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Frane Banić and Ivan Žilić

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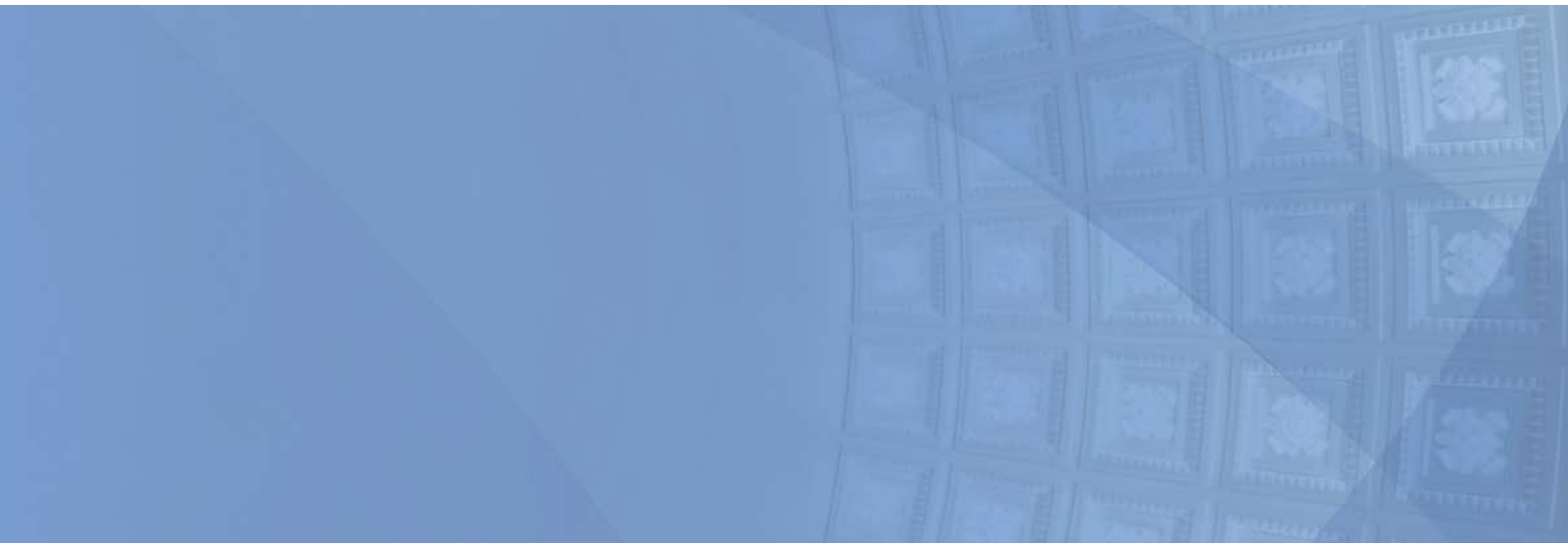

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The authors state that the views presented in this paper are those of the authors and do not necessarily represent the institutions the authors work at.

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Kako je Procedura prekomjernog manjka djelovala na smjer fiskalne politike u EU?

Sažetak

U radu analiziramo učinak Procedure prekomjernog manjka (engl. *Excessive Deficit Procedure*, EDP) na fiskalnu konsolidaciju u državama članicama EU između 2005. i 2019. godine. Koristeći recentniju literaturu o identifikaciji pomoću razlike-u-razlikama (engl. *Difference-in-Differences*), koja omogućuje kompleksne vremenske profile tretmana, na tromjesečnim podacima procjenjujemo uzročni utjecaj EDP-a na ciklički prilagođeni primarni saldo. Rezultati upućuju znatnu fiskalnu konsolidaciju u EU pod EDP, odražavajući poboljšanje fiskalne pozicije od 1,69 postotnih bodova. Dok je poboljšanje fiskalne pozicije pod EDP djelovalo kao protuciklička mjera tijekom gospodarske ekspanzije, rezultati deskriptivno pokazuju da je fiskalna konsolidacija zbog EDP-a usmjerila nositelje politike prema restriktivnom procikličkom karakteru, posebice tijekom globalne financijske krize. Naposljetku kontekstualiziramo nalaze u sklopu novih fiskalnih pravila EU-a, koja naglašavaju srednjoročnu fiskalnu prilagodbu.

