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Working Paper

From paradigms to policies: Economic models in the EU's fiscal regulation framework

ICAE Working Paper Series, No. 61

Provided in Cooperation with:

Johannes Kepler University Linz, Institute for Comprehensive Analysis of the Economy (ICAE)

Suggested Citation: Kapeller, Jakob; Heimberger, Philipp; Huber, Jakob (2017) : From paradigms to policies: Economic models in the EU's fiscal regulation framework, ICAE Working Paper Series, No. 61, Johannes Kepler University Linz, Institute for Comprehensive Analysis of the Economy (ICAE), Linz

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From paradigms to policies: Economic models in the EU's fiscal regulation framework

**Jakob Huber, Philipp Heimberger
and Jakob Kapeller**

From paradigms to policies: Economic models in the EU's fiscal regulation framework[#]

Jakob Huber^{*}, Philipp Heimberger^{**} and Jakob Kapeller^{***}

Abstract

This paper analyzes the impact of economic ideas on political processes and decision-making by focusing on the role and impact of the European Commission's 'potential output model'. This model represents a core pillar in European fiscal policy coordination in executing the Stability and Growth Pact, as it provides estimates for 'structural deficits' used to evaluate member states' fiscal effort. The analysis builds on historical and technical contextualization of the model's origin and content, complemented by a case study database including policy documents, newspaper articles, public speeches and interviews with high-level practitioners in the respective field. We document that the potential output model has a marked imprint on political processes and outcomes: first, the model manufactures legitimacy in a contested policy-area. Second, it maps paradigmatic priors into specific and executable programs, thereby shaping the general scope in debates on economic policy. Finally, the model's main concepts and routines are embedded in a corresponding narrative, which is used to communicate the implications of model estimates to a broader audience.

[#] This work was supported by the Institute for New Economic Thinking under Grant INO1500015

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1. Introduction

“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.” (Interviewee FC2, Economic and Financial Committee)

“I would say that the output gap lies at the core of the fiscal rules of the European Union because it’s at the very first step of everything.” (Interviewee WG2, Output Gaps Working Group)

“People have been working on the measurement of output gaps for decades, but no one has found something that is stable and always gives meaningful results.”
(Interviewee EC2, European Commission)

Analysing the interplay between ideas of economists, actual policies and economic outcomes has an illustrious history in political economy. In this vein, von Mises (1940:744) argued that disputes on social order are eventually always resolved by arguments on economic theory. Similarly, Keynes had famously posited that “ideas of economists and political philosophers [...] are more powerful than is commonly understood. Indeed, the world is ruled by little else.” (1936:383-384) Relationships between economic ideas, policies and society have been widely studied by political scientists and institutionalist scholars. Hall (1993) contributed to the ideas-vs.-interests-debate by arguing that shifts in policy paradigms cannot be understood properly without accounting for the importance of ideas. A stream in the political economy literature has treated ideas as central objects of investigation (e.g. Blyth, 2003), specifically emphasizing the importance of ideas in the aftermath of the global financial crisis (e.g. Blyth, 2013; Dellepiane-Avellaneda, 2015), in trade politics (e.g. Siles-Brügge, De Ville, 2015) and in the EU’s Stability and Growth Pact (henceforth: SGP; e.g. Van Esch, Princen, 2016)

However, political scientists are accused of “econophobia” (Watson, 2014) as they regularly avoid scrutinizing technical economic models, which leaves unexamined the role of these models as prime devices in policy-making. Thus, political scientists are called to take the “arcane nuances of macroeconomic discourse” seriously – for they do not only influence policy outcomes but also are important in the “quest to establish governability” (Braun, 2014: 70). As the literature has so far refrained from providing comprehensive analyses on the impact of technicalities in macroeconomic models on political processes, this paper aims at closing this gap.

In doing so, we focus on fiscal policy-making in the EU. We document the genesis and content of model-based fiscal policy-making in Europe. A brief historical account of cycle-sensitive budgeting helps to understand the specific political decisions and technical aspects underlying the EC’s ‘potential output model’ – henceforth: PO-model –, which acts as a core device for fiscal policy coordination in the EU (Klär, 2013). The Commission employs the PO-model for estimating the ‘output gap’ – the difference between actual GDP and potential output –, which is used as an indicator for the cyclical position of an economy. Output gap estimates translate into the Commission’s judgments on how much of the fiscal deficit (or surplus) in a particular EU country is ‘structural’, i.e. not attributable to the cyclical ups and downs in the economy. If the structural deficit is estimated to be high, the fiscal scope of member countries shrinks, as they are obliged to implement fiscal consolidation measures (Heimberger, Kapeller, 2017). This paper aims at deepening the understanding of the PO-model’s political embedding; we investigate the model’s functions within the policy-making process and show how the model is connected and intertwined with political narratives.

The EU’s fiscal regulation framework provides us with an ideal opportunity to study the role of models as policy tools. The SGP defines the legal basis for the application of a specific macroeconomic model and thereby assigns regulatory importance to estimates of ‘structural deficits’, which are used to evaluate member states’ fiscal performance and underlie the Commission’s proposals related to medium-term budgetary objectives (ECFIN, 2013). In this context, ‘structural’

refers to a hypothetical case where cyclical effects are absent and an economy has gravitated towards its ‘true’ potential. As the underlying model variables are non-observable theoretical postulates, policy-makers routinely rely on the PO-model’s estimates when agreeing on policy-decisions.

After providing some conceptual foundations in the following section, we offer an introduction to our methodical approach in section 3, before turning to core aspects of the history and composition of the PO-model in sections 4 and 5. In sections 6 and 7, we focus on presenting empirical results regarding the functions of the model in policy processes and related public debates. Section 8 concludes our arguments.

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*. *Paradigms*, defined as a framework for structuring and solving puzzles (Kuhn, 1962), and *programs*, in the sense of professional ideas that prescribe a course of policy action (Campbell 1998:386), operate on a “cognitive” level. *Frames* and *public sentiments* are important on a symbolic or “normative” level, which generally consists of assertions based on values and attitudes. Specifically, *public sentiments* refer to general attitudes “about what is desirable or not” (Campbell 1998:392), while *frames* consist of symbols and immediately understandable concepts that provide mental shortcuts to some desired outcome or solution (Lakoff, Johnson, 2008).

In order to better incorporate the role of economic models in the analysis we extend Campbell’s basic framework. We assert that models mediate between paradigms and programs by providing simplified representations of complex economic processes, which map causes and quantify effects. By selecting certain variables and by omitting others, an economic model defines what is – and what is not – part of the problem and its solution. *Models* connect assumptions from economic paradigms and apply these to specific political problems. Similarly, *problem narratives* combine single frames into overarching stories to more effectively relate single events or circumstances to long-term public sentiments. While models and narratives have a similar purpose – they serve to select what is noteworthy about a given problem (Patterson, Monroe, 1998) – they also share a transmission function between more general ideas in the “background” of the policy-process and the often short-lived programs and frames operating in its “foreground”. Despite these commonalities, economic models and (related) problem narratives need not be consistent; indeed, some contributions to macroeconomic theory explicitly differentiate between models as such and the political “stories” attached (e.g. Stockhammer, 2008).

