The power of economic models: The case of the EU's fiscal regulation framework

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Abstract

This paper is concerned with the impact of economic ideas on political processes and decision-making. We argue that economic models can serve as a transmission device between economic paradigms and policy programs, which allows actors drawing on the model to exercise power in decision-making. We illustrate this argument by focusing on the European Commission's 'potential output' model, which represents a core pillar of EU fiscal governance as it provides estimates of 'structural deficits' for evaluating fiscal policies. We combine an analysis of the history and content of the model at stake with insights derived from policy documents, legal provisions, speeches and interviews. Our findings imply that economic models (1) allow for exerting power only under specific conditions; (2) align paradigmatic priors with policy proposals; (3) may constitute mutual feedback loops where political decisions are coined by technicalities and, as a consequence, seemingly innocent technical assumptions become objects of political demands.

Keywords: Economics, economic sociology, economic methodology, governance, institutions, public finance.

JEL codes: B41 (Economic Methodology), E61 (Policy Objectives; Policy Designs and Consistency; Policy Coordination), E62 (Fiscal Policy).

1. Introduction

Analyzing the interplay between ideas of economists, actual policies and economic outcomes has an illustrious history political economy research. Ludwig von Mises (1940, p. 744) already argued that disputes about social order are eventually resolved by arguments about economic theory. Similarly, Keynes famously posited: "ideas of economists and political philosophers […] are more powerful than is commonly understood. Indeed, the world is ruled by little else." (Keynes 1936, p. 383-384) Relationships between economic ideas, policies and society have been widely studied. A stream in the political economy literature has treated ideas as central objects of investigation (e.g. Hall 1993; Blyth 2003; Hirschman, Popp Berman 2014; Ban 2016). Past studies on the impact of economic models as formalized ideas have mostly focused on microeconomic contexts and financial markets (e.g. MacKenzie 2006; MacKenzie 2011; Svetlova 2012) and have understood models akin to ideas, metaphors and concepts, which provide a general vision suitable for guiding the design of specific institutions. Furthermore, the role of economic models as "devices used by actors to induce policy change" (Henriksen 2013, p. 481) has recently been studied in various contexts, including the International Monetary Fund's positional changes regarding the effects of capital controls (Gallagher 2015) and fiscal policy measures (Ban 2015) as well as expert consultation on shadow banking (Ban et al. 2016). Against this backdrop, the criticism that political economists suffer from "econophobia" (Watson 2014) is arguably an exaggeration. Nevertheless, most of the existing literature on economic ideas and their influence on politics and policy programs has been conducted at the level of abstract theories instead of at the level of more specific economic models that are used by economists working in policy-making institutions (e.g. Hall 1993; Anderson 2008; Lindvall 2009). As a consequence, scholars have largely avoided in-depth analyses of how technical details in economic models matter for political processes. This lack of technical scrutiny, however, leaves under-examined the role of these models as prime devices in policy-making (e.g. Henriksen 2013; Watson 2014; Braun 2016). This criticism is arguably most relevant when looking at the role of complex macroeconomic models, which do not only influence specific policy outcomes, but are important tools in the more general "quest for governability" (Braun 2014, p. 52).

Guided by the aim to illuminate the importance of the "arcane nuances" (Braun 2014, p. 70) arising from the introduction of economic models into the political process, this paper contributes to closing existing gaps in the literature by studying how economic models affect political processes and decision-making. By extending the framework developed in Campbell (1998), we propose a new approach for theorizing how models matter for policy-making. We introduce economic models as conceptual transmission devices between economic paradigms and political programs. In this view models are potential carriers for certain political convictions and, hence, allow actors drawing on such models to exert power in political decision-making under certain conditions. Based on this theoretical perspective, we provide an in-depth case study on fiscal policy in the EU analyzing the European Commission's 'potential output model' – henceforth: PO-model –, which is the core technical backbone of fiscal policy coordination in the EU's fiscal regulation framework (Havik et al. 2014; Tereanu et al. 2014; Costantini 2017). The PO-model is of special political significance, as the use of the model's estimations by policy-makers has been shown to have a strong imprint on the scope of democratic fiscal policy-making in individual EU member states (Klär 2013; Truger 2015; Heimberger and Kapeller 2017).

The Commission employs the PO-model for estimating the 'output gap' – the difference between actual output (Gross Domestic Product, in short: GDP) and a hypothetical, model-based 'potential output' –, where the output gap is interpreted as an indicator for the cyclical position of an economy. Output gap estimates strongly guide the Commission's judgments on how much of the actual fiscal deficit (or surplus) in a particular EU country is 'structural' in the sense that it is not attributable to the effect of cyclical swings in the economy on government spending and revenues.[1] The EU's fiscal regulation framework provides us with an ideal opportunity to study the role of macroeconomic models as policy tools, because the Stability and Growth Pact as well as the Fiscal Compact explicitly assign a legal basis to the application of the Commission's PO-model. In this context model estimates are used for evaluating and supervising member states' fiscal performance and underlie the Commission's recommendations related to medium-term budgetary objectives (EC 2013; EC 2019). In practice, this setup implies that model-based estimates of the 'structural' deficit feed directly into

[1] To arrive at the structural budget balance, the European Commission corrects the headline fiscal balance for the so-called cyclical component and for budgetary one-off effects (see Heimberger and Kapeller 2017, p. 909-910).

policy: when the estimate of the structural deficit is high(er), the fiscal scope of member countries is (more) constrained, as the countries concerned are obliged to adapt to tighter fiscal constraints (Klär 2013; Heimberger, Kapeller 2017). In studying this exceptional macroeconomic model, which is tailor-made for the specific purpose of fiscal policy-making in Europe, we deepen our understanding of the role played by economic models in the political process. In doing so, we complement the recently emerging literature on how economic ideas shape fiscal policy-making (e.g. Blyth 2013; Braun 2014; Dellepiane-Avellaneda 2015; Helgadottir 2016; Matthijs 2016; Van Esch, Princen 2016; Haffert 2019; Carstensen and Matthijs 2018; Bremer and McDaniel 2019), as much of this literature has neglected the analysis of seemingly technical but politically important details of macroeconomic models used in policy-making.

After providing the theoretical foundations in the following section, we offer an introduction to our empirical approach in section 3, before turning to core aspects of the history and composition of the PO-model in sections 4 and 5. Section 6 presents empirical results regarding the causal mechanisms through which actors use the PO-model to wield power in fiscal governance processes, and section 7 provides an analysis about media reports on the role of the model. Section 8 concludes our argument.

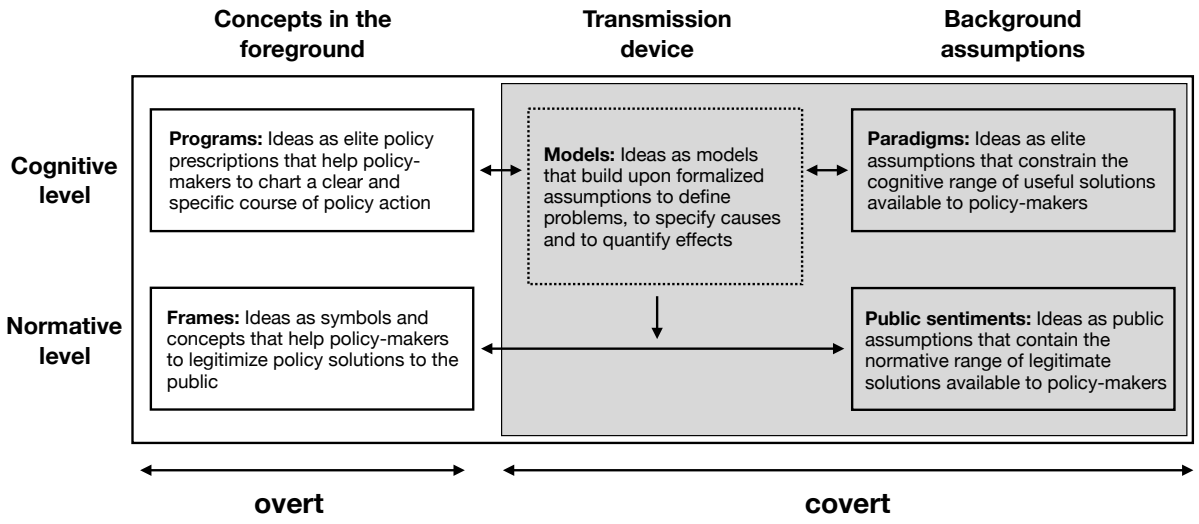
2. Theoretical framework: Types of ideas and devices of transmission

Campbell (1998) blended historical with organizational institutionalism by categorizing four different types of ideas – namely *programs*, *paradigms*, *frames* and *public sentiments.* Thereby, *paradigms* are understood as a framework for structuring and solving puzzles (Kuhn 1962) while *programs* refer to professional ideas that prescribe a specific course of policy action (Campbell 1998, p. 386). These two types operate on a "cognitive" level; they can be conceived as analytical tools. F*rames* and *public sentiments,* in contrast, are important on a symbolic or "normative" level, which generally consists of assertions regarding values and attitudes. Specifically, *public sentiments* refer to general attitudes "about what is desirable or not" (Campbell 1998, p. 392), while *frames* consist of symbols and immediately understandable concepts that provide mental shortcuts to some desired outcome or solution (Lakoff, Johnson 2008).

Figure 1 is based on the original dimensions in Campbell (1998), summarizing role and purpose of several types of ideas. In order to better incorporate the role of economic models in the analysis, we extend Campbell's framework by locating economic models as a transmission device for translating paradigmatic assumptions into political actions, which is mostly concealed from the public discourse. In doing so, we assert that models mediate between economic paradigms and policy programs by providing simplified representations of complex economic processes, which specify causes and quantify effects, and by highlighting the impact of certain variables while downplaying the importance of others. Thereby, an economic model reflects the underlying paradigm in a way that makes it possible to operationalize the paradigm for specific policy programs.

