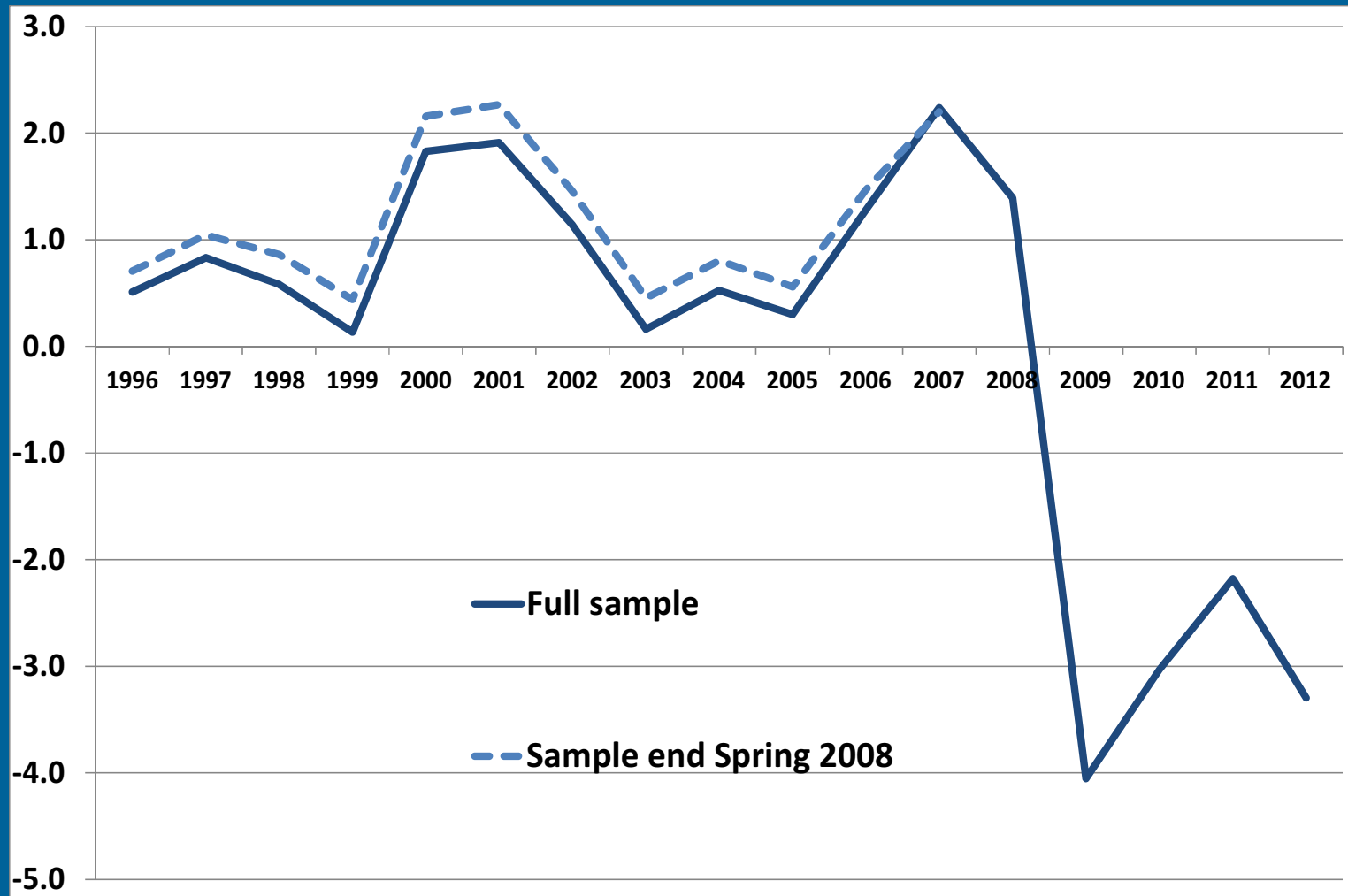
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- Not subject to revision, but manufacturing only
- Among a selection of OECD countries, a significant relationship between CU & output gaps found for only about **1/2** of all countries examined.
- Capacity utilisation (CU) not helpful in explaining real-time output gap revisions ( $\beta$  not signif):

