Finance Watch

Making finance serve society

Europe's coming investment crisis

What if capital markets could only meet a third of Europe's essential funding needs?

A Finance Watch Report

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Executive Summary

The European Union needs to invest an "enormous amount of money in a relatively short time" to deal with the challenges the bloc is facing, according to Mario Draghi. On the assumption that public money will not be enough, the EU is counting on private money to fill the gap.

This report looks at the conditions under which private capital can be deployed and concludes that, even with a fully functioning CMU and sustainable finance agenda, private capital is likely to cover only a third of the amount needed to avoid an investment crisis.

We call on the new European Parliament and European Commission to recognise this risk and quantify the shortfall as a first step towards solving the coming investment crisis.

I. Climate change mitigation and adaptation at the heart of the funding gap

With renewable energy not yet displacing fossil fuels, carbon removal still undeveloped, and GHG emissions unabated, climate scientists expect the world to see +3°C global warming by the end of the century.

At +3°C, nearly every part of society and the economy will struggle due to physical effects such as floods and heat and transition effects on employment, not to mention the threats of business disruption, armed conflict and waves of migration.

The costs of not acting on climate change would be unmanageably large. The European Environment Agency assessed 36 different risks for the EU and warned that just one of them - coastal flooding - could cost 6% of today's EU GDP a year by the end of the century. The combined impacts could destroy 30% of GDP by 2070 and more than 60% by 2080. At even a fraction of this level, economic activity and social order would break down.

Mitigating and adapting to climate change and the environmental crisis is thus not optional and will need a large increase in upfront investment.

The EU will need adaptation policies in multiple areas: agriculture, biodiversity, buildings, business and industry, coastal areas, disaster risk reduction, energy, financial, forestry, health, information and communication technology, fisheries, transport, and water management.

Investing now, for example to help people retrofit their homes or retrain from jobs in

high emitting industries, will help to reduce the amounts spent later on. Many early adaptation investments deliver social benefits worth double to ten times their cost.

Addressing climate change will require upfront investments in the order of 5% to 10% of EU GDP per year (4% to 9% for mitigation and 1.1% to 1.3% for adaptation at +3°C). While these investments seem high, they are achievable while the costs of inaction will be far higher and worsened by the 'scissor' effect as public revenue falls away just when public spending demands rise.

The report by former Italian Prime Minister Enrico Letta on the future of the Single Market said that financing the transition is *"arguably the most strategic choice the EU can make"* and called for *"all necessary public and private resources"* to make this happen, including a reboot of the Capital Markets Union (CMU).

However, as the next sections explain, there are practical limits to what private capital can do and concerns about how such investments could fit with the rules of the EU's Stability and Growth Pact. Bold thinking will be required.

II. What private capital can and cannot do

The theory and dynamics of capital markets make it difficult for equity and debt capital to finance more than about a third of the climate change mitigation and adaptation projects required.

For equity investors, tools such as the Capital Asset Pricing Model define expected returns as a discount rate, which tends to undervalue the longer-term investments needed for a sustainable world. The definition of risk as a difference to market returns is also unhelpful, because it ignores the economic changes that will result from climate change.

For debt investors, the use of risk premiums and the risk-free rate (itself a problematic concept) makes it irrational to allocate credit to projects whose after-tax rate of return is lower than the interest rate paid on the bond issued. Unfortunately, this describes many mitigation and adaptation projects.

A raft of sustainable finance regulations (Taxonomy regulation, CSRD and SFDR) aim to improve disclosure about what is and what is not sustainable. While helpful for steering capital and monitoring the transition, these regulations do not remove the requirement for projects to be profitable first, before sustainability criteria are applied. The hope that sustainable finance will replace core financial criteria and trigger the transition by itself is, sadly, a fantasy.

The very dynamics of capital markets start to look outdated and even irrational when viewed through a climate lens. For example, how can traditional investing, in which future outcomes are given probabilities based on past outcomes, keep up with a rapidly changing world whose outcomes are entirely novel and unknowable? Radical uncertainty, as this is known, may be the most important concept for financiers to

grasp today, including in the derivatives market.

How can it be rational that investments in climate mitigation and adaptation, which have existential importance for society to cope with the collapsing sustainability and habitability of the world, are valued only on the net present value of their future cash flows?

When you also add Keynes's comment that market prices reflect what investors expect others to pay rather than their own valuation, and the often encountered view that markets are always correct, it is unsurprising that capital markets and sustainability are disconnected.

Nevertheless, we recognize that capital markets could fund a portion of the EU's investment needs, provided they are properly regulated and that we are realistic about the limits of what they can achieve.

The idea of a Capital Markets Union (CMU) was launched in 2015 to create a single market for capital, overcoming the different economic cultures in the EU's member states, illustrated by the different levels of equity market capitalisation, which range from 190% of GDP in Denmark to 36% in Italy.

To build a single capital market, the EU will need joint supervision at EU level and harmonised tax, insolvency, and company laws. So far, however, the CMU has been used to pursue projects often unrelated to those goals and, unsurprisingly, EU capital markets remain fragmented. For instance, it is worrying to hear the growing narrative about the need to develop further securitisation in EU capital markets with the incoherent rationale of "freeing" bank balance sheets.

In theory, a completed CMU in which liquidity is concentrated in just a few listing venues (instead of the current 35), could unlock the power of capital markets and lead to significantly higher valuations for startups or innovative growth companies.

But if we take McKinsey's estimate that only 40% of climate mitigation projects have a risk/return profile suitable for private investment, and our assumption of 20% for adaptation projects, there will be a significant shortfall. In a best case, CMU-invigorated EU capital markets could likely provide about a third of the funding needed; between €300 billion and €600 billion versus the €800 to €1,600 billion needed each year for climate change mitigation and adaptation projects.

The annual shortfall in investment will be between €500 and €1 trillion, equivalent to 3% - 6% of the EU's GDP, which can only be filled by public money.

III. Possible directions to rethink public finance

Economic history shows that public and private money complement one another, rather than competing. It also shows that massive government interventions to save the economy or shape it for the future are now the norm: bank bailouts, the accep-

tance of too-big-to-fail firms, ongoing central bank support for financial markets and asset prices, economy-wide relief during the Covid pandemic (EUR 3 trillion in the EU including national reliefs), and subsidy programmes such as the EU's Green Deal and the US's Inflation Reduction Act.

This trend towards a government-sponsored hybrid economy is almost certain to be reinforced by the climate change crisis and increasing geopolitical tensions. States are already assuming risks as the insurance sector retreats from properties at risk of climate impacts, making taxpayers responsible for uninsured losses. The ECB estimates that three quarters of the EU's climate-related catastrophe risks are currently uninsured.

The version of hybrid economy that we have today is highly inefficient; it lacks the incentives and discipline of a market economy and also the controls and direction of a state-run economy. However this is fixed, it is clear that society must not always be on the losing side of the game. The public sector must set conditions when it allocates public money and have power to orient some corporate actions for the benefit of society.

One challenge is how to overcome free riding behaviours that impede collective action, which for climate change includes jurisdictions doing little in the hope that others will do more to reduce GHG emissions. That feeds a political narrative against climate action because of the costs and short-term competitive disadvantages, despite the medium and longer-term benefits. This is game theory in practice: lack of cooperation leads to sub-optimal results.

It is a dangerous dynamic that risks a vicious circle: when climate impacts hit home, perhaps in the form of conflicts over space and water or massive waves of climate migrants, there will be even less capacity and political will for humanity to act collectively. It is rational to invest early and adequately to avoid this.

Policymakers look to taxes and debt as the main sources of public money. Many reforms could increase tax revenues, for example clamping down on tax avoidance by the very wealthy. An increase in deficits, however, seems unavoidable, given rising demand for public money to support private economic interests, to respond to geopolitical tensions and to cope with the climate crisis.

If governments choose to meet these demands, deficits will increase. If governments choose not to, the lack of investment will have consequences that will increase deficits anyway. The question is then: how can the architecture of public finance be reformed to cope with this situation?

One school of thought is not to run deficits. However, we believe that this position is not compatible with financing the needs of tomorrow's society and will lead to a worse fiscal situation in the future.

Deficits could instead be funded through government borrowing on capital markets.

However, if the proceeds are used for 'unbankable' climate and adaptation projects that produce little financial return, governments will struggle to service the debt. Debt capital markets are also unreliable and can close quickly for reasons of sentiment, for example if a solvent Member State breaches an arbitrary limit in the EU's Stability and Growth Pact. What matters is not the Member State's creditworthiness but how investors think others will react; a government that relies only on capital markets to fund a growing deficit will face increasing instability, especially in the EU.

Borrowing by EU Member States is constrained by the Stability and Growth Pact (SGP), which dates back to the Maastricht Treaty of 1992, when economic conditions supported a 3% limit on deficits to GDP and a 60% limit on debt to GDP. These limits have not changed, even though economic conditions are very different. The framework does now include a 'General Escape Clause' to suspend the rules in a crisis or severe economic downturn, which will be the case when the earth's climate tipping points are breached, when global warming reaches a "beyond catastrophic" + 3° C or if wars spread over the globe. But before then, there is little political will to change the arbitrary borrowing limits.

Another option is for the EU itself to borrow. The EU can borrow cheaply and, if it transfers the proceeds to Member States as grants, it could avoid the straightjacket of SGP rules. However, the EU is not allowed to run a budget deficit and going beyond the EU's own resources ceiling of 1.4% of EU Gross National Income to reach the 3% to 6% of GNI needed for unbankable climate mitigation and adaptation projects would require giving the EU budget powers, for which there is currently little political will.

A third option is to seek funding from central banks, or monetary financing, as the Bank of England and US Federal Reserve did successfully to support their countries' economic, military and geopolitical power over the last century, in ordinary times as well as wars and civil crises. The incomplete structure of the EU's monetary system and the legal prohibition on direct financing of public entities in Article 123 TFEU make this a difficult approach for the EU, although the ECB has moved a step closer by supporting Member States' sovereign debt in the secondary markets.

The commonest objection to monetary finance is fear of inflation, based largely on the quantity theory of money that Milton Friedman and others popularised 60 years ago. This theory has been contradicted by the reality of the past 30 years, in which unprecedented money creation to support financial markets had no unintended inflationary effect, while the return of inflation in 2022 was caused, not by money creation, but by high energy and food prices after Russia's invasion of Ukraine in the wake of the Covid pandemic.

Considering this history and the EU's enormous investment needs, we feel that monetary financing deserves to be investigated again as a possible addition to governments' and central banks' toolkits. The focus, however, should avoid ideology and look at what conditions are needed for it to be used successfully and how it can best be combined with market financing.

A starting point could be to consider different types of deficit funding for different types of public spending, for example using capital markets to fund general government deficits, and amending the TFEU so that monetary finance can cover deficits arising from investments in essential climate mitigation and adaptation measures. Such a dual approach could reduce overall borrowing costs and debt levels.

We believe that opening a discussion on this topic could be a useful step in addressing the dilemma in which capital market dynamics and the EU's fiscal rules prevent the EU from making the investments needed to adapt to a changing world and keep its place on the international scene.

Recommendations

In light of the inherent limitations of capital markets and the constraints of the EU's fiscal framework, we call on the European Parliament and European Commission to:

1 **Recognise the significant risk of under-investment in the EU's essential climate mitigation and adaptation measures.**

2 **Take steps to quantify and publish (i) the likely maximum contribution of capital markets to these goals and (ii) the corresponding investment shortfall, so that work on possible solutions can begin.**

Introduction

The European Union needs to invest an *"enormous amount of money in a relatively short time"* to deal with the challenges the bloc is facing and, given that *"public money will never be enough",* European private savings must be mobilised. Such were the words of former European Central Bank President and former Prime minister of Italy Mario Draghi to EU ministers gathered in Ghent on 24 February 2024.

With the environmental and social sustainability crises now on us and threatening the very survival of human societies, the question 'where is the money necessary to mitigate and adapt going to come from?' is one of the most pressing questions policymakers have to address today.

Finding the money to finance the transition is, along with regaining strategic autonomy, one of the reasons most often put forward by EU leaders to revive a flagging capital markets union (CMU). The narrative supporting the initiative is that in a context of constrained Member States' budgets and scarce public finance, the EU needs deeper and bigger capital markets to finance the transition towards a sustainable world, to develop its economy and to boost its power on the world scene. In EU leaders' logic, a capital markets union combined with the set of EU sustainable finance regulations is the right cocktail to both unlock the power of capital markets for the benefit of the EU economy and orient capital flows towards sustainable usages and the transition to a sustainable economy. The scantly veiled objective behind this narrative is the possibility for private money to replace public money given that there will not be enough of the latter.

This report questions whether this is realistic and whether private capital can really fill the EU funding gap. Assuming that the capital markets union finally becomes a reality (admittedly a bold assumption), will private money be able to finance the investments necessary to fight climate change and the environmental crisis and to adapt to them, including in their social dimension? Can the combination of the yet to be achieved CMU, potentially reformed SFDR, Taxonomy regulation and CSRD both unlock sufficiently large new pools of capital and orient capital flows towards sustainability on a sufficient scale?

This report agrees that the European Union needs to invest an *"enormous amount of money in a relatively short time"* and that *"public money will never be enough"* given the rules governing public money today. It looks into the conditions under which private capital can be a solution to finance the daunting environmental, social, economic and strategic investments governments have to make. It also assesses whether there can be enough private money to replace the public money we are missing. Finally, having determined that private money, if important, will not be enough to fill the EU funding gap, it opens the debate of a possible rethink of the rules governing public money. Filling the EU funding gap will necessitate increasing the fire power of both private and public finance: what solution can the EU find to get out of a dead-end where it does not have the money for the indispensable investments it needs to make?

