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Sustainability and Solvency of Government Finances under the Euro: Illustrations and Policy Options

Abstract

In this paper, sound public finances under the euro means sustainability in the long term instead of short- and medium-term fiscal discipline. The challenges to sustainability are identified for the four largest euro area member states, and several policy options for sustainability are illustrated with scenarios. Sustainability of the government finances is required for being solvent and having continuous access to credit at acceptable interest rates. Solvency in the long term is the key link between coherent fiscal and monetary policies. A main tool of the Eurosystem for setting an appropriate monetary stance is purchasing bonds issued by the solvent governments. It also must assess their solvency if it needs to act as the lender of last resort for a euro area government under liquidity shortage to prevent it from developing into a general financial crisis. Resolving the crisis caused by the Covid-19 pandemic requires confidence that the public finances will be steered towards sustainability and the Eurosystem can take its proper role as a central bank.

JEL-Codes: E420, E620, E630, H100.

Keywords: euro, fiscal policy, monetary policy.

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In my papers in autumn 2019 I promoted the view that in the euro fiscal policy should be reoriented from short-sighted discipline to long-term sustainability and that functioning of the Euro system for maintaining financial stability should be affirmed. I am grateful to a few colleagues who encouraged me to be more specific about the new policy options. This paper is my response. I want to thank Allan Rosas for reading the draft and suggesting some precisions and John Rogers for excellent editorial assistance. I take sole responsibility for any remaining deficiencies or errors.
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Heikki Oksanen 2020-06-22

Sustainability and Solvency of Government Finances under the Euro: Illustrations and Policy Options

1. Introduction

In my two papers in autumn 2019 (2019a and b) I launched the view that the euro can be successfully reformed by reorienting fiscal policy toward long-term sustainability and revamping the Eurosystem into a proper central bank, including the role as the lender of last resort to solvent governments and financial institutions.

I argued that the long-term approach should replace the fiscal discipline embodied in the fiscal rules known as the Stability and Growth Pact (SGP) with its emphasis on the short and medium term, now commonly understood to have almost persistently caused procyclical fiscal policy in the euro area and, at its worst, it even contributed to the contraction in 2012-13 in euro area GDP prolonging the deep recession after the crash of 2009.

I was also critical towards the debate on reforming the euro in the last few years, arguing that even quite extensive proposals have been practically silent about both the true long-term issues of fiscal policy and the interlinkages between public finances and the essential functions of the Eurosystem.

While I was calling for countercyclical flexibility in fiscal policy, especially in times of crisis I maintained that this should not open the door for irresponsibility. Sound public finances in the long term require that the challenges posed by population ageing on public pension and health care financing should be taken seriously. For this, I proposed that increasing the old age retirement age significantly, though gradually, should be seriously considered as otherwise the social expenditures easily get out of hand.

Also, following from the long-term perspective, as the governments can now borrow at negative interest rates, they should use this opportunity for long-term investments, including moderating climate change and renovating production and use of energy. This would benefit both the current and the future generations, although, it must be remembered, the increased debt burden should be manageable also at more normal interest rates whenever they emerge.

Thus, assessing solvency of the governments in a long-term perspective is what sound public finances as defined in the EU Treaty should mean instead of short-term discipline. Solvency should also be the key when the Eurosystem, acting independently in choosing its instruments, performs its tasks as a true central bank as the lender of last resort in any serious crisis, preventing a liquidity shortage from developing into a general economic collapse.

This then triggers the question of how solvency should be defined and assessed with sufficient clarity. The approach and results in this paper complement several conclusions of the analysis in the official reports of the European Commission (EC), which are unduly limited to analysing the developments under the current policies. Instead, assuring sustainability of public finances calls for new policy options. As the policies in future will affect sustainability and vice versa, the assessment is ultimately political in nature and goes well beyond the technical work of the experts. Yet, it is the duty of the experts to develop tools for designing the policy options to be debated and presented to the political bodies.

During the course of the work to be reported here the Covid-19 shock hit in March 2020 and the German constitutional court questioned the legality of the basic monetary policy tool of the EBC, its purchases of government bonds, on 5 May 2020. These events and the subsequent policy reactions made it even more pertinent to clarify how fiscal and monetary policies should be managed under the euro.

Coverage and style

The statistical analysis covers the four largest euro area countries (Germany, France, Italy and Spain, henceforth DE, FR, IT and ES) which currently account for 75% of the euro area's GDP. The data used mainly comes from the Debt Sustainability Monitor 2019 of the EC (DSM 2019, published in January 2020).

The present paper is a follow-up to Oksanen (2019a and b) but it is meant to be a stand-alone paper to be read independently. However, broader material on the debate on the euro can be found in those papers, including a nearly five pages long list of references. Only a limited number of references are made here, restricted to the most important and new ones.

The paper aims to be readable without prior knowledge of public economics, for which reason the style is in some places pedagogical. No single mathematical formula is used, instead, the assumptions and results are illustrated with tables and graphs. Details and additional data are presented in the Technical appendix (TA).

The approach and outline

The analysis in the present paper is based on the now commonly applied concept of the sustainability gap indicator S2, which measures the immediate and permanent budgetary adjustment required to match the current public debt and the expenditures projected under the currently prevailing policies. We take a critical look into the previous applications and present modified versions.

Section 2 presents the official results based on expenditure projections until 2070.

In Section 3 we construct modified versions starting with an argument that the time horizon to 2070 in the latest official reports is unnecessarily long and has led to unfounded complacency as those results are affected by the projected decrease in the public expenditures in very distant future. We take the view that 30 years ahead is more appropriate as it corresponds to burden sharing across generations and removes the obvious uncertainty in the more distant future. In addition, we assess the risks that the public expenditure projections (pensions, health care and long-term care) have been underestimated.

In Section 4 we present modified policy options. First, as the assumption that the required fiscal adjustment takes place immediately is unnecessarily restrictive, we present scenarios where the adjustment is stretched over time. Secondly, we relax the assumption of current policies determining the expenditures and present policy options with new policies restraining their growth.

Section 5 discusses the inevitably needed coherence of fiscal and monetary policy. The key to this is sustainability and solvency of government public finances. Fiscal policy is responsible for assuring it, with the focus on the long term, and the Eurosystem acts, if and when required, as the lender of last resort to solvent governments along with its tasks in setting the monetary stance for the euro area.

Section 6 deliberates the compatibility of our proposals with the EU Treaty, arguing that the reorientation can be initiated without changes to the Treaty

Section 7 gives a summary and conclusions for policy and hopefully also serves as an Executive Summary.

2. *Use and misuse of the sustainability gap indicator S2*

The concept of S2

Since 2001 the EU and Member States officials have regularly produced reports on the long-term challenges to public finances caused by population ageing, updating them regularly, the latest edition being from the year 2018. This work has produced extensive data, other information and analysis of the population ageing-related public expenditures (pensions, health care and long-term care). Due to its main motivation to pre-empt the threats for excessive deficits and indebtedness early enough, this work led to numerical estimates of the challenges to public finances, called sustainability gap indicator S2.

Despite the extensive use of S2 in policy analysis, the concept and its implications are inadequately known and understood, sometimes even by experts.

Conceptually, the S2 indicator gives (under its various assumptions) a single number for the immediate and permanent budgetary adjustment required by (1) the deviation of the budget balance in the base year from what is required for satisfying the intertemporal budget constraint in the hypothetical case of no increase in the ageing-related expenditures and (2) the additional adjustment required by the projected increase in those expenditures. In the EC reports the first component is labelled as 'Initial Budgetary Position' (IBP) and the second 'Cost of Ageing' (CoA). We follow this terminology where applicable, but as we proceed to extended scenarios and also allow other expenditure increases in addition to the CoA, we label the second component as 'Additional adjustment Required by Expenditure Increase' (AREI). More details are explained in the TA, Section TA.2.

The indicator S2 got its name as it was preceded by a narrower indicator, which then became to be called S1, denoting the immediate increase in government revenues (or cut in other expenditures) for covering the initial debt and the increase in expenditures until the final year of the projection.

However, it was then rightly recognised that the S1 indicator was inadequate as a significant imbalance typically shows up at the end of the time horizon because the level of expenditures reached should normally be assumed to continue and a further increase on top of the S1 implied level in revenues is therefore called for.[1]

In order to cover also the latter adjustment an extended indicator, which became to be called S2, was introduced and first published in 2006 in the EC's Sustainability report (EC, 2019, 115). S2 indicator then became a central element of the long-term sustainability analysis by the EC, the most recent report being the DSM 2019. The estimates for S2 are based on the expenditure projections made in close collaboration with the Member States' (MSs) administrations in the Economic Policy Committee (EPC) and its Ageing Working Group (AWG), the most recent results being published in the 2018 Ageing Report, called here EC/AWG Report 2018.

Technically, the S2 indicator eliminates the end-of-the-horizon loophole by extending the data by a simple assumption that the expenditures continue till infinity at the levels reached. Consequently, the S2 indicator then gives the level of revenues to cover them (and the burden

[1] The definition of S1 was later changed to refer to an estimate of the budgetary adjustment needed to reach 60 % of GDP debt ratio ten years after the end of the underlying medium-term projection; in the most recent estimates this means by 2034 (DSM 2019, 57).

of initial debt) until infinity. The assumption of infinitely running variables is not a forecast but just a technical assumption, and it should be accepted for the logic of the exercise.

In the official reports it is correctly said that *'the government's intertemporal budget constraint… requires that the government debt stabilises over the long term (i.e. by 2070)'*. What is not entirely clear is the meaning and purpose of the S2 indicator when it is said that it *'measures* <u>*the*</u> *(*underlined HO*) budgetary adjustment that would ensure sustainable public finances in the long term'* (DSM 2019, 81). Highlighting *'*<u>*the*</u>*'* above is done here to flag that the immediate budgetary adjustment is not necessary but it is just one of an infinite number of possible budgetary adjustment paths that can fulfil the intertemporal budget constraint and a stable government debt ratio.

The official S2 results

A summary of the ageing-related public expenditure projections for the four MSs as published in the EC/AWG Report 2018 are presented in Table 1. It gives the increases from 2021 to 2040, 2050 and 2070 in the two EC projections and anticipates also our modified numbers to be explained below.

They are the basis, together with initial budget data, for the S2 estimates presented in Tables 2-3 (in Section 4 below), starting from the S2 estimates reported in the DSM 2019 by the EC. They are based on the expenditure projections until 2070. In the base line cases they are roughly two percentage points (pp.) for DE, IT, and ES, and a meagre 0.2 pp. for FR (DSM 2019, 81).

Interpreting the S2 estimates usefully requires a look at its two components, IBP and CoA (or AREI). In the EC base line for DE the 'cost of ageing' contributes 3 pp. of GDP while its initial budget position is in surplus so that the S2 is reduced to around 2 % of GDP. For the other three countries the numbers are quite different. For FR the initial deficit makes 2 % of GDP, but the projected negative CoA eliminates it. Also for IT and ES the S2 estimates of around 2 % of GDP come almost entirely from the adverse initial budget positions. Therefore, the implications for DE are quite different than for the others.

The EC/AWG Report 2018 includes several additional expenditure projections, the 'AWG risk scenario' giving the highest S2 estimates for all the four MSs, roughly 1-2 percentage points higher than under the base line.

Our Scenarios 1a and b in Table 2 (in Section 4) reproduce the EC estimates. The S2 from the base line projection for DE implies elimination of its public debt (of 55 % of GDP in 2021) by 2044 and accumulation of some assets by 2070 (at the new steady state). For FR, IT and ES the results are very different: after the immediate budgetary adjustment in 2022 their debt ratios would decrease somewhat, but then increase again so that in the new steady state they would be higher than initially (Scenarios 1a in Tables 2-3 and Figure 1, in Section 4 below).

The main reason for this discrepancy between DE and the others is that for DE the ageing-related expenditures (as percentage of GDP; net of taxes on pensions) are projected to increase continuously from 2021 to 2070, while in the other three it first increases, but starts to decrease in the 2040s and does so significantly by 2070. The peak is earliest for FR, in the year 2032.

According to the AWG risk scenario the projected expenditure increases are higher than in the base line for all, the highest for DE, over 5 pp. of GDP from 2021 to 2070, while the expenditure increases are in the range of zero to two per cent of GDP for FR, IT and ES, in this order (Table 1).

Table 1. Ageing-related expenditures, % of GDP, levels in 2021 and projected increases

Germany (DE)				
Ageing-related expenditures				
Level	Increase from 2021			
2021		2021-40	2021-50	2021-70
23.0	EC/AWG base	2.47	2.98	3.36
	EC/AWG risk	3.25	4.27	5.42
	Exp. Sc 3-5	3.66	4.89	4.89
	Exp. Sc 6-7	2.46	2.99	2.99

France (FR)				
Ageing-rel-exp	Increase in ageing-related expenditures			
2021		2021-40	2021-50	2021-70
29.3	EC/AWG base	0.58	-0.53	-2.57
	EC/AWG risk	1.48	0.99	0.15
	Exp. Sc 3-5	2.43	2.42	2.42
	Exp. Sc 6-7	0.73	-0.28	-0.28

Italy (IT)				
Ageing-rel-exp	Increase in ageing-related expenditures			
2021		2021-40	2021-50	2021-70
25.3	EC/AWG base	2.69	2.35	-0.28
	EC/AWG risk	3.06	3.05	1.06
	Exp. Sc 3-5	3.32	3.44	3.44
	Exp. Sc 6-7	1.80	1.04	1.04

Spain (ES)				
Ageing-rel-exp	Increase in ageing-related expenditures			
2021		2021-40	2021-50	2021-70
23.5	EC/AWG base	2.01	2.67	-0.45
	EC/AWG risk	2.74	4.02	2.21
	Exp. Sc 3-5	4.43	6.56	6.56
	Exp. Sc 6-7	3.04	4.36	4.36

Legend: see the text. Scenarios 3-7 are explained in Table 3 below.

An immediate and permanent budgetary adjustment according to the risk scenario S2 would for DE lead to a decrease in the debt ratio by more than 90 % of GDP, from 55 down to minus 39 % of GDP, i.e. having significant net assets. For the other three MSs the implied decreases in the debt ratio would be smaller, though over 30 pp. for FR and ES, and less than 10 pp. for IT from its initial debt ratio of 137 % of GDP.

These numbers from both the AWG base line and risk scenarios are puzzling, and they should be analysed carefully. The implications of S2 estimates have remained unclear because the debt

ratio trajectories implied by them have not been spelled out in the EC reports or elsewhere, and in fact people have not noticed how peculiar the results can be.[2]

Also, it has not been duly investigated how each of the driving factors, namely the initial budgetary position, the increase in projected expenditures, the chosen adjustment path for government revenues and various other factors like the interest rate, jointly determine the government debt ratio that emerges from each scenario.