Furthermore, we argue that some aspects of this mediation between paradigms and policies also affect the normative level: the model's focus on specific relationships (e.g. between labor market flexibility and economic output); its ability to provide politically relevant statistical estimates (e.g. for the 'structural rate of unemployment', the 'output gap' and the 'structural deficit', respectively); and the model's "professional authority" (Hirschman and Popp Berman 2014, p. 790-792) and seemingly neutral stance in contested policy contexts (e.g. evaluating economic and fiscal performance across EU member countries) – all these aspects may trickle down to the normative level. In this context, models may also have an impact on the relationship between frames and public sentiments, e.g. by influencing public discourse (e.g. De Ville and Siles-Brügge 2015) or by providing legitimacy to specific actors or policies (e.g. Schmidt 2013). Figure 1 summarizes this description of models as core mediators between paradigmatic assumptions and political programs, which may eventually also influence Campbell's normative level. While the focus in the rest of our study will be on analyzing the role of economic models on the cognitive level, future research could also focus on analyzing under which conditions technical assumptions in economic models can affect the normative level in terms of frames and public sentiments.

Figure 1: Role of ideas in political economy, extension of Campbell's (1998) framework. Authors' illustration.

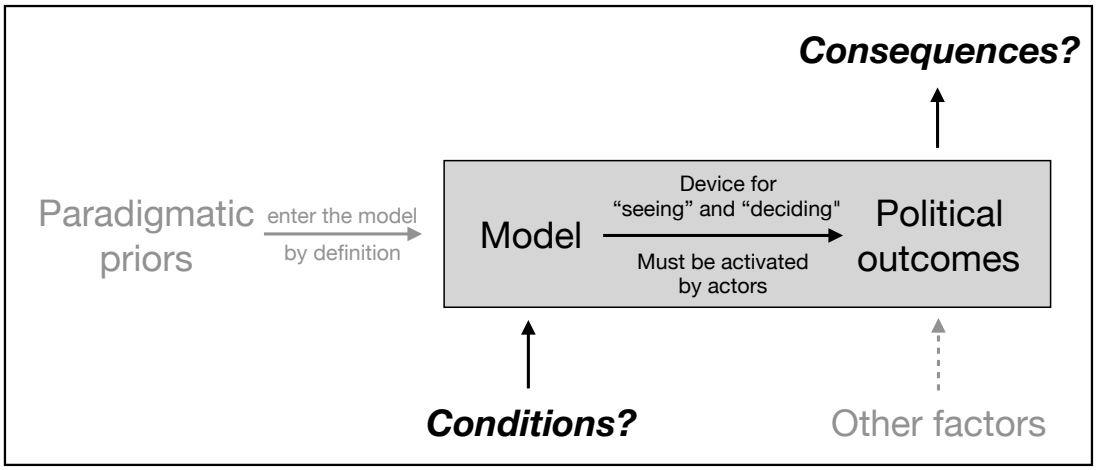


By inspecting the issue of fiscal policy coordination in Europe, this paper will put some flesh on the theoretical bones in Figure 1. First, the Stability and Growth Pact and the corresponding PO-model are rooted in neoclassical economics. Second, the fiscal consolidation programs announced in the aftermath of the financial crisis received a considerable amount of attention and serve as examples for clear-cut programs at the foreground of political discourse (e.g. Blyth, 2013). In our case study, we show that by delivering a benchmark for the fiscal performance of EU member countries, the PO-model plays an essential role for transmitting vague economic convictions into specific policy proposals.

While, in principle, all economic models *can* serve as abstract transmission devices between economic paradigms and policy programs, for a specific model to actually become a tool used for „seeing and deciding" in policy-contexts (Hirschman and Popp Berman 2014, p. 779), additional conditions seem to be relevant. For instance, Hirschman and Popp Berman (2014) emphasize the ability of economists to frame policy questions as essentially technical issues, because such technical specificities call for the economists' "professional authority" (Hirschman and Popp Berman (2014), p. 790). In this spirit, our case study on the potential output model tries to excavate the conditions that render the PO-model

an exceptionally powerful device as well as the consequences that emerge from its use in the political process (cf. Figure 2).

Figure 2: Causal factors surrounding the power of economic models.



3. Research field and methodology

Our research relates to fiscal policy-making in the EU, which, for the purpose of this study, can be divided into four pillars, each representing a unique perspective on the challenge of cycle-sensitive budgeting. First, the Commission hosts the Directorate General for Economic and Financial Affairs (DG ECFIN), which uses PO-model estimates to provide assessments of the 'structural' budget situation of EU member countries and their fiscal effort within the European Semester (e.g. EC 2019). Second, representatives of the member states in the Council for Economic and Monetary Affairs (ECOFIN) and its subcommittees such as the Economic and Financial Committee (EFC) make policy decisions based on estimates of the PO-model.[2] Third, public discourse could potentially be affected by the introduction of the PO-model, although it remains ex-ante unclear how such a transmission should unfold. Finally, technical experts, mostly economists specialized in statistical modeling, develop, maintain and update the PO-model. Their focal meeting point is the Output Gaps Working Group (OGWG), in which technical issues on the PO-model are discussed among the Commission's technical experts and delegates of EU member countries. The OGWG usually meets four times a year

[2] See Braun and Hübner (2019) for a more comprehensive summary of the organization and decision-making process in EU fiscal governance.

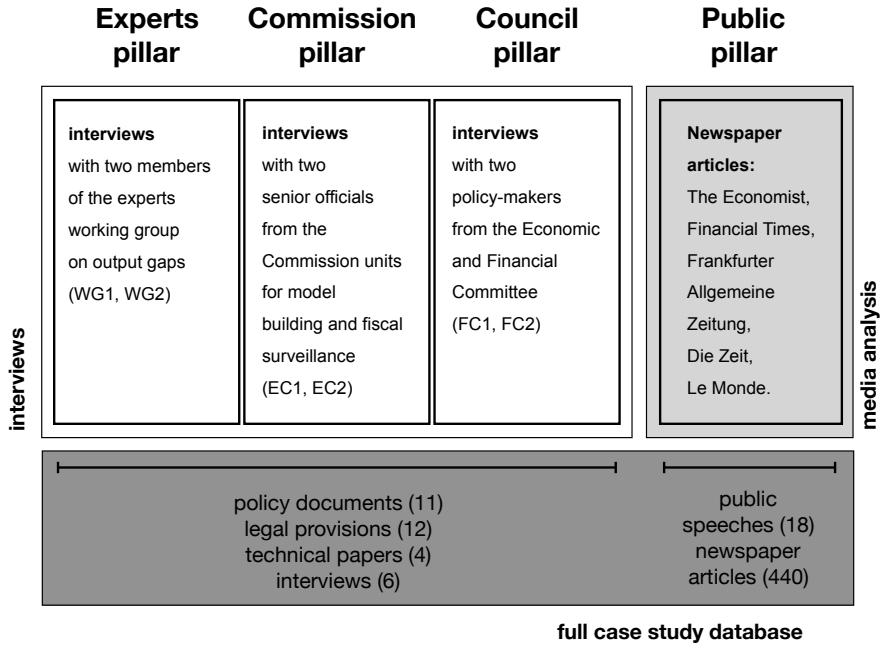
and consists of delegations from Member States, usually 2-3 medium-ranked econometricians and statisticians from ministries of finance or national banks, representatives from the DG ECFIN and guests from European Central Bank (ECB), Organisation for Economic Co-operation and Development (OECD) and International Monetary Fund (IMF). The main difference between the OGWG and the EFC, to which it actually reports, is the level of technical expertise: interviewee FC1 estimates that one third of the EFC members *"once upon a time has understood whereof the talk is"* whereas the rest *"never has understood it"* due to differences in educational and professional background.

To address these diverse fields of engagement with the PO-model and its corresponding estimates, we choose a mixed-methodology approach, grouping our sources around the PO-model. The design of our case-study thereby relies on an understanding of the PO-model as an 'extreme case' (Flyvberg 2006, p. 230, Seawright, Gerring 2008, p. 297): the PO-model is a model of exceptional political importance due to its institutionalization within the EU's fiscal regulation framework (e.g. Klär 2013; Heimberger and Kapeller 2017). We study this case by "explaining outcome process-tracing" (Beach and Pedersen 2016, p. 309), as we trace how the actors that draw on the PO-model rely on causal mechanisms for mapping paradigmatic priors onto political action, which allows us to gain a clear understanding of the conditions and consequences associated with the power of economic models. Hence, our study on the role of the PO-model in EU fiscal policy-making can be read as a "theory-centric" work focused on complementing past accounts on the political power of economic ideas (e.g. Hall 1993; Campbell 1998), as well as a "case-centric" contribution, which examines a case of specific historical importance (Beach and Pedersen 2016, p. 305).

As our methodological focus is really on the case of the PO-model as such, generalizations of our findings to other economic models should not be drawn light-heartedly as they will mostly require additional qualifications. However, the results of this study can hopefully facilitate the identification of similar cases of powerful economic models by explicating some of the conditions that make the PO-model such an exceptional case.

To get a better understanding of how the PO-model feeds into the political process, we relied mainly on studying legal and policy documents as well as technical publications and speeches. These readings were complemented by a replication of the Commission's PO-model to allow for computational experiments, i.e. the simulation of different scenarios within the model framework applied by the Commission. Finally, we also conducted six qualitative expert interviews with high-level representatives from European institutions to further validate our understanding of the reception of the model-outputs by policy-makers as well as administrative staff (see Figure 3).[3] A full list of our data sources is available in an accompanying appendix.

Figure 3: Research methodology consisting of four pillars. Authors' illustration.



