

Which European Public Goods?



EGOV
ECONOMIC GOVERNANCE

External author:
Charles WYPLOSZ



Which European Public Goods?

Abstract

The recent stunning geopolitical events have prompted a wave of initiatives and proposals that seek to endow the European Union with responsibilities currently exercised at the national level. The present study examines which proposals match the principles of fiscal federalism to be considered properly as European public goods.

This document was provided/prepared by the Economic Governance and EMU Scrutiny Unit at the request of the ECON Committee.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

AUTHORS

Charles WYPLOSZ, The Geneva Graduate Institute

ADMINISTRATOR RESPONSIBLE

Maja SABOL

Samuel de LEMOS PEIXOTO

EDITORIAL ASSISTANT

Donella BOLDI

LINGUISTIC VERSIONS

Original: EN

ABOUT THE EDITOR

The Economic Governance and EMU Scrutiny Unit provides in-house and external expertise to support EP committees and other parliamentary bodies in shaping legislation and exercising democratic scrutiny over EU internal policies.

To contact Economic Governance and EMU Scrutiny Unit or to subscribe to its newsletter please write to:

Economic Governance and EMU Scrutiny Unit

European Parliament

B-1047 Brussels

E-mail: egov@ep.europa.eu

Manuscript completed in March 2024

© European Union, 2024

This document and other supporting analyses are available on the internet at:

<http://www.europarl.europa.eu/supporting-analyses>

DISCLAIMER AND COPYRIGHT

The opinions expressed in this document are the sole responsibility of the authors and do not necessarily represent the official position of the European Parliament.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the European Parliament is given prior notice and sent a copy.

CONTENTS

LIST OF ABBREVIATIONS	6
LIST OF BOXES	7
LIST OF FIGURES	7
LIST OF TABLES	7
EXECUTIVE SUMMARY	8
1. INTRODUCTION	9
2. A FRAMEWORK TO EVALUATE PROPOSALS	10
2.1. European public goods	10
2.2. Allocation of tasks: the fiscal federalism framework	11
2.3. Fiscal federalism: Allocation of Financing	12
2.4. Solidarity vs. moral hazard	13
3. THE GREEN TRANSITION	14
3.1. The logic of a carbon tax	14
3.2. Alternative to the carbon tax: emissions trading systems	14
3.3. Subsidies and bans	16
3.4. The Green New Deal	17
4. HEALTH POLICY	19
5. THE DIGITAL TRANSITION	20
6. STRATEGIC SOVEREIGNTY	22
6.1. A more robust and sustainable economic base	22
6.2. Fostering public and private investment	24
7. RESEARCH AND DEVELOPMENT	26
8. CONCLUSION	28
REFERENCES	29

LIST OF ABBREVIATIONS

BARDA	Biomedical Advanced Research and Development Authority
CBAM	Carbon Border Adjustment Mechanism
COP	Conferences of the Parties
DARPA	Defense Advanced Research Projects Agency
EU	European Union
ECTS	European Credit Transfer System
ETS	Emissions Trading System
EPP	Group of the European People's Party (Christian Democrats)
GDP	Gross Domestic Product
HERPA	Health Emergency Preparedness and Response Authority
IPCEI	Important Projects of Common European Interest
IRA	Inflation Reduction Act
STEP	Strategic Technologies for Europe Platform

LIST OF BOXES

Box 1: COVID-19 vaccines	27
--------------------------	----

LIST OF FIGURES

Figure 1: Verified emissions under European ETS (million t CO ₂ -equivalent)	15
Figure 2: Carbon prices from ETSs	16
Figure 3: Car production and rates of unemployment in 2022, (%)	24
Figure 4: Gross fixed capital formation (% of GDP) - period 1960-2022	24

LIST OF TABLES

Table 1. Fiscal federalism criteria	12
-------------------------------------	----

EXECUTIVE SUMMARY

Background

The major geopolitical shocks that started with the COVID-19 pandemic have challenged the responses of both the European Union and its Member States. This has led to a wide array of proposals to develop European public goods to be operated and financed as the European level.

Public goods are goods and services that are freely accessible and whose use by one does not affect (too much) use by someone else. For this reason, they can only be provided by the public sector.

The theory of fiscal federalism provides a framework to evaluate at what level of government a public good is best offered. This study uses fiscal federalism to evaluate some of the most frequently offered proposals.

Main points

- Fiscal federalism lists two criteria that argue for the central (EU level) provision of a public good: increasing returns to scale and spillovers. It also lists four criteria for a national (country level) provision: divergent national preferences, better information at the national level, more effective democratic control at the national level, and better possibilities to move to a different jurisdiction. Importantly, the framework also asserts that financing of a public good ought to occur at the level where it is provided.
- Climate change is frequently seen as a European public good. Depending on the instrument to be used, it matches or it does not match the fiscal federalism criteria. A carbon tax should operate at the EU level. The EU has adopted the near-equivalent instrument, the Emissions Trading System (ETS) and is gradually improving and spreading.
- Other climate change instruments are not efficient. This concerns the vast subsidy system of the Green New Deal. Because of its complexity, it is inefficient and in many ways arbitrary, with different levels of support in different countries, and it requires local considerations that cannot be factored in at the EU level. In such cases, the EU level may formulate general objectives but leave design and implementation to the national level. Outright bans are highly inefficient.
- It is also often proposed to make health a European public good. However, health includes a wide range of policies. Some of them qualify for being operated at the EU level: collection and exchange of information, procurement of medicines and vaccines, and the provision of treatment during unexpected emergencies. On the other hand, the provision of health services, the bulk of health policies, are national public goods.
- In spite of numerous endorsements, the digital transition is not a public good, because it is better provided privately, nor is seeking to defend competitiveness in this industry. Regulation of digital activities and cyber security are European public goods.
- Strategic sovereignty is a multi-pronged concept that extends far beyond economic issues. The idea that the EU must foster a wide range of activities where it currently is weak or not present seems obvious, but it is not. Most suggested policies are protectionist and rely on industrial policies, both of which stand in contradiction with single market, arguably Europe's biggest economic success.
- Research and Development, broadly defined, is a European public good. Some important steps have been taken in this direction but much remains to be done to come close to the level and scope of the US arrangements.

1. INTRODUCTION

The last four years have been traumatic. The COVID-19 pandemic has led to 1.25 million deaths in the European Union (EU), according to the World Health Organisation.¹ Most countries responded by imposing month-long lockdowns, often closing borders to personal mobility, with little coordination. Once the pandemic receded, widespread scarcities revealed that the long supply chains, which underpinned global growth over the previous decades, were surprisingly fragile. This came on top of international trade tensions, partly created by the Trump administration, which further undermined trust in global trade. Then inflation, which was believed to have been consigned to history, surged. In response, central banks raised interest rates to levels not seen for decades, which dispelled the belief that credit would remain lastingly cheap. In the middle of all this, Russia invaded Ukraine. In addition, the European Union (EU), created to finally establish peace in the continent, discovered that war had come to its borders. Relations with China, a key trade partner, are worsening, with growing fears of an invasion of Taiwan. More generally, the global geopolitical situation has become dangerous, with wars in Gaza, Sudan, Burma and Sahel, and the list is not exhaustive. Finally, the climate change has started to produce its long-foreseen effects, making it plain that the era of benign neglect of carbon emission was over.

In many ways, these events challenge the EU, because it was not built to operate in this environment. Since its inception, the EU has relied on trade integration, both internally and externally, to achieve growth and peace. The Single Market was underpinned by increasingly elaborate measures to limit government interferences. Many policy areas were transferred to the EU level, but many others remained in national hands under the subsidiarity principle. The Commission budget remained capped at about 1% of GDP, which kept most policies in national hands. The crises shook this equilibrium. Collective interventions, widely considered impossible or undesirable, were quickly put in place. In particular, the adoption of NextGenerationEU sharply increased the central level and brought under collective control a number of policy initiatives that had been so far seen so far as the exclusive responsibility of national governments.