Ad hoc reporting on the debt trajectory is found in the Fiscal sustainability report 2018 (EC, 2019, 115-116), where the debt trajectories are presented for selected MSs, but it is not duly noted that the debt ratios in the new steady state increase from the current levels for the countries with high initial debt primarily because their projected expenditures until 2070 decline. Instead, as their debt projections look unacceptable the sustainability assessment is turned to other indicators.

Based on these critical remarks we now turn to new S2 estimates, looking critically to the assumptions and data, but adhering first to its standard definition as the required immediate budgetary adjustment.

3. Modified results for S2 from a critical approach

The data

We shall report below alternative estimates for the S2 indicator, based on the data used by the EC in their most recent estimates, but modifying it in various ways to reflect possible underestimation of the ageing-related expenditures. The DSM 2019 gives the data for 2021, which is the initial year of the scenarios, coming from the EC autumn 2019 forecasts. Like the DSM 2019 we use the projections for expenditures in the EC/AGW Report 2018 including both the EC/AWG base line and risk scenarios (and some EC/AWG supplementary tables accessible online, and the report on its underlying assumptions and projection methodologies, EC, 2017). These data run to 2070.

In addition to expenditure projections those for the interest rate on government debt are important. The details are explained and illustrated in the TA, Section TA.4, noting here only that in the DSM 2019 the EC revised them significantly downwards from those a year earlier (DSM 2019, 52). Combined with the projections for the GDP the effect was that the interest rate - GDP growth rate differential (r-g) became negative until the 2040s for the three MSs and below one per cent also for IT until 2050. This reduced the S2 estimates reported in the DSM 2019 and it is crucial also for the results in the present paper.

The EC data contains also the projections for property income of the governments. We keep them in all our scenarios to mimic the EC results and because they and the underlying capital reflect transfer of resources over time. However, we do not investigate them explicitly as their changes are relatively small compared to those in the ageing-related expenditures.

[2] The constricted saying that an adjustment to close the S2 gap would stabilise the debt ratio in the long term may sometimes have been understood to mean that it would stabilise at its initial level. This is a simple misunderstanding.

Time horizon

We saw above that the time profile of the projections for the ageing-related expenditures differs considerably between Germany and the three other MSs, where they decrease significantly from early 2040s onwards. Choosing a shorter time horizon than to 2070 would then affect significantly the results for the S2. For assessing what the proper time horizon should be, we need to go back to the basic nature and purposes of projecting the expenditures and estimating the S2.

The expenditure projections are based on the most recent projections of population age structure for each country, notably the so-called old-age-dependency ratios. The projections by age and gender are based on the projections on fertility, mortality and migration. As the projections produced by Eurostat extend conventionally 50 years ahead, the most recent exercise stretches up to 2070. The same time horizon has then been used for the EC/AWG projections.

The underlying population projections could be extended beyond the 50-year cut-off date. If fertility and mortality rates and migration were technically assumed to stay constant beyond the cut-off year, the population age structure would normally still fluctuate, depending on the time profile of fertility and mortality before the cut-off year, but ultimately it would stabilise (with population size changing according to assumed fertility and migration).

Based on this method, the time horizon for reporting the population projections can be chosen quite freely. For example, the recent United Nations projections extend to 2100. Such a time horizon can be useful for some purposes, and in any case, any user can choose to apply them for any shorter time horizon, depending on the purpose of each exercise.

Here we are dealing with the challenges posed by the ageing-related expenditures to the sustainability of public finances, and we aim at providing elements for political decisions now and in the near future. We challenge the conventional 50-year time horizon as it may not be the most appropriate one for this purpose.

The purpose of the ageing-related public expenditure projection is to provide reasoned assessments for policies affecting burden sharing across the successive generations. This gives us 30 years for the time horizon. It is the average age of the mother giving birth, and it is also roughly the time horizon of a middle-aged worker (at around 40-45) to the mid-point of her/his time in retirement (around 70-75).

An additional argument for a shorter than 50-year horizon is that all the projections become more uncertain the longer horizon they aim to cover. For example, the underlying demographic projections are naturally uncertain: for DE the old-age dependency ratio is projected to increase up to 2065 while a significant decrease is projected for ES from 2050 onwards and a moderate decrease for FR starting in 2045 and for IT in 2050. We are not questioning the assumptions behind these projections, but only remark their obvious uncertainty. It is useful that this uncertainty will be removed if the time horizon is limited to 2050 based on other valid reasons.

The idea here is that each projection exercise for the next 30 years is rolled over and updated at regular intervals. This corresponds to the dynamics of successive generations who are born, then work and finally enjoy retirement. This process over time provides for policy design elements for incorporating intergenerational fairness in burden sharing.

Limiting the time horizon to 30 years does not mean that the interests of the generations beyond would be ignored. On the contrary, the idea here is that each generation in working life sets the combination of the three key parameters for its pensions, namely pension contributions, retirement age and its future pension benefit level, and it can or should, if we want to set a norm, take into account the interests of the future generations, who will then take the decision for themselves, choosing the same combination (adjusted for changed circumstances) or deviating from it (Beetsma and Oksanen, 2008). This gives them the opportunity to make their own choice.

The time horizon of 50 years is in conflict with this principle most starkly for France in the EC/AWG base line projection: ageing-related expenditures are projected to decline by two pp. of GDP over 2050-70, and this affects significantly the S2 estimate by the EC, the immediate budgetary adjustment in 2022. If S2 and its use for policy design means that the currently active generation should already now benefit from lower taxes thanks to the declining public expenditures over 2050-70, then it could be required that this is done transparently.

However, our approach needs two clarifications. First, the generations in real life are not born in 30-year intervals but in continuous time. Therefore, at every instant we have in the working age population people at different ages, but the government still normally treats them under identical tax schedules so that in practice there can never be a precise correspondence between what a yearly age cohort first contributes to and later benefits from the public welfare schemes. This means that the policies are never able to apply intergenerational fairness accurately, but only approximate it by implementing the changes in parameters gradually. This will be the model below.

Second, government investment can be financed from current taxes or debt, which makes a difference on burden sharing across generations. The same is true for public expenditures on education as it affects the capacity of a given generation to earn their living. So, the changes in public debt over generations is not a pre-emptive indicator of burden sharing, not to speak here of ignoring private saving and bequests from the picture.

Yet, the largest of intergenerational transfer items are public pensions, and they are the largest single expenditure category in government budgets. This gives them a central position in policy making and collective decision making in general. Public health care (HC) and long-term care (LTC) expenditures are also large and carry many of the same features as pensions. So, there are strong reasons to look at these ageing-related public expenditures and their consequences for public debt from the angle of intergenerational fairness.

Thus, using a 30-year horizon in long-term analysis of public finances is a justified choice. Limiting the time horizon of the expenditure projections in estimating the S2 to 2050 instead to 2070, and making technical assumption that they stay at the level of 2050 until infinity is our first modification to the conventional practice.

The results are given as Scenarios 2 a-b in Table 2 and for Scenarios 2b in Figure 1 (in Section 4 below). The results compared to Scenarios 1 a-b and those in the DSM 2019 are considerably different: the S2 estimate for DE decreases while the S2 estimates for the others increase. Consequently, under the immediate budgetary adjustment scenario prescribed by S2 the debt ratio for DE would decrease less than in the scenarios based on projections until 2070. For the other three MSs the decrease would be significant.

Modifications for avoiding underestimation of the budgetary pressures

As mentioned above the EC/AWG Report 2018 presents for each MS, in addition to the base line scenario, a risk scenario where the expenditure growth of health care and long-term care is higher. It also contains eleven sensitivity tests for pension expenditures regarding the underlying factors (EC/AWG Report 2018, 93). However, ten of these alternative assumptions concern demographic and economic factors, up and down from the base line, and only one concerns the pension system rules *per se*, namely the option of linking the retirement age to life expectancy.

Otherwise the EC/AWG pension projections are based on the current rules, or more prudently, on an interpretation of the current rules agreed in the EC/AWG working group of the experts. Those reports provide important groundwork for analysing the problem, while the experts are not given a mandate to consider new and diverting policy options. This also excludes assessment of political risks of changing the prevailing rules in any, possibly unforeseen circumstances.

The same holds for the DSM 2019. It measures and assesses the sustainability of government finances, but it does not consider designing policy changes for improving it.

Understandingly, this is a limitation to the joint work among the EU and government experts, but several actors and decision makers, including the credit rating agencies and financial investors must assess sustainability and solvency of the governments more broadly, covering also alternative fiscal policy options and assessing their likelihood and political sustainability. And all this must in real life be done under both projected and unforeseen circumstances.

Hence, there is a genuine necessity for a much wider range of scenarios than that provided in the official reports.

We now turn to the expenditure projections with a critical look at the individual expenditure items.

Pensions

The EC/AWG Report 2018 (its summary table, page 78, and the various details elsewhere) gives the breakdown of the various factors affecting them, showing how the change in the age structure is the one which increases the expenditures (as a per cent of the GDP) and how a number of other factors alleviate this increase.

Initially, in 2016, public pensions are by far the largest item in the EC/AWG expenditure projections. Importantly, their percentage of GDP is projected to reach its peak already in 2032 in FR, in 2040 in IT, in 2045 in ES, while it is growing until 2061 in DE (see summary data in Table 1).

In the three MSs the largest factor that spurs a fall in the GDP shares is the projected decrease in the benefit ratio, which measures the ratio between average pensions (public pension spending divided by number of pensioners) and the GDP per labour input.

In the EC/AWG projections the benefit ratios decrease from 2020 to 2050 in all four MSs, including in DE, where it contributes negatively by 1.7 pp. of GDP by 2050. In the other three the corresponding decreases by 2050 are significantly larger (and they continue over 2050-70, but we eliminate their effect by limiting our horizon to 2050).

We take the view that such large decreases in the benefit rations should be assessed carefully. Skilful experts in each MS have produced the EC/AWG projections, but we should not forget that their projections are based on the currently prevailing rules, for example, indexation of pensions to the price level only, omitting the projected increases in real wages. Such a shift in the rules has taken place in the recent past in several countries, aiming at curtailing expenditure growth. But reversals in pension reforms have taken place in the past and new changes which increase pension levels can also always happen. So, it is prudent to look at alternative pension projections, that might be relevant for political or any other reasons.

This is the approach here. We present expenditure projections with smaller decreases in benefit ratios, hence leading to larger expenditures, for FR and ES. Those for DE are left untouched, as well as for IT, assuming that the quite significant decrease in the benefit ratio in IT might be more tolerable than elsewhere as there the initial benefit level is relatively high.

For FR we assume that one third and for ES one half of the projected decrease in the benefit ratio by 2050 will not be realised. The TA gives the details in Table TA.1.

Our modifications are rough, the purpose being to show the possible orders of magnitude and to provoke more detailed analysis.

Health care (HC) and Long-term care (LTC) expenditures

Public health care (HC) expenditures are the second largest item, initially roughly half of pension expenditures. Projecting them, and the long-term care (LTC) expenditures as well, always starts from the observation that a significant proportion of these expenditures takes place at high ages, and importantly, a significant part of them is concentrated to the last few years of peoples' lives. This means that the increase in the number of people over any chosen age limit should not as such be used for projecting the increases but, given the increase in life expectancy, the rise in the number of (relatively) healthy years needs to be taken into account (EC/AWG Report 2018, 101-104).

However, apart from population ageing, these expenditures are affected by several other factors, which can be at least equally important for assessing sustainability of public finances (and for other purposes). Here, we should note that the commonly adopted terminology in all this analysis rightly refers to 'ageing-*related* expenditures'. *'Related'* means that the object is not restricted to estimating the *effect* of population ageing on these expenditures, but something broader. Importantly, and this may not always be noted, any increase in public HC expenditures projected to take place even in the absence of ageing should also be taken into account when assessing long-term sustainability of public finances.

The EC/AWG report 2018 reflects well these complexities. It contains altogether 12 alternative projections for them, reflecting the various assumptions on their inherent determinants, together with additional 10 sensitivity tests upon the base line scenario regarding various demographic and economic factors. Based on this massive illustration of the large uncertainty (EC/AWG Report 2018, 112-126), the report then gives, for each country, prominence to the base line scenarios, together with those called 'AWG risk scenarios', based on explicit alternative assumptions.

The increases projected in the EC/AWG Report 2018, even the risk scenario variants, are not large in the light of other literature. Breyer and Lorenz (2019) assess the past data and the large literature. They conclude, first, that other time-varying factors such as medical progress and

rising GDP have driven the increases in the HC expenditures over 1970-2000, and that this should be expected to continue. Secondly, even if the change in population age structure seems not to have been a dominant factor in the past, its effects will probably be more significant in future as the demographic change itself will be more rapid in the coming decades.

Also the OECD (2015, 29-32) report on fiscal sustainability of health systems expresses the view that the new technologies and rising incomes are the main drivers of health spending growth and the demographic change comes only after. The report presents quite high figures for 'cost-pressure scenario' for the OECD on average, more than double of the recent level of 6.2 % of GDP for the total of the HC and LTC expenditures of (5.5 + 0.8, respectively). Then it continues with scenarios called 'cost-containment' ending up at 9.5 % (7.9 + 1.6).

The EC/AWG report 2018 discusses at length the various factors that are driving the HC expenditures up but are difficult to be identified and projected. It notes as a currently prevalent consensus view that, in addition to demographic and general economic factors, innovations in medical care have had a strong increasing effect on public spending: they have expanded the possibilities of life-saving treatments, adding thereby extra expenditure to treat previously non-curable diseases, saving people's lives at the cost of longer periods of morbidity, especially at old ages. It also notes that the HC expenditures will increase as health care is labour intensive and requires highly skilled medical personnel.

The EC/AWG report shows the contribution of these factors using a variant called the 'Non-demographic determinants scenario' (EC/AWG report 2018, 129-130). It is a simplistic scenario as it is based on unchanged age-gender expenditure profiles, but it is presented in the EC/AWG report as a simple proxy for expenditure growth caused by the various factors that are not easy to be modelled.

For most MSs this scenario gives the highest HC expenditure increases of all alternative 12 scenarios in the EC/AWG report. By 2050, they are somewhat higher than in the EC/AWG risk scenarios, for DE and FR +0.6 pp. of GDP and +0.4 pp. for IT and ES. We insert these additional increases over 2021-50 into our modified scenarios.

The LTC expenditures are significant and projected to increase fastest.

The EC/AWG report 2018 contains a large number of alternative scenarios also for the LTC. We use here the AWG risk scenario which combines the assumptions that half of the projected gains in life expectancy are spent without needing LTC and that both unit costs and coverage converge upwards to the EU-average ('cost and coverage convergence scenario'). Also higher projections are found in the EC/AWG report.

