

Core Matters

How to reconcile fiscal consolidation, greening and equality?

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December 22, 2022

Our Core Matters series provides thematic research on macro, investment and insurance topics

Europe is facing another fiscal spending boost: on top of de-facto inevitable green investments, the Russian invasion will prompt higher military spending while social coercion will also warrant public support.

The bulk of the green expenditures will be borne by the private sector, but the burden for governments that includes military and social expenditures will also be huge. We look for additional net EMU public spending of about € 260 bn per year until 2030, with risks on the upside.

With the ECB normalising its policy, key rates will continue to rise, implying increased government interest expenditures. Quantitative Tightening (QT) will somewhat constrain the greening of monetary policy.

We expect the euro area average debt ratio to stay close to 100% by 2030. Debt sustainability indicators will deteriorate. Additional shocks – e.g. climate or geopolitics – or social pressure emanating from the transition cost in a context of increased inequality, would make the debt path ever more challenging. This may well create a new ‘impossible trinity’.

Is a greener and fairer society possible without jeopardising debt sustainability? The fiscal rules will be overhauled, but high hurdles for sustained and substantial debt mutualisation will leave much of the burden on the shoulders of single countries.

Fiscal policy needs to become less expenditure-oriented, e.g. to rely on relative price changes rather than subsidies for greening. Governments need to act early to ensure a relatively smooth adjustment, co-operate with private firms in infrastructure projects, and embrace “growth-enhancing reforms”. Tax increases for high-income earners will inevitably be considered, though that too requires strong international cooperation.

Markets will scrutinise the ability of firms to become greener and punish the brown laggards, thereby helping to master the green transition.

Three major policy challenges: an impossible trinity?



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1. The stage for an impossible trinity

Climate warming is (one of) the most important challenges of our times. Recent floods, fires, droughts, and storms have raised fears of accelerating disasters. Limiting warming to ~1.5°C, as flagged in the latest [IPCC report](#), will require **huge public and private spending needs**. Moreover, the Russian invasion of Ukraine and the EU’s energy shock have triggered additional military and energy-related outlays. Distributional questions are front and centre: **greening measures may prove harder to digest for low-income earners**. To avoid social tensions and political instability, additional spending will be warranted. Consequently, the total volume of expected additional annual spending needs over the next years will be sizable (Chapter 2).

Meanwhile, inflation has surged. While a cost-of-living crisis exacerbates distributional tensions, **central banks are tightening monetary policy**, implying rising average interest rates on sovereign debt. This strains fiscal policy. Amid the pandemic, the euro area debt ratio had already (temporarily) averaged close to 100%. Given an increasingly ageing population and receding trend growth, consolidation has become challenging, and we expect debt sustainability issues to come to the fore again – especially in countries with debt ratios already above 100% (Chapter 3).

Can green and social outlays be reconciled with fiscal consolidation needs or do they create a new impossible trinity? The **ECB** will help on greening, yet it **will no longer absorb debt via asset purchases but shrink its balance sheet**. The greening of its policy will operate through various channels (e.g. preferential treatment of green assets in policy operations), thereby playing an important role for the corporate sector. Regarding sovereigns there might be some support (e.g. green reinvestment of assets) (Chapter 4). On the fiscal side, a **greening of the Stability and Growth Pact (SGP)** would

help but not solve the underlying debt problem (Chapter 5). Sacrificing social objectives may increase social tensions and ultimately jeopardize green objectives (Chapter 6). In our view the bulk of the policy response will need to come from governments, requiring fiscal policy to become “smarter” to avoid the trap of an impossible trinity. This also includes the handling of the carbon tax - a key tool for greening the economy - even if related net fiscal revenues may be limited (Chapter 7). For investors economic greening creates challenges and opportunities (Chapter 8). All in all, we conclude (Chapter 9) that the air for fiscal policy is getting thinner, with the risk of an ‘accident’ increasing. Without a much smarter fiscal policy, the trinity of greening, debt reduction and securing social coercion will become impossible.

2. Huge but largely inevitable spending needs

Greening the economy, enhancing defence capabilities, and fostering energy independence will strain governments’ budgets.

First, the current decade will be decisive to put the greening of the economy on track. This implies largely unavoidable investment to achieve CO₂ reduction and other greening targets. Over the last years, the EU has committed to the targets of a 55% GHG (Green House Gases) emissions reduction by 2030 (from 1990 levels) and zero net emissions by 2050. Required “[...] *private and public investments are driven primarily by the large one-off costs of transitioning to low-carbon technology and the need to construct a new infrastructure network to accommodate it*” (see [here](#)). The EU Commission’s estimates of the “*green investment gap*” have evolved over time, also depending on what exactly is included. It started in 2018 with an estimate of at least € 180 bn per year to reach the 2030 climate targets. When the EU increased its ambition from a reduction goal of 40% to 50-55% (now *at least* 55%), the gap widened to € 260 bn per year. In a 2020 communication ([Identifying Europe's recovery needs](#)), the **estimate ran as high as € 470 bn per year in the 2021 to 2030 period** (or more than 3% of 2021 nominal GDP) for reaching the EU’s 2030 climate and wider environmental policy goals. Including the digital transformation, the sum increased to even € 595 bn per year over the decade. These estimates are above those of the International Energy Agency (IEA) for the world and of the International Renewable Energy Agency (IRENA). Here, the green investment gap is quantified at about 2% of GDP which would be in line with the aforementioned € 260 bn. However, we suspect that additional expenditures will build up and assume an annual green investment gap of € 470 bn.

While the bulk of the spending will need to be borne by corporates, the **fiscal contribution** will still be sizeable. It is typically estimated at **20%-30% of overall required green investments**. It results in annual public investments of € 94 bn

to € 141 bn. This is conservative as some (e.g. [Darvas and Wolf](#)) even see this public share between 0.5% and 1.0% of annual GDP (i.e. 25% to 50% of green investments).

Breakdown of "widely" defined EU green investment gap

Sector	bn EUR per year
Renewable energy	30
Construction	185
Industrial/ other energy efficiency	5
Transport	120
Environmental protection	77
Resource management (ex energy)	38
Circular economy (beyond already included)	15
Sum	470

Source: EU, GIAM calculations

Second, the Russian invasion in Ukraine has prompted a policy U-turn on **military spending**. We assume that governments (including non-NATO members like Austria) will tend to catch up to the NATO's 2% military spending target by 2023. Hence, about € 100 bn of additional annual expenditures will be needed compared to 2022. **The risks are tilted to the upside**, as for instance the June 2022 [NATO summit](#) communique suggests. Necessary help for Ukraine comes on top.

