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# Centralised and Decentralised Responses to COVID-19: the EU and the USA Compared

ARTICLE

PAUL AUBRECHT
JAN ESSINK
MITJA KOVAC
ANN-SOPHIE VANDENBERGHE

*Author affiliations can be found in the back matter of this article

## ABSTRACT

The European Union and the United States of America have experienced some of the most concerning outbreaks of COVID-19. This paper investigates the division of power in the EU and the USA, suggesting the radical uncertainty created by the COVID-19 pandemic means that states' procurement and distribution of the materials they need for testing and the obtaining of medical supplies to treat the seriously ill might best be centrally administered. The centralised procurement and distribution of essential medical goods can resolve the problems arising from harmful competition between states to procure them and allow states to exercise their buying power. Moreover, it might solve the moral hazard problem, which leads to the hoarding of necessary medical goods, thereby creating a cross-border externality when other states within the federal system do not have enough of the medical items needed. However, the paper argues that the importance of local information suggests that organising the provision of testing programmes is optimally done as part of a decentralised process. Finally, to enable the most effective health responses for future pandemics and achieve the most effective integration of EU Member States, the current regulatory and legal adaptations and allocation of competences should also become permanent features in the EU's constitutional landscape.

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**CORRESPONDING AUTHOR:**

**Mitja Kovac**

Professor of civil and commercial law, University of Ljubljana School of Economics and Business, Kardeljeva ploscad 17, 1000 Ljubljana, Slovenia

mitja.kovac@ef.uni-lj.si

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## 1. INTRODUCTION

The states within the European Union (EU) and the United States of America (USA) have experienced some of the most harmful outbreaks of COVID-19. Although organised under significantly different constitutional systems, the EU and the USA share some similarities concerning their economies and divisions of power. The COVID-19 pandemic is unlike other types of disasters in terms of its timing and location and also unlike different viral pandemics because of the high rate of asymptomatic persons infected with the virus.

While states must make numerous decisions about COVID-19 and how best to respond to the danger it poses to society, this paper looks at decisions to enact the public health responses needed to treat and limit the spread of COVID-19. More specifically, this paper seeks to explain whether the health responses to the COVID-19 pandemic of large multistate federal systems such as the USA or sui generis legal entities like the EU should be centralised or decentralised. Taking a comparative law and economics approach[1] alongside traditional legal methods, this paper employs insights from the literature on the economics of federalism[2] to explain the institutional advantages and/or disadvantages of various centralised or decentralised institutional designs. The economics of federalism might offer a fresh perspective able to provide valuable policy information on which particular institutional arrangements can assist with realising the public interest goals of tackling the COVID-19 pandemic and other potential future pandemics.[3] Further, the law and economics of federalism offers guidance on whether the appropriate source of regulatory rule-making should be on a centralised or decentralised level. In other words, the economic theory of federalism may offer additional scholarly and policy suggestions regarding how best to organise the vertical structure of governmental institutional arrangements during pandemics.[4] The goal of the apparently general use of the economic theory of federalism is to correct the market failures caused by COVID-19 through government action, with its guiding principle being to assign policy responsibility to the lowest level of government able to accomplish the task. In this paper, the same goal is adopted of correcting COVID-19-related market failures and assigning policy responsibility to the lowest level of government that can accomplish the task.

In this paper, states in both the EU and the USA are compared, although some distinction is made between states in the EU which are also nations, and US states which do not possess national sovereignty. For this paper, the EU Member States (hereinafter MS) are considered to be legal/administrative entities. The USA and the EU can also be distinguished by the different ways in which they provide extensive civil and economic liberties to their citizens. Several decisions about states' medical responses are considered in this paper, including: the decision to purchase medical equipment and supplies; the decision to implement testing programmes for COVID-19; the decision to close the borders for citizens; and the decision to enact public health interventions.