Overall assessment of modified expenditure projections

The aim in the present paper is not to choose for our modified scenarios the highest expenditure projections in the EC/AWG report or elsewhere. Instead, we incorporate some elements that should be analysed carefully, first the reliance on the projections for significantly decreasing pension benefit ratios in FR and ES, and secondly, possible underestimation of the HC expenditures even in the 'AWG risk' scenarios.

The EC/AWG scenarios include also public *expenditures on education*. They are classified under 'strictly age-related items' in many editions of the EC/AWG reports, which we can accept despite the large room of judgement as to what 'age-*related*' means.

As the projected fertility rates below 2.1 mean that the number of pupils at schools decreases (apart from the effects of migration) a very first simple base line scenario can show a decrease in education expenditures. A decrease indeed appears in the EC/AWG projections base line 2020-50 for FR and IT, although a moderate increase is recorded for DE and ES.

The EC/AWG report 2018 shows again here a large number of projections, some of them being up to one pp. of GDP higher than in the base line (EC/AWG report 2018, 165). We do not insert these higher numbers into our modified projections, but they should be remembered in further analysis.

The EC/AWG report also includes expenditures for *unemployment benefits*. It has been there for many editions, expressly outside the category of 'strictly age-related items'. The background is most likely that the experts in countries with high initial unemployment rates wanted to insert a decreasing trend into these expenditures to alleviate the total AWG estimated expenditure increases.

The largest decrease in expenditures for unemployment in the base line is projected for ES, 0.6 % of GDP over 2020-50. It will be useful to keep this in mind when judging the policy options which obviously should aim at reducing unemployment in ES, where it is, since the outbreak of the 2008 crisis, still at a very high level.

While the purpose of the EC/AWG reports is to project the implications of current policies, the line between them and policy options is not always entirely clear. For example, the scenario 'shift to formal care' in LTC may breach the scope of current policies.

Overall, our modification to pension expenditures projection for ES is a quite significant addition, and also the one for FR makes a difference. However, the additions to HC projections on top of the AWG risk scenario we make are not great. The outcomes for HC expenditures (non-weighted average 1.7) are well below the increases presented in the OECD report referred to above (OECD 2015). Notably, the expenditure increases in our modified scenarios remain even under the OECD 'cost-containment' scenario, which gives a 2.5 pp. of GDP increase in HC expenditures in the advanced OECD countries.

The question arises whether the EC/AWG projections for HC and LTC expenditures should truly be considered to represent the current policies or should they require new policies aiming at containing the costs. This we must leave for further investigation by the specialised experts.

The results for the modified S2 estimates

Scenarios 1-4 for each MS give the S2 estimates based on alternative assumptions on the expenditures. They are shown in Table 2 (in Section 4), starting from the EC/AWG base line and their risk scenario, Scenarios 1a and 1 b. Scenarios 2a and 2b are the same except that the time horizon for the ageing-related expenditures is limited up to 2050. Scenarios 3-4 contain our revisions to the expenditure projections showing that for the three MSs they lead to clearly higher results for S2 than even the risk scenario by the EC. For DE our new S2 estimate remains a little below the EC risk scenario based on their projections until 2070.

In Scenarios 1-3 we follow the EC data as close as practically possible, but in Scenario 4 we introduce our own interest rate trajectory which ends up at 4 % in 2070 for all (see the TA, Section TA.4, for details).

For ES the results (in both Scenarios 3-4 in Table 2) are most dramatic: S2 increases to well over 7 % of GDP, this change coming mostly from our large correction to pension expenditures resulting from rejecting half of the dramatic decrease in the pension benefit ratio in the EC/AWG projection.

For all, the high S2 estimates, based on their literal application as the immediate and permanent budgetary adjustment to comply with the intertemporal budget constraint logically lead to large decreases in the debt ratios. The debt would be eliminated not only in DE but also in ES. The projections in Scenarios 4 are presented in Figure 1 (Section 4).

These are the results from the initial data, expenditure projections in each case and the definition of the S2. It is clear that these scenarios fall short of any useful policy advice for budgetary adjustment. This is not a question of lacking political will: they lack economic sense. Why should public debt be wiped out in Germany and Spain? Why should only the revenues (and possibly other than ageing-related expenditures) be adjusted and why do so immediately rather than gradually. Why should the policy options be restricted to accepting the projected ageing-related expenditure increases based on the current policies?

These are pertinent questions that have not been duly asked and analysed in the policy debate. We now turn to enlarged policy options and present scenarios for providing more insight into the policy debate.

4. Designing policy options for sustainable public finances

Gradual budgetary adjustment

While the S2 is a crude indicator of the budgetary adjustment required for fiscal sustainability, it only measures the hypothetical immediate adjustment. Falling short of providing useful policy advice and it may even obstruct exploring a wider range of policy options.

We proceed now to a very simple modification: the budgetary adjustment is set to take place gradually over 30 years from now (i.e. up to 2050). The level it must reach is determined by the requirement that the public debt ratio converges to a constant, which in our exercise is the expression of sustainability of government finances - whether the emerging constant debt ratio is such that the government will be able to roll over its debt is a further question that we shall discuss further below.

The results from the gradual budgetary adjustment are presented in Scenarios 5 in Table 2 below. The assumptions behind are otherwise the same as in Scenarios 4, including the interest rates. The required cumulative budgetary adjustment by 2050 is now somewhat higher than in Scenarios 4. The decrease in debt ratio is significantly less than under the immediate adjustment in 2022, but still of the order of 30 pp. of GDP for DE and 20 pp. for FR, 15 pp. for ES, while nil for IT.

These results depend significantly on how the interest rate – growth rate differential (r-g) evolves, being in the DSM 2019 projections negative most of the time (except for IT) and turning positive only in the 2040s for DE and ES, and in the 2050s for FR (as its growth rate projection is highest until the 2050s, mainly due to higher fertility). In our modified scenarios they stay negative even longer as we assume that the nominal rates converge by 2070 to 4 % instead of 5 % in the EC projections (for details see the TA, Section TA.4).

Table 2. Scenarios for sustainable government finances

DE	Budget. adj. tota		Debt ratio		D change	Budget. adj. comp.	
Germany	2022, S2	by 2050	2021	in NSS	2021-NSS	'IBP'	AREI
EC base	2.22					-0.75	2.98
EC risk	3.79					-0.70	4.48
Sc1a	2.23		55.0	-7.8	-62.9	-0.75	2.98
Sc1b	3.80		55.0	-39.0	-94.0	-0.69	4.49
Sc2a	1.84		55.0	5.8	-49.2	-0.75	2.60
Sc2b	2.97		55.0	-5.0	-60.1	-0.69	3.66
Sc3	3.50		55.0	-10.4	-65.4	-0.69	4.20
Sc4	3.60		55.0	-11.2	-66.3	-0.90	4.50
Sc5		3.80	55.0	22.8	-32.2	-0.90	4.71
Sc6		1.91	55.0	24.1	-30.9	-0.90	2.82
Sc7A		1.94	55.0	29.0	-26.0	-0.90	2.85
Sc7B		2.01	55.0	40.0	-15.0	-0.84	2.85
Sc7C		2.19	55.0	27.1	-28.0	-0.76	2.95

FR	Budget. adj. total		Debt ratio		D change	Budget. adj. comp.	
France	2022, S2	by 2050	2021	in NSS	2021-NSS	'IBP'	AREI
EC base	0.18					2.04	-1.9
EC risk	2.40					2.03	0.4
Sc1a	0.18		99.2	105.9	6.7	2.05	-1.86
Sc1b	2.41		99.2	63.4	-35.8	2.04	0.38
Sc2a	1.63		99.2	59.2	-40.0	2.05	-0.41
Sc2b	3.00		99.2	46.1	-53.1	2.04	0.97
Sc3	4.31		99.2	36.0	-63.2	2.04	2.27
Sc4	4.04		99.2	40.6	-58.6	1.71	2.33
Sc5		4.16	99.2	77.8	-21.4	1.71	2.45
Sc6		1.47	99.2	79.6	-19.6	1.71	-0.24
Sc7A		1.48	99.2	84.4	-14.8	1.71	-0.23
Sc7B		1.52	99.2	95.4	-3.8	1.74	-0.23
Sc7C		2.23	99.2	79.6	-19.6	2.10	0.13

IT	Budget. adj. tota		Debt ratio		D change	Budget. adj. comp.	
Italy	2022, S2	by 2050	2021	in NSS	2021-NSS	'IBP'	AREI
EC base	2.05					1.48	0.6
EC risk	3.01					1.48	1.5
Sc1a	2.10		137.4	153.0	15.6	1.51	0.59
Sc1b	3.06		137.4	129.2	-8.2	1.50	1.56
Sc2a	3.66		137.4	88.9	-48.5	1.51	2.15
Sc2b	4.24		137.4	81.1	-56.4	1.50	2.74
Sc3	4.56		137.4	75.9	-61.5	1.50	3.05
Sc4	4.01		137.4	87.1	-50.3	0.80	3.21
Sc5		4.38	137.4	137.9	0.5	0.80	3.58
Sc6		1.99	137.4	140.1	2.7	0.80	1.20
Sc7A		2.04	137.4	146.6	9.2	0.80	1.25
Sc7B		2.18	137.4	165.5	28.1	0.92	1.26
Sc7C		3.32	137.4	138.4	1.0	1.62	1.71

ES	Budget. adj. total		Debt ratio		D change	Budget. adj. comp.	
Spain	2022, S2	by 2050	2021	in NSS	2021-NSS	'IBP'	AREI
EC base	1.77					1.70	0.1
EC risk	3.96					1.70	2.3
Sc1a	1.79		96.0	113.3	17.3	1.70	0.08
Sc1b	3.98		96.0	63.4	-32.6	1.70	2.28
Sc2a	4.09		96.0	33.2	-62.8	1.70	2.39
Sc2b	5.31		96.0	18.9	-77.2	1.70	3.61
Sc3	7.65		96.0	-3.5	-99.5	1.70	5.94
Sc4	7.68		96.0	-4.8	-100.8	1.23	6.45
Sc5		7.73	96.0	81.8	-14.2	1.23	6.50
Sc6		5.53	96.0	83.7	-12.3	1.23	4.30
Sc7A		5.53	96.0	89.6	-6.4	1.23	4.31
Sc7B		5.54	96.0	104.9	8.9	1.24	4.31
Sc7C		6.48	96.0	98.3	2.2	1.75	4.73

Legend: see next page and the text.

Abbreviations: NSS = New Steady State, 'IBP' = Initial Budgetary Position, AREI = Additional Required by Expenditure Increase.

Table 3. The Scenarios

Label	Description
EC base	EC/AWG Report 2018 base line scenario.
EC risk	EC/AWG Report 2018 risk scenario.
Sc1a	Reprise of the EC/AWG Report 2018 base line scenario, expenditure projection 2021-70.
Sc1b	Reprise of the EC/AWG Report 2018 risk scenario, expenditure projection 2021-70.
Sc2a	Assumption of the EC base, expenditure projection 2021-50.
Sc2b	Assumption of the EC risk, expenditure projection 2021-50.
Sc3	Modified expenditure projection 2021-50; interest rates as in Sc2b.
Sc4	Modified expenditure projection 2021-50; interest rates converge to 4 % by 2070.
Sc5	Expenditures as in Sc4, gradual budgetary adjustment by 2050.
Sc6	Same as Sc5 with reduced pension expenditures due to retirement age increase (see the text).
Sc7A	Same as Sc6 with additional expenditure 2023-40 for climate mitigation (see the text).
Sc7B	Same as Sc7A with 20 % of GDP addition to initial debt ratio in 2021.
Sc7C	Same as Sc7A with interest rate converging to 5 % by 2070.

For the interest rate assumptions in Sc 1-3 and in Sc 4-7 see the text and the TA, Section 4.

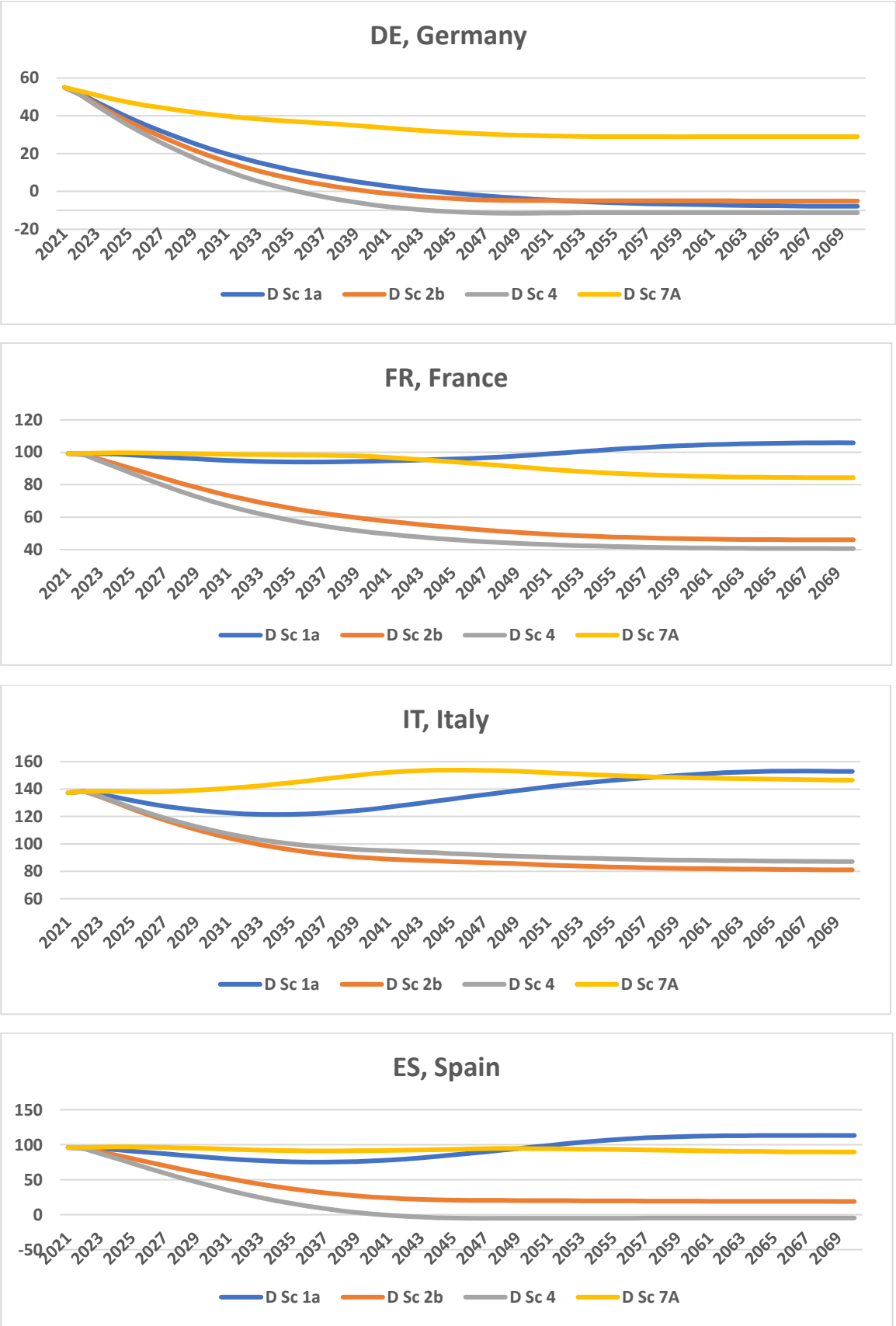
The required increases in tax rates in Scenarios 5 are large, obviously unacceptable even if they increase gradually. The issue pertains to how the gross tax rate could ever be increased (or non-ageing-related expenditures cut) by around 4 pp. of GDP in DE, FR and IT and by nearly 8 pp. of GDP in ES even if there the gross tax rate is initially significantly lower than in the others. Regarding all counties we should note that GDP is not the tax base, but taxes are effectively levied on income and consumption, which makes the hikes relatively even more pronounced.