Third, raising energy independence from Russia has become a policy goal. The EU's RePowerEU initiative foresees additional cumulative spending of up to € 300 bn. These expenses are intended to be frontloaded until 2027. No more than € 20 bn of new funding has been earmarked to finance the public component. The rest is about to come by repurposing Recovery and Resilience Facility (RRF) loans and grants from other programs, e.g. Cohesion Fund. That said, it remains to be seen to which degree the mobilisation of private investment will succeed and it is unclear in how far member states have incorporated the potential RRF means fully in their budget or whether it requires additional debt. Overall, we find it sensible to assume in additional annual expenses of € 5 bn over the 2023 to 2030 period.

Fourth, there is common agreement that the green transition will need to be accompanied by **social measures to cushion the effects especially on low-income earners**. It is hard to precisely quantify the needed amounts. The EU Commission provided estimates in the aftermath of the pandemic ([Identifying Europe's recovery needs](#)). Here, the additional investments in the fields of social infrastructure, affordable housing, health and long-term care, education, and life-long training might serve as a proxy. The estimates were made under the impression of the Covid crisis and thus very much emphasise the healthcare investment needs. However, topics like education and lifelong learning will also be of essence, especially for formally "lower" qualified people as the green transition will accelerate the change in job profiles. **Higher inflation and an ageing population will, more generally, make**

expenditures for affordable living necessary. In sum, the [EU calculates](#) additional annual investment cost of € 192 bn over the current EU budget period until 2027.

Social infrastructure investment needs

€bn, per year	
Education and long-life learning	15
Health	70
Long-term care	50
Affordable housing	57
Total	192

Source: EU Commission 2020, Identifying Europe's recovery needs, GIAM

Our quantitative assessment of the forthcoming total (public and private) investment needs sums up to about **€ 776 bn per year or 6.3% of 2021 nominal GDP (see next table), of which are € 396-444 bn are public**. However, assessing what is already budgeted and what is truly "additional" is a difficult task. As part of its [EU Green Deal](#), the EU has already developed a strong focus to tilt all its expenses towards climate policies. This is true for the EU recovery plan (at least 25% of it to be green), the NextGenerationEU (at least 37%) or the 2021-2027 long-term EU budget (at least 30%). Moreover, as the NGEU shows, the EU may act as a lender: its own resources and loans, if not grants, towards single countries could gain importance. Currently, the EU has three main [sources of revenue](#) (2021-2027): customs duties, shares in VAT collected by Member States, and direct contributions by EU countries. Recently, a contribution based on the non-recycled plastic packaging waste was added. The current EU's own resources amount to about one third of the entire budget. Looking ahead, it is [intended](#) to include also revenues from Emission Trading System (ETS), the Carbon Border Adjustment Mechanism (CBAM) and the reallocation of profits from large [Multinational Enterprises](#) (MNEs) worth about **€ 17 bn** per year, which would lift EU own resources to slightly above 40%. However, the [2022 EU budget](#) of € 169 bn pales compared to the aggregated fiscal revenues EMU governments of about € 6200 bn. The EU budget makes only about 2% of total public expenditures.

The table below sums up the above mentioned investment needs for the EU. Departing from overall public expenses of € 444 bn, assuming that 30% of the non-military expenses are covered by the EU own resources and considering also limited carbon tax income (see section 8), **we end up with additional annual expenses of about € 300 bn for public coffers**. For the euro area economies, **it would be about € 260 bn or 2% of GDP**. Arguably, this number differs from the aforementioned 2% public plus private greening estimate. We stress that the latter estimate carries a high amount of uncertainty, and we see risks tilted to the upside, e.g. additional spending for the digital transformation.

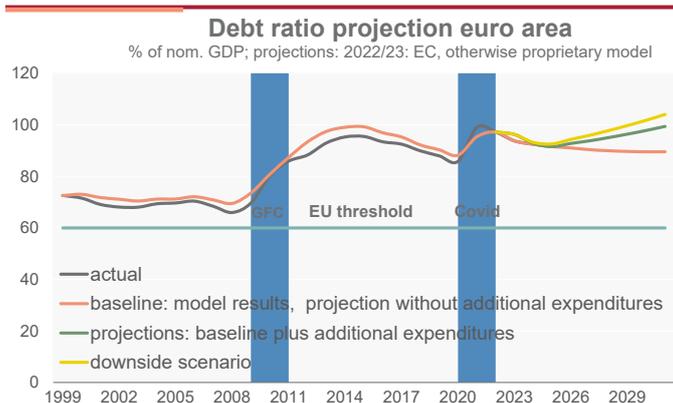
Huge EU public and private investment needs

Item	Description/study	average annual expenses until 2030 (bn EUR)		
		total	public	private
Green investment gap	public share of 20%	470	94	376
	public share of 30%		141	329
Energy autarky (RePowerEU)	public share of 20%	5	1	4
	public share of 30%		2	4
Increased military spending	Military expenditures in line with the 2% threshold or constant if current spending is already above	109	109	0
	Mesasures to cushion the fallout from the green transition on low income households		192	192
Sum	public share of 20%	776	396	380
	public share of 30%		444	333

Source: EU, GIAM calculations

3. Debt sustainability indicators to deteriorate

In a late 2020 [publication](#), we addressed the issue of debt sustainability mainly in the light of the Covid pandemic. We build on this work (see Box 1 in appendix 2) and now add the significantly changed inflation and interest rate outlook amid increased public expenditure needs. In appendix 1 we lay down in more detail our assumptions about growth, inflation, the ECB policy rate and the 10-year government bond benchmark yields. We discuss three scenarios. First, as our reference, we compute the baseline scenario without additional expenditures. Second, we include the additional expenditures (green, military, social, energy, in short “greening”) to the baseline scenario. Third, we combine the additional expenditures with the downside scenario.



We highlight that the euro area debt-to-GDP ratio runs to 99% in the greening scenario, about 9 pp higher than in the baseline (90%). **While in both cases, the post pandemic recovery and higher inflation help to reduce the debt-to-GDP ratio near term, longer term the negative impact of higher interest rates and lower nominal growth will become more visible.** Also, an ageing population will make it difficult to keep the primary balance in surplus.

In fact, for the 2023-30 period we expect the primary balance

to stay broadly balanced in the base case but to turn markedly negative in the greening scenario. The base case assumes in line with the [EC autumn 2022](#) forecast that the policies to cushion the energy shock peter out in 2023. The risks are clearly tilted towards an extension of many of these measures. In the downside case, we even look for an average primary balance around -2% and a debt ratio of 104% by 2030. **The projected debt ratios are in any case clearly above the SGP threshold of 60%.** With debt ratios staying around 100% questions about debt sustainability will persist. Is there reason to be concerned?

