EUROPEAN CENTRAL BANK

EUROSYSTEM

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AN ECB VIEW ON THE EURO AREA FISCAL STANCE*

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* The views expressed are those of the presenter and do not necessarily reflect those of the ECB

Outline

1. Introduction

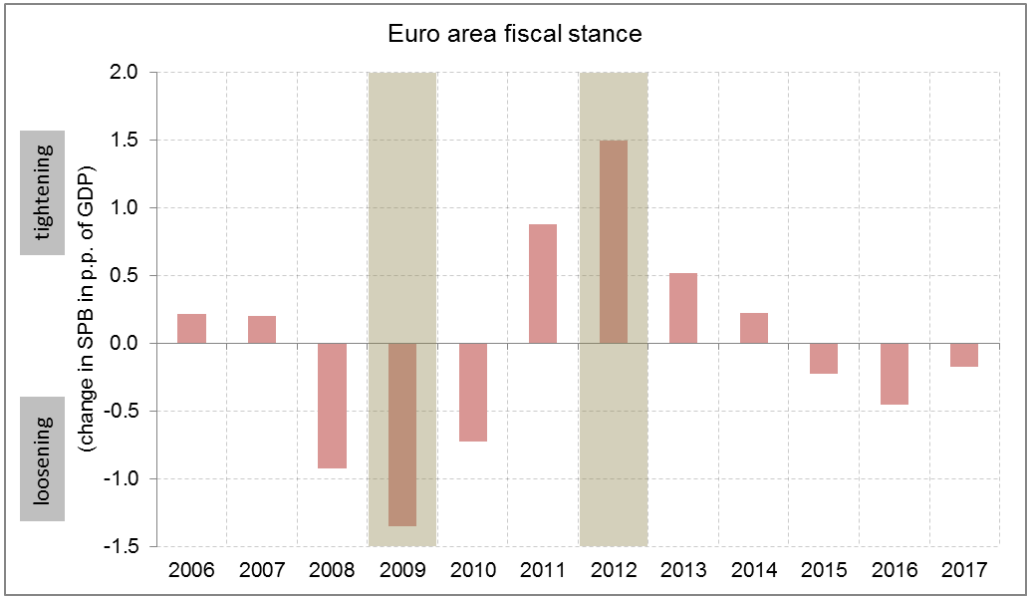
- Euro area fiscal stance received in the past limited attention
- Determined as the aggregate of national policies guided by the SGP
- More interest recently:
  - Institutional developments
    - Five Presidents' Report: national fiscal policies might not result in an appropriate aggregate euro area fiscal stance
    - European Fiscal Board: mandate to evaluate euro area fiscal stance
  - Economic situation
    - Sovereign debt crisis and consequent intensive consolidation
    - Double-dip recession in 2012 with monetary policy reaching the lower bound

2. On fiscal stance measurement and assessment

- Fiscal stance concept aims at capturing the fiscal impulse that derives from discretionary policy action
- Two main measures, both with serious limitations
  - cyclically-adjusted indicators
  - bottom-up
- Euro area fiscal stance: mechanical aggregation of national components
  - Economic impact more difficult to capture in presence of spillovers
- Desirable fiscal stance should be determined by a combination of (short-term) stabilisation and (long-term) sustainability objectives
- Not straightforward to asses both objectives, even more difficult to combine them

Outline

(I) EA fiscal stance in recent past



- 2016; (mildly) expansionary; 2017 broadly neutral stance
- Following large consolidation effort in 2011-13 fiscal stance has been closer to neutral in recent years
- 2012 tightening
- from 2010 onwards, euro area countries embarked on a prolonged phase of fiscal consolidation to restore fiscal sustainability
- 2009 stimulus
- End of 2008, the EC set up an action plan to counter the effects of the economic downturn
- European Economic Recovery Plan (EERP) embedded 1.5% of GDP stimulus, the bulk (1.2% of GDP) at national level within 2009 budgets

Source: European Commission's European Economic Forecast Autumn 2016 and ECB calculations.

II. Empirical estimates of fiscal stance in the past

- Dynamic GMM panel fiscal reaction functions (FRFs) for 15 euro area and non-euro area countries during the 1979-2015 period
  - Reaction of PB and CAPB to debt and output gap (+ some controls)
- Identify heterogeneities between periphery (Greece, Spain, Ireland, Italy and Portugal) and core (Austria, Belgium, Finland, France, Germany, Luxembourg, the Netherlands)
- Employs a linear specification as well as a novel non-linear approach Thresholds as endogenously determined parameters and tested with a bootstrap approach