Ključne riječi: Procedura prekomjernog manjka, fiskalna konsolidacija, razlike-u-razlikama

JEL: H30, H60, F62

How DiD EU's fiscal policymakers behave under the Excessive Deficit Procedure*

Frane Banić† and Ivan Žilić‡

Abstract

This paper estimates the effect of Excessive Deficit Procedure (EDP) on fiscal consolidation for EU member states between 2005 and 2019. Using the quarterly data which enables more time granularity and the recent advances in the difference-in-difference literature which allow for differently timed, non-absorbing treatments with dynamic effects, we estimate the causal effect of EDP on cyclically adjusted primary balance. Our findings point to a strong fiscal consolidation effect in the EU under the EDP, measuring to 1.69 percentage point improvement in fiscal stance. While the improvement of fiscal stance under the EDP acted as a counter-cyclical measure during economic expansion, we descriptively show that fiscal consolidation due to the EDP directed policymakers towards a restrictive pro-cyclical stance, especially during the global financial crisis. Finally, we contextualize these findings within the new EU's fiscal rules, which emphasize the medium-term fiscal adjustment.

Keywords: Excessive Deficit Procedure, fiscal consolidation, difference-in-difference

JEL classification: H30, H60, F62

*The views and conclusions expressed in this paper are those of the authors and do not necessarily reflect the position of institutions that the authors work for. The authors would like to thank Alan Bobetko, Ozana Nadoveza, Dominik Pripužić, an anonymous referee, and CNB working paper editorial board for useful and constructive comments.

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1. Introduction

Fiscal rules in the European Union are designed to mitigate the juxtaposition of a centralized supranational monetary policy and decentralized national fiscal policies. Implemented through the Stability and Growth Pact (SGP), if the fiscal rules in terms of deficit and/or debt are not satisfied, EU member states need to improve their position under the SGP's Corrective Arm – Excessive Deficit Procedure (EDP). However, the role of fiscal rules has been controversial: on the one hand, critics argue that they pushed toward restrictive pro-cyclical fiscal policy resulting in self-defeating consolidation and excessive austerity, while the critics from the other side of the spectrum emphasize the poor compliance of mandated fiscal rules. While fiscal policy in the EU member states has been the subject of numerous analyses (Cimadomo, 2008; Nerlich and Reuter, 2016; Eyraud et al., 2017; Gootjes and de Haan, 2022; Herrero-Alcalde et al., 2024), there is not a large body of research that analyzes the effect of SGP's Corrective Arm – EDP on fiscal stance. One notable example, De Jong and Gilbert (2020), analyzing the effect of EDP recommendations on fiscal stance, find a strong effect on forecasted and actual fiscal consolidation.

Building on this literature, in this paper we analyze the the effect of EDP on cyclically adjusted primary balance (CAPB) in EU member states. We employ recent advances in difference-in-difference literature to analyze the effects of EDP. In particular, EDP has a complex timing profile: countries do not start EDP at the same time, they switch in and -out of the EDP, and there are potentially dynamic effects of EDP on fiscal stance, which complicates the identification of causal effect. Using the data from 2005 to 2019 on a quarterly frequency, which enables more time-granulated estimation, we use a difference-in-difference estimator from De Chaisemartin and d'Haultfoeuille (2024) which allows for differently timed, non-absorbing treatment with dynamic effects. We find a positive effect of EDP on CAPB in the EU member states, which amounts, on average across ten quarters, to a 1.69 percentage point increase of CAPB. However, while descriptively analyzing fiscal consolidation through the lenses of a cyclical stance, we conclude that fiscal policy under the EDP was at times restrictive pro-cyclical, preventing the stimuli during the negative output gaps periods, which resulted in self-defeating consolidation. Our results corroborate the recent set of EU fiscal rules, which emphasize medium-term adjustments to avoid an overly restrictive pro-cyclical fiscal stance.