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

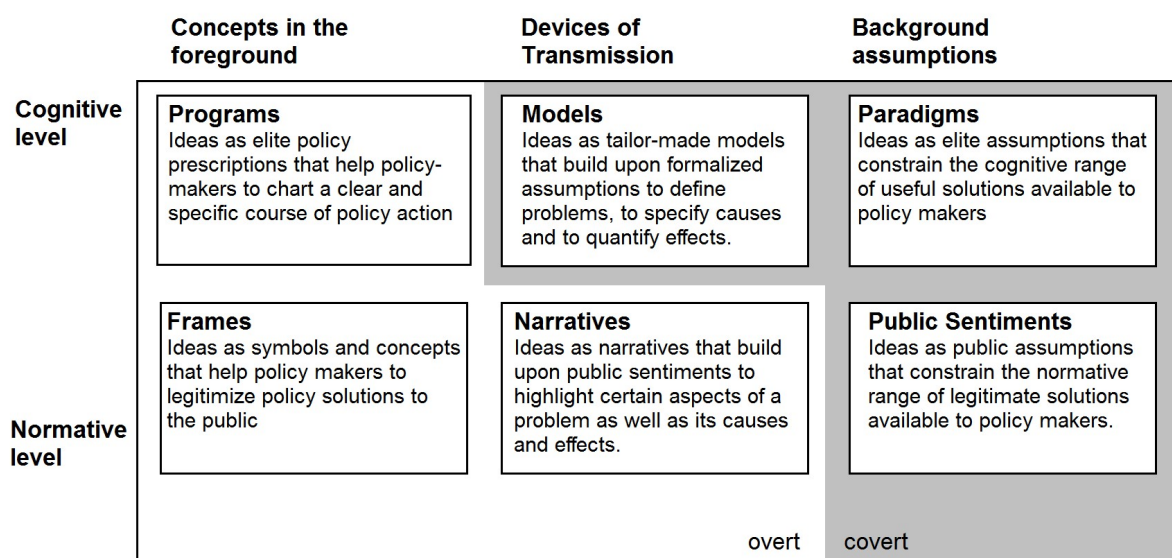


Figure 1 is based on the original dimensions in Campbell (1998), summarizing role and purpose of the six types of ideas by locating models and narratives as transmission devices. Looking at fiscal policy coordination in Europe, it is not too difficult to think of examples putting some flesh on these theoretical bones. The SGP in its present form is firmly rooted in the neoclassical paradigm in economics, which corresponds strongly to the neoliberal policy paradigm (e.g. Palley, 2005). Additionally, the consolidation and convergence programs announced in the aftermath of the financial crisis received a considerable amount of attention, serving 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 – but mostly hidden – role in transmitting vague economic convictions into specific policy proposals. Thereby, the model does not only legitimize form and extent of consolidation and convergence programs, but also plays a vital role in diagnosing deviant fiscal behaviour in the first place.

3. Research methodology

Our research relates to economic 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, technical experts, mostly economists specialised in statistical modelling, developed the PO-model. Their focal meeting point is the output gaps working group (OGWG). Second, the Commission hosts the Directorate General for Economic and Financial Affairs (DG ECFIN), responsible for providing assessments within the European Semester. Thirdly, 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 important policy decisions. Finally, public discourse is inter alia influenced by public speeches of politicians and media coverage.

We chose a mixed-methodology approach, grouping our sources around the PO-model, which represents an “extreme case” of an exceptionally important and powerful economic model (Flyvberg, 2006:230). In addition to studying legal and policy documents as well as technical publications and speeches, we also conducted six qualitative expert interviews with high-level representatives from European institutions (see Table 1).

Table 1: Case study database

	Items	Publications	Items	Interviews
Experts' pillar	4	Technical papers: Denis et al (2002, 2006), D'Auria et al. (2010), Havik et al (2014)	2	Two members of the experts working group on output gaps (WG1, WG2)
Commission pillar	12	Policy papers, esp. European Commission (2012, 2012a, 2013, 2015)	2	Two senior officials from the Commission units for model building and fiscal surveillance respectively (EC1, EC2)
Council pillar	10	Legal provisions, esp. Council Regulations 1055/2005, 1056/2005, 1175/2011 and TSCG	2	Two decision making members of the Economic and Financial Committee (FC1, FC2)
Public discourse pillar	16	Selected public speeches by Commission President Juncker, EUROGROUP President Djisselbloem, ECB President Draghi (2010-2015)		
	457	Newspaper articles on the SGP published Economist, Financial Times, Frankfurter Allgemeine Zeitung, Die Zeit and Le Monde Diplomatique (2010-2015).		

While four interviewees represented European institutions, the other two represented 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, recorded, transcribed and evaluated by means of topical grouping. Expert interviews helped us to better contextualize our document-based analysis by gaining information on the actual practices and discussions.

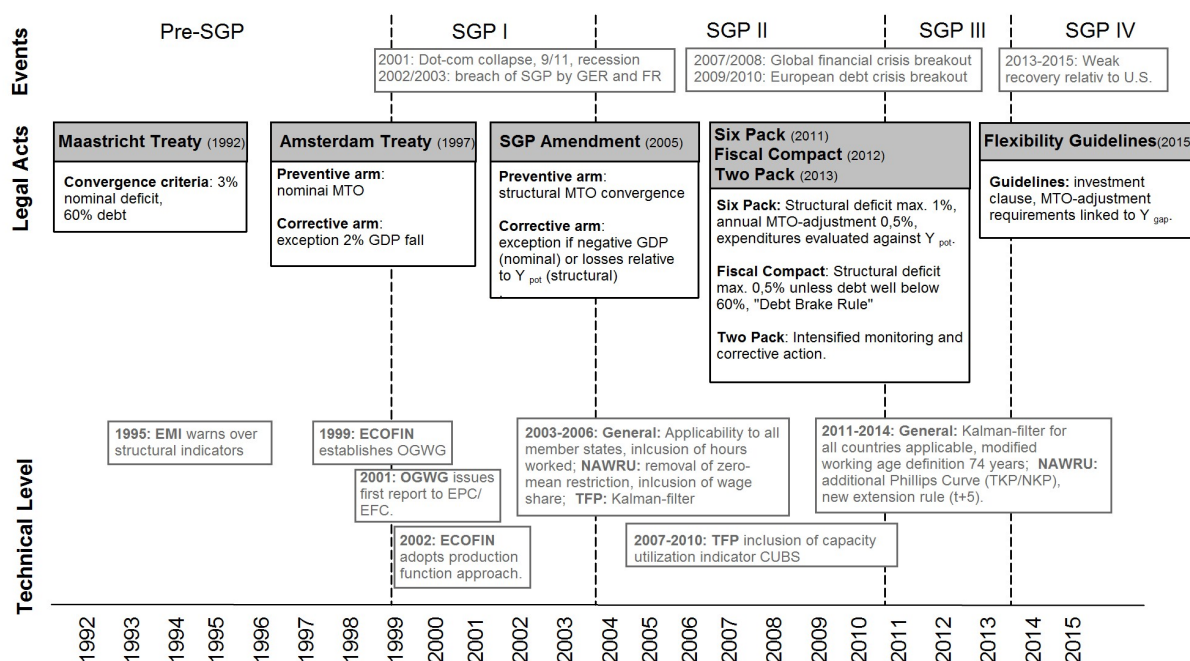
While the EU's principal architecture is well known, the relevant sub-committees and working groups deserve a brief introduction. Their formal position is ambiguous: As interviewee WG2 reports, the OGWG and the EFC both belong to the Council's pillar, yet its administrative staff are employed and situated in the Commission's DG ECFIN; yet they do not report to the Commission ranks. The experts' OGWG usually meets four times a year for an entire day and comprises up to 70 technical economists with backgrounds in econometric modelling. The working group 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 ECB, OECD and IMF. Scientists from academia are not part of the OGWG due to the sensitivity of the issues at stake, as interviewee WG2 told us. Interviewee EC1 feels that in the OGWG "*all are very good, but 60% of them are outstanding in terms of their technical knowledge*". The OGWG operates under the unanimity regime. All major changes and issues lacking unanimous support are passed on by the OGWG to its parent committees.