Threshold estimates

Debt-to-GDP

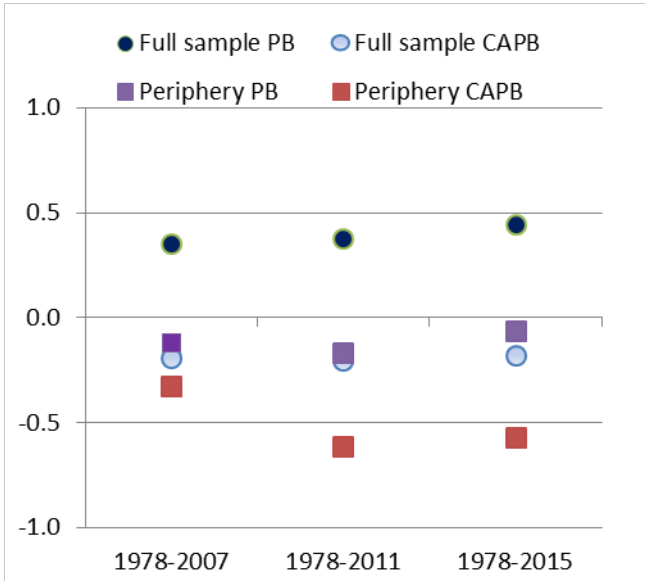
- EMU core: 54%
- EMU periphery: 105%

Output gap

- EMU core: -0.95
- EMU periphery: -3.0

- Positive reaction of (CA)PB to debt for full sample, core and periphery
- Stronger reaction in periphery when high debt is high
- A-cyclical reaction to output gap for full sample, but pro-cyclical reaction in periphery

Chart: reaction to output gap



GMM dynamic panel with Arelano-Bund estimator for different time horizons; for periphery, marginal impact is shown.

Interpretation

- Heterogeneous EMU fiscal reaction functions across euro area countries
- Core: operation of automatic stabilisers allowed more moderate response to debt than in periphery and more stabilisation in crisis
- Periphery: pro-cyclical policies necessitated strong response to high debt

Outline

Fiscal stance assessment (ECB OP 182)

- Comparison of the fiscal outlook vs. desirable stance (ΔSPB)
  - Fiscal outlook: EC 2016 Spring Forecast
  - Desirable fiscal stance 2016-17: derived from the two objectives
- Operationalisation of the two objectives

Stabilisation objective → **Fiscal stance that ensures the output gap closure by 50%-100% by end-2017**

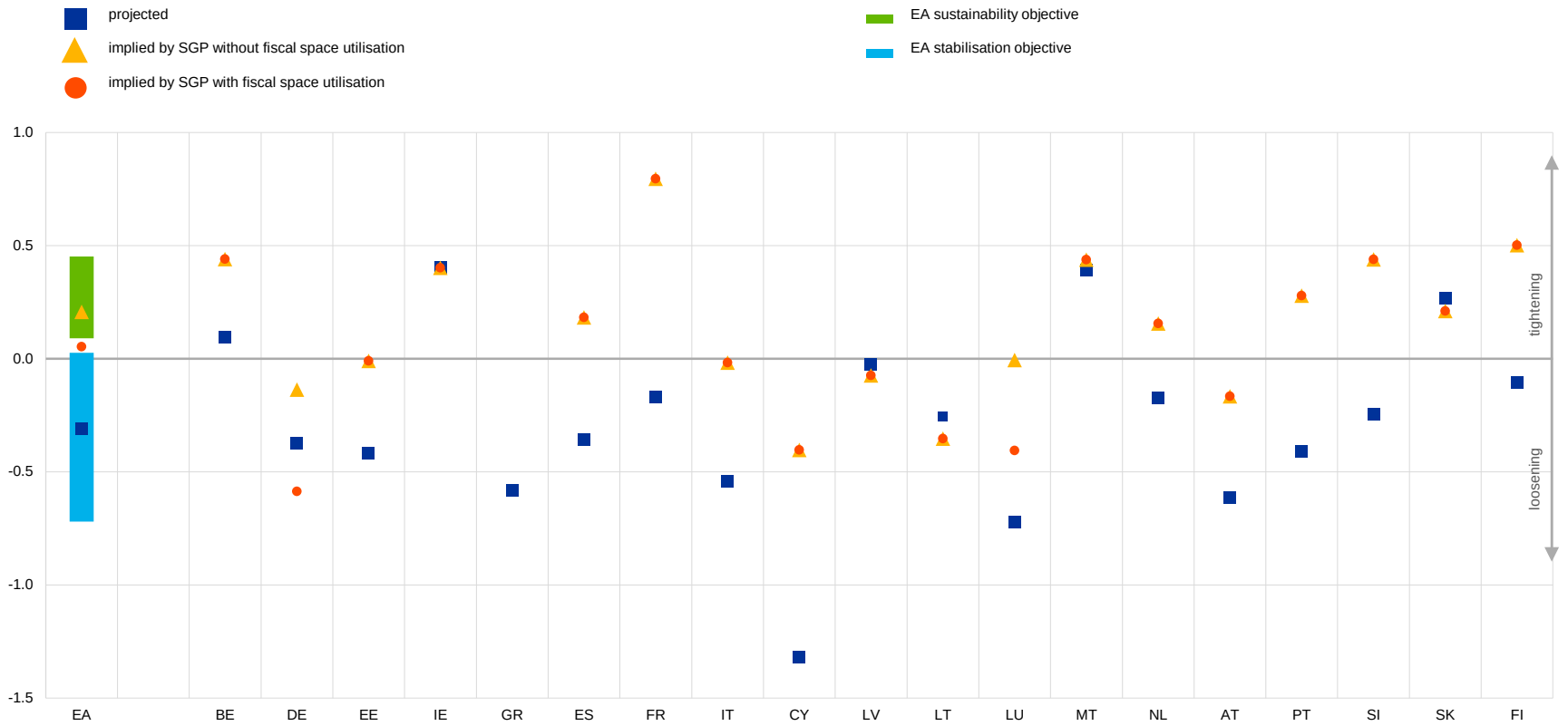
Sustainability objective → **Fiscal stance needed to bring debt-to-GDP ratio to 60% by 2025 to 2035**