While four interviewees represented European institutions, two others were affiliated with perspectives of individual member states. In terms of nationality, interviewees come from Austria, Finland, Ireland, Italy and Spain. In terms of education, all interviewees hold academic degrees in economics and/or statistics. Interviews were conducted face-to-face or via telephone during 2016,

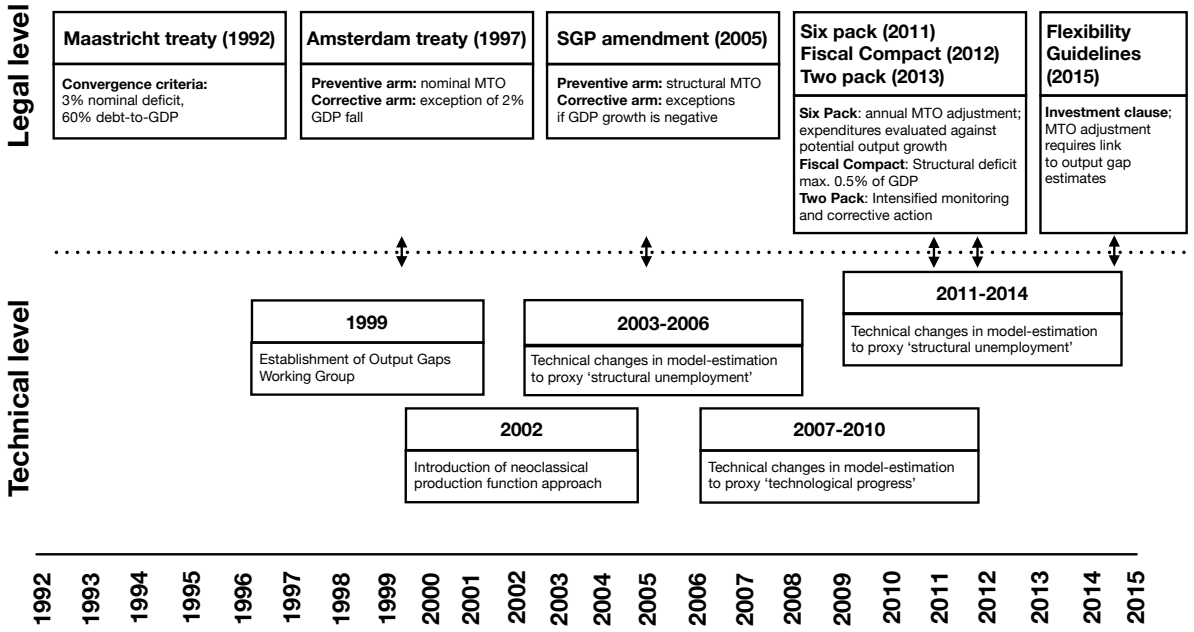
[3] See Schulz (2019) for a recent survey of the literature on EU economic governance, including a discussion on the empirical strategies used in the relevant studies, which often also use expert interviews and document analysis.

recorded, transcribed and evaluated by means of topical grouping (Kohlbacher 2006). Expert interviews helped us to better contextualize our document-based analysis by gaining information on the actual practices and discussions around the PO-model.

4. The structural deficit and the Stability and Growth Pact: A short history

While economic indicators such as 'potential output' or the 'structural deficit' had already been estimated in the 1990s, their practical importance for economic policy design in the EU has greatly increased in the aftermath of the financial crisis. In what follows, we illustrate the institutional emergence of the potential output approach for calculating structural deficits against the backdrop of the evolution of the EU's fiscal regulation framework (see Figure 4).

Figure 4: Development of the EU's fiscal regulation framework on legal and technical level (1992-2015). Authors' illustration.



In 1992, the Maastricht Treaty laid the foundations for what should later become the Stability and Growth Pact. Specifically, it introduced convergence criteria stipulating nominal reference values for the fiscal deficit (3% of GDP) and public debt (60% of GDP). Higher deficits were regarded as acceptable whenever they were judged to be exceptional and temporary, but the Maastricht Treaty did not include any explicit criteria for assessing the economic cycle. Hence, the political management of the business cycle was mainly an informal issue as the – already available – *structural indicators* were associated with "severe methodological and measurement problems" (EMI 1995, p. 22) and, hence, were judged to be inadequate for informing economic policy-making. In 1997, the introduction of the Stability and Growth Pact tightened this regime by recording that "budgetary positions close to balance or in surplus will allow all Member States to deal with normal cyclical fluctuations while keeping the government deficit within the reference value of 3% of GDP" (Council Resolution 1997, OJ C 236). The resolution introduced the so-called *preventive arm* and the associated medium-term budgetary objectives for member states (MTO) as well as the *corrective arm* including the excessive deficit procedure (EDP). The EDP is supposed to ensure that Member States take fiscal policy measures to correct 'excessive' fiscal deficits, and it puts special disciplinary scrutiny on the budgetary decisions of countries in an ongoing procedure. To maintain fiscal discipline, the Stability and Growth Pact (SGP) allows for imposing financial fines on non-compliant countries (e.g. EC 2013), and this threat of potential enforcement is supposed to strengthen compliance with existing rules.

In 1999, the ECOFIN Council established the Output Gaps Working Group as an ad-hoc expert council dedicated to developing new methodologies for determining what is 'structural' about the headline fiscal deficit. This working group issued its first internal report in 2001 and published a first technical paper in the following year (Denis et al. 2002), clearly opting for a neoclassical production function approach to replace existing routines based on purely statistical filtering methods. Finance ministers adopted the proposal and welcomed the Commission's approach, which effectively overturned past skepticism on model-based indicators for assessing the cyclical position of domestic economies. Since 2002, the Output Gaps Working Group has refined and modified the methodology

(see Figure 4), with changes being summarized in special reports (Denis et al. 2002; Denis et al. 2006, D'Auria et al. 2010; Havik et al. 2014).

Between 2001 and 2005, the political discourse on the Stability and Growth Pact was coined by Germany's and France's breach of deficit criteria. The debate on the appropriateness of the 3% limit in times of economic turmoil triggered major revisions of the Stability and Growth Pact: in autumn 2003, France and Germany blocked a strict implementation of the SGP by rejecting a recommendation from the European Commission, which had requested additional fiscal adjustment efforts. After the excessive deficit procedure was put on hold, the European Commission decided not to simply accept noncompliance with the SGP, but presented a new communication calling for the implementation of medium-term budgetary targets and for the consideration of additional economic factors when assessing the fiscal situation in member countries. The ultimate goal of the Commission was to improve the enforcement of fiscal rules, i.e. to make sure that countries such as Germany and France would not be able to escape from being sanctioned in the future. In practice, the SGP reform amounted to a shift away from nominal reference values (cf. Fischer et al. 2006, p. 6-8) towards model-based estimates ('structural deficits'), and these steps were initially triggered by the fiscal calamities experienced by the two major political powers in Europe, namely France and Germany. As a reaction, the Commission aimed for greater capabilities for enforcement, which eventually boosted the practical importance of model-based estimates. As interviewee FC2 points out, the move towards model-based assessments of the fiscal balance aimed at resolving political conflicts by referring to a technical instrument devised by experts, which comes with its own challenges and difficulties: *"For economists, the 'structural deficit' is understandable. In their models it's actually very well defined. But in the real world it is not only unmeasurable; it is also undefined. We are not sure what we mean by the concept."*

This change in attitude towards cyclically-adjusted budget indicators became visible when a limit of 1% of GDP on 'structural deficits' was introduced in 2005 to account for "the diversity of economic and budgetary positions and developments" and "allow room for budgetary maneuver, considering in particular the needs for public investment" (Council Regulation 1055/2005). After the SGP reform in

2005, references to the 'structural deficit' also became more prominent in the legal framework (Larch and Turrini 2009). This change constituted a delicate and contested issue right from the beginning. For instance, interviewee FC1 recalls that the ministers regarded structural budget measures as *"much better, but unfortunately not directly observable"*, while FC2, who views the reform as a *"disservice",* also emphasized that it *"opened the door (...) towards unobserved variables"*.

The global financial crisis and the ensuing public debt crisis pushed fiscal policy into a new era: in times of enforced fiscal tightening, the structural deficit has become more important for enforcing budgetary discipline. Major legislative packages strengthened model-based estimates relative to observable budgetary criteria: the Six-Pack-Legislation of 2011 committed member states to achieving annual improvements of the structural balance by 0.5% of GDP whenever they failed to meet their medium-term budgetary objective. The expenditure rule implies that growth in public expenditures must not exceed growth in potential output. Furthermore, the Fiscal Compact introduced in 2012 effectively restricted the annual structural deficit to 0.5% of GDP. The contracting member states agreed to implement a correction mechanism ("debt brake") at the national level. Finally, the Two-Pack-Legislation further intensified surveillance from 2013 onwards (e.g. EC 2013).

However, policymakers in Brussels remain ambivalent regarding how they assess the fiscal framework: while some governments demand additional discretionary room against the background of *"objective and subjective difficulties with calculating structural deficits"* (FC1) and the *"general feeling that [the] structural deficit is far too fragile to rely on"* (FC2), the Commission's experts argue that the established methodology is much more reliable than commonly believed (McMorrow et al. 2015; Buti et al. 2019). In other words, the assessment of the performance of the structural deficit derived from the underlying PO-model has become a politically contested issue.

To summarize, model-based 'structural deficit' indicators were mostly rejected as inadequate throughout the 1990s. From 1999 onwards, they have gained importance: first, while the reform of the Stability and Growth Pact in 2005 added significantly to the importance of the structural deficit as a major control indicator, subsequent reforms since the financial crisis have further strengthened its role.

As a consequence, the structural deficit has become a prime object of concern in EU economic policy conflicts. Partly because of this development, the Commission and the Council have loosened rigidities related to the 'structural deficit' to some extent in 2014 by introducing so-called 'flexibility clauses' in the SGP (EC 2015). Nevertheless, the structural deficit derived from the PO-model plays a powerful role; if it is taken as the *"sole indicator for success and failure, [it] becomes politically explosive due to the dissonance and complexity of the output gap evaluation"*, as FC1 admits.