The OGWG was formally founded under the Economic Policy Committee (EPC); however, in practice, the OGWG reports to the Economic and Financial Committee (EFC), as interviewees WG1 and FC1 confirm. In contrast to the EPC, which focuses on long-term challenges, the EFC deals with short- and medium-term issues of acute political relevance, directly prepares ECOFIN Council meetings and consists of senior political officials (directors and secretaries of state). One main difference between the OGWG and the EPC/EFC 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 remainder “*never has understood it*” due to a different educational background.

4. Structural indicators and the history of the Stability and Growth Pact

Indicators like ‘potential output’ or ‘structural deficit’ were already estimated in the 1990s. Yet, their importance has greatly risen in the aftermath of the financial crisis. In what follows, we illustrate the institutional emergence of the PO-approach against the backdrop of the evolution of the SGP (see Figure 2).

Figure 2: Development of the SGP on legal and technical level (1992-2015)



In 1992, the Maastricht Treaty laid the foundations for what should later become the SGP. Specifically, it introduced convergence criteria stipulating nominal reference values for the deficit (3% of GDP) and public debt (60% of GDP). Higher deficits were regarded non-excessive whenever they were judged to be exceptional and temporary, but yet no explicit criteria regarding the economic cycle had been defined. Hence, the political management of the business cycle was conceived as an informal issue. Already available ‘structural indicators’ were associated with “severe methodological and measurement problems” (EMI 1995:22); until 1999, they were judged inapt to adequately inform economic policy-making. In 1997 the European Council adopted a resolution on the introduction of the SGP, 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 reference value was thus interpreted as a safety buffer against cyclical downturns. The resolution introduced both the preventive

arm with ex-ante medium-term objectives (MTO) for fiscal prudence and the corrective arm with ex-post excessive deficit procedures (EDP).

In 1999, the ECOFIN Council established an ad-hoc expert working group on Output Gaps (OGWG), dedicated to developing new methodologies for determining structural indicators. The OGWG 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 production function approach to replace routines based on simple empiricist methods such as the Hodrick-Prescott (HP) filter. Finance Ministers adopted the proposal and welcomed “the Commission’s intention to apply this method in a non-mechanistic, transparent and consistent way”. The Austrian and German delegates, however, demanded sticking with the hitherto established measures “until the results of the estimates using the production function method are regarded [...] as sufficiently reliable” (ECOFIN, 2002:7). Since 2002, the OGWG has refined and modified the methodology (see Figure 2) and summarized changes in special reports, published every four years (Denis et al. 2002; 2006, D’Auria et al., 2010; Havik et al., 2014).

In the OGWG’s first years, political discourse on the SGP was significantly coined by Germany’s and France’s breach of the deficit criteria between 2001 and 2005. The debate on the appropriateness of the 3 % limit in times of turmoil (Princen, Van Esch, 2016) triggered major revisions of the SGP. The preventive arm was changed to include a limit of 1% on ‘structural deficits’ in order to account for “the diversity of economic and budgetary positions and developments” and “allow room for budgetary manoeuvre, considering in particular the needs for public investment” (Council Regulation 1055/2005). In the corrective arm, additional clauses of exception were also based on structural indicators (Council Regulation 1056/2005). Thus, structural terms directly entered the SGP II, aiming to relax the Maastricht criteria – changes that were met with optimism among policy-makers. Interviewee FC1 recalls that the ministers unanimously regarded structural measures as “*much better, but unfortunately not directly observable*”. In retrospect, however, FC2 viewed the SGP-reform as a “*disservice*” that “*opened the door (...) towards unobserved variables*”.

The global financial crisis and the following European debt crisis pushed fiscal policy into a new era (SGP III). Three major legislative packages strengthened model-based estimates relative to observable criteria. Interviewee FC1 describes the shift towards cutting deficits as a “*new mantra*”, which came with the technical challenge of correctly estimating “*the structural deficit in times of structural breaks*”. Indeed, the Six-Pack-Legislation of 2011 committed member states to achieve annual improvements of the structural balance by 0.5%-points whenever they failed to meet their MTO. The new expenditure rule implies that growth in public expenditures must not exceed growth in potential output. The Fiscal Compact of 2012 effectively tightened the limit on the annual structural deficit to 0.5%. The contracting member states agreed to implement a correction mechanism (“debt brake”) at the national level. The Two-Pack-Legislation following in 2013 further intensified surveillance (ECFIN, 2013).

The most recent phase of fiscal policy coordination in the EU (SGP IV) is characterized as a mismatch between weak growth rates on the one hand, and the policy makers’ impression “*that we have left behind the worst part of the crisis*” (interviewee FC1) on the other hand. This situation regularly provokes criticism from member states, who 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). In contrast, the EC’s experts conclude that the Commission’s methodology was more reliable in terms of revisions than commonly believed (McMorrow et al, 2015).

The criticism of a lack of flexibility entails possible technical circumventions: For instance, the Commission announced that public investments could legitimize MTO-deviations under specific conditions (EC, 2012:24), which was confirmed in the EC’s so called “flexibility-communication” (2015). The conditions of this so-called ‘investment clause’ are a negative output gap (actual output below the model-estimate of potential output) of more than 1.5% of GDP, compliance with the nominal 3%-deficit-restriction, and co-funding of the respective investments by EU funds. The Commission explicitly links annual adjustment requirements to developments of the output gap and potential output (EC, 2015:20). The ‘flexibility-communication’ decreased the model’s importance

because in the words of FC2 *“there is a lot of lip service paid to the structural deficit, but in reality the flexibility and the exceptions are used to circumvent the results”*. Paradoxically, to interviewee WG2 the flexibility communication is *“the determinant point in time, which increased the relevance of the OGWG”*.

To summarize, model-based ‘structural deficit’ indicators were introduced from 1999 onwards, gaining importance with the reform of the SGP in 2005 and with subsequent regulatory since the financial crisis. Since 2014, the Commission and the Council have loosened rule rigidities related to the ‘structural deficit’ to some extent. Nevertheless, the structural deficit has a powerful role that, if taken as *“sole indicator for success and failure, becomes politically explosive due to the dissonance and complexity of the output gap evaluation”*, as FC1 admits.

5. The machine room: Technical aspects of the potential output model

We continue by focussing on how the PO-model produces estimates 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 turn to the inner workings of the Commission’s PO-model.

5.1. At the gates: A short history of cycle-sensitive budgeting

The main idea behind cycle-sensitive budgeting is to adapt the fiscal balance to the cyclical conditions of an economy. Expansionary fiscal policies in crisis times should be combined with contractionary fiscal policies in good times, allowing for policy-mitigation of the ups and downs of the business cycle (e.g. Carnot, de Castro, 2015). A variety of methodologies exist when it comes to performing cyclical adjustments, as illustrated by Table 3.