NextGenerationEU was officially meant to be an exceptional response to exceptional circumstances. Yet, it broke several taboos. Its success will have to be evaluated, but already many suggestions have emerged to build upon this experiment and to work toward a new equilibrium. They aim at developing new collective instruments, collectively financed, to achieve “strategic autonomy” in crucial areas such as climate change, digital R&D, defence, external trade, or social inclusion.

This paper examines the logic of these suggestions. It starts with a review of the arguments and proposals put forward and proceeds to evaluate their economic relevance. Some of the proposed new actions are very relevant and conducting them at the EU level is indeed justified. Other proposals are less convincing, either because the suggested actions are not desirable or because the EU level is not necessarily appropriate, or both.

¹ Our World in Data (<https://ourworldindata.org/covid-deaths>).

2. A FRAMEWORK TO EVALUATE PROPOSALS

2.1. European public goods

In an innovative book, Kaul et al. (1999) introduced the concept of global public goods, as a way of fostering international cooperation in a broad range of domains. Many of the same domains have now been proposed as European public goods. Public goods and services are produced by governments to fulfil needs that the market will not deliver adequately because their use cannot be charged, like security or clean air.² Public goods can be provided by the state at different levels of government, from local to regional to national. Global public goods are provided at the international level by specialized world institutions. European public goods are provided collectively by EU member countries through agreements (like the single market) or by the EU Commission (like customer protection regulations).

The aim of the study is to examine whether the proposals frequently put forwards, and sometimes already implemented satisfy two conditions: 1) Do they qualify as public goods? 2) If so, is Europe the best level at which they should be produced and financed?

In an early contribution, Fuest and Pisani-Ferry (2019) have argued that *“the EU has mostly been defined as a provider of economic integration. The single market and the euro were both integration driven. In a context transformed by technology, global and regional challenges, and geopolitical change, time has come to give renewed priority to European public goods – policies and initiatives whose value to the citizens are higher when conducted at EU rather than at national level.”* Following the adoptions of the single market and of the euro, this is meant to be the third major step of the evolution of the EU.

The argument is that the responsibility for the provision of public goods so far has been mostly assigned to national governments, but times have changed and newly emerging challenges require a rethink. Fuest and Pisani-Ferry (2019) note the need to tackle climate change and biodiversity, the emergence of a multipolar world in the wake of isolationist tendencies in the United States (US), and growing regional threats (terrorism, immigration, military conflicts). They suggest a number of initiatives that would enhance the welfare and protection of European citizens.

Public goods are needed and available in a vast number of areas. Whether they should be provided at the EU level or at the national level and how they should be financed is a perennial issue in any federation.³ Of course, formally the EU is not a federation but it has a number of federal features since some policy domains already are the exclusive responsibility of the Commission and most countries share a common currency managed by a unique central bank. Branding more public goods as European, as opposed to national, would make the EU resemble more like a federation. This is a highly controversial political proposal, and it has been so ever since the creation of the Common Market. As such, it must be based on sound economic principles, even if political considerations prevail in the end.

² To quote Kaul et al. (1999): “We know that the marketplace is the most efficient way of producing private goods. But the market relies on a set of goods that it cannot itself provide: property rights, predictability, safety, nomenclature and so on. These goods often need to be provided by nonmarket or modified market mechanisms. [...] Public goods are recognized as having benefits that cannot easily be confined to a single “buyer” (or set of “buyers”). Yet once they are provided, many can enjoy them for free. Street names are an example. A clean environment is another. Without a mechanism for collective action, these goods can be underproduced.” In technical terms, public goods are freely available as well as “non-excludable” and “non-rivalrous”, meaning that they can be accessed freely by anyone and use by one person does not affect another person’s use.

³ An early attempt at defining European public goods is Zuleeg (2009).

2.2. Allocation of tasks: the fiscal federalism framework

The theory of fiscal federalism considers where to locate responsibilities for providing public goods in a multi-layered system of government.⁴ Given the complexity of the question, the theory rarely leads to black-and-white conclusions. Instead, it has developed a series of criteria to evaluate whether a specific policy domain ought to be allocated to the central level (here the EU) or to the subcentral level (here member governments, possibly lower levels where they exist). The usual six criteria are listed in Table 1. Each criterion whether a given policy under review is better allocated to the central or to the sub central level. Two criteria argue in favour of centralisation:

- **Increasing returns to scale.** The presence of economies of scale means that shifting the provision of goods to the central (here, European) level would cut costs and/or improve efficiency.
- **Spillovers** (also called externalities). In the presence of spillovers, one country's provision of public goods may benefit other countries (for example, spending on defence) or, in the opposite, hurt them (like when competing for scarce vaccines). In both cases, coordination is helpful and, doing it jointly is the best form of coordination.

However, fulfilling those characteristics does not imply that it is always desirable to allocate the responsibility to provide the public good at the European level.

Following four criteria explain why:

- **Information asymmetries.** The design and delivery some public goods may require detailed knowledge of local characteristics that is not available at the central level, in which case there exists an information asymmetry. Consider road systems for example: key highways are characterized by strong spillovers, but smaller roads must meet local habits and development plans.
- **Heterogeneity of preferences.** Not all countries agree on the desirability or design of some public goods. Foreign policy, for instance, benefits from scale economies but opinions differ significantly from country to country. Reaching agreements can be challenging and disagreements may result in the inability to deliver the public good.
- **Democratic control.** Governments may offer public goods for good or bad reasons, and the quality may vary greatly. Democratic control on the provision of these goods stands to encourage the authorities to better satisfy citizen preferences. It is often believed that the higher the level of centralisation, the less individual citizens can weigh on issues that they care most about. In Europe, this problem is sometimes referred to as the "democratic deficit".
- **Jurisdictional competition.** Voting is not the only mean for citizens to obtain satisfaction. If they feel particularly aggrieved, the alternative is to leave the jurisdiction. Exit is a way for likely-minded citizens to "sort themselves out" and to exert pressure on governments. The exit option depends on people's mobility in a wide sense. While people can move within the EU to access to desired medical services, going outside the EU for this purpose is considerably more difficult. Competition is much higher among EU countries than at the EU level.

⁴ The seminal contribution is Oates (1972) with a still-relevant survey by Wildasin (1996).

Table 1. Fiscal federalism criteria

Criterion	Returns to scale	Spillovers	Information asymmetry	Preference heterogeneity	Democratic control	Jurisdictional competition
Allocation	Central	Central	Subcentral	Subcentral	Subcentral	Subcentral

The upshot is that the existence of economies of scale and/or of spillovers is a necessary but not sufficient condition for justifying a Europe-wide public goods and, as explained below, many current proposals fail to pass the bar of fiscal federalism. Some proponents explicitly refer to (some of) these criteria (Fuest and Pisani-Ferry, 2019; Buti et al, 2023; Thöne and Kreuter, 2020), but others do not. Even when these considerations are properly taken into account, the conclusion is rarely black-and-white, as already mentioned.

The subsidiarity principle suggests that the arguments in favour of centralization must clearly outweigh the arguments in favour of keeping the provision of public goods at the national level. However, even the subsidiarity principle must be balanced against other important considerations. For example, the adoption of the euro was by no mean a clear-cut decision. Arguably, the decision to go ahead was influenced by political considerations and by the idea that one European public good (the euro) may enhance the benefits from another one (the single market).

