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Structural unemployment vs. NAWRU: Implications for the assessment of the cyclical position and the fiscal stance

Julia Lendvai, Matteo Salto, Anna Thum-Thysen

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Comments and enquiries should be addressed to:

European Commission
Directorate-General for Economic and Financial Affairs
Unit Communication
B-1049 Brussels
Belgium
E-mail: ecfin-info@ec.europa.eu

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Abstract

This paper discusses the fiscal policy implications of applying an alternative output gap methodology. The alternative methodology replaces the NAWRU by the structural unemployment rate (SUR) estimated by DG ECFIN in the calculation of potential GDP. The note studies how the use of this method changes the properties of trend and cyclical variables and it analyses the properties of the estimated structural fiscal balance and fiscal effort for the EA12. The results suggest that the SUR-based potential growth and structural balance are somewhat less procyclical than the standard potential growth and structural balance. They are also somewhat less affected by forecast revisions at the end of the sample, i.e. the period relevant for fiscal policy. Also, the SUR-based indicators suggest worse underlying economic conditions in relatively good times and better underlying economic conditions in relatively bad times than the NAWRU-based indicators. Thereby, they tend to show a less favourable structural fiscal position in good times and a more favourable one in bad times. Quantitatively, differences in indicators are found to be larger for Member States which had sizeable fluctuations in the unemployment rate over the past decade. Given its different concept of the cycle and the trend component, other things equal, the SUR-method would provide incentives to accommodate highly persistent shocks (e.g. hysteresis), while the standard method considers these to be beyond the scope of fiscal policy.

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Keywords: structural balance, output gap, potential growth, debt, deficit, stabilisation.

Corresponding authors: Julia Lendvai, European Commission, DG Economic and Financial Affairs, julia.lendvai@ec.europa.eu, Matteo Salto, European Commission, DG Economic and Financial Affairs, matteo.salto@ec.europa.eu, Anna Thum-Thysen, European Commission, DG Economic and Financial Affairs, anna.thum@ec.europa.eu.

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1. INTRODUCTION

This note discusses the fiscal policy implications of applying an alternative potential output / output gap methodology, which is presumably more stable than the one retrieved with the commonly agreed methodology used for the purposes of budgetary surveillance in the EU. The analysis is motivated by recurrent criticism of the commonly agreed methodology, according to which this would produce potential output estimates that are not 'stable' enough. These criticisms have been echoed by some well-known commentators (see among many Cottarelli([1]) and Pisany-Ferry([2])). In particular, these have criticised the procyclicality of potential output and the fact that it moves too much with forecast revisions.

The alternative methodology considered in this paper replaces the NAWRU with a structural unemployment rate (SUR). The SUR is estimated as the part of the NAWRU that can be explained by institutional factors. Thereby, the SUR captures lower-frequency (longer-run) dynamics of the NAWRU and can be expected to be less subject to changes than the NAWRU itself. The choice of this specific alternative was motivated by the availability of this indicator and by its property to be stripped of any variation going beyond that of structural indicators and long-term developments. Other approaches to model low-frequency output dynamics could be conceived. The results in this note should be considered as an illustration of the general implications of the use of a lower-frequency potential output.

The note distinguishes between *stability within a forecast vintage*, which is related to the procyclicality of a variable, and *stability across forecast vintages*, which is related to the impact of forecast revisions on the variable. It analyses whether and to what extent the SUR and other trend variables based on the SUR are more stable than the NAWRU and trend variables based on the NAWRU. It then discusses the implications of using the SUR methodology for fiscal policy.

The results suggest that:

1. **The SUR method tends to increase both the within-vintage and the cross-vintage stability of potential output**. In particular, it implies a less procyclical potential output than the standard method. In addition, the SUR-based potential growth is also less affected by forecast revisions at the end of the sample, i.e. over the period particularly relevant for fiscal policy and surveillance.

2. **The SUR method tends to imply worse underlying economic conditions in relatively good times and better underlying economic conditions in relatively bad times than the standard method.** This observation is explained by the fact that the SUR-based potential output implies larger-amplitude cycles around the trend than the cycles estimated with commonly agreed methodology. The impact of forecast revisions on the output gap would also be reduced at the end of the sample for years with available outturn data. By contrast, for forecast years, the less procyclical potential output implies larger revisions in the output gap.

3. **The SUR-based structural balance (SB) is also found to be somewhat less procyclical than the one implied by the commonly agreed methodology**. Thereby, the SUR-based method implies a relatively better (worse) structural balance position than the standard method for countries in relatively bad (good) economic times. In addition, the SUR-based SB series' sensitivity to forecast revisions also tends to be slightly lower towards the end of the sample than the sensitivity of the standard SB.

4. **C*hanges* in the structural balance (i.e. the structural effort) are little affected**.

5. **The quantitative impact of the SUR-based methodology varies across countries.** The SUR method affects mostly Member States with larger fluctuations in unemployment recorded over time; i.e. in the EA12 especially EL, ES, IE and PT but also, to a somewhat lesser extent, DE, IT and NL. In most cases this implies that the SUR-based output gap is found to be more negative than the standard output gap in recent years and thereby, the SUR method tends to imply a more favourable structural balance position for the affected Member States since the crisis. By contrast, for DE, the SUR method turns out to suggest a smaller negative or even positive output gap in recent years as opposed to the standard method. By

([1]) C. Cottarelli: 'Potential growth rates and the working of SGP fiscal rules' in *Vox*, 2 March 2015 http://www.voxeu.org/article/assessing-compliance-stability-and-growth-pact-s-rules.
([2]) J. Pisani-Ferry: 'Unnecessary Instability' in Project Syndicate, 31 March 2015, http://www.project-syndicate.org/commentary/potential-output-fiscal-policy-by-jean-pisani-ferry-2015-03.

consequence, the SUR method suggests a less favourable structural balance position for DE than the standard method since the beginning of the crisis. For other countries, especially AT, BE, FI and FR, the quantitative difference between the two methods is found to be small.

To situate these results, it should be noted that, while some fiscal implications of a more stable trend seem appealing, other considerations might also play a role when deciding about the frequency of the trend and the cycle used for fiscal policy decisions. Specifically, the output gap extracted by the commonly agreed methodology has a frequency which is commonly accepted as the standard business cycle frequency. As such, these cycles are commonly viewed as the scope of monetary or fiscal policy stabilisation. Using a trend which has a lower frequency implies longer cycles which may be driven by highly persistent shock such as e.g. hysteresis effects. Therefore, using these lower-than-business-cycle frequency cycles for the purposes of fiscal policy surveillance also implicitly gives incentives for the accommodation of such highly persistent negative shocks via a looser fiscal policy; by the same token, it also tends to imply more restrictive fiscal policy to offset the impact of highly persistent positive shocks. The standard method would consider reaction to these shocks to be beyond the scope of fiscal policy and in the remit of structural policies.

Thereby, basing fiscal policy decisions on a low-frequency trend, allows for larger swings in the headline balance as well as in the debt-to-GDP ratio. As long as incentives are rigorously followed symmetrically in cyclical downturns and upturns, debt should remain well anchored under both methods. However, should this not be the case, debt might become less well anchored under the low-frequency method than under the commonly agreed method. This risk needs to be evaluated against the debt limits that governments may face.

The remainder of the note is organised as follows. Section 2 describes the structural unemployment methodology. Section 3 discusses the properties of the trend unemployment and potential growth as well as of the cyclical components implied by the different methodologies. Section 4 presents the repercussions of these changes on fiscal indicators and Section 5 discusses the implications of the use of low-frequency trends for the purposes of fiscal policy.

2. THE ALTERNATIVE METHODOLOGY

In order to assess the fiscal policy implications of applying an alternative potential output/output gap methodology, we explore the use of alternative methodologies to compute a cyclically adjusted unemployment rate (CAU). In ECFIN's commonly agreed metholodogy CAU is estimated as the NAWRU (Havik et al. (2014)). As an alternative, this note will build on the so-called structural unemployment rate (SUR) also estimated by ECFIN to anchor the NAWRU in the long-run.

The current method separates the actual unemployment rate into a trend component (the NAWRU used currently as a measure of CAU) and a cyclical component. This methodology is based on the view that the CAU (or the trend component) is not observable because not all structural determinants of unemployment can be observed nor is it possible to capture hysteresis effects (resulting from skill downgrading of the unemployed, wage setting by insiders etc.) in a fully satisfactory manner. By contrast, the cyclical component can more easily be linked to observable wage or price indicators - as the Phillips curve relationship suggests. Therefore the cyclical component is modelled more carefully while the structural component of unemployment is modelled as a time series process. For many EU countries a 2^{nd} order random walk process is chosen since it allows capturing long medium term swings in the unemployment rate. However the drawback of using such a process is that the forecasting properties of a 2^{nd} order RW are unrealistic. For example, if the NAWRU has increased between T and T-1, the 2^{nd} order random walk would predict that the NAWRU increases at that rate forever. For long-term projections, this requires replacing the NAWRU T+10 projection by another method, which allows the NAWRU to converge to a medium term NAWRU anchor in T+10.