Table 3: Different approaches to cycle-sensitive budgeting

Order of change (Hall, 1993)	Road taken by the Commission	Road not taken by the Commission
3 rd order – change of goals	Deficit-oriented	Employment-oriented
2 nd order – change of instruments	Cyclically adjusted budget balance (CAB)	Plurality of indices (e.g. Blanchard, 1990)
1 st order – change of application	Theory-based production function approach (e.g. European Commission after 2002)	Purely statistical approach – Hodrick Prescott (e.g. European Commission until 2002)

The basic concept of cycle-sensitive budgeting can be traced back to the New Deal era of the 1940s and helped popularize Keynesian thinking. ‘High-Employment-Budgets’ were built upon politically-agreed target levels of unemployment (e.g. 4%). Tax rates and public expenditures were set to yield small surpluses if the target was reached, so that automatic stabilizers (unemployment benefits, income taxes) would lead to deliberate deficits if the target unemployment rate was surpassed (Costatini, 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 general 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 was a third order change in the goals of economic policy.

In contrast, second order changes refer to instruments. After comparing the overall usefulness of different fiscal indicators, Blanchard (1990) found that the cyclically-adjusted balance (CAB) is the most deficient option. 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 economists, international institutions such as the EC, OECD, IMF or ECB mostly ignored this proposal to broaden the acceptable set of instruments for fiscal surveillance (Larch and Turrini, 2009:6). Contrarily, we have witnessed a further increase in the importance of structural indicators based on the concept of potential output, as almost all major international organisations (ECB, OECD, IMF...) provide in-house estimates (e.g. McMorrow et al., 2015).

The main differences among the institutions' approaches are of first order, concerning the role of economic theory. On the one hand, purely statistical methods such as the Hodrick-Prescott-filter mechanically de-trend the GDP time series into a smooth curve (Hodrick, Prescott, 1997) and take the difference between observed and trend GDP as the output gap. While such filtering techniques are flexible and easy to use, their main disadvantage is their predisposition to produce misleading results for the most recent observations ("end-of-sample-bias", e.g. Hamilton, 2016), which makes it quite inapt for policy purposes. This purely statistical de-trending was predominant in the EU' until it was discarded in 2002 (see Figure 2). On the other hand, theory-based approaches such as the Commission's current methodology build upon theoretical assumptions about the inner workings of an economy, applying statistical de-trending at the level of (sub-)factors of production (Heimberger, Kapeller, 2017).

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

The current Commission approach is described in a number of technical publications (Havik et al., 2014; Mourre et al., 2014; Planas, Rossi, 2015). The cyclically-adjusted budget balance (CAB) is given as the nominal headline budget balance (BB) corrected for the effects of the business cycle (Mourre et al., 2014). Figure 3 shows that by additionally accounting for one-time and temporary effects (OE), one obtains the structural balance (SB). The cyclical component of the budget balance is derived by multiplying the model-derived output gap (OG) with a sensitivity parameter (ϵ), which captures the sensitivity of the budget balance towards the output gap, where sensitivity-estimates are taken from the OECD (Price et al., 2014). The output gap is the difference between actual output (GDP) and the model-based estimate of potential output (PO), expressed in percent of potential output.

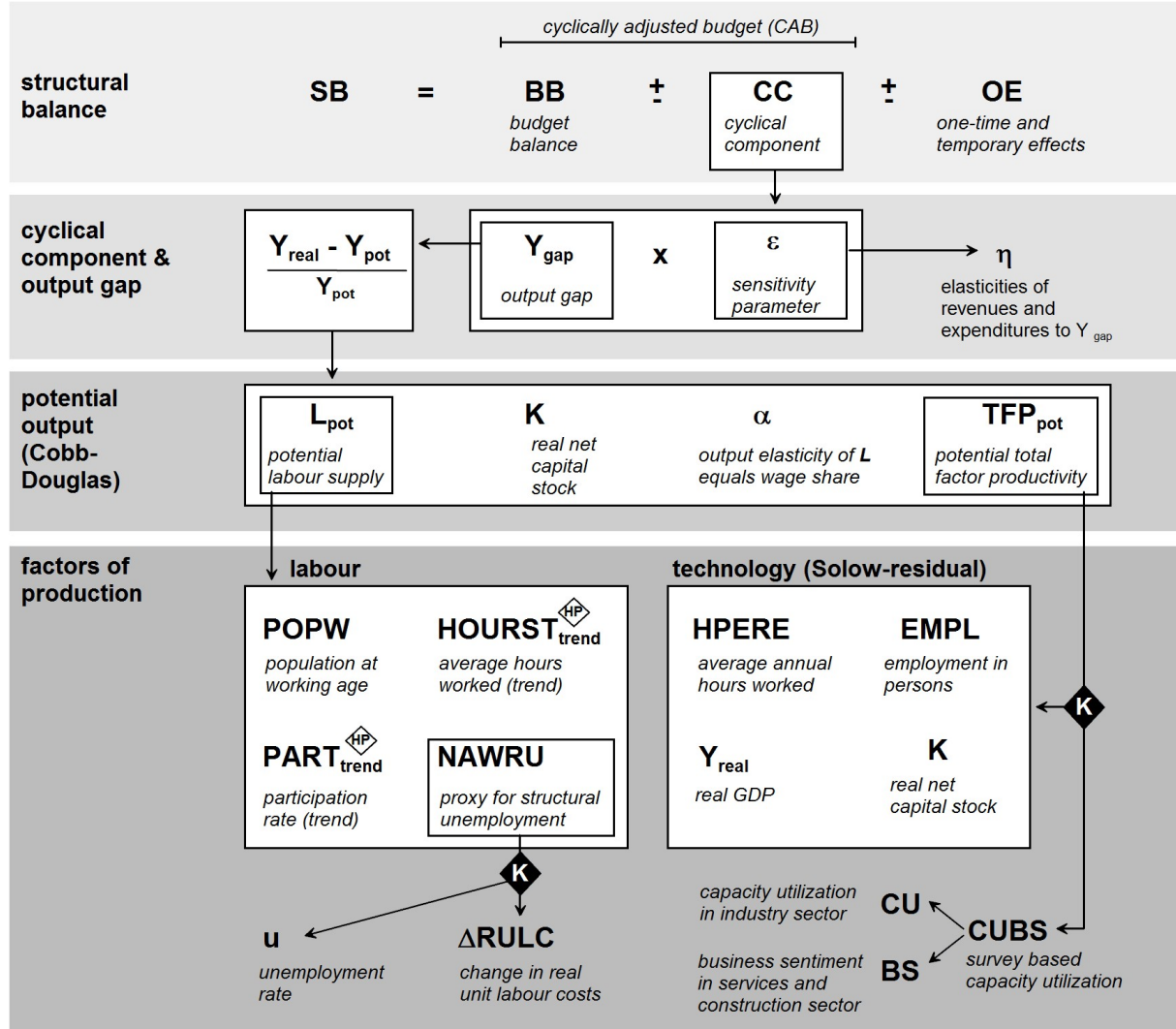
The Commission's PO-model is rooted in the neoclassical paradigm, as it builds on a Cobb-Douglas production function, the reference model in the neoclassical growth literature (Cobb, Douglas, 1928; Solow, 1957). Although the Cobb-Douglas-framework is indeed well established within mainstream macroeconomics, many criticisms have been put forward that challenge its theoretical foundations and empirical usage (Felipe, McCombie, 2014). Potential output is estimated by multiplying labour supply (L), capital (K) and total productivity (TFP), as indicated at the third level in Figure 3.¹ Notably, the Commission models the economy exclusively from the supply-side. Specifically, the model is based on the notion that given technological growth embedded in competitive markets implies steady economic progress, which 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).

