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# Constitutional Constraints on Public Debt in the Ecological Transition Era

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## Abstract

This article focuses on financing the necessary public expenditures to address the challenge of climate change faced by human societies, specifically examining the choice of public debt. Considering the already significant levels of public debt worldwide, this decision becomes particularly complex. Therefore, the article explores the instruments of public debt in the context of climate change, raising questions about the consequences of unwise public borrowing and wasteful public expenditure, and how to protect future generations from bearing the primary burden of public loans. The article further undertakes a scholarly examination of what constitutional law can contribute to the ongoing debate.

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Keywords: Constitution, Ecological Transition, Public Debt, Fiscal Illusion, Taxation, Future Generations.

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## 1. Introduction

It would probably not be an exaggeration to say that climate change is an immense challenge human societies have to face. And it is a problem that was caused mainly by carbon emissions due to human activity burning fossil fuels. As written in the IPCC report (2023, pp. 42): “Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 in 2011–2020 [...] This has led to widespread adverse impacts on food and water security, human health and on economies and society and related losses and damages to nature and people.” Three possible future climate scenarios have been forecasted for greenhouse gases (GHG) and CO<sub>2</sub> emissions over the 21st century, namely near-term (2021–2040), mid-term (2041–2060) and long-term (2081–2100). In all possible scenarios, the global surface temperature is expected to continue to increase until at least mid-century.

To face this challenge, various institutions have decided to control GHG emission reduction. For instance, the European Commission (2020, pp. 2) decided that net emissions should fall to 55% of their 1990 levels by 2030, and zero by 2050. To reach that goal, a radical social and economic transformation has to be undertaken.

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Consumers have to change their habits. Producers have to modify their modes of production. New forms of energy have to be invented. In other words, an ecological transition seems to be required. To be more precise, an ecological transition that requires huge amounts of money. Indeed, even if William Nordhaus (2007, 2013) claimed that without a new policy measure, climate change would reduce world GDP by just 3% or 4% by the end of this century, others argue that the costs would be huge. For instance, economist Bjorn Lomborg (2020) predicts that doing nothing would cost about \$140 trillion (expressed in terms of damages provoked by climate change) while cutting the damage to \$40 trillion would require policy costs of circa \$177 trillion. In any case, for political reasons, it seems impossible not to act against climate change. Thus, the common decision coming from the COP27 meeting in Sharm el-Sheikh in November 2022 and COP26 meeting in Glasgow in 2021 was to engage in large, global public expenditure programs to slow down climate change because “[...] *with concern that the current provision of climate finance for adaptation remains insufficient to respond to worsening climate change impacts in developing country Parties*” (Glasgow Climate Pact, 2021).

Then, the question is obvious: how to finance these massive public expenditures? And, more precisely, which instrument should be used—taxes or debt? We decided not to take into account the discussion about whether climate change is (or is not) an international public, why it should (or should not) be produced, or the perspective of the tragedy of the commons. The reason is that these points do not change the fact that climate change is financed with public debt. In other words, our main focus is not on a normative question but on a positive one, and the fact remains that climate change is produced and financed with public debt. Nevertheless, in a world in which public debts are already large, the question is particularly tricky. Who suffers if the public borrowing is unwise and the public expenditure to finance it is wasteful? How to preserve future generations from the primary burden of public loans? What Constitutional law can do to the current debate?

We suggest discussing these questions within the framework of the Virginia School of Political Economy because it provides the framework we need to demonstrate that increasing public debt can be a problem and to argue that we need constitutional rules to control the increase of the debt.

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This stems from the fact that the problem at hand (issuing debt, rather than increasing taxes) implies some generational effects. Therefore, the question is that of Ricardian equivalence between taxes and debt. One of the most important economists who used Ricardian equivalence is Buchanan, along with Barro and Feldstein. Therefore, we mention these economists because, based on the history of Ricardian equivalence, they "re-discovered" it in the 20th century.

The arguments are developed as follows. We first make readers wonder why we can treat the question of climate change as a form of public expenditure, namely environmental debt. Indeed, financing the latter by using debt, or taxes, raises the question of who is going to pay for the ecological transition. Are these two fiscal instruments identical, equivalent or not? The equivalence between debt and taxes was put forward by David Ricardo at the beginning of the 18<sup>th</sup> century but unearthed by the Italian public finance theorists two hundred years later and then by James Buchanan (see, in particular, 1958).

Having defined what is meant by transferring the burden to future generations, we move on to discuss another major problem against Ricardian equivalence which is the fiscal illusion. This was raised by Puviani (1903) and then recalled by Buchanan (1960,1967) and it is not unlike what behavioural economists did. We discuss the subjective dimension of costs. The latter, not only is an important aspect of Virginia's political economy's approach to debt but also an important factor for behavioural economics. Both share several key features. Nevertheless, the concept of the subjective nature of choice refers to the individualised processes by which individuals comprehend their choice contexts and assess the alternatives available to them. Subjectivity is a result of an individual's psychological processes.