The inevitable conclusion is that stretching the budgetary adjustment over 30 years does not solve the genuine problem: the required hikes in taxes (or cuts in non-ageing-related expenditures) are not realistic or reasonable in any sense, economically or politically, and even if set onto these trajectories in some circumstances, they would easily not be politically sustainable when their effects become more broadly understood.

The Debt Sustainability Monitor 2019 results of the EC

The results reported in the DSM 2019, the latest large report from the EC on the fiscal sustainability challenges, can lead to complacency regarding long-term challenges as it mainly refers to the relatively low S2 estimates based on the AWG base line estimates (from the 2021-2070 data, giving practically zero for FR), though it also mentions the higher AWG risk scenario estimates.

Figure 1. Debt ratios (D) in the selected scenarios, 2021-70



Legend: see Table 3 and the text.

The report does not discuss possible underestimation of the ageing costs in FR, IT and ES assessed above, but its complacency is reduced as it also refers to the S1 estimates, the required adjustment to reach 60 % of the GDP debt ratio by 2034. For FR and ES, due to their high initial debt ratios the S1 estimates are much higher than the S2 estimates, even those based on the EC/AWG risk scenarios. For IT the S1 is very high, 8.8 % of GDP, the reason being that its initial debt is so high and its (r-g) is relatively high due to the low growth projection (DSM 2019, 58).

Based on both S1 and S2 indicators and several other factors the DSM 2019 gives an overall long-term risk assessment for each MS. It ranks DE, FR and ES in the medium risk category, DE for its significantly rising costs of ageing, and FR and ES escape the high risk category mainly due to their moderate S2 base line estimates (which we challenge here). IT is ranked at high risk, mainly due to its more than 90 % GDP debt ratio projected still in 2030 (in a separate projection in the DSM 2019 and the very high S1 reflects the same).

Who should think of new policy options?

Although the DSM 2019 (and the previous editions) concludes that most MSs, including the four largest euro members, face serious problems with sustainability, its mandate does not extend to the question on how the MS governments could and should improve their fiscal sustainability.

Apparently, the challenges are great and relevant policy options should not be excluded without explicit arguments. For designing competing and often mutually reinforcing policy options we now turn to a wider range of them. No policy options should be excluded before they are first transparently analysed in a broad enough framework that allows pursuit of meaningful comparisons.

Increase in retirement age

A significant increase in old age retirement age is a policy option that has been missing almost completely from government sustainability analysis. Yet, it is a key policy variable in addition to revenues to the pension system and the ratio of benefits to wages.

The DSM 2019 does not raise this issue. The EC/AWG ageing report 2018 (and earlier editions) provides ample data on retirement ages, duration of retirement as a share of average working life etc. With policy options it is unpretentious as it only discusses the option to link the retirement age to the increase in life expectancy but not further. The same appears also in the recommendations in the country reports of the EC under the European Semester, February 2020 (EC, 2020 b/c/d/e).

However, it is proven nowhere that linking the retirement age to life expectancy from now onwards would be sufficient for any meaningful improvement in government sustainability or desired on any other grounds. At least, explicit reasoning should be provided.

The retirement ages have in most countries traditionally been set in terms of fixed numbers. As life expectancy has increased, not only the time in retirement has lengthened but also time of healthy life and good capacity to work has increased. Hence, the ratio of these phases in life have changed without proper judgement and transparent decisions. Instead, the attempts to make changes have encountered a multitude of obstacles by various interest groups etc.

Hence, a bias in retirement ages has accumulated over time. Logically, this can be corrected only by increasing the retirement age from now onwards more than linking it to a further increase in life expectancy.

For the broad picture we should note that also providing and financing public HC and LTC services must be taken into account in judging and setting the retirement age. An isolated examination of the

sustainability of the pension system is not adequate as the retirement age affects the general tax base via the supply of labour and thereby the capacity to finance the HC and LTC expenditures.

For these reasons there are strong reasons for designing scenarios where the retirement age is increased significantly. This naturally does not mean that other policy areas would be unnecessary for improving sustainability of government finances, but the retirement age increase is highlighted here because it is missing from the previous analyses where it should have been.

We start with the estimates presented in the EC/AWG report 2018 as to how much the pension expenditures would decrease by 2050 if the retirement age were now linked to life expectancy. For IT this effect is nil as the link is already in the rules, and for ES, according to the report, the retirement age in the EC/AWG base line projections increases more than by linking it to life expectancy.

Then we estimate from the EC/AWG data for 2050 the effect of a three-year increase in retirement age on public pension expenditure. Our estimate is based on the size of the cohort at the age of 65 in 2050, and we simply assume three yearly cohorts shifting from retirement to work and, additionally, that the average pensions are unchanged. This gives the effect by 2050 and we assume that the change takes place gradually, i.e. the increase is not more than roughly one year in each decade. The gradual reduction in pension expenditures net of taxes, starting from 2024, together with the estimates in the EC/AWG report 2018 on linking the retirement age to life expectancy is then fed as a negative component to the total public expenditures.

The reduction in net pension expenditures in 2050 range from 1.9 pp. of GDP for DE to 2.7 pp. for FR. DE gets the lowest number as its benefit level is lowest and FR the highest as its effective retirement age is lowest (see the TA, Section TA.4, for the details).

Such an outline for the retirement age increase will certainly be considered unrealistic by many commentators. The recent obstacles in FR to remove privileges for some professions is a reminder of the difficulties to be encountered. Also many other initiatives have failed in the past.

In March 2002 the European Council in Barcelona called for an increase in effective average retirement age by five years by 2010. The target was reiterated later, but faded away, obviously as it became clear how unrealistic it was. The average increase from 2001 to 2009 was 1.5 years in the EU on average. After this failure, linking the retirement age to life expectancy then became a more common recommendation.

Although the literature on pensions systems is large it leaves a lot to be hoped for in terms of developing constructive and coherent analysis. For example, the Joint report by the Social Protection Committee (SPC) and the EC (DG EMPL) in 2018 (EC, 2018b, 130-134) highlights the large range in the estimates of the effects of the past pension reforms on effective retirement ages (or exit ages) in all EU counties. From this it follows that the projected effect of any proposed increase in old-age retirement age would be equally obscure.

There are, indeed, several serious conceptual issues in what is supposed to be defined as an *effect* of any parameter changes. The reason is that we are dealing here with adjustment over a long time and intertwined changes in several relevant variables are taking place at the same time. Hence, it is a challenge to be clear what the effects are, taking into account all indirect effects.

Links between statutory old age retirement age and effective exit from work is one such issue. Restricting early retirement was highlighted in the Barcelona conclusions in 2002, for good reasons as moving older workers to retirement had become a common practice. Here, we are endorsing an increase in the old-age retirement age, knowing well that it does not translate directly to an increase

in effective retirement age as it must be expected, for example, that our proposal would cause an increase in the frequency of disability pensions among those approaching the increased old-age pension age.

This side-effect must be accepted, but it is also a matter to be looked at carefully in each pension system. Social insurance should mean that the level of disability pensions includes the forfeited accumulation of pension rights up to the statutory old-age retirement age. This means that a person falling into disability at any given age will benefit from an increase in the latter.

A related argument is that increasing the old-age pension retirement age gradually and declaring it convincingly can be expected to affect the behaviour of both employees and employers regarding the incentives to undergo training and to hire and train the employees. This should promote employment and productivity perhaps 10-15 years before statutory retirement, i.e. starting from age groups of 50-55 -year-olds.

These two arguments give weight to increasing the minimum statutory old age retirement age compared to changes in other factors affecting the exit from work. The positive effect on the level of disability pensions and declaring that the principle behind it will be duly implemented could help in gaining acceptance to the reform among the workers in harder occupations who are often opposing retirement age increases.

Also, the signalling effect on employment well ahead of retirement is probably more significant when an increase in the statutory minimum retirement age is declared and implemented, while supplementary accrual rates or other incentives for postponing retirement at later stages would not have this indirect effect as their impacts on exit from work would not be known in advance. They also have an opposing effect on which groups gain. Those who have become disabled or are no longer in good health do not gain from the supplements while healthy persons engaged in easier work, often in higher income groups, gain from the supplements as well as their higher life expectancy.

One more lesson from the failed pension reforms in the past is that gaining acceptance requires that the rights of the current retirees and those approaching retirement age are (broadly speaking) maintained and not mixed with the increases in the old age retirement age for younger cohorts in the more distant future. It would also be useful to explain that the currently active younger population would not only suffer but also benefit from the reform as their pension contributions and taxes can be lower than otherwise necessary.

These remarks are not supposed to give comprehensive advice to politicians but only provoke further work on these complex issues.

The results with retirement age increase

Scenarios 6 as compared to Scenarios 5 show the effects of our simple assumptions on the retirement increases for each MS, reported in Table 2.

The required budgetary adjustment reduces to much more reasonable numbers, except for ES where it is still 5.5 % of GDP. Therefore, especially for ES this cannot be the end of the search for viable policy options.

The overall assessment also for the others can be the same. There will certainly be voices that an additional three-year increase to the retirement age is not realistically expected (even over 30 years). But this cannot be the final answer as the scenarios indicate clearly enough that sustainability then requires some combination of larger decreases in benefit ratios than what we assumed in our scenarios and/or larger increases in tax rates than indicated by the results of these scenarios.

Of course, for FR and ES one could go back to the significantly decreasing benefit ratios in the EC/AWG projections, but then it should also be necessary to make such a policy line transparent in the political process. If not, their political sustainability can remain dubious.

Then, would larger increases in tax rates than indicated by the results above be acceptable politically and otherwise?

Our analysis highlights that the key parameters of the pension systems are the pension contributions (or taxes allocated to it), pension benefit ratios and retirement ages. The number of the combinations is infinite, and even more drastic increases in retirement age could possibly become relevant. Our simple framework provides an elementary tool for producing more options. The policy makers who take responsibility for both current and future generations will have to accept that only the combinations that assure financial sustainability in the long term are acceptable and valid.

Additional public expenditure for infrastructure and mitigating climate change

Until here we have restricted the long-term budgetary challenges to those identified in the EC/AWG projections and the initial budgetary positions. This is, however, not all that should be addressed in government debt sustainability analysis. The need for public investment to address climate change and renewal of production and use of energy has been recognised for a long time, gaining increased attention in the various declarations before and after the European Parliament elections in 2019. It then became part of the programme of the new EC under Ursula von der Leyen and the orientation of the ECB under its new president Christine Lagarde. It must be in the picture for both fiscal policy in the long term and for assessing the desired fiscal-monetary policy mix, especially in the current zero interest rate environment under the risk of secular stagnation. The relevant time span for all these phenomena is the same up to 30 years that we are otherwise dealing with here.

How to adjust the fiscal rules and the operations of the Eurosystem to these tasks led to diverging views in autumn 2019 and how to respond to the Covid-19 crisis in spring 2020 only aggravated them.

The DSM 2019 published in January 2020 includes a section on responding to climate change. It rightly recognises the need to embody it in government debt sustainability analysis. It notes that estimates of the total costs of climate commitments for the economy and government finances are not available, or their uncertainty is very large, and that no commonly agreed framework for these estimates is available to be used in the Stability and Convergence Programmes of the MSs. The DSM 2019 foresees that first results of improved analysis could be presented in the next update (DSM 2019, 116-124).

It is promising that climate change will gain attention in monitoring government sustainability which has been dominated by the short- and medium-term developments and threats guided by the SGP disciplinary rulebook, and that it is duly recognised that these issues are complex and need careful work for identifying the required policies (Diets et al., 2020).

Our simple framework here does not cover the substance of this complex area but it can offer some help in feeding the (competing and uncertain) estimates of the costs of the climate commitments to long-term fiscal analysis. Any options are possible. It would be possible to assume any time profile for an additional climate mitigation expenditure component which then by 2050 (or any other year) turns to permanent expenditure, a constant percentage of GDP. This would be technically similar to the ageing-related expenditure items in our framework.

We can also assume a time-limited expenditure item if that is regarded more relevant. Such a simple example is shown next: additional expenditure starts growing gradually from 2023, reaches 0.5 % of GDP in 2027, stays there for ten years and then fades away in 2037-2040. This makes a cumulative amount of 7 % of GDP, perhaps something tangible to build up capacity to respond significantly to climate change, especially if combined with inputs from the private sector.

The results of this simple additional exercise are shown as Scenarios 7A in Table 2 and in the graphs in Figure 1.

Compared to Scenarios 6 the significant result is that the time-limited expenditure item would increase the need for the gradual budgetary adjustment until 2050 next to nil. The debt ratios would increase in the three MSs less than the 7 pp. of GDP, the total cumulative spending. This results from the on average negative (r-g) over 2022-70 for the three MSs. For IT the cost and the increase in debt is again highest mainly due to its positive (r-g) on average over 2022-70).

Covid-19 pandemic will increase the debt levels

The scenarios reported here were started in February 2020 after the publication of the DSM 2019, which was based on the EC Autumn 2019 forecast and the EC/AWG Report 2018.

By 2021, which is the base year of our scenarios, the circumstances will change dramatically. One reference is that after the 2007/08 crisis in the euro area on average the debt ratios increased by 30 pp. of GDP by 2014, which was also the increase in FR and IT, while for ES it was 65 pp. of GDP.

It is possible that the negative shock is now even larger. Without guessing what will happen to the debt ratios, which will depend also on the policies, we give here a simple illustration, assuming for each of the four MSs, that the initial debt ratios have in 2021 jumped by 20 pp. of GDP.

The results are shown as Scenarios 7B in Table 2. The increases in the required budgetary adjustment are not large and the emerging increase in the debt ratio compared to Scenarios 7A is much less than the assumed initial 20 pp. of GDP increase, except again for IT. So, these scenarios reiterate the same features as in the time-limited additional expenditure scenario above: the significantly negative (r-g) until 2040s for the others keeps the effect on the debt moderate.

