Budgetary Safety Margins: Some Considerations

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Motivation (1)

- The recent reform of SGP points to an increasingly important role for budgetary safety margins in the EU surveillance mechanisms
- The Member States officially called for further methodological work to improve the existing Commission's method to derive these safety margins

Motivation (2)

- A key provision of the revised SGP is that budgetary MTOs may diverge from close-to-balance or in surplus and can differ across countries
- Need to ensure a safety margin with respect to the 3 per cent limit in case of adverse cyclical developments

Motivation (3)

- This requires computation of the Minimal Benchmark (MB): the value of deficit-to-GDP ratio that ensures compliance with this margin
- Calculation of MBs requires preliminary estimation of budgetary sensitivities to output and representative negative output gaps (ROG)
- We question the current approach to compute ROGs and propose an alternative method

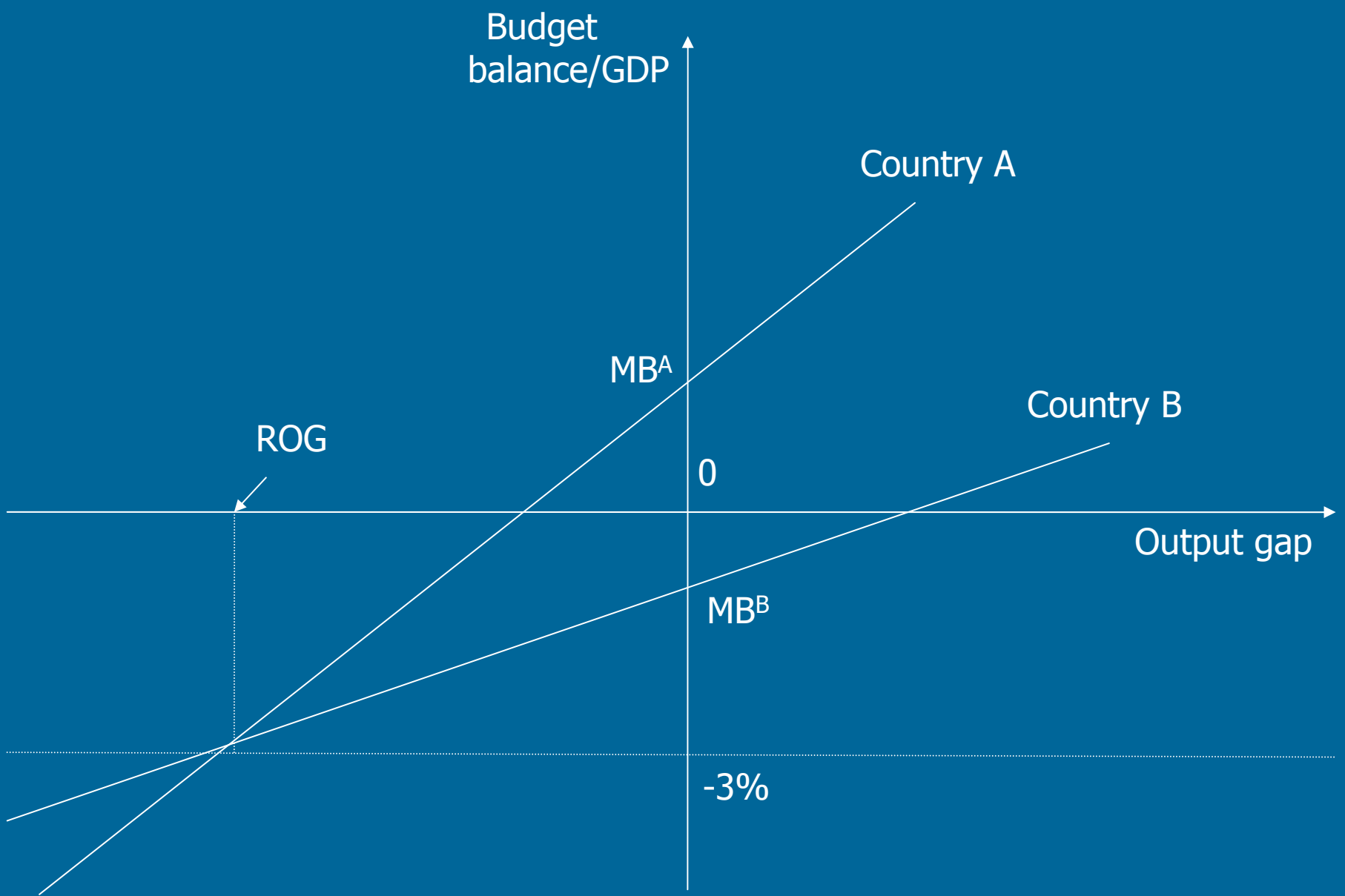
Definition

- MB is the value of the cyclically-adjusted budget balance that allows a country to let automatic stabilisers work freely without risking to breach the 3% deficit-to-GDP ceiling under adverse, yet still likely, cyclical developments

