Enforcing economic liberalism in European fiscal policy-making: On the role of the European Commission's potential output model

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Abstract

This paper analyzes the performative impact of the European Commission's model for estimating 'potential output', which is used as a yardstick for measuring the 'structural budget balance' of EU countries and, hence, is crucial for coordinating European fiscal policies. The analysis is posed in the tradition of Polanyi's argument on the 'paradox of economic liberalism', which states that the implementation of economic liberalism in societies has always been the outcome of deliberate political engineering. From a Polanyian perspective, we find that the potential output model serves as a tool for enforcing economic policy prescriptions along the ideological lines of economic liberalism, as the model prescriptions prioritize the policy goals of balancing national finances and increasing price competitiveness against other policy goals. In pre-crisis years, potential output estimates amplified the build-up of private debt, housing bubbles and macroeconomic imbalances. After the financial crisis, they were revised downwards, which increased fiscal consolidation pressures. By focusing on the euro area's economies during 1999-2014, we identify two performative aspects of the potential output model. First, the political implications of the model led to a pro-cyclical feedback loop, reinforcing general economic developments. Second, the model has contributed to national lock-ins on path dependent debt trajectories, fueling 'structural polarization' between core and periphery.

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1. Introduction

How do macroeconomic theories and models influence economic, political and socio-economic developments? In answering this question, we focus on the role of macroeconomic models in enforcing economic liberalism, market-based solutions and a strengthened competition regime in European policy-making. The analysis is posed in the tradition of Polanyi's (1944) argument on the 'paradox of economic liberalism', which states that the implementation of economic liberalism in societies has always been the outcome of deliberate political engineering.

Polanyi's thoughts on economic liberalism and the role of political intervention in creating and shaping "free markets" are related to the literature on the performativity of economic theories and models, which alleges that economics does not merely describe and measure economic reality, but contributes powerfully to shaping it (e.g. MacKenzie, 2006). While past literature has closely investigated the performative effects of models used by financial market actors (e.g. Braun, 2014), it does not look at macroeconomic policy-making in any substantive fashion. Our research contributes to closing this research gap. Specifically, we investigate the case of the European Commission's model, which is used for estimating 'potential output' (PO) of European economies and serves as a basis for the coordination of national fiscal policies, where 'potential output' is defined as the (hypothetical) level of output that can be produced by an economy operating at 'non-inflationary' levels (Havik et al., 2014).

2. The European Commission's potential output model and its use in European fiscal policy-making

The EC's model for computing PO is essential for judging which components of the fiscal balance in EU countries are 'structural', that is, the part of the fiscal deficit (or surplus) that is driven neither by the business cycle nor by one-off and temporary effects such as costs related to averting the break-down of the financial system (Havik et al., 2014;

Mourre et al., 2014). Estimates of the 'structural balance' directly depend on the EC's measure of the output gap, as can be seen from the corresponding formula:

$$SB_t = FB_t - \varepsilon_t OG_t - OE_t.$$

Here, SB_t refers to the structural balance; FB_t denotes the fiscal balance reported by individual countries; ε_t measures the reaction of the fiscal balance to the output gap, called 'semi-elasticity parameter'; OG_t is the output gap, measured as the difference between actual GDP and PO (in percent of PO). Finally, OE_t are one-off and temporary effects on the fiscal balance (Mourre et al., 2014). Subtracting $\varepsilon_t OG_t$ from FB_t yields the cyclically-adjusted budget balance (CAB_t).

The PO model is the EC's preferred operational surveillance tool for evaluating and controlling fiscal policies, as PO estimates are transformed into estimates of the structural balance. The institutional importance of these estimates derives from the Stability and Growth Pact, which defines countries' medium-term budgetary objectives (MTOs) in terms of the structural balance. In case of a deviation from the MTO, a country has to correct 'excessive structural deficits' by fiscal consolidation measures, as the SGP requires the structural balance to improve by 0.5% of GDP per year (Ecfin, 2013). Moreover, the Fiscal Compact uses estimates of the structural balance to assess fiscal policies: Governments are legally obliged to ensure that the structural deficit does not exceed 0.5% of GDP per year – a rule that signatory states had to codify into national law, preferably as a constitutional safeguard (Fiscal Compact, 2012). Hence, higher structural deficits amplify the pressure to implement fiscal consolidation measures; vice versa, a fall in the structural deficit (or a rise in the structural surplus) reduces the need for fiscal adjustment.

