BULLETIN OF POLITICAL ECONOMY
16:1 (2022): 57-69

Potential output measurement and structural unemployment (NAWRU) in the context of the European Union

CLAUDIA FONTANARI* **AND RICCARDO PARIBONI****

Abstract: The potential output of an economy is a key concept in the context of the EU fiscal regulation, as its estimation is used to calculate the "structural" budget balances that determine the specific fiscal policy directions of individual countries. After providing an overview of the methodologies adopted in the context of the European institutions to estimate potential output, we discuss different meanings and interpretations of the concept, which reflect different theoretical standpoints. We highlight some problems related to the mainstream explanation and the paradoxical outcome that the estimated value for the theoretical magnitude, the one that should act as an attractor for the realized one, ends up being determined, mostly, by the realized, effective variable. Finally, we elaborate on the policy implications within the EU regulatory framework that ensue from the previously discussed issues, such as the prescription of restrictive fiscal policies, to comply with European fiscal rules, even in recessions.

Keywords: potential output, NAWRU, structural budget balance, fiscal policy

JEL Code: E23, E24, E60, O40

INTRODUCTION

The 2005 reform of the Stability and Growth Pact (SGP), within the European Union's framework for fiscal surveillance, introduced the idea that public finances of member states should be assessed in "structural" terms. The reform stated the principle that each member state must meet a medium-term objective (MTO) based on the general principle of a zero structural budget balance. To identify the structural component, it is therefore necessary to distinguish, in the overall actual balance, the component whose

* Roma Tre University, claudia.fontanari@uniroma3.it
** DEPS, University of Siena, riccardo.pariboni@unisi.it

changes are due to fluctuations in the business cycle from the cyclically adjusted component, which represents the value of the government balance that prevails when GDP is at its potential level. The principle of a zero structural balance thus stipulates that the actual budget balance must equal only the cyclical component, which embodies the action of the automatic stabilizers.

With these rules in mind, in this short article we will focus our attention on how the potential level of output is calculated for the Eurozone countries and the consequences that the conceptual and empirical definition of potential GDP adopted by the European Commission (EC) has for the Eurozone economies in terms of assessing their fiscal space. We discuss different meanings and interpretations of the concept, which reflect different theoretical standpoints. In contrast to the notion of potential output, implicit in the EC methodology, as the center of attraction of actual output that is supposed to fluctuate symmetrically around it, we present a different notion, according to which systematic negative deviations of actual output from its potential path can occur. This alternative notion is grounded on the Keynesian idea of the absence of automatic self-stabilizing mechanisms, which supposedly ensure the tendency of actual output to gravitate around its potential level.

The theoretical perspective adopted clearly influences how the estimation techniques are designed and implemented. For this reason, we analyze some of the problems associated with the methodology adopted by the EC, pointing out the overdependence of potential output—but the same could be said for NAWRU and NAIRU on the one hand and actual unemployment rate on the other—on realized output. The result is paradoxical, since the estimated value for the theoretical magnitude, which should act as an attractor for the realized one, ends up being determined, mostly, by the actual variable. The policy consequence is apparent: when the mainstream notion of potential output is replaced with other notions, it results in a much wider fiscal space than that calculated through standard estimates. This implies that the fiscal policies of Eurozone member states are constrained by a questionable conception of potential output and an empirical methodology that assumes, rather than proves, this notion.

The article is structured as follows. In the next section, the mainstream notion of potential output is presented along with the definition and calculation of the structural budget balance in the European framework. Then, we describe the main techniques for estimating potential output, focusing on the production function approach used by the EC, and analyze the policy

implications in terms of available fiscal space of different conceptions of potential output and business cycle. The last section concludes with some final remarks.

POTENTIAL OUTPUT AND STRUCTURAL BUDGET

The potential output of an economy is a key concept in the context of the EU fiscal regulation, as its estimation is used to calculate the "structural" budget balances that determine the specific fiscal policy directions of individual countries. Since potential output is an unobservable magnitude, the theoretical assumptions and statistical techniques on which its estimation is based, as well as the interpretation that can be attributed to it, play a key role.