Limitations of the scenarios and sensitivity of the results

We gave above the main characteristics of the interest rate assumptions we used in each set of the scenarios and the TA, Section TA.4, gives further details. As the last set of the scenarios in Table 2 we give the results based on the same assumptions as in Scenarios 7A, including that the underlying interest rates follow the same pattern until 2030 except that they then converge to 4 % by 2070, instead to 5% as assumed by the EC in the DSM 2019.

The results are reported as Scenarios 7C in Table 2. For DE the change is smallest, due to its low debt both initially and in the new steady state. For FR the required budgetary adjustment by 2050 is 0.75 pp. and for ES nearly one pp. higher than in Scenarios 7A. For IT the increase is larger than one pp. mainly due to its more than 100 % of GDP debt ratio. The effects on the debt ratio in the new steady state are limited.

We do not report any further sensitivity tests on the interest rate assumptions, but only note that the most important features are their low level until the 2040s, the differences across the MSs, and the level where they all are projected to converge by 2070, which then represents the level until infinity.

Moderate modifications to these assumptions do not change the results significantly. Instead, it is significant that in our scenarios there is no feedback from the assumed budgetary adjustment (or lack

of it!) to the interest rates. This is made in all scenario exercises of this type and it is of course not fully valid.

We come back to below to this serious limitation when drawing conclusions for policy options. In the real world the interest rates on the public debt of all euro area MSs will depend on the credibility of the euro in general, which will depend, in addition to the external pressures, on both the fiscal and monetary policies and their coherence.

5. Euro needs coherent fiscal and monetary policy

The official reports fall short of policy options

The EC/AWG projections for ageing-related expenditures and the analysis of the sustainability challenges by the EC as reported in the DSM 2019 are most valuable, but their purpose is not to present policy options to tackle the challenges.

The DSM 2019 states: *'Adherence to the SGP would bring the debt to GDP ratio to lower levels over the projection period in the majority of countries, especially in those found to be at high risk over the medium term'* (DSM 2019, 11, 130). As it refers to the medium term the reference to the SGP is logical. The DSM 2019 gives prominence also to the S1 estimates, the required adjustment to reach 60 % of the GDP debt ratio by 2034, which must be judged to be a relatively short horizon for policy design if the initial debt ratio is of the order of 140 % of GDP.

For all MSs the medium-term horizon turns the attention away from what might be more appropriate, namely pension reforms that only bear fruit later than by 2034. Assessing sustainability of public finances requires a long-term view, and a short- and medium-term analysis can be an obstacle to asking the right questions.

It's the policy – stupid!

Responding to the challenges to sustainability of public finances needs ample data and sensitivity analysis, but the required next step is to provide a wide range of policy options to be dealt with transparently in a democratic political process.

Our scenarios attempt to help here. They are developed from the commonly used long-term sustainability indicator S2 methodology, expanding it for designing policy options to crystallise the inevitable choice of the time path for adjusting budget revenues and the changes to any policy variables that affect the expenditures. We started from choosing a relevant time horizon for the decisions to be taken and proceeded to gradual budgetary adjustment and then to gradual containment of the increase in public expenditures.

Simplicity of our framework obviously brings limitations but also advantages. Simplicity crystallises the inevitable choice between the main policy lines regarding taxes and expenditures and helps us to avoid being confused by details. The scenarios are examples for showing the orders of magnitude in facing this choice under the demographic change and the various economic assumptions.

The framework is relatively transparent, and it can be easily adjusted not only for more accurate details but also to incorporate possible systemic reforms. An example is the treatment of systemic pension reforms. Shifting part of the mandatory pension to a fully funded privately managed second pillar affects public revenues immediately as part of the pension contributions will go to the second pillar, public pension expenditures decrease only gradually and public debt increases, while the pension liabilities of the first pillar decrease, but this is not recorded in the standard national accounts.

This is mentioned here as it is a typical issue where the adjustment in public finances takes place over a generation and despite implementation of potential solutions, the current fiscal rules accommodate this very poorly (Oksanen, 2019a, 9; Beetsma and Oksanen 2008, 568-9).

Our scenarios produce time paths for public debt that converge to a constant, specific for each case, which is here the operational expression for sustainability of public finances. Only the sustainable paths are acceptable for a policy line, but it is equally important that there is a large number of combinations of the various policy variables which can fulfil the requirement of sustainability. Choosing between them is a political choice. Our framework accentuates that this choice must be made under the restriction that only the combinations that assure financial sustainability in the long term are acceptable and valid.

Until here we have dealt with public finances. For identifying coherent policy options for the euro area as a monetary union we now turn to the interlinkages of sustainable public finances and stability-oriented monetary policy.

Sustainability of public finances and revamped role of the Eurosystem are intertwined

It took more than a decade, until 2012, before it gradually became properly understood how closely intertwined fiscal and monetary policy are under the euro. This was probably mostly caused by the unrefined perception that fiscal policy is responsible for fiscal discipline, the SGP being the guide, and monetary policy strictly for price stability, operationalised as below 2 % inflation, and especially that the two should be kept strictly apart.

The famous declaration by Mario Draghi in July 2012 that *'the ECB is ready to do whatever it takes to preserve the euro'* started a learning process to accepting that the ECB must become a true central bank. The declaration was followed by giving an enlarged potential role to the ECB under the provisions entitled Outright Monetary Transactions, OMT (though the OMT operations have not been reverted to so far), and the various asset purchase programmes (APPs) for quantitative easing (QE), the largest being the public sector purchase programme (PSPP) for buying government debt by the Eurosystem.

These developments in the operations of the Eurosystem led to the understanding that the euro, like any other monetary system, needs a central bank that can and should act as a lender of last resort to solvent governments and financial institutions. It was gradually accepted that this is necessary as otherwise a liquidity crisis emanating from any source could develop into a public finance crisis and cause illiquidity among the financial institutions and a general economic collapse. Parallelly, the task of managing the smooth operation of the payment systems at all times under the TARGET2 payment system also became gradually understood and accepted.

By autumn 2019 when the new European Commission was installed and the new president started at the ECB, the interlinkages between fiscal and monetary policy had become a regular topic, though – as the readers of the *Financial Times* know - still with diverging views even inside the ECB governing council.

The key link between the two policy realms is sustainability and solvency of the government finances. Long-term sustainability is nearly a synonym for sound public finances for several reasons, and solvency of the governments must be understood to be a precondition for the ECB to accept their bonds in its regular monetary policy operations and, if it appears necessary, to accept them as a lender of last resort to overcome a liquidity crisis.

Sustainability and solvency are often used interchangeably, which is not wrong as in ordinary language they mean much the same. Here, we have operationalised sustainability with the help of the indicator which requires that the government debt ratio converges to a constant over the chosen time horizon. Thus, the indicator is defined specifically with reference to explicit assumptions on the relevant economic variables; by implication, it should be understood that several possibly relevant factors are left outside and therefore the validity of the indicator is limited.

The meaning and definition of solvency is then a key issue. It must be accepted that giving a precise meaning for the solvency of a government is harder than solvency of private entities. The assessment of the capability and willingness of the government to meet its financial responsibilities, comprised not only of its outstanding debt but also promises to meet its pension liabilities and other explicit or implicit commitments, is always political. It goes well beyond the technical work of the experts as it must embrace the capability of governments to collect taxes and to adjust their various policies in any circumstances.

Despite these complications solvency can then be usefully defined as the possibility and capacity of the government to roll over its debt under the assumed interest rates. This can cease if the credit rating agencies downgrade the debtor and the investors are no longer ready to provide financing in quantities required. They may, for example, start to doubt that the increase in the tax rate (or taking measures to reduce the expenditures) required for sustainability is no longer assured for political or any other reasons. If so, our estimate of the sustainability indicator is no longer valid.

Then, three options arise. (1) The interest rates increase and the investors take the risk of providing financing as they gain from the risk premium; this leads to revision of our sustainability assessment with a higher interest rate leading to a higher tax rate trajectory and a higher debt ratio in the new steady state. (2) The rating agencies issue a further downgrading and the investors withdraw their credits until the government comes out with a policy programme that assures that it will meet its financial responsibilities. (3) The government is locked out from the financial market and must enter into restructuring of its debt, which will then require a fresh policy programme that convinces the lenders that no further haircut or default will happen in relevant future.

However, the credit rating agencies and the investors do not make their judgements by themselves. Instead, they are watching closely what the central bank is doing.

The operations of the central bank as the lender of last resort affect under phase (1) above the worries and expectations of the private agents as liquidity support from the central bank keeps the required risk premia lower. Under option (2) liquidity support from the central bank gives the government time to formulate a new policy programme that becomes sufficiently reassuring and the government is able to return to the market; thus, a shortage of liquidity is prevented from leading to insolvency and default.

Essentially, the private sector agents are watching what the central bank is doing and assess how far its functioning as the lender of last resort will stretch. The central bank on its part must judge whether the worries of the private sector actors are valid. In July 2012 the risk premia had jumped due to the widespread speculation that the euro system was about to fall apart. Mario Draghi gave his famous assurances as he deemed that this can be prevented.

In general, the central bank may interfere if it assesses that the government under pressure is or can be solvent under a relevant long-term perspective, longer than what prevails among the investors in the financial market. The argument is then that the markets often behave short-sightedly because every agent wants to jump out from financing before all others do so, this leading to a self-fulfilling

vicious circle. The central bank can eliminate this by liquidity support and adequate signalling of its own assessment and its commitment to provide liquidity also in future when needed.

However, there are limits to what the Eurosystem can do. We should note the declaration of Mario Draghi in July 2012 in full: *'Within our mandate, the ECB is ready to do whatever it takes to preserve the euro – and believe me, it will be enough'*. It starts with *'within our mandate'*. The Eurosystem does not have a mandate to put public finances in order in a MS. Liquidity support from the central bank alone cannot remove a genuine insolvency of a government.

The Eurosystem must judge as to how far its liquidity support can stretch. The key question is then over which horizon, and under which conditions the Eurosystem is ready to provide financial support to a government in trouble. In hindsight, it is now quite commonly agreed that both fiscal and monetary policy were unduly short-sighted from 2011 onwards leading to the contraction of GDP in 2012-13. The views of the initial conditions were not valid, the negative effects of fiscal discipline were not understood, and the time horizon for corrective measures was not long enough.

Leaving any particular circumstances aside, the main argument in the present paper is that short-sightedness should be replaced by a long-term assessment. We have considered above that a 30-year time horizon is appropriate for sustainability assessment, and here we can add that 30 years is presumably the longest possible horizon for the financial market agents to handle in earnest: for example, it is not likely that they would give much weight to the projected decrease of pension benefit ratios from 2050 until 2070 even if they saw it in the EC/AWG report.

6. Compatibility with the EU Treaty

Reasonable flexibility of the EU Treaty and the 'strict conditionality' in rescue operations

The present paper asserts that in assessing the sustainability of public finances a significant shift from the short and medium term to a longer horizon should be adopted, our modifications and extensions to the S2 sustainability indicator providing a possible framework for this. The question is then whether such a shift in the orientation is compatible with the prevailing EU Treaty and the EU legislation otherwise.

This question is pertinent. In Oksanen (2019a and 2019b) I criticised various euro reform proposals for being unrealistic as they seemed to require changes to the EU Treaty and therefore easily fail, and that such failed attempts are detrimental to the EU. I also considered that some the proposals were not well thought out as the same results could be achieved under arrangements that are already available.

We start with the EU Treaty. Its Art. 3(3) Treaty on EU (TEU) declares that the Union works for sustainable and balanced economic growth and price stability and aims at full employment. Art. 119(3) of the Treaty on the Functioning of the EU (TFEU) states that stable prices, sound public finances and monetary conditions are guiding principles. The subsequent articles prohibit direct access of the governments to the ECB (Art. 123) and impose the no-bail-out clause prohibiting the public institutions from assuming the liabilities of the governments (Art. 125). Art. 126 prescribes avoidance of excessive government deficits and gives guidance to identify gross errors. It refers to reference values for deficit and debt but also obliges taking into account government investments and all other relevant factors, and the EU Council shall take the decision whether an excessive deficit exists only after an overall assessment.

Furthermore, Art. 136 TFEU gives the Council the task of adopting measures to strengthen the coordination and surveillance of budgetary discipline under the euro.

These Treaty provisions are general enough so that they do not prevent shifting to more long-term view in fiscal policy than what has prevailed. The Treaty provisions can even be interpreted to call for a long-term view. However, the excessive deficit procedure reference values of 3 % and 60 % of GDP for deficit and debt, respectively, in the Treaty protocol affect this judgement. The EU Treaty prescribes that when these reference values are exceeded the deficit should be reduced *'substantially and continuously'* and the debt ratio should be diminished *'sufficiently'* and *'at a satisfactory pace'*. The dominant view has been that these provisions necessarily require prompt fiscal discipline.

In the real world the various objectives are conflicting with each other and the decisions must be balanced, while detailed guidelines can never be written into the Treaty provisions, neither in Maastricht in December 1991 nor later. The SGP crisis in November 2003 taught that unexpected adverse factors can impede attaining the deficit target even if policy were adequately revised under the commonly agreed expectations at the time (as it was for DE in 2003).

The learning curve got even steeper when the EU, specially the euro area, had to respond to the budgetary crisis in Greece and some other MSs. Financial assistance was provided, partly on the basis of exceptional occurrences beyond the control of the MS (Art. 122(2) TFEU), but there was a potential conflict with the no-bailout provision in the Treaty (Art. 125 TFEU). The *Pringle* judgement of the Court of Justice of the EU (CJEU) in 2012 approved the assistance and accepted adding in 2011 the new paragraph 3 to Art. 136 TFEU allowing establishment of the European Stability Mechanism (ESM and its predecessors) for this purpose (CJEU, 2012).

This essential constitutional mutation, as Tuori and Tuori (2014, 119-162) explain, was approved on the basis that it was needed *'to safeguard the financial stability of the euro area as a whole'*, which can be derived from the broad economic policy objectives in the EU Treaty. The CJEU considered that flexibility in interpreting the no-bailout clause was justified as otherwise the principles and guidelines for economic policy in the Treaty quoted above could not be attained in the circumstances at the time.

Indeed, it is clear that in the euro area *'balanced economic growth'* and *'sound public finances'* can only be successfully achieved under '*financial stability of the euro area as a whole*', and the no-bail-out rule had to give way, albeit under strict conditions.[3] *'Strict conditionality',* meaning fiscal discipline, became attached to the financial assistance from the ESM.