Drawing on usual practices in the neoclassical growth literature (e.g. Solow, 1957; Aghion & Howitt, 2009), the EC employs a Cobb-Douglas production function[3] of the form

[3] The Cobb-Douglas framework used by the EC is well established, although there exist many criticisms challenging its theoretical foundations and empirical usage (e.g. Felipe and McCombie, 2014).

$$PO_t = L^{\alpha}\, K^{1-\alpha}\, TFP_t$$

to obtain estimates of unobservable potential output PO_t (Havik et al., 2014). In doing so, the production factor labor L_t is operationalized as a Hodrick-Prescott-filtered trend of the share of total working hours offered by the active Labor Force, *which would be employed given the EC's NAIRU estimates* – where the NAIRU is the unemployment rate at which (wage) inflation does not accelerate. Total Factor Productivity (TFP_t) is first calculated as average output per hours worked, then corrected for 'cyclical' deviations by a Kalman-Filter and eventually reinserted into the model. Finally, estimates for the capital stock K_t are taken from the AMECO database. Hence, the Cobb-Douglas function merely serves as a simple calculatory vehicle for processing empirical data, while the essential economic question – 'Which components of unemployment and productivity growth are to be judged 'structural' or 'cyclical'?' – is delegated to the statistical de-trending of the respective time-series on unemployment and TFP.

In what follows, we specifically focus on the estimation of the contribution of labor supply (L) to PO for two reasons: First, the EC defines PO as the level of output at which inflation remains stable. Hence, the NAIRU – the unemployment rate at which (wage) inflation does not accelerate – is of central importance for the theoretical framework (European Commission, 2014) and also serves as blueprint for corresponding policy suggestions to increase labor market flexibility (e.g. Orlandi, 2012). The second reason for focusing on the role of NAIRU estimates refers to their empirical impact: Several researchers have pointed out that since the GFC, revisions in NAIRU estimates have been the most important reason for changes in PO for many EZ countries (e.g. Klär, 2013; Krugman, 2013).

The EC defines the NAIRU as the 'trend component' of the unemployment rate, stripped off all cyclical factors (European Commission, 2014; Planas & Rossi, 2015). From a theoretical perspective, the EC therefore connects the NAIRU with the idea of a 'natural rate of unemployment' (Friedman, 1968; Phelps, 1967), which is assumed to exist for any economy and at any point in time, independently of all cyclical and seasonal influences. In the EC's theoretical framework, a Kalman-filter approach is used to supply NAIRU estimates, which are interpreted as a proxy for 'structural unemployment' (Orlandi, 2012; Lendvai et al., 2015).

Hence, the Kalman-filter employed to calculate NAIRU estimates is of crucial importance for the model's outcomes. Regrettably, the Kalman-filter technique comes with a series of drawbacks, which are either due to the general statistical properties of Kalman-filtering or related to the specific implementation of the Kalman-filter employed by the EC. Without going into the technical details of the underlying dynamic state-space model – which is basically a concise reconstruction of the underlying statistical and economic hypotheses in matrix notation (Durbin & Koopman 2012) – these drawbacks can be summarized as follows: The Kalman-Filter is based on a recursive procedure, which updates its predictions every time new empirical information becomes available. Due to this crucial role assigned to the most recent observations – a phenomenon that the statistical filtering literature calls the 'end point bias' (e.g. Ekinci et al., 2013; Havik et al., 2014) –, NAIRU estimates exhibit a pro-cyclical bias. For the very same reasons – the filter's recursive structure and the associated quick adaption to new inputs –, estimates given by the Kalman-Filter are not consistent over time, as they are subject to changes when additional or revised observations are brought into the filtering process, which may cause new de-trended estimates to represent strong revisions of past estimates that also contradict past policy-prescriptions (e.g. Klär, 2013; Palumbo, 2015)