For anchoring the NAWRU, ECFIN estimates the SUR (see also Havik et al. (2014)). The SUR is an attempt to capture the most important institutional factors which drive the trend of unemployment while correcting for the medium-term levels of relevant macroeconomic variables.

Specifically, for the purpose of this note, the Commission forecast vintage database was used to calculate the output gap using the SUR instead of the NAWRU for historical spring forecast exercises from 2007 until 2014. The output gap is calculated as the difference between actual and potential output. Potential output is calculated as the product of potential TFP, actual capital and potential labour, which is based on trend participation rate, trend hours worked, growth in population and the SUR (instead of the NAWRU).

SUR by country i and year t is defined as

$$SUR_{it} = f_i + \beta_1 \bar{M}_{i\bar{t}} + \beta_2 S_{it} \qquad (1)$$

where f_i is a country fixed effect, $\bar{M}_{i\bar{t}}$ are respective averages across time of three variables controlling for the long-term average levels of medium term macro-economic factors (total factor productivity trend, share of employment in the construction sector([3]) and long-term interest rates), S_{it} are four indicators of structural labour market policies (active labour market policies, unemployment replacement rates, tax wedges and union density) and $\beta_1$and β_2 are two parameter estimates from a panel regression of the NAWRU on the macro-economic M_{it} and on the structural policy indicators S_{it}. The panel regression setup is thoroughly discussed in Orlandi (2012). It is built on a theoretical model by Blanchard and Katz (1999). The choice of variables in $\bar{M}_{i\bar{t}}$ was based on work by Blanchard and Wolfers (2000).

Through the inclusion of S_{it} and $\bar{M}_{i\bar{t}}$ in the panel regression, SUR can reflect changes in structural indicators but also long-term changes in macro-economic trend variables. Thereby, the SUR can theoretically capture the impact of structural reforms, which would only be captured with some delay by the NAWRU. The included structural indicators were tested and identified as robust determinants as demonstrated in Orlandi (2012).

For this panel regression and the computation of SUR as in (1) we use the respective NAWRU vintages and combine them with measures for M_{it} and S_{it} stemming from the SUR database employed in the European Economic Forecast Autumn 2014, which contains data from 1985-2013 (for most countries). The time horizon of the SUR database is adjusted to each vintage. For example the 2013 NAWRU vintage is combined with the SUR database for 1985-2012.

Conceptually, the SUR is a low-frequency (long-run) trend which serves as a long-run *anchor* to the NAWRU capturing both medium and low frequencies (medium and long run dynamics). As such, the dynamics of the SUR is primarily driven by movements in structural indicators, while medium-term fluctuations are excluded. This implies that some persistent albeit not permanent shocks which were captured as trend component by the NAWRU will enter the cyclical component with the SUR. Notably, this concerns e.g. the impact of sectoral shifts or hysteresis effects which do enter the NAWRU whereas they would not be considered as part of the SUR.

Another possible shortcoming which concerns the SUR specifically, but does not necessarily concern all lower-frequency trend unemployment rates, is the homogeneity restriction for the elasticities imposed by the panel approach, which may hamper capturing country-specific dynamics. Note that country-specific *level* effects are taken into account through the fixed-effects approach employed.

It should also be noted that due do a one-to-two-years delay in the availability of institutional variables, the SUR cannot capture the impact of structural reforms in real time either.

The choice of the SUR as an alternative to the NAWRU for the purposes of this note was motivated by the availability of this indicator and by its property to be stripped of any variation going beyond that of structural indicators and long-term developments. Typical approaches to estimate low-frequency output (cf. Kuttner (1994) and Gerlach and Smets (1999)) and unemployment dynamics (cf. Gordon (1997), Apel and Jansson (1999a and b), OECD (2000)) rely on filtering methods in which persistent shocks in addition to purely structural factors can determine the trend series. Ball (2009) shows how the NAWRU can be affected by such hysteresis effects stemming from persistent shocks. The results in this note should be considered as an illustration of the general implications of the use of a lower-frequency potential output.

3. PROPERTIES AND IMPACT ON OTHER KEY VARIABLES

This section discusses the SUR in comparison with the NAWRU and compares the key properties of trend (trend unemployment, potential growth) and cyclical (output gap) macroeconomic variables implied by the structural-

([3]) Employment in the construction sector controls for boom- and bust- movements in the construction sector. Its coefficient is usually negative, indicating a decrease in the NAWRU as a result of a boom in the construction sector. During a construction boom, demand for low-skilled labour increases. This skill group typically displays a comparatively higher unemployment rate. These facts taken together lead to a lower NAWRU.

unemployment method and the standard commonly agreed method. In particular, it will focus on the stability of trend variables implied by the two methods and its implications for the cycle.

Stability can be defined in two ways. First, stability within a given forecast vintage, which is related to the smoothness of the trend or the procyclicality of a given variable; and second, stability across forecast vintages, which is related to the impact of forecast revisions on the trend and on the cycle. In general discussions it is assumed that stability within a forecast vintage also leads to more stability across forecast vintages. This section discusses the two concepts separately and thereby allows checking whether this implicit assumption can be confirmed.

3.1. STABILITY WITHIN FORECAST VINTAGES

Stability within forecast vintages can be captured by the volatility of a given variable over time. It is measured here as the within-vintage volatility of a variable averaged over the vintages of the 2007-2014 spring forecasts. Given that the SUR is a low-frequency indicator based on institutional variables which change relatively little and rather slowly over time, it can be expected to imply a less volatile potential output within forecast vintages than the one implied by the NAWRU.

Within-vintage volatility is also related to a variable's procyclicality: a less volatile trend also tends to be less procyclical as it moves less closely together with the actual variable. Thereby, the less volatile (less procyclical) the trend, the more volatile the cycle around the trend will be as more of the fluctuations of the observed variable will be attributed to changes in the cycle.

3.1.1. Trend unemployment

The data confirm that the SUR is less volatile than the NAWRU over the 2001-15 horizon. Indeed, the EA12 average standard deviation of the SUR tends to be significantly lower than that of the NAWRU; see Table 1. At the same time, there are differences across individual Member States. The volatility of the SUR is markedly below that of the NAWRU for EL, ES, IE, and PT, and to a somewhat lesser extent for DE, IT and LU. By contrast, for some Member States, the volatility of the two indicators is very close together and in some cases the volatility of the SUR even exceeds that of the NAWRU, albeit in most cases to a very little extent only (AT, FI, FR, NL([4])).

Table 1: Standard deviation of the unemployment rate, NAWRU and the SUR (2001 – 2015, average over spring forecast vintages 2007 - 2014)

U_rate	St.dev	**Trend u_rate**	St.dev NAWRU	St.dev Structural U_rate
AT	0.6	AT	0.2	0.3
BE	0.7	BE	0.2	0.2
DE	1.5	DE	0.8	0.5
EL	3.1	EL	1.8	0.2
ES	4.4	ES	2.9	0.3
FI	1.0	FI	1.1	0.9
FR	0.7	FR	0.3	0.4
IE	3.4	IE	2.8	0.6
IT	1.4	IT	0.8	0.3
LU	1.2	LU	0.8	0.3
NL	1.1	NL	0.5	1.0
PT	2.8	PT	2.0	0.2
Average	*1.8*	*Average*	*1.2*	*0.4*

Note: U_rate: actual unemployment rate; NAWRU: non-accelerating-wage-rate unemployment rate (commonly agreed methodology); Structural U_rate: trend unemployment rate based on the SUR.

([4]) NL seems to be somewhat of an outlier which is due to unusually large changes in active labour market policy expenditure (increasing the SUR from 2002 to 2006) and a large drop in the tax wedge in 2006.

The smaller volatility of the SUR is the reflection of the fact that this indicator tends to be less procyclical, i.e. it moves less closely together with the actual unemployment rate than does the NAWRU. This can be captured by the correlation between the trend unemployment rate and the actual unemployment rate; see Table 2, which confirms this finding clearly for the average over the countries and also for most Member States under study.