Having discussed the subjective dimension of costs and the presence of illusion, we address the institutional and legal way to deal with those problems by reviewing the constitutional rules suggested by Buchanan. Environmental debt has political reasons and implications. Since we, as a collective, are willing to change and (re)shape our society towards a less polluted world, the interaction between politics and the economic problem occurs. Nevertheless, the Virginia School of Political Economy is the school that studies these interactions. We explore how to implement constitutional/legal

regulations to avoid fiscal illusion and how this can be used to deal with environmental debt.

This paper is organized as follows. Section 2 discusses why we can treat the question of climate change as a form of public expenditure. Section 3 describes the Ricardian equivalence and why it does not work. Section 4 introduces the problem of fiscal illusion within Buchanan's works and behavioural economics main findings. Section 5 suggests how to deal with fiscal illusion in terms of constitutional/legal rule, therefore discussing how institutions and law can be used to address environmental debt. Section 6 presents our final considerations.

## **2. Can we treat the question of climate change as a form of public expenditure?**

In this section, we show why we can treat the question of climate change as a form of public expenditure and therefore discuss it in terms of Ricardian equivalence. These two crises unfold over a comparable period (decades for both) and share remarkable similarities, including uncertainty, free-rider incentives, and political disincentives that hinder early and farsighted policy actions to fully address the respective issues. Generally speaking, the length of time is a significant obstacle to successful political decision-making. Both human-induced climate change and the public debt issue are characterised by a time lag between society's attempts to solve the problem and the resulting benefits. The time lag between attempts to reduce GHG emissions and the subsequent realization of benefits in terms of reduced climate-related damages poses a significant challenge for politicians in effectively tackling climate change. If a successful policy initiative is not ensured, future generations will pay the price. Also with the public debt, there is a lag between the cost that future taxpayers will bear and the current gain obtained from public initiatives (as put forward in section 3, it is even more clear in presence of wasteful expenditure).

Another parallel between public debt and the climate crisis is that both necessitate international collaboration. Just as no one nation can avoid climate change, no single country can prevent an increase in public spending in the case of the progressive mutualisation of debts, especially when specific projects, such as resilience or ecological transition, are financed by common instruments, namely euro-bonds or

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Next-Generation EU Green Bonds. Branger and Quirion (2014) reported that economists frequently use the phrase "carbon leakage" in the context of the climate challenge. This means that unilateral efforts by one country to cut GHG emissions are compromised if other nations do not follow suit, as enterprises may transfer production and local firms may lose international competitiveness. Thus, unilateral emission reduction programmes essentially move emissions from one nation to another rather than reducing emissions globally, unless additional mechanisms that expressly address leakage are utilised, such as the introduction of a border carbon adjustment system. Otherwise, carbon leakage erodes the incentives for individual countries to engage in climate change mitigation efforts from the outset. Moreover, it strengthens the "free-rider incentive", which characterises the climate problem from a game-theoretic standpoint: rather than becoming a proactive country, each country has incentives to remain inactive and let other countries go ahead, by investing limited resources to reduce domestic emissions (Barrett, 1994). This is because any unilateral attempts to cut GHG emissions would ultimately benefit all countries, whereas the costs will primarily affect the home economy and society.

Also with the public debt problem, there is a "leakage" issue that becomes more apparent when Euro-bond instruments are analysed. This is especially relevant when investigating the so-called mutualization of public obligations in the EU. In a word, it entails the sharing of a portion of the public debt by European Union member states, or rather the choice of certain states to guarantee the issuing of debt instruments by other governments. This is accomplished through the mediation of the Commission: as stated in point A3 of the European Council Conclusions (2020, pp. 3), even the states that had previously raised objections agreed to this fundamental novelty to equip the EU with the resources necessary to address the challenges posed by the COVID-19 pandemic (Brosio et al., 2022, Garzarelli et al., 2022). Therefore, the Commission authorised borrowing on the capital markets on behalf of the Union. This indicates that the EU will be the primary debtor. Ultimately, the implication is that, in the event of a country's future inability to repay its share of debt, the solvent nations will have to compensate those in need with their resources, with the only option being for the EU to implode. From an economic standpoint, such a system exposes itself to extraordinarily high risks of individual and institutional free-riding (De Caria, 2021). The economic literature has

demonstrated conclusively that corruption, waste, and inefficiency increase proportionally to the distance between the recipient and the payer of a particular social service (Liu & Feng, 2015).