5. The machine room: Historical and technical aspects of the potential output model

We continue by focusing on how the PO-model actually produces the estimates relevant for policy-making. We first give a brief history of 'cycle-sensitive' budgeting to raise awareness about how this classical theme has been received by economists and policy-makers. In a second step, we aim to illuminate the inner workings of the Commission's PO-model to identify its underlying political and conceptual priors as well as the technical properties that eventually feed back into the policy process.

5.1 At the gates: The European conception of cycle-sensitive budgeting

The traditional concept of cycle-sensitive budgeting is to adapt the public sector's fiscal balance to the cyclical conditions of an economy. Expansionary fiscal policies in crisis times should be combined with contractionary fiscal policies in economically beneficial times, allowing for policy-mitigation of the ups and downs of the business cycle (e.g. Carnot, de Castro 2015). A variety of different general strategies and specific methodologies exist when it comes to performing cyclical adjustments of fiscal variables, as illustrated by Table 1.

Table 1: Different approaches to cycle-sensitive budgeting.

Depth of strategic decision (Hall 1993)	**Road taken by the Commission after 2002**	**Possible alternatives**
Main goals	Supply-side-oriented	Demand-side-oriented
Preferred instruments	Cyclically-adjusted budget balance (CAB)	Plurality of indices (e.g. Blanchard 1990)
Operative applications	Theory-based production function approach	Purely statistical approach (e.g. European Commission until 2002)

The origins of cycle-sensitive budgeting lie in a Keynesian approach to fiscal policy. The concept was first proposed by Gunnar Myrdal, who wanted to allow the Swedish government to balance the budget over the entire business cycle, which was supposed to promote a fiscal policy capable of smoothening cyclical swings in the economy (see Costantini 2018, p. 86). The concept of cycle-sensitive budgeting gained importance when it was incorporated into fiscal programs in the New Deal era of the 1940s, where it helped popularize Keynesian thinking. In this original sense, cycle-sensitive budgeting was tailored to contribute to the engineering of full employment, and the corresponding 'High-Employment-Budgets' were built upon politically agreed target levels of unemployment. Tax rates and public expenditures were set to yield small surpluses if the target was reached, so that automatic stabilizers (e.g. unemployment benefits, income taxes) would lead to deliberate deficits if the target unemployment rate was surpassed (Costantini 2015). In politics, this Keynesian budgeting-approach was eventually pushed aside by 'Reagonomics' (Campbell 1998). In economic theory, neoclassical macroeconomics put forward the central proposition about the ineffectiveness of expansionary fiscal policies (Lucas 1975), which implied a focus on controlling inflation rather than employment. In Hall's (1993) terminology, this move towards emphasizing inflation and deficits represented a major ("third order") change in the goals of economic policy.

Cycle-sensitive budgeting, as employed by the European Commission, focuses on the cyclically-adjusted balance (CAB) as a core performance indicator. The CAB is calculated by means of the PO-

model and represents a hypothetical budget balance that would materialize if all cyclical fluctuations were absent (and, hence, potential output would equal actual output). Interestingly, Blanchard (1990) argued that the cyclically-adjusted balance (CAB) is the most deficient choice for relating the cyclical position of an economy to its budgetary performance. Instead of focusing on the CAB or any other single indicator, he proposed considering a plurality of indices – for each purpose at least one involving only current data and one involving forecasts. Although Blanchard can safely be considered one of the most influential macroeconomists of our time, international institutions such as the Commission, OECD, IMF or ECB mostly ignored his proposal to broaden the acceptable set of instruments for fiscal surveillance (Larch and Turrini 2009, p. 6). In stark contrast, we have witnessed a further increase in the importance of structural indicators based on the concept of potential output and the cyclically-adjusted balance, for which many major international organizations (ECB, OECD, IMF…) provide in-house estimates (e.g. McMorrow et al. 2015).

In the year 2002, the EU finally switched from a purely statistical de-trending to theory-based approaches of estimating the structural deficit, leading to the Commission's current methodology, which builds upon neoclassical theoretical priors about the inner workings of an economy and applies statistical de-trending only at the level of (sub-)factors of production (Heimberger, Kapeller 2017). In doing so, the European Commission's approach to cycle-sensitive budgeting has assigned a greater weight to paradigmatic priors in economic policy-making on which theory-based approaches to estimating potential output naturally rest. In what follows, we explore this current practice more closely to identify the major transmission belts between paradigmatic priors and final policy recommendations.

5.2 Inside the machine room: The Commission's potential output approach

How much of the actual fiscal deficit (or surplus) in a particular EU country is 'structural' in the sense that it is not attributable to cyclical swings in the economy? The current Commission approach used to answer this question is described in technical publications (Havik et al. 2014; Mourre et al. 2014). The cyclically-adjusted budget balance is given as the nominal headline budget balance corrected for the

effects of the business cycle.[4] The cyclical component of the budget balance is derived by multiplying the model-based output gap estimate with a sensitivity parameter (ϵ), which captures the sensitivity of the budget balance towards the output gap. The output gap is the difference between actual output and the model-based estimate of potential output (PO), expressed in percent of potential output.

The Commission's PO-model is rooted in the neoclassical paradigm, as it builds on a neoclassical production function (Cobb, Douglas 1928; Solow 1957; Havik et al. 2014).[5] Notably, the Commission models the economy exclusively from the supply-side. The model is based on the notion that economic growth emerges from competitive markets implying steady economic progress that is sometimes constrained by regulation and random deviations. Hence, the PO-model is consistent with a paradigm that addresses macroeconomic problems by looking at the supply side of an economy instead of focusing on aggregate demand (see section 6.2). Formally, potential output is estimated as a function of the production factors labor supply and capital, and a proxy-variable for technological progress.[6]

Core ideas of the neoclassical paradigm are characteristic when defining the model's subcomponents. For the calculation of the production factor labor, estimates of 'structural unemployment' are of particular importance: the higher the estimate of 'structural unemployment', the lower the contribution of the production factor labor to potential output (and vice versa). 'Structural unemployment' is proxied by a statistical estimate, the 'NAWRU', which refers to the non-accelerating wage inflation rate of unemployment. It encapsulates the proposition that any economy can be characterized by an unobservable rate of unemployment at which inflation remains stable. The Commission also relates the NAWRU to Milton Friedman's idea of a 'natural rate of unemployment', which represents 'structural unemployment' independently of all temporary and seasonal fluctuations (Friedman, 1968). As theoretical postulates such as the NAWRU are unobservable (in contrast, e.g., to the concept of the actual unemployment rate), the Commission estimates the NAWRU by using a statistical filtering model. Although the matter appears to be a technical detail, the statistical filtering model used by the

[4] In addition to correcting for cyclical effects on government revenues and spending, the Commission also accounts for one-time and temporary effects such as costs related to bailing out financial institutions (e.g. Mourre et al. 2014).
[5] Although the Cobb-Doublas-framework is indeed well established within mainstream macroeconomics, many criticisms have been put forward that challenge its theoretical foundations and empirical usage (e.g. Felipe, McCombie, 2014).
[6] Both L and K are raised to the power of their output elasticity (α and $1-\alpha$, respectively). α is set to be constant at 0.65 for all member states and all years and reflects the overall wage share of 0.63 (Footnote 5 in Havik et al, 2014:10).

Commission, a so-called Kalman-filter that has its conceptual origins in aviation, is crucial for the entire estimation-approach of structural deficits (Fioramanti, 2016; Heimberger und Kapeller 2017).[7] The basic idea behind the filtering is to take new data on unemployment and wage-inflation and feed it into the Kalman-filter model dedicated to decomposing 'trend' and 'cycle' of unemployment by statistical means. The resulting trend-component is in turn interpreted as representing the NAWRU and, hence, used as a proxy of 'structural unemployment'. NAWRU estimation constitutes a delicate procedure full of uncertain assumptions (Cerra, Saxena, 2000; Laubach 2001; Fioramanti, 2016): as a consequence, the Commission's NAWRU estimates have been heavily contested both by macroeconomic researchers and within the institutions of European policy-making, as we will see in section 6.3.[8] In the context of these debates, a specific property of the Kalman-filter approach for estimating 'structural unemployment' is of special importance: the last empirical observations have an over-proportionally strong impact on model-outcomes and, hence, the whole technique suffers from an *end-point bias* (see Heimberger and Kapeller 2017, p. 11).

Finally, the proxy for technological progress in the PO-model is derived from another neoclassical workhorse, the so-called Solow-growth residual (Solow 1957). The Solow residual, by definition, is a catchall variable for all factors contributing to changes in GDP that are not explained by changes in labor supply or capital. It therefore also includes errors and biases related to measurement, aggregation and model misspecification (Hulton 2001, p. 9). Hence, the proxy for technological progress used in the Commission's PO-model can be seen as a "measure of our ignorance" (Abramovitz 1956, p. 11).[9]

To summarize, the Commission's production-function approach, on which the calculation of 'structural deficits' is based, combines several standard neoclassical assumptions that operationalize

[7] The main routine of the Kalman-recursions is to assess the relative performance of the model vis-à-vis empirical measurements every time new data is entered (Heimberger, Kapeller 2017).

[8] While 'natural rate theory' postulates that the NAWRU can be exclusively explained by 'market rigidities' – especially by referring to employment protection legislation, minimum wages, tax wedges etc. on the labor markets –, the Commission's NAWRU estimates are indeed to a large extent driven by 'non-structural factors' related to the ups and downs of the business cycle (Heimberger et al. 2017). Nevertheless, the Commission largely sticks to the neoclassical interpretation of the NAWRU (Stockhammer 2008) by interpreting the Kalman-filter's NAWRU estimates as a good proxy for 'structural unemployment' (Orlandi 2012).