Table 2: Procyclicality of trend employment using different methodologies

u_rate - trend u_rate	Correlation NAWRU	SUR
AT	0.8	-0.1
BE	0.0	0.6
DE	0.7	0.6
EL	0.9	-0.1
ES	0.9	0.5
FI	0.8	0.7
FR	0.4	0.4
IE	0.7	0.5
IT	0.9	0.6
LU	0.9	-0.4
NL	0.6	0.6
PT	1.0	0.6
Average	*0.7*	*0.4*

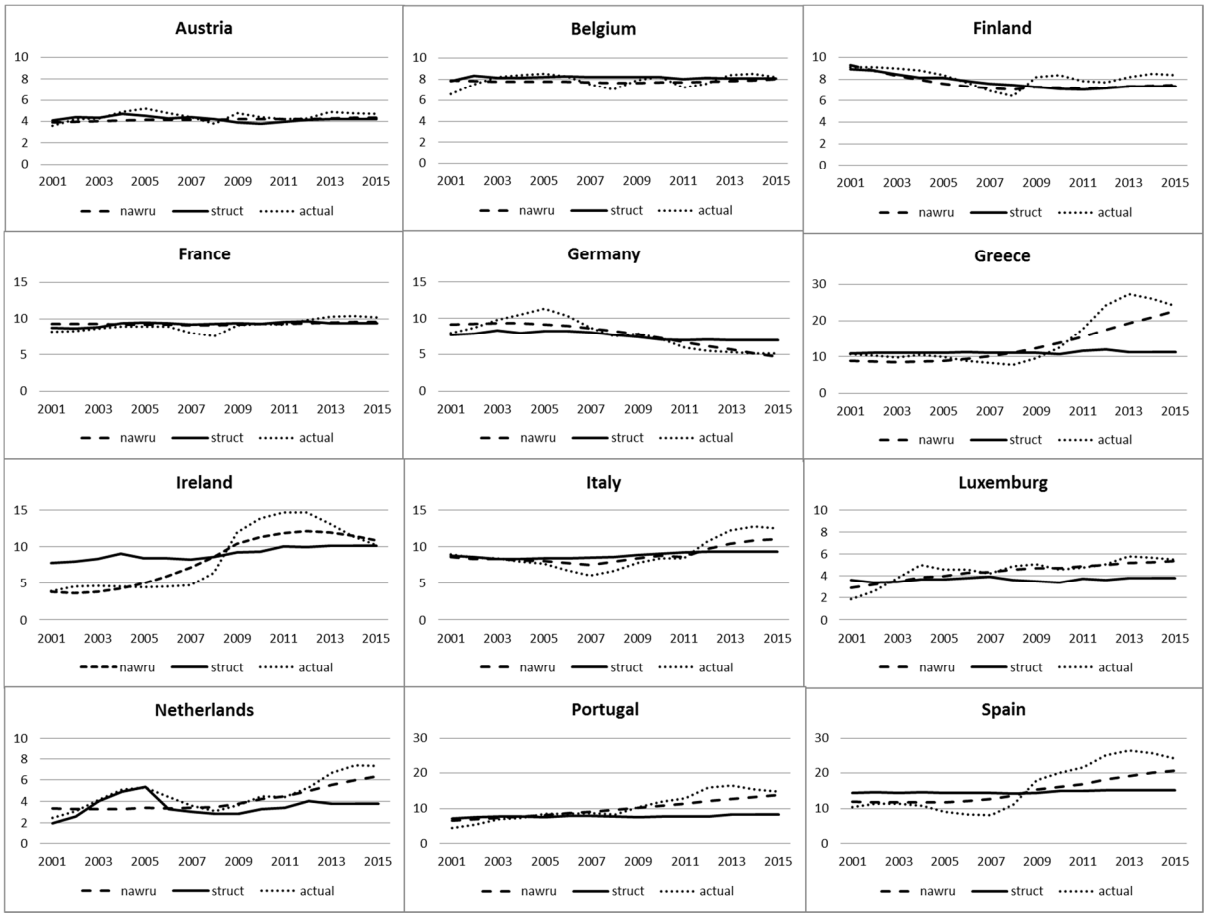
Note: Procyclicality captured by the correlation between the actual and the trend unemployment rate defined as the NAWRU (standard) and the SUR (structural); period: 2001 – 2015, average across spring forecast vintages 2007 - 2014.

The less volatile the trend unemployment, the larger the amplitude of cycles around it will be. In particular, the lower degree of procyclicality of the SUR implies that during periods when actual unemployment is relatively high, the SUR remains below the NAWRU, and it thereby implies a larger positive unemployment gap; by contrast, during periods when the unemployment rate is relatively low, the SUR remains above the NAWRU and thereby implies a larger negative cyclical unemployment gap.

This pattern is illustrated by Figure 1a, which displays the actual unemployment rate as well as the trend unemployment rates extracted with the two alternative methodologies. The unemployment gap is the difference between the actual and the trend unemployment rate. The general pattern is most obviously observable in the figure in the case of EL, IE, PT and ES and also but to a lesser extent in IT, LU and NL. Interestingly, similar differences apply to DE, however, in this country the structural-unemployment method would conclude to larger positive unemployment gap (bad times) at the beginning of the sample and larger negative unemployment gap (good times) at the end of the sample.

Little volatility in the actual unemployment rate seems to lead to smaller differences between the two measures of trend unemployment. Unsurprisingly, in the Member States for which there was little difference observed between the volatility of the two methodologies, notably AT, BE and FR, the two indicators of trend unemployment lie very close to each other. More interestingly, this seems to be driven by the fact that the actual unemployment rate itself remained relatively stable over the 2001-15 period, thereby containing the size of the cycle independent of the methodology applied.

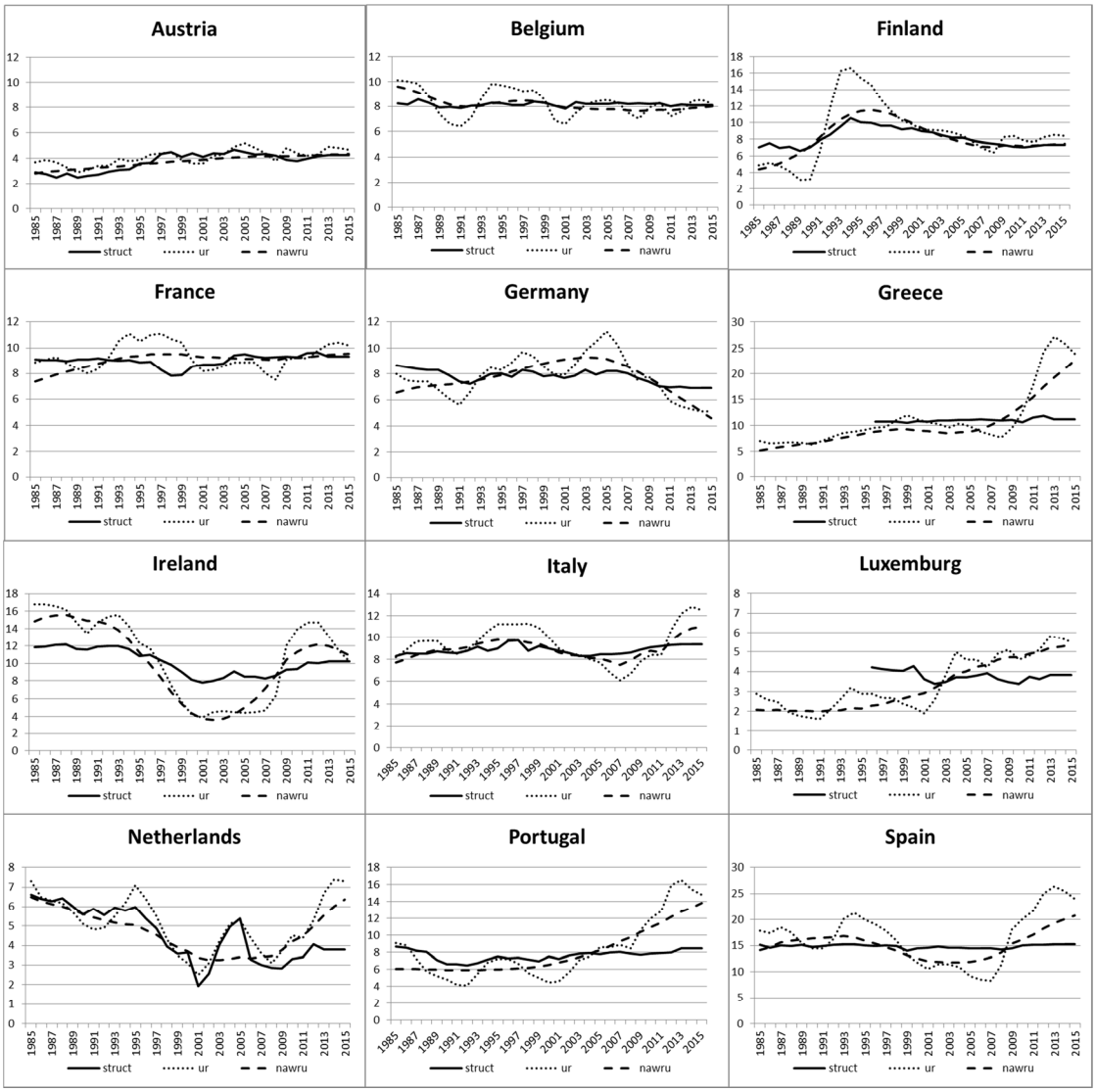
Fig.1a: Unemployment rate 2001-2015 (2014 Spring Forecast)



Note: The figure compares the actual unemployment rate (dotted lines) with the NAWRU (dashed lines) and the SUR (solid lines) calculated at the time of the 2014SF. Scales across panels may differ for the sake of readability.