3. How does the potential output model shape fiscal policy-making and economic developments?

Heimberger and Kapeller (2016) argue that three mechanisms are crucial for understanding the pro-cyclicality of NAIRU and PO estimates in both the pre-crisis and the post-crisis loop. First, the EC's model estimates *reaffirm prevailing beliefs* among economists and policy-makers by providing additional support for established policies. Second, estimates of NAIRU and PO affect the *timing and speed of fiscal policies*, which is due to their importance for calculating structural balances in the EU's fiscal regulation framework. Finally, reaffirmation of beliefs and model-induced pro-cyclical fiscal policy bias trigger *a reinforcement of cyclical trends*, which were largely shaped by two events in the period under study, namely by the introduction of the Euro and the GFC.

After the financial crisis, downward revisions in PO increased fiscal consolidation pressures in Europe (Tereanu et al., 2014). Table 1 illustrates this relationship for five EZ periphery countries and five core countries. Output gaps would have been much larger than the EC's official numbers provided in November 2015 if one assumes that PO during 2010-2014 had grown at a constant average pre-crisis growth rate (Ball, 2014).

Table 1: Downward revisions in PO estimates increased fiscal consolidation pressures: all numbers for the year 2014

	OG	**OG****	**CAB**	**CAB****
Periphery countries				
Greece	-9.1%	-42.1%	0.8%	16.6%
Ireland	-1.1%	-25.2%	-3.3%	9.5%
Portugal	-3.9%	-12.6%	-5.2%	-0.7%
Spain	-6.9%	-25.2%	-2.2%	7.7%
Italy	-4.0%	-15.2%	-0.9%	5.1%
Core countries				
Austria	-0.9%	-7.9%	-2.2%	1.9%
Germany	-0.4%	-1.4%	0.5%	1.1%
France	-1.9%	-8.3%	-2.8%	1.0%
Netherlands	-2.7%	-7.1%	-0.6%	2.2%
Belgium	-1.0%	-8.0%	-2.5%	1.8%

Data: AMECO (December 2007, November 2015); authors' calculations.
OG = (Y-PO)/Y**
*OG** = (Y-PO**)/Y***
*CAB = FB – ε * OG*
*CAB** = FB – ε * OG***
FB… fiscal balance.
ε … budgetary semi-elasticity (Mourre et al., 2014, p. 21).

To demonstrate the pro-cyclicality of the EC's model, table 2 shows that, as the NAIRU tends to shoot up during a crisis, PO shrinks (ceteris paribus), so that the output gap becomes less negative and the CAB deteriorates. We provide replicated estimates for Spain – this time for the crisis year 2009 – to illustrate the NAIRU model's pro-cyclical impact in the post-crisis period. In Autumn 2007, shortly before the GFC, the EC forecast that the Spanish NAIRU in 2009 would stand at 8.2%. However, as the Spanish economy experienced a severe and long-lasting recession after the bursting of its housing bubble and the GFC, Spain's NAIRU estimate for 2009 was revised upwards to 14.2% in Autumn 2011. Table 2 demonstrates that PO would have been estimated €45.5 billion higher if

the EC had used the Autumn 2007 NAIRU estimate for its Autumn 2011 calculations. Hence, the negative OG would have nearly doubled from -4.7% to -8.9%, so that the CAB would have be -6.9%, which is markedly lower than the official estimate of -8.9%. These calculations show that against the backdrop of the underlying fiscal regulation framework, the pressure on the Spanish government to implement fiscal consolidation measures would have been markedly lower if the pre-crisis NAIRU estimates had not been revised.