We approach this question by looking at the required actions to keep the projected 2030 debt ratio at least constant (see Box 2 for details). The **first indicator** we look at is the “**snowball effect**” i.e. the difference between the average interest rate on debt and nominal growth rate (i-g). If it is positive, the debt ratio grows even in case of a balanced primary budget. Our projections see the implicit interest rate on debt rising from 1.8% at present 2.5% by 2030, still below the projected nominal growth rate. Quite encouragingly, the debt ratio hence still falls in case of a balanced budget. That said, we see the primary balance staying in negative territory by the end of the decade. In our scenario the **snowball effect is not sufficient to bring debt down.** Instead, a primary balance of at least -0.3% would be needed (pb* in the table below), 1.2 pp (greening) or even 1.8 pp (downside) above the respective projections (pb in table below).

Euro area debt projections until 2030

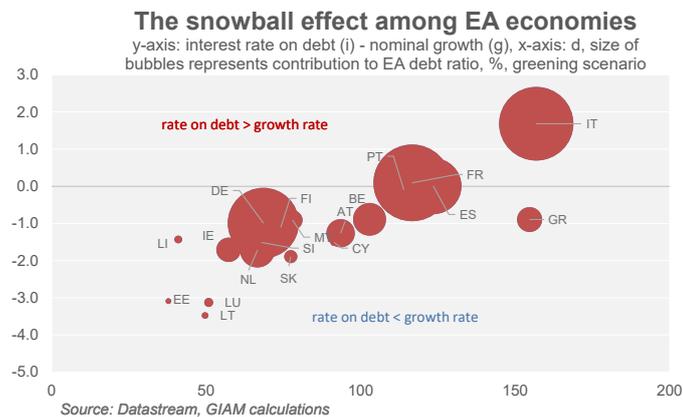
expected evolution of EA aggregate total government debt under different scenarios

	debt ratio (d)	primary balance (pb)	implicit rate on debt (i)	projected nominal growth rate (g)	pb* = pb to stabilize d given i	i* = i to stabilize d given pb
base scenario						
2022	93.7	-4.4	1.8	7.4	-4.9	5.0
2025	91.0	0.0	2.2	4.0	-1.6	4.0
2030	89.6	-0.2	2.5	2.8	-0.3	2.7
greening						
2022	96.3	-4.4	1.8	7.4	-5.1	5.0
2025	92.8	-1.7	2.2	4.0	-1.6	3.1
2030	99.4	-1.8	2.5	2.8	-0.3	1.9
downside scenario						
2022	96.3	-4.4	1.8	7.8	-5.4	5.4
2025	94.4	-2.1	2.3	2.9	-0.6	1.8
2030	104.0	-2.2	2.7	2.6	0.1	1.5

source: Datastream, European Commission, GIAM calculations

Hence, on the aggregate level, consolidation requires a marked shift in the fiscal policy stance. While this is significant, the budget balances needed to prevent debt from rising in all our scenarios do look manageable. By contrast, the **country-specific analysis paints a much more differentiated picture** (see graph below). Italy and Greece will continue to exhibit elevated debt ratios. The snowball effect is set to become no longer negative for Italy, France and Spain – the second to fourth largest EMU economies. In our downside scenario it also kicks in for Portugal.

The **second indicator** is based on the idea that we find it useful to look – given projected rates on debt, growth, and primary balance – at the cushion against deteriorating fiscal metrics while still maintaining an at least constant debt ratio. When doing so, we assume the economy growing at potential and the government exhibiting the primary balances forecast by the model. We then calculate the maximum rate on government debt still consistent with stable debt ratio (see also Box 2). We call this the **critical rate**. Its difference to the projected rate on government debt is an indication for the fiscal policy leeway a country still has.



Our projection shows that **all countries except two (Italy and Portugal) still have some ‘current policy leeway’ by 2030, but for some not much at all.** Both need to adopt a sounder fiscal policy compared what is to be expected, especially as we expect receding primary balances due to lower potential growth and an ageing population. But for most countries there is still some buffer (see grey bars in next graph).

The **third indicator** highlights that ultimately the willingness and ability of governments to embark on a tighter fiscal trajectory is decisive for debt to stay sustainable. Outstanding is Greece which reached in the 2016-2019 period an average primary surplus of 3.9% and adopted substantial reforms under the pressure of its creditors. We deem it extremely **unlikely** that, without firm external pressure, **countries would maintain a primary surplus above 2.5% over a long period.** But examples like the German Agenda 2020 also suggests that **crisis times may lead to reforms.** Simulations by the [IMF \(see chapter 7\)](#) imply a GDP boost of 4% over five years and even 12% in the long run. Arguably, [other studies](#) point out that the effect of actual reforms lags behind expectations. All in all, we deem it appropriate to assume a maximum primary balance of 2.5% and an increase of potential growth by on average 0.5 pp annually over our projection horizon in crisis times. With these adjustments being made countries can shoulder an even higher interest rate while keeping debt under control. We label this derived rate – analogously to the critical rate – the maximum rate. The difference to the projected actual rate gives what we name the **safety margin before serious debt sustainability concerns arise** (box 2).

Box 2: Some indicators for debt sustainability

For our analysis, we find it useful to look at the following three indicators to assess the risk of unsustainable public debt.

First, departing from (1) in Box 1, ignoring (because it plays no role here) SFA (t) we get

$$(3) D(t, j) - D(t - 1, i) = \frac{(i(t, j) - g(t, j))}{1 + g(t, j)} - pb(t, j)$$

stating that with $pb(t) = 0$ the change in the debt ratio is only positive for $i(t) > g(t)$. The measure $(i-g)$ is also referred to as the snowball effect. We now take a medium-term view and think of $g(t)$ as a constant (potential) growth rate g . If we impose $D(t) - D(t-1) = 0$ in (1) we get

$$(4) i(t) = \frac{pb(t) * (1 + g)}{d(t - 1)} + g$$

or the **average rate on government debt which is consistent with a stable debt ratio.** From this equation we derive two further key debt sustainability indicators.