Finally, it should be noted that, following from the low frequency of the SUR, it is conceivable that countries with currently high unemployment rates will reach the SUR only after several business-cycle up- and downswings only. This is well illustrated by Figure 1b which compares the actual unemployment rate, the NAWRU and the SUR over a longer horizon. As can be seen in the figure, since 1985, there were a number of cases when the actual unemployment rate remained at or above the SUR at cyclical troughs (e.g. ES 91, IT 91); or below the SUR at cyclical peaks (e.g. PT 95). Thus, it could also be the case that in the next cyclical upswing (e.g. in T+x, with x<10), the actual unemployment rate in countries like EL or ES will stay above the SUR, and it would take two or more standard business cycles before the actual unemployment falls back to (or below) the SUR level. This is just another way to express that the SUR is a long-run structural unemployment rate and the cycles around it tend to be not only of larger amplitude than the cycles around the NAWRU but the cycles also tend to be longer than the standard business cycle.

Fig.1b: Unemployment rate – 1985 - 2015 (2014 Spring Forecast)



Note: The figure compares the actual unemployment rate (dotted lines) with the NAWRU (solid lines) and the SUR (dashed lines) calculated at the time of the 2014SF. Scales across panels may differ for the sake of readability.

3.1.2 Potential growth and output gap

As regards other variables building on trend unemployment, the SUR method implies a somewhat more stable potential output than the standard method as reflected by a modest reduction of the EA12 average within-vintage volatility of potential growth over 2001-15 compared with that implied by the standard method; see Table 3. This result is obviously driven by the more stable trend unemployment series, even though the impact of trend unemployment is somewhat mitigated by other factors entering potential output. The volatility of potential growth is found to be most significantly reduced for EL, ES and IE and to a lesser extent in FI and PT, while in other Member States the volatility is equal or slightly increasing under the structural-unemployment method.

Also, in line with findings on the SUR, the structural method tends to imply a less procyclical potential growth than the standard method, albeit the difference as captured by the correlation of potential growth with real growth is rather small and, once more, there are some exceptions from the general pattern; see Table 4.

Table 3: Standard deviation GDP growth, potential growth and output gap (2001 – 2015, average over spring forecast vintages 2007 - 2014)

GDP growth	St.dev	Potential growth	St.dev		Output Gap	St.dev	
			standard	structural		standard	structural
AT	1.7	AT	0.4	0.4	AT	1.6	1.7
BE	1.4	BE	0.4	0.4	BE	1.4	1.4
DE	1.9	DE	0.2	0.3	DE	1.7	1.8
EL	2.9	EL	1.7	1.5	EL	3.1	4.1
ES	1.9	ES	1.3	0.9	ES	2.4	3.9
FI	2.7	FI	0.8	0.7	FI	2.6	2.7
FR	1.2	FR	0.3	0.3	FR	2.0	1.9
IE	3.4	IE	2.6	2.2	IE	3.1	4.1
IT	1.7	IT	0.5	0.5	IT	2.1	2.0
LU	2.5	LU	1.1	1.2	LU	2.8	3.4
NL	1.8	NL	0.6	1.0	NL	2.0	2.1
PT	1.5	PT	0.9	0.8	PT	2.1	3.2
Average	*2.1*	*Average*	*0.9*	*0.8*	*Average*	*2.2*	*2.7*

Note that an inverse pattern holds for the output gap. In particular, in line with the above discussion, the amplitude of the cyclical fluctuations increases, which is reflected in the increase in the average EA12 volatility of the output gap with the structural-unemployment methodology; see Table 3. Again, the largest differences can be observed for EL, IE, PT and ES. In other Member States, the implied differences in the output gaps based on the two methodologies are rather small and in some cases (IT, FR) also inverted.

Table 4: Procyclicality of potential growth

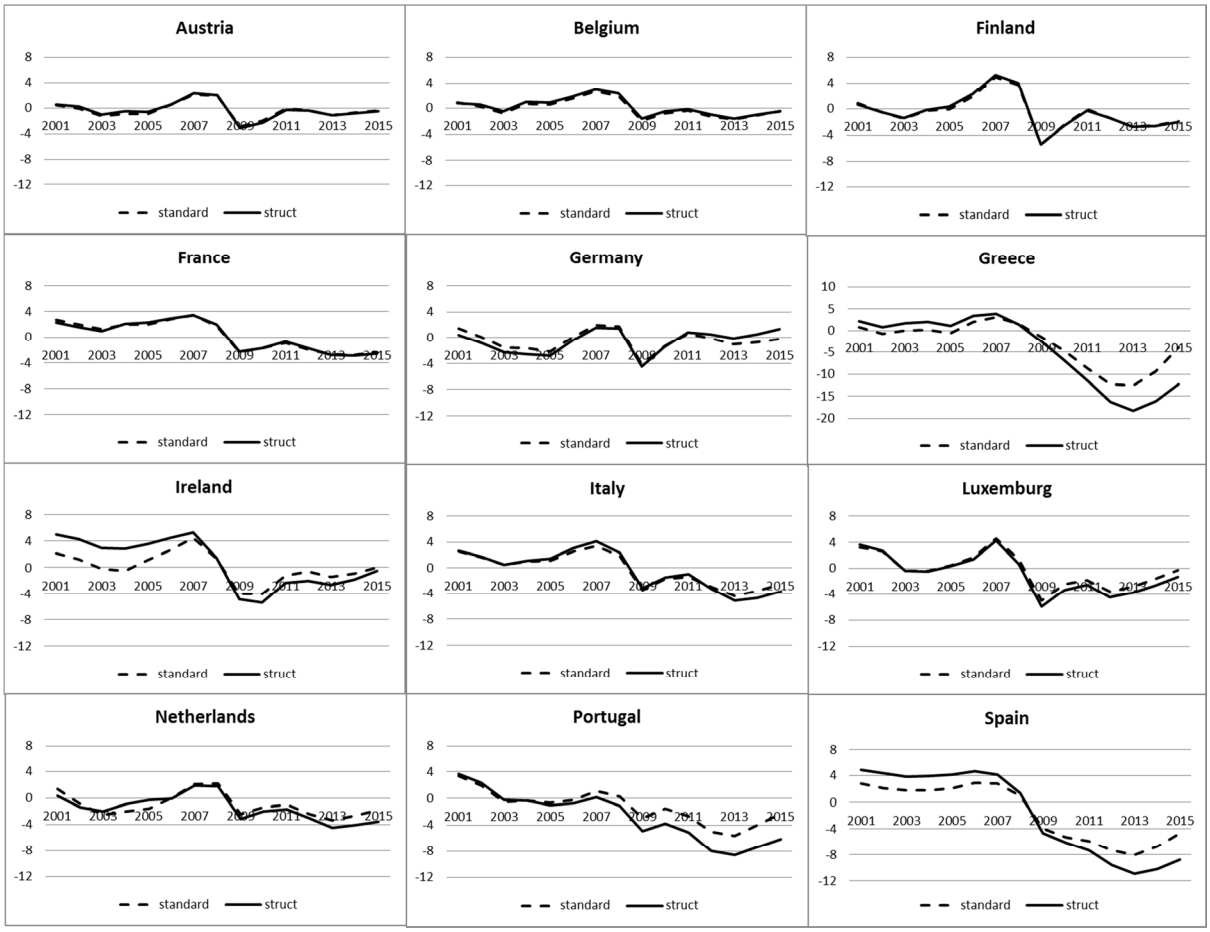
real growth - potential growth	Correlation	
	standard	structural
AT	0.2	0.1
BE	0.4	0.3
DE	0.5	0.3
EL	0.8	0.9
ES	0.7	0.6
FI	0.3	0.4
FR	0.5	0.2
IE	0.8	0.8
IT	0.6	0.4
LU	0.4	0.3
NL	0.2	0.4
PT	0.5	0.4
Average	*0.5*	*0.4*

Note: Correlation between real GDP growth and potential growth measured under the standard commonly agreed methodology and the SUR-based methodology (2001 – 2015, average over spring forecast vintages 2007 - 2014)

The output gap follows a similar pattern to that of the unemployment gap discussed above. Specifically, in good times, the output gap implied by the structural-unemployment methodology tends to imply better times than the NAWRU-based methodology in the sense of showing a more positive output gap; conversely, in bad times, it implies worse times, i.e. showing a more negative output gap. In particular, for the 2014SF vintage displayed in Figure 2a, it becomes apparent that the structural-unemployment method tends to suggest larger positive output gaps than the NAWRU-based output gap before the crisis and larger negative ones since the crisis. This is particularly evident for EL, ES and IE and to somewhat lesser extent for IT and NL, while for PT the structural-

unemployment output gap is more and increasingly more negative than the NAWRU output gap starting from 2003. The notable exception is DE, for which, in line with findings on the structural unemployment gap discussed above, the structural output gap is less positive / more negative than the NAWRU output gap before the crisis and less negative / more positive since the crisis. This is related to the significant decline in the unemployment rate in Germany, which implies a positive unemployment gap until 2010 and a negative unemployment gap since. This pattern is the opposite of that observable in most other countries.