Even completed by the subsidiarity principle, in many cases the fiscal federalism framework is unlikely to provide clear-cut answers. Even so, it is an indispensable tool because it raises the hard questions and it calls for precise arguments. Proposals to create European public goods too often simply state that a given public good is needed at the EU level, which may be true but ignores the difficulties that can derail adequate design and delivery.

2.3. Fiscal federalism: Allocation of Financing

Another principle of the theory of fiscal federalism is that public goods must be financed at the level where they are produced (Wildasin, 1996). The main reason is democratic control. Public goods may be highly desirable but rarely come for free. The costs can be explicitly financial, as is the case with the green transition. They may also be implicit as, for example, with regulations that impose significant costs, pecuniary or not, to firms and citizens. Democratic control requires that those who pay must be able to decide whether they are willing to cover these costs. It follows that the decision to shift a public good from the national to the European level must also be a decision to shift the corresponding costs. Failure to do so stands to deepen the democratic deficit, with adverse political consequences. For example, the NextGenerationEU programme is sometimes seen as a blueprint for the expansion of European public goods, but its sizeable budget is to be covered mostly by transfers from member states, which are not yet budgeted but are appropriately considered as a part of national public debts. One can be concerned about what will happen when the bills come due in a couple of decades. It may have been justified by the exceptional nature of the shocks that made it desirable, but it certainly is not the way to proceed for a lasting reallocation of public goods.

First, European public goods can be newly offered or represent a transfer of responsibility from national authorities. In the latter case, the logic would be for national governments to fully eliminate the corresponding budget line. However, that would imply dismantling some administrations as well as hurting possible subcontractors or providers of goods and services. The risk is duplication if some expenditures are retained at the national, which undercuts the benefits from potential economies of scale.

Second, scale economies and spillovers, even large ones, do not imply that all EU member countries have the same needs for specific public goods. For instance, according to 2021 Eurostat data, a number of countries spend little relative to GDP on defence (e.g., Austria (0.6), Ireland (0.2) or Portugal(0.8)) while some others (e.g., Greece (2.8), Latvia (2.3) or Poland(1.6)) spend significantly more. This pattern likely reflects different preferences and situations. Making defence a European public goods would result in transfers from the low-spending countries to the high-spending ones. This can be seen as a form of justifiable transfer if it clearly contributes to the collective welfare, for example through spillovers. However, the usually conflictual question about how the financing burden is distributed across Member States, sometimes labelled "*juste retour*", is never far below the surface. One possibility is that when many public goods are switched to the European level, the associated transfers end up compensating each other. This is after all, what public budgets informally achieve at the national level. Yet another possibility, though, is that the "*juste retour*" issue becomes a prominent source of conflicts.

Third comes a basic democratic principle: "*no taxing without representation*". This principle concerns both the level and allocation of public spending financed by taxes. As more European public goods are delivered by the EU, even if they are fully financed by European-level taxes, more public attention will be devoted to delivery. It will not only concern the choice of the goods, at a detailed level, but also their quality and desirability, especially if information asymmetries and heterogenous preferences are present. This remark can be seen as a warning about a rapid expansion of European public goods. Alternatively, it means that the roles of the Commission and of the European Parliament need to be seriously adapted to deliver proper accountability.

2.4. Solidarity vs. moral hazard

Solidarity is a concept that is not directly included in the fiscal federalism theory, but it has long been a tenet of European construction, going back the 1951 Preamble to the Treaty Establishing the European Coal and Steel Community Treaty and all the way to the Treaty of Lisbon (Art. 3.2). In terms of economics, empathy toward fellow citizens of the EU justifies transfers. Tirole (2015) argues that solidarity can take the form of ex ante insurance mechanisms (*ex ante payments of premia with ex post reimbursements of costs*) or the issuance of joint liabilities used for ex post transfers. Solidarity, however, can give rise to moral hazard if it encourages some countries to take actions that make them more often recipients than donors.

The following sections apply the principles developed above to evaluate some of the most frequently suggested European public goods.

3. THE GREEN TRANSITION

Dealing with climate change is often mentioned as a desirable European public good⁵. It is obviously a global public good. The UN-sponsored Conferences of the Parties (COP) recognize the need for all nations to contribute to reduce greenhouse gas emissions. How to do that, however, is not settled. The COPs rely on individual countries to meet commonly agreed objectives. The measures to be taken differ across countries because of their specific circumstances, which is why no single common public good can be designed at the global level. An intermediate solution is for clubs of like-minded countries to agree on a shared public good. The EU is such a natural club and, indeed, it has decided to be collectively at the forefront of that effort. Yet, there are many different ways to deliver this public good at the EU level.

The centre piece of the European programme is the European Green Deal, adopted in 2020. This is an evolving programme that includes many components like Fit for 55, which concerns carbon and methane emissions, renewable energy, industrial policies, R&D, the circular economy, packaging and consumer information, biodiversity, and a lot more. The strategy, which operates under co-decision by the Commission, the European parliament, and the Council, is to promote a quasi-exhaustive list of actions, through regulations, subsidies and the deepening of the ETS.

3.1. The logic of a carbon tax

For half a century, economists have widely agreed that the efficient response to climate change is to apply the time-honoured principle that polluters must pay (Nordhaus, 1974; Akerlof et al. 2019). That means a carbon tax, which has several desirable features:

- It provides incentives for consumers to reduce their purchases of polluting goods and services in proportion to their contributions to carbon emission.
- It provides incentives for firms to invest in products with low or no carbon content.
- It provides incentives for R&D in developing new technologies.
- It does not require to work out lists of measures to be taken, a challenging task given its inherent complexity.
- The tax may be introduced slowly to avoid disruptions.
- The tax is to be raised over time in a predictable manner to justify long-term investments by firms and R&D efforts.
- The tax provides resources, which should be devoted to compensate low-income people and strongly affected firms that stand to be particularly hit, and to finance public investments in alternatives (e.g. public transport to replace car use) and to support public research.

3.2. Alternative to the carbon tax: emissions trading systems

However, the tax has been highly unpopular. The yellow vests uprising in France stands as an influential example, but it was poorly designed (initially it did not include any compensation, nor did it apply to all goods and services). The French experience contrasts with the long-running existence of carbon taxes in Sweden and Switzerland which are credited with significant reductions in carbon emissions and have become popular.⁶ Still, most governments are reluctant to create a new tax, especially one that affects all voters in a very visible way.

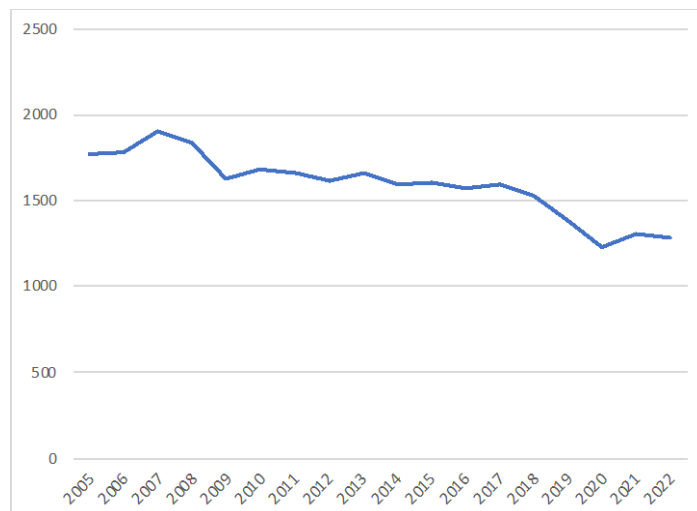
⁵ For instance, it can be found in Buti and Papaconstantinou (2022), Buti et al. (2023), Draghi (2023), Fuest and Pisani (2019), Panetta (2023), Ubide (2023).