In 2012, when the euro was under threat, the Eurosystem launched its OMT provisions (Outright Monetary Transactions) making it possible to purchase government bonds of the euro area MSs on secondary markets, this being applicable under the conditionality of an ESM macroeconomic adjustment programme and full compliance by the MS concerned with it. The CJEU ruled in 2015 that the OMT programme is in compliance with the EU Treaty (CJEU, 2015). The OMT has probably

[3] We could now, in retrospect, consider that writing *'financial stability'* originally into the EU Treaty in 1991, alongside with price stability, would have made it easier for the Eurosystem to assume its role as a true central bank. The reason why this did not happen was most obviously that it is too open to interpretation. However, basic understanding of economics is sufficient for deriving it from the stated objectives and principles. After 2010 this became understood the hard way when it became evident what the lack of *'financial stability'* can mean. So, it found its way to the accepted language and in essence also to the new Art. 136(3) TFEU in 2011.

helped to stabilise the expectations in the market by its sheer existence even though it has not been activated so far.

More recently, conditionality to EDP/SGP criteria appears crucial in enlarging the functions of the ESM, an element in the ongoing process of euro reforms, which is easier than a change to the EU Treaty as the ESM is an intergovernmental institution formally outside the Union's institutional structure. An agreement on the draft for revising the Treaty on the ESM was announced at the Eurogroup finance ministers' meeting in June 2019. The *'precautionary conditioned credit line'* will be available for providing financial assistance to ESM members conditional on a list of EDP/SGP criteria, together with a parallel line for the members that do not fulfil them all but whose government debt is judged to be sustainable (Council of the EU, 2019a). In December 2019 the Eurogroup proceeded with these revisions (Council of the EU, 2019b), and at the time of writing, the new ESM Treaty is pending for signing and ratification.

The reference to the EDP/SGP provisions in conditional financial assistance is complicated by their overwhelming complexity and incomprehensibleness, especially since 2011 as a result of attempting to cover all the challenges at the height of the financial crisis (Wieser, 2018; Wyplosz, 2019). Consensus of their simplification and partial depletion might be emerging as also the EC has called for their simplification, although only by 2025 (EC, 2017b, 12).

The *'strict conditionality'* of financial assistance in the new Art. 136(3) TFEU has provided the legal grounds for the ESM operations in the past and will be enlarged for the future. It also provides the link to the potential OTM operations of the Eurosystem, which are dominant features of the euro architecture for dealing with financial stability. All this is confirmed by the CJEU in its Pringle and OTM judgements (2012 and 2015) to be compatible with the EU law.

As the adjustment programmes must state the conditions their implementation and surveillance easily become complex, but the bottom line is in fact simple: these operations provide assistance only under much more stringent conditions than prescribed by the regular EU Treaty provisions on public finances. The threat of withdrawing the assistance is a most effective potential sanction.

This means that the threshold for acquiring assistance becomes high, and not only because asking and receiving conditional assistance is politically appalling due to the reputation of the austerity programmes imposed on the southern MSs in the past, for right or wrong reasons. However, they can be dangerous for pure economic reasons as already a preparation of conditional assistance may trigger a self-fulfilling financial crisis in a high debt country as it signals that the risks for investing in their debt instruments are high and increasing. Unexpected events may then easily trigger a vicious circle. This, in addition to the constant pressure from exceeding the 60 % GDP debt reference value is hampering adoption of more subtle arrangements.

The danger that conditionality and pressure may trigger a financial crisis is a genuine problem which has appeared in various occasions in recent past. This is probably a reason why several proposals for new financial instruments for public debts have not proceeded. The highest political level has not been convinced that they would help much and feared that speculation about them could trigger a financial crisis in the high debt countries.

The Bundesverfassungsgerickt questioning a basic instrument of monetary policy

As a more fundamental issue than those related to the specific conditional financing operations, the German constitutional court questioned on 5 May 2020 the legality of the bond-buying programme, PSPP of the Eurosystem, contesting the CJEU judgement in 2018 that the PSPP is compatible with

EU law ((Bundesverfassungsgerickt, 2020; CJEU, 2018). The German court referred to the Treaty articles prohibiting direct access of the governments to central bank financing and the no bail-out clause (Art. 123 and 125 TFEU), i.e. the same articles that were interpreted by the CJEU already in its Pringle and OTM judgements (2012 and 2015). It called for a 'proportionality assessment' regarding the various economic consequences of the PSPP without duly realising that in the conditions of effectively zero interest rates in the aftermath of the prolonged recession it is a monetary policy tool the Eurosystem needs for maintaining price stability, its primary task. In general, it should be understood that purchasing government bonds in the secondary market in exchange of creating base money for providing liquidity to the economy is an instrument of the central bank in any modern monetary system.

The PSPP is indeed a tool for setting the monetary stance without being involved in practical terms in risk sharing within the euro area as under its rules each national central bank mainly purchases bonds of its own government, making 90 % of the total, 10 % being purchased by the ECB. These characters of the PSPP were adequate for the CJEU judgement in 2018 that the PSPP, started in 2015, is indeed compatible with the EU law (CJEU, 2018).

The judgement of the German constitutional court *'is extraordinary. It is an attack on basic economics, the central bank's integrity, its independence and the legal order of the EU'*, Martin Wolf (2020) wrote in the *Financial Times* on 12 May 2020, and feared that *'future historians may mark [it] as the decisive turning point in Europe's history'*.

The misgivings of the German court have been widely rejected as unfounded and the Eurosystem has announced that it will continue to be vigilant with its policies. At the time of writing (22 June 2020) the *Financial Times* reports that the German government and the Bundesbank are finding a response that should satisfy the court in Karlsruhe.

Conditionality is the key – but it should refer to long-term sustainability

Leaving aside the questions of legality of the PSPP as a tool of the Eurosystem for setting the monetary stance, we now come back to the conditionality in the rescue operations by the ESM and possibly by the Eurosystem with its OMT operations and as the lender of last resort in a liquidity crisis.

The approach in the present paper does not question that the specific actions in crisis must set the conditions for financial assistance, but we pursue here reorientation of the conditions from short-term discipline to long-term sustainability. We should now discuss as to how this can be implemented in ways that comply with the current EU Treaty provisions as referred to above and their interpretation in the three important CJEU rulings on the euro in 2012, 2015 and 2018 referred to above (Pringle, OMT and PSPP cases).

Conditionality in the financial assistance operations under the ESM in the past, and in future with the extensions on the table now in 2020, is the key to implement the shift to focussing on long-term sustainability. The ESM operations are conducted under the specific treaty, but the conditions applied refer to the SGP rules, and, importantly, these conditions feed into the possible OMT operations of the Eurosystem.

Making the shift towards a more long-term perspective under conditional assistance to a government requires giving more weight to long-term elements in the adjustment programme of the government, negotiated and approved as the condition.

The basis issue here is that no government is in the position to commit the MS in question to pursue any specific policy line beyond the electoral cycle. This is a fact that must be accepted in democracies. The unfortunate drawback is that for this reason the financial assistance operations tend to be short-sighted instead of taking a longer perspective that would be more appropriate for sustainable progress.

Therefore, it would be helpful to invent arrangements that support commitments for a longer term. A blueprint could be that the MSs agree to present long-term policy programmes with a 30-year time horizon as we pursue here, and then these programmes are rolled over and updated following their electoral cycle or other major events necessitating un update. The purpose would be that, at a minimum, the changes in the long-term policy line be made transparently, both for the partners in the euro area and for their own electorates.

Analytical and statistical work serving these types of rolling-over programmes is already an established practice for nearly 20 years under the regularly repeated EC/AWG projection exercises. The important additional element emphasised here is that also alternative policy options should be covered. In order to keep the roles of the experts and political bodies separate, each government would be responsible for specifying policy options and the experts would then assess their sustainability. Elements of this work are already happening, for example, in the DSM 2019, but merely noting the serious problems with sustainability under the current policies should be followed by designing alternative policy options and analysing their implications.

The need for clarifying what sustainability means in each case is already clearly stated in provisions for the enlarged ESM operations as the MSs which do not qualify for the credit line conditional on the specified SGP criteria, may benefit from the parallel line if their government debt is judged to be sustainable. This shows that conditionality in the various operations is already acquiring new content.

Similarly, the Eurosystem must necessarily assess sustainability of all the euro area governments in fulfilling its tasks as the central bank. Purchases of government bonds under its PSPP programme, is its basic tool for setting the appropriate monetary stance, as approved by the CJEU in 2018. Under the PSPP it should not be engaged in risk sharing or transfers, but the purpose is to transmit the monetary policy impulses to the whole euro area. An assessment of solvency of the governments issuing the bonds used in these operations must then always be underlying these operations, although in communication its assessment the Eurosystem must be careful to avoid unnecessary speculations in the financial markets.

Under the possible OMT operations the Eurosystem could be seen to act as lender of last resort. Then the link to conditionality to long-term policy line of the MS under pressure will be crucial in assessing whether it will be able to maintain and restore its solvency and overcome the shortage of liquidity caused by restrained credit from the private market.

In all this we should not hide the fact that defining and measuring sustainability and solvency is not easy and straightforward. It helps a little that it is much easier to define unsustainability and insolvency.

We have a concrete example of what this can mean from the past: for Greece the AWG report 2001, the very first in the series, projected that pension expenditures were to increase from 12.6 % of GDP in 2000 to 19.6 by 2030 and 24.8 % by 2050, by far the highest increase in the EU, obviously an impossible scenario to happen, implying that strong changes to policies were needed. Then, Greece did not participate in the 2006 pension projections exercise. Could this withdrawal from the joint exercise have been a signal that something was wrong? Greece was back in the 2009 exercise,

showing roughly the same results as in 2001. In 2010 the Greek crisis struck, and a drastic pension reform had to be imposed on it.

This could give one operational criterion to judge solvency. If a MS openly refuses to present a long-term policy programme or does not do it seriously and co-operatively, containing also assessments of relevant policy options and their risks, then it would obviously follow that doubts about its solvency would arise. Declaring such doubts would be a nuclear weapon that no political actor or central bank wants to use as then the MS would be excluded from the credit market. But it would be strongly in the interest of the MS under such doubts to remove them and comply with the expectations of presenting a solvency enhancing programme, acting in the spirit that all the euro MSs *'shall regard their economic policies as a matter of common concern and shall coordinate them within the Council'*, as the Art. 121 TFEU phrases it.

For the broad principles, we argue here that extending the time horizon in fiscal policy from the prevailing short and medium term to a clearly longer perspective is compatible with the EU Treaty, with the possible exception regarding modifying the protocol on the excessive deficit, the potential need for this being foreseen in the Treaty as it can be done by unanimity at the Council. Alternatively, continuing with the flexibility in its interpretation, for which there already are precedents, could also be sufficient.

Lessening conditionality and other support operations under Covid-19

Under the Covid-19 shock now in 2020, urgent joint measures have already been taken and proposed. Here we underline that their effects will significantly depend on the credibility of the policies for the long-term. These measures will help in resolving the acute crisis only if there is sufficient confidence that the public finances will gradually be steered towards sustainability and solvency.

The package of the EC unveiled on 27 May 2020 (EC, 2020f) was a major initiative, including a new €750 billion recovery instrument, 'Next Generation EU'. It would be used for grants and loans to the MSs hit most severely by the Covid-19 shock. The resources would be raised by borrowing from the financial markets by temporarily lifting the resources ceiling to 2% of EU Gross National Income.

The EC proposal followed the joint initiative of Angela Merkel and Emmanuel Macron on 18 May, and it significantly topped up the plans and announcements in March-April 2020, which included the extension of financing from the European Investment Bank (EIB) and the EMS's unused lending capacity. Importantly, conditionality in the assistance from the EMS will be lessened by not requiring an adjustment programme but only earmarking the financial assistance to Covid-19-related expenditures.

In parallel, the Eurosystem launched on 18 March 2020 its Pandemic emergency purchase programme (PEPP) with the purpose, along with the PSPP, of assuring the functioning of the monetary policy transmission mechanism under the Covid-19 shock. On 4 June 2020 the Eurosystem announced that its volume is expanded from the original € 750 bn to € 1.35 tr, now well over 10 % of euro area GDP, mainly but not solely for purchasing government bonds. A new feature of the PEPP is some flexibility, more than for the PSPP, in the purchases across asset classes and among jurisdictions (European Central Bank, 2020a; Lane, 2020; European Central Bank, 2020b).

From the perspective of the general orientation in the present paper it is interesting to note that the joint Franco-German proposal was reported to have been significantly affected by Angela Merkel's concern of possible detrimental effects of the ruling of the German constitutional court on 5 May, which questioned the legality of the PSPP of the Eurosystem, and that a fear was spreading in the

German government that the constitutional court could go even further, and issue a similar challenge to the ECB's recently launched €750bn pandemic emergency purchase programme (PEPP), the centrepiece of its crisis-fighting strategy (*Financial Times*, 22 May 2020).

For Merkel such moves could 'endanger the European Union's cohesion'. Such anxiety of a serious threat and a determined action to eliminate it can at times be needed, and it typically requires a loud expression of the commitment to *'do whatever it takes'*. This time, in May 2020, it was needed for preserving the trust that the essential functions of the economic and monetary union will be upheld. In the case of the Covid-19 hitting hardest IT and ES it was necessary to signal that budgetary support will be provided.

The announcement of the Eurosystem on 4 June 2020 of increasing the volume of the PEPP and extend its duration was then equally forceful for preserving confidence to the essential functions of the monetary system.

The intended effects were immediately seen on the market: the risk premia of the Italian bonds decreased significantly, after having fluctuated over the spring reacting to the news on the augmenting pressures and the responses to them, including the uncertainties, as known from daily reading of the *Financial Times.*

At the time of writing, 22 June 2020, it is too early to predict what will happen with the 'Next Generation EU' proposals of the EC of 27 May. They must enter to a difficult negotiation among all MSs, as they are tied to the EU budget and therefore require the unanimity of all, including non-euro members. The proposed volumes of joint borrowing for transfers and lending is significant, but not more than 4 % of EU GDP, the same order of magnitude as the volumes of the EIB and ESM. The support especially to IT and ES will alleviate their financing needs but by an amount that will be only a fraction of the likely and inevitable increase in their government debt.

Therefore it is probable that the most important effects of the recent announcements and actions ensue from the clear signalling of the willingness and capacity to take determined measures when needed. Especially those of the Eurosystem are effective as they have the advantage of being enforceable without delay. These signals help to overcome the acute crisis, including helping the high debt MSs to maintain their access to credit markets at reasonable interest rates.

7. Summary and conclusions for reforming the euro

A pragmatic, though demanding policy line

The present paper promotes the view that managing the euro can be improved by giving significantly more weight to long-term sustainability of public finances. There are plenty of reasons for this, including that short-term fiscal discipline can be self-defeating and rather increase the debt burden than alleviate it, and that public finances should serve also the future generations, meaning that fairness in burden sharing should be one guide for the policies. A 30-year horizon is presented here to be of reasonable length. It is sufficiently long, and it also corresponds to the view that an even longer horizon easily carries unnecessary uncertainty.