The strategic role of potential output estimates has fueled a growing debate regarding the methodologies used by leading international institutions. In this article, we focus on the methodology adopted by the European Commission (EC) for estimating potential output and the output gap (the difference between actual and potential output). The latter has become crucial for European economic policy, especially since the implementation of the Fiscal Compact, which combines the requirement of a balanced budget in the long run with a set of Medium-Term Objectives (MTOs), relating to the "structural" (i.e., the cyclically adjusted) budget balance rather than the actual budget balance.

In the European framework, potential output is defined as the highest level of output that an economy can achieve by fully utilizing available productive resources without generating inflationary pressures, and it is interpreted as a long-run equilibrium level, determined by supply factors and institutional variables, around which actual output gravitates. It follows that the difference between actual and potential output is interpreted as a measure of the cyclical position of the economy and, as such, used by the EC to assess how much of the fiscal deficit (or surplus) in a particular country can be ascribed to variations in the business cycle and how much, instead, is to be considered structural. The imposition of the zero structural balance target, in the EU's fiscal regulatory framework, implies that an increase in a country's structural deficit results in pressure, exerted on that country, to implement fiscal consolidation, while a decrease in the structural deficit (or an increase in the structural surplus) reduces the urgency of fiscal adjustment (Carnazza et al. 2021).

The importance of estimating potential output, in this framework, is readily apparent: in determining the actual budget balance, a wider output

gap in absolute value will result in a greater weight being given to business cycle effects, leading to the estimation of a larger structural budget balance. The estimate of potential output is thus directly linked to the margins of flexibility in fiscal measures granted to individual European countries, which may vary from country to country even with the same actual budget balance.

Formally, the structural budget balance measures the position of government accounts adjusted for the effects arising from cyclical fluctuations in the economy:

$$SB_t = CAB_t - oneoffs_t \tag{1}$$

where CAB_t is the cyclically adjusted budget balance and $oneoffs_t$ indicates the number of one-time measures as a percentage of GDP. In turn, the cyclically adjusted budget balance is defined as follows:

$$CAB_t = \frac{B_t}{Y_t} - C_t = \frac{B_t}{Y_t} - \varepsilon \cdot OG_t \tag{2}$$

where $\frac{B_t}{Y_t}$ measures the budget balance in relation to GDP and C_t represents the cyclical component, which depends on the measure of the output gap (OG_t) based on the elasticity ε of the budget balance to changes in the output gap (which is called the cyclical-adjustment budgetary parameter). Since in the European framework SB_t should equal zero, the only allowed budget movements would be those related to automatic stabilizers. If, in fact, we derive the definition of the actual balance from (2) and substitute the definition of the cyclically adjusted budget balance from (1), we get:

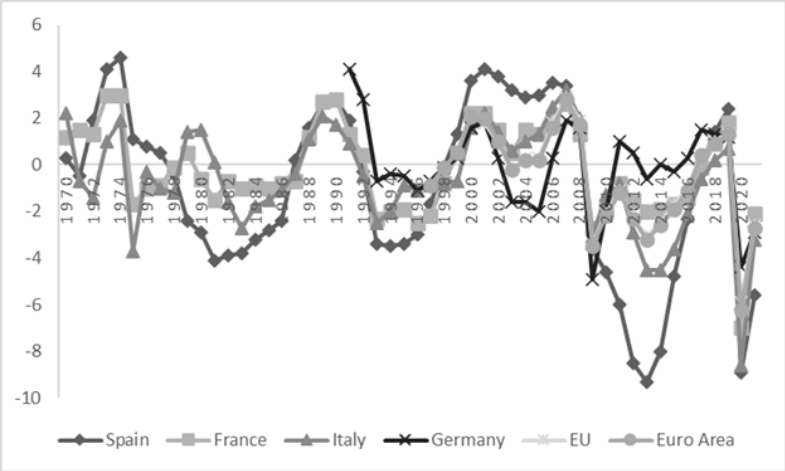
$$\frac{B_t}{Y_t} = CAB_t + C_t = (SB_t + oneoffs_t) + C_t \tag{3}$$