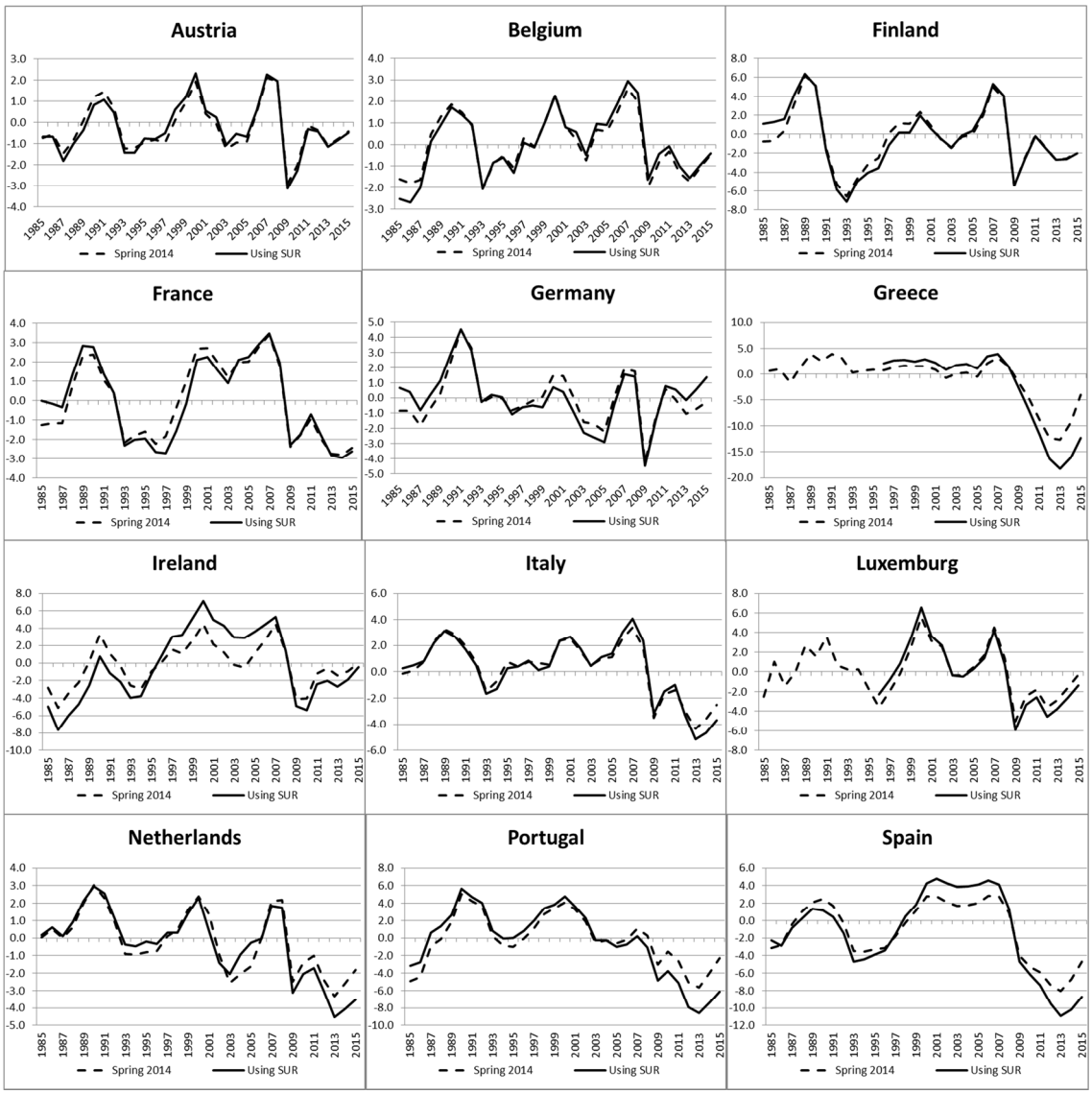
Fig.2a: Output gap: commonly agreed methodology vs. SUR methodology



Note: Output gaps calculated with the commonly agreed methodology (dashed lines) and the SUR methodology (solid lines); 2014SF

Also, the length of the cycle around the SUR-based potential output tends to be longer than the standard business cycle based on the NAWRU methodology, although maybe less obviously than it is the case for the unemployment cycles discussed above. This is most visible in the case of Portugal where the SUR output gaps show positive output gaps all through 1987 and 2002 whereas the standard output gaps show positive output gaps between 1989 and 1993, negative between 1994 and 1996 and positive again between 1997 and 2002; see Figure 2b.

Fig.2b: Output gap: commonly agreed methodology vs. SUR methodology 1985 - 2015



Note: Output gaps calculated with the commonly agreed methodology (dashed) and the SUR methodology (solid lines); 2014SF.

3.2 STABILITY ACROSS FORECAST VINTAGES

Stability across forecast vintages is meant to capture the impact of forecast revisions on potential growth and the output gap. Indeed, trends and cyclical components such as potential output and the output gap are extracted from observed data series (actual GDP) with given filtering techniques. Given the nature of these filters, the retrieved unobserved variables can change with new observed data points added to the sample. Moreover, the new observed data points can change the unobserved series over the full sample horizon even if the past observed data are not revised.

The frequent changes in potential output and output gaps between forecast vintages have been often criticised as a weakness of the commonly agreed methodology. While changes in unobserved variables across forecast vintages cannot be eliminated if the forecast changes, different filters can imply different degrees of end-point sensitivity. In general, the more procyclical the extracted unobserved trend, the closer together the trend will move with the observed series. Therefore, a forecast revision tends to imply larger revisions *towards the end of the sample* in the case of a more procyclical trend than in the case of a less procyclical trend. By contrast, the less procyclical the trend, the more the impact of the forecast revision on individual data points would tend to be small and at the same time also more equally distributed over the full sample over which the filter was computed (i.e. affecting the beginning of the sample as much as the end of the sample).

For the purposes of this note, the stability of trend unemployment, potential growth and output gap across forecast vintages is captured by the standard deviation of the value of a given variable in a given year over the spring forecast vintages of the years 2007 (or the earliest available) – 2014.

The results suggest that the average size of data revisions in trend unemployment and potential growth *over the long sample* considered in the paper (i.e. *2001 to t* across forecast vintages *t=2007, …, 2014)* is somewhat lower under the SUR method than under the standard methodology; see Table 5a. By contrast, the revisions in the output gap turn out to be larger under the SUR method than under the standard method, suggesting that the full-sample results could be driven by the forecast years. To see why, note that for the forecast years (*t and t+1* in any vintage *t*), when actual GDP is effectively revised, the smaller the revisions in potential output, the larger the revisions in the output gap will be.

Indeed, when looking only at the average data revisions across vintages for the years in each vintage for which outturn data exist (i.e. the horizon *2001,…,t-1* across vintages *t=2007,…,2014*) the data revisions are found to be roughly equal under the two methodologies for each the trend employment, potential growth and output gap.([5])

Table 5a: Standardised revisions across forecast vintages under the two methodologies – long sample

Trend u_rate	standard	structural
AT	0.2	0.1
BE	0.2	0.1
DE	0.4	0.4
EL	1.2	0.3
ES	0.9	0.7
FI	0.3	0.2
FR	0.2	0.2
IE	0.5	0.8
IT	0.5	0.3
LU	0.2	0.3
NL	0.3	0.4
PT	0.8	0.7
Average	*0.49*	*0.37*

Potential growth	standard	structural
AT	0.2	0.2
BE	0.2	0.2
DE	0.2	0.1
EL	0.9	0.6
ES	0.3	0.2
FI	0.4	0.3
FR	0.2	0.2
IE	0.7	0.6
IT	0.3	0.2
LU	0.5	0.5
NL	0.2	0.2
PT	0.3	0.2
Average	*0.36*	*0.29*

Output gap	standard	structural
AT	0.5	0.6
BE	0.6	0.6
DE	0.6	0.7
EL	1.3	1.6
ES	0.7	0.9
FI	1.0	1.1
FR	0.8	0.8
IE	1.0	1.1
IT	0.8	0.8
LU	1.0	1.2
NL	0.6	0.7
PT	0.5	0.7
Average	*0.77*	*0.89*

Note: The table shows the average data revisions of a given variable over the spring forecast vintages 2007 (or earliest available) – 2014 as captured by the standard deviation of the value of the variable in a given year across the vintages and then averaged over the years 2001 – last available in the vintage. The values under the standard methodology for EL, ES, FI, FR, IE, PT exclude the spring 2014 vintage due to a change in methodology to calculate the NAWRU for the countries in spring 2014, which would artificially inflate the captured forecast revision.