I. Climate change mitigation and adaptation at the heart of the EU funding gap

A. Mitigating climate change and the environmental crisis and adapting to them

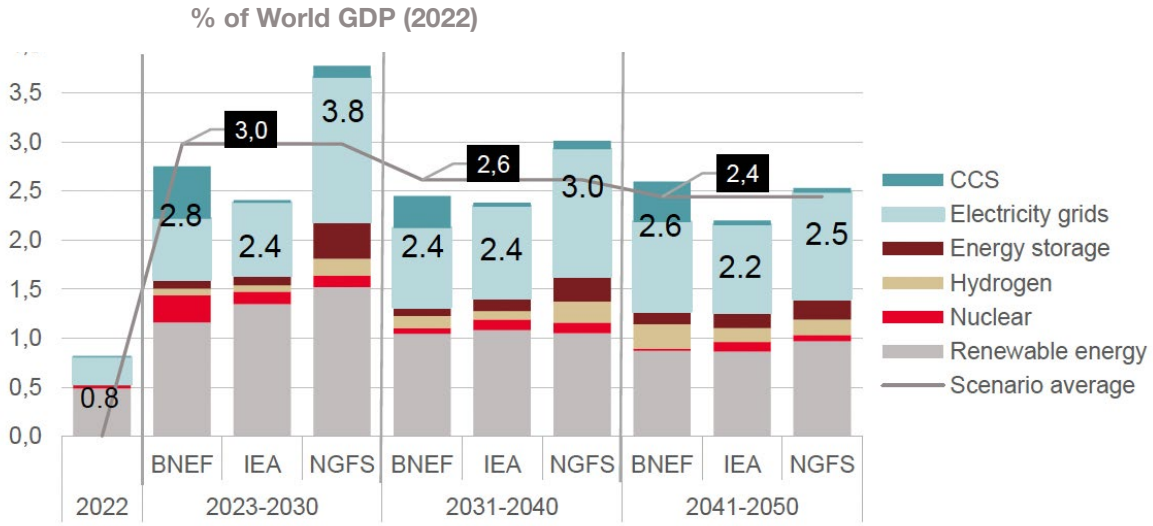
Mitigating climate change and the environmental crisis to the maximum extent possible should be an obvious priority. This is true despite the fact that climate change and the environmental crisis are already on us and that global warming has already reached 1.5°C compared to the pre-industrial period. The less warm the world becomes the better, and having now almost inexorably missed the Paris Agreement target of "well below 2°C" is not an excuse for not investing massively into climate change mitigation. A world at +2°C, would be less catastrophic than a world at +3°C, etc…

a. Mitigating

Investing to develop low CO_2 emitting or CO_2 neutral economic assets…

Investing to develop low CO_2 emitting or CO_2 neutral economic assets will require considerable financial resources. Beyond the variations of estimations linked to differences of hypotheses, the orders of magnitude provided by different research institutions speak for themselves:

Chart 1: Comparison: 2022 low-carbon energy supply and grid investment versus annual investment in 2023-30, 2031-40, and 2041-50 in BNEF, IEA, and NGFS net-zero scenarios



Source: BloombergNEF, IEA World Energy Outlook 2022, NGFS Phase 3 (Network of Central Banks and Supervisors for Greening the Financial System). Note: the scope of this chart excludes energy demand sectors but includes grids. BNEF's Net-Zero Scenario, the IEA's Net Zero Emissions, and the NGFS Net Zero by 2050 scenarios are used, respectively. Values for the IEA NZE and NGFS NZ are aggregated based off BNEF estimates.

For the 2023-2030 period, the numbers range between 2.4% and 3.8% of world GDP, meaning a three to fivefold increase of the energy investment made in 2022 which reached globally $1.1tn, i.e. 0.8% of world GDP. Not only a huge absolute number but also a very challenging step to climb in terms of increased ambition. For the following periods (2031-2040 and 2041-2050), the numbers are broadly similar.

The debate is open to determine to what extent the financing of the necessary energy investments can come from the private sector or whether a significant part will need to come from public pockets. Most consultants state that the bulk of the financing required can come from private sources (concretely from banks and institutional investors – insurance companies, pension funds, sovereign funds, alternative investment funds and family offices), but one could argue that consultants have a vested interest in saying so, whether to seduce new corporate clients or to be in sync with the generalised narrative of public authorities stating that given the scarcity of public finance (often dubbed 'lack of fiscal space'), the money will have to come from private pockets. We analyse in Section II what private money can and cannot do to finance climate change mitigation and adaptation. According to McKinsey and the Institute of International Finance, and regardless of whether the financing comes from private or from public pockets, up to $275 trillion will have to be invested globally between now and 2050 in energy-related physical assets alone.[1]

…which should not be confused with a transition

Mitigating climate change and the environmental crisis is often described as 'embarking on a transition pathway'. This expression refers to the fact that mitigating climate change assumes the development of an economic system with low or no greenhouse gas (GHG) emissions to reach a net-zero economy. Finance Watch addressed in 2022 the question of a rigorous definition of a net-zero economy in a report entitled 'The problem lies in the net':[2] mitigating climate change will require businesses to reduce first and foremost their absolute GHG emissions (scope 1, 2 and 3). Put simply, this implies replacing GHG-heavy sources of energy by GHG-free sources of energy. A transition can only mean, by definition, the decrease of GHG absolute emissions, not only the decrease of their intensity in the economy.

This, in theory, is what should be meant by the word 'transition'. However, we are not witnessing today a transition from fossil fuel-based sources of energy (coal, oil and gas) to fossil fuel-free sources of energy (nuclear, hydroelectric, wind and solar), but rather an addition of fossil fuel-free sources of energy on top of fossil fuel-based sources of energy. Fossil fuel-based sources of energy remain unabated to this day despite the development of renewable sources of energy. This phenomenon may lead to a decrease in the intensity of GHG emissions in the economy but not to a reduction

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1 *Financing the net-zero transition: From planning to practice*, *McKinsey & Company, Institute of International Finance, 2023*

2 *The problem lies in the net*, Finance Watch, June 2022

of absolute emissions into the atmosphere. The world is in an additive as opposed to a transition process.

Many economic surveys come to this conclusion, for instance Société Générale's Global Economic outlook published in November 2023. Extract:

Focus – Update on GHG emissions in 2023-2033. Climate transition efforts curbed by financing challenges

We expect global GHG emissions to increase by 0.5%, to 54.1bn tonnes of CO2eq in 2023. In addition to the EU27 member states, our estimates include the remaining G20 members (excluding the African Union), which together are set to represent 75% of the world's GHG emissions in 2030. In keeping with the EDGAR database, our analysis also covers the global aviation and shipping industries, which we expect to contribute another 2.7% of emissions in 2030.

We summarise below the highlights of our latest series of forecasts.

- *Based on EDGAR data up to and including 2022, and our projection, global GHG emissions are set to increase to 54.3bn tonnes of CO2 eq this decade – a 7.3% increase vs the 7.7% rise observed in the 2010s. This includes a cumulative increase of 1.0% between 2022 and 2030, with a peak in 2028 and a subsequent fall thereafter.*
- *We expect many emerging markets (e.g. India, Indonesia, Turkey, Saudi Arabia, Mexico and Argentina) and the rest of the world to see a continued and significant surge in emissions, whereas emissions across the advanced economies should fall. Emissions are close to peak in China. Emissions from international aviation are likely to double this decade, whereas those from international shipping are poised to increase by 27%.*
- *Our estimates suggest that the world is on track for a 2.3°C average temperature rise by the end of the century. The global emissions gap to the 2°C (net zero) global warming scenario stands at an estimated 24.9% (vs 40.8bn tonnes of CO2 eq. required by 2030). Of this, 11.3% is an ambition gap and 13.6% is the implementation gap (gap to the NDCs).*
- *According to our estimates, GHG intensity – measured as emissions per unit of GDP (in constant 2015 USD) – is set to fall more rapidly this decade (by -2.1% p.a. vs –1.6% in the 2010s). However, as we expect global growth to be higher (2.9% vs 2.4%), our estimates imply that emissions will continue to rise for most of the period.*
- *Emerging markets and less developed economies in particular are likely to miss their emissions targets substantially, as they are either not prepared to sacrifice growth and/or lack the financial wherewithal to switch to low-emitting energy sources and technologies. Discussions at this year's COP28 should provide more clarity on financing challenges and whether the Parties are ready to make meaningful progress on reducing emissions.*

- *Given this overly gradual progress towards emissions reduction, we expect a precipitous adjustment to be required later on. This will most likely come at a much greater cost to economies, people and public finances than would have been needed had quicker action been taken.*

This corresponds also to what historians like Jean-Baptiste Fressoz tell us:[3] the history of human societies has never seen any substitution of a source of energy by another source but always an accumulation. Coal did not replace wood; it came on top of wood. Oil did not replace coal; it came on top of coal. Nuclear did not replace oil; it came on top of oil. Renewable sources of energy are not replacing fossil fuels; they are coming on top of fossil fuels, so far at least. This additive phenomenon has an important consequence: the GHG intensity of the economy decreases mechanically with the addition of renewable energy sources on top of fossil fuels but not the absolute GHG emissions. In other words, despite the investments made to develop renewable sources of energy, energy efficiency and more generally a less carbonised economy measured in terms of intensity, we are not today on a path to decrease absolute GHG emissions and therefore not on a path to mitigate global warming. Absolute emissions keep on increasing, reflecting the fact that the absolute value of economic growth is higher than the decrease of the economy's GHG intensity.

The probability that the world embarks in the near future on a transition pathway away from fossil fuels is low despite the efforts of so many to make it happen. It is difficult to see why and how an energy transition defined as the replacement of fossil fuels by non-carbon emitting energy sources could start in a context where the COP 28 outcome was more than meagre (the call made on governments on that occasion to speed up the transition away from fossil fuels to renewables rings hollow given that such a transition has not started yet), where oil and gas companies keep on exploring for more reserves, where China could increase its coal power capacity between 23% and 33% above 2022 levels with 243GW of new coal power approved or under construction and another 149 GW announced but not yet permitted,[4] and where fossil fuel subsidies stood globally at $7 trillion in 2022 and are expected to rise to $8.2 trillion by 2030.[5] Moreover, a transition away from fossil fuels, if there were to be one, would have to be conducted in a coordinated manner at a global level for the reason that fossil fuel powered energy production yields more immediate returns than renewable and is therefore more suited to the functioning of today's world. A global energy transition would require a non-competitive attitude where countries would not try to take advantage of other countries' transition to renewable energy sources to beat them in the global economic competition. Realistically, this sounds like an unreachable dream in today's divided world and aggressive international landscape.

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3 'Sans transition : une nouvelle histoire de l'énergie', Jean-Baptiste Fressoz, Seuil, 2024

4 Source: *Center for Research on Energy and Clean Air*

5 International Monetary Fund, '*Fossil Fuel Subsidies*', 2023. IMF's estimates include both explicit and implicit subsidies whereas IEA's estimates standing at $1 trillion for 2022 include only '*Fossil Fuel Consumption Subsidies*'

As the European Commission put it in its 2021 'New EU strategy on adaptation to climate change' Q&A,[6] *"halting all greenhouse gas emissions today would still not prevent the climate change impacts that are already occurring"*. But greenhouse gas emissions have not come to a halt and there are no such perspectives given the current absence of an energy transition (defined as the replacement of fossil fuel energy sources by renewable energy sources) whether in the EU or anywhere else.

This makes for a situation where mitigation efforts must be reinforced but also, and as importantly, where adaptation efforts will be crucial.

Why technological solutions are highly unlikely to be the key to a transition

Technological solutions are often described as the solution to achieve a carbon neutral economy, and among those technologies CO2 removal and sequestration holds a special place in official narratives despite the fact that it is able to absorb only 0.1% of CO2 emissions today and that experts do not consider it to be deployable at scale.

Carbon dioxide removal (CDR) can be done either via natural solutions (e.g. afforestation, reforestation, land management…) or technological solutions (carbon capture and storage (CCS), carbon capture, utilisation and storage (CCUS)) and their variations (direct air carbon capture (DACC), bio-energy with carbon capture and storage (BECCS)…). Natural solutions are the most efficient and cheapest way to remove carbon dioxide from the atmosphere but their capacity to keep it sequestrated permanently is a delicate question as fires or the change of use of soils result in its release back to the atmosphere. The issue of land availability is also a most significant constraint and it makes natural solutions at best a complement but not the silver bullet to removing CO_2 from the atmosphere and sequestering it. Technology, which could be seen as the solution given the limitations of natural solutions, does not seem to be deployable at scale either. The volume of CO2 captured currently stands at 40 MT per annum (i.e. 0.1% of the world's CO2 emissions). According to the IEA, carbon capture would need to increase to 1,600 MT CO2 in 2030 and 7,600 MT CO2 in 2050 to achieve a net-zero economy and experts agree that without CDR no net-zero economy will be achievable. However, there is also a wide recognition in the community of experts that going from an annual volume of CO2 captured and sequestrated permanently equal to 40 MT today to 7.6 GT in less than 30 years' time (i.e. increasing by a factor of 190) is unrealistic,

6 European Commission, *Questions and Answers: New EU strategy on adaptation to climate change*

in particular given that the challenge is not only to capture CO2 but also to transport and sequester it permanently. CDR and CCS technologies have been in demonstration phase for twenty years and they still are today. Counting on them to achieve carbon neutrality is, to this day, a fantasy. This is obviously worrying if we relate this to the IEA's statement that "*reaching net zero by 2050 requires further rapid deployment of available technologies (scalability issue) as well as widespread development of technologies that are not on the market yet.*"

Despite the world's mitigation efforts (or, rather, because of their insufficient level), most climate scientists consider that the earth is on a path to a + 3° C global warming at the end of the 21st century. This makes adapting to climate change as high a priority as mitigating it.

b. Adapting

A + 3° C global warming is described by many climate scientists as beyond catastrophic. Concretely, this means that most, if not all, sections of societies and economic sectors will be affected by climate change and will find themselves unable to operate as they do today if they do not adapt. Adaptation is synonymous with the ability of human societies to keep on functioning in the new conditions created by climate change.

The EU Climate-ADAPT[7] platform for adaptation knowledge gives the following list of sector policies that require climate change adaptation: agriculture, biodiversity, buildings, business and industry, coastal areas, cultural heritage, disaster risk reduction, energy, financial, forestry, health, ICT, land use planning, marine & fisheries, mountain areas, tourism, transport, urban and water management.

Barely any sector of society will be spared, and adapting to climate change will have many microeconomic and macroeconomic dimensions.

The European Environment Agency gives a precise, if frightening, description of the climate risks facing Europe:[8]

"The systematic risk assessment process has identified and assessed 36 major climate risks for Europe, grouped into five broad clusters: ecosystems, food, health, infrastructure, and economy and finance (see Figure ES.4). Depending on their nature, each of these risks alone has the potential to cause significant environmental degradation, economic damage, social emergencies and political turbulences; their combined effects are even more impactful. The selection was based on a comprehensive review of the literature and the evidence related to climate impacts and risks

7 *Climate ADAPT*

8 *European Climate Risk Assessment*, European Environment Agency, 2024

in Europe; it considered the potential of various climate risks to put Europe into crisis. Almost all of the selected major risks can reach critical or even catastrophic levels during this century. In addition, the assessment identified three major climate risks specific to the EU outermost regions."