[9] Turning to the empirical separation of 'trend' and 'cycle' of technological progress, total factor productivity (based on the Solow residual) is also de-trended using a Kalman-filter, as TFP_{trend} is linked to capacity utilization. The latter is captured by the combination of observable capacity utilization in industry and two survey-based business sentiment indicators (Havik et al., 2014:59). The share of TFP that is attributable to changes in capacity utilization is deemed cyclical, the remaining part structural.

core ideas of the neoclassical paradigm in policy-making. Central components of the model – 'structural unemployment' and 'technological progress' – are unobservable, while their model-based proxies are theoretical conceptions with strong normative implications, which eventually have to be estimated by statistical filtering techniques largely unrelated to the underlying theoretical conceptions. As emphasized in section 4, the neoclassical production function approach was introduced in the early 2000s (Denis et al. 2002), but over the years the model has undergone several refinements and modifications (see Figure 4).

5.3 Model authority and political legitimacy

Crucially, the adoption and development of the PO-model by experts of the European Commission falls into a period dominated by neoclassical ideas in macroeconomics (e.g. Dobusch and Kapeller 2009) and by the supply-side paradigm in economic policy-making (e.g. Trichet 2004). The choice of the neoclassical framework of the PO-model and its subcomponents can be understood against this backdrop: indeed, it is difficult to imagine that an institution such as the European Commission could have opted against core mainstream economic ideas in the early 2000s by adopting, for example, a Keynesian approach to modeling 'structural unemployment' and 'potential output'.[10] Against the background of neoclassical paradigmatic dominance, the reliance on paradigm-compatible priors ensured that the PO-model developed by the Commission could fully rely on the "professional authority" (Hirschman and Popp Berman 2014, p. 790) associated with academic economics.

The constant struggle for legitimacy is a core tenet in the political science literature, which distinguishes between 'input' legitimacy and 'output' legitimacy as well as 'throughput' legitimacy. While input legitimacy relies on European citizens expressing their demands in the respective institutions, output legitimacy depends on whether policies work effectively for the people (e.g. Scharpf 1999). Throughput legitimacy, however, is concerned with what is going on in the 'black box' of governance processes in the space between political input and policy output (Schmidt 2013). In the

[10] Such a Keynesian approach would require that both unobservable variables follow endogenously from changes in economic activity affecting the utilization rate (e.g. Stockhammer 2008; Klär 2013), rather than being determined by 'exogenous' supply-side factors. Fontanari et al. (2019) challenge the supply-side view of potential output used by the European Commission and develop an alternative demand-led growth framework for estimating potential output.

context of our case study, throughput legitimacy involves the ideas and deliberative actions of the actors involved in the EU's fiscal policy governance processes; it is about how the fiscal policy-making process works institutionally to ensure the efficacy of EU fiscal governance, the accountability of those engaged in making fiscal policy decisions, and the transparency of the underlying processes. Hence, the PO-model can be understood as strengthening the legitimacy of the actors that use it. However, it can only provide such throughput-legitimacy to political actors, when the model itself is understood as an authoritative tool for policy-making.

We have already seen that the authority of the PO-model is strengthened by its close relation to dominant views in academic economics as well as by its legally binding role and the corresponding potential for enforcement by means of budgetary surveillance and financial sanctions. Moreover, the Commission – as the EU's core actor in surveying, coordinating and enforcing fiscal policies – is constantly questioned by member states, as limits on deficits and expenditures diminish the national governments' political autonomy. As a consequence, the Commission strives to strengthen the authority of the PO-model to eventually improve its own position in the policy-making process (e.g. Buti et al. 2019).

We argue that the PO-model's role in contributing to "throughput legitimacy" (Schmidt 2013) relies not only on expert and legal authority, but also on two additional sources: impartiality and ownership. When it comes to impartiality, the aspired "equal treatment" formally means that the same rules are applied to every member state: the PO-model is general in the sense that it is applicable to all countries under all circumstances and considered non-partisan, i.e. not favoring any specific political ideology or country. Hence, the PO-model is presented as immune towards subjective interests of particular countries. This 'impartiality' enhances the authority of the PO-model, which in turn supports the 'throughput legitimacy' in the European governance process. Once alleviated to this position, the model supplies specific results that can be framed as 'transparent' and 'objective' model-based judgments regarding how much of the fiscal deficit cannot be attributed to the business cycle. By applying the model, the Commission acts, in the words of one of our interviewees (EC1), *"very independently and impartially"*; in this vein, *"complete transparency and predictability"* are deemed

crucial for effective policy coordination (interviewee EC1). Similarly, interviewee EC2 finds that the Commission has less room for discretionary judgment than the IMF as member states would oppose such a course of action: *"They [the IMF] have a formula but then put the number that they like and think is best (...) in a sense their [output gap of] -4 is more true than our -2 for Spain. But we cannot do this, member states would shoot at us"* (EC2). The quest for achieving throughput legitimacy has consequences for the treatment of model outcomes as the Commission tries to *"keep the level of judgment to an absolute minimum"* (EC1). Model results are taken literally and – as EC1 emphasizes – they are not subjected to further reflections regarding their plausibility, let alone modifications based on discretionary country assessment. These observations clearly point to the fact that the Commission is careful not to challenge the authority of the PO-model as those working for the Commission are also the main actors drawing on its potential to exert power.

To further strengthen the authority of the PO-model, the Commission frequently frames the latter as being based on a "common methodology" or "commonly agreed method" (e.g. in interviews, in the OGWG's online self-portrait[11] or in publications such as EC 2012, Mourre et al. 2014 and Buti et al. 2019). Increasing *the national ownership of EU rules* is seen as a key measure in line with a *better enforcement mechanism* in the new governance framework envisaged in the Five President's Report (Juncker et al., 2015, p. 14). The emphasis on member states owning the methodology not only contributes to its acceptance; it also allows for rejecting methodological criticism by pointing out that the agreement was reached by all member states.

Although the claim of common ownership is formally correct, it has to be put into perspective. At the political level, one could argue that – back in the year 2005 – the relevance of model-based fiscal estimates was initially increased to make sure that countries such as France and Germany would not be able to avoid being sanctioned in the future if they were to violate the SGP's deficit rules. However, the calculation of these cyclically-adjusted deficit estimates was only slowly and marginally adapted when Southern European countries experienced a deep economic slump in the years after the start of the global financial crisis. This lopsidedness reflects existing power asymmetries within the Eurozone (e.g. between creditor- and debtor-countries; Frieden and Walter 2017). From a more practical

[11] URL: http://europa.eu/epc/output-gaps-working-group_en [last download on April 12th 2019].

perspective, it is the Commission's economic experts that develop the PO-model's foundations and necessary software applications. In doing so, the Commission sets technical standards for achieving fiscal policy coordination. Once approved, these standards are effectively conserved by the unanimity regime of the OGWG, since proposals challenging established practices have to be accepted by every EU member state. In other words: while the initial decision in the late 1990s to adopt a neoclassical approach of modeling an economy's output (from a supply-side perspective) can be understood against the background of the dominance of neoclassical ideas in macroeconomics (Dobusch and Kapeller 2009), the political unanimity requirement for choosing a different modeling approach has effectively triggered a path-dependent process, in which established neoclassical priors are difficult to challenge – and relatively marginal technical model adaptions are the most realistic way to achieving model estimates that "*work for your country*" (interviewee WG1). Eventually, the degree to which a member state actually perceives the methodology as being 'commonly owned' can be expected to vary and correlate with subjective interests of member states. In line with past observations, interviewee FC2 reports on *"very significant differences in the EFC and in the Council"* and shares the impression that these tensions imply that *"the common methodology is not widely supported or shared*". This aspect, which was also emphasized by interviewee WG1, is hardly visible in the Commission's official presentation regarding the role of the PO-model.

The throughput legitimacy provided by the PO-model in the EU's fiscal governance processes is not only a product of expert knowledge, but also contributes to rendering questions of fiscal policy choice as technical issues best left to experts (Crouch 2004). In the words of one of our interviewees from the Commission: *"Our job is to sort of simplify the whole thing and convey it in a politically [acceptable way]... if the economics is correct, then we try and persuade them that this is first of all the fair thing to do and is economically justifiable"* (EC1). This view resonates well with the argument of Hirschman and Popp Berman (2014) who argue that economic ideas and concepts become more powerful as the underlying problem is mainly understood as a technical issue.

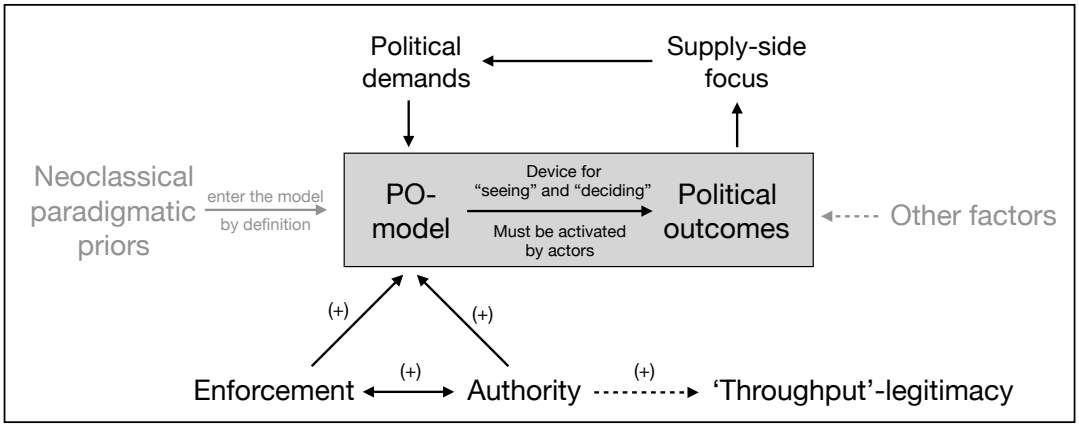
Summing up, the authority of the PO-model is supported and upheld in various ways. In turn, the authority of the PO-model feeds back on the European Commission, which draws on the model to

reach decisions on fiscal governance, and, thereby, shapes the "coordinative discourse" (Schmidt 2013, p. 17) on EU fiscal policies: as a consequence, the Commission's technical experts, who are key for protecting the model's authority as well as the only ones knowing all the ins and outs of the model (thereby acting as the 'gatekeepers' of the PO-model), find themselves in an authoritative position vis-à-vis those actors representing an EU member state.