Our work contributes to previous literature on the economics of federalism[5] by examining the institutional responses of states in federal systems or sui generis entities like the EU faced with unprecedented, extraordinary uncertainties and risks like those brought about by the COVID-19 pandemic. It also contributes to the comparative law and economics literature by comparing

1 Roger Van den Bergh, *The Roundabouts of European Law and Economics* (Eleven International Publishing 2018) 21–28.

2 See, e.g. Richard A Posner, *Economic Analysis of Law* (8th edn, Wolters Kluwer International 2011); Jim Leitzel, *Concepts in Law and Economics: A Guide for the Curious* (Oxford University Press 2015); and Jonathan Klick, *The Law and Economics of Federalism* (Edward Elgar 2017).

3 See Posner (n 2) 891; Anthony Ogus, *Regulation: Legal Form and Economic Theory* (Hart Publishing 2004) 58; and Roger Van den Bergh,'Farewell Utopia? Why the European Union should take the economics of federalism seriously' (2016) 23 Maastricht Journal of European and Comparative Law 6.

4 Robert P Inman and Daniel L Rubinfeld, 'Rethinking Federalism' (1997) 11 Journal of Economic Perspectives 4.

5 See e.g. William C Niskanen, *Bureaucratic and Representative Government* (Aldine-Atherton 1971); Alan P Hamlin, 'The political economy of constitutional federalism' (1985) 46 Public Choice 2; Wallace E Oates, 'Searching for Leviathan: An empirical study' (1985) 75 American Economic Review 1; Philip J Grossman and Edwin G West, 'Federalism and the growth of government revisited' (1994) 79(1) Public Choice; Van den Bergh (n 3); Wallace E Oates, 'An essay on fiscal federalism' (1999) 37 Journal of Economic Literature 3; Bruce H Kobayashi and Larry E Ribstein, *Economics of Federalism: Economic Approaches to Law Series* (Edward Elgar 2007); and Robert P Inman and Daniel L Rubinfeld, *Economics of Federalism, The Oxford Handbook of Law and Economics*, vol 3 (Oxford University Press 2017).

institutional responses in the USA and the EU, which then serves as a bridge between facts and normative conclusions, between economic theory and policy proposals for an improved legal system.[6]

The COVID-19 pandemic is not a single violent blow to society; instead, it has been a slow burning fire scorching the globe. In this slow burn, several hotspots of concentrated cases in the EU and the USA emerged in early 2020, notably in Northern Italy, Central Spain, and the greater New York City area. As part of this slow burn, various states have developed divergent approaches, notably for introducing public health interventions aimed at limiting COVID-19's impact, namely, to slow the burn rate. Slowing the spread of COVID-19 is a visible problem since serious challenges have affected states' abilities to meet the material demands entailed in fighting COVID-19.

This paper examines the need for states to consider how centralised and decentralised responses to COVID-19 may limit the costs of COVID-19 to society, given the characteristics of the 'federal' or sui generis quasi-federal systems.

The structure of the paper is as follows. Section 2 describes certain similarities between the USA and the EU. Section 3 is concerned with the use of centralised and decentralised responses to disasters, specifically COVID-19. Section 4 addresses the procurement and distribution of medical equipment, the closure of borders, and supplies, while Section 5 concludes.

## 2. US AND EU SYSTEMS AND RESPONSES TO COVID-19 COMPARED

The EU and USA are similar in permitting the free movement of goods across jurisdictional borders and regarding the competence of EU MS and US states to administer health systems.[7] In the EU, the single market allows for the free movement of goods across EU MS' borders. In the USA, interstate commerce is regulated on the federal level and essentially allows for the duty-free movement of goods across states. This means there is some equivalence between the USA and the EU in the movement of goods across internal borders within their federal systems. In addition, within the USA, there is no restriction on residents' movement between states under the 'Comity Clause'.[8] Within the EU, the free movement of persons allows for similar movement between participating EU MS.

However, US states have no legal way of imposing unilateral border closures between US states, while the EU MS maintain the power to close their borders. Of course, such closure may only be done in certain exceptional cases where the EU MS hold competence to close their borders, as detailed in the Schengen Borders Code.[9] Still, there is some similarity regarding how large parts of both the EU and US health systems are administered on the state level. While some federally run medical centres exist in the USA, notably the Veterans Affairs healthcare system, the vast majority of hospitals are primarily administered by private health providers. The states and the private healthcare providers are then responsible for planning and stockpiling medical goods independent of any US federal plan. Much of the insurance law and health law in the USA has

6 This methodology complements traditional legal disciplines by bringing to light a logic that decision-makers follow without necessarily expressing it in their reasons for judgment, yet one that constrains their results. It also seeks to make this logic transparent to outside observers; Anthony Ogus, *Costs and Cautionary Tales: Economic Insights for the Law* (Hart Publishing 2006) 11–16. See also Guido Calabresi, *The Future of Law and Economics* (Yale University Press 2016); Richard A Posner, *Divergent Paths: The Academy and the Judiciary* (Harvard University Press 2016); and Van den Bergh (n 1) 21–28.