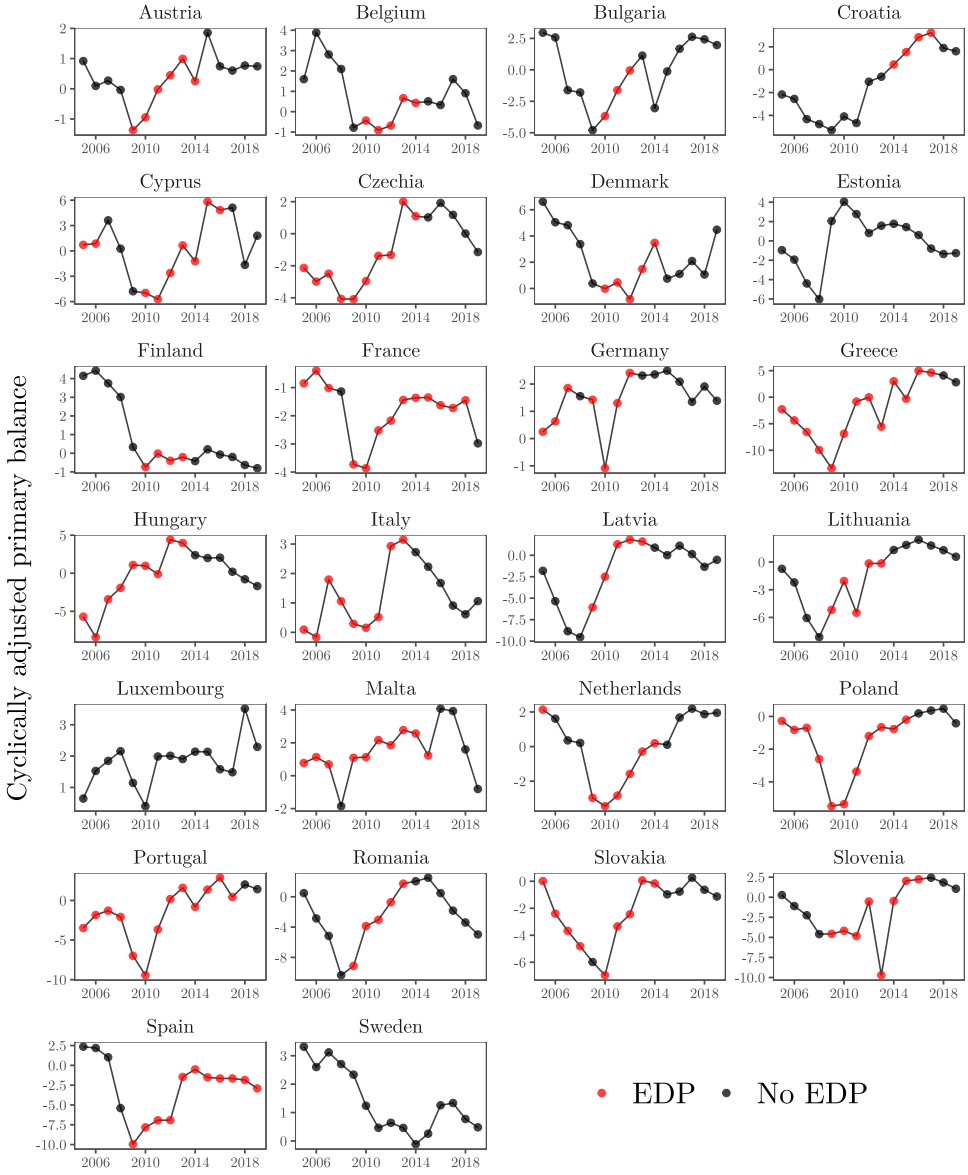
2. Data and empirical approach

In order to assess the causal effect of the EDP on fiscal stance, we use quarterly data from Eurostat on fiscal position from 2005 to the end of 2019 for 26 European Union countries.[1] Using quarterly data is a prerequisite for estimating the causal effect of EDP on fiscal stance accurately since the treatment relies on a specific date, which is important especially if EDP is opened and closed within the same year so taking only annual observation would to some extent omit causal effect. By using realizations instead of plans or forecast errors, we wanted to estimate the actual fiscal consolidation effect under the EDP. For analysis of the difference between the intentions of policymakers and actuals, it would be more suitable to use annual observations. Data spans from 2005, from the reform of the Stability and Growth Pact (SGP) which emphasized medium-term objectives in terms of structural balances, to the end of 2019, when the general escape clause was activated following the COVID pandemic.