Second, the critical (crit) interest rate is calculated by inserting expected averages (exp av) for $pb(t)$ and $g(t)$. We use the predicted average of the 2023 to 2030 period. The debt ratio is our expectation for 2030.

$$(5) i(crit, t) = \frac{pb(\text{exp av}) * (1 + g(\text{exp av}))}{d(t - 1)} + g(\text{exp av})$$

As a measure for stress, we use

$$(6) i(crit_gap) = i(crit, t) - i(t)$$

which is an indication how much leeway policy still has given that the debt ratio stays at least constant (**‘current policy leeway’**). A negative value is an indication for adjustment needs.

Third, the next indicator looks at the maximum interest rate that is derived under the assumption of the highest politically sustainable medium term primary balance $pb(\text{max})$ and the expected growth rate augmented by growth supporting reform measures (r).

$$(7) i(\text{max}) = \frac{pb(\text{max}) * (1 + g(\text{exp av} + r))}{d(t - 1)} + g(\text{exp av} + r)$$

As a measure for stress, we analogously use:

$$(8) i(\text{max_gap}) = i(\text{max}) - i(t)$$

If $i(\text{max_gap}) > 0$ we still deem it possible that policy can at least maintain the current debt ratio medium term. The higher it is the bigger the **‘safety margin before serious debt sustainability concerns’ arise.** In case of $i(\text{max_gap}) < 0$ we are concerned about an upward trajectory of the debt ratio. This does not mean that debt will necessarily become unsustainable as the future path of monetary policy could theoretically change the picture via its impact on $i(t)$ or an adjustment program via the ESM could do the trick.

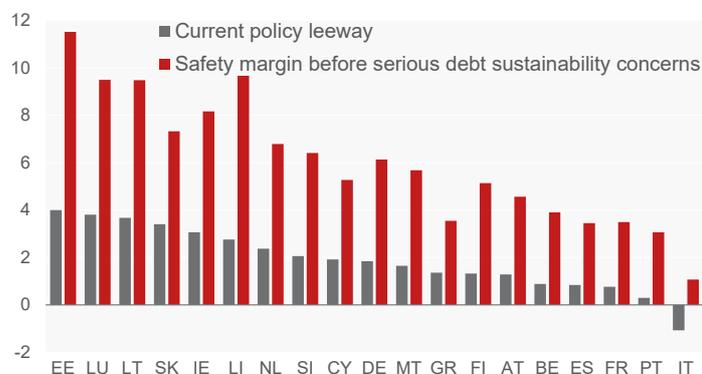
Our simulations show that such a safety margin **is set to remain for all countries.** Italy is forecast to exhibit the smallest leeway with 1.1 pp in the greening and only 0.7 pp in the downside scenario. In other words, if the average yield on Italian government debt were to rise by 2030 from an estimated 3.5% to

above 4.6%, we would expect debt to become unsustainable. In the downside scenario this threshold is somewhat lower at 4.4%.

All in all, current debt sustainability is not in acute danger, as even the downside scenario appears manageable. However, the air is getting thinner: the **materialisation of yet another ‘unknown unknown’ could easily worsen the situation by driving debt ratios further up**. This concerns Greece and Italy with projected debt ratios around 154% and 157% in the first place. Also, we see upside risks to green expenditures. Importantly, the average (unweighted) maturity of the EMU economies currently is 8.6 years but for the countries with clearly below average maturities (Luxemburg: 6.1, Portugal and Italy: 7.1, Germany and Finland: 7.5, Cyprus: 7.7 and Spain: 8.0) the risk is much higher. The upshot is that measures to ensure and improve debt sustainability while not putting the green transition into danger are urgently needed.

Debt sustainability indicators by 2030

pps of rate on government debt in the greening scenario, for definition of indicators see box 2



Source: Datastream, GIAM calculations

4. Greener ECB policy no rescue to governments

The ECB will support the green transition as much as possible within the limits of its mandate. Most major central banks have already decided to give up market neutrality and tilt policy towards greening the economy.

The ECB adopted a **climate action plan** as part of its new monetary policy strategy in mid-2021, including a detailed **roadmap**. It argues that “Climate change has profound implications for price stability through its impact on the structure and cyclical dynamics of the economy and the financial system.” It uses its mandate in basically three dimensions: (1) Improving the **analytical framework** to incorporate the impact of climate change into growth and inflation and the functioning of the financial system (transmission process). (2) Using its **supervisory role** for the banking/financial system to produce relevant statistics and require financial institutions to observe their exposure to climate risks. For a broader review of macroprudential policies, see Chapter 4 of the ECB/ESBR Project Team report (**July 2022**). (3) Influence **financial market** prices and risks by adjusting their monetary policy, financial market operations, and prudential requirements.

The ECB has acted already along these lines and **adopted several measures**. In 2021, it announced to accept sustainability-linked bonds **as collateral**. It also agreed on a **common stance** for applying sustainable and responsible investment principles in the euro-denominated non-monetary policy portfolios. Recently (July 2022), it **announced** to start reducing the carbon footprint in its portfolio (amid **more details in mid-September**) and push banks to better manage climate and environmental risks. Within its corporate sector purchase programme (CSPP), using several influence strategies,

- it “will start tilting the reinvestments from maturing **corporate bonds** – around €30 billion every year – towards assets issued by companies with a better climate performance” (from October on).
- Moreover, in the future, it will “limit the share of assets of high-carbon companies that can be pledged by a bank as **collateral**” (supposedly applicable before end 2024) and
- limit “collateral to companies and debtors that are compliant with EU sustainable reporting standards”.

Such transparency requirement will heavily rely on the Corporate Sustainability Directive (CRSD), hence is expected to apply from 2026 only. The ECB has also already used its supervisory role performing a “**top-down**” climate stress test and – recently – a “**bottom-up**” climate stress test, the latter finding that banks are failing to sufficiently incorporate the issue into their risk management frameworks and internal models.

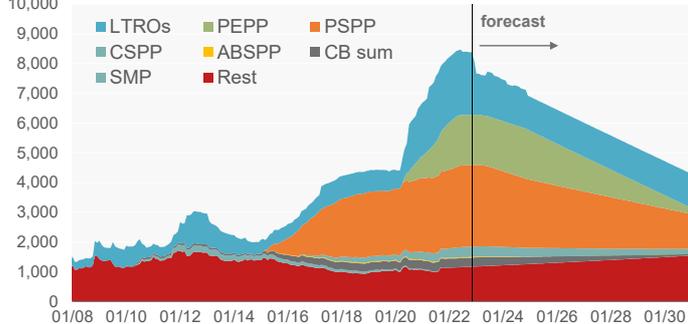
All these measures help nudging “relative prices” towards greener production. The ECB sees it within its secondary mandate to contribute to the efficient allocation of resources by influencing the relative financing costs. It is **estimated** that the CSPP lowered yields of eligible bonds between 15 to 40 bps relative to non-eligible bonds. Similarly, the collateral eligibility premium has been estimated at between 11 to 24 bps. The ECB now intends to use such power to influence relative prices as a climate-change policy tool.