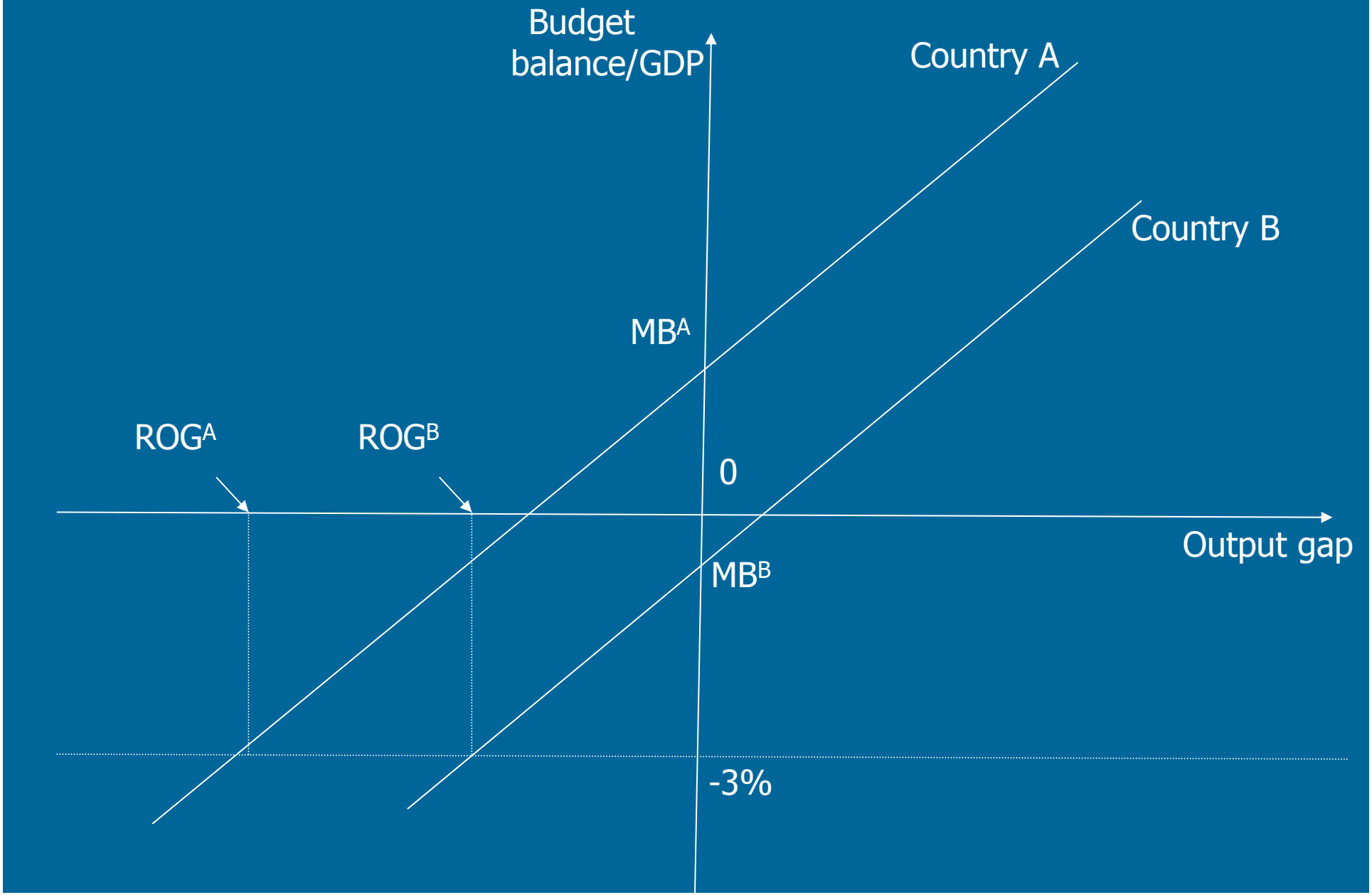
$$MB = -3 - \varepsilon \cdot ROG$$

- ε is budgetary sensitivity to output fluctuations
- ROG is 'representative output gap' in case of particularly weak cyclical conditions

MBs for 2 countries with the same ROG



MBs for 2 countries with the same budgetary sensitivity



Data and Measurement (1)

- Sample of output gap data to estimate ROGs is 1980–2005 for the EU 15 countries. For EU 12 (NMSs) the sample starts in 1995 at the earliest
- Despite official data start far back in the past, the entire sample is not used. It would increase the risk of dealing with past cyclical characteristics different from those of today
- A time series starting back in the past may under (over)-estimate the size of a typical adverse cyclical outcome. This would imply a lower (higher)-than-required safety margin

Data and Measurement (2)

- This is also true for NMSs where available data on output gap starts quite recently
- Indeed, the cyclical patterns of these economies before the mid-90s are likely to be profoundly different from those prevailing now
- On the other hand, however, the resulting short length of the time series, especially for NMS, is problematic