Hence, given the goal of zero structural balance, it follows that:

$$\frac{B_t}{Y_t} = C_t = \varepsilon \cdot OG_t \tag{4}$$

that is, for a given parameter ε, the size of the actual budget balance will be determined by the size of the output gap only. A negative output gap determines the portion of the actual budget that does not need to be corrected by discretionary fiscal policies. As it is apparent from these definitions, an increase in the output gap (in absolute value) leads to an improvement in the structural budget balance, allowing for greater flexibility in government spending (see Carnazza et al. 2021).

Figure 1: Output Gap, expressed as a percentage of potential output.



Source: AMECO

Table 1: Output Gap, expressed as a percentage of potential output.

	Eu	Euro Area	Germany	Spain	France	Italy	Portugal	Finland	Sweden	United Kingdom
1970-79				1	0,68	-0,18	-0,43	-2,1	0,21	0,77
1980-89				-1,87	-0,33	-0,43	-1,89	-0,02	-0,25	0,32
1990-99			0,41	-0,94	-0,67	-0,68	1,5	-1,29	-2,02	-0,13
2000	-	2,1	1,6	3,6	2,2	1,6	3,1	3	1,9	2
2001	1,8	2	1,8	4,1	2,2	2,2	2,2	1,4	0,3	1,2
2002	0,9	1	0,3	3,8	1,5	1,4	0,9	-0,4	-0,5	0,6
2003	-0,2	-0,2	-1,6	3,2	0,5	0,6	-1,4	-1,5	-1	1,1
2004	0,3	0,2	-1,6	2,9	1,5	1	-0,8	-0,4	0,4	1
2005	0,3	0,2	-2	3	1,3	1,3	-0,9	-0,3	0,6	1,1
2006	1,8	1,6	0,3	3,5	2	2,5	-0,1	1,4	2,4	1,6
2007	2,9	2,8	1,9	3,4	2,6	3,2	1,6	4,4	3,2	1,9
2008	1,9	1,7	1,6	1,3	1,3	2	1,4	3,6	0,5	0,1
2009	-3,4	-3,5	-4,9	-3,6	-2,7	-3,1	-1,7	-5	-5,3	-4,9
2010	-2,1	-2,2	-2	-4,6	-1,9	-1,3	-0,1	-2,2	-1,4	-3,9
2011	-1,1	-1,2	1	-6	-0,8	-0,8	-1,3	0	0,1	-3,5
2012	-2,3	-2,3	0,5	-8,5	-1,5	-2,9	-4,3	-1,6	-2	-3
2013	-3,1	-3,2	-0,6	-9,3	-2	-4,5	-4,5	-2,6	-2,4	-2,3
2014	-2,5	-2,6	0	-8	-1,9	-4,5	-3,6	-3,1	-1,7	-0,9
2015	-1,7	-1,9	-0,3	-4,8	-1,7	-3,6	-2,1	-3	0,6	0,1
2016	-1	-1,1	0,3	-2,3	-1,4	-2,1	-0,9	-1,2	0,4	0,5
2017	0,4	0,4	1,5	0	-0,1	-0,6	1,3	0,7	0,6	1,1
2018	1	0,9	1,3	1,4	0,9	0,2	2,7	0,4	0,4	1,5
2019	1,3	1,3	1,2	2,4	1,8	0,7	3,9	0,3	0,2	2
2020	-5,9	-6,2	-4,4	-8,9	-7	-8,6	-6,1	-3,7	-4,3	-8,6
2021	-2,6	-2,7	-2,9	-5,6	-2,1	-3,2	-3,3	-1,8	-2	-3,3

Source: AMECO (values at 1970-79, 1980-89 and 1990-99 are corresponding to the average output gap for that decade)