Table 2: Pro-cyclical NAIRU estimates and their impact on potential output, the output gap and structural balances

	NAIRU	**PO**	**OG**	**CAB**
Post-crisis BUST	↓	↑	↓	↑
Spain, Year 2009				
Autumn 2011	14.2	998.0	-4.7	-8.9
Autumn 2011 with Autumn 2007 NAIRU	*8.2*	*1043.5*	*-8.9*	*-6.9*

Notes. All potential output numbers were calculated at constant prices with the base 2005=100. NAIRU, non-accelerating (wage) inflation rate of unemployment (in %); PO, potential output (in billion €); OG, output gap (in % of PO); CAB, cyclically-adjusted budget balance (in % of PO).

It becomes clear from this illustration that the implicit imperative of the EC's model during a crisis is fiscal austerity. A broad literature has shown in recent years that pro-cyclical fiscal tightening has pronounced negative effects on economic growth and employment (e.g. Blanchard & Leigh, 2014; Jorda & Taylor, 2016), which explains the finding that in those European countries that implemented the harshest fiscal austerity measures, demand was squeezed the most (de Grauwe & Ji, 2013). Thereby, it is no coincidence, but rather an implicit consequence of to the 'end-point bias' in Kalman-filtering and the collapse in the growth rate of the capital stock (e.g. Klär, 2013; Palumbo, 2015) that downward revisions in PO were most pronounced where the crisis stroke hardest (Heimberger, Kapeller, 2016), which systematically subjected Europe's weakest economies to implementing austerity measures.

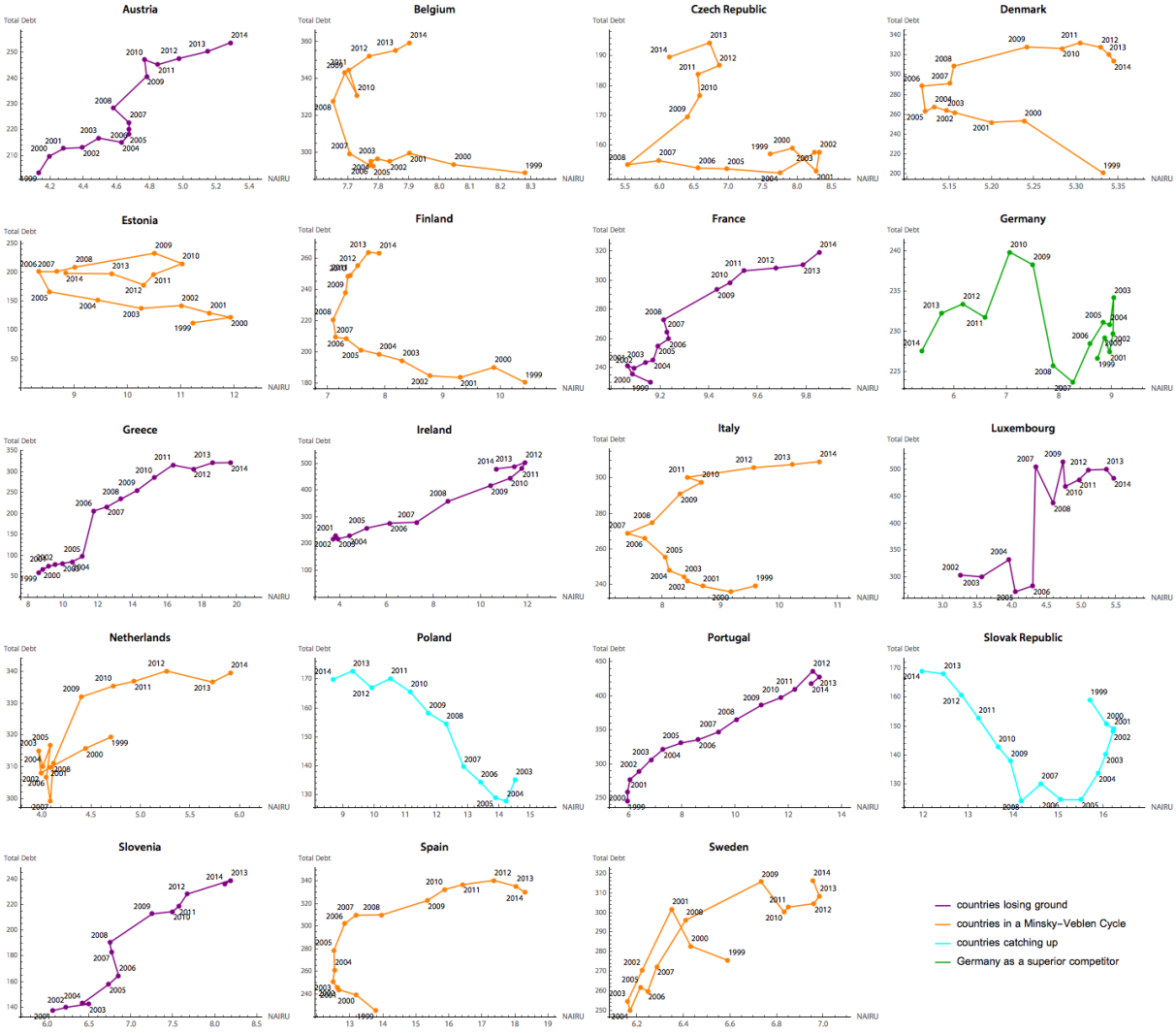
4. Model performativity and debt trajectories in Europe: The self-defeating nature of the Stability and Growth Pact