The vital necessity to adapt is, among others, described in a paper published in 2022 by two COACCH[9] researchers who estimate in their conclusion that : *"Extreme events, in particular sea-level rise and riverine flooding, but more in general, climate change stress on EU infrastructural endowment, are among the most prominent drivers of GDP and direct economic losses. Health impacts on mortality and morbidity or on labour productivity associated with extreme heat are another concerning source of economic costs. Research also emphasizes the possible occurrence of socio-economic tipping points that can be widespread and may have disruptive social and economic effects."*[10]

The emphasis on *"the possible occurrence of socio-economic tipping points that can be widespread and may have disruptive social and economic effects"* is, in our view, particularly important. This analysis is in line with the climate change-induced disruption risk analysis developed by Finance Watch since 2020.[11] It is also coherent with the macroeconomic approaches based on exponential or logistic functions (and, as such, better equipped than those based on quadratic functions to capture and model the economic effect of tipping points). Those approaches predict an impact of climate change on GDP around 10% in 2060, between 30% and 40% in 2070 and between 60% and 100% in 2080.[12] Such huge negative GDP impacts reflect the acceleration of climate change-related damages around the crossing of tipping points expected to occur between 2060 and 2080. They are also clearly synonymous with the disruption of human societies.

If the cost of climate change-induced disruption is difficult to assess with precision, there is no doubt that it will be considerable. A good proxy to make such an assessment is the impact on GDP described by the macroeconomic approaches mentioned above and able to take into account tipping points and their acceleration and irreversibility characteristics. The quantification by the European Environment Agency that *"Hundreds of thousands of people would die from heatwaves, and economic losses from coastal floods alone could exceed EUR 1 trillion per year"*[13] offers also an insight into the level of disruption (and its economic cost) climate change could lead to in the EU. The €1 trillion yearly cost evoked by the European Environment Agency represents 6% of today's EU GDP, and this is for coastal floods only.

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9 *COACCH* (CO-designing the Assessment of Climate CHange costs) is a research project bringing together experts on climate change sciences from 13 European research institutions with the objective of advancing knowledge regarding climate change impacts and policy.

10 *Climate change impacts in the EU: new evidence from recent research*, Francesco Bosello and Carmelo J.Leon.

11 *Breaking the climate-finance doom loop*, Finance Watch, June 2020

12 See *Finance in a hot house world*, Finance Watch, 2023, page 29.

13 *European Climate Assessment Executive summary*, European Environment Agency, 2024

On the other side of the equation, quantifying the cost of adaptation is a function of the global temperature rise assumed, among others. The European Commission's Joint Research Centre estimated in 2020 that EU investments needs related to adaptation stood at around €80-120 billion per year with a 2°C global temperature rise and €175-200 billion per year with a 3°C global temperature rise.[14] We know that the latter corresponds to the end of the century global warming path that climate scientists consider most likely.

B. Managing the social consequences of climate change

a. Social implications of climate change mitigation

The social dimension of climate change mitigation is usually described with the term 'just transition'. The expression refers to the necessity to accompany the measures that need to be taken to limit global warming with social measures that will make them acceptable to citizens, and in particular to those that will be most impacted, including by losing their job, or who can less afford the cost of contributing to mitigate climate change. The objective of a just transition can be seen as emptying the 'end of the world vs. end of the month' slogan of its content.[15]

For all its importance, a just transition is in our view only a partial description of what needs to be achieved in the social sphere in the wake of climate change. Very much like climate change action is centered around two axes, climate change mitigation (which is a transition issue) and climate change adaptation, the social dimension of climate change has a mitigation dimension and an adaptation dimension.

The expression 'just transition' must also be put in perspective with the reality described above i.e. the fact that, for the time being at least, we are not witnessing an energy transition but an addition of fossil fuel and renewable energy sources. As discussed, for a transition to happen renewable energy would need to replace fossil fuels but this is not happening so far.

This 'non-transition' has social implications: as long as the transition does not describe a process where existing fossil fuel-based or high GHG emitting activities disappear, the concept of a 'just transition' will essentially encompass enabling citizens, and in particular the less privileged, to finance the energy efficiency renovation of their homes, to access (usually more expensive) decarbonised means of transportation, and to cope with behavioural taxes (such as carbon taxes) when they exist or price increases triggered by climate change mitigation policies. As long as the world does not undergo a proper energy transition, which would entail a drastic evolution of its mode of functioning, a just transition will only marginally consist of retraining and supporting people working in disappearing activities for the simple reason that there

14 *Assessing the costs and benefits of climate change adaptation*, European Environment Agency, 2023.

15 Le Monde, *« Gilets jaunes » : « Les élites parlent de fin du monde, quand nous, on parle de fin du mois »*. During the French 'Gilets jaunes' protests in 2018, a protestor described opposition to proposed climate measures by saying "While the elites are talking about the end of the world, we are talking about the end of the month".

will hardly be any such disappearing activities. In terms of cost, the lower the climate change mitigation investments will be, the less the world will be on a transition path and the lower the cost of a just transition. However, this lower cost of a just transition in the face of policies clearly insufficient to mitigate climate change will mechanically translate into a higher cost of adaptation, including on the social front where the consequences of climate change will have the highest impact. One way or another, there is no escaping mitigation and adaptation costs: the money not spent on mitigation will have to be spent on adaptation, potentially with a multiple. This is particularly true for social issues.

b. Beyond a just transition, the social dimension of climate change adaptation

The social dimension of climate change adaptation is about keeping human societies unlivable despite global warming. How do we ensure that human societies remain socially acceptable and livable in the wake of climate change?

The social dimensions of climate change adaptation can be divided into three broad categories: 1) the physical effects of climate change on people (e.g. heat waves, droughts, ocean level rises, riverine floods, pandemics…); 2) the economic consequences of climate change (e.g. negative impact on economic activity - GDP - with resulting diminished revenues or job losses, insurance protection gap…); and 3) the disruption of the functioning of human societies that will affect people's lives (access to food and water, livelihood security, disruption of transportation, forced displacement and related conflicts…).

All citizens will be affected and, obviously, the poor even more so than the affluent. In a context where the disruption of society may reach extreme levels, the support that people will seek from public authorities (and therefore budgets) may reach unprecedented levels, absent which social chaos will be inevitable.

Adapting human societies for the consequences of climate change will require enormous financial resources as the Joint Research Centre estimation at €175-200 billion (1% to 1.25% of EU GDP) per year for the EU shows.

C. Assessing the EU financing need linked to climate change mitigation and adaptation

"Financing the transition" is the heart of the narrative backing the effort to complete a capital markets union and the various pieces of EU financial regulation. If not exclusive of other funding needs,[16] climate change mitigation and adaptation constitute a very important part of the increase of the EU funding needs that can be anticipated in the coming decades. The paradox of today's situation is that numerous voices, including most official ones, express both concern about the fact that EU Member States are

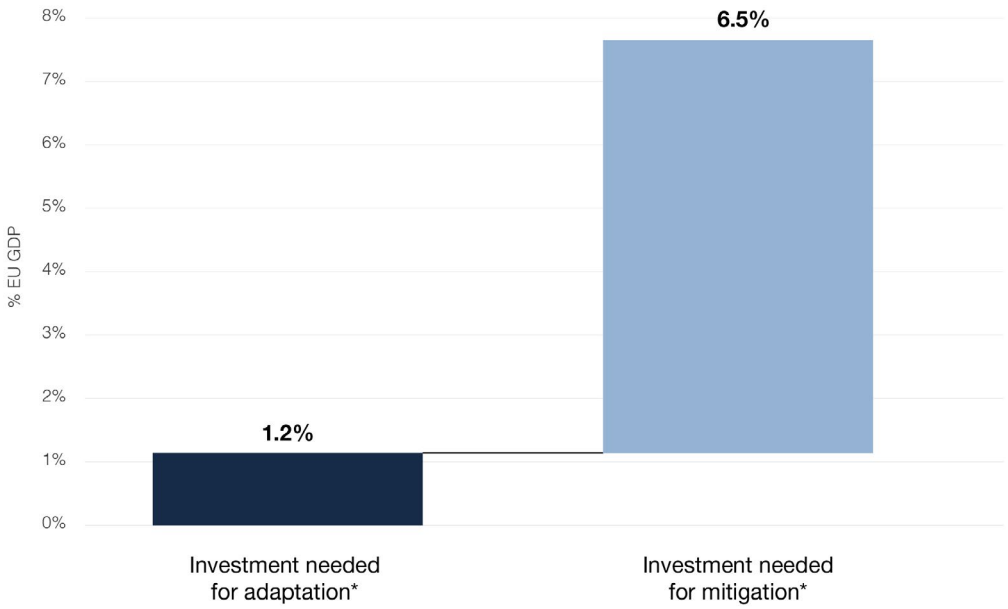
16 Cf. section III

not devoting enough resources to climate change mitigation and adaptation and, simultaneously, about public budgets not respecting the EU's Stability and Growth Pact (SGP) deficit and debt rules,[17] two obviously incompatible injunctions. Estimating the financing needs linked to climate change mitigation and adaptation is a first step before we look into the question of whether private finance can fill the funding gap opened by the lack of public finance.

Orders of magnitude:

- Climate change mitigation:
  - → Depending on the sources, estimates of the EU climate change mitigation financing needs range from €620 billion[18] to €750 billion[19] and €1,350 billion[20] per year, i.e. between 4% and 9% of EU GDP.
- Climate change adaptation:
  - → The European Commission's Joint Research Center estimates the cost of climate change adaptation in the EU between €175 and €200 billion per year,[21] i.e. between 1.1% and 1.3% of EU GDP for a 3°C global temperature rise.

Chart 2: EU's estimated climate-related investment needs (%GDP)



**The investment needs shown in the chart are the average of low and high estimates*

17 This was, for instance, the case with the French Court of Auditors (Cour des Comptes) in March 2024

18 *European Commission – Strategic Foresight Report 2023*

19 *UN Emissions Gap Report 2022*

20 *Financing the net-zero transition: From planning to practice*, McKinsey & Company, Institute of International Finance, 2023

21 Source: European commission Joint Research Center. Estimate for a 3°C global temperature rise

Adding (and marginally rounding) numbers, climate change mitigation and climate change adaptation in the EU will require annual financing between €800 and €1,600 billion, i.e. between 5% and 10% of EU GDP. The following considerations need to be taken into account when considering those numbers:

- If the cost of climate action may seem high, the cost of climate inaction will be much higher. Finance Watch addressed this question in a previous report[22] with a particular focus on the fact that the underestimation of the cost of climate inaction feeds the inaction bias of policymakers. Mitigation money is well spent not only as it is the only means to avoid the enormous cost represented by the collapse of economic activity that climate change will trigger, but also because of its knock-on benefits such as reducing the need for costly fuels, creating impetus for new jobs and export markets, reducing future health costs or slowing the loss of biodiversity and eco-system services, to name but a few.
- Adaptation money is also money well spent: a COACCH paper published in 2022,[23] estimated that *"many early adaptation investments were found to deliver high value for money, with benefit-cost ratios typically in the range of 2:1 to 10:1".*
- Public revenues will be negatively affected by climate change for two distinct and cumulative reasons: expenditure will rise while revenues will diminish: the more public funding will be needed to adapt to climate change, the more public revenues will diminish precisely because of climate change. This scissors effect on public budgets is most often overlooked by governments even if the point is clearly made by the European Commission in a Commission staff working document of May 2021[24] (extract page 3): *"Climate-related phenomena are expected to have substantial impacts on economic activity, affecting GDP levels and growth, and public finances, via several transmission channels, including public expenditure and revenues. Yet, climate-related fiscal risks are often absent from the fiscal sustainability frameworks of official institutions."*

22 *Finance in a hot house world*, Finance Watch, October 2023

23 *The economics of climate adaptation in the EU: new evidence from recent research*, Paul Watkiss and Eva Preinfalk, 2022

24 *'Closing the climate protection gap – Scoping policy and data gaps'*, European Commission, 27.5.2021

II. What private capital can and cannot do

A. Is equity capital able to finance climate change mitigation and adaptation?

Allocating private capital consists of putting a price on a risk. When applied to an economic project, the expression 'bankable' is the shortcut expression to encapsulate a price high enough to generate a sufficient expected return and therefore compensate the financier for the risk taken.

In order to determine whether private capital can finance the needs of tomorrow's world identified in Section I, we need to define what is meant by 'risk' and 'sufficient expected return'.

The response lies in the Capital Asset Pricing Model. On the back of the notoriety of its Nobel prize winning fathers (William Sharpe, Eugene Fama and Harry Markowitz), the Capital Asset Pricing Model **(CAPM)** has become the capital allocation engine of the private investment world. For the past fifty years, going through the CAPM filter has been a condition for investment projects to come to life.

CAPM defines with a simple equation the expected return of a capital asset, and therefore the cost of capital as companies have to satisfy investors' expectations to raise the capital they need:

$$E(R_i) = R_f + \beta \times (E(R_m) - R_f)$$

where:
$E(R_i)$ = Expected return of asset i
R_f = Risk free rate
β = Sensitivity of asset i return to market return (covariance divided by market variance)
$E(R_m)$ = Expected return of market

Risk and expected return are the two sides of any capital allocation decision.

- → CAPM defines risk as the instant sensitivity of an asset return to the market return (in other words as the divergence from the crowd at all times).
- → CAPM defines the expected return of an asset as a discount rate calculated by adding a risk factor on top of the risk free rate.

These two characteristics make CAPM at best a problematic tool to allocate capital to environmentally and socially sustainable investments in a rapidly changing world for the following reasons:

Defining risk as the instant sensitivity of an asset's return neglects the question of the time horizon under which the risk of sustainable investments can materialise.

Defining risk as the asset's divergence from the market is hardly compatible with investing in tomorrow's world in a fast changing environment which, by definition, cannot be an exercise of replicating today's economy (and therefore today's market).

Defining expected return as a discount rate neglects the question of the suitability of using a discount rate as a tool to assess the riskiness and therefore the value of sustainable investments which, by construction, are not defined exclusively by their cash flow generating capacity. The essence of a discount rate is to be the price of time: the higher the discount rate, the lower the value of long dated projects and therefore the higher the preference for short-dated projects (and vice-versa). In the world of sustainable investing, a preference for short-dated projects means effectively the opposite of investing for sustainability (not only because today's economic world is not sustainable but also because investing for sustainability is synonymous with long-term investing). This is why a number of voices have been challenging the very use of discount rates to assess the value of sustainable projects, and others have been calling for a zero discount rate to be used, effectively promoting the idea that, when it comes to sustainability, the future is as important as the present.