- Certain arbitrariness is acknowledged
- To account for uncertainties desirable fiscal stance specified in ranges and objectives are considered separately
- Analysis not intended to substitute SGP

Assessment

Euro area fiscal stance assessment (2016-17) and the SGP

(annual change in structural primary balance during 2016-17, p.p. of GDP)

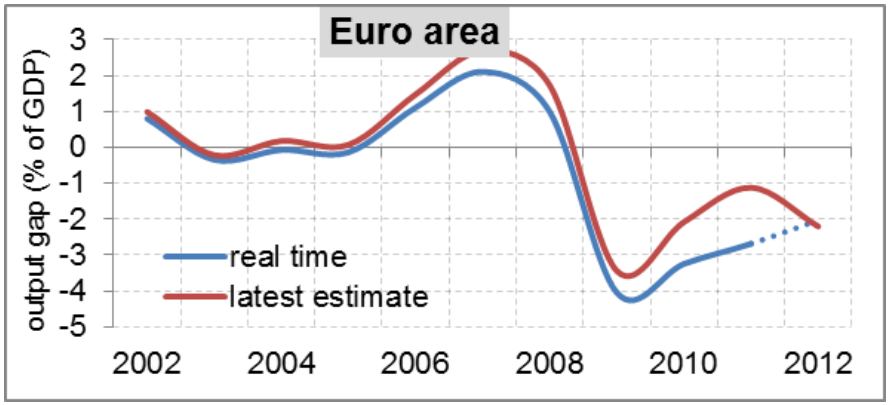


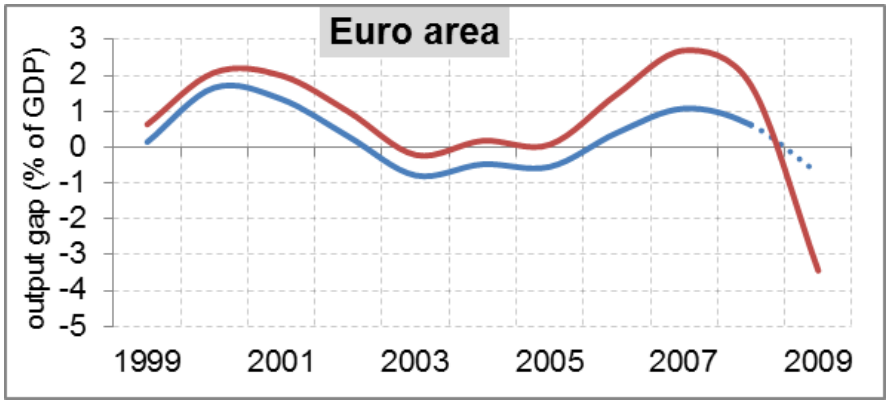
Source: Own calculations based on the European Commission's Spring 2016 European Economic Forecast and country-specific SGP requirements.
Notes: The SGP requirements, which are expressed in overall structural balance changes, are translated into structural primary balance changes by adding projected interest payments. This is with a view to aligning the quantitative SGP requirements with the definition of the fiscal stance outlined in this paper based on the change in the structural primary balance. The SGP requirements are not available for Greece, given that the country remains under the EU/IMF economic adjustment programme.

- Trade-off instances between stabilisation and sustainability
- SGP may not ensure an appropriate EA fiscal stance: no requirements for MS with fiscal space