Uncertainty is another deterrent to a successful climate policy. This relates to both the magnitude of predicted future losses and the costs of climate change mitigation. Nobody can anticipate how expensive it will be to meet, for example, the 1.5 °C targets, or which technologies will be used to do so (Howard & Sterner, 2017). This is similar when the public project is financed by debt and the cost of the investment must be compared with the individual returns rate rather than the decrease in net worth of the taxpayer occasion by the interest payment (Buchanan, 1958, pp. 54). The productivity of the public project at the individual level is hard to predict. Taking this into account, there is every reason to expect that the interposition of bureaucrats and politicians may convert beneficial expenditures into unproductive ones, and so public debt is no longer a viable option. Moreover, the strategic use of budgeting by politicians and bureaucrats may lead them to define an "investment" as an outlay that improves the supply of future public services which is the actual result of the rent-seeking activity (Eusepi & Wagner, 2018). It should be emphasised that because actions are determined by an actor's goals, the same activity might be classified as current consumption or investment depending on how the activity is mapped into the actor's goals. In any instance, the chooser, the taxpayer, should make the distinction, not the observer, the government, as expressed by Eusepi (2020).

The public perception and media coverage of the respective problem, as well as the impact of politicians, political parties, or interest groups who are attempting to influence the media coverage following their interests or (politically flawed) beliefs, are yet another aspect of the climate change problem that shares some similarities with the public debt. Because these two challenges unfold on comparable time scales, policymakers' mistakes in managing the public debt and climate change will only become evident in a few decades. Involving irrevocable tipping points that have the potential to create catastrophic climate change and uncontrollable governmental debt levels, both may have severe impacts.

The final connection between these two situations is that there is a systemic dearth of incentives for politicians to appropriately handle either problem. Climate

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change is a problem that, by its very nature, would have necessitated prompt policy action at a period when serious climate damage was not yet evident. As is the situation with climate change now, politics, and this is also true for democracies, typically appears to handle problems only when the damages become nearly universally apparent, i.e., when the subject becomes urgent (Schmidt, 2021). The same holds for public debt. The fundamental issue seems to be that politicians lack the proper incentives to pursue proactive, long-term policy. Such policies are initially unpopular, and as a result, politicians who implement them must fear for their political careers, as the general populace cannot fully appreciate the necessity of the actions until the repercussions become apparent.

All the considerations mentioned above raise the following question: if the issue of climate change can be treated as a form of public expenditure, should we use taxes or public debt to finance the ecological transition? In the next section, we discuss it in terms of Ricardian equivalence.

### **3. Public debt or taxes? It does not matter: the Ricardian equivalence and why it does not work**

To some it does not matter, to others it does. How is it possible? Are taxes equivalent to debt to finance public expenditures? It is not sure. We explain why. Then we discuss that the Ricardian theorem does not hold.

#### **3.1. Ricardo's theorem: do taxes exert the same effect as debt?**

At the beginning of the 18th Century, classical political economist David Ricardo wrote "Principles of political economy and taxation" (Ricardo, 1817) and "Essay on the Funding System" (Ricardo, 1820). In these two fundamental works, Ricardo gave some of the principles upon which rest classical political economy. One of the questions he addressed was that of the financing of extraordinary expenses. The standard tax system should not be used in the face of a long-term war; instead, debt was a viable option because an extraordinary occurrence should not be compensated with an ordinary tax. Therefore, it must be paid through an extraordinary tax. The question Ricardo addressed was whether (or not) borrowing by the government would have shifted the burden of excessive government spending to future generations. In this regard, he

argued that taxation and public debt have the same effect from an individual's perspective.

He also stated that, regardless of the method of financing, the weight of present government expenditures cannot be passed to future generations (Ricardo, 1817). From an individual point of view, the latter decision should not make any difference, as expressed in Ricardo's formulation (Ricardo, 1951): *“When, for the expenses of a year's war, twenty millions are raised by means of a loan, it is the twenty millions which are withdrawn from the productive capital of the nation[...] Government might at once have required the twenty millions in the shape of taxes; in which case it would not have been necessary to raise annual taxes to the amount of a million. This, however, would not have changed the nature of the transaction. An individual instead of being called upon to pay 100£, per annum, might have been obliged to pay 2000£, once and for all”*. The reason is purely numerical.

Therefore, within Ricardo's framework, the nature of the transaction would not have changed whether using an extraordinary tax or public debt. Thus, his proposition implied that taxes and debt have the same effect on private consumption, at least for two reasons. First, since debt is a future repayment obligation, an increase in government debt is considered a postponement of tax increases in the future. Second, the consumer is rational and able on the one hand to write down the present value of his income streams. On the other hand, the individual can forecast an increase in taxes in the future whenever government runs a deficit in the short-term, adjusting his spending behaviour at the present moment. In this light, as it will be put forward more than a century later by Keynes (1936), the Ricardian formulation gave birth to literature slightly able to explain the defect of the most shared economic analysis of government debt and deficits which argued, more than a century later, stimulation of aggregate demand mainly caused by a rise of disposable income induced by a deficit-financed tax policy (Keynes, 1936).