⁶ On the Swedish case, see Andersson (2019). The Swiss tax only covers some 40% of emissions and a proposal to extend coverage has been voted down in a referendum in 2021.

The carbon tax can be imposed in two ways. The first one is to tax all goods and services along the production chain – like the value-added tax – in proportion of their carbon content. The second one is to impose a ceiling on the production of all goods and services in proportion of their carbon content. The first method directly acts on the consumer price and indirectly on the quantity of goods and services produced. The second method does the opposite: by limiting the available quantities of goods and services, it will make them more expensive. In theory, the result is the same for both prices and quantities. An increasing number of countries are adopting a smart version of the second approach, known as cap-and-trade. The European Union has long been running such a scheme under the ETS that started in 2005.

The ETS is complicated in its details,⁷ but the logic is simple. A number of carbon-emitting⁸ installations are given a maximum amount of allowed emission, the cap. To that effect, the system auctions permits, which can be traded among the installations on a dedicated market. The price on this market provides installations with incentives to emit less than their caps and to sell unused rights to other installations that choose to emit more than their caps. This mechanism encourages firms to adjust their production processes or even to aim at other products. In addition, the emission reductions take place where they are cheaper to achieve since individual producers decide on their responses. Over time, the ETS is lowering the caps, which raises the price of permits, making it increasingly more costly for installations to emit carbon. The ETS is operating since 2005 in the 27 EU member countries as well as in Iceland, Liechtenstein and Norway. Verified emissions under the ETS scheme are shown in **Figure 1**, which illustrates the gradual tightening (and the distance to go until zero emissions).

Figure 1: Verified emissions under European ETS (million t CO₂-equivalent)



Source: European Environment Agency. Available on: <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>.

Figure 2, which shows the evolution of the carbon price implied by the European ETS as well other ETSs, suggests three observations:

- The carbon price of the European ETS has started to rise after auctions have replaced free allocations of permits, and keeps rising as the caps are lowered and more sectors are subjected to caps. The current level, close to \$100 per tonne of CO₂ equivalent, is considered as reasonable.

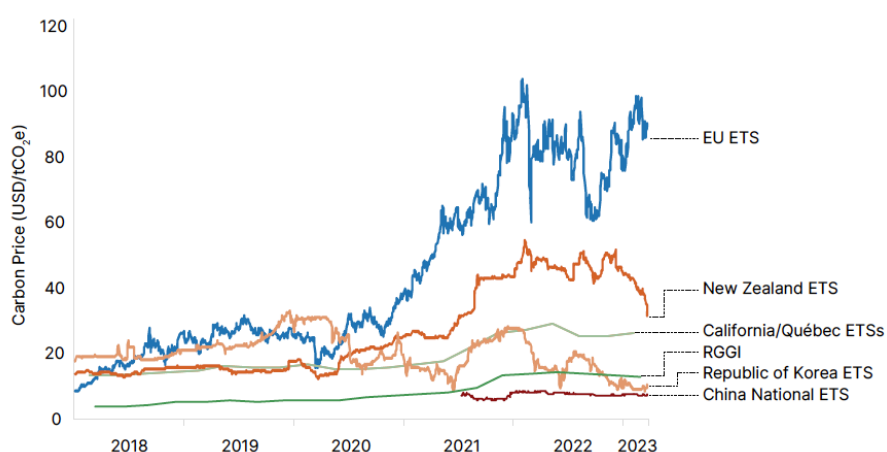
⁷ The system is presented on https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en.

⁸ The ETS started to cap carbon emissions. It now caps other greenhouse gas emissions.

- The price is unstable as demand fluctuates, often responding to economic cycles.
- The European ETS is stricter than other existing ETSs.

In 2026 the European ETS will be completed by the Carbon Border Adjustment Mechanism (CBAM), which will impose duties on all imports into the EU. The duties will equal to the cost imposed by the ETS for each good and service. This is a necessary complement to the ETS (or to any carbon tax), not a protectionist device. It prevents non-EU firms from gaining a comparative advantage and also EU firms from circumventing the ETS by shifting production to non-EU subsidiaries. It aims at establishing a level-playing field for all goods and services consumed in the EU, irrespective of where they are produced. It is likely that it will provide incentives for firms outside the EU to move toward EU emission standards.

Figure 2: Carbon prices from ETSs



Note: The Regional Greenhouse Gas Initiative (RGGI) is an undertaking of 11 US states from the East Coast.
Source: World Bank. (2023). *State and Trends of Carbon Pricing 2023*. Washington, DC: World Bank.

The European ETS is arguably the most advanced carbon pricing system in the world, although the direct carbon taxes in Switzerland and Sweden imply a higher carbon price of around \$120. The Fit for 55 programme, which aims at cutting emissions by 55% relative to the 2005 level, is largely based on the ETS. In December 2023, it was decided to tighten the ETS by bringing additional sectors into the scheme.

It remains that a carbon tax is much easier to administer than an ETS. It delivers a smooth path of current and future prices, which helps planning for the future. In addition, Weitzman (2017) argues that ETSs are easier to negotiate than carbon taxes when it involves several countries, as in the case of the EU.

3.3. Subsidies and bans

A second-best solution is to pay polluters to reduce pollution. Compared to the polluter-payer arrangement, it suffers from two major shortcomings:

- It requires governments to choose among a quasi-infinite number of pollution sources. Efficiency would require focussing on sources that offer the best ratio of emission reduction to cost at any point of time. Although our understanding of abatement is improving, it remains patchy and imprecise.
- It requires up-front funding.
- Like with any programme of subsidies, it is subject to pressure and counter-pressure from interest groups and advocacy groups.

For these reasons, it is widely held that the cost of subsidies exceeds what a carbon tax could achieve to deliver the same impact on emissions (see e.g., Blanchard et al., 2022).

A third-best solution is an outright ban on specific polluting activities. This solution suffers from the same drawback as subsidies, namely the quasi-impossible evaluation of activities to be banned. In contrast with the polluter-payer or polluter-subsidised policies, bans are sometimes perceived to be free. Yet, they generate unseen costs that include the losses to be borne by producers and consumers alike. These costs are both direct and indirect because bans reverberate along the whole production chain and the substitution possibilities of banned by not-banned products. The absence of any visible financial constraint, which characterizes market-based mechanisms such as carbon taxes and ETS, is an invitation to increase the number of bans without concern for economic efficiency.

3.4. The Green New Deal

The EU has chosen to operate all available means of action, ETS, subsidies and bans. Supporting those most affected and least able to cope carbon taxes is a judicious use of from the ETS as is spending to measures required to accompany the transition. According to the European Environment Agency (EEA), the ETS has generated a revenue of €38.8 billion in 2022, possibly reaching €42 billion in 2023, about 0.2% of GDP. It is agreed that governments should use at least 50% of auction revenues for climate, renewable energy and energy efficiency related purposes, which mostly consists of subsidies. From 2013 to 2022, 6% of the total revenue between 2013 and 2022 has been spent.⁹ Even if the implied ETS carbon tax were to double in future years and 100% of auction receipts would be spent for climate, this will remain a small proportion of the costs of the subsidy component of the Green New Deal.

The very detailed list of subsidisation programmes is not matched by a clear evaluation of their costs and their financing. In fact, it should not be surprising. Given the inherent complexity of any subsidy programme and their multiplicity, there is considerable uncertainty about expected results and costs. Some estimates envision a cost of 2% of GDP.¹⁰ Recently, the Financial Times reported that an unpublished report by the Commission sets the costs of investments from 2031 to 2050 at some 10% of GDP.¹¹ The range is considerably wide and likely to grow wider.