Although there are many methodological and theoretical critical issues

related to the definition and measurement of potential output and output gaps, it may be useful to see what the data tell us. Figure 1 provides a glimpse of the evolution of the output gap in Italy, compared with that of a selection of European countries and the European Union and Euro Area as a whole, since 1970. In the face of a remarkable synchrony of the business cycle, as measured by the trend of the output gap, it particularly emerges, unsurprisingly, how the aftermath of the European sovereign debt crisis has affected Italy - and more generally the Mediterranean countries - more impetuously than the European average. A similar argument can be made about the last two years, namely 2020 and 2021, showing how the economic consequences of the pandemic have been felt particularly in our country.

METHODOLOGIES FOR ESTIMATING POTENTIAL OUTPUT

The concept of potential output as a non-inflationary long-run equilibrium around which actual output gravitates is not theoretically neutral. From a different perspective, which draws on the Keynesian theoretical framework, potential output is interpreted as an upper ceiling on the actual level of output in an economy normally characterized by less than full employment. Potential output is thus defined as the amount of output that can be obtained by fully using the available productive resources. This basic theoretical difference has a major effect on the way potential output, an unobservable quantity, is empirically estimated.

Two main classes of estimation methods result from the mainstream theoretical interpretation: purely statistical methods (which obtain information from the series of actual output) and economic methods (which use additional economic relationships) (for a finer review of current estimation methods see Fontanari et al. 2020). As for the first class, the actual output series is decomposed into a trend component and a cyclical component through the application of univariate statistical filters. By identifying the trend of actual output as the potential level of output, these methodologies assume – rather than prove – that actual output tends to fluctuate around potential output and that the two magnitudes cannot diverge other than temporarily from each other. Methods in the second class are also structurally influenced by the theoretical assumptions on which they rely. Within this class, some methods use the Phillips curve to estimate the NAWRU – that particular equilibrium unemployment rate that is associated with stable wage growth – according to the theoretical principle that positive (negative) changes in inflation must correspond to negative (positive) unemployment gaps, and from these unemployment gaps, output gaps are then calculated; others directly estimate

the evolution of supply factors over time, based on the theoretical principle that potential output growth is exclusively a supply-side phenomenon. Among these, a widely used methodology, which is also the basis for the European Commission's estimates, is the production function method.

The methodology adopted by the European Commission (D'Auria et al. 2010; Havik et al. 2014) to estimate potential GDP is based indeed on a Cobb-Douglas production function at constant returns to scale:

$$Y_t = L_t^{\alpha} \cdot K_t^{1-\alpha} \cdot TFP_t \tag{5}$$

where Y_t is GDP in real terms, L_t represents labor, K_t is capital, and TEP_t is total factor productivity. According to this representation, potential output results from the combination of the productive factors labor and capital, and total factor productivity, expressed at their trend levels, obtained through appropriate statistical filters. The parameter α represents the output elasticity of labor which, assuming constant returns to scale and perfect competition, can be estimated directly from the wage share series.

Specifically, potential labor is defined as:

$$L^{\alpha} = Part \cdot Popw \cdot (1 - NAWRU) \cdot h \tag{6}$$

where $Part$ represents the structural component of the labor force participation rate, $Popw$ is the working-age population aged 15-74, h is the structural component of hours worked per employee, and $NAWRU$ is the non-inflationary unemployment rate. The NAWRU estimate is obtained by applying a bivariate Kalman filter in a trend-cycle decomposition of the series of the actual unemployment rate that uses the information from a specification of the Phillips curve (Havik et al. 2014).