At the same time, looking at the *end of the sample* only, which is the most relevant for the purposes of fiscal policy and surveillance, the results suggest that the SUR-based trend components are significantly less sensitive to forecast revisions. In particular, the average data revisions for the years *t-2 to t+1* across the spring forecast vintages *t=2007,…,2014* are clearly smaller for trend employment and for potential growth; see Table 5b. Note that this result also holds when excluding the forecast years (i.e. for the years *t-2* and t-1 in each vintage *t*); see Table 5c. Also, the revisions in the output gap at the end of the sample are larger under the SUR method than under the standard method for the years *t-2 to t+1* in any vintage *t*, i.e. including the forecast years. However, this result turns around when only looking at the end-of-sample years with outturn data only.

([5]) Not displayed. Results available on request.

Table 5b: Standardised revisions across forecast vintages under the two methodologies – end of sample

Trend u_rate	standard	structural
AT	0.3	0.2
BE	0.3	0.1
DE	0.6	0.2
EL	1.4	0.3
ES	1.4	0.5
FI	0.5	0.1
FR	0.4	0.1
IE	0.9	0.9
IT	0.7	0.2
LU	0.4	0.2
NL	0.4	0.4
PT	0.8	0.4
Average	*0.66*	*0.30*

Potential growth	standard	structural
AT	0.2	0.2
BE	0.2	0.2
DE	0.2	0.2
EL	0.9	0.7
ES	0.5	0.2
FI	0.5	0.4
FR	0.3	0.2
IE	0.9	0.7
IT	0.3	0.2
LU	0.6	0.5
NL	0.3	0.2
PT	0.5	0.3
Average	*0.45*	*0.34*

Output gap	standard	structural
AT	0.7	0.8
BE	0.7	0.8
DE	0.7	1.1
EL	0.7	0.8
ES	0.7	0.9
FI	0.7	1.4
FR	0.7	0.8
IE	0.7	1.5
IT	0.7	0.9
LU	0.7	1.3
NL	0.7	0.9
PT	0.7	1.0
Average	*0.70*	*1.02*

Note: The table shows the average data revisions of a given variable over spring forecast vintages for the years t-2 to t+1 of a forecast vintage t, t=2007,…,2014. Looking at the end of the sample of every vintage restricts the number of available data points to compare. Thus, the earliest year for which the revision can be assessed is 2006 (which is t-1 in the 2007 vintage and t-2 in the 2008 vintage). The values under the standard methodology for EL, ES, FI, FR, IE, PT exclude the spring 2014 vintage due to a change in methodology to calculate the NAWRU for the countries in spring 2014, which would artificially inflate the captured forecast revision.

Table 5c: Standardised revisions across forecast vintages under the two methodologies – end of sample outturn data only

Trend u_rate	standard	structural
AT	0.2	0.1
BE	0.2	0.0
DE	0.4	0.2
EL	0.5	0.1
ES	0.5	0.2
FI	0.2	0.1
FR	0.8	0.1
IE	0.3	0.2
IT	0.3	0.1
LU	0.2	0.1
NL	0.2	0.2
PT	0.4	0.2
Average	*0.36*	*0.15*

Potential growth	standard	structural
AT	0.2	0.2
BE	0.2	0.1
DE	0.1	0.1
EL	0.4	0.3
ES	0.2	0.1
FI	0.3	0.2
FR	0.2	0.2
IE	0.6	0.5
IT	0.2	0.1
LU	0.4	0.4
NL	0.1	0.1
PT	0.2	0.2
Average	*0.25*	*0.21*

Output gap	standard	structural
AT	0.3	0.3
BE	0.5	0.5
DE	0.5	0.4
EL	1.0	0.6
ES	0.5	0.2
FI	1.1	0.8
FR	0.9	0.7
IE	1.0	0.8
IT	0.6	0.4
LU	1.1	1.0
NL	0.5	0.6
PT	0.6	0.6
Average	*0.72*	*0.57*

Note: The table shows the average data revisions of a given variable over spring forecast vintages for the years t-2 and t-1 of a forecast vintage t, t=2007,…,2014. Looking at the end of the sample of every vintage restricts the number of available data points to compare. Thus, the earliest year for which the revision can be assessed is 2006 (which is t-1 in the 2007 vintage and t-2 in the 2008 vintage) and the last is 2012 (t-1 in the 2013 vintage and t-2 in the 2014 vintage). The values under the standard methodology for EL, ES, FI, FR, IE, PT exclude the spring 2014 vintage due to a change in methodology to calculate the NAWRU for the countries in spring 2014, which would artificially inflate the captured forecast revision.

4. IMPLICATIONS FOR THE ASSESSMENT OF FISCAL POLICY

This section discusses the implications of the use of the SUR method for variables and indicators relevant for fiscal policy. This concerns first, the evaluation of good or bad times based on the output gap and potential growth under the two methodologies, and second, the impact of the SUR on the structural balance and the change in the structural balance.

4.1 GOOD AND BAD TIMES

The fact that the SUR method tends to show better times than the standard method in good times and worse times than the standard method in bad times may imply differences in the fiscal requirements under the preventive arm, and it may modify the assessment of the existence of adverse economic conditions under the corrective arm.

To illustrate differences implied by the alternative filtering methods for the assessment of the economic situation for fiscal policy purposes, Table 6 shows the situation of Member States in the matrix currently applied for the modulation of preventive arm requirements based on both the standard and the structural method.

Table 6: Position of Member States in the matrix

STANDARD METHODOLOGY

2007 [2007SF]			
	Condition	**gy ≤ gy_pot**	**gy > gy_pot**
Exceptionally bad times	Real growth < 0 or OG < -4		
Very bad times	-4 ≤ OG < -3		
Bad times	-3 ≤ OG < -1.5		PT
Normal times	-1.5 ≤ OG < 1.5	BE EL ES FI IE	DE FR IT LU NL AT
Good times	OG ≥ 1.5		

2014 [2014SF]			
	Condition	**gy ≤ gy_pot**	**gy > gy_pot**
Exceptionally bad times	Real growth < 0 or OG < -4		EL ES
Very bad times	-4 ≤ OG < -3		IT PT
Bad times	-3 ≤ OG < -1.5	FR	FI LU NL
Normal times	-1.5 ≤ OG < 1.5		AT BE DE IE
Good times	OG ≥ 1.5		

STUCTURAL UNEMPLOYMENT METHODOLOGY

2007 [2007SF]			
	Condition	**gy ≤ gy_pot**	**gy > gy_pot**
Exceptionally bad times	Real growth < 0 or OG < -4		
Very bad times	-4 ≤ OG < -3		
Bad times	-3 ≤ OG < -1.5	PT	
Normal times	-1.5 ≤ OG < 1.5	BE IE	AT DE FI FR IT LU NL
Good times	OG ≥ 1.5	EL	ES

2014 [2014SF]			
	Condition	**gy ≤ gy_pot**	**gy > gy_pot**
Exceptionally bad times	Real growth < 0 or OG < -4		EL ES IT PT
Very bad times	-4 ≤ OG < -3		NL
Bad times	-3 ≤ OG < -1.5	FR	FI
Normal times	-1.5 ≤ OG < 1.5		AT BE DE IE LU
Good times	OG ≥ 1.5		

Note: the panels show the distribution of Member States in the preventive-arm matrix for the 2007 forecast values of the 2007SF (upper panels) and the 2014 forecast values of the 2014SF (lower panels) based on the standard methodology (LHS panels) and on the SUR methodology (RHS panels)

The results confirm that in relatively good (bad) times the structural method implies a somewhat more (less) favourable assessment of the cyclical economic situation of Member States. Specifically, in 2007, when except PT all Member States had positive output gaps, the SUR methodology would have shifted up EL, ES and FI along at least one dimension: EL and ES would shift from normal times to good times, with ES also shifting from actual growth below potential to actual growth exceeding potential. FI would remain in normal times but its growth would exceed potential based on the structural-unemployment method as opposed to what is suggested by the standard method; PT would shift in the opposite direction. By contrast, in 2014, the SUR method would have shifted IT and PT from very bad times to exceptionally bad times, NL from bad times to very bad times and LU from bad times to normal times. At the same time, it should be noted that for the majority of Member States, the two methodologies would imply the same situation in the matrix.