Bearing in mind that the normal budget of the Commission is capped at 1% of GDP,¹² this is a very significant cost. In addition, as explained in Blanchard et al. (2022), the regulations and bans included in the Green Deal programme entails invisible but sizeable costs to be borne by consumers and firms. It is unclear how such expenditures can be financed. Most governments will find it difficult to reshape their budgets to make room for this, and it is doubtful that the Commission will be given adequate resources through national contributions or own resources.

In 2022, the ETS covered about 36% of total European greenhouse gas emissions. Although its scope is set to be extended, it is unlikely to ever cover all emissions. One reason is that carbon taxes, whether direct or indirect via ETSs, are politically difficult. Jaakkola et al. (2023) makes an important point: because the costs of subsidies are not directly borne by the ultimate consumers and because their effects can be observed, they are politically appealing. Producers compete to attract subsidies while

⁹ The numbers quoted from the European Environment Agency can be found at: <https://www.eea.europa.eu/en/analysis/indicators/use-of-auctioning-revenues-generated?activeAccordion=309c5ef9-de09-4759-bc02-802370dfa366>

¹⁰ See Briancon (2023), European Commission (2023), Jaakkola and Rovelli (2023).

¹¹ "EU must invest about €1.5tn to meet net zero targets, says Brussels", *Financial Times* 23 January 2024. <https://www.ft.com/content/ababab4c-7d81-4e63-b48c-0c59b687b5f2>

¹² NextGenerationEU adds another 1% of GDP while it lasts but some of this has been redirected to the Green Deal, as are parts of the Cohesion funds from the regular budget.

consumers do not establish a link between the costs and the taxes that they pay. Even better, if they are financed through public debts, the costs are shifted to future generations, which should be grateful that they will not suffer, or suffer less from climate changes. Jaakola et al. (2023) recognize that subsidies are less efficient than carbon taxes, but they argue that they represent a pragmatic approach that can be progressively phased out once public opinions see their costs and are ready to adopt carbon taxes. There is no economic argument in favour of outright bans, which seem to become politically contentious.

4. HEALTH POLICY

As an unexpected and historical shock, the COVID-19 pandemic has revealed the importance of health as a public good in each and every country around the world. In the EU, health was primarily a national responsibility, which is logical in the sense that the returns to scale are limited to some specific aspects (like R&D or data collection) while information asymmetries loom large given the differences in national health institutions and preferences are heterogeneous. However, a pandemic gives rise to major spillovers through contagion. These spillovers are global but were particularly salient in the EU because some aspects (lockdowns, masks and vaccines procurement, financing, supply chain disruptions during the recovery phase) challenged the single market rules. For this reason, health has been described as a European public good (e.g., Buti and Papaconstantinou, 2022; Buti et al., 2023; European Commission, 2022). Explicitly or implicitly, the spillover criterion figures prominently when this view is promoted, but the other criteria are often ignored. In fact, “health” is a multidimensional issue so that blanket endorsement of all aspects being European public goods is not convincing.

Some components of health policy may be considered as European public goods:

- The exchange of data (spread of diseases, effectiveness of treatment and of medicines) is subject to returns to scale, with no heterogeneity of preferences and as a way of breaking information asymmetries.
- The procurement of medicines and of vaccines also exhibit returns of scale because it strengthens the hand of acquisition agencies in the front of monopolistic providers. It also prevents harmful competition among countries during period of scarcity. Preferences are largely homogeneous and information sharing should reduce asymmetries. Indeed, during the acute phase of COVID-19, it was agreed to charge the Commission to acquire the vaccines.¹³
- It can also be argued that, during unexpected emergencies, the provision of treatment is a European public good in order to prevent poorer countries, or heavily indebted governments from providing inadequate protection to their citizens. This case is often described as involving solidarity, but it faces the risk of moral hazard because it involves ongoing transfers from well-equipped to poorly equipped countries.

It is difficult to consider that some other elements of health policies qualify as European public goods:

- The delivery of health services is organized at the local level according to long-standing heterogeneous institutional arrangements. There are returns to scale, but they quickly diminish so that most of the associated benefits can be reaped at the local or national levels.
- The existing arrangements reflect profound information asymmetries and preference heterogeneities. Except for epidemics, spillover effects are minimal. During the COVID-19 pandemic, a few exchange arrangements were put in place, but they were rare.

The blanket argument that health is a European public good is weak, but some components of health policies can be justified as such. They are listed above. The proposal to establish a Health Emergency Preparedness and Response Authority (HERA) is another one.

¹³ A few countries chose to differ and indicated that they did not agree on which vaccines should be sought.

5. THE DIGITAL TRANSITION

Another frequently mentioned European public good is digital sovereignty (Buti et al., 2023; Fuest and Pisani, 2019; Ubide, 2023). The Commission has proposed a “path to the digital decade”¹⁴ that was finally adopted in 2022 with the following objectives:

- A digitally skilled population and highly skilled digital professionals
- Secure and performant sustainable digital infrastructures
- Digital transformation of business
- Digitalisation of public services

The European Chips Act was enacted in September 2023, with the aim of combining public and private investments of an estimated amount of €40 billion by 2030.

The list above does not suggest a European public good. The first objective may be seen as education, a public good best delivered at the national level. The second objective concerns infrastructures that are privately developed, without the need for public intervention as long as they are subject to effective competition. The third objective refers to private business actions while the last one concerns national-level administrations.

On the other hand, security is a European public good because it cannot be privately provided, it is subject to returns to scale, and probably generates significant spillovers, with limited weights on the other fiscal federalism criteria. It mostly calls for regulations. Indeed, although the Chips Act is presented as contributing to digital sovereignty, the various other measures are framed as parts of the Digital Decade and mostly seek to promote coordination and regulations.

Sovereignty is a different issue. It refers to global competition and fragile supply chains, as well as to cyber security. Tambiama (2020) argues that “*Member States of the European Union are gradually losing control over their data, over their capacity for innovation, and over their ability to shape and enforce legislation in the digital environment.*” Here a distinction must be made between regulations and public expenditures. Obviously, regulation of digital activities is subject to return to scale and to spillovers, as demonstrated by the General Data Protection Regulation (GDPR). Data protection and cyber security are global public goods but, global agreements are unlikely, so they are European public goods with limited preference heterogeneities or asymmetric information, while democratic control and jurisdictional competition are minor issues.

The same cannot be said about competitiveness, which is not a public good. It refers to the ability of private corporations to measure up with foreign counterparts. Europe lags behind the US and China in areas like R&D, cloud computing or artificial intelligence. But “Europe” does not seem to play a significant role here, witness the wide differences among member countries. As far as chips are concerned, the world leading chip design firm is Dutch (ASML Holding N.V.), Sweden harbours several companies at the forefront of digital technology, and the world leader in advanced chips is Taiwanese (Taiwan Semiconductor Manufacturing Corporation or TSMC). Returns to scale apparently do no matter, nor does a generous military budget. On the other hand, competitiveness builds upon public goods like education, public services, infrastructure, taxation, and judicial frameworks (including labour market legislation), etc., which are mostly local. Some are European, like the single market or financial stability, in which case the challenge is to improve existing public goods.

¹⁴ See https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

A related argument concerns the ubiquitous dominance of the GAFAMs (Google, Apple, Facebook, and Amazon) in several digital areas. This dominance is often attributed to their monopolistic powers, which is sometimes used as an argument to justify subsidies to set up European champions, with their own monopolistic powers. Subsidising the emergence of local champions, which is sometimes called industrial policy, cannot be the proper response to foreign monopolists. The proper response is anti-monopoly regulation, which the Commission is actively promoting. But this begs the question of why these firms all grew in the US. The narrative is that they started as tiny firms in students' bedrooms and grew thanks to the visions of their founders. There is no reason why Europe lacks similarly imaginative people. What is missing is the ability to raise resources, which points to the limits of European financial markets, dominated by large banks with a limited role for stock markets and venture capital. Public subsidies to established firms cannot operate as a substitute for inefficient financial markets.