Large uncertainties surrounding fiscal stance assessment

Real-time and ex-post output gap estimates



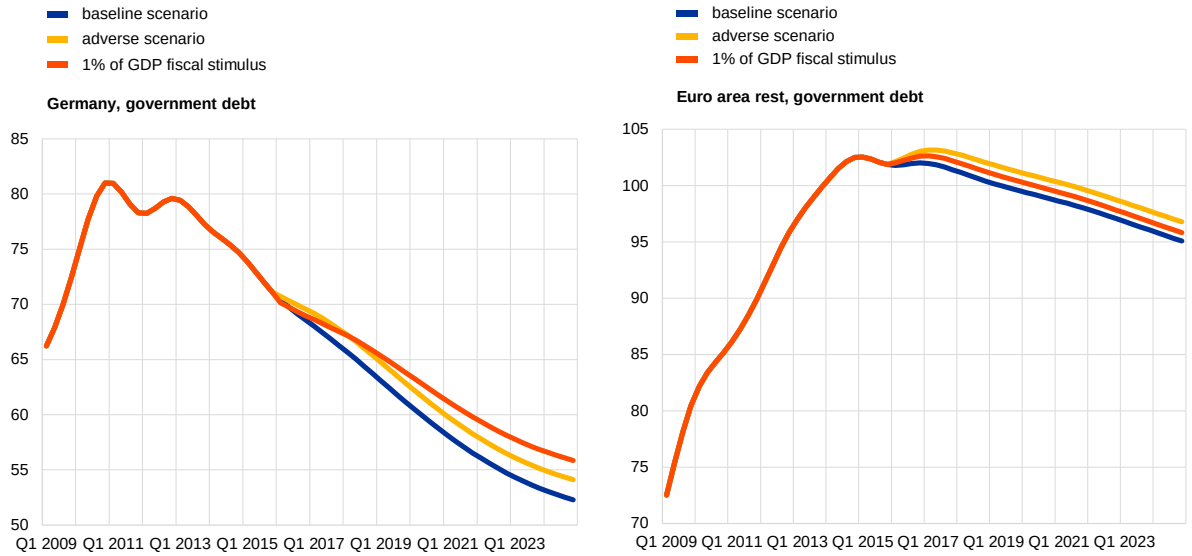


Source: Commission Autumn 2008, Spring 2011 and Autumn 2008 Forecasts

- Targeting a fiscal stance should account for notion of uncertainty: policy recommendations should err on side of caution
- Well-known practical difficulties in implementing discretionary fiscal policy
- Link between the SGP and the appropriate euro area aggregate fiscal stance to be clarified
- Should "exceptional circumstances" be operationalised?
  - E.g. periods of negative real growth and prolonged periods of low inflation

Illustrative scenario of fiscal coordination (II)

Chart: The effects of the stimulus in Germany on debt

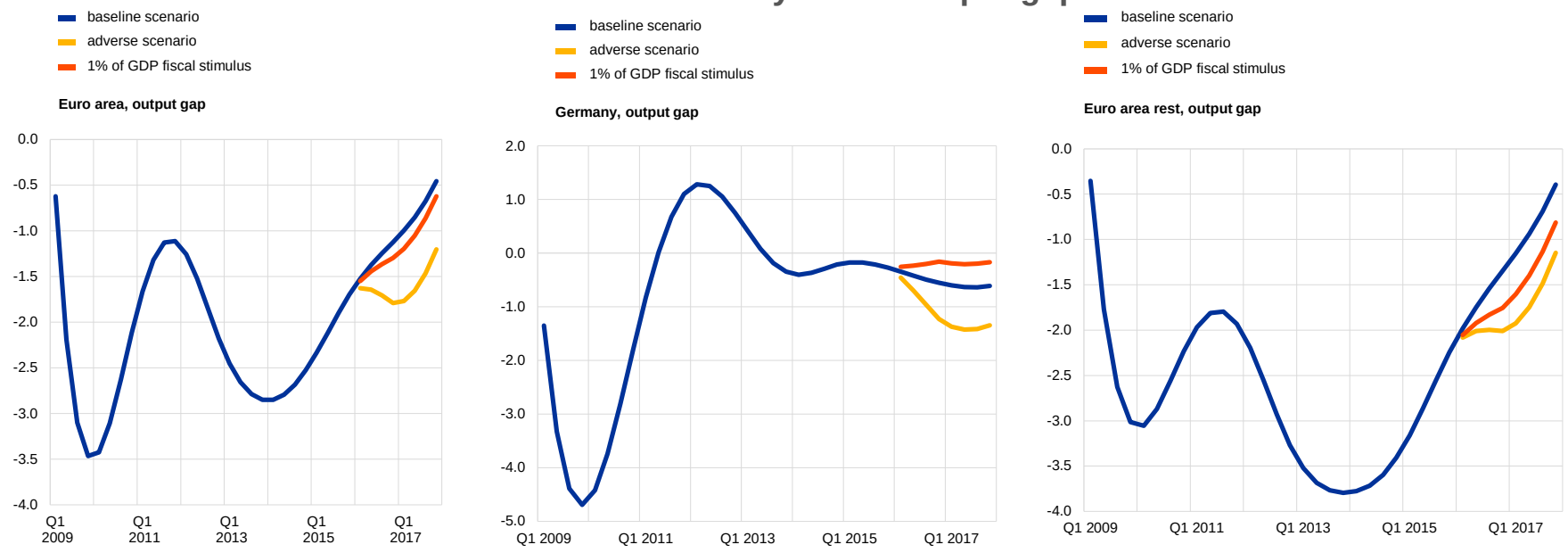


Source: Own calculations with EAGLE model.
Notes: The baseline is consistent with data extrapolated from the EC 2016 Spring Forecast. .

- How to implement a EU fiscal stance target?
- A more expansionary stance in response to adverse shock would need to be implemented asymmetrically on account of lack of fiscal space in many MS