One of the economists who (at least partially) built on Ricardo's equivalence theorem was James Buchanan. In his chapter “Public Principles of Public Debt: A Defense and Restatement” (Buchanan, 1958), he demonstrates that the real primary burden of public debt is shifted to future generations. He achieved this by highlighting the following seven points: [1] when future periods are considered, the focus on the national balance sheet confuses, rather than the individual or family which is the



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philosophical entity in society (Buchanan, 1958, pp. 36), [2] individuals who will be obliged to give up resources in the future, acquire and pay for the public project, [3] no real economic resources are sacrificed by the bondholder since there is a voluntary alteration in the structure of his actual asset pattern, [4] because the taxpayer does not pay any tax for the useless project, he makes no sacrifice in period  $t_0$ , [5] the burden must fall only on the taxpayer, in the future. To transfer money to the bondholder, the future taxpayer must now cut his real income with no productive asset, in the form of a public project, to offset his genuine sacrifice (Buchanan 1958, pp. 39) in case the public borrowing is unwise and the public expenditure wasteful, [6] while interest payments indicate future revenue that the bondholder or his forefathers paid for via resource sacrifice during the debt creation period, future generations cannot be compelled to pay for resources that have already been used in the past, [7] the project's productivity or lack thereof is irrelevant in and of itself. In any instance, the taxpayer is the one who foots the bill and makes real-world sacrifices. The future taxpayer is the final "purchaser" of public goods and services.

The necessary conditions for the Ricardian theorem to hold are very specific and summarized as follows (Brennan & Buchanan, 1980):

1. Public expenditures in the initial period are constant between the two financing instruments;
2. Public debt issued in the early period must be repaid and/or amortized from taxes collected in the later period;
3. The capital market is perfect, and individuals can borrow at the same rate as the government;
4. Individuals have certainty about their current and future income prospects;
5. As current taxpayers and potential future taxpayers, their behaviours have unlimited planning horizons- they act "as if" they plan to live forever;
6. The individual fully anticipates tax liabilities arising from debt issuance in future periods;
7. All taxes are one-time payments.

Conditions (5) and (6) above appear to impose very strict behavioural and informational assumptions on actors in the economy. Ricardo himself seems to challenge the validity of the equivalence theorem on these grounds (O'Driscoll Jr, 1977). According to these assumptions, the generation that lives at the time of the expenditure will bear the whole cost of the public project because individuals write down the present value of their future revenue streams as a result of taking on debt. As a result, the present value of the tax liabilities caused by future service charges will directly lower the present value of assets. (Buchanan, 1958). The major critique of the Ricardian proposition, using Buchanan's words "[...] is that individuals do not fully discount future taxes" (1958, pp. 45). Moreover, individuals with no assets are incapable of operating complete discounting logic. The future tax burden associated with interest payments will not be completely capitalised by the individual who owns no capital assets. Only if the latter person will be a future taxpayer would he capitalise them. Due to the shortness of human life, much of the debt burden must remain uncanceled. As a result, even if all of the other Ricardian assumptions are true, the burden must fall on "future generations" to some extent. The position of the debt burden on future taxpayers becomes increasingly clearer when the prospect of individual irrationality in discounting future tax payments is considered.

However, in 1974, Robert Barro wrote an article in which he examines whether government bonds should be considered net wealth or not. In a nutshell, if government bonds are not considered net wealth, changes in consumption of government finance do not have a real effect on consumption. Therefore, debt does not play any role in consumption, and it is said to be neutral. Since that article (Barro, 1974), Buchanan explored the tight relationship between Barro's arguments and the theory proposed by Ricardo (Buchanan, 1976), embracing at glance a new label: Ricardian Equivalence. The equivalence of what? The equivalence between financing through tax or debt Barro's analysis (1974) extended Ricardo's model. While the latter considers a rational individual living in two different periods, the former relates the individual of the present generation to his future generation, assuming that these intergenerational relationships are purely altruistic. Therefore, consumers have a limited life with benevolent behaviour towards their descendants, delivering them a positive bequest. In this way, the government cannot perpetually postpone the repayment of the bonds because

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consumers act “as if” they do have an infinite life since adopting an altruistic behaviour concerning their descendants. The reimbursement received by consumers includes capital plus interest and is equal to the sum of the principal and taxes collected to pay the obligation (Ricciuti, 2003). In this light, government bonds are not considered net wealth because a decrease in government savings is offset by an increase in private savings. As a result, national savings remain constant.

Feldstein (1976) criticized the altruistic approach to intergenerational justice by questioning the existence of a connection between households, since Barro includes in his analysis the families without children. When the government substitutes debt for taxes, childless households lose interest in future-generation taxes and modify their behaviour (Buitert & Tobin, 1978). Stated differently, why a person without children should consider someone in the future as himself? For example, assuming that individuals live during exactly two periods in a series of overlapping generations, and their only source of utility is their consumption. The government collects funds by taxing people and running deficits. Because current issues of government debt, which cut the taxes of the current working generation, will be redeemed with taxes collected on future generations, Ricardian equivalence will not hold. The present value of the future tax burden imposed on the current working generation by the debt will be less than the current tax cut. As a result, even lump-sum taxes, such as debt-for-tax swaps, will have wealth implications if they are financed differently (Seater, 1993). In addition, from a microeconomic point of view, there is a difference between debt and tax related to the consumer age. While an elderly person will be more favourable to finance public expenditure through debt to avoid tax today, a young person (with a limited disposable income) will be more favourable to tax today to avoid taxation when her/his future wealth will be greater than the actual one. Even if Barro’s hypothesis is more restrictive than Ricardo’s, the occurrence of childless families has not been proven to be an acceptable basis for rejection of the Ricardian equivalence in the empirical study (Boór, 2021). Some research supports benevolence (Seater, 1993), while others contradict it (Bernheim, 1987).