Looking ahead, **the ECB could even enlarge its toolbox in our view** to further influence relative financing costs. Principally, it could not only target reinvestments, but also existing government bond portfolios (PSPP and PEPP summing up to € 4424 bn as of November 2022) which we expect to be reduced only cautiously by passive QT. This reshuffling could also be extended to CSPP holdings. The ECB announced at its December 2022 meeting to present details about the likely preferred treatment of green bonds from February 2023 onwards. However, some hurdles would need to be overcome, ranging from the availability of green government bonds to the ECB’s commitment to capital key buying. A further qualitative leap could include **green TLTROs** (targeted longer-term refinancing operations) should the overall policy stance become more accommodative again, directly involving the credit channel. The latter would come a step closer to the People’s Bank of China (**PBoC**) which launched an outright carbon emissions

reduction facility last November. This facility incentivises banks to give loans to green projects with the bank providing 60% of the loan principal at a one-year lending rate of 1.75% (compared e.g., to a 1y Loan Prime Rate of 3.70%). We see this as a powerful additional green tool.

ECB balance sheet to shrink medium term

ECB balance sheet composition, bn EUR, forecast assuming passive QT on APP and PEPP reinvestments until 2024



Source: Datastream, ECB, GIAM calculations

5. Stability pact greening, no debt mutualisation

Given our debt simulations it looks clear that bringing the debt-ratio down to the 60% threshold as required by the SGP is unrealistic for most countries. Already the large Covid-related expenditures prompted the EU to trigger the [“general escape clause”](#) in early 2020 and to extend it until the end of 2023. There is general agreement that the SGP needs a substantial overhaul. **The European Commission set out ideas for a [new fiscal framework](#)** on Nov. 9 that would give member states more flexibility regarding the adjustment path while at the same time enforcement would be strengthened. Compared to the current rules (60% debt-to-GDP ratio, 3% deficit-to-GDP ratio, plus the “corrective” arm) national medium-term fiscal-structural plans would be the cornerstone, integrating fiscal, reform and investment objectives, including those to address macroeconomic imbalances. The result would be a single holistic medium-term plan with a single operational indicator, i.e. net primary expenditure which is in a government’s control. At the same time, more stringent EU enforcement tools to ensure delivery. The deficit-based excessive deficit procedure (EDP) would be maintained, while the debt-based EDP would be reinforced.

Nevertheless, **“consolidation” and “greening” may be presently mutually incompatible**. Although near-term the [Next Generation EU](#) (NGEU) funds will play a large mitigating role, neither the existing nor the new rules explicitly mention the treatment of green investments. Consolidation needs could prevent the investments needed for the greening of the economy unless “other” expenditures were to be cut substantially. Experience from the euro crisis shows that under consolidation pressures almost all countries chose to cut public investment rather than current (consumptive) spending. Such

a policy response is considered system-inherent (compare [Darvas and Wolff, CEPR](#)) as *“in ageing societies, the interests of future generations have less electoral support”*. Moreover, *“fiscal rules disadvantage investments by treating them fully as current expenses, even though the benefits of investments accrue over long periods”*. Against this background, several **routes** (with variants) to exempt greening investments from consolidation needs **are under discussion**:

- A [first option](#) is to add an exemption clause for green public investment to the **current flexibility clauses** (i.e. “unusual event clause” or “general escape clause”). While relatively easy to implement without a Treaty change, it would not ensure that member states indeed invest the necessary amounts. The same is true for a “variant”, proposing an even more general relaxation of EU fiscal rules. To mitigate this problem, the European Commission could estimate and the European Council recommend country-specific green fiscal outlays. However, such an approach is considered complex and – given fiscal sovereignty – not ensuring that countries would comply nor that that public finances would improve.
- A [second option](#) would be to **fund all EU climate expenditure centrally**, possibly via EU borrowing. Such a solution would be like the Recovery and Resilience Facility (RFF) or the NGEU. This would be again complex, but consistent with EU goals and ensure appropriate spending. The debt financed spending would not be accounted as national debt. However, such a fund would also likely involve some EU redistribution and, as it would likely be much larger than the previous examples, amount to a substantial mutualisation of fiscal debt, which will face stiff resistance from so called frugal economies.
- A [third option](#) could be a **green “golden rule”**. This would allow for green investment debt to not count in the SGP, i.e., to be exempted from the consolidation requirement. To prevent any misuse (greenwashing) criteria to identify green investments (taxonomy) and how they separate from the “general budget” which would still have to obey consolidation requirements are needed. This may blur the boundaries and require audit rules. While the rule still does not guarantee an adequate amount of investments, there remain strong incentives to “convert” any feasible investment into a green one.

But **none of these approaches escape the real the issue of rising debt ratios**. Debt mutualisation would benefit individual member state’s debt ratios but only kick the can further down the road and are unlikely to find a political consensus in the near term.

6. Inequality issues a limit to consolidation

Even in the – in our view – unlikely case of some further debt mutualisation, the **EU faces a range of “solidarity” issues**. The Commission dubbed “solidarity” a defining principle of the European green transition (“[Fit for 55](#)”) both among member states and generations, regions, rural and urban areas, and different parts of society. Solidarity is considered a cornerstone to winning over the support of people, even as they might be negatively affected by greening policies. These considerations reflect the increased awareness of [inequality issues](#), although the road towards equality remains highly controversial.

The EU has already set up a range of funds for buffering the green transition. First, the [European Green Deal](#) has been accompanied by the so-called **Just Transition Mechanism** (€ 100 bn of investments over 2021-27, coming from the EU budget, co-financing by Member States and contributions from InvestEU and the European Investment Bank). The “Fit for 55” package also introduced a new [Social Climate Fund](#) which will “provide dedicated funding to Member States to support European citizens most affected or at risk of energy or mobility poverty”. Energy poverty alone could affect up to 34 million people in the EU. The Social Climate Fund amounts to € 72.2 bn for the period 2025-2032 in the EU budget – in principle 25% of the expected revenues from the new emissions trading system. Member States facing higher challenges (e.g. higher share of fossil, greenhouse gas emissions, energy intensity or lower GDP per capita) will benefit from an enhanced **Modernisation Fund**. Especially in the case of further supply shocks elevated inflation would primarily harm the poorer people. In any case, these **equality considerations limit the leeway for fiscal consolidation via a broad-based tax increase**.