$$GAP_t = \text{const} + \alpha RTGAP_t + \beta CU_t$$



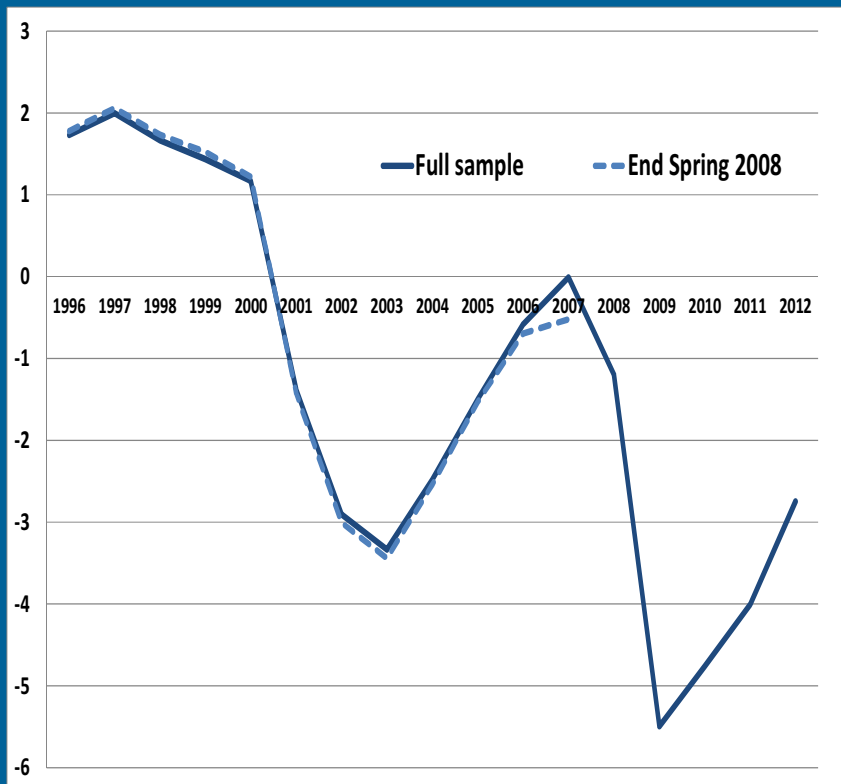
# Using capacity utilisation successfully anchors potential output for Italy



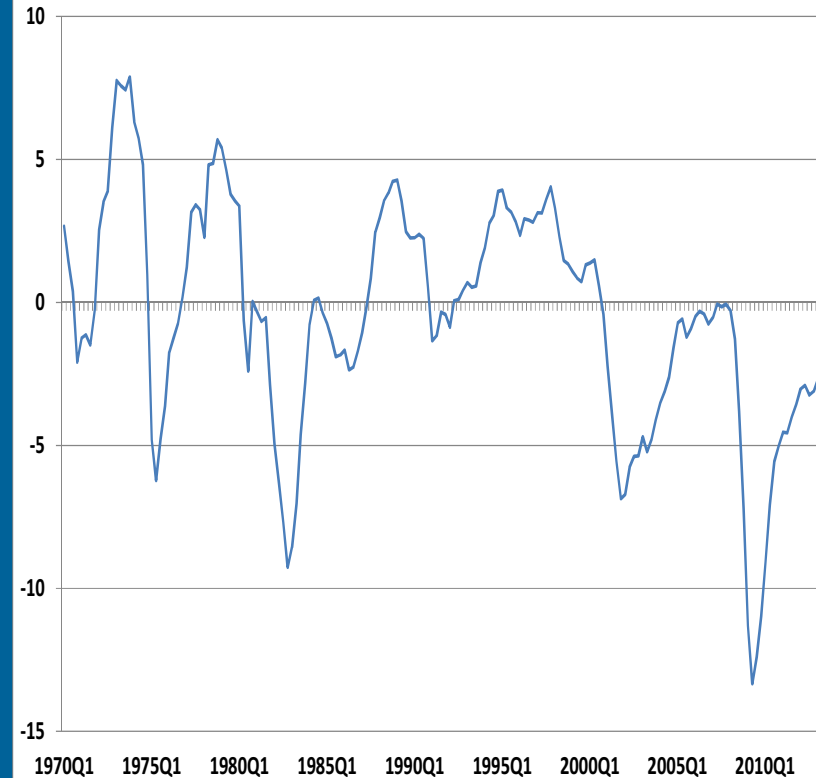


but can anchor potential output in the  
wrong place **e.g. USA**

### Output gap estimates using capacity utilisation



### Survey measures of Capacity utilisation





## Tentative conclusion: no simple recipe for anchoring trend output

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- For countries where financial variables do help anchor  $y^*$  is it in the right place does it focus on the last crisis not the next one?
- Same imbalance indicators don't work for all countries, dependent on choice & period over which averaged
- Capacity utilisation unlikely to work for many countries
- **No general recipe that can be followed across many countries to anchor trend output**



## Selected References

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- Alberola E., A. Estrada and D. Santabarbara (2013), “Growth Beyond Imbalances, Sustainable Growth Rates and Output Gap Reassessment”, Bank of Spain.
- Bagnoli, P., E. Rusticelli and D. Turner (2013), “A Review of Alternative Concepts of Trend Output Incorporating Macroeconomic Imbalance Indicators” *OECD Economics Department Working Papers*, (forthcoming).
- Borio, C., P. Disyatat and M. Juselius (2013), “Rethinking Potential Output: Embedding Information about the Financial Cycle”, *BIS Working Papers*, No. 404.



# ALTERNATIVE & MORE ROBUST MEASURES OF TREND OUTPUT

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