6. Models as mediators between economic paradigms and policy programs

We continue by investigating how the PO-model can be used to exert power in political processes. Against the background of the theoretical framework introduced in section 2, Figure 5 provides an extended causal map, which summarizes a series of observations made throughout the paper. First, the PO-model is characterized by neoclassical paradigmatic priors, which enter the model by definition. Second, we have discussed two auxiliary conditions that influence how much power can be exerted by means of the PO-model. More specifically, we found that the position of the PO-model has been formally strengthened by implementing stronger (legal) enforcement as well as by supporting and upholding the model's authority. Both factors increase the model's potential power: model-based diagnoses about whether 'structural' deficits of member countries are compliant with the fiscal rules have to be enforceable and authoritative. These conditions are basically fulfilled in our case, because the model is enforced by the EU's fiscal regulation framework and its authority is supported by a variety of factors as discussed in section 5.3. In addition, the PO-model's authority is also relevant for sustaining and strengthening the throughput legitimacy of the European fiscal governance process.

Figure 5: Mapping the causal factors most relevant for the case of the PO-model



Through what mechanisms does the PO-model allow for wielding power? As soon as the PO-model is activated by the European Commission and national policy-makers in the sense that these actors negotiate fiscal policy based on the PO-model's estimates of the 'structural' deficit, the model starts to serve as a *device for seeing* as it not only suggests a coherent 'supply-side vision' of the economy, but also produces numbers that allow those involved in the EU fiscal governance process to see the world in a novel and, allegedly, more precise way. However, the PO-model also serves as a *device for deciding* as it highlights certain policy options while hiding others. These causal mechanisms bring about political outcomes. In particular, the PO-model leads to a supply-side focus, which prioritizes fiscal consolidation in conjunction with labor and product market deregulation over demand-side policies such as public investment. The empirical findings presented below allow us to substantiate the claims about how the PO-model serves as a transmission device between economic paradigms and policy programs (see section 2) and, thereby, is activated by representatives of the European Commission and of national governments to wield power over fiscal policy. In addition, Figure 5 indicates that the supply-side focus in political outcomes induced by the model creates novel political demands that aim for changes or revisions of the model-based policies implemented by the Commission.

6.1 A 'device for seeing': Transmitting paradigmatic assumptions into policy programs

The first causal mechanism of how the use of the PO-model brings about political outcomes is that it serves as a "device for seeing" (see Hirschman and Popp Berman 2014, p. 796-797) by mapping core paradigmatic assumptions onto the policy process. It implies a priority of supply-side policies, such as labor and product market reforms, over demand-side policies, such as discretionary changes in public investment or the introduction of a public employer of last resort. While the PO-model itself is categorically apt for both supply- and demand-side policy recommendations, a theoretical rationale is provided only for the former: while the PO-approach explicitly models the economy via the supply side (Havik et al. 2014), cyclical variations potentially motivating demand-side policies are introduced only as a temporary nuisance – where the assumption is that deviations from potential output are merely temporary, as market forces will quickly make the economy revert back to its full potential (Ball 2014). Furthermore, whenever the estimates of potential output are close to or below actual output, the scope for demand side policies within the EU's fiscal regulation framework is inherently constrained (Heimberger, Kapeller 2017).

The basic story behind the Commission's modeling approach is that policy-makers who want to deliver steady economic progress ought to introduce supply-side measures – labor market reforms, product market deregulation etc. – in conjunction with fiscal policy restraint, which allow for productivity growth and ensure highly competitive markets in combination with low 'structural' deficits. A team consisting of Commission economists put this story in a nutshell: "Strengthening our economic fundamentals [i.e. increasing potential output] will require further reforms in labor and product markets, beyond those carried out during the crisis to restore competitiveness" (Canton et al., 2014, p. 1). This argument is in line with the assurance by all our interviewees that the key criterion for the PO-approach is that it is able *to explain*: the model has to be *"simple enough for policy makers to work with"* (EC1) and should come with the ability to *"convey a story"* (EC2) to politicians. By framing policy choices as technical problems, the model attains a kind of pedagogical function,[12] as it provides a *"very effective tool for helping policy makers understand what has happened in the past,*

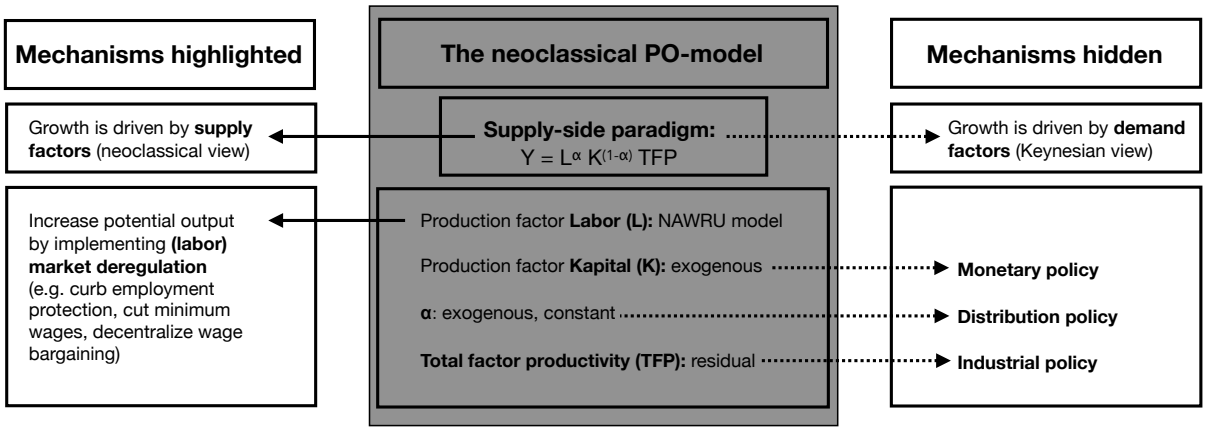
[12] Foundations for theorizing the pedagogical value of economic models can be found in Broome (2010) as well as Broome and Seabrooke (2015).

what are those policy drivers that have actually made a difference (...) and that they have a framework looking forward in terms of how they can influence their underlying growth patterns" (EC1). In contrast, more complicated modeling approaches, such as the Commission's in-house Dynamic Stochastic General Equilibrium model lead policy-makers *"to be alienated by excessively jargonistic type stuff"* (EC1). The exact mapping of theory and policy is, hence, crucial for the causal mechanism of "seeing" by relying on the PO-model's estimates: *"the advantage of the Cobb-Douglas-Function [is] that you get neat division of where the growth comes from, what part comes from labor growth, capital intensity and also factor productivity"* (FC2). This ability to generate a direct and intuitively understandable mapping of the impact of different variables on economic development transmits the theoretical preconceptions underlying the model into the political process.

6.2 A 'device for deciding': Highlighting and hiding explanatory factors

We now examine the second causal mechanism through which the PO-model triggers political effects: the model serves as a "device for deciding" (Hirschman and Popp Berman 2014, p. 797-800) as the technical properties of the model assign a prominent position to some specific policy-options while downplaying others. In the words of interviewee EC2, *"a good model is something that allows you to convey the assumptions that you need and the story that you need to tell the truth or your representation of it"*. We illustrate how the model highlights certain explanatory factors while it hides others (see Figure 6). In doing so, the causal mechanism of "deciding" by applying the PO-model (see Figure 5) brings about a supply-side focus in policy-making.

Figure 6: The PO-model highlights and hides certain factors. Authors' illustration.



Taking the fact that economic growth serves as a meta-goal in European economic policy as given, the first and foremost question is: how to foster economic growth? In this context, the PO-model highlights the importance of supply-side factors, while the possibility of demand-led growth is absent in its mechanics. In other words: factors influencing aggregate demand – like public spending, the personal distribution of income, the specificities of international trade or the relative importance of speculation vis-à-vis real sector investment – are systematically neglected. This bias is also mirrored by contemporary austerity policies. It is well documented that the use of the PO-model has facilitated pro-cyclical fiscal policies from 2010 onwards (e.g. Klär 2013; Truger 2015; Heimberger and Kapeller 2017; Fatas 2019). Specifically, as downward revisions in economic growth and employment materialized during crisis times, the *end-point bias* associated with the underlying model-based statistical filtering gained relevance: the increase in actual unemployment rates also pushed the Commission's model-based estimates of 'structural unemployment' upwards (see Heimberger and Kapeller 2017, p. 915; Palumbo 2015, p. 296). As a consequence, the Commission underestimated the extent to which the production factors in crisis-ridden economies were underutilized, which, in turn, increased estimates of the 'structural' deficit – which put more pressure in the respective governments to reduce 'excessive structural deficits' by implementing fiscal consolidation measures. In the euro area, the Commission's crisis-induced upward revisions in the 'structural deficit' were most pronounced for the countries hit hardest by the crisis (see Heimberger and Kapeller 2017, p. 916-919). Importantly, the pro-cyclical bias introduced by the neoclassical PO-model into EU fiscal policy-

making stands in stark contrast to a Keynesian view, in which fiscal policies should be anti-cyclical, i.e. expansionary during recessions (to promote growth and employment) and restrictive in cyclical upswings (to curb unsustainable macroeconomic dynamics). Hence, in the specific context of post-crisis policies the causal mechanism of the model as a *device for deciding* was especially pronounced as model-outcomes directly translated into stricter fiscal constraints for crisis-ridden countries. Obviously, the use of the PO-model as a *device for deciding* was not the only factor pushing for fiscal austerity in Europe. For example, recent literature has emphasized that professional networks may play an important role in shaping the policy-makers' positions concerning the role of fiscal policy (e.g. Dellepiane-Avellaneda 2015; Helgadottir 2016; Ban and Patenaude 2019). As it seems clear from the outset that the impact of models is unlikely to solely determine some outcome, our theoretical framework explicitly allows for other factors to also affect those outcomes (see Figure 2 and Figure 5). However, as the Commission drew on the potential of the PO-model to exert power, it clearly contributed to a post-crisis focus on bringing down 'excessive structural deficits' by means of fiscal consolidation (Heimberger and Kapeller 2017).