Data and Measurement (3)

Commission's algorithm for computing ROG:

- After excluding outliers, calculate the average of the minimum and maximum values from these 3 alternative criteria:

1. the largest negative output gap ever observed for the Member State concerned
2. the simple average of the largest negative output gaps in EU Member States
3. two times the country-specific standard deviation of the output gap with minus sign

Critical issues with the method (1)

- The method features 3 different indicators but only 2 of them are relevant for each country
- Identification of a bad cyclical outcome hinges on different indicators depending on the country
- New data releases and/or revision may imply a switch, for a given country, from one pair of indicators to another
- The ex-ante uncertainty on which pair of indicators is used casts some doubts on the soundness of the existing approach

Critical issues with the method (2)

- The short length of output gap time series for the NMS
- Country-specific data may not be sufficiently informative on the typical size of adverse cyclical developments
- EU countries' standard deviations are larger when the longest samples available are considered
- In 9 cases out of 12 the standard deviation of output gap of the EU-12 is lower than the figure for all countries on the selected sample

Critical issues with the method (3)

- The evidence for the EU 27 indicates that, with too short a sample of the output gap series, the degree of cyclical volatility might be under-estimated
- One of the 3 indicators is common to all EU countries. This partly mitigates the problem of under-estimation of ROG and safety margin in case of too short output gap time series
- However, further methodological work is warranted so as to make MBs for NMSs more demanding

Critical issues with the method (4)

- For being meaningful, one of the indicator implicitly requires the assumption that output gaps follow a normal distribution
- We performed two different tests for normality on each of the EU 27 country's time series of output gap
- In about 20% of the EU 27 countries the hypothesis of normality is rejected
- Departure from normality is found on output gap data of countries like Spain and Germany

Our proposed method (1)

- In computing ROG, we use the same algorithm for all countries. Since shortened output gap series may lack significance, we supplement country-specific information with cross-countries information from the EU-27

- We consider both the 5^{th} percentile of the country output gap data ($P^{c}_{5\%}$) and the 5^{th} percentile of the output gap data for the whole sample of EU 27 countries ($P^{E}_{5\%}$)

- The key point is how to combine the two pieces of information ------→

Our proposed method (2)

$$ROG^c = \frac{\sigma_c^2}{\sigma_c^2 + \sigma_E^2} P_{5\%}^c + \frac{\sigma_E^2}{\sigma_c^2 + \sigma_E^2} P_{5\%}^E$$

- σ^2_c is the variance of country *c* output gaps and σ^2_E is the variance for the whole sample of output gap

The relative volatility of business cycles provides the weights for aggregating the country-specific and common components

Our proposed method (3)

- Intuition: the higher the volatility of business cycle of a given country, the more likely this country experiences a severe downturn
- The larger is the variance of the output gap series, the larger (in absolute value) tends to be the representative (negative) output gap
- This result holds under a variety of hypotheses on distribution of output gap that are relevant for our purposes (Monte Carlo analysis)

Our proposed method (4)

- The correlation coefficient between the countries' standard deviation of output gap and the corresponding 5^{th} percentile is -.83
- Empirically, the lower degree of volatility of output gaps is associated with the short length of their series. This might downwardly bias the (absolute value of the) 5^{th} percentile
- Thus, we assign a relatively low weight to this potentially biased piece of information. A lower weight is assigned to the country-specific 5^{th} percentile if not enough informative

Key findings

- Whilst quite different, the two methods deliver broadly similar estimates of the safety margins
- We cannot conclude that one method systematically leads to more severe budgetary requirements in terms of safety margins
- However, in the majority of cases (15 countries out of 10) the proposed method points to a higher required safety margin
- The correlation coefficient between MBs computed through the two methods is .92

Alternative approach: model-based MBs

- We perform stochastic simulations on an econometric model to derive estimates of MBs
- Through stochastic simulations we mimic the macroeconomic turbulence of the economy
- The model-based approach identifies the deficit-to-GDP ratio that is required to maintain the economy, at various confidence levels and time horizons, within the 3% limit
- We solve the model repeatedly and use each time different draws of the stochastic components of the model

Alternative approach: model-based MBs

- For each of the 1,000 simulations, a path is obtained for the budget balance-to-GDP ratio
- This generates a distribution and we can pick the deficit-to-GDP ratio that can be classified as the worst with a 95% confidence level
- Surprisingly similar results across the methods
- To assess the role of fiscal structure, we also performed stochastic simulations under two counterfactual scenarios
- Results: MBs are less restrictive if tax revenues are less sensitive to business cycle

Concluding remarks

- We provide arguments casting some doubts on the soundness of the existing methodology
- We propose an alternative method addressing the critical issues
- Our estimates of MBs do not diverge significantly from those of the existing method
- In the majority of cases, however, the new method leads to a higher safety margin
- We show that the model-based approach is a helpful complement providing useful insights