Defining expected return as a function of a risk free rate misses also an important economic fact: it could be debated whether today's world still knows such a thing as a risk free asset generating a risk free rate. At the very least, it must be affirmed that there is no such thing as a risk free rate in the Eurozone as there is no such thing as euro-denominated risk free assets (euro-denominated sovereign bonds are not risk free, regardless of the issuer).

B. Is debt capital able to finance climate change mitigation and adaptation?

Bond valuation is a function of the risk free rate to which a risk premium is added.

A bond risk premium can be seen as an adjustment for the credit risk borne by bond investors: in a world where risk free assets generating risk free rates can be found, a risky bond's yield must provide a risk-adjusted return above the risk fee rate.

In the case of debt, the risk premium is mainly a function of the probability of default (PD) and of the loss given default (LGD) of the issuer of the debt.

Corporate finance theory teaches us that financing a project by the issuance of a bond is economically rational when the after-tax rate of return of the project financed is greater than the interest rate paid on the bond issued. Unfortunately, many mitigation and adaptation projects do not pass this test and, if corporate finance theory is to be followed, cannot therefore be financed by issuing a bond. This also has consequences for governments who would want to finance their mitigation or adaptation projects by issuing bonds. We will address this point in Section III.

The points made above about the appropriateness of using a discount rate to assess sustainability-related investment decisions and about the relevance of the risk free rate approach (particularly in the Eurozone) are also valid when it comes to bond valuation. These factors reinforce the difficulty of relying on debt raised in capital markets to finance tomorrow's financing needs.

C. Can sustainable finance rules orient capital flows towards sustainable investments?

The essence of sustainable finance regulation is to improve the quality and the quantity of the sustainability information provided to investors in order to enable them to make informed decisions when it comes to allocating capital to sustainable projects, assets or activities. In the EU, this is what the Taxonomy regulation, which establishes sustainability criteria for economic activities, the Corporate Sustainability Reporting Directive (CSRD), which defines with the European Sustainability Reporting Standards (ESRS) what sustainability information issuers should provide, and the Sustainable Finance Disclosure Regulation (SFDR), which defines sustainability disclosure requirements for financial markets participants, aim to achieve.

Better and standardized sustainability information is necessary to help investors allocate capital to sustainable activities or assets. However, it is not synonymous by itself with a world where capital would naturally flow in the direction of sustainability: sustainable investors look at investments first with a traditional risk/reward financial prism and, only after, with their sustainability glasses on. In other words, sustainable investors operate first as traditional investors applying a CAPM filter or a traditional bond valuation logic before they apply a sustainability filter following the definitions and standards provided by sustainable finance regulation. Investments have to be considered profitable on a risk-adjusted basis before they can be considered for their sustainability dimension.

In today's investment world, a sustainable investment is a traditional investment with a sustainability add-on. Sustainable finance regulation has the objective of improving the quality of the add-on but it does not change the heart of a capital allocation process still governed by CAPM and traditional financial theories. Sustainable finance rules will not trigger by themselves a reorientation of capital flows towards sustainable investments, and even less away from unsustainable investments. Short term financial return remains the key of all financial decisions, whether deemed sustainable or not, as witnessed by the massive allocation of capital to the fossil fuel sector over the past two years on the back of its currently high returns on capital. Said differently, given its foundation in traditional financial practice, sustainable finance will not trigger the transition by itself. Sustainable finance is a necessary but not a sufficient condition to orient capital flows in the direction of a sustainable economy. The sustainable finance agenda of the EU is a most important contribution to build a sustainable economy, but it is only one piece of a much bigger puzzle that must be founded first and foremost on the adoption of adequate public policies. Finance is fundamental but there is only so much it can do in the absence of the necessary public policies, and dreaming of

sustainability criteria superseding financial criteria to finance climate change mitigation or adaptation is a fantasy.[25]

D. Making sense of capital markets dynamics

Raising equity or debt capital on markets is a multi-faceted exercise with wide-ranging implications.

When issued, shares and bonds (whether from corporate or sovereign issuers) are typically bought, and subsequently held, by institutional investors (insurance companies, pension funds, sovereign funds), family offices, asset managers, hedge funds, investment banks' proprietary trading desks and retail investors. In the case of bonds, commercial banks and central banks are, or can be, also on the buy-side of the market.

Once they have been issued, shares and bonds are traded on secondary markets. Capital markets participants analyse the cash flow generating potential and the economic perspectives of issuing entities in order to make their investment decisions. In the case of shares, investors look at the growth prospect and the profit generating potential of the issuing company, and in the case of debt at its ability to generate a sufficient amount of cash to repay its obligations, i.e. pay the coupons and redeem the debt at maturity. Capital markets constantly adjust the price they put on the securities they trade by reacting to the relevant analysis, rumours or news. The judgment of financial markets is a function of rational factors (economic and financial analysis) and irrational factors (fear, greed and herd instinct). This combination of rationality and irrationality, along with the intrinsic difficulty to convert even rational analysis into a price make financial markets prone to 'overshooting', following a pattern similar to the description made by Rudiger Dornbusch for foreign exchange markets in 1976.[26]

However, this is not the entire story and two factors must be investigated further:

1 - In its rational dimension, investment analysis consists of anticipating the future cash flows of a financial asset and of discounting them to derive their net present value (often referred to as the asset's 'fair value'). From a rational standpoint, investing is about purchasing assets deemed to be trading under or at their fair value. We can see that the two main ingredients of rational investing are the quality of cash flow expectations (which is an economic question) and the adequacy of the rate used to discount future cash flows (which is a financial question). These two ingredients are the heart of investment analysis and, consequently, of the investment decision-making process. However, as discussed above, the very notion of a discount rate becomes problematic when dealing with sustainability issues. In reality, estimating the fair value of a sovereign bond with a 10, 20 or 30-year maturity or a share of stock which has, by

25 In that context, the debate recently opened around the idea of altering the cost of capital of sustainable economic activities through the use of dual rates is an interesting development: better information on sustainability matters, if indispensable, will not suffice to orient capital flows and the purely financial dimension of the capital allocation process remains essential even for sustainable activities.

26 *Expectations and Exchange Rates Dynamics*, Rudiger Dornbusch, Journal of Political Economy, 1976

construction, an infinite duration is much less rational than it seems in today's conditions. This is due not only to the fact that the world is changing rapidly and in a most radical manner but also to the theoretical challenge, not to say the sheer conceptual incoherence, of using a discount rate to calculate a net present value of future cash flows when the proceeds of the securities issued will be used to finance services indispensable to cope with the collapsing sustainability and inhabitability of the world, clearly an investment rationale beyond financial considerations.

2 - Capital markets are inherently prone to speculation.

Let us start with the description of speculation given by John Maynard Keynes in 1936 in chapter 12 of his 'General Theory of Employment, Interest and Money', which remains unsurpassed to this day:

"Most (professional investors and speculators) are, in fact, largely concerned, not with making superior long-term forecasts of the probable yield of an investment over its whole life, but with foreseeing changes in the conventional basis of valuation a short time ahead of the general public. They are concerned, not with what an investment is really worth to a man who buys it "for keeps", but with what the market will value it at, under the influence of mass psychology, three months or a year hence. Moreover, this behaviour is not the outcome of a wrong-headed propensity. It is an inevitable result of an investment market organised along the lines described. For it is not sensible to pay 25 for an investment of which you believe the prospective yield to justify a value of 30, if you also believe that the market will value it at 20 three months hence."

"Professional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practise the fourth, fifth and higher degrees."

Two dimensions can be added to update Keynes's description of the speculative process and complete it to reflect today's market conditions.

First, the world, and therefore the economic world, is faced today with an unprecedented situation of radical uncertainty. Radical uncertainty is a change of paradigm for financiers. It goes far beyond the platitude of saying that the future is not certain and therefore risky. Risk can be quantified and approximated through the use of probability. Financiers are used to applying probability on future events in order to estimate the fair value of an asset and therefore put on it a price at which they are willing to

trade (this is, for instance, the essence of derivatives pricing which commands a $1 quadrillion - 10 times world GDP - underlying notional market: a financial asset derivative's price is a direct function of the probability of the financial asset's price to reach a certain level at a certain date).

Radical uncertainty is of an entirely different nature: risk can be quantified with a reasonable level of approximation, radical uncertainty cannot. Using probability to estimate the future possible states of the world assumes that the world will continue functioning along similar rules. However, it only takes reading the IPCC reports to arrive at the conclusion that the world will not continue functioning the way it is today. This is what is meant by radical uncertainty. Taking Keynes's example of an investment with a market price of 25, the question is no longer to wait until the price reaches 20 and make the investment in the hope that it bounces back to 30, but to realise that the very idea that *"the prospective yield (can) justify a value of 30"* has become at best very fragile, if not void of sense, given the radical uncertainty of the future state of the world.

Radical uncertainty may be the most important concept for financiers to apprehend the world of investment today, and it should change the way they approach their practice as it jeopardizes the very notion of reasonable economic projections. This assertion stands for equity and bond investment alike but also for long term derivatives pricing which becomes nonsensical in a radically uncertain world where probability is no longer a realistic description of the possible states of the world (this, in passing, raises global financial stability questions given the enormous size of the derivatives market).

Second, the size, and therefore the power, of financial markets has fundamentally changed in the 90 years since Keynes wrote his 'General Theory of Employment, Interest and Money'. Market size and power have become so overwhelming that if the market puts the price of an investment at 20, in many cases the fair value for this investment is considered to be 20 by the sole virtue that it is its market price. If the economy is the dog and financial markets the tail, the tail has become so big and powerful that it is now wagging the dog. This is what is meant by the adage 'the market is always right': market prices have acquired the possibility of being self-fulfilling prophecies. This is, for instance, what we are witnessing on the market for tech related stocks in the US where shares of still relatively young companies are priced at sky high levels (several hundred times their earnings), which gives them a phenomenal financial power as their shares are used as a currency to acquire competitors. This enables US tech companies to buy market share, develop their business and eliminate their competitors, which justifies ex post their market price. When, traditionally, the price of a security on financial markets is supposed to reflect economic reality, in this inverted logic economic reality is shaped by the security's market price. The tail wags the dog and the price of Keynes's investment is no longer 25 when its fair value is estimated at 30 on the basis of its prospective yield, hence giving room for value investing. Keynes's investment is now trading at 100, which is not justified by its prospective yield in a first instance, but becomes justified in a second instance thanks to a monopolistic position created through the acquisition of competitors paid for with the

issuing company's shares. The trick in inverting the traditional market logic where the prospective yield justifies a stock price lies in the fact that the acquisition of competitors paid in shares is made particularly cheap when the share is overvalued, making this acquisition akin to a purchase made with an overvalued currency.

The process described here for the price formation of US listed tech stocks is also valid for the bond market, and in particular for the sovereign bond market. For instance, this was made evident during the Greek sovereign debt crisis between 2010 and 2015: the market marked down the price of Greek bonds (pushed their yields up), which fed the loss of confidence in Greece's ability to service its debt, which forced a restructuring of Greek debt. The tail wagged the dog (again) with, among others, the result that the impact on economic activity of the austerity measures jointly imposed on Greece by the European Commission, the European Central Bank and the International Monetary Fund led to a GDP contraction which mechanically increased Greece's debt-to-GDP ratio by 40% in the course of a few years, hence feeding a vicious circle. On a more anecdotal level, this is reminiscent of the quote from one of Bill Clinton's top advisers who famously said that he wanted to be born again as the bond market "because you can intimidate everyone".

The common denominator of the two very different examples just described is the self-fulfilling prophecy characteristic of capital markets.

E. Objectives, challenges and limits of a capital markets union

a. Objectives of the CMU

The ambition of the capital markets union is best stated by the European Commission itself.

Extract:[27]

Why do we need a capital markets union?

The capital markets union (CMU) is a plan to create a single market for capital. The aim is to get money – investments and savings – flowing across the EU so that it can benefit consumers, investors and companies, regardless of where they are located.

A capital markets union will:

- provide businesses with a greater choice of funding at lower costs and provide SMEs in particular with the financing they need;
- support the economic recovery post-Covid-19 and create jobs;
- offer new opportunities for savers and investors;
- create a more inclusive and resilient economy;
- help Europe deliver its new green deal and digital agenda;

27 European Commission, *What is the capital markets union?*

- reinforce the EU's global competitiveness and autonomy;
- make the financial system more resilient so it can better adapt to the UK's departure from the EU.

CMU action plans and packages

While progress has been made since the CMU initiative was launched in 2015, EU capital markets remain fragmented. The Commission therefore adopted on 24 September 2020 a new CMU action plan. The plan set out 16 legislative and non-legislative measures to deliver on three main objectives:

- support a green, inclusive and resilient economic recovery;
- make the EU an even safer place to save and invest long-term;
- integrate national capital markets into a genuine single market.

At the beginning of 2024, EU leaders initiated a strong push to revive a capital markets union yet to be realised.

b. Operational challenges of the CMU

Developing a capital markets union in the EU has a number of prerequisites:

- Putting in place a joint supervision of capital markets at EU level as opposed to the current situation where each Member State has its own supervisory authority (NCA: national competent authority);
- Repatriating clearing in the EU as opposed to the current situation where the bulk of the EU clearing business is conducted outside of the EU (in London);
- Developing an EU-wide insolvency law;
- Developing an EU-wide company law;
- Developing coherent corporate tax regimes across the EU to avoid the current situation where tax-arbitrage is an important and often decisive criterion when a company decides where to list in the EU.