A basic feature in the euro area is that fiscal policy in general is in the hands of the national governments, while especially long-term sustainability of public finances is a common concern among all MSs. It is indispensable also for the operations of the Eurosystem in maintaining price stability and financial stability. The objective of financial stability necessitates that it also serves as

the lender of last resort to solvent governments. For doing this appropriately, the definition of solvency should not be biased towards the short and medium term.

A pragmatic policy line can be composed of policy programmes for all euro MSs for the long term and the assessment by the Eurosystem (and the EU Council, finance ministers and heads of state and governments) of their credibility. This can then be the basis for assessing the solvency of the governments and validates the use of their bonds in the operations of monetary policy.

Long-term fiscal policy programmes are necessary

Firstly, the long-term fiscal policy programmes should assert that the debt ratio does not explode and show that the debt is manageable under consistent assumptions on the terms and availability of credit. This is, among its other implications, a requirement for flexibility in fiscal policy in the short and medium term.

We have emphasised here that no policy areas affecting public finances in the long term should be left out, which means that the time horizon must be long enough to capture, for example, a realistic plan to increase the retirement age as it can be implemented only gradually. Increasing the retirement age is highlighted here because it has been overlooked, albeit we do not want to give an impression that it solves all problems – no, on the contrary, much more is surely needed, and the framework presented here could serve for analysing their contributions to sustainability.

A serious problem with giving more weight to the long-term policy programmes is that the governments are not in the position to definitely commit their MSs to pursue the declared policy line beyond the electoral cycle, but reversals can always happen. This must be accepted in democracies. To help finding solutions we outline here the MSs would agree to present long-term policy programmes with a 30-year time horizon, rolling and updating them at least according to their electoral cycles. This would make the changes in the long-term programmes transparent and help in identifying their effects.

The established practice for nearly 20 years under the EC/AWG ageing-related expenditure projection exercises could serve as a model, together with the sustainability reports (DSM 2019 as the most recent example) built upon those projections. These exercises should be extended to cover also alternative policy options, keeping clear the roles of the experts and political bodies. The new policy options should be primarily presented by each government, and the experts should then present the results of their sustainability, and challenges to specify further options then builds up.

The long-term policy programmes so specified should be accompanied with readiness to act in a crisis. For the occasions where financial assistance is needed, it becomes indispensable to review the content and time horizon of the conditionality. It is the prerequisite according to the new Art. 136(3) TFEU and firmly embedded in the operations of the ESM, and feeds to the eventual OMT interventions of the Eurosystem and possibly elsewhere. Here, shifting the conditionality from the current SGP-based short- and medium-term fiscal adjustment to requiring a programme for long-term sustainability would be the key for a longer perspective. Budgetary discipline does not have to mean short-term austerity, but it can mean discipline in being responsible and transparent in setting the relevant policies for the long term.

If the proposal of requiring a long-term policy programme were accepted, then a concrete example of falling into insolvency could be an open refusal of a government to present such a programme. This said, grey areas for defining solvency will always remain and these is no way to remove them completely.

The transparent long-term programmes would be a major step in improving the management of the euro. It can be considered to the compatible with the current EU Treaty, but it naturally requires the approval of the MSs. In practice, consensus is advisable, while formally a qualified majority should be sufficient for revising the relevant SGP rules and other regulations. It may help here that their streamlining and making them more understandable and transparent is desirable also for the reputation of the EU legislation in general.

Also the Eurosystem must assess solvency of the governments

Secondly, in parallel to the reorientation towards fiscal sustainability the ways and means where the Eurosystem will operate should be reviewed. It should be accepted that it is equally important that it can purchase bonds issued by solvent governments as that it should not purchase those of insolvent ones. This conclusion can be drawn from the EU Treaty and from elementary understanding of modern central banking. Of course, the trickiest possible question is where the red line goes as it moves all the time according to the external events and policies. But there is no way to completely escape the assessment of the solvency of the issuer of any assets to be purchased.

It helps that the Eurosystem is not doing this alone. It is the regular vocation of the rating agencies and investors in the financial market to assess the solvency of the debtors. The results are partly published and all the time seen in the markets as risk premia.

This does not mean that the judgement should or could be left primarily to the private agents. Although the investors providing credit to the governments in principle always need to take a long-term view, their behaviour as a group is short-sighted as they watch each other, and importantly, they watch on a daily basis what the Eurosystem is doing. So, it is primarily the Eurosystem that basically sets and signals the judgement, and there is no way it could avoid this.

This means that the Eurosystem has in its hands a nuclear weapon whether it wants it or not. As said above, it is not likely that the Eurosystem would be among the first to declare that a government is no longer solvent. But if the private creditors make a judgement that a government is becoming insolvent and that the limits of the Eurosystem as the lender of last resort have been exhausted, they withdraw credit. Then, maintaining its integrity, the Eurosystem may not be able, under its mandate, to prevent the exclusion of the government in question from the credit market. What then remains is to participate in a rescue operation that includes a partial default, and minimising any contagion effects on other, solvent euro area governments by performing its role as the lender of last resort.

We noted above that Mario Draghi's declaration in July 2012 did not pertain to a crisis of solvency in any particular MS, but he attacked the speculations that the foundations of euro system were crumbling and felt that those speculations were unfounded.

Any chances for making progress under Covid-19

Is the Covid-19 pandemic, together with other presumed obstacles, making moving towards the proposed shift to the long-term assessments fully unrealistic? Unemployment will increase to record high levels, making it a less urgent priority for the governments and others to start negotiation for a significant increase in retirement age, even if it is emphasised here that it should be implemented gradually. And an increase in public debt ratios perhaps by 20-30 pp. of GDP (which happened after the 2008 crisis) may well cause an acute crisis that will occupy the minds of the politicians for a few years to come.

But still, it can be the other way around. Managing the Covid-19 crisis, including preserving access to credit markets, cannot be done successfully without preserving credibility that the necessarily

increasing public debts will be sustainable in the long term. This credibility should emerge, and there is no time to wait, as otherwise we could see a financial crash, more severe than ten years ago.

The tax rates will have to increase in the euro area as credit to the governments may not be available in the quantities required to cover the expenditures and the falling tax bases. As this will last for years it can gradually become better understood that the tax rates cannot be reduced to more acceptable levels without working longer, i.e. increasing the retirement age.

Are there any good alternatives?

More generally, what is the alternative for giving gradually more weight to long-term sustainability? Due to the Covid-19 shock the application of the EDP/SGP criteria has been suspended for the moment, but this will not help for very long. As long as the conditions for receiving financial assistance from the existing arrangements (ESM and OMT) are based on the EDP/SGP discipline, there is a serious danger of a credit crunch. It could emerge from self-defeating disciplinary adjustment programmes with a too short time horizon like in 2011-13 in the euro area. Alternatively, the lack of any agreement on an assistance programme could trigger a crunch as this would destroy confidence altogether. In both cases it seems that it is necessary to seek a solution by extending the time horizon of the adjustment.

For assessing the orientation pursued in the present paper and for identifying any possible alternative policy options, we should duly recognise the importance of our assumption that the financial markets remain in reasonable order, keeping the interest rates for government bonds subdued, so that the interest rate – growth rate differential remains negative or close to zero until 2050. This assumption is broadly in line with the commonly accepted vision of a secular stagnation and no significant inflation pressures for the next 10-20 years, which the Covid-19 pandemic is now making even more likely.

But importantly, this assumption presupposes that the euro area monetary union functions reasonably well as a whole and no MS, at least no major member, will encounter any serious difficulties in the credit market. This means that we exclude any political upheavals which could emerge if populist political forces campaigning for abolishing the euro gained ground. Our assumptions also require that the calls for restrictions to the basic functions of the Eurosystem as a central bank, be they based on extreme legal or political arguments, will be successfully eliminated.

Fortunately for the euro, countering such harmful and destabilising pressures has been taken seriously at the highest political level. The Merkel-Macron initiative of 18 May 2020 was a pronounced commitment *'to do whatever it takes'* as they launched their initiative for extended measures. As mentioned above, it is reported that they were partly motivated by the need to eliminate populist campaigning and narrow-minded legal attacks against the euro. Without quoting anybody literally, we could consider it useful, especially now that the pandemic is causing augmented challenges, that the highest political level is delivering the view that abolishing the euro would lead to an economic disorder of competitive currencies and exchange rates that would destroy the internal market and hurt the prospects of investments and growth in Europe.

But the next question is whether the proposal by the EC of 27 May ensuing the Merkel-Macron initiatives will work out successfully and be sufficient to do what they claim, *'create the moment for Europe, repair and prepare for the next generation'*. There are elements with the same time horizon as we advocate here as the joint borrowing is foreseen to be repaid only by 2058, and the proposed new taxes for the repayment would be linked to moderating climate change.

However, the European Council on 19 June 2020 could only register the need to continue its deliberations in the next meeting, and it is already known that there will be significant political challenges for reaching the necessary unanimity as the operation is linked to an agreement on the EU budget for the next 7-year period, and additionally, there are legal doubts whether the proposed joint borrowing is compatible with the EU Treaty.

These challenges should be weighed against the significant political costs in many MSs and the damages to the reputation of the EU due to constant quarrelling. Also, the proposed volume of joint borrowing is of the same order of magnitude as could be arranged by expanding the existing operations of the EMS and EIB, notably as they are already geared for providing financing for pandemic-related purposes. True, the volume of transfers not to be paid back by the MSs proposed by the EC would not be delivered by the EMS and EIB, so that the grants to the MSs earmarked for Covid-19 related expenditures so far would be tiny. But also this must be put into perspective: even the EUR 500 bn for grants proposed by the EC are only a fraction of the need for financing the increase in expenditures and the reduced tax revenues caused by the pandemic. This implies the conclusion that the MSs will in all events be obliged to find financing from the open markets. This means that preserving access to the credit market and, hence, sufficient confidence in long-term sustainability appears again as the key which the proposed special arrangements will not make redundant.

Beyond these comments on the most recent proposals we should note that the various euro reform proposals that would require changes to the EU Treaty are not deliberated here, for three reasons. (1) They might be unrealistic precisely because they require a Treaty change. (2) We do not advocate them as it would be wiser not to launch such reforms as they easily fail, and especially, expressing that they would be indispensable could be even detrimental as a failed attempt would then mean that the euro should be resolved, and the possible failed referenda in the MSs would only offer a platform for populist attacks. (3) The same purposes might be attainable by other means that do not require changes to the Treaty.

The approach presented here avoids all these negative occurrences. It is based on pragmatic reforms within the current Treaty, which is a great advantage. Interpreting fiscal discipline to mean sustainability of public finances in the long term clearly complies with the principles in the Treaty. Changing the protocol on the excessive deficit might be needed, but it can be done in the Council without changing the main text in Treaty. Changing the protocol might not be absolutely necessary, but it could also be useful for transparency and to give more visibility and weight to clarifying what the newly agreed guidelines for the long term will mean.

Sustainability and solvency will be the anchors for financial stability

The orientation to the long term promoted here is comprehensive as it encompasses both fiscal and monetary realms. It does not promise to solve the problems immediately, but it requires that in a not too distant future a basic understanding will develop that economic policies must gradually be oriented to the long term. This is a prerequisite also for containing the effects of the Covid-19 shock right now or any sudden serious shocks to come, or for that matter, smoothing the effects of more normal short-term fluctuations.

This is, in short, the argument that the medium term is too short for gearing the policies, in general and under the Covid-19 pandemic in particular. Even if right now there is no political energy to develop the structures of long-term policy programmes, preparations could start. According to the regular 3-year cycle the next round of EC/AWG projections should start this year, to be published in

2021. This might be too early for a significantly extended assignment, but perhaps the following round, due in 2024 is a more realistic target for a widened exercise aiming at providing ground also for new policy options.

Orientation towards long-term sustainability is not only useful but essential for preserving reasonable conditions for government borrowing now and in the short term. For this there must be a minimum level of credibility that they will be agreed and implemented as otherwise credit will not be available at reasonable terms to the most indebted MSs.

Increasing the retirement age is emphasised here, but this does not mean that there are no other policy options for improving sustainability that should also be presented for political assessment and put under an equally tight scrutiny as the proposals here.

Issuing mutual debt in the euro area is one proposal that appears regularly. Certain amounts are currently issued by the EIB and EMS, and their operations are now expanded as a response to the Covid-19 pandemic and perhaps the fresh proposal by the EC will lead to some new arrangements, though even its proposed volume is not more than the order of magnitude of the ESM and EIB. It is prudent and realistic to accept that issuing mutual debt in large scale is excluded by the legal and political obstacles.

This means that government debt in the euro area is of such an order of magnitude that it is practically certain that the bulk of it will not be rearranged to become mutualised. Therefore, the governments will remain liable for sustainability of their own public finances as otherwise they will not preserve access to credit in the open markets. The Eurosystem as an independent fully empowered central bank for the EU continues to do whatever it takes for maintaining price stability, supporting balanced economic growth and preserving financial stability. It can do this successfully only in an environment of solvent governments.

Heikki Oksanen **2020-06-22**

Technical appendix for

Sustainability and Solvency of Government Finances in the Euro: Illustrations and Policy Options

This Technical appendix (TA) gives details and additional data, following the numbering of titles and subtitles in the main text.

TA.2. *Use and misuse of the sustainability gap indicator S2*

The concept of S2

IBP, CoA and AREI

In the main text (p. 5) it is explained that the S2 indicator gives a single number for the immediate and permanent budgetary adjustment required by (1) the deviation of the budget balance in the base year from what is required for satisfying the intertemporal budget constraint in the hypothetical case of no increase in the ageing-related expenditures, labelled as 'Initial Budgetary Position' (IBP), and (2) the additional adjustment required by the projected increase in those expenditures, labelled as 'Cost of Ageing' (CoA), or in the more general case, as 'Additional adjustment Required by Expenditure Increase' (AREI).

The precise result of decomposing the S2 estimates to these two components depends on the various variables in each case, namely on the projection of the interest rate, GDP growth rate and property income of the governments. This means that the IBP varies, although not strongly, between the scenarios depending on these other factors, which can be seen from Table 2 in the main text, Section 4. Correspondingly, the estimate for the CoA may vary even if the assumed increase in ageing-related expenditures is the same. This can be seen by comparing the AREI in the results for Scenarios 3 to Scenarios 4 (for each MS), where the increase in expenditures is the same. A similar comparison can be made between Scenarios 7A and Scenarios 7C.

For clarity, the IBP is conceptually not identical to the adjustment needed for stabilising the debt ratio at its initial level. A constant debt ratio would require a time varying budgetary adjustment that depends on the interest rate – growth rate differential (r-g) and the varying projection for the property income.