[1] We omit Ireland from the analysis due to substantial general government deficit and synchronization with the US business cycle.

Our main outcome of interest is cyclically adjusted primary balance (CAPB), which measures fiscal position netted out of the effect of automatic stabilizers. We estimate CAPB in two steps: (i) we calculate the primary balance using the data on countries' revenues, expenditures, and interest rate payments; (ii) we estimate the cyclical component using country-specific budget-to-gap elasticities from Mourre et al. (2019) as well as the output gap using the one-sided Hodrick-Prescott filter as an estimate for potential output. The CAPB is the difference between the primary balance and cyclical component – Figure 1 displays the yearly CAPB estimates by country, highlighting the periods when the country was under EDP.

FIGURE 1 — Cyclically adjusted primary balance (% of GDP)



Note: Figure displays the cyclically adjusted primary balance on an annual frequency, from 2005 to 2019 (including).

To assess the causal effect of EDP on fiscal stance we start with a two-way fixed effects estimation (TWFE), an approach common in applied microeconomics literature :

$$CAPB_{it} = \alpha + \beta \times EDP_{it} + \boldsymbol{\zeta}_i + \boldsymbol{\eta}_t + \epsilon_{it} \tag{1}$$

where:

- $CAPB_{it}$ is the cyclically adjusted primary balance in country i in quarter t.
- EDP_{it} is an indicator variable taking the value 1 of country i in quarter t is under EDP, and 0 otherwise. We do not control for the non-compliance with the SGP adjustment requirements, which implies that we estimate intent-to-treat effects.
- $\boldsymbol{\zeta}_i$ and $\boldsymbol{\eta}_t$ are country and quarter fixed effects, respectively. These country and time fixed effects control for invariant idiosyncratic characteristics at the county and time level which, arguably, control for unobserved heterogeneity.

However, as vast new literature on difference-in-difference shows, this TWFE estimation might produce biased estimates if the treatment effect is heterogeneous across time and groups (see, for example, Roth et al. (2023) and De Chaisemartin and d'Haultfoeuille (2023)). In addition, using TWFE in a setting with differential treatment timing implies making "forbidden" comparisons of groups with different treatment paths, aggregating individual treatment effects with "negative weights", thus producing severely biased estimates. As Figure 1 shows, EDP has a complex timing profile: not all countries start EDP at the same time, and is not absorbing as the treatment status changes, i.e. countries switch in and -out of the EDP. In addition, EDP might have dynamic effects on fiscal stance as EDP in previous years might affect CAPB today ("carryover effect"). Therefore, the TWFE version of Equation 1 will produce biased estimates.