Several economists have attempted to demonstrate or reject Ricardian equivalence using a variety of scientific methods. However, the empirical evidence is contradictory. Following Buchanan’s methodological approach, even if all of the other

Ricardian assumptions are true, the burden must fall on "future generations" to some extent. The major actual cost of public debt is borne mostly by future generations, and debt production involves the transfer of burdens to those living in periods after debt issues. Not only the position of the debt burden on future taxpayers becomes clearer when the prospect of individual irrationality in discounting future tax payments is considered but also when the public expenditure is wasteful. Nevertheless, the mechanism for shifting burdens to future generations also occur in the so-called ecological crisis.

#### **4. The problem of fiscal illusion**

There is also a major problem against Ricardian equivalence, which is the problem of illusion. This was raised by Puviani (1903) and recalled by Buchanan (1960, 1967) and it is not unlike what behavioural economists did.

##### **4.1. Buchanan and the fiscal illusion**

One of the main aspects of the theory of fiscal illusion is that it highlights the fact that citizens do not always make an accurate comparison between the expenses of public activity (taxes) and its benefits (public services). Specifically, there is no certainty of symmetry between cost and benefit assessments. We briefly examine the types of fiscal illusion mentioned by Puviani (1903).

To facilitate our work, we should utilize Buchanan's concise classification system (1967, pp. 126-43). The first group of illusions consists of situations in which the total amount of publicly available resources is concealed from taxpayers. This is the case of a government using revenues from the public domain (whose amount is typically ignored by taxpayers), tax shifting on consumption goods (often quite uncertain), public debt (for which Puviani, following Ricardo's hypothesis, observes that taxpayers prefer to pay taxes despite the equal present value), and inflation due to monetary expansion (a taxpayer cannot determine his or her share of public service costs). Lastly, this is an instance of a government making misleading promises, for example, declaring that a particular measure will be temporary, but is destined to endure over time. The second type of illusion consists of payment methods that link a taxpayer's responsibility to pay taxes to a beneficial period or event. In this instance, individuals' opinions are

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influenced by the specific circumstances in which they find themselves, for example, paying inheritance tax taxes on an unexpected bequest or donation. A third group includes taxes paid for specific, primarily nominal services given by public offices, such as fishing license fees, degree fees, and so forth. The final type of illusion, arguably the most relevant from the perspective of taxation because it is also the most frequent, consists of dividing the tax burden through a complicated system of many taxes and duties.

All of these categories refer to tax levying. Those pertaining to public expenditure are less complex and refer primarily to the less-than-exact facts provided by governments to stress the significance of public expenditures and so make an increase in public expenditures more acceptable. In Puviani's analysis (1903), it appears that public expenditure illusions can be categorized primarily as the illusion of lack of information, as the required information has not been distributed by the government or other responsible entities. As it has been discussed, there is no "irrational" behaviour among taxpayers who are just "victims" (Da Empoli, 2002) of a lack of information in any of the circumstances mentioned above.

Intuitively, the illusion seems not to require irrational behaviour. The individual who behaves irrationally makes inconsistent decisions; he does not conduct in a way that would allow an external observer to predict his behaviour, even if his utility function remained constant. By contrast, the individual who behaves in the presence of an illusion will act consistently; when presented with the same choice situation on two separate occasions, he will tend to make the same decision, provided that learning from experience does not dispel the illusion and his utility function may not change in the interim. It follows that the external observer can make predictions if he is aware of the consequences of illusion on decision-making behaviour (Buchanan, 2014). Since illusion results from the individual's perception of the properties of the alternatives, while irrationality is a trait of the mind, it would not be exaggerated to argue that institutions of social choice can create (or reduce) illusions, and it is worthwhile to explore this aspect of such institutions in the context of ecological transition financing system. However, to Buchanan, fiscal illusion did not explain that the burden of debt could be shifted to the next generation.

There are numerous forms of information asymmetry within the theory of fiscal illusion. One of them is the asymmetry between citizens and politicians, that on the one hand, argue that citizens have a flawed understanding of fiscal facts, rendering them unable to appropriately appraise the consequences of public finance decisions. On the other hand, argue that politicians have a clear understanding of these facts, allowing them to take advantage of this disparity by convincing citizens to choose unsuitable options. How to deal with that? In the next section, we show the arguments provided by Behavioural Economics.