While the performative impact of the political application of the EC's PO model was rather uniform across countries in pre-crisis years – reinforcing optimism only to slightly varying degrees across countries, largely independent of a country's specific growth model –, this tide turned rather quickly in the post-crisis period. In the aftermath of the GFC, countries focusing on compensating deficiencies in domestic demand via the export side faced mainly financial risks and were continually granted comparably positive assessments of their real economic development (Storm & Naastepad, 2015a, 2015b). However, those European countries that in the pre-crisis years had relied on increases in private and public sector debt to increase spending and thereby accumulated large current account deficits, were confronted with a much more intense economic downturn and a reversal of their developmental trajectories in close correspondence with the extent of their private and public sector debt overhang. The application of the PO model has amplified this structural divergence between export-led creditor-countries and (overly) indebted countries by providing political and fiscal leeway to those already successful, while delegitimizing and shackling already stressed periphery countries via model-induced deteriorations in 'structural unemployment' (NAIRU), PO and structural deficits.

In exploring this argument in more depth, we first provide an empirical analysis of the development paths of individual economies in a plane constructed out of national time-series for the NAIRU and the sum of private and public sector debt in % of GDP (Figure 1) in order to assess the intensity of structural polarization in Europe. As a first step to making sense of the information contained in Figure 1, we suggest focusing on the developmental trajectories of individual countries. In doing so, four basic types emerge: (a) countries experiencing a rough non-linearity in their developmental path when the GFC hit, resembling the structure of a 'Minsky-Veblen Cycle' (Kapeller & Schütz, 2014); (b) countries, which are – either very slowly or rather rapidly – 'losing ground', as debt-levels and NAIRU estimates rise simultaneously; (c) countries with rising debt levels, but a decreasing NAIRU, which are 'catching up' to the EZ's core countries; and (d) a single country – Germany – exhibiting both decreasing levels of debt and a falling NAIRU,

thereby signifying Germany's position as the powerful 'victor' in the European race for competitiveness (Simonazzi et al., 2013; Storm, Naastepad, 2015b).