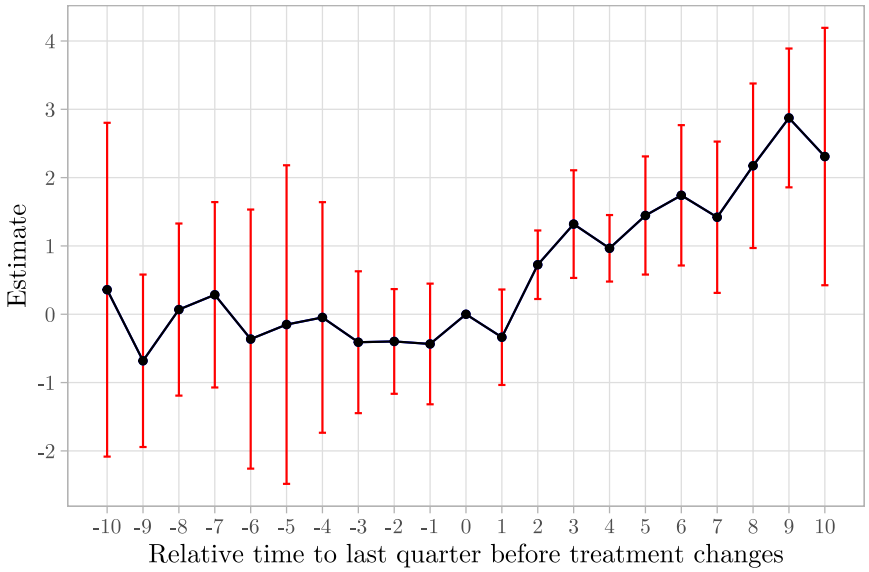
To the best of our knowledge (section 3.4 in Roth et al. (2023)), only the estimator in De Chaisemartin and d'Haultfoeuille (2024) can accommodate the empirical setting where the groups are treated at different times, where the treatment is non-absorbing and where there are potential carryover effects. In a nutshell, the estimator relies on comparing the group countries that entered the treatment between time $t-1$ and t (switchers), with countries that were not treated at both t and $t-1$; this can be extended to l treatment periods. If the F_i denotes the first period when country i is treated, then the DID_l is the average, across all switchers i, of estimators comparing the change in outcome from $F_i - 1$ to $F_i - 1 + l$, between switchers and not-yet-switchers with the same period-one treatment status. Note that when aggregating $DID_{i,l}$, the estimates that come from the treatment path that has both strictly lower and strictly larger treatment than period-one treatment are discarded. The estimator from De Chaisemartin and d'Haultfoeuille (2024) can also accommodate additional covariates in the estimation, and has derived analytical proprieties which enable inference.

The validity of the design relies on two identifying assumptions. The first one is a no-anticipation assumption, i.e. country's current outcome (CAPB) does not depend on its future treatment (EDP), while the second is parallel trends for the status-quo outcome assumption – if the two countries have the same period-one treatment (EDP), then that the same expected evolution of their status-quo outcome (CAPB). De Chaisemartin and d'Haultfoeuille (2024) also propose the placebo exercise which tests no anticipation and parallel trends assumption, which compares the evolution of the outcome of switchers and not-yet-switchers for periods before the first treatment change for the switchers.

3. Results and discussion

Figure 2 presents the results from the De Chaisemartin and d'Haultfoeuille (2024) estimation of the effect of SGP's corrective arm (EDP) on discretionary fiscal reaction in the EU member states. For periods 1 to 10, Figure 2 shows non-normalized event-study effects, which are averages, across all switchers, of having actual EDP treatment status rather than period-one treatment, for l periods. For periods -10 to -1, Figure 2 displays the placebo estimates which assess the no anticipation and parallel trends assumption.

Figure 2 — The effect of Excessive Deficit Procedure (EDP) on cyclically adjusted primary balance (CAPB)



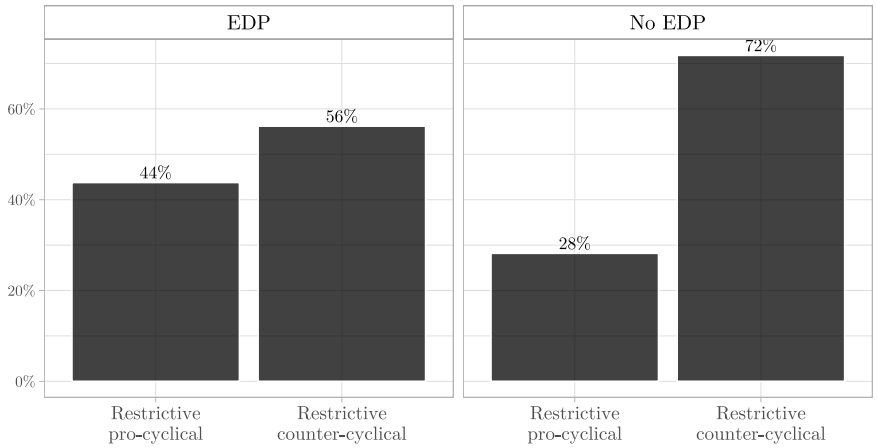
Note: Black points display point estimates of EDP on CAPB for -10 to 10 using De Chaisemartin and d'Haultfoeuille (2024) estimator. From -10 to -1, the point estimates are placebo estimates, while 1 to 10 are non-normalized estimates of being in the EDP for l quarters. Red bars represent the 90% confidence interval of the effect based on the standard errors clustered at the country level. The specification is without covariates.