4.2 STRUCTURAL BALANCE, STRUCTURAL EFFORT

The structural balance (SB) for each Member States has been recalculated using the structural output gap estimates assuming the official value of the semi-elasticity in force at the time of a given forecast vintage. The following subsections compare the SUR-based SB series with the standard NAWRU-based SB series along the dimensions of within-vintage stability and cross-vintage stability and discuss potential consequences for fiscal surveillance.

4.2.1. Within-vintage stability and the level of the structural balance and structural effort

The SUR-based SB turns out to inherit the properties of the SUR-based potential GDP in being slightly more stable than the standard SB as captured by the average within-vintage volatility of the variables; see Table 7.

Table 7: Standard deviation of the general government balance and the structural balance and change in the structural balance estimated with the standard and the structural-unemployment methods (2003 – 2015, average over spring forecast vintages 2007 - 2014)

GG balance	St.dev	**Structural balance**	St.dev		**Change in SB**	St.dev	
			standard	structural		standard	structural
AT	1.3	AT	0.8	0.7	AT	0.6	0.6
BE	1.8	BE	0.9	0.9	BE	0.6	0.6
DE	1.8	DE	1.1	1.0	DE	0.7	0.7
EL	2.8	EL	2.9	3.1	EL	2.6	2.7
ES	4.0	ES	3.1	2.5	ES	2.1	2.0
FI	2.5	FI	1.3	1.1	FI	0.7	0.7
FR	1.5	FR	1.0	0.9	FR	0.7	0.7
IE	7.0	IE	4.1	3.5	IE	2.3	2.2
IT	1.1	IT	1.4	1.3	IT	0.7	0.7
LU	1.7	LU	1.0	1.1	LU	1.1	1.1
NL	2.2	NL	1.5	1.4	NL	1.3	1.3
PT	2.1	PT	1.7	1.9	PT	1.6	1.6
Average	*2.5*	*Average*	*1.73*	*1.62*	*Average*	*1.26*	*1.24*

The most notable exceptions are EL and PT, for which countries the within-vintage volatility of the SUR-based SB increases compared with the standard SB. The reason for this is that in these two countries the level of the SB improves significantly over the period of observation (2003-2014) and, given the relative within-vintage stability of the SUR-based potential output, the SUR-based SB shows a larger improvement than the standard SB; see Figure 3. For the other Member States, the SB tends to fluctuate more around some long-run constant, and in these Member States the SUR-based SB turns out to be less volatile, i.e. more stable.

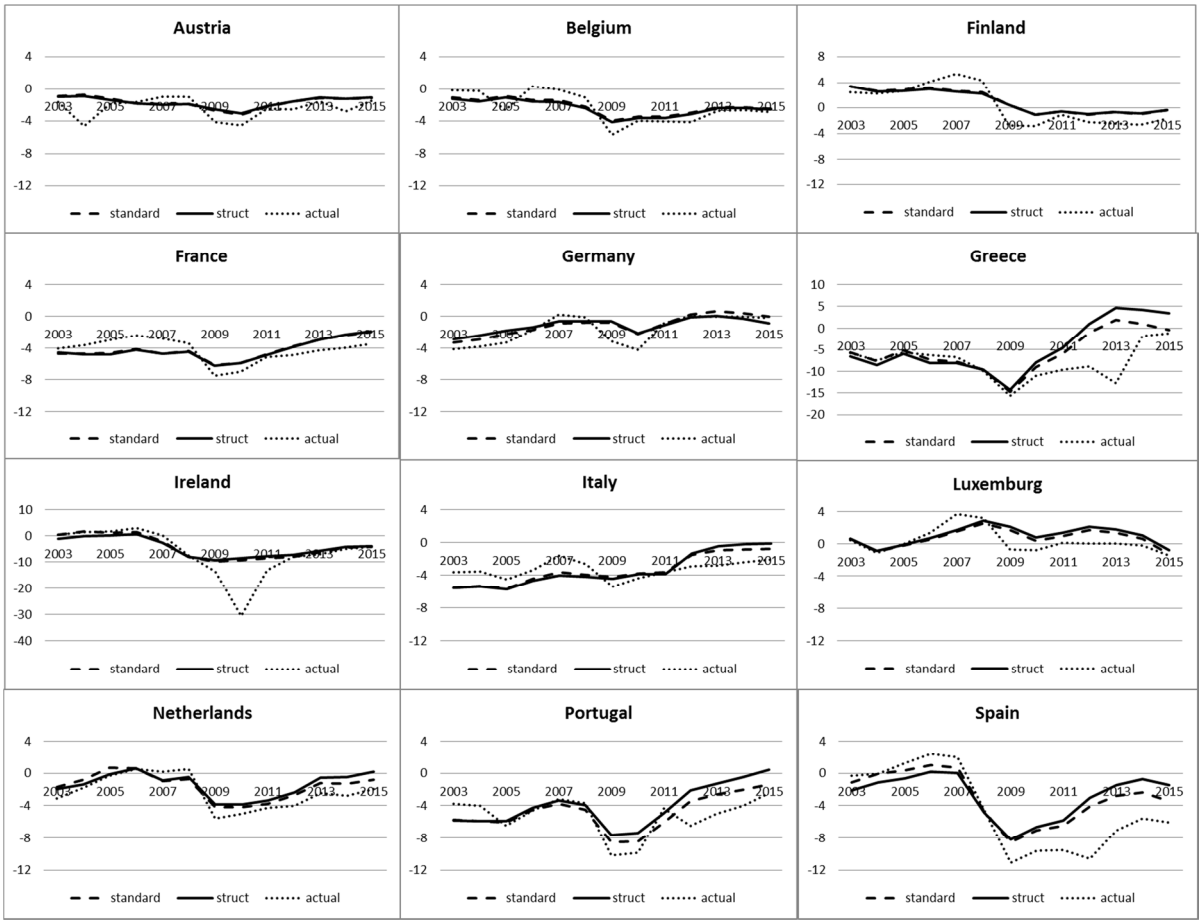
Similarly, the SUR-based SB tends to be slightly less procyclical than the standard SB but the differences are very small in most cases; see Table 8.

Table 8: Procyclicality of the structural balance under the standard and the structural methods

GG balance - SB	Correlation	
	standard	structural
AT	0.4	0.4
BE	0.5	0.5
DE	0.9	0.9
EL	0.8	0.8
ES	1.0	0.9
FI	0.9	0.9
FR	0.8	0.7
IE	0.9	0.9
IT	0.5	0.5
LU	0.7	0.7
NL	0.9	0.9
PT	0.7	0.6
Average	*0.76*	*0.73*

Note: Correlation between the General Government balance and the structural balance measured under the standard commonly agreed methodology and the structural methodology (2003 – 2015, average over spring forecast vintages 2007 - 2014)

Fig.3: Structural balance vs. headline general government balance



Note: Structural balance calculated with the commonly agreed methodology output gaps (dashed lines) and the SUR methodology output gaps (solid lines), actual headline balance (dotted lines); 2014SF. FI, IE and EL are shown on a different scale.

Related to this, the SUR method implies a more favourable (less negative / more positive) structural balance position than the standard method in bad times and a less favourable one (less positive / more negative) in good times.

These results are obvious reflections of the behaviour of the output gaps under the two methods: in particular, the larger-amplitude the cycles, the larger the cyclical component of the general government balance will be and therefore the implied SB series tend to be less procyclical and less volatile. By the same token, since the structural output gap tends to show worse (better) times in bad (good) times than the standard output gap, it will imply a larger cyclical correction of the general government balance, which in bad times implies a better SB and in good times a worse SB than the one implied by the standard method.

Notably, this suggests substantially better structural balances with the SUR method for EL, ES, IT, NL and LU since the beginning of the crisis. For PT, the same pattern holds since 2003, the year in which the PT output gap turned negative. Also mirroring the differences in the output gap, the DE structural balance would be less negative at the beginning of the period and less positive / more negative towards the end of the period. Differences for other Member States have the same intuition; however, for these countries the figures show much smaller and therefore indiscernible differences between the two methods.

Given that the level of the structural balance is a crucial indicator for the assessment of compliance with the MTO under the preventive arm, these differences could have a significant impact on the assessment of policies of some Member States. Also, the level of the structural balance plays a key role in the determination of the

Minimum Linear Structural Adjustment (MLSA) during the transition period to full compliance with the debt rule.

While there are hence noticeable differences between the *level* of the structural balance implied by the two methods with likely consequences for fiscal surveillance, the differences implied for the *change* in the structural balance, a key variable of the fiscal surveillance, turn out to be negligible. It is also more difficult to give intuitive explanations as regards the impact of the filter on this first-difference variable.

4.2.2 Impact of forecast revisions on the structural balance

The impact of forecast revisions on the SUR-based and the standard SB series is found to be roughly equal looking at the average over the full horizon available for each forecast vintage. At the same time, as observed above for potential growth, the structural-unemployment method seems to reduce the impact of forecast revisions on the SB towards the end of the sample, the horizon which is particularly relevant for fiscal surveillance.