7 For an overview of aggregate US hospital data, see: Health Forum, LLC, 'Fast Facts on US Hospitals' American Hospital Association, March 2020. According to American Hospital Association data, out of 6,146 hospitals in the USA, 965 are state and local government community hospitals, and 209 are federal government hospitals.

According to the OECD and European Union 2018 report on healthcare in Europe, in the EU MS 'on average, around three-quarters of health spending is financed out of public sources;' OECD, *Health at a Glance: Europe 2018: State of Health in the EU Cycle* (OECD Publishing 2018).

8 Under the US Constitution's 'Comity Clause', 'The Citizens of each State shall be entitled to all Privileges and Immunities of Citizens in the several States'. US Const. Article IV Section 2, Clause 1.

9 Generally, under the Schengen Agreement an open border regime is the norm; see The Schengen acquis - Convention implementing the Schengen Agreement of 14 June 1985 between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic on the gradual abolition of checks at their common borders [2000] OJ L 239/19-62.

developed on the state level under rights reserved for states under the 10th Amendment,[10] and is effectively administered to a large extent at the state level.[11] Further, many insurance policies define the benefits and cost structures, which in turn challenges consistency in insurance and medical care.[12]

In the EU, the MS retain the competence to regulate and administer their health systems, and mixes of public and private health systems can be found across the EU. Importantly, there is no EU-wide medical system and, instead, the EU MS have given the European Medicines Agency a limited role in healthcare within the MS, meanwhile making states responsible for their own planning and stocking of medical equipment.

This paper focuses on the similarities in the federalism of the EU and the USA with respect to having a single open market and the reservation of states' rights to administer healthcare and impose public health interventions.

State jurisdictions within federal systems and sub jurisdictions within states have characteristics unlike other areas or jurisdictions, whereby responses to COVID-19 and tactics to fight the pandemic must take national, regional and local characteristics into account. These unique characteristics typically involve cultural, geographical, legal and economic qualities, which may require tailored approaches to implementing a plan of attack against COVID-19. The division of powers within federal systems is often drawn along jurisdictional lines, representing local characteristics.

In the EU, for instance, broad community laws are implemented at state levels by state authorities under the principle of the conferral of powers and then, with regard to the powers that are conferred (and to what extent), the principles of subsidiarity and proportionality come into play.[13] In the USA, the division of power is implemented differently between federal and state authorities. Federal law is seen as superseding state law under either the judicial interpretation of the 'supremacy clause'[14] or a broad interpretation of the 'commerce clause',[15] which gives the US Congress the power to regulate interstate commerce, although states reserve certain competences under the 10th Amendment.[16] In line with the literature, one may argue that

10 Kathryn Zeiler, 'Medical malpractice liability crisis or patient compensation crisis?' (2010) 59 DePaul Law Review 675.

11 In *Diesel Barbershop LLC et al. v State Farm Lloyds*, Case No. 5:20-cv-461-DAE (13.8.2020) Senior US District Judge David Ezra perceptively held that COVID-19 does not cause direct physical damage to property. The court held that: the plaintiffs had failed to prove they had incurred a direct physical loss; the virus exclusion included in the policy barred policyholders' claims; and the Civil Authority provision in the policy was not triggered. The judge made a couple of very important points in his decision, saying that: while there is 'no doubt that the COVID-19 crisis severely affected plaintiffs' businesses, [the insurer] cannot be held liable to pay BI insurance on these claims as there was no direct physical loss'. He added that even if there were a direct physical loss, the virus exclusion would apply to bar the plaintiffs' claims. The judge also stated that 'given the plain language of the insurance contract between the parties, the Court cannot deviate from this finding without in effect re-writing the policies in question'. The Texas Court joined with a number of states recently siding with insurers on the grounds of similar findings, including Florida, Michigan, and the District of Columbia. See S Paul White and Siobhan A Green, 'Texas Federal Court Rules No Coverage for COVID-19 Losses' (2020) 10 The National Law Review 240.