Regarding capital stock, instead, the potential level is assumed to be equal to the actual level. The level of capital is built by cumulating the series of gross investment, assuming a constant depreciation rate and full utilization of the existing capital stock, and the perpetual inventory method is adopted. Hence:

$$K_t = (1 - \delta)K_{t-1} + I_t \tag{7}$$

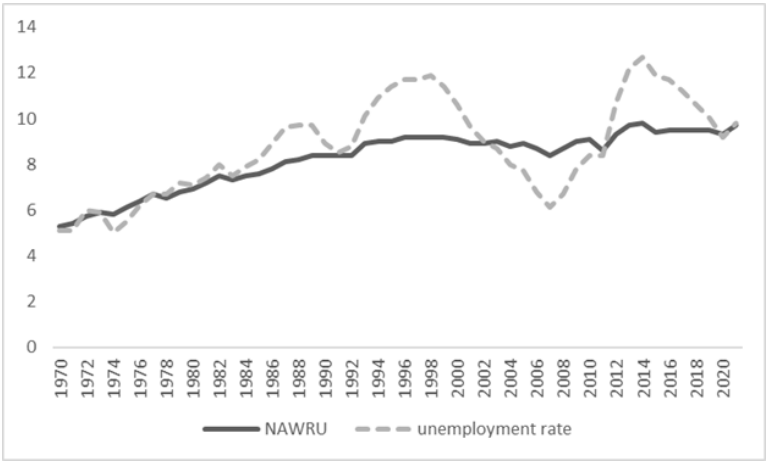
where the capital stock in each period K_t is measured by the previous period stock net of depreciation δ and increased by the flow of new investment I_t.

Finally, potential TFP is estimated as the trend component of TFP obtained as a Solow residual by regressing actual output on actual inputs. Since fall 2010, a Bayesian bivariate Kalman filter method is adopted for trend extraction, which exploits the link between TFP cycle and capacity utilization

(D'Auria et al. 2010).

Equation (6) features that the estimated NAWRU plays a key role in estimating potential output. The higher the NAWRU, the less the labor input that enters the production function, and thus the lower the potential output. If the NAWRU increases during a recession, it results in a decrease in potential labor, which in turn leads to a fall in potential GDP and a reduction in the output gap, resulting in less flexibility allowed in fiscal policy. However, the estimation of this unobservable quantity also has several critical issues: ideally, the value of the NAWRU should be deduced from wage inflation data, but in practice, due to the erratic nature of the empirical wage-unemployment relationship, the NAWRU is actually defined as the trend component of the series of the effective unemployment rate. This leads to an over-sensitivity of the estimated NAWRU to trends of the actual unemployment rate, so that any observed persistent change in the average level of actual unemployment is automatically interpreted as a change in the NAWRU, invoking the concept of hysteresis (Carnazza et al. 2021). Figure 2, below, shows the co-evolution over time of the effective unemployment rate and NAWRU for Italy, starting in 1970.

Figure 2: NAWRU and effective unemployment rate in Italy.



Source: AMECO

Table 2: The NAWRU in major European countries.