The capital markets union initiative has been on the EU agenda since the seminal speech given by European Commission President-elect Jean-Claude Juncker in July 2014. Since then, it has taken the form of a long list of very different and often unrelated initiatives, among which we can find, among others, simple transparent and standardised (STS) securitisation, the prospectus Regulation, the European Venture Capital Fund Regulation (EuVECA), the European Social Entrepreneurship Fund Regulation (EuSEF), the Pan-European Personal Pension Product (PEPP), covered bonds, crowdfunding, investment firms review, and the promotion of SME growth markets…

Beyond the technical debate on each of those initiatives, what jumps off the page is that none of them starts addressing the prerequisites listed above. The CMU seems sometimes to be used as an excuse to achieve objectives that have nothing to do with its stated ambition. For instance, it is worrying to hear the growing narrative about the need to develop further securitisation in EU capital markets with the incoherent rationale that it will "free" EU banks' balance sheets and enable them to lend more

to the EU economy whilst the objective of the capital markets union is announced as promoting market financing for EU companies to free themselves from the dependency of bank lending (!). It is also worth noting that the same EU Member States who manoeuvred against single supervision or against a repatriation of clearing in the EU are now pushing for reviving a securitisation painted, in a most contradictory manner, as essential for the CMU with the objective of developing bank lending…

With savings at 12.7% of disposable income in the EU and 14.6% in the euro area (3.8% in the US), the EU does not have an investment capacity problem. The relative underdevelopment of its equity market capitalisation (70% of GDP in the EU compared with over 200% in the US) is linked to both the inexistence of the prerequisites listed above and, as importantly in our view, to the very different economic cultures encountered in different EU countries (the ratio of equity market capitalisation to GDP stands at 190% in Denmark, 132% in the Netherlands, 85% in France, 60% in Germany and 36% in Italy). The legitimate and much wider debate about the economic and social desirability of a high equity market capitalisation and the related financialisation of the economy and of society are topics outside the scope of this paper.

c. Structural limits of the CMU

For its promoters, in a context of scarce public finance a capital markets union is necessary to unlock the power of capital markets for the benefit of the EU economy and to finance the massive investments necessary for the transition towards a sustainable economy. If the EU needs an enormous amount of money and public money is not available, private money can do the job, can't it? This logic is to be found in the speeches of many Member States' leaders or finance ministers,[28] central bankers,[29] at the highest level of the European Union Institutions[30] and also, but with nuances, in the report by former Italian Prime Minister Enrico Letta[31] presented to the leaders of Europe on 16 April 2024. For instance, having established a comparison with the financing of railway projects at the end of the 19th century in the United States, European Central Bank President Christine Lagarde, stated in the speech she gave on 17 November 2023 that the capital markets union will be necessary to finance the EU green transition. Similarly, in a February 2024 speech[32] Banque de France Governor François Villeroy de Galhau *"call(ed) loudly and clearly for a "Financing Union for Transition"*, and added that he wishes that the EU's market capitalisation can double *"over the next decade in order to boost innovation"* and that *"green finance is clearly a highway for the Financing Union for Transition"*. In the same vein, Enrico Letta's report calls for the capital markets union to be rebranded as a *"Savings and Investments*

28 See, for instance, *Bruno Lemaire on 23 February 2024*,

29 *A Kantian shift for the capital markets union*, Christine Lagarde, 17 November 2023

30 *Euro at 25: the value of unity in a changing world*, Christine Lagarde, Pascal Donohoe, Roberta Metsola, Cahrles Michel and Ursula von der Leyen, 30 December 2023

31 *Much more than a market*, Enrico Letta, April 2024

32 *From a Capital Markets Union to a genuine Financing Union for Transition*, François Villeroy de Galhau, 23 February 2024

Union" and making it an overarching objective *"to make European industrial capacity compatible with the goals of the fair, green, and digital transition".*

Extract:

"Therefore, one of the main objectives of the new Single Market must be to make European industrial capacity compatible with the goals of the fair, green, and digital transition. To this end, in the next legislative term, it will be necessary to direct all energy towards the financial support of the transition, channelling all necessary public and private resources towards this goal to make the transformation of the European production system possible. In this endeavour, the Single Market can and must play a pivotal role.

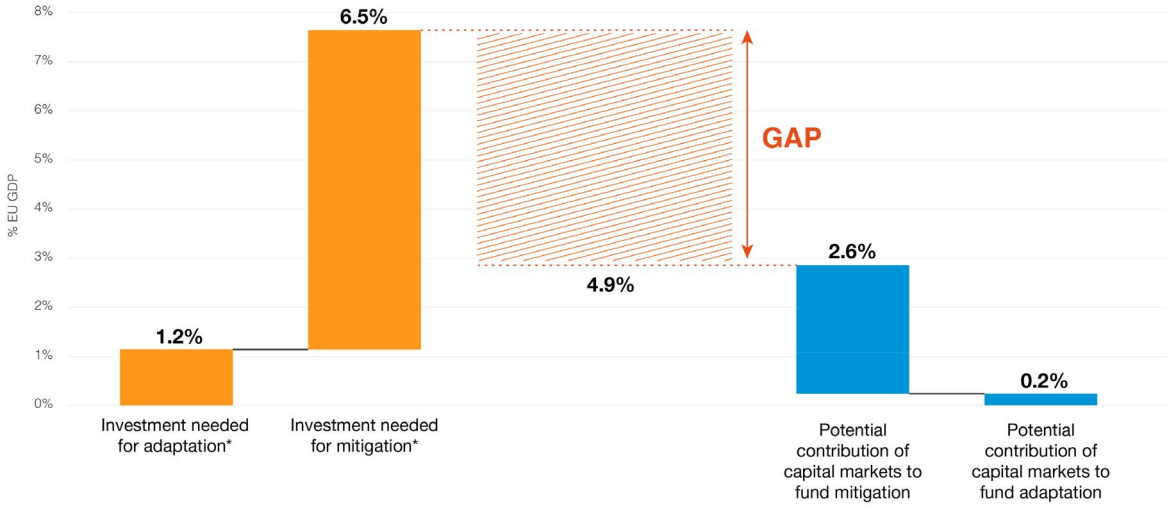
The initial priority should be to mobilise private capital, a crucial step that lays the groundwork for a more inclusive and efficient financing framework, as it is the area where the EU is most lagging behind. The European Union is home to a staggering 33 trillion euros in private savings, 9 predominantly held in currency and deposits. This wealth, however, is not being fully leveraged to meet the EU's strategic needs. A concerning trend is the annual diversion of around €300 billion of European families' savings from EU markets abroad, primarily to the American economy, due to the fragmentation of our financial markets. This phenomenon underscores a significant inefficiency in the use of the EU's economic assets, which, if redirected effectively within its own economies, could substantially aid in achieving its strategic objectives. In this context, this Report calls for a significant transformation: the creation of a Savings and Investments Union, developed from the incomplete Capital Markets Union. By fully integrating financial services within the Single Market, the Savings and Investments Union aims to not only keep European private savings within the EU but also attract additional resources from abroad."

Explicitly or implicitly, the central question behind these different assertions is whether private money can replace public money. If public money is unavailable, can the green transition find the financing it needs with private money? Can private capital fill the EU funding gap? Assuming the EU finally manages to complete its capital markets union, can private capital provide each year the €800 to €1,600 billion (5% to 10% of EU GDP) necessary for climate change mitigation and adaptation?

Responding to this question requires us to consider the process through which private capital is deployed. As explained, capital markets will finance the green transition provided the projects to be financed offer an adequate risk-reward profile, i.e. a potential return high enough to reward investors for the risk they estimate. Absent this combination, even the deepest capital markets will not be in a position to finance projects, be they green or necessary to society. All other considerations are of secondary importance in the capital allocation decision-making process. Consequently, this means that if a financier is not in a position to properly assess the risk to be taken, or if the risk is deemed too high, or if the potential return is not sufficient to cover the risk, private capital is not available.

A significant part of the mitigation investments needed will not fulfil those conditions, and we argue that the bulk of adaptation investments will not either: building flood defences or sea walls will be indispensable but will not generate the cash flows private investors look for. This means that most of those investments will not attract private capital regardless of the depth of the capital market contemplated, in other words even if the EU manages to complete its capital markets union. Taking McKinsey's assumption of 60% "non-bankable" (and therefore 40% "bankable") climate mitigation investments, and assuming an 80% "non-bankable" (20% "bankable") adaptation investments, we derive an annual €300 billion to €600 billion potentially financed by CMU-invigorated EU capital markets, a little over a third of the investment needed. This, obviously, if CMU becomes a reality.

Chart 3: Matching EU capital needs with supply via capital markets in a best case scenario



**The investment needs shown in the chart are the average of low and high estimates*

If adopted and implemented, the CMU could contribute to unlock the power of capital markets for the benefit of the EU economy by reversing the traditional equity market valuation logic, as is the case for US tech stocks (see section II. D). This could, in particular, lead to significantly higher valuations for startups or innovative companies in a growth phase listed in the EU, which would, in turn, give the means to those companies to conquer market share and expand rapidly, as their US competitors do. In passing, the completion of the CMU would lead to a reduction in the number of listing exchanges (not to be confused with trading exchanges) in the EU from the current 35 to something more comparable to the US's three such exchanges. This would reflect the concentration of liquidity on a smaller number of places and would be an indicator that this key objective of the CMU has been reached. However, the reduction of the number of listing exchanges will not be the cause of the CMU but its consequence: if and when the CMU is completed, it will lead to a reduction of the number of listing exchanges in the EU. If and when.

We agree with Enrico Letta when he comes to the conclusion that (our emphasis) *"in the next legislative term, it will be necessary to direct all energy towards the financial support of the transition, channelling all necessary* ***public and private*** *resources towards this goal to make the transformation of the European production system possible"*, he states that *"supporting the transition structurally is a fundamental objective within the European Union's strategic framework. However, discussions must not only focus on the costs associated with this transition. It is crucial to recognize the extensive benefits that this transition offers to citizens, businesses, and workers alike.* ***Investing in and financing this transition is not just a financial decision; it is arguably the most strategic choice the EU can make to secure a significant competitive advantage on the global stage, while preserving and developing the social standards that Europe proudly enjoys****".*

By making this statement, Enrico Letta acknowledges the constraints private finance operates under and therefore its limits. He recognises that in a context where private capital, even if abundant, cannot do everything given that its allocation is by construction *"just a financial decision"*, it will not fill by itself the entire EU funding gap. The unformulated consequence of Enrico Letta's statement is that an essential role will have to be played by public finance to finance the transition.

The orders of magnitude we arrived at in this section speak for themselves:

A completed CMU should enable to raise an additional €300 to €600 billion per year for the transition in the European Union. These numbers are very significant but they still leave an annual funding gap for the EU between €500 billion and €1000 billion (3% to 6% of EU GDP). In our view, this funding gap can only be filled by public money, hence the fact that Section III opens the debate of the reform paths possible for public finance to be in a position to fill this yawning remaining gap.

III. Possible directions to rethink public finance

If private capital, however important, is not going to be sufficient to fill the funding gap, we need to explore the directions that have the potential to make public finance less scarce a resource than it is today. An important message conveyed by economic history is that public and private money do not compete but, quite the contrary, complement one another. Even in the country with the biggest and deepest capital market in the world, the USA, government intervention via tax deductions and public cash injection (US Inflation Reduction Act of 2022) and government bail-out of ailing companies (e.g. Silicon Valley Bank in 2023) have become the norm to spur the economy, orient its direction or save companies or sectors deemed to be strategic or systemically important.

A. Context of a rethink of public finance rules

Beyond the necessity to finance the climate change mitigation and adaptation effort, the economic context of the public finance landscape is characterized by two trends: one is a structural evolution of economic systems towards a hybrid form, the other one is more circumstantial and linked to the rising geo-political tensions which do not seem likely to disappear soon.

a. A structural evolution towards a hybrid economic system

The world economy has been for several decades on a path of hybridisation where the upside benefits private interests and the downside is borne by society. Bailing-out ailing private interests is on its way to becoming a new normal. When an economic service deemed to be essential is in trouble, public money is more and more systematically called upon to it with a view of avoiding a potentially disruptive impact on society. In this process, moral hazard, where profits remain private whilst costs and losses are public, is gradually becoming a new normal.

This trend is being reinforced by the momentum we are witnessing everywhere to support economic development and, as the case may be, the orientation of the economy with public money. The rationale is very similar to the reason invoked for supporting private interests with public money when they flounder: some economic activities are crucial to mitigate the growing climate crisis and to adapt to it, and some, which may overlap with the first group, are considered as being strategic to compete on an increasingly non-cooperative and competitive international scene. In both cases, the rationale for governments to support private economic interests with public money is linked to the fact that economic power is seen as a condition of national might.

Let us take a step back and put things in perspective:

i. Supporting the economy on the downside

Financial markets have become 'too-big-to-be-let-down'

During his term at the helm of the US Federal Reserve (1987–2006), Alan Greenspan played a defining role in establishing moral hazard as an essential characteristic of the financial system. The 'Greenspan put', as it came to be called, consisted of supporting financial markets through interest rate cuts and liquidity injections each time financial markets showed signs of weakness beyond their routine and quickly forgotten ups and downs. Alan Greenspan started his long mandate as the President of the Federal Reserve a month before the market crash of 1987, a factor not foreign to his subsequent policy of systematic support of financial markets. After the crisis of 1987, the objective (never formulated as such, obviously) was that financial markets, which are one of the engines of the US economic power, should not be allowed to falter. The result was spectacular: financial markets kept on going up and up. Greenspan's policy was contagious: central bankers all over the world came gradually to consider that, in addition to their traditional price and financial stability mandates, they had an unwritten mandate to support financial markets. The 'Greenspan put' was mimicked after Greenspan by a 'Bernanke put', a 'Yellen put', a 'Draghi put', a 'Powel put' and a 'Lagarde put', to name but a few of the central bankers of the world. Over the years, supporting financial markets in times of crisis became part of the financial stability toolkit of central banks. The most recent and spectacular illustration of that situation was the injection in the spring of 2020 of an unprecedented number of trillions of their respective currencies by the US Federal Reserve, the European Central Bank, the Bank of Japan, the Bank of England, etc… into financial markets that were collapsing as a consequence of the Covid-19 crisis and its impact on the economy.

If the political reason for central banks to support financial markets is clear (financial prosperity is a condition of power), the technical reason is linked to the fact that the entire financial system has become dependent on financial market prices and that significantly lower prices put the entire financial system at risk. This is the result of a financial system inflated by years of central bank support and interest rate cuts to reach at the end of 2023 a global size of $107 trillion for equity markets,[33] $100 trillion for bond markets[34] and $1 quadrillion for derivatives markets. The financial system was concomitantly made fragile by accounting standards (mark-to-market - fair value - accounting developed since the 1990s and more specifically IFRS 7, 9 and 13) reflecting the adage 'the market is always right'. In this system, the solvency of the world's banks, insurance companies and pension funds is a direct function of financial market asset prices, and financial stability is subsequently a direct function of the level of financial markets. Over the years, financial markets have become 'too-big-to-be-let-down', and this phenomenon has fed a vicious circle beyond anybody's control:

33 Market capitalization, *World Federation of Exchanges*, November 2023

34 *Global Debt Report 2024*, OECD

the more financial markets are supported by central banks, the more they become vital for the stability of the financial system and the less central banks can afford to let them down.