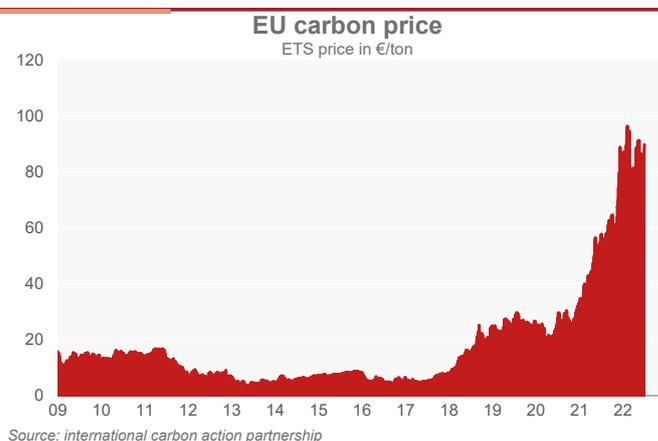
7. A “smart” fiscal policy warranted

In this challenging environment, fiscal policy will have to “square the circle”. This will involve **sorting out “smart and effective” options from the fiscal toolbox**, including to avoid additional public (consumption) expenditures.

A first option is to involve the private sector whenever possible, incentivising private investment (e.g. public-private partnerships) that could facilitate the green transition and thereby support growth and fiscal revenues. At the EU level there is some past experience with the so called [Juncker Plan](#), which is estimated to have a long-term positive effect on GDP of 1.2% and mobilized investments of € 439 bn up to 2019, 70% of which coming from the private sector.

Relative price adjustments should not take place via deficit-augmenting subsidies but rather taxes or regulations. As it stands, **carbon taxes will be the central tool** to induce

reallocating resources from high- to low-carbon activities. These carbon taxes can come in a wide variety of (dis-)incentives, including the [European Emissions Trading System \(ETS\)](#) where the emission rights are cut over time while their price increases, or the (proposed) [Carbon Border Adjustment Mechanism \(CBAM\)](#). From a sovereign debt perspective, it is crucial to estimate the income that could be expected. This is **tricky because if such carbon “steering” tax was successful, the tax income for governments should quickly trend to naught**. If instead the price elasticity proves to be rather low, the tax income would be high but the green goals elusive. On top, carbon taxes are critical from an inequality perspective as “poor” households will be disproportionately hurt. Options to eliminate this shortcoming are redistributing the tax income via cuts in income taxes or via lump-sum payments, the so called “climate dividend” to all or parts of the society (“carbon-tax-cum-dividend” policies, compare e.g. analyses for [Germany](#) and [France](#)). The form of the redistribution also feeds back on other macro variables (e.g. labour supply), which complicates the estimations of carbon tax revenues.



That said, by focusing on elements of the “Fit for 55” package the [Institute for European Environmental Policy](#) (IEEP) provides useful insights. It **expects the “Fit for 55” package to extend EU-wide carbon pricing coverage from around 22% percent of EU greenhouse gas emissions today to over two thirds**. The full impact will only be reached in 2030. The ETS coverage extensions mainly concern road transport and buildings sectors and the ending of energy tax exemptions for aviation and maritime. The IEEP assumes an “ETS price range of 50-100 Euros/tonne by 2030, yielding revenues of € 71-142 bn per year by that time.” Given that the current price is already at around € 80/t this number looks conservative. On top, the CBAM could yield € 2.1 bn.

Beside the ETS many member countries also levy national CO₂ taxes. Some have been recently introduced, others, e.g. in Sweden, date back to 1991. In France, the tax increased to € 44/t CO₂ in 2018 and was scheduled to rise to € 86.20 bn by 2022, which the “yellow vests” managed to stop. In Germany, the tax started in 2021 with € 25 bn, and will be raised to € 55 bn by 2025. Other taxes were lowered, as an offset. For Germany, it is estimated that government revenues could

amount to about € 10 bn by 2025. The “[tax foundation](#)” sees in an EU 17-country sample the average CO₂ tax at € 36 bn in 2021 (but Germany and France are missing in the sample). Thus assuming a rise similar to Germany (€ 55 bn by 2025) and extrapolating the income by the [German GDP share in the EU](#) (24.7% in 2021), a rough calculation would suggest (€ 10 bn/0.247) around € 40 bn add-on from country carbon taxing. Overlaps of national and EU ETS taxation cannot be excluded with the widening coverage of the ETS. To avoid double taxation, the national tax measures would probably be cut.

In sum, **carbon taxes may promise a marked income effect for government coffers and according to our rough calculations averages € 140-180 bn p.a.** But it must be kept in mind that a large part of these revenues will be eaten up by compensating tax reductions (reduction in income tax, lump sum dividend). Likewise, for the ETS, as part of the proceeds will cover the Social Climate Fund.

We expect that higher taxes for high income earners and wealthy individuals will increasingly be discussed, though capital mobility – including human capital – will limit the scope for implementation. International tax harmonization is of the essence. The latest agreement on [MNE taxation](#) is a good start but a small step.

Expenditure cuts will also come into focus. With the labour force shrinking further over the coming years a leaner and more digital government will be warranted. A huge share of government expenditures goes to pension payments. Higher pension ages could help. At the European level synergies should be used. A more integrated European army could save money and increase EU military power. Likewise, a truly European energy infrastructure could create synergies.

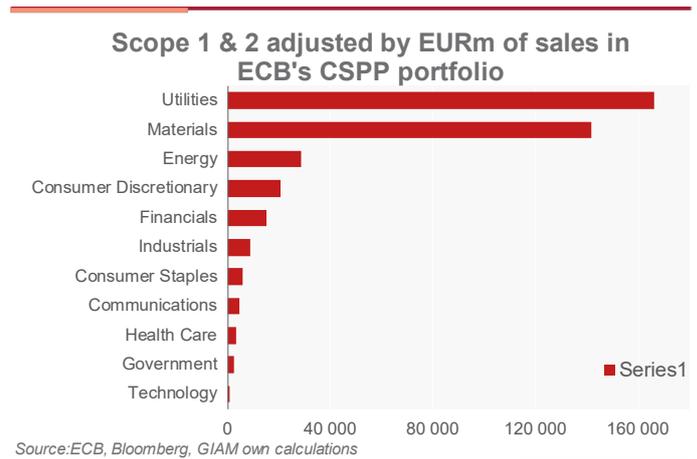
8. Immense private sector efforts needed

The transition toward production compatible with the EU green objectives will bring huge costs for the private sector but little or no extra income. For instance the only difference between clean and dirty cement is the cost of production. The **green transition represents a drag on future profits and credit qualities of the most polluting sectors.** Hence, there is little chance that companies will take the unilateral decision to make the required investments in time without constraint or incentives both from the institutional framework or the market.