Core ideas of the neoclassical paradigm are also characteristic of the model's subcomponents. This becomes apparent when one looks at level four in Figure 3, which shows that the production factor labor (L_t) is calculated as a statistically filtered trend of total working hours ($HOURS_t$) offered by the

¹ 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).

active labor force ($POPW_t * PARTS_t$) that would be employed given estimates of ‘structural unemployment’ ($1 - NAWRU$). Here, NAWRU refers to the non-accelerating wage inflation rate of unemployment, which is based on the proposition that any economy can be characterized by an unobservable rate of unemployment at which inflation remains stable.

Figure 3: Basic components of the European Commission’s PO-model. Own illustration.



The NAWRU is related with the idea of a ‘natural rate of unemployment’, which represents ‘structural unemployment’ independently of all temporary and seasonal fluctuations (Friedman, 1968). The Commission estimates the NAWRU by using a so-called Kalman filter. Although the matter appears to be a technical detail, the Kalman filter is crucial for the entire estimation-approach (Fioramanti, 2016; Heimberger, Kapeller, 2017). 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. In the case of the Commission’s PO-model, new data on unemployment and wage-inflation are fed into a complex statistical model dedicated to decomposing ‘trend’ and ‘cycle’ by statistical means. The resulting trend-component is in turn interpreted as representing the NAWRU. However, the Kalman-estimation constitutes a delicate procedure full of uncertain assumptions (Cerra, Chaman Saxena, 2000:5; Fioramanti, 2016). 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 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).

While the second factor of production, capital (K), enters the third level in Figure 3 without de-trending, total factor productivity (TFP) is derived from another neoclassical workhorse, the so-called Solow-growth residual (Solow, 1957). TFP is used as a proxy for unobserved technological and organizational progress. However, TFP is a catchall variable for all factors contributing to changes in GDP that are not explained by changes in labour supply or capital. By definition, TFP also includes errors and biases related to measurement, aggregation and model misspecification (Hulton, 2001: 9); hence, the Solow residual is a “measure of our ignorance” (Abramovitz, 1956:11). Turning to the empirical separation of ‘trend’ and ‘cycle’, TFP 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.

To summarize, the Commission’s production-function approach is a combination of several standard neoclassical workhorses that operationalize core ideas of the neoclassical paradigm in policy-making. Central components of the model – ‘structural unemployment’ and ‘trend productivity’ – are unobservable, while their proxies ($NAWRU$, TFP_{trend}) are theoretical conceptions with strong normative implications, which eventually have to be estimated by statistical filtering techniques largely unrelated to the underlying theoretical conceptions.

6. Cognitive level: Models as mediators between policies and paradigms

Referring to the theoretical framework introduced in section 2, we investigate how the model mediates between policy programs and paradigms. Our empirical findings point to three institutional functions performed by the model: first, it provides legitimacy; second, it maps paradigmatic assumptions onto the policy-process. Finally, it introduces technical model properties into the policy-process that favour paradigm-compatible policies and conflates the realms of politics and modelling.

6.1. Manufacturing of legitimacy

The constant struggle for legitimacy is a core tenet of institutionalist theory (Meyer, Rowan, 1977; Scott, 2008). The legitimacy of the EC – 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 governments’ scope for policy manoeuvring. Several finance ministers have pointed to the fact that they are “held accountable for an indicator [the structural deficit] which to a crucial extent lies beyond their control” (ECOFIN 2016:2). Against this background, the two core principles of the OGWG – “transparency” and “equal treatment of member states” (Denise et al, 2002:4 and 2006:6; D’Auria et al, 2010:5; Havik et al, 2014:6) – are supposed to provide fair and balanced judgement of fiscal performance. By providing allegedly non-partisan expert advice, the OGWG and its PO-model both provide legitimacy to the Commission’s policy recommendations and convergence requirements.

This legitimization power has two sources: impartiality and ownership. When it comes to impartiality, the aspired “equal treatment” formally implies that the same rules are applied to everyone: the PO-model is general in the sense that it is applicable to all countries under all circumstances, legally binding and considered non-partisan, i.e. not favouring any specific political ideology or country. The results of the model are binding in legal terms and regarded legitimate in institutional terms; at the same time, their non-acceptance would be judged as illegitimate rule violation. The PO-model is, furthermore, supposedly immune towards subjective interests of particular countries. By applying the model, the Commission acts “*very independent and impartial*”; if “*member states feel that there is an excessive degree of discretion being exercised by the EC, you will run into big problems in terms of domestic acceptability.*” Hence, “*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 judgement than the IMF: “*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 legitimacy has consequences for the treatment of model outcomes as the Commission tries to “*keep the level of judgement to an absolute minimum*” (EC1). Model results are taken literally and – as EC1 emphasizes – not subjected to further reflections on plausibility, let alone modifications. Interviewee WG1 criticizes this practice: “*If a methodology doesn't work for your country but you have to stick to the methodology nonetheless, this is not equal treatment.*”

The second source of the PO-model’s legitimization power, ownership, becomes evident through the frequent references to a “common methodology” or “commonly agreed method” made in interviews, in the OGWG’s online self-portrait² and in publications (e.g. EC, 2012a, Moure et al., 2014). 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, 2015:14). 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. Most importantly, it is the Commission’s economic experts that develop the methodology’s foundations and necessary software applications, on the basis of which they regularly develop policy proposals. 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 member state. In this context, procedural arguments – “*if we reopen for one we have to reopen for everybody*” (EC2) – gain importance. 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. Interviewee FC2 reports “*very significant differences in the EFC and in the Council*” and has the impression that “*the common methodology is not widely supported or shared.*”

Instrumentally, the legitimacy of the PO-model also contributes to rendering issues of economic 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... 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) In doing so, the “*existing balance between the scientific and the policy making end*” is of such crucial importance for EC1’s work that he concludes our interview by emphasizing that “*we just hope the current framework can be maintained and respected over the next 10 years, that is for me the most important point.*”

6.2 Mapping and prioritizing policies

The second institutional function of the model is the mapping of core paradigmatic assumptions onto the policy process. It implies a priority of supply-side policies, such as labour and product market reforms, over demand-side policies, such as discretionary changes in public investment. 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: 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). Moreover, whenever the estimates of potential output are close to or above actual output, the legitimate room for demand side policies within the EU’s fiscal regulation framework is limited (Heimberger, Kapeller, 2017).