Figure 1: Four different patterns in country-specific trajectories on a NAIRU-Debt plane



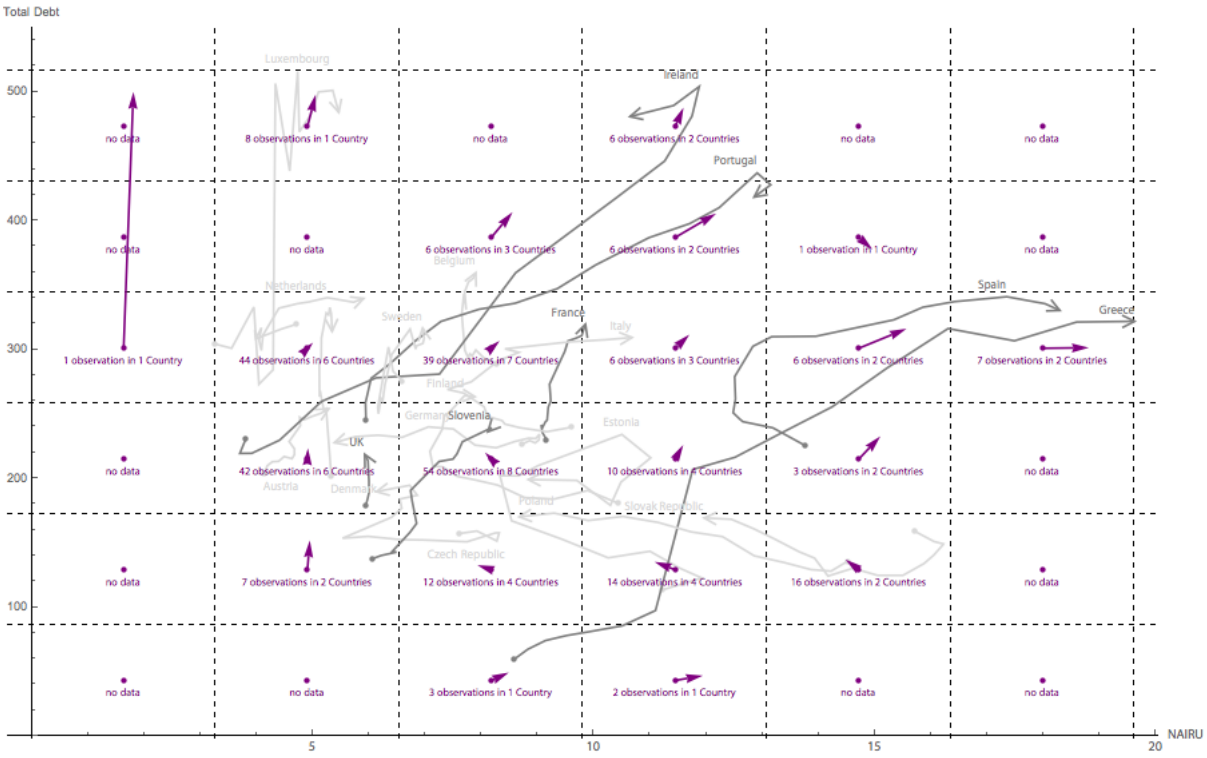
Data: AMECO (November 2015); authors' calculations.

While this approach supplies us with an overview on the individual countries' developmental trajectories that are reinforced by the EC's model, a major disadvantage of this perspective is that it hardly allows for synthesizing data and interpretation across countries. In order to remedy this fact, we provide an aggregate NAIRU-debt plane for 19 EU countries, including 15 EZ countries. Figure 2 is based on a simple aggregation of all time-series provided in Figure 1. Its main feature is that it separates the whole plane into grids and thereby calculates the average movement per period within the respective grid and plots these averages as arrows. This setup is inspired by the complexity economics approach developed in Cristelli et al. (2015), who argue that a

vector-like representation in a plane such as ours allows for a better understanding of the complex trajectories of different countries.

Dividing the NAIRU-debt plane into grids not only allows for visualizing average dynamics within a pooled set of countries, but also for assessing the relative strength of diverging moves within more densely populated areas, i.e. grids characterized by many observations: while for a certain, more extreme, range of NAIRU-debt values clear patterns emerge, in more densely populated areas the dynamics across countries tend to level each other out. In order to stress the performative role of the PO model, we also printed the trajectories of all those countries in emphasis where the European Commission has opened an 'excessive deficit procedure' in the aftermath of the GFC, which could not be resolved till today. Regarding the sensitivity of the results in the NAIRU-debt plane, we find that they are robust with respect to variations in the number of grids applied.