Who is impacted?

As explained in the second section, we do estimate that limiting warming to ~1.5°C and ensure energy autarky, the European private sector would have to spend between € 330 bn and € 380 bn p.a. But the effort will be very unevenly distributed across industries. The sectors that will bear the heaviest burden are obviously the ones with the highest carbon emissions. The **most polluting sectors** within the European IG

market, when considering scope 1&2 GHG emissions adjusted for sales, are **Utilities, Materials and Energy.**

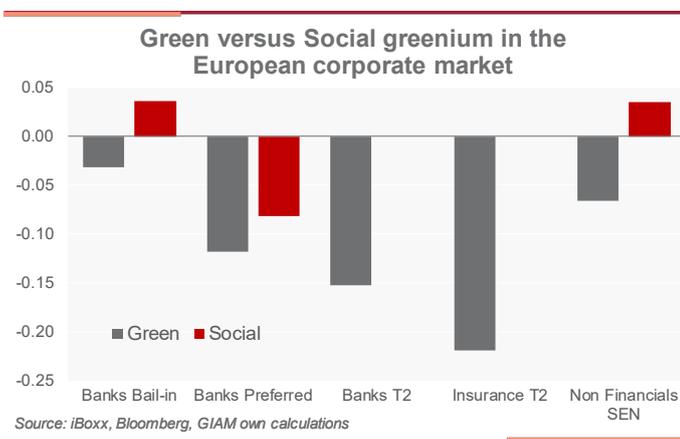


Markets are starting to integrate a climate component into prices. For instance, in the credit market issuers in the energy sector are selling debt at a slightly larger yields than similarly rated peers from other sectors, most likely because of their poor environmental score. The ECB just started to green its corporate purchases. This will further accelerate the building of ESG premia, even if the shrinking of the APP portfolio from March 2023 will limit the ECB's active climate policy.

In the equity markets studies tend to show that carbon intensity has been so far the main metric used to build discriminant ESG strategies. But this is not necessarily sufficient to hedge climate risk. For instance a [Fed study](#) analyses the market impact of the unexpected revision of the German carbon pricing system for the transportations and construction sector in December 2019. The carbon tax was set at EUR25 instead of the initially planned level of EUR 10. On the news, investors sold companies with the highest carbon intensity and analysts have down earnings the most for those companies reacting more to the absolute carbon intensity than on the decarbonisation trajectory.

The private sector will have to increasingly rely on the **sustainable debt market.** As per the environmental premium mentioned earlier the “greenium” is small, only a few basis points. From a pure risk perspective, the pricing of the bonds should not diverge as both the financial risk and the ESG risks are the same for green bonds and conventional ones. Yet the demand for green paper via green bond funds is strong; according to the [Environmental Finance Bond Database](#), funds that have more than 50% of their portfolio in green bonds saw their assets under management soar by 31% to USD 34 bn in 2021. The number of funds reaching the 50% threshold rose to 68 from 55, while new funds are being registered.

According to the [IEA World Energy Outlook 2022](#) the most rapid changes and the largest emissions reductions this decade have to come from the electricity producers, and more specifically from a quick deployment of clean electricity generation implying a strong decline in emissions from coal.



Clean electricity not only cuts power sector emissions but also helps bring about emissions reductions in end-use sectors as they increasingly look to electricity to meet demand for energy services. As a result, electricity becomes the “new oil” in terms of its dominant role in final energy consumption. Investment in renewable energy and electricity networks make it a key sector to leverage the net zero transition theme.

Rating agencies and ESG scores

Pressures to embrace the green transition is also rising on the side of rating agencies. Not only do they face [ESMA](#) regulatory supervision but also they are signatories of the Principles for Responsible Investment (PRI’s) [statement on ESG in credit risk and ratings](#). The three major credit rating agencies thus have officially formalised the integration of ESG into credit ratings, including published general principles and scoring systems. They accelerated their ESG journey via acquisitions of ESG research and data specialists. ESG factors are increasingly cited by rating agencies as key drivers. They are becoming gradually more relevant as instances of carbon transition-driven rating actions are mounting, e.g. at S&P via a change in the business risk profile assessment (Oil & Gas), in credit metrics threshold (Utilities) or the inclusion of climate targets among key rating upside catalysts (Glencore).

Overall pressure from the equity / debt market is not yet strong enough to force polluting companies to make the required green investments. Firms in the oil sector start looking at renewable capacities. But they are reluctant to transition too fast as it is burdening both their income and rating as their “brown” activities – even if not sustainable over the long run – are far more profitable for now. That being said the oil and gas sector currently provide nearly 55 % of the world’s energy supply and as the world’s population continues to grow, rising prosperity will increase energy demand. In fact, even the IEA’s most ambitious low-carbon scenario requires more oil & gas production by 2030. Also Oils are expected to increase their share of Taxonomy-aligned capex to above 40% by 2030E (from 8% currently), at a higher rates than other carbon-intensive sectors - although still far from sufficient to tackle the energy and climate crises. On this, the application of the EU Green Taxonomy disclosure in 2023 could be a

momentum driver for the energy sector because it will help quantifying companies’ transition plans and “credentialising” decarbonization targets.

The same also probably applies to nuclear for Utilities as the production cost is now well above other electricity production methods based on fossil fuel, even though from a carbon issuance standpoint it is much better (despite the issue of the waste being far from resolved). In that respect implementing green fiscal incentives is key to nudging companies to make those low profitability investments. The inclusion of gas and nuclear in the EU taxonomy is a way to facilitate the funding of those considered climate-transition-friendly capex. Now the funding of taxonomy-eligible activities is not significantly cheaper than that of more polluting ones but it is reasonable to expect that the gap will gradually increase in the coming years. According to the EU Technical Expert Group on Sustainable Finance: “*Capex is a key variable for assessing the credibility of a company’s strategy, and it helps investors decide whether they agree with their strategic approach*”.