Illustrative scenario of fiscal coordination

Chart: The effects of stimulus in Germany on the output gap

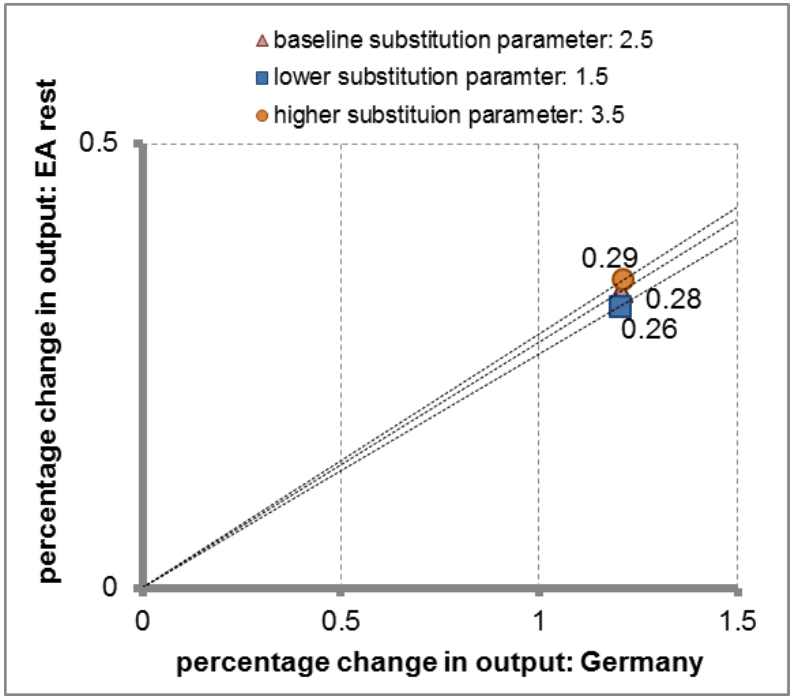


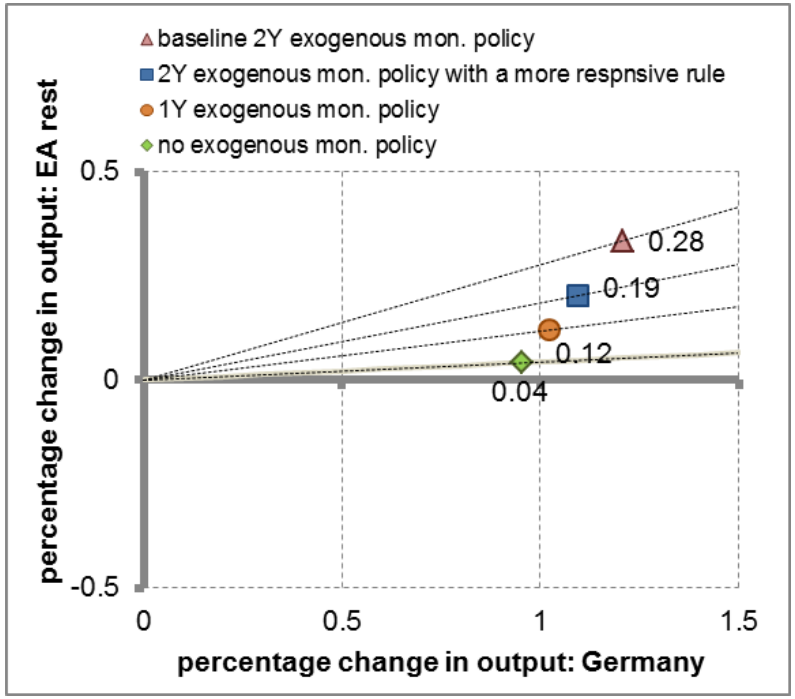
Source: Own calculations with EAGLE model.
Notes: The baseline is consistent with the EC 2016 Spring Forecast. The stimulus in Germany: debt financed, evenly split between public consumption and investment, 1% of GDP during 2016q2 – 2017q4., with monetary policy remaining accommodative for 2 year.

- Euro area: fiscal stimulus almost eliminates the adverse shock
- Germany: fiscal stimulus more than counteracts the adverse shock
- Rest of euro area: only part of the adverse shock offset
- Spill-over effects: non-negligible but dependent on in the simulations on a monetary policy response

Sensitivity of spill-over effects

Chart: The effects of the stimulus in Germany on government debt





- The assumption about the monetary policy in the DSGE simulation affects the magnitude of the spill-over effects tremendously.

Source: Own calculations using EAGLE model.
Notes: The figures presented in the charts are spillover ratios in the last (seventh) quarter of the stimulus simulation. The exogenous policy of 2 years presented in the chart lasts last exactly 7 quarters, which is the duration of the fiscal stimulus in Germany. The more responsive monetary policy rule involves 2.5 coefficient on the inflation deviation and 0.125 coefficient on the output gap, which are higher than these used in the standard version of the EAGLE model (1.7 and 0.1 respectively).The former values are based on Lindé, J., Blanchard, O. J., & Erceg, C. J. (2015).