Subsequently, policy-makers regularly ask: how to foster supply? As currently set up, the PO-model and its accompanying framing tend to emphasize labor market conditions over other aspects impacting on production, because the other relevant variables are either assumed to be constant (functional income distribution as represented by α),[13] exogenously given (α as well as capital K) or treated as a residual of all other components of the model (Total Factor Productivity, in short: TFP). This feature is stressed several times in the technical papers, e.g. by "highlighting the close relationship between the potential output and NAWRU concepts" (Havik et al. 2014, p. 5). By assigning the NAWRU a core role, the model implicitly discounts a series of other policy options. In particular, conceptualizing productivity as a (catch-all) residual variable makes it difficult to think about industrial policies or specific investment strategies within the model framework. Similarly, monetary policy and

[13] In the Commission's interpretation, α and (1 - α) as included in the neoclassical production function (see the middle column of Figure 6) are the constant output elasticities of labor and capital, respectively – representing by how many percentage points output changes when the respective input is increased by one percentage point: "under the assumption of constant returns to scale and perfect competition, these elasticities can be estimated from the wage share" (Havik et al. 2014, p. 10).

distributional policies relating to the functional income distribution are rendered invisible by the model; both related variables (capital K and the factor shares α and $1-\alpha$) are assumed to be exogenous. Furthermore, capital K is considered to be insensitive to the business cycle and per definition always fully utilized as capital supply automatically adjusts itself to productivity conditions (see Havik et al. 2014, p. 11). Hence, the model tends to hide and discount a series of important aspects, while it highlights a political frame that focuses on increasing *potential growth* by promoting the contribution of labor as a production factor.

Finally, policy makers will ask: how to promote employment? We have documented that unemployment is transformed into the NAWRU by using statistical filtering models, and the corresponding model-based NAWRU estimates are deemed to be a valid proxy for 'structural unemployment', which in turn is determined by "institutional factors and fiscal measures (unemployment benefits, tax rates) which influence the reservation wage" (Orlandi, 2012, p. 1). The implication for policy makers is to conduct labor market reforms and adopt other measures that increase the workers' willingness to accept job offers that otherwise would be unattractive. Eventually, the PO-model comes with a very specific policy-implication, namely to increase labor market flexibility, i.e. making it easier for firms to hire and fire. Obviously, other factors also contribute to the policy outcome of a focus on labor market flexibility geared towards improving the supply-side of an economy. In particular, the literature has emphasized a long-standing focus by international organizations such as the European Commission, the International Monetary Fund and the OECD on the so-called NAIRU story, according to which high 'structural' unemployment rates are exclusively determined by overly protective labor market institutions, which should be deregulated (e.g. Stockhammer 2008). However, the role of the PO-model as a device for "seeing and deciding" in fostering a supply-side focus on labor market deregulation is arguably underappreciated as the model has gained importance over the last ten years. This is not surprising, since gaining insights into how the use of the PO-model brings about a supply-side focus requires a deeper engagement with the technical details of how the Commission models 'structural' unemployment in the process of estimating 'potential output' (Heimberger et al. 2017). As will see in the next chapter, an important consequence of the close alignment between neoclassical paradigmatic priors and paradigm-

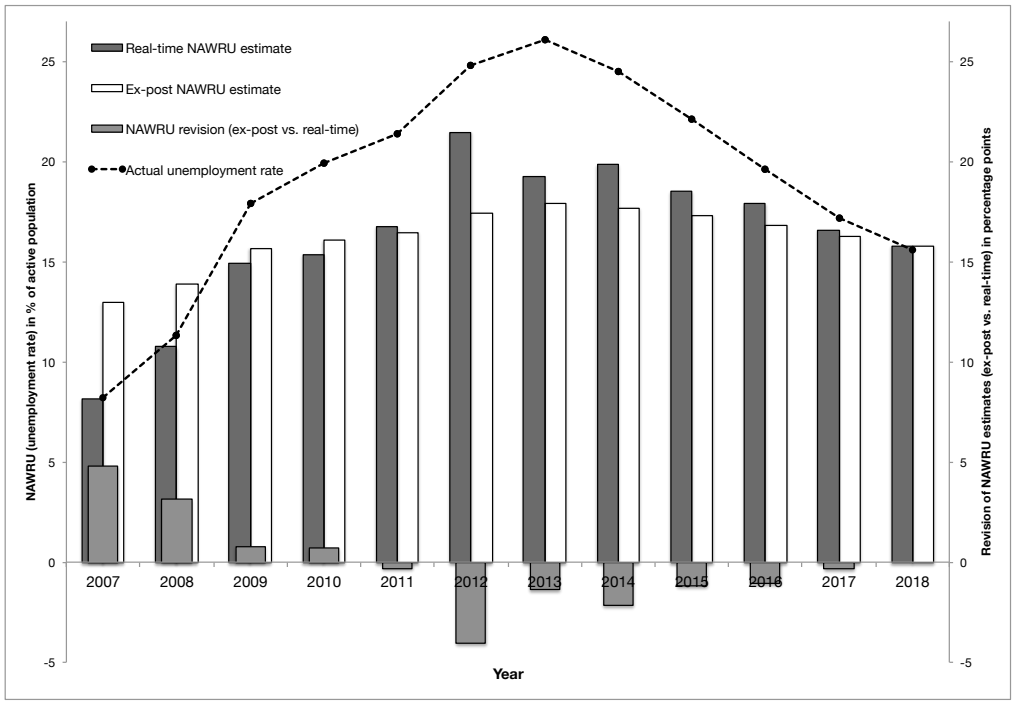
compatible policies is that such technical idiosyncrasies feed back into the political process – and vice versa.

6.3 Negotiating the PO-model: The technical and the political

The PO-model effectively fosters a process in which *"the technical and the political blur together"* (FC2). This point can be illustrated by pointing to the phenomenon that 'structural unemployment' estimates (proxied by the NAWRU) often tend to move relatively close to actual unemployment (Figure 7), which is due to the *end-point-bias* of the Kalman-filter that assigns a disproportionate impact to the last observations. Acknowledging that the Commission's 'structural unemployment' estimates are of contested quality (e.g. Constancio 2018) stands in contrast to the political discourse in which high NAWRU estimates are understood as prime indicators for 'rigid' labor market conditions (Orlandi 2012) – although labor market institutions do not directly enter the relevant NAWRU-model, neither as components of the production function nor in the accompanying statistical calculations (Heimberger et al. 2017). This interplay between technical idiosyncrasies and political rationalizations can be used to translate paradigmatic preferences into policy action: in times when *"the technical demands on ministers definitely increased"* (FC1), cases of diverging interpretations of the Commission's model estimates are no exception.

A similar argument can be made with regard to another feature of the Kalman-filter, which leads to revisions of *all* past estimates whenever new data is entered. These ex-post revisions are partially drastic as indicated in Figure 7, which compares the ex-post NAWRU estimates for Spain with real-time estimates. The difference between these two series is that the Commission calculated the former by incorporating all relevant data up to 2018, while the latter shows the estimates produced based on the data that were available and inserted into the model in the respective year. It can be seen that real-time estimates deviate markedly from ex-post estimates, which raises doubts about the reliability of the underlying statistical filtering procedure (Heimberger, Kapeller 2017).

Figure 7: Real time and ex-post NAWRU estimates for Spain, 2007-2018, Source: European Commission; own calculations. Real-time NAWRU estimates show the Commission's NAWRU estimate from the Autumn forecast of the respective year. The ex-post estimates are based on the Commission's Autumn 2018 forecast. Revisions were calculated as the difference between ex-post and real-time estimates. Note: The European Commission uses the NAWRU as a proxy for 'structural unemployment' (see section 5.2).



All interviewees see revisions of model estimates as a "*serious flaw, but you cannot get rid of it*" (EC2). Member states partially feel restricted in their political leeway as the fiscal framework assigns *"a lot of power to the people that estimate potential outputs"* (WG1). Revisions of model estimates affect the political evaluation of a country's economic situation since high estimates of 'structural unemployment' are interpreted as an indication for significant labor market rigidities. Hence, modifications of the underlying NAWRU model are also the target of specific political demands, which is evident in Spain's calls for changes to the NAWRU model (e.g. Dalton 2013). On a *technical level*, Spain simply demanded modifications of the underlying Kalman-filter model, namely the introduction of a different statistical assumption in estimating unobservable variables in the model.[14] On a *theoretical level,* these rather minor technical modifications in the statistical setup can be represented as a shift in how the relationship between unemployment and inflation is being modeled

[14] In statistical jargon, the discussion was about the introduction of a second-order autoregressive process instead of a first-order autoregressive process in the estimation of (unobservable) unemployment gaps (e.g. Gechert et al. 2016), which are defined as the difference between actual unemployment and 'structural' unemployment.