6. STRATEGIC SOVEREIGNTY

The climate and digital transitions are a special case of wider proposals that identify strategic sovereignty as a European public good (Fuest and Pisani-Ferry, 2019; Thöne and Kreuter, 2020; Buti and Papaconstantinou, 2022; EEAG (2022), Leonard et al., 2019; Buti et al., 2023). The European Council has backed the goal of European sovereignty through the Versailles Declaration of March 2022:

*"Confronted with growing instability, strategic competition and security threats, we decided to take more responsibility for our security and take further decisive steps towards building our European sovereignty, reducing our dependencies and designing a new growth and investment model for 2030. In this respect, we addressed today three key dimensions: a) Bolstering our defence capabilities; b) Reducing our energy dependencies; and c) Building a more robust economic base."*¹⁵

The Commission is actively developing proposals. We examine two economic aspects of this vision within the prism of European public goods: the need to support domestic firms (beyond the digital transition discussed in Section 5) and the scope for enhanced public investment.

6.1. A more robust and sustainable economic base

The US and China dominate some industries. The US is leading in most advanced technologies. China has a near-monopoly on solar cells and uses its resources in crucial primary commodities to dominate the market for batteries and to move ahead in the production of electric vehicles. As explained in Leonard et al. (2019) Gopinath (2023), those countries do not play by the open market rules that the EU is committed to. A key example is the US Inflation Reduction Act (IRA), which lies at the heart of the country's strategy against climate change. It offers large subsidies to firms located in the US and using US-produced good. It is protectionist and as it aims at putting the US at the forefront of industries perceived to be leading the green transition. China too has used protectionism for decades to climb the technology ladder, now reaching the upper echelons in a number of advanced technologies.

As the two other largest economies have adopted a protectionist stance in these industries, it makes sense for the EU to think how it wishes to react. Using the concept of a European public good for this purpose is questionable, however, since this is about private production. Of course, the logic of public goods can be applied to specific policy actions, but it requires a tighter argumentation than "responding to IRA".

It is true that some EU firms lag behind their foreign competitors, but the proper reaction is to first determine why this happens. It could be the result of market failures, in which case the first best response is to directly deal these failures. Alternatively, it could be the result of relative (dis)advantage, which implies that open trade is the best way to benefit from these advantages. Protectionism is most unlikely to be the right instrument. There are two exceptions to this general principle.

- First, the infant industry argument holds that domestic firms cannot grow and prosper in industries that foreign incumbents dominate and where they use their monopolistic power to deter entry. This may apply to some new products such as high-capacity batteries or green hydrogen. The traditional reason for scepticism about the infant industry argument is that governments are not the best placed to pick up which industries are suited to grow from their infant stage. Blanchard et al. (2022) summarized this view when he notes that "governments

¹⁵ <https://www.consilium.europa.eu/media/54773/20220311-versailles-declaration-en.pdf>

too often attempt to pick winners without having the required information, respond to lobbies, or just follow their own whim or the Zeitgeist”.

- Second, locally producing crucial goods and services is a matter of security. However, the risk is again that the list be driven by private interests or the Zeitgeist.¹⁶ For example, in order to guarantee access to clean energy, many countries around the world are subsidising the production of green hydrogen. A plausible outcome is a vast excess supply of green hydrogen when all these projects mature.

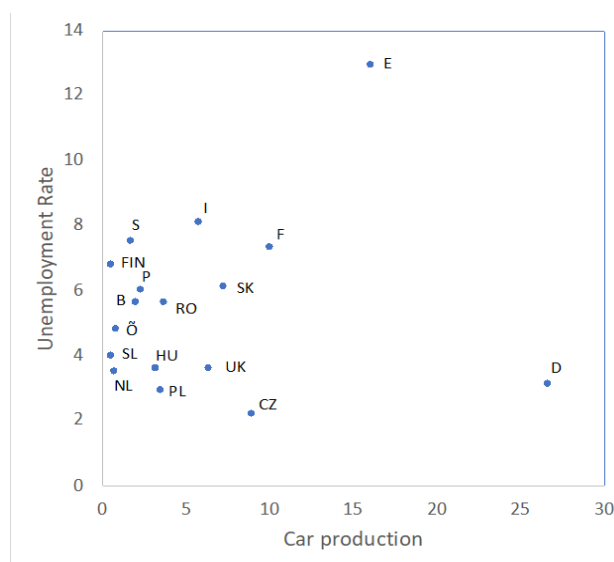
The most frequently mentioned argument in favour of protectionism is that the EU must respond in line with the US and China for fear of missing out on important technological innovations and thus become dependent on these countries, which are driven by strategic aims rather than economic logic. Yet, from an economic viewpoint, the best response to protectionism is market openness. This may sound naïve, but it is not. That these countries subsidise some goods means that the EU can buy them at low prices, the discount being financed by foreign taxpayers.

The example of electric vehicles is instructive. Abundant subsidies have led to the emergence of a large number of Chinese producers, resulting in excess capacity in the local market. The response of the Chinese manufacturers is to export their quickly growing inventories of vehicles by charging low prices, maybe even below production costs, which they can afford thanks to the subsidies. Charging prices below costs is a market-distorting strategy to drive competitors out, and it is against internationally accepted trade rules. The EU is considering the imposition of tariffs because of the threat that European car manufacturers will miss out on this important new market. This would be legal by international legal standards, yet it is a weak argument as far as economics is concerned. Historically, many countries have benefitted from their vehicle industries, and it seems inconceivable that their manufacturers become minor players or even disappear. The power of the argument in favour of a powerful protectionist response to US and Chinese subsidies is that it is championed by private interests, which often claim that there is a public interest in protecting employment. Yet, many EU countries produce no or few cars and still have healthy economies as indicated by **Figure 3**. Buying cheap subsidised cars allows consumers to save money, which can be spent on other goods and services, which sustains employment. Anyway, as international transport costs rise as a result of climate change policies, foreign producers are bound to start producing electric vehicles in the EU, as happened when Japanese car manufacturers successfully became major global players. The public good argument is missing, both at the national and EU levels.

Figure 3 compares the rate of unemployment and the share of European car production for a number of countries. There is no link between these two variables. Car manufacturing does not appear to be a necessary or sufficient condition for low unemployment, at least in the long run.

¹⁶ Two examples may be relevant. In 2006, France identified yoghurts as a national interest to block a purchase of Danone by Pepsi. During the COVID-19, a similar argument was used to promote the local production of low-tech masks.

Figure 3: Car production and rates of unemployment in 2022, (%)



Source: International Organization of Motor Vehicle Manufacturers (<https://www.oica.net/category/production-statistics/2022-statistics/>) and AMECO on line.