## **4.2. The economic psychology of public debt**

The question of why voters and politicians so seldom dispute the excessive rise in public debt despite the ensuing financial hardship is (partially) answered by economic psychology and the findings of behavioural economics (Döring & Oehmke, 2019). We start by summarizing the psychological factors that may lead political actors to lose control over public debt, and then we turn our attention to explaining why an individual in democratic countries continues to tolerate such political behaviour rather than penalising it.

### **4.2.1. Politicians**

First, habits might have a detrimental impact on present decision-making behaviour as a result of previous governments. This decision-making style is termed "methodism" by Dörner (1990). It arises when individuals build a mental system and assume it can solve all future difficulties. This is especially true if the approach has a lengthy track record of success. However, it may cause individuals to overestimate the effectiveness of their strategy. Following psychological studies (Wiswede, 2012), political actors have a propensity to overestimate the macroeconomic impacts of public debt. Politicians naively overestimate their locus of power, assuming that government borrowing can address economic issues. In addition, similar to the reasons driving the over-indebtedness of individual families, the rising government debt might be understood as a collective inability to postpone the satisfaction of needs. In a behavioural study, this process is referred described as—melioration or procrastination and is considered to be the cause of time-inconsistent preferences.

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Thus, politicians and taxpayers might quickly support future constraints on debt financing, but fail to fully foresee that their strategy may be damaged by unanticipated events. Thaler and Sunstein (2009) refer to such behaviour as dynamically inconsistent, describing it as a combination of temptation and thoughtlessness. This cognitive effect is exacerbated by the significant discounting of predicted long-term consequences of public debt. The remaining longevity of individuals plays a significant part in this behaviour. Thus, the shorter the remaining lifetime, the greater the inclination to value the present over the future, with the result that nations with a high average population age typically have a higher amount of public debt. If we look at the reduction of public debt, the history of debt policy is marked by continuous procrastination, which can be overcome only via the use of self-discipline measures (Ariely & Wertenbroch, 2002). However, we did not provide a thorough explanation for public debt since we focused solely on the behaviour of politicians.

#### **4.2.2. Voters**

We now turn our attention to explaining why an individual in democratic countries continues to tolerate such political behaviour rather than penalising it. There are two ways to change the behavior of citizens: in the short term, by changing their psychology; and in the long term, through education. The number of publications on taxation psychology has expanded dramatically, but publications on the psychological consequences of public debt remain uncommon. This is even more puzzling considering the vast number of psychology research that examines private debt. Private debt behaviour is a subcategory of intertemporal decision-making that differs dramatically from rational behaviour, according to economic theory (Döring & Oehmke, 2019). According to the psychological reactance theory, individuals respond to punishing stimuli via avoidance behaviour. The stronger the punitive stimulus, the greater the financial burden associated with public financing instruments that are consciously recognised by the involved actors—noticeability. By expanding the theory, the constraint of financial resources might be considered a restriction of behavioural freedom. In the event of consciously perceived taxes, reactance can result in both legal and unlawful tax avoidance. The concept of—loss aversion, as explained in Kahneman and Tversky's prospect theory (1979), amplifies the consequences of the punishing

stimuli. According to them, losses were twice as impactful as gains of the same magnitude. As a result, the various public financing vehicles may be categorised according to their degree of visibility and the related capacity for reactivity. Both of these features are scored higher for direct taxes than indirect taxes. In the latter case, taxes are already included in the price, and the majority of taxpayers do not view taxes as a significant factor in everyday pricing.

It would probably be safe to argue that public debt is (one of) the most misperceived method through which governments manage their budgets. Typically, it does not provoke instant opposition from individuals. This does not imply that there is no public debt opposition. As suggested by Döring & Oehmke (2019), if the "psychological borders of public debt" are crossed, resistance against public debt, akin to opposition to taxes, might develop. According to the authors, these psychological boundaries are breached if the public perceives that the quantity of public debt poses a threat to the orderly continuation of society. In such circumstances, the private desire to acquire further government bonds diminishes dramatically. In the event of a persistent illusion, it should be considered that the general public is unaware of the economic consequences of governmental debt. Thus, indicating a lack of learning effect (Gandenberger, 1985).

In addition to low reactance and the absence of learning processes, the degree of tax compliance among citizens is a significant determinant of the level of public debt. Tax compliance is the overall attitude of taxpayers about the execution or not of their tax obligations. Cowell (1992) and Robben et al. (1990) found that tax compliance is positively related to perceived tax justice and a favourable opinion toward the overall taxation system. The degree to which citizens comply with tax laws varies considerably from country to country. Perceived fairness causes taxpayers to regard taxes as more legitimate and increases their state loyalty. "Psychological tax treaty" (Feld & Frey, 2007) is used in this context to define the nature of the connection between taxpayers and their government. A review of worldwide comparative research on Europe (Zimmermann, 2015) argues that tax compliance and the amount of confidence in the political system are historically linked to public debt behaviour. Thus, countries such as Switzerland, Germany, Austria, the United Kingdom, the Netherlands, and the Scandinavian nations have very modest fiscal policies. Countries such as Spain, France,



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Belgium, Italy, and Greece, on the other hand, are characterised by lower tax compliance and a greater predisposition toward excessive government borrowing. However, it would probably not be correct to claim that the first set of nations is immune to the debt illusion. They employ government borrowing to finance public expenditures but on a far smaller scale.