Outline

Conclusions

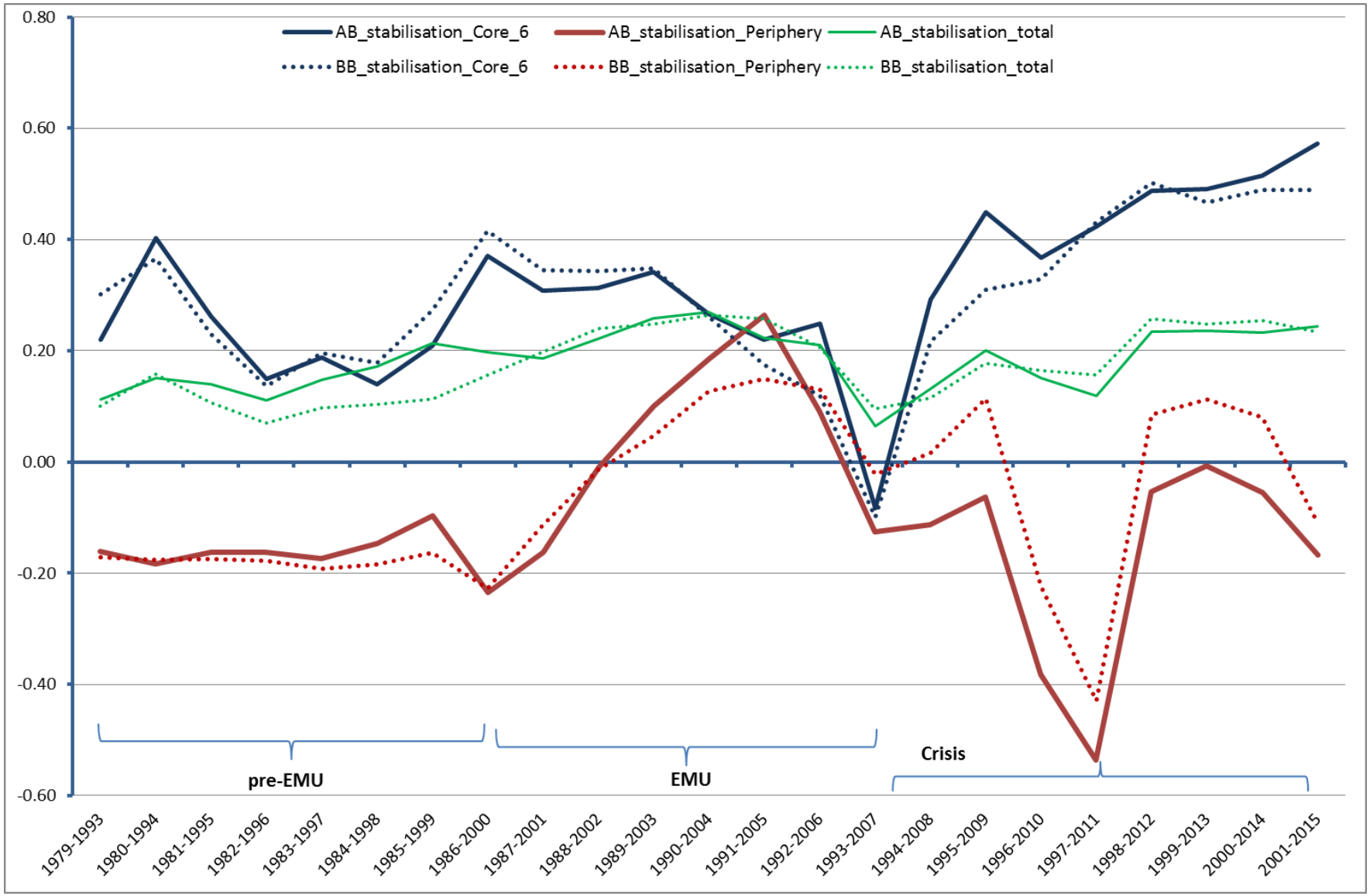
- Euro area fiscal stance receives close attention given institutional developments and economic situation.
- Past pro-cyclical policies led to sharp adjustment in some MS
- Appropriate EA fiscal stance needs to combine stabilisation and sustainability objectives
- Assessment needs to account for uncertainty
- Clarify link between the SGP and the EA fiscal stance
  - Do exceptional circumstances need to be clarified?
- How to implement a EA stance target?
  - Practical difficulties in implementing discretionary fiscal policy
  - Illustrative adverse scenario shows limits to coordinated expansion, depending on spill-overs