TA.3. Modified results for S2 from a critical approach

Modifications for avoiding underestimation of the budgetary pressures

Pensions - Adjusting the Benefit Ratios

In the main text (p. 10-11) it is explained that in the EC/AWG projections the largest factor that affects the GDP shares of the pension expenditures downwards is the projected decrease in the benefit ratios (measured by the ratio between average pensions and the GDP per labour input).

These projections are agreed by the experts in the EPC/AWG working group and based on the currently prevailing pension system rules and the various other assumptions. As the significant reductions in benefit ratios may not be politically sustainable or realistic for other reasons, alternative projections with smaller decreases in benefit ratios are presented in the present paper for FR and ES,

hence leading to higher pension expenditures. Those for DE and IT are left untouched. For FR we assume that one third and for ES one half of the decrease in the benefit ratio by 2050 projected by the EC/AWG Report 2018 will not be realised. Table TA.1 below gives the details.

Table TA.1. Pension benefit ratio (BR), 2020-2050

Change in BR, 2020-50, pp. of wage level

	Level	EC/AWG	Here
Country	2020	2020-50	
DE	42.0	-4.9	-4.9
FR	49.6	-8.3	-5.6
IT	60.7	-9.3	-9.3
ES	55.1	-17.4	-8.7

Percentage change in BR, 2020-50

	Level	EC/AWG	Here
Country	2020	2020-50	
DE	42.0	-11.7	-11.7
FR	49.6	-16.8	-11.2
IT	60.7	-15.3	-15.3
ES	55.1	-31.7	-15.8

Public pensions, gross, % of GDP change due to change in BR

	EC/AWG	Here
Country	2050	2050
DE	-1.7	-1.7
FR	-2.6	-1.7
IT	-3.0	-3.0
ES	-4.8	-2.3

Legend: EC/AWG gives the projected changes in the EC/AWG Report 2018 and 'Here' the modified projections in Scenarios 4-7 in the present paper.

Our modification leads for FR to an addition of 0.8 pp. of GDP in 2050 to pension expenditures net of taxes and it is assumed to increase gradually from 2022. For ES the increase by 2050 is 2.2 pp. of GDP.

TA.4. Designing policy options for sustainable public finances

Increase in retirement age - The results with retirement age increase

The rough estimates used in Scenarios 6-7 for the effects of a discretionary increase in the retirement age by three years by 2050 for each MS are based on the data for 2050 on the demographic variables and on the effective exit age and duration of retirement as a share of the average working career given in the EC/AWG Report 2018 and its parallel electronic data base. Those data also give an estimate on the effect of linking the retirement age to life expectancy from 2016 onwards until 2050 for each MS, which is added to have the combined effect of these two factors.

The first set of estimates (Method I) for the effect of the 3-year discretionary increase is derived using the old age dependency ratio (the ratio of those 65 and older to the working age population, i.e. 15-64 old) in the demographic projections for 2050 by shifting three yearly age cohorts of age 65 in 2050 (derived from the Eurostat demographic data) from the numerator to the denominator, and applying the resulting change in this ratio to the pension expenditure data net of taxes.

A parallel set of estimates (Method II) uses the estimate of the age of exit from work and the estimated length of working career derived from the data on the duration of retirement in years and duration of

retirement as a share of average working career given in EC/AWG Report 2018 (page 59) and its data base. Shifting the exit age by three years and using the net pension expenditure projections for 2050 then gives the estimates for the effects of the 3-year increase in the age of exit from work. The data on the duration of retirement is gender-specific and we have aggregated it to give average effects by using participation rates etc. available in the same data set. We use here the exit age as a proxy for the retirement age even though it is not exactly the same as the retirees may continue working (EC/AWG Report 2018, 58).

A simple average of these two calculations is then used, adding to the results the effect of linking the retirement age to the life expectancy estimate in the EC/AWG Report 2018 for each MS. The latter effect is negative for ES, indicating that the retirement age in the EC/AWG projections increases more than by linking it to life expectancy. For consistency, we use the combined effect of these two factors. The effect of the link to life expectancy for IT is nil as the current rules contain it.

The results of these estimates are given in Table TA.2 below, the last column giving the effect on the decrease in pension expenditures net of taxes on pensions for 2050. The effect is assumed to start in 2024 and take place gradually until 2050.

Like our calculations for the modified pension benefit ratios above, also the estimates for the effects of the retirement age increase are meant to be simple and rough, and presented only to show the orders of magnitude and provoke more comprehensive analysis of policy options.

Table TA.2. Retirement age increase and net public pension expenditures in 2050

Effect of an additional 3-year increase in retirement age and of linking the retirement age to life expectancy (LE) from 2016 onwards on the decrease in net public pension as a per cent of GDP

Country	Meth I	Meth II	average	link to LE	Total
DE	1.69	1.48	1.58	0.36	1.9
FR	2.00	2.11	2.05	0.62	2.7
IT	2.21	2.61	2.41	0.00	2.4
ES	2.15	2.57	2.36	-0.14	2.2

Sources: Table III.1.45: Average effective exit age (Total) and Table III.1.97: Public pensions, gross as % of GDP - Policy scenario linking retirement age to increases in life expectancy, in the electronic files 'The 2018 Ageing Report: cross country tables, 25 May 2018' at https://ec.europa.eu/info/publications/economy-finance/2018-ageing-report-economic-and-budgetary-projections-eu-member-states-2016-2070_en which gives as the background data for the EC/AWG Report 2018. Additionally, Table II.1.5: 'Duration of retirement by gender, also as percentage of average working career length and of adult life spent at retirement, respectively', in the EC/AWG report 2018, page 59. It gives data for 2040 and 2070. Own estimates for 2050 derived by interpolation.
Legend: see the text.

The projections for the interest rates

The main text (pages 8, 15, 17 and 24) and Table 3 explain the main characteristics of the interest rate assumptions in each set of our scenarios. The projections are based on those in the DSM 2019, except one significant modification from Scenarios 4 onwards.

The interest rate projections for the S2 estimates reported by the EC in the DSM 2019 are based, among other factors, on the market rates (according to the EC autumn 2019 forecasts) for 10-year

bonds of each MSs, including their observed forward rates until 2030, and assuming that from then onwards they converge to 5 % by 2050. Figure TA.1 gives these projections by the EC.

In addition to the projections for the market rates the S2 estimates in the DSM 2019 are based on the projections for interest expenditures paid by the government in each year which take into account the evolving maturity structure of the debt. The latter is derived from an additional specific model used by the EC, where the result depends on the total amount of debt in each case. The aim is to follow the national accounts definitions for government interest expenditures. The estimated expenditures are then divided by the projected total debt in the previous year, and this gives a proxy for the interest rate for estimating the S2.

This procedure in the DSM 2019 means that the interest rate projections are slightly different in the EC base line and risk scenarios. Figure TA.2 illustrates the interest rates in the EC baseline scenarios for each MS.

We use these EC interest rate projections in our Scenarios 1-3, picking them in each case from the underlying EC scenario. Doing this we use the interest rate projections until 2070 following the DSM 2019 projections even if we cut off the expenditure increase projections at 2050. This is done to simulate the EC results as closely as practically possible and having checked that choosing between the various other options available in the EC files the results are affected only moderately, including also an assumption that the interest rates would converge to their permanent values already by 2050.

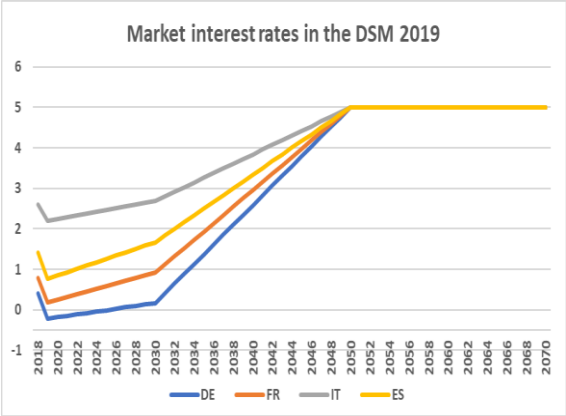
From our Scenarios 4 onwards we use the interest rate projections in the EC base line until 2030 and then set them to converge to their permanent level by 2070.[4] In the DSM 2019 the EC maintained the assumption that the market interest rates converge to 5 % by 2070 even if the assumptions on the interest rates for the coming decades was changed significantly downwards from the EC report one year earlier (p. 8, reference to (DSM 2019, 52). Thus, the EC projected that real rates converge by 2070 to 3 % as the projected inflation rate is 2 %.

We choose to set the permanent level to be reached by 2070 at 4 % to reflect the view that the interest rates may well stay at a relatively low level in the long term reflecting the hypothesis of secular stagnation, the historical data for the US, etc. Our modified projections for each MS used in our scenarios 4-7A are shown in Figure TA.3. Together with the assumption of inflation at 2 % the real rates would reach 2 %. As we take the projected real GDP growth rates from the EC projections where they converge to below 2 % by 2070, our assumption means that the interest rate – GDP growth rate differential (r-g) in the emerging permanent steady state is slightly positive for all four countries, about 0.5 % for DE and IT and just above zero for FR and ES, where the GDP growth projection of the EC is highest from the 2050s until 2070, as shown in Figure TA.4.

The projections for the interest rate - GDP growth rate differential (r-g) are slightly different in each scenario version as both the interest rates and the growth rates vary between them. However, those variations are not large and we report in Figure TA.4 only those emerging from our Scenarios 7A. Omitting other details we only note that the increase from 2021 to 2022 is due to the decrease in the GDP growth rate in the GDP projections in the base line of the EC.

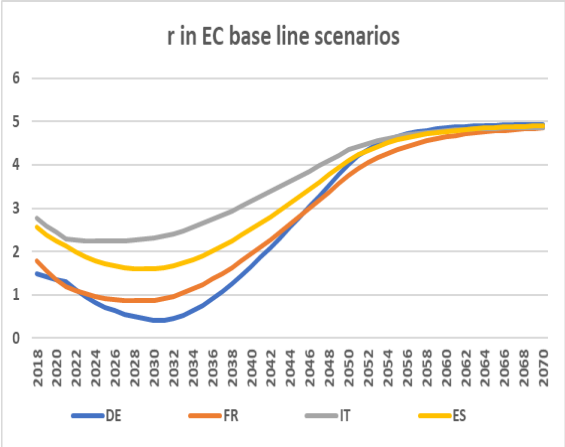
[4] As a detail, in the EC estimates they do not converge exactly to their assumed permanent values by 2070, the reason being that the maturity structure in 2070 still contains debt issued before 2050 when the rates were lower. In our scenarios we modify the projections so that they reach the assumed permanent values in 2070 as they will then represents the interest rates also from 2070 onwards till infinity.

Figure TA.1. Market interest rates for government debt in the DSM 2019.



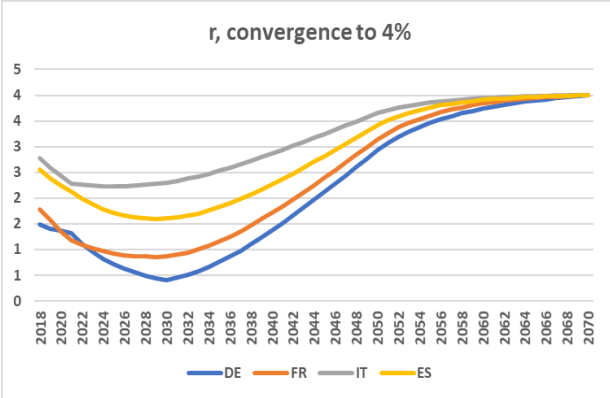
Source: European Commission, DSM 2019 dataset.

Figure TA.2. Interest rate on government debt in EC base line scenarios.



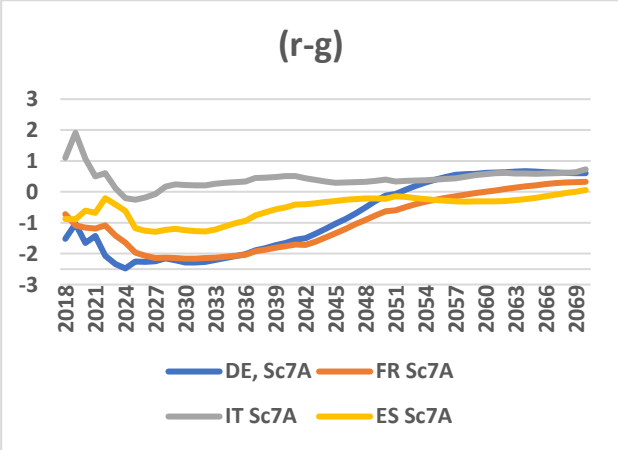
Source: European Commission, DSM 2019 dataset.

Figure TA.3. Interest rate on government debt, EC base line modified to convergence to 4 %.



Source: European Commission, DSM 2019 dataset and own calculations.

Figure TA.4. Interest rate – growth rate differential (r-g), Scenarios 7A.



Source: European Commission, DSM 2019 dataset and own calculation.

As explained in the main text (p. 37 and 39) the assumption of relatively low interest rates over the next 2-3 decades (also made by the EC) and our assumption of the 4 % for the emerging steady state presupposes that the financial markets remain in reasonable order and that the euro remains as a stable currency for the euro area and will preserve its trusted position globally. In the contrary case of continuing turbulence and crisis the scenarios based on these interest rate projections presented here would not be valid. The same would hold for the EC projections and the S2 estimates based on them.

Without presenting any extensive alternative sets of scenarios we only report in Section 4 (p. 24) for each of the four MSs the Scenarios 7C, where it is assumed that the interest rates converge to 5 % by 2070 as assumed by the EC.

Projections for the GDP growth

In our scenarios the EC base line projections for the GDP in the DSM 2019 are taken as given, including the growth rate for IT which is permanently lower than for the other three MSs. The projected low growth is, together with the higher nominal interest rate, behind the higher (r-g) for IT in Figure TA.4 above, and explains several results explained in the main text.

In our scenarios we also follow the EC assumption that the change in the cumulative budgetary effort from 2022 in each scenario will affect the GDP negatively in the year of its occurrence by a coefficient 0.75 (but not thereafter). This assumption takes on board the possible negative effect of fiscal tightening, although in a very simple manner. We should also note that the base line GDP projections are taken from the projection for each MS without any budgetary adjustment, which means in most cases that public debt would explode, and therefore such a projection is not a meaningful reference for assessing the scenarios aiming at sustainability which we design in the present paper.

End of the Technical appendix.

References and Abbreviations

Abbreviations
AWG = Ageing Working Group
CJEU = Court of Justice of the EU
EC = European Commission
EPC = Economic Policy Committee
EU = European Union
TEU = Treaty on European Union
TFEU = Treaty on the Functioning of the European Union

In the text
'EC/AWG Report 2018' refers to EC (2018a), and
'DSM 2019' refers to EC (2020a).

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