Not surprisingly, the EU green bond and Recovery plan funding systems go in the above-mentioned direction: collective debt rather than collective taxation. As opposed to public debt, taxation's drawbacks are realised immediately, while its benefits, such as increased government services, are ambiguous. Individuals consistently misperceive both the cost associated with public debt and the benefit derived from debt-financed public services and thus tend to consistently underestimate the net fiscal burden associated with public debt. The disparity between the actual and perceived burden of public debt indicates an issue with perception (different to taxation where such a discrepancy does not exist). According to the Weber-Fechner law (Sinn, 2003), it is not fair to assume that the true (statistically measured) amount of public debt and the experienced (subjectively perceived) level of public debt, inclusive of future payments, coincide. In reality, they tend to be rather distinct from one another. If the real quantity of public debt is essentially ignored, a psychological illusion would occur. So, how do deal with that?

## **5. How to deal with that? Buchanan suggested constitutional rules**

The constitutional approach to debt, taxes and expenditures allows for a comparison of their costs and benefits before their implementation and, thus, before the consolidation process begins. Several public debates argued that a fiscal constitution would play an important role in terms of taxpayers' access to additional information and the reduction of fiscal illusions. In this section, after recalling a distinction between a protective state and a productive state, we define constitutional and post-constitutional rules. Then, we discuss how to use constitutional/legal rules to avoid fiscal illusion and how this can be used to deal with environmental debt.

### **5.1. How to use constitutional/legal rules to avoid fiscal illusion and how this can be used to deal with the environmental debt**

Buchanan separates government functions into a protective state that safeguards citizens' rights and a productive state that provides communal goods that individuals cannot produce independently or via market processes. The title of his book, "The Limits of Liberty: Between Anarchy and Leviathan", effectively encapsulates the central dilemma of his constitutional quest (Buchanan, 1975). To some authors (Holcombe, 2020), Buchanan felt that a protective state is required to safeguard liberty, but feared that a government powerful enough to defend individual rights may use its authority to violate those principles. In other words, constitutional standards allow the government to defend rights and generate communal goods for the benefit of its citizens while preventing it from acting against the interests of the individuals it ruled. At this point, we recall the distinction between the constitutional stage, in which policymakers determine the rules of the game, and the post-constitutional, or implementation stage, in which policymakers act under the rules of the game.

There may exist vested interests in rules, especially when those rules are more complex. Not only does the same reasoning apply to these regulations, but also the underlying statistics and evaluation techniques. The more complicated the data and evaluation processes, the more the relevant parties will attempt to exploit this complexity for their benefit (Schuknecht, 2004). Politicians may embrace complexity when it allows for interpretation and discretion and makes strict execution more difficult. Commonly shared in the public economics literature, the assumption of government as a welfare-maximizing almost by definition results in "optimal rules" that conflict with very simple ones. This may hold also for the various institutions that have decided to control GHG emission reduction with different tools such as *cap-and-trade systems* and stricter emissions regulations. As argued by Hervés-Beloso and Martínez-Concha (2023), implementing economic policies based on *cap-and-trade* is challenging due to free-rider behaviour and insufficient authority to impose penalties for non-compliance with established targets. The EU Commission could have more influence on the process and get larger budgetary allocations through the use of complex rules as opposed to financial markets and the public concerns that, due to transaction/monitoring costs, have an interest in very simple and clear regulations.

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Individuals should be effectively educated on the long-term economic consequences of public debt to have a better understanding of the present and future effects. This obligation ought to be obligatory and possibly incorporated as a constitutional principle. This information might be given consistently and clearly. The issue must be portrayed negatively by emphasizing the scale of government debt-related losses. For example, it may be more beneficial to display the level of public debt per capita on people's annual tax bills, as politicians may be obligated to inform voters about the amount of debt required to finance a certain public service if they utilize it. This might result in a reduction of fiscal illusion. Voters possibly would understand the intertemporal budget constraint because they would have low information costs. If this would be the case, politicians would not be able to raise spending more than taxes. This could lead to symmetric (or at least partially less asymmetric) information.