Thank you for you attention

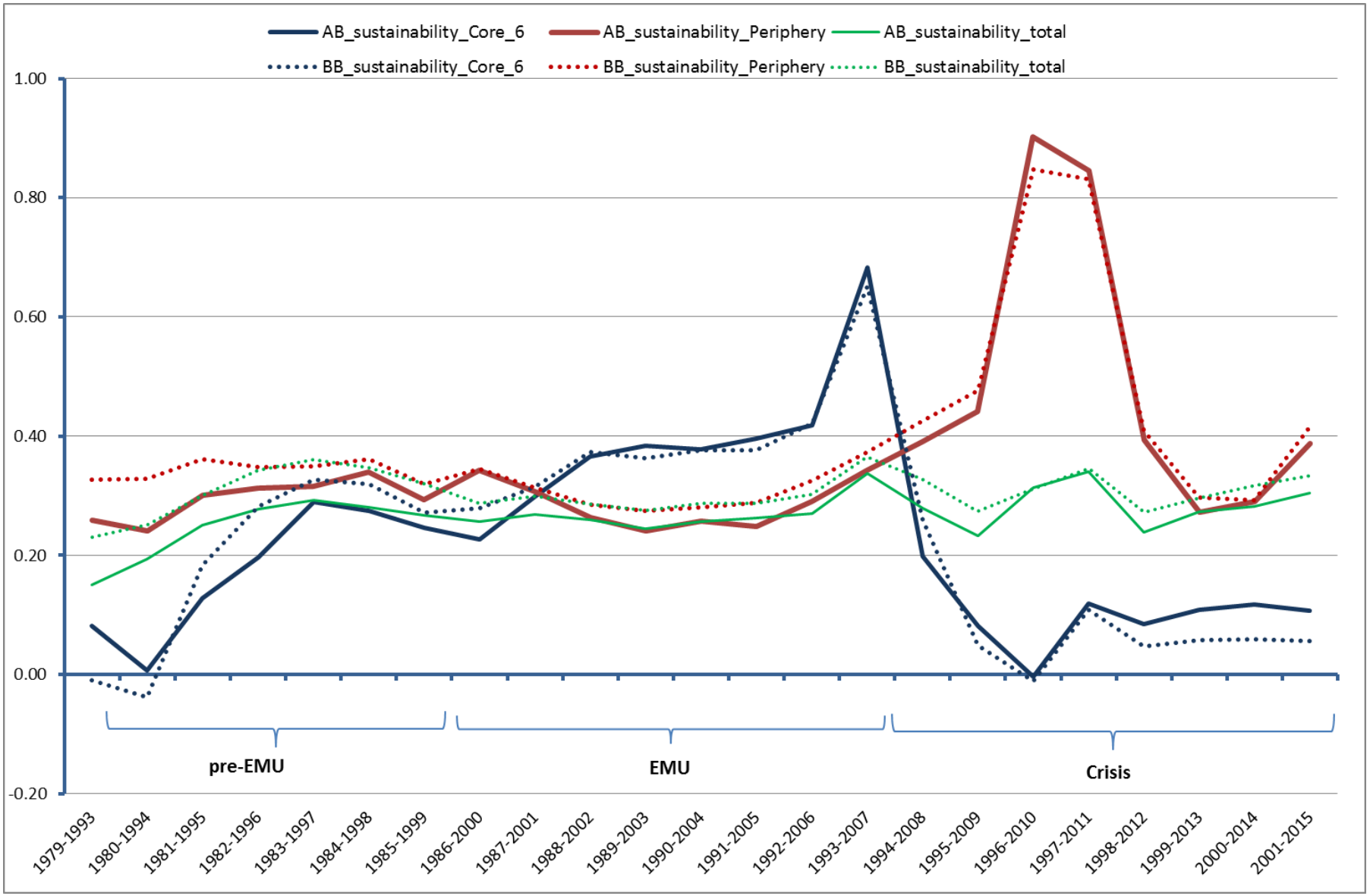
Euro area fiscal stance, ECB Occasional Paper 182
https://www.ecb.europa.eu/pub/pdf/scpops/ecbop182.en.pdf
Krzysztof Bańkowski & Marien Ferdinandusse
With contributions from Maria Grazia Attinasi, Cristina Checherita-Westphal, Georgios Palaiodimos and Maria Manuel Trindade Campos

Non-linearities in Fiscal Policy: Evidence from the Eurozone *(work in progress)*
Marien Ferdinandusse, Georgios Palaiodimos and Panagiotis Politsidis

Response PB to output gap (15-year rolling window estimates)



Response PB to debt-to-GDP (15-year rolling window estimates)



Data

- Data on primary balance, government debt, output gap
- Period: 1979-2015
- Frequency: Annually
- Source: AMECO (ESA 2010)
- Backwards extension using the annual growth rates from ESA 79
- 15 EU countries on the introduction of the euro
- 12 euro area: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain
- 3 non euro area: Denmark, Sweden, UK

.

Baseline specification (GMM estimator)

$$Pb_{it} = a_{i,t} + \alpha_b \cdot Pb_{it-1} + \alpha_{y_{US}} \cdot OG_{US_{it-1}} + \alpha_m \cdot mon_{it} + \left(\gamma_{ir} \cdot IIR_{it} + \boldsymbol{\gamma_y} \cdot OG_{it} + \gamma_d \cdot D_{it}\right) + \underbrace{\left(\delta_{ir} \cdot IIR_{it-1} + \delta_y \cdot OG_{it-1} + \boldsymbol{\delta_d} \cdot D_{it-1}\right) + \left(\varepsilon_{ir} \cdot IIR_{it-2} + \varepsilon_y \cdot OG_{it-2} + \varepsilon_d \cdot D_{it-2}\right)}_{\text{endogenous instruments t-1, t-2}} + n_i + \lambda_t + \varepsilon_{i,t} \quad for\ country\ i\ at\ time\ t$$

- Pb_{it} = primary balance as % of GDP (current prices)
- D_{it-1} = the lagged general government consolidated gross debt (% of GDP)
- OG_{it} = the gap between actual and potential gross domestic product at 2010 reference levels as % of potential gross domestic product (constant prices)
- mon_{it} = the deviation of the interest rate implied by the Taylor-rule from the prevailing 3-month real interest rate
- $OG_{US_{it-1}}$ = the US output gap
- IIR_{it} = the implicit interest rate on government debt
- Use as instruments set of endogenous variables with two lags

An extended fiscal reaction function to capture country group differences

- $$Pb_{it} = a_{i,t} + \alpha_b \cdot Pb_{it-1} + \alpha_{y_{US}} \cdot OG_{US_{it-1}} + \alpha_m \cdot mon_{it} + \left(endog_{i,t} + \boldsymbol{\zeta_X} \cdot X_{it} + \boldsymbol{\zeta_{X_P}} \cdot X_{it} \cdot periph_{i,t} + \boldsymbol{\zeta_{X_C}} \cdot X_{it} \cdot core_{i,t}\right) + (instr_{it}) + n_i + \lambda_t + \varepsilon_{i,t}$$

where:

- $periph_{i,t}$ and $core_{i,t}$ refer to cross sectional dummies that equal to 1 if country i belongs to peripheral or core EMU countries and 0 otherwise
- $X_{it} = D_{it-1}, OG_{it}$
- Coefficient of interest: $\zeta_X, \zeta_{X_P}, \zeta_{X_C}$

Threshold Identification

- Structural threshold regression (STR) model of Kourtelos et al. (2016 ET)
  - Recent addition to STR models (Hansen, 1999 JE, 2000 E; Caner and Hansen, 2004 ET)
  - Endogeneity of the threshold variable and the slope regressors
  - Regime specific heteroskedasticity.