Banks have become and still are 'too-big-to-fail'

The financial crisis of 2007-2009 was a defining moral hazard moment when, confronted with a collapsing banking system and realising the dire consequences of such a collapse, the US Government injected $500 billion of public money and EU Member States €400 billion to save their respective banking systems. Banks had officially become 'too-big-to-fail'.

Since then, despite all the promises of 'never again' and the reforms of prudential regulation adopted to prevent the possibility of a repetition of such a scenario, most jurisdictions have demonstrated that 'too-big-to-fail' has not disappeared in banking: in the EU, even small banks have become 'too-big-to fail', witness the bail-outs with public money of Banca Popolare di Vicenza, Veneto Banca, Banca Carige, Monte dei Paschi di Siena and NordLB since 2016; in the US, a banking panic following the failure of Silicon Valley Bank and Signature Bank in the spring of 2023 was only stopped when the US Government stepped in to guarantee the banks' deposits without limit; in Switzerland, the purchase of failing Credit Suisse by UBS in March 2023 was only made possible by, among others, a CHF100 billion public liquidity backstop.

Private economic interests have become too crucial not to be supported in times of crisis

Moral hazard and the trend towards a hybrid economic system is no longer the specificity of the financial sector. Supporting and bailing-out the economy are now an integral part of the toolkit of economic policymakers regardless of the sector of activity. In 2020, the Covid-19 crisis saw governments intervene massively to support an economy threatening to collapse in the wake of the lockdowns imposed because of the pandemic. In the EU, the stimulus package[35] decided (dubbed "the largest ever") was estimated at €2.018 trillion - this not counting the stimulus and support packages decided at Member State level bringing the figure to €3 trillion. In the US, the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) amounted to a stimulus of $2.2 trillion.

The massive support of the economy unleashed by governments throughout the world and the post-crisis recovery packages adopted in many jurisdictions, in particular in the EU, had several objectives: 1) put the economy as a whole on a lifeline to ensure society would continue functioning; 2) support people in the process; 3) provide the stimulus necessary to go back to the economic situation that prevailed before the Covid-19 crisis triggered a substantial contraction of the world economy.

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35 European Commission, *Recovery plan for Europe*

ii. Supporting the economy on the upside

Supporting private enterprise with public money to prepare their economies for tomorrow's world has become a most significant trend in the US, in the EU and in China today, to mention only three of the world's jurisdictions.

In the US, the US Inflation Reduction Act (IRA) of 2022 was a sweeping piece of legislation worth $365 billion of tax credits, grants and loans aiming to decarbonise the US economy, reshore supply chains, and reduce dependence on China. It showed, if anything, that the direction of economic travel is no longer one of free market globalization but, quite the contrary, one of state intervention and support of private interests with public money. It was a recognition by the largest economy of the world of the necessity to put public money at work to develop (private) economic activity deemed to be strategic, that cheapest is not always the best, and that the notion of global supply chain neglected the fundamental question of the security of supplies.

From an operational standpoint, the US IRA's unprecedented level of tax incentives played on the country's fiscal capacity at federal level. It showed that the availability of public money to support private enterprises in the face of an obvious market failure depends also on the existence of a large government budget and its related fiscal capacity.

In the EU, state aid expenditure rose from €102.8 billion in 2015 to €334.54 billion in 2021, and between March 2022 and August 2023, Europe approved an unprecedented €733 billion in state support.[36] The EU also reacted to the US Inflation Reduction Act by adapting its state aid rules and the legislative proposals of the Green Deal Industrial Plan. The trend is clear: in the EU, public support of the economy has become a must in the face of the challenges governments must meet, and this trend is only reinforced by the current non-cooperative state of the world. However, when it comes to supporting the economy with public incentives, the EU is put at a considerable disadvantage to the USA by the mere fact that its own resources are very limited and it does not run a budget independently of its Member States.

The game today does not only consist of meeting environmental, economic and social challenges in a rapidly changing and unpredictable context, but also of taking on challengers on the international scene in what can be seen as the beginning of the end of globalisation. Free trade no longer appears as an objective as such, supply chains built with the sole objective of the lowest possible cost of the merchandises traded have shown their fragility and hence their limits, and the rules of the World Trade Organization (WTO) need at best a serious rethinking when confronted with the world's sustainability crisis. This is all the more obvious as China has demonstrated since its accession in 2001 a great capacity to play the WTO's rules to its advantage, thereby creating a shift in the world's economic dominance and a lot of frustration in the rest of the world, in particular in Western countries.

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36 *Financial Times*

We live in an age of government-sponsored market economy. Governmental financial support has become the condition to develop ambitious private initiatives, very much as governmental financial support has become indispensable to save private interests (and subsequently the economy) when things go sour.

iii. The trend towards a hybrid economy will only be reinforced by the climate change crisis

The two-pronged trend towards the support of economic development and the bail-out of economic interests with public money can only be expected to increase in frequency and magnitude with the growing climate change crisis.

As discussed in other publications,[37] financial stability is threatened by climate change and given the absence of consideration by policymakers so far, including by the EU co-legislators, of the easy solutions at their disposal to tackle this risk, it can only be expected that a new financial crisis will emerge from the climate crisis. Such a new crisis will inevitably lead, yet again, to a bail-out of the financial system with public money on a scale probably never seen before.

In the insurance world, the insurance gap, where entire economic sectors or geographical localisations are being refused insurance cover as the risks have become too high and therefore uninsurable, is growing. In all probability, this will lead at one point to the replacement of private insurance by an insurance cover provided, at least partially, by public authorities or governments in order to keep the economy running, and this will reinforce the trend towards even more economic moral hazard situations. There seems to be little alternative to such an evolution given the vital importance of insurance cover for the economy.

In a blog published in April 2023[38] referring to a joint ECB – EIOPA Discussion Paper,[39] the ECB highlighted that only a quarter of climate-related catastrophe losses are insured and that the figure can even be less than 5% in some countries. The ECB also described what they called a ladder approach to catastrophe insurance, where the first two rungs of the ladder (respectively private sector insurance and reinsurance/catastrophe bonds) are private sector solutions and the next two rungs (respectively national public sector measures/public-private partnerships and EU components complementing national measures) are public sector solutions.

As described on page 3 of the joint ECB – EIOPA Discussion Paper:

"Only about a quarter of climate-related catastrophe losses are currently insured in the EU. This insurance protection gap could widen in the medium to long term as a result of climate change, partly because repricing of insurance contracts in response to increasingly frequent and intense events may lead to such insurance becoming

37 Finance Watch: *Breaking the climate-finance doom loop, Finance in a hot house world*

38 *What to do about Europe's climate insurance gap*

39 *Policy options to reduce the climate insurance protection gap*

unaffordable. This would further increase the burden on governments, both in terms of macroeconomic risks and in terms of fiscal spending to cover uninsured losses. This may raise government debt burdens of EU countries and increase economic divergence. A widening insurance protection gap may also pose financial stability risks and reduce credit provision in countries with large banking sector exposures to catastrophe risk events."

The message from the ECB and from EIOPA is clear: the insurance protection gap will exert a considerable drain on public money in the coming decades, both directly as public budgets (the last two rungs of the ECB ladder) will have to step in to replace a private insurance sector (the first two rungs of the ECB ladder) increasingly unable to play its role, and indirectly as the macroeconomic impact of the insurance protection gap will not only diminish public budgets revenues, but also will increase fiscal spending to cover uninsured losses and trigger financial instability,[40] requiring in turn massive public support of a too-big-to fail financial system.

iv. Economic consequences of a hybrid economic system

The increasingly hybrid economic system we have under our eyes has neither the characteristics of a market nor of a state-run economy. Strikingly, the system lacks the incentives and the controls necessary to make any economic system efficient.

The rationale and the coherence of a free market (capitalist) system comes from the fact that the entrepreneur and the capitalist have the potential to win (upside potential) along with the risk of losing. The risk of losing is, in theory, inherent to the capitalist system and it is meant to create a discipline.

The rationale and the coherence of a state-run system comes from the control and the planning exercised by public authorities who bear the downside of the economic game but also benefit from its upside, in addition to being in a position to use it as an economic policy tool.

Beyond the (many) criticisms that can be addressed to both capitalist and state-run systems, it has to be recognised that they both have, at least on paper, a coherence and an in-built control mechanism.

With its moral hazard characteristic, the version of hybrid economic system that we currently have is an entirely different story: the downside and the cost of the incentives are borne by society and the upside by private interests, with the consequence that private interests can only win, and society can only lose, at least from a financial standpoint. This situation has two major consequences. Financially, a hybrid econo-

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40 The ECB – EIOPA Discussion Paper reminds us page 14 that *"Around 75% of the exposures of euro area banks to firms subject to high or increasing flood risk is uncollateralised or secured by physical collateral that is also exposed to physical risk, i.e. €370 billion (Chart 4, left panel). This raises concerns, especially in countries with a large insurance protection gap. The potential losses for banks exposed to high-risk firms (or households) would be significant should extreme floods intensify or hit a large share of those who are vulnerable. The exposure of euro area banks to firms subject to other climate-related hazards – such as heat stress, hurricanes, sea level rise, water stress and wildfires – is much lower, but it is also mostly uncollateralised or secured by vulnerable physical collateral"*.

mic system creates a drain on public money. Economically, a hybrid economic system lacks the discipline of a market economy and the control of a state-run economy. Such a system suffers from a fundamental internal incoherence as the risk takers (public budgets) do not benefit financially from the risks they are taking, and private interests end up being in the enviable position of having nothing to lose.

Theorising a hybrid economic system is beyond the scope of this report, but economists must start thinking of the possible ways for society not to be always on the losing side of the game, which most certainly means regaining financial upside, exerting economic control to orient corporate action for the benefit of society and adding conditionality for the allocation of public money.

Past costs incurred by public budgets in the EU in situations of support of private economic interest with public money:

- Bail-outs:
  - → Financial crisis of 2007-2009: €400 billion from EU Member States' domestic budgets
  - → Covid-19 crisis (2020): €1,850 billion liquidity injection (pandemic emergency purchase programme) by the ECB
  - → Covid-19 crisis-related EU stimulus package: €2,018 billion
  - → Covid-19 crisis-related EU Member States support: €1,000 billion from Member States' domestic budgets
- Supporting development:
  - → EU approved state aid expenditure 2021: €335 billion (out of which €199 billion were Covid-19 related)[41]
  - → EU approved state aid expenditure between March 2022 and August 2023: €733 billion[42]

b. Preserving strategic autonomy in a non-cooperative and increasingly conflictual world

World international dynamics are in a negative spiral.

The transition that human societies need is not only an energy transition but, even more fundamentally, a transition in the way they operate. In the absence of global governance, achieving such a challenge would require international cooperation but the world is growing less and less cooperative by the day, which not only diminishes the likelihood of achieving an already highly challenging and not yet started transition, but also feeds a vicious circle given that environmental and social evils are one more factor feeding international tensions.

41 *State aid Scoreboard 2022*, European Commission

42 *Financial Times*

The world is facing a collective action problem: action to tackle climate change needs to be collective to be effective but collective action is not happening.

Collective action situations typically generate free riding behaviours, and this is the case for the effort to combat global warming. If a country or a jurisdiction does what it takes to tackle its GHG emissions and incurs the cost of doing so, other jurisdictions not taking action benefit from it without paying the cost. Arguably, this is the case to some extent today for the European Union. Despite all the imperfections and, everything else being equal, the insufficient ambition and effectiveness of its plan to reduce GHG emissions, the EU can be seen as the most ambitious jurisdiction in the world on the subject. However, it represents barely 10% of the world's GHG emissions. This situation feeds in turn a growing political narrative asking for a pause in the EU's efforts to reduce GHG emissions or not to act for environmental sustainability because of the economic costs and the short-term disadvantages they create in the competition with other jurisdictions who are not playing the game. The result is a generalised pushback by business organisations and by a growing number of governments around the world. This is game theory in practice: lack of cooperation leads to sub-optimal results.

The collective action problem the world is facing will become all the more complex as the environmental crisis unfolds: there is a high risk of feeding a vicious circle where the lack of collective action makes climate change and its social consequences worse, which then exacerbates conflicts and reduces even further the ability of humanity to act collectively.

Tensions and conflicts are growing everywhere and climate change will only feed conflicts for space and water. By the same token, the predictable massive waves of climate migrants will inevitably trigger human struggles. Geopolitical tensions and conflicts will in all likelihood be on the rise in the foreseeable future, and this will rhyme both with significantly increased defence budgets and with further investments to secure economic predominance, including supply chain security.

Preserving strategic autonomy in a non-cooperative and increasingly conflictual world will require a high level of additional financial resources, in particular to feed growing defence budgets.

Orders of magnitude of present and possible future defence budgets in the EU:

- Total EU annual defence spending reached €240 billion in 2022 and €270 billion in 2023, i.e. 1.6% of EU GDP.
- An increase of EU Member States' defence spending to reach the level of the United States' (i.e. 3.5% of GDP), would represent €560 billion (i.e. an increase of €290 billion) per year.

B. Possible directions to rethink public finance

As a preliminary consideration, an important factor to consider when thinking about the possible ways to make more public financing available to meet society's needs is the pro-cyclical nature of crises on public finance: just when more public funding is needed to confront a crisis, public revenues are likely to diminish because of the crisis. Given the considerable impact that climate change will have on the economy over the coming decades, it can be affirmed that this phenomenon will prove particularly acute. Despite the almost intuitive nature of this dynamic, the impact of crises on public revenues is often overlooked by governments.

This point is made by the European Commission in a staff working document of May 2021[43] (extract page 3):

"Climate-related phenomena are expected to have substantial impacts on economic activity, affecting GDP levels and growth, and public finances, via several transmission channels, including public expenditure and revenues. Yet, climate-related fiscal risks are often absent from the fiscal sustainability frameworks of official institutions."

These different parameters, and particularly the fact that public budgets will, in all probability, be confronted in the relatively near future with a concomitant substantial increase of financing needs and a significant decrease of revenues, commands a rethink of the rules governing public finance.