Political institutions such as political and tax systems, voting rules, and budget regulations can minimize (or exacerbate) the deficit, the illusion bias, and the time inconsistency issue mentioned above. From a normative standpoint, budgetary principles are welcome to restrict governmental behaviour. Assumptions regarding the long-term viability of policy can be anchored by fiscal regulations, mitigating deficit bias and time inconsistency. There is widespread agreement (Schuknecht, 2004) that Europe needs stricter budgetary laws. Political markets may fail due to high transaction costs and a lack of time consistency, but constitutional rules could help. So, an obvious question follows: what form of rules can be implemented and enforced? Ex-post compliance and performance monitoring may be the first step. The second step may be a way to punish unsuitable compliance and performance. Therefore, rule complexity and enforceability may be crucial, but it would not be an error to examine the dependency and possible conflict between these two criteria. On the one hand, fiscal rules should be economically feasible; if not, they will lose the support of the public and policymakers, and hence their enforceability. On the other hand, rules must also be clear and straightforward; otherwise, the public's monitoring costs will be too high, and policymakers' discretion and disagreement will undermine their enforceability and legitimacy. This possible trade-off depends on several economic factors and the legal-institutional environment in which rules are embedded. These difficulties and their repercussions are examined below.

Identifying incentives for enforcement is not easy. Nevertheless, post-constitutional politicians are interested in a "soft" implementation of the rules, where the concept of "soft law" describes non-binding agreements, principles, and declarations (Abbott & Snidal, 2000). At the constitutional stage, politicians may desire norms that ensure good public finances and generally efficient governments, but they may prefer that these constraints bind the subsequent government rather than the current one (Schuknecht, 2004). They will not enhance budgetary regulations until they obtain significant signals from the public and financial markets. In other words, constitutional thinking may emerge and greater enforcement provisions may be required only if there is a sense of urgency. Likewise, this may be the case with the ecological transition, where picking the right moment to introduce rule changes could be a challenge.

The respect for solidarity principle between generations and future generations seems not to be fully undertaken by the Court of the European Justice. The comparative analysis of the latter court with the Italian Constitutional Court (De Caria, 2021) draws our attention to his conclusion<sup>1</sup> (2021, 131) "[...] even if the Italian Constitutional Court did not give precedence to the interests of future generations (see the following cases 70/2015, 178/2015 and 275/2016<sup>2</sup>), it has nonetheless demonstrated a willingness to assume responsibility for them and to base its decisions on the need to protect future generations, thereby fulfilling the principle of intergenerational solidarity". The same cannot be said about the Court of Justice of the European Union. Then, we propose the expansion of the idea of intergenerational solidarity at the European level to include constitutional protections against public debt. It would not be inappropriate to leave on to future generations, not only a healthy environment but also robust and stable public finances.

## 6. Final Considerations

By using the above-mentioned sections, one might make certain conclusions. First, individuals should be adequately informed about the long-term economic implications of public debt to have a better comprehension of the present and future consequences. This requirement should be mandatory and perhaps added as a

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<sup>1</sup> Translated by the author.

<sup>2</sup> Respectively, C. Cost., 20 April 2015 n. 70; 23 July 2015, n. 178; and 16 December 2016, n. 276.

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constitutional principle. This information should be presented regularly and be understandable. The issue must be framed negatively by emphasising the magnitude of losses connected with governmental debt. For instance, it may be more effective to display the level of public debt per capita on citizens' annual tax bills since politicians might be compelled to tell voters about the amount of debt used to support a particular public service if they utilise it. The situation may be more complicated when the ecological transition progresses are taken into account. Indicators for a sustainable fiscal strategy might be devised to illustrate the anticipated costs of public debt to present and future generations. Thus, the indicators should be shared frequently so that the public may acquire and provide sufficient feedback to stimulate the learning processes.

In the context of public debt, further measures should address melioration and procrastination from an economic psychology perspective. To assist politicians (and voters) avoid the attraction of public debt and overcoming their lack of self-control when it comes to debt financing, the political decision-making architecture should be altered through the use of a constitutional constraint. By using Buchanan's Constitutional project, an example of a rather strong constraint is a constitutionally guaranteed balanced-budget norm that fosters positive fiscal policy decision-making. This institutional system aids political actors in overcoming the cognitive loss of control. In addition, compliance with debt constraints requires consolidation of the budget. According to research in economic psychology, expenditure cuts and tax hikes are functionally identical weapons for budget consolidation that differ in terms of the levels of reactance and loss aversion they elicit (Schmolders, 1970).

According to prospect theory, individuals perceive forgoing a benefit (reducing public costs) as less painful than losing their assets (tax increase). Certainly, the taxpayers' support of budget cuts is also contingent on the amount of their visibility and their participation. To have a balanced budget, however, it is preferable to reduce government spending rather than raise taxes. To achieve the ecological transition, tax increases should be favoured above (or combined with) increases in public debt. Especially given the absence of an EU fiscal constitution and the accountability of EU political parties. A constitutional embedding of ecological goals can thus serve as a bulwark against the unpredictability of political processes, ensuring a steady course towards long-term sustainability. Such an approach would also contribute to

overcoming the public choice dilemmas identified by Buchanan and Tullock (1962), where individual incentives may not align with collective environmental goals.

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