12 See e.g. William M Sage, 'Health law 2000: The legal system and the changing health care market' (1996) 15 Health Affairs 3; Timothy S Jost, 'Health insurance exchanges: Legal issues' (2009) 37 J . Med. & Ethics 53; Lawrence O Gostin and Elenora E Connors, 'Health care reform in transition: Incremental insurance reform without an individual mandate' (2010) 303 Journal of the American Medical Association 1188; and Lawrence O Gostin and Elenora E Connors, 'Health care reform – A historic moment in US social policy' (2010) 303 Journal of the American Medical Association 2521.

13 'Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at a regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level', Article 5(3) of the Treaty on European Union.

14 According to the 'Supremacy Clause' of the US Constitution, 'This Constitution, and the laws of the United States which shall be made in pursuance thereof; and all treaties made, or which shall be made, under the authority of the United States, shall be the supreme law of the land; and the judges in every State shall be bound thereby, anything in the Constitution or laws of any State to the contrary notwithstanding'. US Const. Article VI, Paragraph 2.

15 According to the 'Commerce Clause' of the US Constitution, 'The Congress shall have power to… regulate commerce with foreign nations, and among the several states, and with the Indian tribes'. US Const. Article 1, Section 8, Clause 3.

16 Under the 10th Amendment to the US Constitution, 'The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the States respectively, or to the people'. US Const. amend. X.

the EU is actually a de facto federal system as it possesses standard characteristics of federal states.[17] Thus, both the EU and the USA are federal systems, albeit differently structured, which similarly divide competences and power between states within federal systems in the following respects: (1) open markets exist between borders within the federal system; (2) states retain the competence to run and administer their own health infrastructure; and (3) states retain the right to limit internal movement within their borders through the implementation of public health interventions.

## 3. CENTRALISATION AND DECENTRALISATION: A SYNTHESIS OF LAW AND ECONOMICS LITERATURE

### 3.1 ARGUMENTS IN SUPPORT OF CENTRALISATION

Van den Bergh offers three main reasons in favour of centralisation: externalities across jurisdictions; transaction costs; and the risk of the destructive competition of legal rules.[18] First, externalities across jurisdictions occur when a decision in one jurisdiction also impacts other jurisdictions. If decisions take place on the decentralised level, a risk is created that the impact of those decisions on other jurisdictions is not adequately taken into account.[19] In such a situation, a centralised government response might be efficiency-enhancing because a centralised model can avoid the occurrence of such externalities in the first place.

Second, it might, be expensive to organise decision-making power on the decentralised level if appropriate government action requires different jurisdictions to share information with each other. In this situation, while individuals have a shared interest in cooperating, they might encounter difficulties due to the costs of coordinating.[20] A centralised government response might, in such a situation, lead to a more efficient result if it can overcome the coordination problems and economise on transaction costs.

Third, the destructive competition of legal rules describes a situation in which states use legal rules to outbid each other. In the context of asylum law, states might, for instance, adopt increasingly restrictive asylum conditions to encourage asylum seekers to move to other countries.[21] This leads to a 'race to the bottom'. If such a race-to-the-bottom scenario is detrimental to the jurisdictions involved, this would speak in favour of centralisation because the winning state has no incentive to agree to centralisation in that case.[22]

### 3.2 ARGUMENTS IN SUPPORT OF DECENTRALISATION

Van den Bergh similarly proposed three main arguments in favour of decentralisation: the diverging preferences of citizens; informational advantages on lower levels of government; and the importance of learning processes.[23] First, following the work of Tiebout,[24] suppose there is significant heterogeneity across jurisdictions concerning how government action is implemented. It is difficult to take appropriate government action if citizens hold diverging policy preferences. If policy preferences are not widely shared across jurisdictions, it might be better to organise decision-making power on the decentralised level. Second, local information may be required to implement government action. Here, heterogeneity of costs might make it better to organise on the decentralised level so local authorities can more easily develop

17 See e.g. Wallace E Oates, 'An essay on fiscal federalism'(1999) 37 Journal of Economic Literature 3; and William H Riker, *Federalism: Origin, Operation, Significance* (Little, Brown and Company 1964).