The basic story behind the Commission’s modelling approach is, therefore, that policy-makers who want to deliver steady economic progress ought to introduce supply-side measures – labor market reforms, product market deregulation etc. –, which allow for constant productivity growth and ensure

² URL: http://europa.eu/epc/output-gaps-working-group_en

highly competitive markets. 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 labour and product markets, beyond those carried out during the crisis to restore competitiveness” (Canton et al., 2014:1). This argument is in line with the assurance by all our interviewees that explainability was the key criterion for the PO-approach: 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, as it provides a “*very effective tool for helping policy makers understand what has happened in the past, 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 modelling approaches, such as the Commission’s in-house DSGE-model³ lead policy-makers “*to be alienated by excessively jargonistic type stuff*” (EC1). The exact mapping of theory and policy is, hence, crucial for the model’s political importance as it provides “*the advantage of the Cobb-Douglas-Function [...] that you get neat division of where the growth comes from, what part comes from labour growth, capital intensity and also factor productivity.*”(FC2)

Delving into this technical debate, we have to remind ourselves that the NAWRU is the trend underlying observed unemployment as estimated by the Kalman filter. The closer the estimates are to the observed unemployment rate u , the smaller the cyclical impact on employment ($u - NAWRU$). In case of a positive employment gap ($u - NAWRU > 0$), which is typical for crisis times, the scope for demand side policies increases as the difference between actual unemployment and NAWRU-estimates becomes larger.

Figure 4: NAWRU estimates and cyclical unemployment for selected countries, 2007-2015, Source: AMECO Spring 2016.

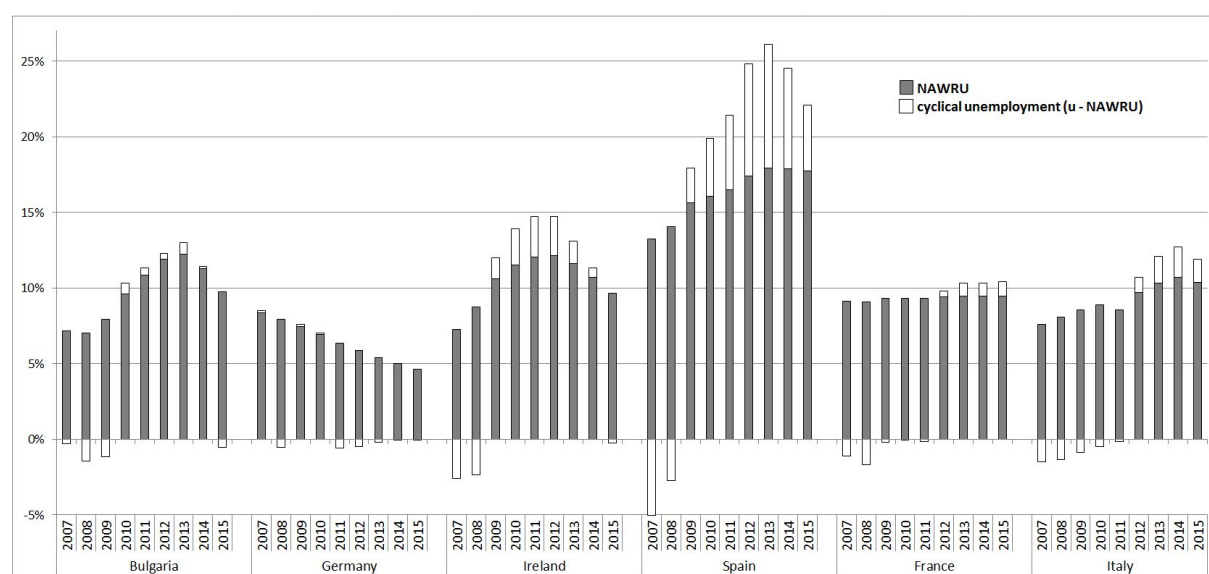


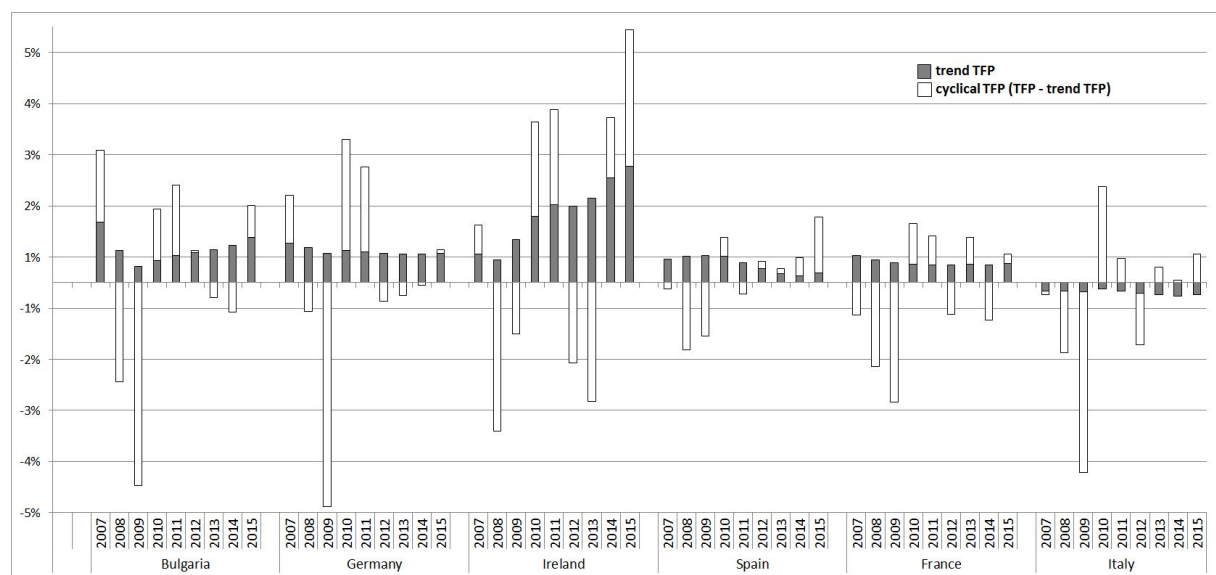
Figure 4 shows the development of u and $NAWRU$ for six exemplary countries. In Bulgaria, Germany and France, $NAWRU$ estimates followed observed unemployment quite closely. According to the PO-model, cyclical crisis effects on unemployment are close to zero in these countries. Thus, there is hardly any room for intensified demand policies: structural and nominal deficit are in line. In the case of Bulgaria, the $NAWRU$ increase by over 5%-points translates into an increase of the structural deficit by about 1%-point of GDP (*ceteris paribus*; see Fioramanti, 2016:8). The $NAWRU$ estimates for Ireland, Spain and Italy left more room for cyclical deviations: In 2007 and 2008, cyclical unemployment was negative – indicating actual unemployment below the estimated $NAWRU$ – and

³ Dynamic Stochastic General Equilibrium (DSGE) models are complex micro-based macro models:
URL: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/economic-research/macro-economic-models_en.

thereby too low in terms of the paradigm: ex-post, the economies of Spain and Ireland are considered ‘overheated’ in pre-crisis years. In the years after 2008, NAWRU-estimates increased for all countries, in the case of Spain by 4.7%-points. We observe that NAWRU estimates tend to at least partially mimic the increase in observed unemployment, which puts further restrictions on demand-side oriented policies due to upward-revisions in structural deficits (Heimberger, Kapeller 2017).

Increases in TFP_{trend} estimates – as measures of ‘trend productivity’ – raise potential output, which in turn creates additional options for demand-oriented policies. Figure 5 shows the enormous volatility of TFP_{trend} estimates. The Commission estimates negative cyclical TFP rates ex-post for all countries in 2008 and 2009, indicating that output declined by much more than either employment or the capital stock could account for. TFP estimates for Italy imply that the Italian economy has been ‘unlearning’, exhibiting technological and organisational regress for over ten years – implying higher structural deficits and more fiscal consolidation pressure. In fact, downward revisions in ‘trend productivity’ have restricted fiscal policy scope in several European countries in the aftermath of the crisis (Klär, 2013), although it remains contestable whether TFP_{trend} -estimates represent useful productivity measures, given that they are per assumption residuals determined by forces outside of and hence unexplainable by the model.