	Eu	Euro Area	Germany	Spain	France	Italy	Portugal	Finland	Sweden	United Kingdom
1970-79			2,02	7,43	4,48	6,06	4,42	2,95	1,72	5,09
1980-89			6,2	14,2	7,85	7,65	7,23	4,38	2,27	9,06
1990-99			7,99	17,56	9,1	8,89	5,78	10,72	6,22	7,97
2000	9,7	9,4	9,1	14,9	9,1	9,1	4,9	9,8	6,8	6,4
2001	9,6	9,2	9,3	13,9	9	8,9	4,9	8,9	6,5	6,1
2002	9,6	9,2	9,4	13,9	9	8,9	5,3	8,3	6,4	6
2003	9,6	9,3	9,5	13,7	9	9	5,8	7,8	6,3	5,9
2004	9,5	9,3	9,5	13,6	8,9	8,8	6,2	7,5	6,2	5,8
2005	9,4	9,3	9,4	13,4	8,9	8,9	7	7,2	6,3	5,7
2006	9,3	9,2	9,1	13,6	8,9	8,7	7,7	7	6,3	5,8
2007	9,1	9,2	8,7	13,8	8,9	8,4	8,5	6,8	6,3	5,8
2008	9	9,2	8,2	14,5	8,8	8,7	9,3	6,9	6,4	5,8
2009	9,2	9,4	7,7	15,8	8,9	9	10,4	7,4	6,7	5,9
2010	9,2	9,4	7	16,1	8,9	9,1	11,2	7,4	6,7	5,9
2011	8,9	9,1	6,4	16,3	8,9	8,6	11,9	7,4	6,7	5,8
2012	9	9,2	5,8	17	8,9	9,3	12,5	7,5	6,8	5,8
2013	8,9	9,1	5,3	17,2	8,8	9,7	12,7	7,7	6,8	5,7
2014	8,6	8,9	4,8	16,9	8,8	9,8	12,1	7,7	6,8	5,6
2015	8,2	8,6	4,4	16,5	8,8	9,4	11,5	7,8	6,7	5,5
2016	7,9	8,4	4	15,9	8,7	9,5	10,8	7,5	6,7	5,3
2017	7,5	8,1	3,8	15,3	8,6	9,5	9,8	7,4	6,6	5,2
2018	7,2	7,8	3,5	14,6	8,6	9,5	8,8	7,1	6,4	5,1
2019	6,9	7,6	3,3	13,9	8,5	9,5	8	6,8	6,3	4,9
2020	6,7	7,4	3,3	13,7	8,4	9,3	7,4	6,8	6,3	4,9
2021	6,6	7,3	3,2	13,1	8,3	9,7	6,8	6,5	6,2	4,8

Source: AMECO (values at 1970-79, 1980-89, and 1990-99 are corresponding to the average NAWRU for that decade).

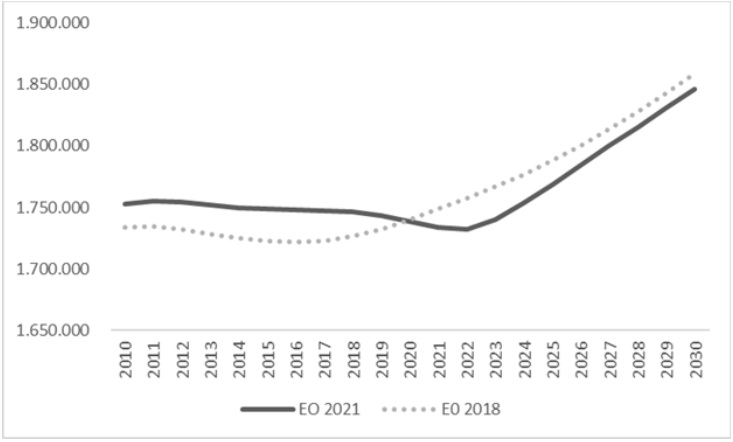
During the 2010s, the performance of the labor market of peripheral Eurozone countries resulted in frequent upward revisions of the NAWRU estimates and their persistence at high levels (Table 2). The worsening of the labor market was then interpreted in structural terms and not as a cyclical phenomenon. This interpretation implies that part of that worsening is not reversible through demand policies, since it is assumed that it is not possible to reduce unemployment without bringing about a simultaneous increase in prices. The fact that the NAWRU reflects too closely the dynamics of the actual unemployment rate, dynamics that should rather be associated, at least in part, with cyclical phenomena, leads to a tendency for EC estimates to underestimate the cyclical component of the budget, resulting in the prescription of restrictive fiscal policies to comply with European fiscal rules even in recessions and especially in those countries suffering from higher unemployment rates. These problematic issues have been addressed with a partial revision of the estimation methodology (see Havik et al. 2014), without succeeding, however, in substantially reducing the over-reliance of the NAWRU on actual unemployment rate trends.

Another critical issue related to the estimates of both the NAWRU

and, consequently, potential output, is their continuous revision (Ball 2014; Krugman 2018; Heimberger 2020; Carnazza et al. 2021). After the 2008-2009 crisis, several international institutions began to present frequent downward revisions of potential GDP estimates. The concept of hysteresis has been again invoked to provide a theoretical explanation for the lowering of potential output, a quantity that should be determined by supply factors alone, recognizing, at least in part, the role of aggregate demand in determining the long-run path of the economy. The Great Recession has, in this sense, made it clear that current estimation methods do not go much beyond calculating potential output as an elaborate moving average of actual output, resulting in an endogeneity of potential output estimates to the trend in actual output.