There is evidence that no anticipation and parallel trends assumption hold as the placebo estimates are not statistically distinguishable from zero. We find no anticipation effects in the relative time before the EDP start, implying that there are no discretionary fiscal measures in the pipeline that are confounding the results. Furthermore, the results point to the positive and statistically significant effect of EDP on CAPB. On average, across the 10 quarters, being in EDP improves CAPB by 1.69 percentage points (90% confidence interval is from 1.07 to 2.32). Finally, there is a cumulative dynamic effect of being under CAPB. For the first quarter after the EDP, there is no effect, which is expected due to the adjustment period regarding legislation procedures related to consolidation efforts. However, the effects of implemented measures cumulate over time; for example, being in EDP for 10 quarters improves CAPB by 2.3 percentage points. Our baseline results hold if we include covariates (GDP per capita and debt), use different Hodrick-Presscot filter to estimate output gap and therefore CAPB, and if bootstrap standard errors. Our results broadly fall in line with existing evaluations of EDP (De Jong and Gilbert, 2020). Further, different initial fiscal position, dynamics and the effectiveness of consolidation measures resulted in relatively wide confidence intervals after the EDP was activated.

Knowing that EDP significantly pushed policymakers towards a more restrictive policy stance, if we compare the level of CAPB to the level of output gap, fiscal consolidation in some cases

was implemented during negative output gaps (for example, the global financial crisis and European sovereign debt crisis), leading to restrictive pro-cyclical behavior when some degree of fiscal support would be more appropriate (Figure 4). In particular, under the EDP, only Finland, Lithuania, and Poland avoided fiscal consolidation during negative output gaps. Under the EDP, fiscal consolidation was implemented during the negative output gap in more than 40%, indicating procyclical behaviour of fiscal policy makers (Figure 3). While this is only descriptive evidence, not controlling for the endogeneity of EDP entry, it does point toward the conclusion of EDP-induced restrictive cyclical policy.

FIGURE 3 — Fiscal consolidation and the phase of business cycle in the EU



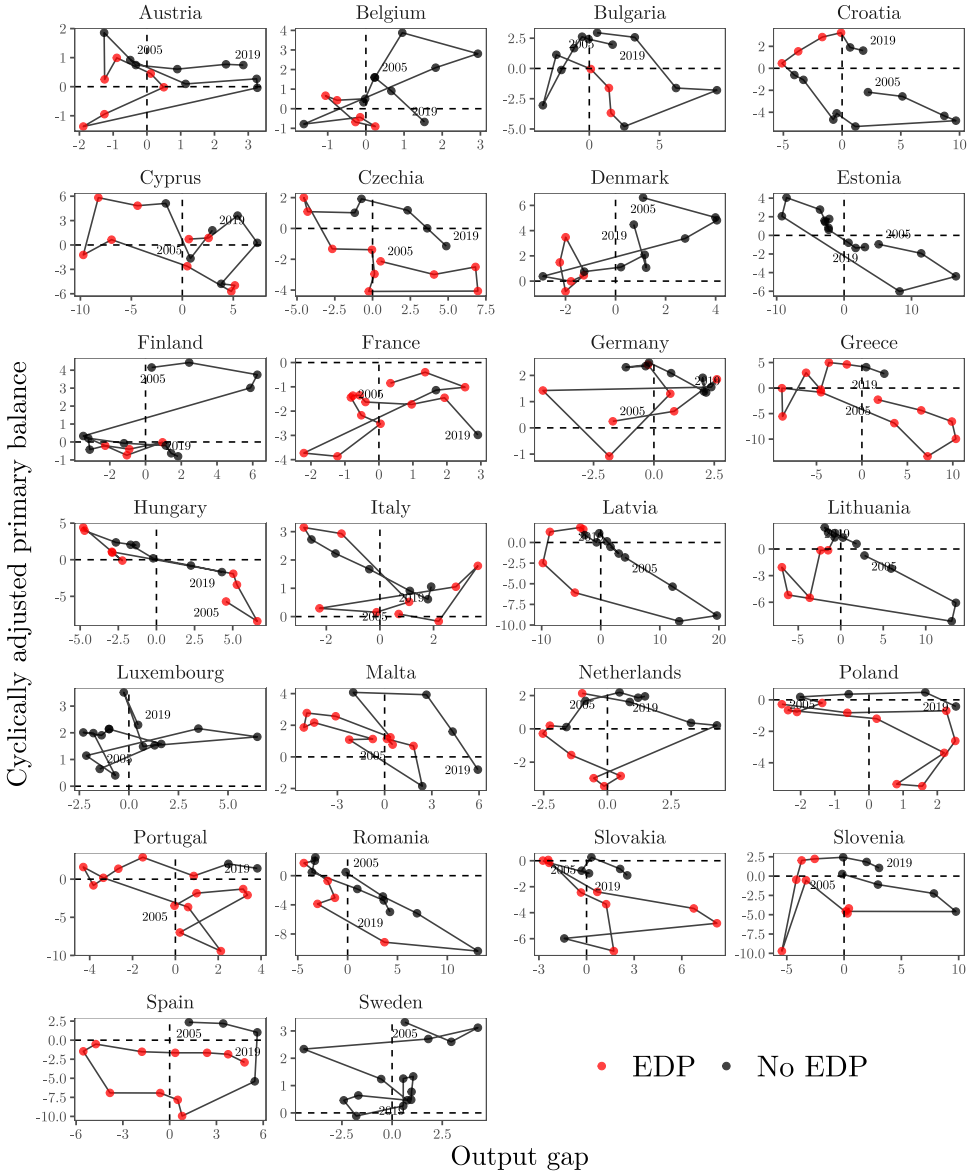
Note: Bars represent the share of fiscal consolidation depending on EDP and the output gap, indicating restrictive pro-cyclical fiscal policy if fiscal consolidation was implemented during a negative output gap and restrictive counter-cyclical if fiscal consolidation was implemented during a positive output gap.