Consequently, we see limited value in discriminating entire sectors, because companies in brown sectors need funding for the transition. Hence it is about discriminating within each sector between the companies that have genuine green capex and transition strategies in their plan, as opposed to those that tend to green wash. Hence, **green capital expenditures comparisons will help measure how committed a company is, estimate the pace of its transition, analyse its strategy, and potentially identify ESG improvers.**

9. Conclusions

Summing up, decarbonisation demands huge private and public investments, which meet already elevated debt levels following the GFC and GCC (Global Covid Crisis). **Ignoring or postponing the spending may cause an unorderly transition**, where costs will be even higher and damages more severe. Previously mitigating factors like low inflation and very accommodative monetary policies are gone.

For **public debt, fiscal policy needs to square the circle**. The required spending needs are not compatible with consolidation. A flexibilization of the SGP will not solve the underlying debt sustainability problem. The end of the ECB bond buying, and ongoing policy normalisation will raise average interest payments and thus narrow government’ room for manoeuvre further. In the end, fiscal policy will need to **follow a fine line: how to foster greening without endangering social stability and debt sustainability**. While fostering private involvement, raising fiscal income via taxes or other measures will be likely part of the plan. At the country level the **tolerance for policy mistakes will sharply diminish**, especially for the highly indebted economies. They will come under special scrutiny potentially increasing their rating risk; another

negative shock to public finances could easily trigger a vicious circle.

The **spending risks are clearly on the upside**. The EU's Fit for 55 package is more realistic than previous approaches in addressing climate change but it is not considered sufficient according to scientists which advocate for overachieving the 55% and targeting an overall 60% reduction. Moreover, the Fit for 55 as well as the REPowerEU are not yet industrial strategies. We conjecture that the implementation of a coherent industrial strategy implies further resources. Also, an extension of the energy support measures over the entire year of 2023 or even beyond is another downside risks to public finances.

For **private debt, monetary policy can help improve relative financing costs for "green" vs "brown" production**. There is room for more initiatives. In principle, this tilt can also be enlarged towards green government bond.

Huge **green investment needs will also dominate the corporate sector**. The most polluting sectors are Utilities, Materials and Energy. Investors will scrutinise the single firms' ability to adjust to the new environment. Here, green capex will likely be a key discriminant. Green companies will benefit from a **premium** and a better **rating assessment**.

The upshot for investors is that a much more thorough and differentiating analysis of potential assets is warranted. We see limited value in discriminating entire sectors, because companies in brown sectors need funding for the transition. Hence it is about discriminating within each sector This concerns both sovereign government and corporate bonds.

Appendix 1: A challenging macro environment

Rising public expenditures will meet a fundamentally different setting compared to the previous decade. First, a shrinking labour force (demographics) will drag on **potential growth**. Second, the **low-inflation environment is unlikely to return soon**. The current inflation tsunami will likely push euro area consumer prices up by almost 8% in 2022 and also keep inflation at elevated levels for a while thereafter. Fundamental factors like the green transition and re-shoring activities by firms will make a relapse into a low inflation environment very unlikely. The ECB is aware of this and Governing Council (GC) member [Schnabel](#) stated that while the average contribution of energy prices to inflation was 0.3 pp historically, “*The scale of the energy transition, and the political determination behind it, implies that these estimates could be conservative.*”

As a result, **monetary policy will become less accommodative than currently** to keep inflation in check. The ECB already hiked its key rates in July 2022, for the first time since 2014, and will lift them to 2.0% by year-end 2022. Thereafter it likely proceeds more cautiously on rates and concentrate on the smooth unwinding of its QE purchases. Hence, the **interest rate burden of sovereigns will rise over the coming years**. However, the passing through will be smooth as sovereigns extended the maturity of debt over the past decade. It ranges from 7 years for Portugal to 11 years in the cases of Belgium and Ireland. Especially Southern European economies will face stronger rate increases as in times of rising yields the search for yield loses importance, contributing to a spread widening against the benchmark. We define our “base case” by the numbers in the table below.

The **risks to this scenario are tilted towards higher inflation, lower growth, and even more spending needs (downside scenario)**, we assume an add-on of annually 0.4% of GDP (or about € 50 bn), and a less dovish central bank. Supply side problems could persist for longer on periodic pandemic-induced production disruptions or geopolitical tensions. This would curb growth, while inflation would be higher than in the base case. The ECB would then be forced to further tighten its policy, in order to keep inflation expectations anchored and to avoid second-round effects. Government bond yields would be torn between upward pressures from higher inflation as well as policy rates and lower real growth but in the end be higher than in the base case.

Key macro assumptions

		Base scenario	Downside scenario
Inflation (GDP deflator, % yoy)	2022	4.6	4.6
	2025	1.8	2.0
	2030	1.9	2.1
Growth (real GDP, % yoy)	2022	3.2	3.2
	2025	1.2	0.9
	2030	0.8	0.5
ECB (policy rate, annual average, %)	2022	0.1	0.1
	2025	2.4	3.0
	2030	1.5	2.0
10Y Bund yields (annual average, %)	2022	1.2	1.2
	2025	2.0	2.3
	2030	2.2	2.5

Source: Datastream, GIAM calculations

Appendix 2: Box 1

Box 1: The projection of debt

Debt sustainability analysis (DSA) usually refers to the ability of a sovereign to keep its debt-to-GDP ratio (D) under control. Its evolution over time t is given by

$$(1) D(t) = \frac{(1+i(t))}{(1+g(t))} * D(t-1) - pb(t) + SFA(t),$$

where i denotes the nominal (implicit) rate on government debt, g the nominal GDP growth rate and pb the primary balance. In practice, not all changes in the debt stock are also reflected in the budget according to the EC accounting rules. For instance, privatization receipts lower debt but do not impact the deficit. These effects are captured by means of the so-called **stock-flow-adjustment** (SFA) but play no role in our analysis.

We assess the evolution of pb by means of a panel data model covering the 19 EA economies (j) from 1999 to 2021. When selecting the model, we tried various approaches but finally came up with the following specification

$$(2) pb(t, j) = -1.56 + 0.17 * Y(-1) + 0.27 Y(-2) - 1.27 * EARecession + 0.03 * DEBT(-1) - 0.48 * ELECTION - 4.04 * GFC_COVID - 3.78 * D(OLDAGE) + C(i),$$

where Y is real GDP growth, EA Recession is a dummy for past recessions (number of quarters classified as recession by the Center of Economic Policy Research divided by 4) and GFC_COVID is a dummy for the Great Financial Crisis of 2008/09 and the pandemic 2020-21. $ELECTION$ marks an election year of a country, $D(OLDAGE)$ is the change in the share of people aged 65+ in the population and $C(i)$ the country-specific fixed effect.

By combination of the equations (2) and (1) we derive the evolution the debt ratio over the coming decade and hence a key ingredient for the DSA.

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