Specifically, over the full horizon *2003* to *t+1* across vintages *t=2007,...,2014*, the cross-forecast volatility of the structural balance under the SUR method and the standard method is found to be roughly equal; see Table 9a.

Table 9a: Data revisions across forecast vintages under the two methodologies – 2003 to 2014

SB	standard	structural	dSB	standard	structural
AT	0.26	0.30	AT	0.33	0.34
BE	0.23	0.22	BE	0.12	0.12
DE	0.22	0.21	DE	0.15	0.15
EL	0.79	0.87	EL	0.48	0.49
ES	0.27	0.29	ES	0.27	0.25
FI	0.44	0.51	FI	0.27	0.25
FR	0.43	0.38	FR	0.20	0.18
IE	0.45	0.47	IE	0.43	0.42
IT	0.32	0.28	IT	0.13	0.13
LU	0.47	0.49	LU	0.38	0.37
NL	0.22	0.29	NL	0.13	0.16
PT	0.41	0.39	PT	0.25	0.26
Average	*0.38*	*0.39*	*Average*	*0.26*	*0.26*

Note: The table shows the average data revisions of a given variable over the spring forecast vintages 2007 (or earliest available) – 2014 as captured by the standard deviation of the value of the variable in a given year across the vintages and then averaged over the years 2003 – 2014. The values under the standard methodology for EL, ES, FI, FR, IE, PT exclude the spring 2014 vintage due to a change in methodology to calculate the NAWRU for the countries in spring 2014, which would artificially inflate the captured forecast revision.

As in the case of potential growth discussed above, when the sample is restricted to the revision of the SB over the *t-2 to t+1* horizon across vintages *t*, some reduction in the cross-forecast volatility of the SUR-based SB can be observed relative to the standard SB; see 9b.

Once more, this result turns out to be to a large extent driven by the reduction of the impact of forecast revisions on the SB values of the forecast years *t* and *t+1*. To situate this result, it should be noted that in the case of the SB revisions, it is very difficult to disentangle in the data the impact of a projected change in the fiscal stance (which should be captured by the revision in the SB) from the impact of noise created by revisions of the output gap and unintended by the forecaster. Therefore, it is difficult to infer on the basis of these statistics whether smaller revisions in the SB for the forecast years, as implied by the SUR method are more 'correct' than the ones implied by the standard method.

Table 9b: Data revisions across forecast vintages under the two methodologies – end of sample

SB	standard	structural
AT	0.47	0.41
BE	0.62	0.55
DE	0.54	0.40
EL	2.62	2.68
ES	1.43	1.12
FI	0.94	0.72
FR	0.79	0.64
IE	1.82	1.63
IT	0.56	0.46
LU	0.92	0.78
NL	0.76	0.64
PT	1.17	1.10
Average	*1.05*	*0.93*

dSB	standard	structural
AT	0.32	0.32
BE	0.41	0.39
DE	0.30	0.32
EL	1.78	1.84
ES	1.24	1.18
FI	0.40	0.36
FR	0.50	0.48
IE	1.07	0.99
IT	0.34	0.37
LU	0.69	0.71
NL	0.50	0.51
PT	0.77	0.75
Average	*0.69*	*0.68*

Note: The table shows the average data revisions of a given variable over spring forecast vintages for the years t-2 to t+1 of a forecast vintage t, t=2007,…,2014. Looking at the end of the sample of every vintage restricts the number of available data points to compare. Thus, the earliest year for which the revision can be assessed is 2006 (which is t-1 in the 2007 vintage and t-2 in the 2008 vintage). The values under the standard methodology for EL, ES, FI, FR, IE, PT exclude the spring 2014 vintage due to a change in methodology to calculate the NAWRU for the countries in spring 2014, which would artificially inflate the captured forecast revision.

Table 9c: Data revisions across forecast vintages under the two methodologies – end of sample outturn years

SB	standard	structural
AT	0.23	0.26
BE	0.25	0.21
DE	0.26	0.21
EL	0.65	0.65
ES	0.23	0.11
FI	0.57	0.51
FR	0.48	0.37
IE	0.56	0.44
IT	0.25	0.18
LU	0.53	0.58
NL	0.18	0.25
PT	0.38	0.32
Average	*0.38*	*0.34*

dSB	standard	structural
AT	0.14	0.16
BE	0.10	0.09
DE	0.07	0.06
EL	0.18	0.21
ES	0.16	0.12
FI	0.29	0.26
FR	0.22	0.20
IE	0.31	0.28
IT	0.13	0.12
LU	0.20	0.41
NL	0.10	0.13
PT	0.25	0.23
Average	*0.18*	*0.19*

Note: The table shows the average data revisions of a given variable over spring forecast vintages for the years t-2 to t+1 of a forecast vintage t, t=2007,…,2014. Looking at the end of the sample of every vintage restricts the number of available data points to compare. Thus, the earliest year for which the revision can be assessed is 2006 (which is t-1 in the 2007 vintage and t-2 in the 2008 vintage). The values under the standard methodology for EL, ES, FI, FR, IE, PT exclude the spring 2014 vintage due to a change in methodology to calculate the NAWRU for the countries in spring 2014, which would artificially inflate the captured forecast revision.

At the same time, the impact of forecast revisions on the SUR-based SB for the end-of-sample outturn years *t-2* and *t-1* also tend to be smaller than for standard SB; see table 9c. However, the size of the reduction turns out to be rather small. This confirms that a method producing lower-frequency potential output than the commonly agreed methodology may reduce revisions in the structural balance driven by revisions in potential output solely. Quantitatively, the improvement remains, however, limited.

Also, once more, the cross-forecast stability of the *change* in the structural balance is basically unaffected both over the longer horizon as well as for the end-of-sample horizon. Overall, the above results suggest that the two methods may imply some differences in the requirements and in the evaluation of the level of the structural balance achieved by Member States, while the change in the structural balance, i.e. the measure of the structural effort under the SGP, appears to be less affected by the filtering technique. Also, the differences seem to concern some countries more than others.

5. DISCUSSION OF THE IMPLICATIONS OF THE SUR METHOD FOR FISCAL SURVEILLANCE

Overall, compared with the commonly agreed methodology, the application of the SUR method, or another low-frequency filter, may imply smaller cross-forecast revisions at the end of the sample in potential output and slightly smaller revisions also for the level of the structural balance. Thereby, such filters may somewhat improve the predictability of the structural balance for the purposes of fiscal policy decisions.

At the same time, using the relatively low-frequency SUR-based SB for fiscal policy decisions would implicitly give incentives to accommodate highly persistent shocks. By contrast, the standard SB does not accommodate these shocks and thereby puts their stabilisation into the scope of more structural policies.

To see why, note that the low-frequency nature of potential output means that the impact of highly persistent shocks becomes part of the cycle. Under the commonly agreed methodology, which produces standard business cycles, the impact of such shocks would be captured as part of the trend. Therefore, the SUR-based SB is adjusted for the fiscal impact of economic cycles driven by such highly persistent shocks, while the standard SB is not adjusted for these. This different view of the structural balance can imply differences in fiscal policy decisions as regards interventions which are targeted at stabilising cyclical developments. In particular, the SUR method tends to give incentives for fiscal interventions in response to highly persistent negative shocks to the economy (e.g. hysteresis effects) by considering these cyclical; by the same token, it also requires fiscal policy to offset highly persistent positive shocks (e.g. persistent impact of credit booms or so-called positive hysteresis). Under the NAWRU methodology, reaction to these shocks would be considered structural and as such less encouraged.

In the current context, for Member States which were hit strongly by the crisis, the SUR method, by attributing a larger part of fluctuations in the headline balance to cyclical developments, will call for a more intensive support from fiscal policy than the standard method. Conversely, for Member States which were hit less by the crisis, the SUR method might imply more restrictive policies than the standard method.

In sum, the choice between the two methods is a choice about the degree of 'leaning against the wind' by discretionary fiscal policy. The SUR method would allow for larger cyclical deterioration of the headline deficit and thereby a larger increase in the public-debt-to-GDP ratio in bad times. Symmetrically, it would require a larger improvement in the headline balance leading to a larger fall in the public-debt-to-GDP ratio in good times. The fiscal requirements based on the commonly agreed method would induce smaller swings in both the headline balance and the debt-to-GDP ratio. Hence, as long as fiscal policy symmetrically follows the requirements in good and bad times, debt should remain well anchored under both methods. However, if fiscal policy tends to be more accommodative in cyclical downturns and less strictly adhering to the guidelines in cyclical upturns, debt could easily become unanchored and more so under the SUR method, or alternative low-frequency filtering techniques, than under the commonly agreed methodology. This risk is to be evaluated against the debt limits that governments may face.

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