In that perspective, a number of options can be assessed for their money raising potential, for their technical feasibility and for their economic and financial consequences.

Public money can come from two sources: taxes and debt.

Taxes are the natural resource of public budgets, and when taxes are not sufficient to cover expenses governments borrow money to cover the resulting deficit (economically, this corresponds to a situation where a government gives more to its citizen-taxpayers than it takes from them).

Reforming the tax system is one of the two blocks of reforms necessary to anticipate the growth of public spending over the coming decades. This is particularly important in a context where, especially at the higher end of the distribution, the level of effective taxation is inversely proportional to the level of revenues or wealth of individuals and corporations. However, taxation is beyond the scope of this report.

We focus here on the other block of necessary reforms: what public finance architecture can and should be put in place to allow the EU, whether at Member States level or at Union level, to function in an ever more challenging environmental, geo-political and economic context?

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43 *'Closing the climate protection gap – Scoping policy and data gaps'*, European Commission, 27.5.2021

One school of thought will say at this point of the debate that the solution is to avoid running public deficits, in other words avoid spending more money that can be raised through taxation (economically speaking, taking more from citizens-tax payers than is given to them).

We believe that this position is not compatible with the description of the financing needs of tomorrow's society made in this report. In the face of daunting economic and social changes, of the growing support of private economic interests with public money, of increasing geopolitical tensions and of the climate crisis and its consequences, there is no doubt that public deficits will grow very significantly over the coming decades regardless of the options taken by decision-makers. Either governments will do what it takes to address the spectrum of challenges they have to address and public deficits will grow, or governments will not do what is needed and deficits will increase anyway: inaction will result in social and economic chaos and falling public revenues, triggering once again the classical loop linking fiscal austerity to reduced economic activity and decreasing fiscal revenues. In all cases we are headed for an era of ineluctable growth of public deficits resulting either from the increase of public spending or from the decrease of fiscal revenues, or from both. In such a situation, the essential question becomes how the public finance architecture can be reformed so that the inevitable deficits remain financially, economically and socially under control.

When Mario Draghi says that the European Union will need to invest an *"enormous amount of money in a relatively short time"* and adds that *"public money will never be enough"*, he omits in our view an obvious possibility: public money will never be enough IF the rules currently governing it are not reformed. Money is both a means to an end and a social construct. We have to go beyond the observation that the current EU fiscal framework will not allow EU governments to meet their financial needs and address the question of how we can design a system where public money will be available to reach the objective of keeping our societies and our economies running despite considerable challenges, upheavals and changes of prevailing conditions.

Different avenues can be explored for an evolution of the public finance architecture. In our view, the key discriminating factor between those avenues is the chosen degree of dependency on market financing. Either the current dependency on capital markets is kept and the EU fiscal framework will need to be reformed, or a new architecture is found and public deficits are no longer, or to a lesser degree, financed by raising debt on capital markets.

a. Implications for governments of raising money on capital markets

The nature of capital markets, their psyche (capital markets are, alongside rational factors, also governed by fear and greed) and their self-fulfilling prophecy characteristic make them intrinsically unstable and therefore uncertain. Capital markets cannot be relied upon as a source of financing that will always be there regardless of the circumstances: they may be open or closed, either altogether or for certain issuers, when financing needs to be raised. This will be a major issue in the future: in a world

fraught with an ever increasing degree of radical uncertainty, relying exclusively on capital markets financing will be a growing source of instability for governments.

We are in a situation where fear about capital market reactions limits policymakers' ambitions when they want to tackle economic, environmental, social or geopolitical challenges. This is typically the case when the breach of Stability and Growth Pact (SGP) rules by an EU Member State feeds market speculation, even if those rules are widely recognised as making little economic sense: the game does not consist of knowing what the fair value of a particular government bond is, but what other market participants are going to think the breach of an SGP rule by an issuing Member State will do to the market price of its debt. The bond market has become so intimidating that governments hesitate to make even the appropriate economic or societal decisions out of the fear that they will be punished and forced to reverse action under market pressure. Making the financing of public budget deficits uniquely dependent on financial markets is inherently a source of instability for governments. This is true for all governments, but it is made particularly acute in the EU given the SGP rules that EU Member States are subject to, and given the incomplete nature of the euro as a currency.[44]

Everywhere in the EU, we witness governments struggling between constrained public financial resources and a rising tide of essential public spending that needs to be made. An illustration of this situation was given in March 2024 when France, running a budget deficit of 5.5% of GDP and a debt to GDP ratio close to 112%, announced its willingness to cut public spending by €20 billion in 2025 and took aim at social outlays such as unemployment benefits, professional training, medical devices, long-term illnesses or medical transport, to name but a few. The irony of the situation is that the state of French public finance is the result of governmental support to the country's economy made during the Covid-19 crisis, which is widely seen as having been the right thing to do.

Capital markets can punish governments for doing the right thing and this problem will only increase with time given the nature of the investments that governments will need to make. Financially, public debt traded on capital markets will be caught in an untenable situation by the mere fact that it has to follow market rules whereas its proceeds generate no or below-market rates of return. For instance, public money used for climate change mitigation will go towards the mitigation investments considered as non-bankable (otherwise private money would have done the job: bankable investments will by definition be made by private money), and this will mechanically create a tension between the asset side and the liability side of the public balance sheet. Similarly, the money invested in adaptation projects (including social adaptation) will not be invested with a financial logic and will in many cases generate no or below market rates of return. The negative difference thus created between the financial return ge-

44 The incompleteness of the euro refers in this case to eurozone members delegating monetary policy to the ECB while retaining fiscal policy as a national competency.

nerated on the investments made and the financial cost of the liability will also create a financial tension that will eventually prove untenable.

Looking at another usage of public funds, raising on capital markets the public money awarded for the bail-out or the support of private interests creates an economically biased situation where governments (public budgets) lose financially on two fronts as they provide free financing to private interests and they have to pay for the financial resources they provide. Conversely, the private sector enjoys an enviable position where the financial sector charges interest for the money it lends to the government so that the government can bail-out or support private interests and, as the case may be, the financial sector itself, with free public money. This situation is obviously not sustainable for the public sector.

b. Solutions relying on capital markets financing of public debt

i. Keeping the current EU fiscal framework but reforming the rules

The first solution to be explored is to keep the current system where EU Member States raise the debt they need on capital markets within the limit of the EU fiscal framework. In this logic, the EU fiscal framework would need to be adapted to make it compatible with the need for public money described, notwithstanding the limited political appetite in the EU to reopen this file at the moment.

With its founding Maastricht Treaty in 1992, the European Union established a three stage Economic and Monetary Union (EMU) aiming to achieve a closer economic integration of its Member States. Among the 'convergence criteria' decided at the time were the rules limiting government budget deficit to 3% of gross domestic product (GDP) and gross government debt to 60% of GDP.

These rules have to be considered in a context of prohibition of monetary financing of EU public authorities, entities and governments, whether at Member State or at Union level, established by Article 123 of the Treaty on the Functioning of the European Union (TFEU).

In 1997, the Stability and Growth Pact (SGP) introduced a number of measures aiming to enforce so-called 'fiscal discipline' between EU Member States. The rules were completed over the years by a series of mechanisms (Six Pack in 2011, Fiscal compact and Two Pack in 2013, SGP review in 2014 and General Escape Clause in 2020) aimed at preventing and correcting deviations and by a complex system of flexibility arrangements. For a detailed analysis of these various mechanisms and of the EU fiscal governance framework, including its economic rationale (or lack of it), we refer the reader to the publications made by Finance Watch on the subject, and in particular to 'One framework to rule them all',[45] 'Navigating the Maze'[46] and 'Fiscal Mythology Unmasked'.[47]

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45 Finance Watch, *One Framework to Rule Them All*, March 2021

46 Finance Watch, *Navigating The Maze*, March 2021

47 Finance Watch, *Fiscal Mythology Unmasked*, July 2021

Much has been said, including by Finance Watch, about the lack of economic rationale of these rules, and over the years a highly political and conflictual debate has developed over a possible reform of the rules. This debate led to the non-reform of 2024.[48]

The often forgotten dimension of the debate about EU fiscal rules is that they are the product of historical circumstances and that they embed a so-called 'General Escape Clause' which allows the rules to be suspended in times of crisis and exceptional circumstances.

Historically, the rules adopted in 1992 corresponded to the economic conditions that prevailed when the Maastricht treaty was negotiated. In 1990 and 1991, France had a budget deficit of respectively 2.4% and 2.9% of GDP and 3% was considered as embedding a sufficient margin of security. Similarly, public debt averaged just under 60% in 1991. In other words, the rules governing EU Member States fiscal policy are the mere reflection of the economic conditions that prevailed at the beginning of the 1990s. This is the degree of science there is to them and, even more importantly, this corresponds to an implicit and obviously irrational message that the economic conditions that prevailed in the early 1990s should be the rules for the future, as if economic conditions could be decided by the law. This sounds like wishfully and magically deciding that the world and its economic conditions will stop changing when, obviously, different economic conditions command different public budget deficits and different levels of government debt.

The narrative around the adoption of the General Escape Clause in 2020 gives an insight into possibly the main reason why the rules of the Stability and Growth Pact will not be adapted to the world of tomorrow where, in the wake of climate change, exceptional circumstances, crises and severe economic downturns will be routinely encountered.

Extract:[49]

The 'general escape clause' within the Stability and Growth Pact:

Fiscal flexibility for severe economic shocks

"An important element of the response to the COVID-19 pandemic will come from European Union (EU) Member States in the form of fiscal intervention. At the same time, Member States are constrained by the fiscal rules in place at both EU and national level. The Stability and Growth Pact contains two clauses allowing Member States to undertake appropriate budgetary measures, wit-

48 We describe as a non-reform the *reform of EU fiscal rules agreed by the Council and the European Parliament on 21 February 2024* and *voted by the European Parliament on 23 April 2024*. Despite some adaptation to the rules trying to take into account the specific situation of each country, the fundamental logic of the SGP and its economically nonsensical 3% and 6% rules remain, making the EU fiscal framework as unsuitable as ever to enable the EU to finance its vital needs.

49 Think Tank European Parliament, *'The 'general escape clause' within the Stability and Growth Pact: Fiscal flexibility for severe economic shocks'*

hin the Pact, in the face of exceptional circumstances. The first is known as the 'unusual events clause', while the second is termed the 'general escape clause'. ***In essence, the clauses allow deviation from parts of the Stability and Growth Pact's preventive or corrective arms, either because an unusual event outside the control of one or more Member States has a major impact on the financial position of the general government, or because the euro area or the Union as a whole faces a severe economic downturn.*** *As the current crisis is outside governments' control, with a major impact on public finances, the European Commission noted that it could apply the unusual events clause. However, it also noted that the magnitude of the fiscal effort necessary to protect European citizens and businesses from the effects of the pandemic, and to support the economy in the aftermath, requires the use of more far-reaching flexibility under the Pact. For this reason, the Commission has proposed to activate the general escape clause. With the Council having endorsed the Commission communication, a deviation from the medium-term budgetary objective or from the appropriate adjustment path towards it may be allowed for Member States, during both the assessment and the implementation of Stability or Convergence Programmes. In the corrective arm of the Pact, the clause will allow an extension of the deadline for the Member States to correct their excessive deficits under the excessive deficit procedure, provided those Member States take effective action as recommended by the Council."*

The sentence highlighted in the text summarises the reason why the SGP rules are not fit for a changing economic environment nor to cope with a radically uncertain world. By the admission of the European Union itself, its fiscal rules are not adapted for situations when "*an unusual event outside the control of one or more Member States has a major impact on the financial position of the general government"* or when *"the euro area or the Union as a whole faces a severe economic downturn"*. The future will be made of more crises and unusual events outside the control of EU Member States, and the funding needs described in Section I of this report all correspond to such situations: climate change is "outside control", climate change adaptation and of the support of the economy and people will have "major impact on the financial position of governments", and there will be "severe economic downturns" when the earth's climate tipping points are breached, when global warming reaches a "beyond catastrophic" + 3° C or if wars spread over the globe. As an illustration, the European Environment Agency published in March 2024 a report quantifying at €1 trillion per annum (6% of today's EU GDP) or more the economic losses to be expected in the EU from coastal floods alone.[50]

With the General Escape Clause, the European Union admits that its fiscal rules are not adapted to drastically more severe conditions, but simultaneously it shuts its eyes to the fact that this future will be made of the ingredients that were planned to trigger

50 *European Climate Risk Assessment*, EEA, March 2024

the General Escape Clause. What is the point of fiscal rules you can escape from in times of crisis when you know that the foreseeable future will be made of continued crises?

Even if adapting the rules to today's economic conditions (for instance with a budget deficit rule at 5% instead of 3% and a government debt rule at 120% instead of 60%) would be an improvement compared with the current situation, it could not be considered as a sustainable solution given the conceptual flaw on which the rule is based. Revising rules corresponding to yesterday's conditions to make them correspond to today's conditions would be tantamount to kicking the can down the road even if it would bring short term relief to the budgets of EU Member States. Such a revision would inevitably lead the European Union to have the same debate again in 20 years' time when budget deficits may average 10% or 15% of GDP and government debt 200% or 250%.

The EU has put in place a paradoxical and dysfunctional fiscal governance framework that has to be suspended each time there is a necessity for public money to finance vital unexpected societal needs, which we know will be our lot in the future.

Beyond the question of the lack of political appetite to reopen the difficult discussions that led to the agreement of 2024 on a marginally revised version of the SGP, we are of the view that as long as they embed numerical constraints reflecting economic conditions of a particular point in time the SGP rules are inadequate to provide EU Member States with the flexibility necessary to deal with evolving real world conditions. In that perspective, we do not believe that reopening the SGP discussions should be a priority unless the principle of such numerical constraints is abandoned. In our view, combining the necessary rigour and the flexibility indispensable to adapt to a world evolving towards always more uncertainty and radically changing conditions should be the priority of sound fiscal rules.

ii. Raising debt at EU level

Raising debt at EU level to finance the transition or, as the case may be, to finance an increased EU defence effort, is more and more often discussed as a possible solution to finance tomorrow's needs whilst enabling Member States to operate within the constraints of SGP rules.

There could be a double logic to this way of proceeding: 1) benefiting from the EU's credit quality to raise funds at the cheapest rate possible and thereby developing a euro-denominated so-called safe asset (even if technically a misnomer) often described as indispensable to develop EU capital markets; 2) making the fiscal burden of EU Member States lighter by excluding the amounts raised by the European Commission on behalf of the European Union from the SGP rules.