(EC 2014).[15] Finally, on a *political level,* these technical model modifications were of prime importance for the Spanish economy, as estimates based on the traditional NAWRU-specification indicated that 'structural unemployment' stood close to the actual unemployment rate of above 20%. With Spanish representatives pushing hard for a change in the NAWRU model and some Northern EU countries unwilling to bring about political compromise, interviewee EC1 recalls an *"agreement on the technical level for some time"* but there was *"a lot of resistance"* at the level of political officials in the EPC. In the end, *"the technical experts won out"* (interviewee EC1). Crucially, the 'technical' agreement on model modifications could only be reached in 2013 under the condition that each member state would still be allowed (for some time) to decide on its preferred NAWRU estimation method. The example of Spain indicates that when it comes to negotiating fiscal policy in the existing fiscal regulation framework, some parties may be unsatisfied with the model's political outcomes, and in such cases the technical aspects of the model become the target of political demands (see also Figure 5).[16]

7. The concealed impact of the PO-model

The last sections have shown that the PO-model plays an essential role in EU fiscal governance processes: it maps paradigmatic priors onto political action and introduces technical properties into the policy process that favor supply-side policies. As a consequence, it becomes very difficult to politically challenge the PO-model's technically sophisticated and legally binding estimates. The question how the PO-model and its estimates of 'potential output' and 'structural deficits' in EU member states are perceived in the broader European policy debate, however, has not yet been addressed. In this respect, we unsurprisingly find that only selected technical aspects enter the respective public debate. This finding is based on analyzing media articles: to evaluate the role of the PO-model in media discourse, we compiled a database of articles published in five European quality

[15] In economic jargon, this change in the statistical setup has been interpreted as a shift from a "traditional Phillips curve" to a "New-Keynesian Phillips Curve", as the new parameter introduced is sometimes assumed to represent the presence of 'rational', forward looking expectations (EC 2014).

[16] Spain is not the only EU country that has voiced concerns about the model-based estimation of 'structural' deficits. Another well-document episode took place in early 2016, when the finance ministers of eight EU countries (Italy, Spain, Latvia, Lithuania, Luxembourg, Portugal, Slovenia and Slovakia) addressed a letter to the European Commission, in which they expressed their concerns about the PO-model, arguing that "[m]ore substantial doubts have been raised about the commonly agreed methodology and it has also been suggested to complement the output gap with other indicators […] we support an intensification of the technical work on the matter" (Ciucci and Zoppe 2016, p. 6).

newspapers between 2010 and 2015 that contain "structural deficit" or synonyms (e.g. "cyclically adjusted budget balance").[17] Of the compiled 440 articles (see Table 2) only 2.7% made any reference to the underlying PO-estimation methodology (Category 3, e.g. by mentioning "potential output"). While 23.2% of the articles included only isolated numbers on the Commission's estimates (Category 2, e.g. by mentioning "1% structural deficit"), 74.1% of the articles mentioned neither the estimation-methodology nor concrete structural deficit numbers (Category 1).

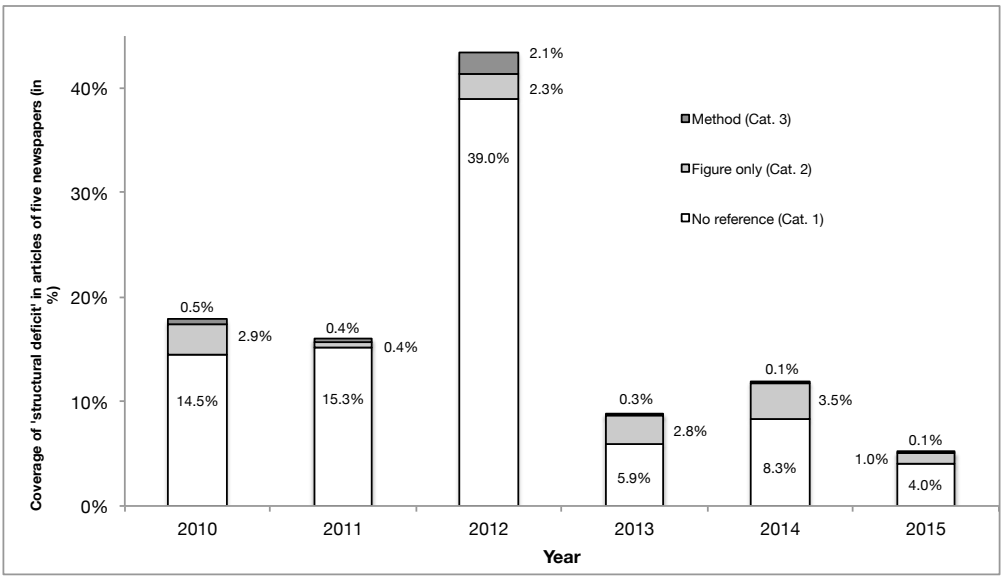
Table 2: Articles on the structural deficit and depth of PO-model coverage in five quality papers, 2010-2015. Explanations of categories: Method: reference to the underlying PO-estimation-methodology. Figure only: Isolated numbers on the structural deficit estimations. No reference: 'structural deficit' is mentioned in general without referring to estimation-methodology or concrete structural deficit numbers.

Newspapers	Articles (count)	No reference Cat. 1	Numbers only Cat. 2	Method Cat. 3
Economist	16	31.2%	56.3%	12.5%
Financial Times	162	87.7%	11.7%	0.6%
Frankfurter Allgemeine Zeitung	108	35.2%	58.3%	6.5%
Die Zeit	138	91.3%	8.0%	0.7%
Le Monde Diplomatique	16	93.8%	0%	6.2%
Total	**440**	**74.1%**	**23.2%**	**2.7%**

To evaluate overall coverage over time, we normalized the data with respect to the number of issues published per year. In the year 2011, a fictional subscriber of all five newspapers found articles in 16.1% of the issues of these five newspapers. In 2012, the coverage rose to 43.4%, yet the increase was not accompanied by more in-depth accounts (see Figure 8). In the following years, coverage fell to a low of 5.1% in 2015.

[17] Articles that refer to regional or domestic fiscal policies and lack any reference to European aspects were excluded. Le Monde Diplomatique was analyzed in the German language edition.

Figure 8: Newspaper articles in five newspapers (Economist, Financial Times, Frankfurter Allgemeine Zeitung, Die Zeit and Le Monde Diplomatique): Coverage of structural deficit in articles (normalized by using the number of issues per year). The numbers represent an unweighted average of articles per issue in the five newspapers. Explanations of categories: "Method"… reference to the underlying PO-estimation-methodology; "Figure only"… isolated numbers on structural deficit estimations; "No reference"… 'structural deficit' mentioned in general without referring to estimation-methodology or concrete structural deficit numbers.



This media analysis shows that even quality newspapers generally fail to provide in-depth coverage on the role of technicalities in the PO-model in EU fiscal governance. The lack of media coverage on essential aspects of the PO-model provides empirical evidence for the theoretical argument in section 2, where we pointed out that economic models mediate between economic paradigms and policy programs by providing simplified representations of complex economic processes, while their role remains largely hidden from the general public. Although the appropriateness of the PO-model's estimates for specific countries has been contested, the relevant discussions are largely absent from the broader policy debate, which is either due to ignorance regarding the political importance of the PO-model or due to a lack of effort to translate technical model details into a language that can be understood by the general public. Notwithstanding the underlying reasons, the consequence is that there are only very limited discussions about how (unelected) actors who are shaping the technical details in the PO-model wield power over democratic fiscal policy-making in the EU's member states.

8. Conclusions

By extending the framework provided by Campbell (1998), this paper has proposed a theoretical innovation to the existing ideas-vs.-interests literature: we have introduced economic models as a specific kind of economic idea, that can serve as a transmission device between economic paradigms and policy programs. We argue that models are potential carriers for political convictions and, hence, allow actors drawing on such models to wield power in political decision-making under certain conditions. In doing so, we focused on the European Commission's potential output model, which is crucial for fiscal policy coordination in Europe, as it has a legal basis in the EU's fiscal regulation framework.

We traced the potential output model's historical origins and technical specificities, which allowed us to analyze the conditions and mechanisms under which this exceptional model has been used by European policy-makers to bring about political outcomes. In essence, we document that the PO-model translates neoclassical paradigmatic priors into political action. We improved the understanding of the potential output model as a device for "seeing and deciding" (Hirschman and Berman 2014, p. 779), which maps theoretical arguments onto political programs – in a way that puts the focus in political consultations on the supply-side paradigm, which has supported a political agenda of (labor) market deregulation. We conclude that substantial insights can be gained from analyzing the seemingly arcane nuances of economic models, with the goal of gaining a better understanding of their actual impacts on policies.

Although generalizations of our findings to other economic models should not be drawn light-heartedly and will certainly require qualifications, our study arguably points towards a future research agenda. Given the rising importance of models in different areas of political decision-making, there are two questions of special relevance. First, how and under what conditions do models cause political outcomes? Second, how can particular models be identified as carriers of certain paradigmatic priors and convictions? To answer these questions, a future research agenda should be characterized by an extended analysis of selected (economic) models to shed more light on the conditions that allow actors drawing on these models to exercise power in political decision-making and the consequences of the

model's activation. For example, recent research has pointed out that models represent an important factor in monetary policy decisions (e.g. Holmes 2014; Christophers 2017; Acosta and Cherrier 2019), but "the field of central bank macroeconomic modeling has been largely ignored" (Srnicek 2018, p.1) when it comes to analyzing the role of relevant models in decision-making processes. Similarly, the analysis of how model estimates shape political processes remains underdeveloped in other areas such as trade policy (e.g. De Ville and Siles-Brügge 2015), the global governance of risk in the financial sector (e.g. Kranke and Yarrow 2018), or climate policy (e.g. Pindyck 2013). Our study has aimed at making a contribution towards an interdisciplinary research agenda that aims at gaining a better understanding of the nature of decision situations in economic contexts (e.g. Beckert 2016) by taking the potentially powerful role of economic models in policy-making more seriously.

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