Distinguish between Low and High regimes: $I(q_{it} \leq \gamma) = \begin{cases} 1 & \text{iff } q_{it} \leq \gamma: \text{ Regime 1} \\ 0 & \text{iff } q_{it} > \gamma: \text{ Regime 2} \end{cases}$

$$s_{it} = \beta'_{X1} \cdot X_{it} \cdot I(q_{it} \leq \gamma) + \beta'_{X2} \cdot X_{it} \cdot I(q_{it} > \gamma) + \kappa \cdot \Lambda_{it}(\gamma) + \varepsilon_{it}$$

$$S_n(\gamma) = S_n(\widehat{\varepsilon_{it}}) = \sum_{i=1}^{n} \left(s_{it} - \widehat{\beta'_{X1}} \cdot X_{it} \cdot I(q_{it} \leq \gamma) - \widehat{\beta'_{X2}} \cdot X_{it} \cdot I(q_{it} > \gamma) - \hat{\kappa}(\gamma) \cdot \hat{\lambda}_{it}(\gamma)' \right)^2$$

the value of the threshold (γ) can be estimated by minimizing the CLS criterion: $\underset{\gamma}{\operatorname{argmin}}\, S_n(\gamma)$

Test for the existence of a threshold

➢ Bootstrap methodology

- Estimate the GMM procedure linear model.
- Draw values from the saved residual series with replacement.
- These are added to the fitted values of dependent variable based on the parameter estimates of the threshold model (DGP) to obtain a new series.
- This series is then used to estimate threshold parameter q and then calculate the value of test statistic Wald-Stat.
- Repeat the above procedure x5000 times so that the sampling distribution does not depend on the threshold estimate and coefficient estimate.
- The obtained 5000 values of q and Wald-Stat are used to estimate the probability value of Wald-Stat

Non-linearities in the Core and Periphery EMU

- Augment our model to capture the effect of the observed asymmetries (threshold) to the fiscal policy objectives i.e. sustainability and stabilisation per country group.

Periphery-Debt threshold

$$Pb_{it} = a_{i,t} + \alpha_b \cdot Pb_{it-1} + \alpha_{y\_US} \cdot OG_{US\,it-1} + \alpha_m \cdot mon_{it} + (endog_{i,t}) +$$

$$(\boldsymbol{\delta_d} \cdot D_{it-1} + \boldsymbol{\delta'_d} \cdot I(D_{i,t} > \gamma) \cdot D_{it-1} + other\_instrum_{i,t-1}) + (instrum_{i,t-2}) + n_i + \lambda_t + \varepsilon_{i,t},$$

- $where\ I(D_{i,t} > \gamma)$ and is equal to 1 if debt is above the threshold and country i belongs to the Peripheral group and 0 otherwise.

Core-Output gap threshold

$$Pb_{it} = a_{i,t} + \alpha_b \cdot Pb_{it-1} + \alpha_{y\_US} \cdot OG_{US\,it-1} + \alpha_m \cdot mon_{it}$$
$$+ (\boldsymbol{\gamma_y} \cdot OG_{it} + \boldsymbol{\gamma'_y} \cdot I(OG_{i,t} > \gamma) \cdot OG_{it} + \boldsymbol{\gamma''_y} \cdot I(OG_{i,t} < \gamma) \cdot OG_{it} + Endog_{i,t})$$
$$+ instrum_{i,t-1} + instrum_{i,t-2} + n_i + \lambda_t + \varepsilon_{i,t},$$

- $where\ I(OG_{i,t} > \gamma)$ and is equal to 1 if debt is above the threshold (High regime) and country i belongs to the Peripheral group and 0 otherwise.

Continuous SGP reforms have increased complexity

SGP 1.0 (1997): nominal balance as anchor

- simple but strongly pro-cyclical

SGP 2.0 (2005): structural balance ("MTO") as anchor

- good properties in theory (adjust nominal balance for cycle and one-offs)
- strongly pro-cyclical in practice (mismeasurement of cycle, revenue wind-/shortfalls)

SGP 3.0 (2011/13): Six-pack/Fiscal Compact/two-pack reform

- **expenditure benchmark** complementing structural balance in preventive arm
- **debt rule** to ensure sufficient progress towards 60% of GDP reference value
- **structural balance (MTOs) put in national primary law**

SGP 3.1 (2014): new effective action methodology in corrective arm

- Two new compliance indicators: **adjusted structural balance, bottom-up approach**

SGP 3.2 (2015): new flexibility clauses in preventive arm

- **Modulation of required effort** according to cyclical conditions, structural reforms, investment, refugee- and security-related spending