This feature of the estimation methods implies that we never observe very large output gaps opening up, even in deep recessions, due to the continuous downward revisions of potential output estimates that squeeze the room for fiscal policy. The above argument can also be seen by adopting the severe economic crisis triggered by the COVID-19 pandemic as a watershed. Figure 3 shows the forecasts on the evolution of Italy potential output made by the OECD at two different time points, when the long-term baseline projections were published in July 2018 and in October 2021. As is very clear, the slump in actual GDP experienced by Italy in the past two years is reflected in a downward revision of potential output estimates in the years ahead, with a persistent and lasting effect.

Figure 3: Italian potential output in millions of euros at constant prices (Euro 2015).



Source: OCSE, Economic Outlook No 103 - July 2018 - Long-term baseline projections (EO 2018) e OCSE, Economic Outlook No 109 - October 2021 - Long-term baseline projections (EO 2021).

ALTERNATIVE THEORETICAL INTERPRETATIONS

The various critical aspects of the estimation methods discussed above can be traced back to the theoretical approach and the concept of potential output on which they are based. As we have seen, according to an alternative theoretical perspective, potential output is conceived as an upper bound to economic activity, which can be achieved only if aggregate demand is strong enough to ensure a full utilisation of productive resources. However, within the normal functioning of an economy, it can very plausibly happen that economic activity fluctuates around a lower average trend; fluctuations around the trend represent the phases of the economic cycle, which are, hence, detectable independently from any reference to the concept of potential output. In other words, according to this theoretical perspective, the cycle is represented (and measured) by the fluctuations of effective output around an average trend, where the latter does not coincide with – and it is usually below - potential output. Therefore, effective production's trend is understood as an ex-post statistical average of realized output, and it can be measured independently from the concept of potential output. The latter, to the contrary, is the product level that would be achieved if productive resources were fully utilised, a level that will manifest itself only if aggregate demand is high enough to justify it. Moreover, this very level will not be exogenous to demand but it will grow when aggregate demand increases, due to the creation of new productive capacity through investment. The absence of any automatic mechanism capable of ensuring the tendency to full employment implies, moreover, that there will be relevant output gaps during prolonged slowdowns of the economy and that these gaps will be mostly negative, given that there is no reason to expect them to be evenly distributed around the zero (see Carnazza et al. 2021 and Fontanari et al. 2020, for an alternative empirical methodology based on this framework).

In the mainstream theoretical framework, on the other hand, the fact that the cyclical position of an economy is measured by the output gap means that it is defined by the distance between effective and potential output, and not by movements around an average trend. The output gap, hence, represents two different concepts: according to the first one, it measures the distance between the effective position of the economy and the position the economy would achieve if all the resources were fully utilised; according to the second, it measures the cyclical position of an economy, to be understood as a temporary movement away from the equilibrium level, that is to say, the highest output achievable without engendering inflationary pressures. This different interpretation acquires a

particular relevance when policy makers' objective is to remove the cyclical component from the estimated budget balance, for the purpose of defining which leeway can be accorded to fiscal policy. Moreover, given that in the mainstream interpretation effective output naturally tends to fluctuate around its potential level, the estimation of the latter ends up boiling down to effective output's trend. The consequence, in terms of the estimation of the structural balance, is that no importance is attributed to the effective, average path of an economy. If an economy fluctuates for several years around an activity level that is far from full utilisation of resources, European rules automatically imply that fiscal policy cannot be utilised to correct this average trend, which is characterized by an underutilisation of capacity, but only to correct the fluctuations around this trend.