However, a number of dimensions have to be investigated and the relevant challenges solved before this avenue can become practicable.

As described by Recovery Watch in a policy study published in March 2023:[51]

"The treaties design a budgetary framework (centred around the multiannual financial framework) for the EU that links expenditure to the capacity to raise resources, thus strongly limiting, in ordinary times, the capacity to raise debt. The creation of special financial instruments and the decision to spend beyond their own resources (i.e. to raise debt) is explicitly linked to extraordinary circumstances and cannot be a solution for recurrent provision of public goods" (page 6). Another point to consider is that *"the EU cannot grant funding to finance actions outside its field of competence, that is, substitute itself for the member states in areas where they retain competence for their policies"* (page 7).

From a legal standpoint, *"operational expenditures can be funded through a mechanism based on Article 122 TFEU, as long as their purpose is to respond to a crisis situation, and therefore, remain exceptional",* which effectively *"prohibits, as a matter of principle, the EU from using funds borrowed on the capital markets for the financing of operational expenditure" (page 29).*

Finally, and most importantly, Article 310 TFEU states that *"the revenue and expenditure shown in the budget (of the Union) shall be in balance"*, which is coherent with Article 122 TFEU mentioned above: by excluding the possibility of a budget deficit, Article 310 of the Treaty on the Functioning of the European Union implicitly excludes the necessity to raise debt at EU level as a normal way of financing expenditure in line with the explicit exclusion already provided in Article 122.

Put differently, raising debt at EU level would necessitate a deep revision of the Treaty on the Functioning of the European Union.

If a discussion on such a revision were to be started, several additional points would need to be considered in our view:

- Given the current rule prohibiting the EU from substituting itself for the Member States in areas where they retain competence for their policies, the proceeds of the debt raised at EU level would have to be transferred to Member States in the form of grants, as loans would see Member States caught in the straightjacket of SGP rules.
- The current ceiling on EU own resources at 1.4% of the EU's Gross National Income[52] is not of the right order of magnitude given the amounts that will need to be financed to finance climate change mitigation and adaptation efforts (between 5% and 10% of EU GNI), not to mention defence spending or the cost of supporting the economy with public money. This means that if the idea and the possibility of financing those needs at EU level whilst keeping the

51 *Making Next Generation EU a permanent tool*, Recovery Watch, March 2023

52 *Council decision (EU) 2020/2053 of 14 December 2020*

EU budget balanced were to be discussed, both the ceiling and the mechanism of the EU's own resources system would need to be reviewed, potentially leading to what would look more and more like a fully-fledged budget of the European Union (and so far an EU political taboo).

- If, after amending the Treaties, the EU raised debt in the trillions of euros on capital markets, it would submit itself to the constraints imposed by capital markets on issuers and would have the difficult task of servicing market rates on its debt when the proceeds of the money raised would in many cases generate no or below-market rates of return (see point above). This could potentially test the status of the EU as a prime borrower and put at risk the very notion of safe asset that many like to ascribe to EU-issued debt, at least until Article 123 TFEU prohibiting the ECB from financing public entities (see below) is amended. Put differently, amending Articles 122 and 310 TFEU should only be considered along with the revision of Article 123 giving the possibility for the ECB to be the EU lender of last resort. This mere possibility, which is not to be equated with an automaticity, would protect the EU from future debt crises.
- The idea proposed by Recovery Watch of creating a European Public Investment Agency which, *"within the limits set by the EU institution roadmaps would have the administrative capacity to design public investment projects that the Commission lacks today and could be given control of grant allocation, technical guidelines, monitoring of conditionality"* would constitute an important step and should be thoroughly explored.

c. Monetary financing as a solution independent from capital markets

For governments in need of funding, the alternative to raising debt on capital markets is to seek financing from their central bank, in other words to monetise their debt. This practice, often dubbed monetary financing, has the dual merit of freeing governments from the dependency on capital markets and of representing a potentially unlimited source of money. However, it also has potential downsides, mainly the inflationary impact of money creation and the possible encouragement of reckless public spending. Monetary financing has been common practice in many different countries in economic history (e.g. during the 20th century in the United States of America, the United Kingdom, France…among many others) particularly, if far from exclusively, during the war periods to finance the war effort.

When it comes to monetary financing, the case of the Eurozone is specific. With its unique characteristic as a monetary zone including 20 EU countries, the dynamic between its central bank and the 20 governments of its 20 Member States is very different from the dynamic encountered when both actors (central bank and government) are from the same country. The European Central Bank (ECB) operates with a high level of independence from Eurozone countries' governments, with a prohibition on monetising government debt and with a permanent tension between the proponents and the opponents of sovereign debt stabilisation in secondary markets.

As described by Will Bateman and Jens van 't Klooster in 'The dysfunctional taboo: monetary financing at the Bank of England, the Federal Reserve, and the European Central Bank',[53] *"the ECB received its mandate during the heights of academic monetarism"* which explains Article 123 TFEU prohibiting the direct financing of public entities by the European Central Bank (ECB). Yet, despite the fact that *"its legal basis explicitly permits secondary market 'stabilization' operations that can substantially reduce sovereign debt yields and treasury funding costs".*[54] the ECB refused to intervene to support the debt of Member States under attack during the crisis of 2008-2009. However, the ECB has since then changed its stance on this point as it now intervenes on the secondary market to support, when need be, the debt of EU Member States. As widely reported, this policy is not without creating tensions in its Governing Council and its Executive Board despite the fact that its secondary market interventions do not contravene Article 123 TFEU.

The main objection against monetary financing is its potentially inflationary effect. From Irving Fisher and his quantity theory of money linking the stock of money and the price level[55] to Milton Friedman who famously said *"Inflation is always and everywhere a monetary phenomenon in the sense that it is and can be produced only by a more rapid increase in the quantity of money than in output"*, traditional monetary theory links the increase of money supply and inflation ('printing money causes inflation').

If not always unfounded in economic history, the description of inflation given by the quantity theory of money as being exclusively a monetary phenomenon is in contradiction with the reality of the past 30 years. The unprecedented creation of central bank money to support financial markets over that period did not have any unintended inflationary effects, and the return of inflation in 2022 was linked to a supply shock triggered by Russia's invasion of Ukraine not long after the pandemic and its impact on energy and agricultural commodities prices. This is not to say that inflation can never be a monetary phenomenon but that inflation is not necessarily a monetary phenomenon. Today, inflation is a supply-driven phenomenon as opposed to a demand-driven phenomenon as acknowledged, for instance, by ECB Board Member Isabel Schnabel in May 2022:[56] *"To put it more provocatively, many euro area firms, though by no means all, have gained from the recent surge in inflation. The fortunes of businesses and households have diverged outside of the euro area, too, with corporate profits in many advanced economies surging over the past few quarters"*, and in November 2023:[57] *"Headline inflation in the euro area declined rapidly to 2.9% in October from its peak of 10.6% one year earlier. The bulk of this large drop reflects the substantial decline in the contributions from energy and food inflation".* Coming

53 Will Bateman & Jens van 't Klooster (2024) *The dysfunctional taboo: monetary financing at the Bank of England, the Federal Reserve, and the European Central Bank, Review of International Political Economy*, 31:2, 413-437.

54 Op.cit.

55 Irving Fisher formulated the quantity theory of money with the equation M.V = P.T , where M is the stock of money, V the velocity of circulation of money, P the price level and T the number of transactions.

56 Isabel Schnabel, *The globalisation of inflation*, 11 May 2022

57 Isabel Schnabel, *The last mile*, 2 November 2023

from one of the strongest proponents of the use of monetary policy to combat inflation regardless of its cause, this recognition of the non-monetary cause of the recent wave of inflation is important to consider (the other side of the debate, i.e. whether monetary policy is adequate to combat supply-driven inflation is beyond the scope of this report).

The debate over the use of monetary financing also needs to be put in a historical perspective. As Will Bateman & Jens van 't Klooster (2024)[58] remind us, *"From the First World War to the present-day, the BoE and the Federal Reserve System have provided money to their national treasuries to fund public expenditures"*. It could be argued that this historical fact was one of the ingredients that made for the possibility of Britain and then the USA to achieve or retain superpower status in the 20th century. Both Britain and the USA solved the question of funding their necessary public expenditures by creating money, and this reality accompanied the development of their economic, military and geopolitical power. Given the dual climate crisis and geopolitical tension context the world is in today, this lesson should not be forgotten, here again without precluding the fact that in some economic circumstances and / or if improperly managed, money creation can have an inflationary impact.

By nature, monetary financing frees governments from the constraints imposed by capital markets, and in particular from the vicious circle created by their self-fulfilling prophecy characteristic. Considering the enormous amounts of funding that governments will need to find in the coming years, this is a fundamental parameter to consider. In our view, the debate should bear on the conditions to fulfil for monetary financing to be successful rather than on an outright prohibition equivalent to tying one's hands behind one's back regardless of the circumstances. Demonising monetary financing ex ante is not rational: monetary financing is neither good nor bad, it all depends on how and when the tool is used. There is no such thing as a transcendental rule that governments should always be financed by private investors only. Pragmatism and economic rationality show rather that public deficits can be financed from private or from central bank money either as an alternative or simultaneously.

Beyond the ideological taboos and cultural resistances, the monetary financing solution deserves to be investigated further in a context where the market-dependent solutions (whether operating within the current fiscal framework or raising debt at EU level) have intrinsic technical limitations (SGP) or pose yet unresolved questions (raising debt at EU level), notwithstanding the facts that they are both politically challenging and that the debate on SGP rules is no longer on the EU political agenda after the agreement between the European Parliament and the Council reached in April 2024.

We reckon that monetary financing should belong to governments' and central banks' toolkits: carving its prohibition in stone does not make economic sense as it deprives the European Union from the possibility of using a financing tool that can be and has

58 Op.cit.

been particularly powerful when employed properly. The possibility of monetary financing in the EU should be explored, even if it would necessitate a reform of the Treaty on the Functioning of the European Union.

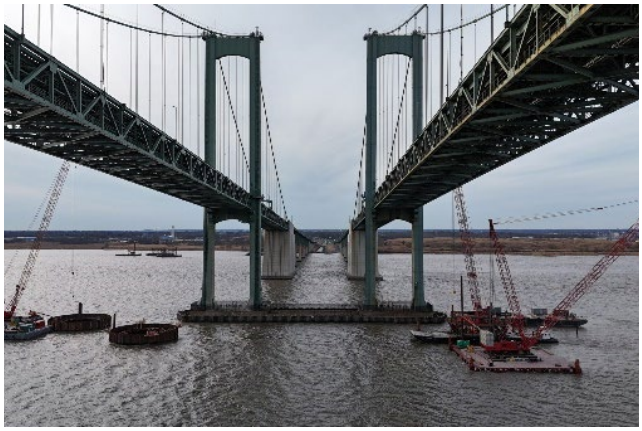
Towards a dual public financing architecture combining financial markets financing and central bank borrowing?

Combining capital markets financing and monetary financing is also a possibility to explore. This could be achieved by distinguishing between government general spending and government spending targeted at specific issues like climate change mitigation and adaptation. Budgets and, as the case may be, resulting deficits could be computed for each category of spending, and deficits arising from the general spending budget financed via debt issued to private investors whilst deficits resulting from climate change mitigation and adaptation investments would be excluded from the SGP rules and financed directly by the Eurosystem central banks under the supervision of the European Central Bank.

A public financing architecture combining market financing and monetary financing could have a dual positive effect on the level of sovereign debt: it would mechanically relieve the pressure on the amount of debt EU Member States would have to issue on markets and it would reduce their probability of default. This could, in turn, positively impact the price of their bonds (decrease their yield) and feed a virtuous circle as interest rate compounding is a determining factor of the general level of sovereign debt.

As is the case for monetary financing, adopting a dual financing architecture would require amending Article 123 TFEU and its prohibition of central bank financing of public entities. Having determined that private money will not be enough, we believe that opening the discussion on this possibility should be a priority if the EU wants to be able to finance the investments it needs to make to adapt to the dramatically new conditions of the world and keep its place on the international scene.

Conclusion



Delaware Memorial Bridge, construction of stone 'dolphins', April 2024 (photo courtesy of Delaware River and Bay Authority)

Francis Scott Key Bridge after being struck by the 'Dali' container ship, March 2024.

On the east coast of the USA, engineers at the Delaware Memorial Bridge are building eight giant stone blocks in the riverbed to protect the suspension bridge from cargo ship collisions. At a cost of *$95m*, it is an expensive precaution. But at the nearby Francis Scott Key Bridge, which was less well protected, a catastrophic collision earlier this year killed six people and triggered insurance claims of up to *$3bn*, thirty times the cost of the new Delaware system.

The reason for sharing this story is to show how quickly values can change in the face of approaching danger. What seems costly now may seem unbelievably good value in the future.

The EU's Green Deal falls into this category. The EU needs upfront investments in the order of 5% to 10% of GDP to navigate the dangers of climate change. Many of the mitigation and adaptation measures that this money can fund will produce no financial returns, like the stone pillars in the river Delaware. But without them, the costs of climate change will be many times greater, resulting in liabilities that the EU's public finances and those of its Member States will not be able to bear.

We estimate that around a third of the upfront investments can be funded via capital markets, if the Capital Markets Union is correctly nurtured. The other two thirds face a funding barrier in the EU's fiscal rules. However, leaving so much essential investment unfunded is also not a fiscally sensible option, because the consequences would cost so much more. The EU's fiscal rules will not survive collision with a +3C world.

Steering the EU away from this danger, so that the necessary investments can be made now and future funding needs anticipated safely, will require some new thinking. As a first step, we call on the European Commission to estimate the investment gap outlined in this report. If it confirms our fears of an investment crisis, there would be a good basis for policymakers to start examining potential solutions.

www.finance-watch.org

About Finance Watch

Finance Watch is an independently funded public interest association dedicated to making finance work for the good of society. Its mission is to strengthen the voice of society in the reform of financial regulation by conducting advocacy and presenting public interest arguments to lawmakers and the public. Finance Watch's members include consumer groups, housing associations, trade unions, NGOs, financial experts, academics and other civil society groups that collectively represent a large number of European citizens. Finance Watch's founding principles state that finance is essential for society in bringing capital to productive use in a transparent and sustainable manner, but that the legitimate pursuit of private interests by the financial industry should not be conducted to the detriment of society. For further information, see www.finance-watch.org

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