Figure 2: Europe on a NAIRU-Debt plane: An aggregate view



Data: AMECO (November 2015); authors' calculations.

In this bird's-eye view on developmental trajectories in Europe, several areas with distinct properties emerge from Figure 2, which roughly resemble the individual

trajectories depicted in Figure 1. First, there is a small group of highly financialized countries (Luxembourg, Netherlands and Ireland) with high debt-levels and varying NAIRU estimates. Second, there is a slightly larger group of countries where the NAIRU is estimated to be high, while the burden of indebtedness is also enormous (Greece, Portugal, SPain as well as, less pronounced, France and Italy). These countries seem to have fallen into an austerity-trap from which there is no clear way out. The ongoing deleveraging in the private and/or public sector leads these countries ever deeper into debt-deflationary territory (e.g. Koo, 2013; Mastromatteo & Rossi, 2015), from which the EC's pro-cyclical PO estimates make it nearly impossible to escape, because the model's implicit imperative in a prolonged crisis is simply more fiscal austerity. Third, there is a densely populated middle area, where the trajectories of individual countries largely cancel each other out. The only exception is a small 'path of hope' exemplified by Poland, Slovakia and (partially) the Czech republic, signaling the possibility that an increase in debt might allow for a sustainable catch-up process – but only for those countries starting with rather low levels of total debt.

While there are not too many data points underlying the pattern exhibited by the second group, consisting of countries in an austerity-trap, these observations are still of high economic and political significance as the main questions – how to bring them back into the game and how to reset their developmental trajectories – remain unanswered by current policy approaches. Quite on the contrary, the policy tools currently in place further reinforce the underlying divergence, as the EC's PO model provides no escape route from a debt-deflationary path that causes countries to move further into the (upper) right 'grids of despair' in the NAIRU-debt plane (Figure 2).

These countries are caught in self-defeating debt-deflation since the European regulatory innovations introduced in the aftermath of the GFC place strong restrictions on their political and fiscal leeway. In this context, Figure 2 also indicates that most of the countries in the upper right part of the NAIRU-debt plane are under direct disciplinary supervision regarding their debt outlooks. This means that according to the prevailing rules in the corrective arm of the SGP, they are legally obliged to bring down 'excessive structural deficits'. Hence, countries in an ongoing 'excessive deficit procedure' are only granted limited financial autonomy, which undermines the introduction of alternative policies ensuring a more sustainable economic development.

5. Conclusions

This paper argues that the EC's model for estimating NAIRU and PO has contributed powerfully to shaping macroeconomic developments and fiscal policy-making in Europe, with particular focus on the euro area's economies during 1999-2014. Our arguments fill a gap in the performativity literature, which has so far mostly neglected the role of macroeconomic models in economic policy-making.

By providing ever more pro-cyclical downward revisions of PO estimates as well as correspondingly higher numbers on 'excessive structural deficits' in times of crisis, the PO model translates an econometric problem (the 'end-point bias' in calculating NAIRU and TFP by means of Kalman-filtering) into political momentum ('We have previously overestimated the 'structural health' of the economies in the EZ periphery; hence, they now have to implement drastic austerity measures'). Accordingly, the NAIRU and PO model also contributes to lopsided attributions of 'blame' for the dire macroeconomic developments in Europe (e.g. Varoufakis, 2015).

From a Polanyian perspective, the potential output model serves as a tool for enforcing economic policy prescriptions along the ideological lines of economic liberalism. By prioritizing the policy goals of balancing national finances, achieving low and stable inflation and increasing price competitiveness against alternative goals such as full employment, a balanced current account position or a more equal distribution of income and wealth, the model serves to politically engineer market-based solutions and a strengthened competition regime within the European Union.

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