A further and final element to consider – which, once again, has to do with the intersection between theoretical aspects, empirical evidence and policy measures – regards the implications of what has been briefly discussed for the Phillips curve. If NAWRU and NAIRU converge to the effective unemployment rate (and analogously, if potential output tends to its effective level), after decades of "accelerationist" infatuation, we find ourselves staring at a traditional, old school downward sloping Phillips curve, in which different levels of unemployment are associated with different and stable inflation rates (Stirati 2016). Hence, the theoretical bases for a vertical Phillips curve, in correspondence of a natural unemployment rate variously defined and immune to demand, prove to be, at the very best, weak. Nevertheless, this has not been enough to persuade the European institutions to abandon the theoretical and applied framework that has driven their fiscal policy "recommendations" in the last decades.

CONCLUDING REMARKS

In this short article we have provided an overview of the most commonly used methodologies for the estimation of potential output, with a particular focus on those adopted by the European Commission. It is not possible, however, to meaningfully discuss potential output - and the related NAIRU and NAWRU – on technical grounds only. As we have tried to argue, the concept itself has different meanings and interpretations depending on the theoretical perspective adopted, while the latter clearly influences and informs the way in which the estimation techniques are designed and implemented. For this reason, we have highlighted some problems related to the mainstream explanation, pointing to the over-reliance of potential output - but the same could be said about NAWRU and NAIRU on the one

hand and effective unemployment rate on the other - on realized output. The result is paradoxical, since the estimated value for the theoretical magnitude, the one that should act as an attractor for the realized one, ends up being determined, mostly, by the realized, effective variable. The policy implications of this paradox are far-reaching: if an economy fluctuates for several years around an activity level that is far from full utilisation of resources, European rules automatically imply that fiscal policy cannot be utilised to correct this average trend, which is characterized by an underutilisation of capacity. At the same time and specularly, NAWRU reflecting too closely the dynamics of the actual unemployment rate leads to a tendency for European Commission estimates to underestimate the cyclical component of the budget, resulting in the prescription of restrictive fiscal policies to comply with European fiscal rules even in recessions and especially in those countries suffering from higher unemployment rates. For all these reasons, a radical rethinking of European fiscal rules, and of the underpinning theoretical principles, is of utmost urgency, especially in the face of the global recession to come.

References

Ball, L.M. (2014), Long-term Damage from the Great Recession in OECD Countries, (No. w20185), *National Bureau of Economic Research*.

Carnazza, G., Fontanari, C., Liberati, P., Palumbo, A. (2021), From Potential GDP to Structural Balance: A Theoretical Reassessment and New Evidence for Italy, *Review of Political Economy*, https://doi.org/10.1080/09538259.2021.1959197, pp. 1-31.

D'Auria, F., Denis, C., Havik, K. M. C., Morrow, K., Planas, C. and Raciborski, C. (2010), The Production Function Methodology for Calculating Potential Growth Rates and Output Gaps, *European Commission Economic Papers*, no. 420.

Fontanari, C., Palumbo, A., Salvatori, C. (2020), Potential Output in Theory and Practice: a Revision and Update of Okun's Original Method, *Structural Change and Economic Dynamics*, 54 (C), pp. 247-266.

Havik, K., Mc Morrow, K., Orlandi, F., Planas, C., Raciborski, R. and Roger, W. (2014), The Production Function Methodology for Calculating Potential Growth Rates & Output Gap, *European Commission Economic Papers*, no. 535.

Heimberger, P. (2020), Potential Output, EU Fiscal Surveillance and the COVID-19 Shock. *Intereconomics*, *55*, pp. 167-174.

Krugman, P. (2018), The Economic Future Isn't What It Used to Be (Wonkish). The New York Times, available at https://www.nytimes.com/2018/09/30/opinion/the- economic- future- isnt- what- it- used- to- be- wonkish.html.

Stirati, A. (2016), Blanchard, the NAIRU, and Economic Policy in the Eurozone, available at https://www.ineteconomics.org/perspectives/blog/blanchard-the-nairu-and-economic-policy-in-the-eurozone.