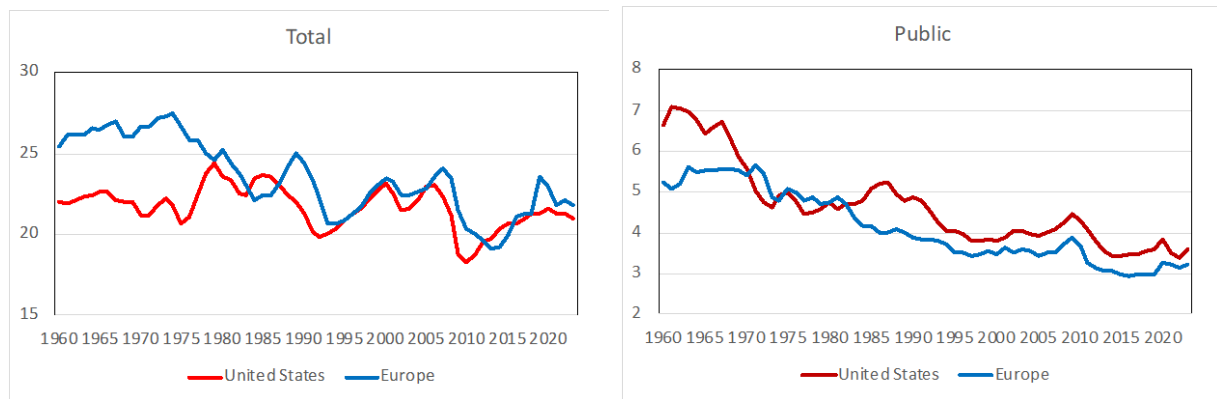
Note: The countries shown are those for which the International Organization of Motor Vehicle Manufacturers provide information.

6.2. Fostering public and private investment

A different argument is that EU firms are trailing behind their foreign competitors because of a lack of investment, both private and public. It is clearly stated by the Commission: *“To deliver on Europe’s strategic priorities and address future challenges, significant additional public and private investment will be needed.”* (Press release of 27 September 2023). Similar statements can be found in Allemand et al. (2023), Draghi (2023), Panetta (2022) or Ubide (2023) among others.

Looking at the past, there is no evidence to support this diagnosis. The left-hand chart in Figure 4 compares the evolution of total investment (public and private) in Europe and the US. Total investment was larger in Europe during the post-war reconstruction years of the 1960s and 1970s, and then declined to the US level. The right-hand chart displays public investment. Since the 1970s, it has been lower in Europe, declining faster than in the US. The average difference from 1990 to 2023 stands at 0.5% of GDP (it could reflect lower military investment in the EU). With lower public investment and similar total investment, private investment is larger in the EU.

Figure 4: Gross fixed capital formation (% of GDP) - period 1960-2022



Sources: *World Development Indicators*, World Bank, and *Economic Outlook*, OECD.

Looking forward, calls for raising investment are justified by upcoming challenges, mostly climate change, post-Ukraine defence and the digital transition, taken to be European public goods. As argued above, these are not all obvious public goods. Draghi (2023) makes a different point. He argues that the resources needed at the national level depend on each country's income and on the public support, which wanes where debt is large. Poorer countries and highly indebted governments stand to be unable to match the efforts that richer countries and lower-debt governments will be able to devote to the upcoming challenges. Preventing a divergence among EU Member States require transfers from the latter to the former.

7. RESEARCH AND DEVELOPMENT

Knowledge is the archetypical global public good. It is freely available, it exhibits large returns to scale (the more widely knowledge is shared, the more useful it is) and it creates strong positive global spillovers. The pro-decentralisation arguments listed in Table 1 are either weak or non-existent. However, there are limits to the use and production of this public good. Use requires educated people who can master advances and apply them for local activities. Production requires technical resources (manpower, infrastructures). Many less developed countries are not equipped for producing technical knowledge and some face limits to use it. As a global public good, knowledge does not have to be produced everywhere, but it must be available universally. Such asymmetries are limited enough within the EU to consider knowledge as a public good that can be both produced and used locally. That does not mean, however, that each country should contribute to all knowledge advances. It means that the costs of production should be financed at the EU level and that uses should be enhanced in every member country.

The end result of Research and Development (R&D) is to raise productivity, through better and new technologies. Research produces new knowledge for its own sake, not for immediate profit. Development also creates knowledge, but this knowledge is mostly used by the private sector to produce commercial goods and services. In that sense, it may not qualify as a public good. However, much of this knowledge eventually spreads because specialized workers move from firm to firm so that firms end up implementing similar knowledge. While knowledge from research is largely publicly funded, knowledge from development is mostly privately funded because better technology and patents allow firms to profit from their discoveries. However, spillovers justify public support.

The EU has moved in this direction, but haltingly. Horizon Europe, with regroups much of European research funding has grown in size and is expected to disburse about €100 billion over the years 2021–2027. Yet, most research funding remains national, largely through a wide diversity of institutions such as universities and research centres. Thus, the EU has a long way to go to treat knowledge a European public good, as opposed to a national public good. The reason is that each country is keen to protect its research institutions, whether they are successful or not.

The European sources of competitive funding are not yet comparable to what is available in the US, with nothing quite like the National Science Foundation or the National Institute of Health, for instance. In addition, Horizon Europe is developing top-down priorities (predictably with an emphasis on the climate transition) even though the European Research Council, which is overseeing the EU effort, recognises the importance of bottom/up project selection.

By definition, R&D is a risky endeavour because the probability that a given project delivers on its objectives is limited, and success is likely to be more uncertain the more innovative the project is. The general way to deal with risk is to diversify. In this case, it means relying on a large number of individual projects, fully expecting that most will fail but hoping that a few will succeed, so that the overall research portfolio continuously delivers innovations. This may seem ex ante costly, but usually ex post efficient. Such a funding strategy exhibits strong returns to scale and reinforces the case that R&D is a European public good. Conversely, failure to fully adopt this strategy at the European level undermines the case for a common strategy.

A good example of how this approach can be implemented is the development of COVID-19 vaccines, which is briefly recalled in Box 1. It explains how the US succeeded in bringing to market in record time two highly innovative products, which remain unique. There is nothing in Europe similar to the US constellation of public-funded agencies that support high-risk, high-reward research in public and

private institutions and can join forces when needed. The Biomedical Advanced Research and Development Authority (BARDA), which was instrumental in COVID-19 funding, is patterned after the Defense Advanced Research Projects Agency (DARPA), which has funded a long list of major discoveries not just for the military but also with civilian applications such as GPS, the internet or automated voice recognition. The defining characteristics of these agencies is risk-taking and tolerance to failure, light bureaucracy, mobility of highly qualified managers in and out, and collaboration with academics, private corporations and other public agencies.

There are indications that Europe is learning. The current policy response includes the Strategic Technologies for Europe Platform (STEP) and the Important Projects of Common European Interest (IPCEIs), which allow for exemptions from the regulations on state support and mobilize national and European resources to support a mix of national and European investments. The Commission has announced a contribution of some €10 billion to be drawn from NextGenerationEU. In addition, the Health Emergency Preparedness and Response Authority (HERA) is meant to be the European BARDA. It is too early to determine whether these initiatives will succeed in harnessing US-style nimbleness and risk-taking.

Box 1: COVID-19 vaccines

The US launched Operation Warp Speed in May 2020. It was coordinated by the National Institutes of Health, with a total budget of \$31.9 billion, \$29.2 billion of which were committed to acquire vaccines (Lalani, 2023). Grants were awarded to 34 R&D groups (pharmaceutical companies and research institutions). In the end, two groups (Pfizer and Moderna) succeeded in record time to design and manufacture the mRNA vaccines.

Warp Speed was not the first funding for research on mRNA. Many 34 recipients had benefitted previously from relatively modest support for research in the mRNA vaccine technology long before the pandemic outbreak. The funders included the NIH and other public agencies, including the Biomedical Advanced Research and Development Authority (BARDA).

This example suggests three observations:

- The grants were awarded to a wide range of institutions, both private and public, both US and foreign (including AstraZeneca and Sanofi, respectively Anglo-Swedish and French).
- The grants were not just for research but mostly for development, including large scale production.
- The US authorities guaranteed that successful vaccines would be available first to the US.

Thus, Warp Speed was a well-diversified bet, based on experienced research groups. It combined both scientific and industrial objectives. In contrast, the German company BioNTech, which designed the Pfizer vaccine, had received financial support for research from German and EU, but not for development and production. It teamed up with Pfizer.