Figure 5: TFP trend estimates and cyclical TFP for selected countries, 2007-2015, Source: AMECO Spring 2016.



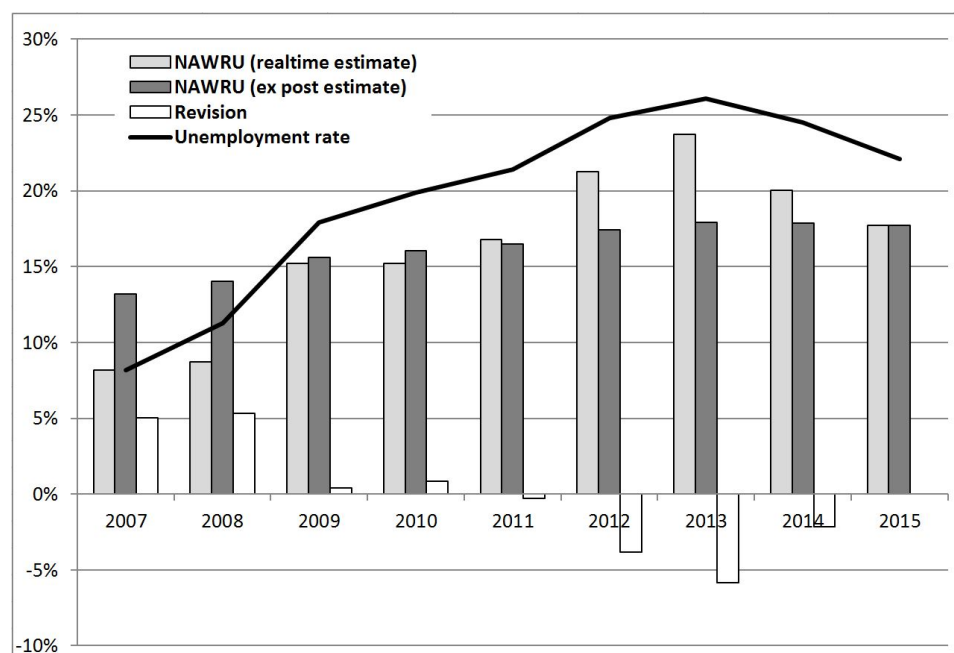
6.3 “The technical and the political”

We now examine the details of how “the technical and the political blur together”, since “there is no such thing as technical discussions on output gaps.” (FC2) One consequence of the close alignment between theory and policy is that technical idiosyncrasies feed back into the political process – and vice versa. This point can be illustrated by pointing to the phenomenon that NAWRU-estimates move close to actual unemployment (Figure 6), 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 NAWRU estimates are of contested quality (Heimberger et al., 2017) stands in contrast to the political discourse, where high NAWRU estimates are understood as prime indicators for ‘rigid’ labour market conditions (Orlandi, 2012) – although labour market institutions do not 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 political action: in times when *“the technical demands on ministers definitely increased”* (FC1), country cases in which diverging interpretations of the Commission’s model estimates are no exception.

A similar case 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 as drastic as indicated in Figure 6, which compares the ex-post NAWRU estimates for Spain as given in Figure 4 with real-time estimates. The difference between these two series is that the Commission calculated the former by incorporating all relevant data up to 2015, while the latter shows the estimates produced 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 6: Real time and ex-post NAWRU estimates for Spain, 2007-2015, Source: European Commission; own calculations.



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 NAWRU estimates are interpreted as an indication for ‘labor market rigidities’, which can only be confronted by deregulating the labour markets. Thus revisions are also the target of specific political demands such as Spain’s call for changes to the NAWRU-setup. (Ciucci, Zoppe, 2016). On a *technical level*, Spain simply demanded modifications of the underlying Kalman-filter model, namely the introduction of a second-order autoregressive process instead of a first-order autoregressive process in the estimation of unemployment gaps. On a *theoretical level*, 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). Finally, on a *political level* this change represented a very important issue for the Spanish economy, as estimates based on the traditional NAWRU-specification indicated an overheated labour market although actual unemployment was above 20%. 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, with Spain pushing hard for the change and some Northern countries unwilling to compromise. In the end, *“the technical experts won out”* (EC1). It should be added that the agreement

could only be reached in 2013 under the condition that each member state would still be allowed to decide on its preferred NAWRU estimation method.

This chapter has discussed economic models as a means for mediation between paradigms and programs. We presented three findings. First, the PO-model provides additional expert legitimacy for those officials acting in accordance with its imperatives, which largely coincide with those of the predominant supply-side paradigm. Reference to impartiality and common ownership of the model supplement the notion of technical expertise embedded in the model and further strengthen the legitimacy of the decisions drawn from the PO-model's estimates. Second, the model manages the prioritization of paradigm-compatible reform politics over paradigm-incompatible stimulus politics by an allegedly "impartial" estimation procedure. Third, we find that politics and modelling are not only intertwined on a conceptual but also on a discursive level.

7 Normative level: The model's transmission into narratives

In what follows, we provide a closer look at the impact of the PO-model on political narratives. Given the technical sophistication of the model we do not expect it to play a direct role in public debate and discourse. This is in line with our theoretical argument made in Chapter 2 that the model operates on a level that is largely concealed from the public. We argue that moving from a model-based debate into a public debate requires tying the former to specific narratives. Notably, we find only subtle traces of the model in the media, and less subtle traces in public speeches of leaders in European institutions.

7.1 Highlighting and hiding through models and narratives

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*". The purpose of the model is "*to convey a story to your political master and journalists*" (EC2). We try to illustrate the relationship between the model and narratives by a fictional, three-step counselling dialogue (Figure 7) that reveals how models and narratives highlight certain aspects while they hide others.

Figure 7: Highlight and hide – coincidences between models and narratives

Policy crunch question	Narratives highlight	Model	Narratives hide
How foster growth?	Growth is driven by supply factors!	Supply-side paradigm: $Y = L^\alpha K^{(1-\alpha)} TFP$	Demand-side paradigm: $Y = \text{demand (C)} + \text{speculation vs. investments (I)} + \text{public spending (G)} + \text{trade (X - M)}$
How foster supply?	Increase employment to increase growth!	L_{pot} : NAWRU-model K : exogenous α : exogenous, constant TFP_{trend} : residual	Monetary policies Income distribution Industrial policies
How foster employment?	Reform labour markets to increase employment!	NAWRU \rightarrow u-NAWRU	Dampen crisis effects

We take as given that economic growth serves as a meta-goal in European economic policy. Thus, the first and foremost question is: how to foster economic growth? The PO-model highlights the importance of supply-side factors, while the possibility of demand-led growth is pushed into hiding. As a consequence, 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, where European policy-makers largely downplayed the impact of cuts in public spending on aggregate demand (Blyth, 2013; Heimberger, 2017).