Taking into account these results, the implementation of old fiscal rules did not consider the potential adverse fiscal impact on the economies during negative gaps. Therefore, it is important to emphasize the necessity of medium-term fiscal adjustment, which is addressed in new fiscal rules to avoid a restrictive pro-cyclical fiscal stance, i.e. pro-recessionary effects of self-defeating consolidations in the short term. Also, a reformed fiscal framework introduced national ownership to address country-specific fiscal risks and consequently target proper medium-term dynamics of adjustment, as well as deficit and debt safeguards to signal the issue of potentially expansionary pro-cyclical stance, which could lead to fiscal unsustainability.

4. CONCLUSION

In this paper, we assess the effect of corrective arm of SGP (EDP) on discretionary fiscal reaction in 26 EU member states using a difference-in-difference method which allows for staggered, non-absorbing treatments with dynamic effects. Empirical strategy in our paper could be also used for tracking recently adopted EU's fiscal rules' effectiveness taking into account dynamic consolidation effects through time spent under the EDP and fiscal effort under the EDP through time by comparing actual consolidation with initial plans made by governments, isolating the effect of EDP from the influence of other external variables. Our findings point to strong fiscal consolidation under the EDP, resulting in the improvement of cyclically adjusted primary balance on average for 1.69 percentage points. However, strong fiscal tightening in some cases, especially during the global financial crisis, resulted in restrictive pro-cyclical behavior when

FIGURE 4 — Fiscal stance in the EU



Note: Figure displays the cyclically adjusted primary balance and output gap on an annual frequency, from 2005 to 2019 (including). The first quadrant represents a counter-cyclical restrictive fiscal stance, the second quadrant pro-cyclical restrictive fiscal stance, the third quadrant counter-cyclical expansionary fiscal stance, while the fourth quadrant represents a pro-cyclical expansionary fiscal stance.

the fiscal stimulus would be more suited. This reflects the need for careful medium-term adjustment to avoid self-defeating consolidation, which is emphasized in new fiscal rules. Also, by introducing national ownership, strengthening independent fiscal institutions, and introducing deficit and debt safeguards in the reformed fiscal rules there is a possibility to signal the issue of a potentially expansionary procyclical stance, which could lead to fiscal unsustainability.

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