8. CONCLUSION

The dramatic events of the past few years have triggered a surge of debates about the provision of European public goods. Many proposals have been put forward. This paper examines some of the most prominent ones through the lens of fiscal federalism, the framework developed to conduct economic evaluations of how to allocate responsibilities and resources among different levels of government. It finds that many proposals are justified but also that many others are not. Providing public goods at the European level is above all a political decision, as all previous integration steps. However, it is risky to adopt a proposal that does not conform to reasonable economic logic. It can trigger a blowback if the public good ends up being poorly provided or unusually expensive.

The focus on developing a host of new European public goods also risks putting other considerations on the back burner. Gopinath (2023) has recently observed that the EU is the region the worst hit by the geopolitical events under way and, yet the best equipped to respond. Both the magnitude of the shocks and the resilience reflect the EU's openness to trade and to capital flows, as well as its diversity. In her view, protectionism and state interventionism misses out on the collective and individual strengths of European countries. Instead, she argues that the EU's best response is to deepen the single market, defend global trading, and complete the banking and capital markets unions in order to exploit the diversity of member economies as the world changes under stress.

Although it comes from a very different angle (trade and macroeconomics), Gopinath's analysis shares with the present paper a crucial conclusion: many responses to the major geoeconomic challenges do not all require ambitious and costly reallocation of responsibilities for providing public goods. Much can be achieved by improving existing arrangements. On the other hand, climate change and R&D are two valid examples of public goods that need to be provided at the European level, although they do not require much additional financing beyond a carbon tax and pooling national R&D spending, respectively. Some other proposals, like boosting private investments or the digital transition, are not properly justified, at least from an economic perspective.

REFERENCES

- Andersson, J. J. (2019). "Carbon Taxes and CO₂ Emissions: Sweden as a Case Study". *American Economic Journal: Economic Policy* 11(4): 1-30.
- Akelrof et al. (2019) "Economists' statement on carbon dividends". Wall Street Journal. <https://www.econstatement.org/>
- Allemand, F. Creel, F., Leron, N., Levasseur, S. and Saraceno, F. (2023) "Why – and how – to make Next Generation EU (NGEU) Sustainable". Le Blog, CEPII, Paris, 28 April. <https://www.ofce.sciences-po.fr/blog/why-and-how-to-make-next-generation-eu-ngeu-sustainable/>
- Blanchard, O., C. Gollier, and Jean Tirole. (2022). "The Portfolio of Economic Policies Needed to Fight Climate Change", Working Paper 22-18, Peterson Institute for International Economics. <https://www.piie.com/publications/working-papers/portfolio-economic-policies-needed-fight-climate-change>
- Briancon, P. (2023). "EU has to come clean on costs of green transition". Reuters. <https://www.reuters.com/breakingviews/eu-has-come-clean-costs-green-transition-2023-07-18/>
- Buti, M., A. Coloccia and M. Messori. (2023). "European Public Goods". VoxEU. <https://cepr.org/voxeu/columns/european-public-goods>
- Buti, M. and G. Papaconstantinou. (2022). "European Public Goods: How can we supply more?". *Policy Brief 3*, LUISS. <https://leap.luiss.it/wp-content/uploads/2022/06/PB3.22-European-Public-Goods.-How-can-we-supply-more.pdf>
- Draghi, M. (2023). "The Next Flight of the Bumblebee: The Path to Common Fiscal Policy in the Eurozone". *The Reporter 3*, NBER. <https://www.nber.org/reporter/2023number3/next-flight-bumblebee-path-common-fiscal-policy-eurozone>
- *EEAG (2022)*. (2022). "Economic Policy for the Next Decade: A Changed Role of Governments?". *The EEAD Report on the European Economy 21*. CESifo, Munich. <https://www.cesifo.org/DocDL/EEAG-Report-2022.pdf>
- European Commission. (2022). Conference on the Future of Europe. https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3750
- European Commission. (2023). *Strategic Foresight Report*. https://commission.europa.eu/system/files/2023-07/SFR-23-beautified-version_en_0.pdf
- Gopinath, G. (2023). "Europe in a fragmented world", IMF. <https://www.imf.org/en/News/Articles/2023/11/30/sp-fdmd-remarks-bernhard-harms-prize>
- Fuest, C. and J. Pisani-Ferry. (2019). "A Primer on Developing European Public Goods". *EconPol Policy Report* 16(3). <https://www.ifo.de/en/publications/2019/working-paper/primer-developing-european-public-goods>
- Jaakkola, N. and R. Rovelli (2023). "Introduction to the Issue on Green Transition: How to Make It Finally Happen?", *Econpol Forum Europe* 24: 3-6. <https://www.econpol.eu/publications/forum-2023-6/green-transition>
- Jaakkola, N., van der Ploeg, F. and A. Venables (2023) "Big Push Green Industrial Policy". *Econpol Forum Europe* 24: 32-36. <https://www.econpol.eu/publications/forum-2023-6/green-transition>
- Kaul, I., I. Grunberg and M.A. Stern (Eds.). (1999). *Global Public Goods*. The World Bank. Oxford University Press
- Lalani, H. and others. (2023) "US public investment in development of mRNA covid-19 vaccines: retrospective cohort study". *The British Medical Journal*, on line. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9975718/#>

- Leonard, M., Pisani-Ferry, J., Ribakova, E., Shapiro, J. and Wolf, G. (2019) "Redefining Europe's economic sovereignty". *Policy Contribution* 9, BRUEGEL. <https://www.jstor.org/stable/pdf/resrep28498.pdf>
- Nordhaus, W. D. (1974). "Resources as a Constraint on Growth". *American Economic Review*(64/2): 22-26.
- Oates, W. (1972). *Fiscal Federalism*. New York: Harcourt Brace Jovanovich.
- Panetta, F. (2022). "Investing in Europe's future: The case for a rethink". ECB. <https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp221111~9dfd501542.en.html>
- Tambiama Madiaga T. (2020). "Towards a more resilient EU". *EPRS Ideas Paper* PE 651.992. European Parliamentary Research Service. [https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/651992/EPRS_BRI\(2020\)651992_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/651992/EPRS_BRI(2020)651992_EN.pdf)
- Thöne M. and H. Kreuter. (2020) "European Public Goods: Their contribution to a strong Europe". *Vision Europe*3, Bertelsmann Stiftung.
- Tirole, J. (2015). "Country Solidarity in Sovereign Crises". *American Economic Review*105(8): 2333-2363.
- Ubide, A. (2023). "European public goods and fiscal rules for the new economic policy", *El Pais*, May 21.
- Weitzman, M, (2017) "Voting on Prices vs. Voting on Quantities in a World Climate Assembly". *Research in Economics* 71 (2): 199–211.
- Wildasin, D. (1996) "Fiscal Aspects of Evolving Federations, Issues for Policy and Research". *International Tax and Public Finance*3(2):121-135.
- Zuleeg, F. (2009) "The Rationale for EU Action: What are European Public Goods?", European Policy Center. https://www.researchgate.net/publication/237445090_The_Rationale_for_EU_Action_What_are_European_Public_Goods

The recent stunning geopolitical events have prompted a wave of initiatives and proposals that seek to endow the European Union with responsibilities currently exercised at the national level. The present study examines which proposals match the principles of fiscal federalism to be considered properly as European public goods.

This document was provided/prepared by the Economic Governance and EMU Scrutiny Unit at the request of the ECON Committee.

PE 755.722

IP/A/ECON-ED/IC/2023-081

Print ISBN 978-92-848-1681-1 | doi: 10.2861/645011 | QA-02-24-293-EN-C

PDF ISBN 978-92-848-1680-4 | doi: 10.2861/256 | QA-02-24-293-EN-N