Consequently, policy-makers may ask: how to foster supply? Both the model and its accompanying narrative, tend to emphasize labour supply over the other factors of production. This feature is stressed several times in the technical papers by “highlighting the close relationship between the potential output and NAWRU concepts” (e.g. Havik et al, 2014:5). By assigning the NAWRU a core role, the model implicitly discounts a series of other policy options. Productivity, for instance, is conceptualized as a mere residual, whose movements are deemed unpredictable by definition, making it difficult to think about industrial policies or investment strategies within the model framework. Similarly, monetary policy and 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. Additionally, capital K is considered to be insensitive to the cycle and per definition always fully utilized; capital supply automatically adjusts itself to productivity conditions (e.g. Havik et al, 2014:11). Hence, the model tends to hide these aspects while it highlights the political narrative that increasing growth by increasing employment is eventually to be achieved by increasing labour market flexibility, i.e. making it easier for firms to hire and fire.

Finally, policy makers may ask: how to foster employment? We have documented that unemployment is statistically transformed into the NAWRU, which is deemed 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, 2012:1). The implication for policy makers is to conduct labour market reforms and adopt other measures that increase the workers willingness to accept job offers that otherwise would be unattractive.

Whenever the NAWRU is estimated to be close to actual unemployment – even if this could be an artefact of statistical filtering (Heimberger et al., 2017) – ‘weak’ economies need ‘determined reformers’ leading their people into a better future. In terms of a narrative, the triad of diagnosis, treatment and recovery could read: *weak growth → cut public finance and implement brave reforms → strong growth and new jobs*.

If, in contrast, NAWRU estimates remained stable despite rising unemployment, the resulting cyclical unemployment would indicate a demand shortfall and lend support to increasing public investment as a counter-measure (Klär, 2013). This case is hard to explain in a neoclassical framework and even harder to illustrate within the supply-side narrative. A Keynesian narrative of the state as investor of last resort, however, could read: *high unemployment → resolute public investment and deliberate deficit spending → strong growth and new jobs*.

7.2 Tracing the model in media discourse and selected speeches

In order to evaluate the role of the model in media discourse, we compiled a database of articles published in five European quality papers between 2010 and 2015 that contain “structural deficit” or synonyms (e.g. “cyclically adjusted budget balance”)⁴. Of the compiled 457 articles (see Table 4) only 3% made any reference to the underlying PO-estimation-methodology (Category 3, e.g. by mentioning “potential output”). While 23% included only isolated numbers on the Commission’s estimates (Category 2, e.g. by mentioning “1% structural deficit”), 74% of the articles mentioned neither the estimation-methodology nor concrete structural deficit numbers (Category 1).

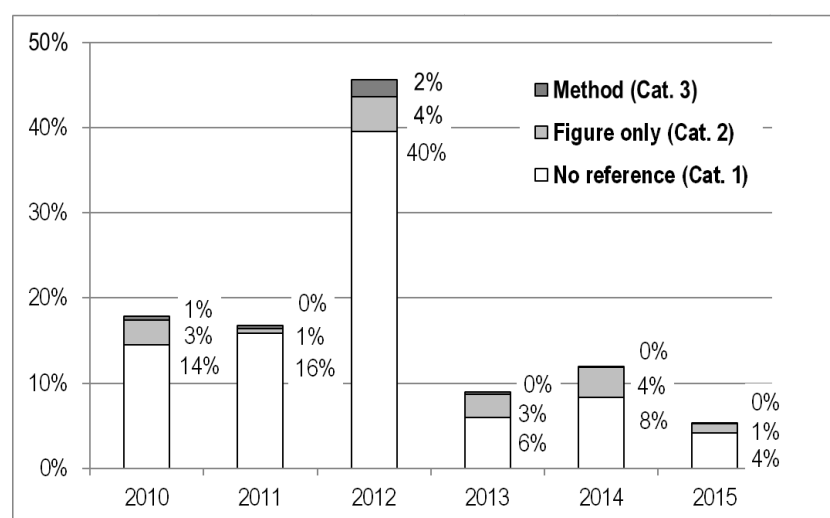
⁴ Articles that refer to regional or domestic fiscal policies and lack any reference to European aspects were excluded. Le Monde Diplomatique was analysed in the German language edition.

Table 4: Articles on the structural deficit and depth of PO-model coverage in five quality papers, 2010-2015.

	Articles	No reference Cat. 1	Numbers only Cat. 2	Method Cat. 3
Economist	16	31%	56%	13%
Financial Times	176	87%	13%	1%
Frankfurter Allgemeine Zeitung	108	35%	58%	6%
Die Zeit	140	91%	8%	1%
Le Monde Diplomatique	17	88%	6%	6%
Total	457	74%	23%	3%

To evaluate overall coverage over time, we normalized the data with respect to the number of issues published per year. We find that a fictional subscriber of all five papers found an article on structural deficits in about 18% of all issues in 2010 and 2011. In 2012, the coverage rose to 45%, 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% in 2015.

Figure 8: Newspaper articles in five newspapers (see Table 4): Coverage of structural deficit in articles (normalized with the number of issues per year). Explanations of categories: see text.



While this media analysis shows that even quality newspapers generally fail to provide in-depth coverage on the role of the PO-model in coordinating fiscal policies, politicians frequently pick up the theme of the ‘brave and fearless reformer’ that is also pushed by media outlets.

“We will keep pushing for what we call the virtuous triangle of investment, structural reforms and consolidation of public finances. This strategy is at the heart of everything we do. (...) Countries with the courage to reform are the ones who are feeling the benefit.” (Juncker, 2016)

In line with the findings of section 6.2, we also find support for a bias that favours ‘labour market reforms’ over stimulus policies:

„Structural reform is our key challenge. No stimulus can replace the need to make our economies more competitive and fit for the 21st century. To address weaknesses in our European economies, we need structural reforms. (...) We need to improve our labour markets, lower the tax wedge on labour and further improve the skills of our workforce.“ (Dijsselbloem, 2015)

Finally, ECB president Draghi also envisaged structural reforms as an imperative without alternative:

„While keeping output close to potential is about the right policy mix, raising potential is above all about structural reforms.“ (Draghi, 2016)

„In the euro area structural reforms are not a policy choice. They are a necessity that follows from the special way in which our monetary union is constructed (...). This imperative has always been understood in principle.“ (Draghi, 2015)

The emphasis on ‘reform courage’ and ‘virtuousness’ represented in those speeches depicts policy-making as an issue not of interests and ideas but of ‘non-alternatives’ and ‘reform opportunities’ that must be grasped by assertive policy-makers. The lack of media coverage and analysis on the underlying technicalities of estimating the ‘structural deficit’ further serves to mask the role of the PO-model as a prime device shaping policy-making.

8 Conclusions

The aim of this paper was to improve our understanding of the role of models in the political process. We focused on the Commission’s potential output model, which is crucial for fiscal policy coordination in Europe. We traced the model’s historical origins, technical specificities and political functions.

In essence, we document that the PO-model translates paradigmatic priors into political action. It does so by manufacturing legitimacy for established paradigmatic views and political decision makers. Furthermore, the model maps political ambitions onto theoretical arguments – in a way that biases political consultations in favour of the dominant supply-side paradigm. By examining cases in which technical features influence political decisions and political demands influence technical constructions, we showed that technical aspects and political arguments are effectively blurred when it comes to negotiating policies.

In addition, we argue that the model is connected to specific political narratives, which highlight certain aspects and conceal possible alternatives. The model remains hidden from public awareness; accompanying narratives are deliberately composed to influence the public debate: large benefits are to be gained from opening the ‘black box’ of economic models, with the goal of gaining a better understanding of their actual impacts on policies.

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