18 Van den Bergh (n 3) 42–43.

19 Roger van den Bergh, 'The subsidiarity principle in European Community law. Some insights from law and economics' (1994) 1 Maastricht Journal of European and Comparative Law 2.

20 Francesco Parisi, *Law & Economics: A Dictionary* (Cambridge University Press 2013) 67.

21 Barbour des Places, 'Evolution of asylum Legislation in the EU: Insights from regulatory competition theory'(2003) EUI Working Papers, Robert Schuman Centre No. 2003/16, 14–21.

22 Van den Bergh (n 1). See also Ogus (n 3) 58; and Mitja Kovac, 'The Brexit fiasco and the failure of Article 50 of the Treaty on the functioning of the European Union' (2019) 12 Baltic Journal of Law & Politics 1.

23 Van den Bergh (n 3) 40–42.

24 Charles Tiebout, 'A pure theory of local expenditures' (1956) 64 Journal of Political Economy 416.

policies that fit the situation in their specific area.[25] Third, if government action is organised on the decentralised level, this may allow greater experimentation with legal rules. This creates a learning process in which different jurisdictions can learn from each other.[26] The matrix in Table 1 summarises the main findings in this section.

**Table 1** Decentralised or centralised decision-making in federal systems.

| BENEFITS OF DECENTRALISATION | BENEFITS OF CENTRALISATION |
|---|---|
| 1. Allows individual states in a federal system to meet the divergent preferences of their citizens | 1. Allows for the internalisation of interstate externalities within federal systems |
| 2. Solves problems of information asymmetry between different levels of government in a federal system | 2. May enable states within federal systems to benefit from scale economies through lower transaction costs |
| 3. Allows states in a federal system to experiment with governance policies, thereby promoting competition in the learning process of numerous states dealing with similar problems | 3. Can reduce the risk of destructive competition between states in a federal system |

## 4. CENTRALISED AND DECENTRALISED APPROACHES TO COVID-19

This section presents an overview of various examples of centralised versus decentralised policy interventions taken by the different governments, while at the end of each subsection consideration is given as to which action worked better or worse depending on the level that implemented it.

Centralised responses to disasters are often viewed as a necessary solution, especially when the disaster occurs in a large geographic area or impacts many people. Generally, as already noted, reasons for supporting complete centralisation include: the existence of externalities across jurisdictions,[27] scale economies,[28] transaction costs, promotion of coordination, and prevention of the prisoner's dilemma games,[29] and the regulatory race to the bottom.[30] In the current COVID-19 pandemic, the case for centralised responses is arguably strong, not only due to the scale of the disaster but also given the need to reallocate large amounts of financial and material resources.[31] The pandemic has also created radical uncertainty, indescribable *ex ante* in probabilistic terms applying to a game of chance.[32] We contend that such radical uncertainty, as opposed to a quantifiable ordinary risk,[33] is a pivotal justification for a centralised response. A centralised response may additionally be necessary when material resources are not already centrally located or accounted for and must be gathered and/or relocated to locations

25 Wallace E Oates, 'An essay on fiscal federalism' (1999) 37 Journal of Economic Literature 1.

26 See e.g. Doni Gewirtzman, 'Complex experimental federalism' (2015) 63 Buffalo Law Review 241; Carol S Weissert and Daniel Scheller, 'Learning from the States? Federalism and national health policy' (2008) 68 (2) Pub Admin Rev; Andrew Karch, *Democratic Laboratories: Policy Diffusion among the American States* (The University of Michigan Press 2007); F Stokes Berry and William D Berry, 'State lottery adoptions as policy innovations: An event history analysis' (1990) 84 Am. Pol. Sci. Rev. 395; and Friedrich A von Hayek, 'Competition as a discovery procedure' in Friedrich A von Hayek (ed), *New Studies in Philosophy, Politics, Economics and the History of Idea* (University of Chicago Press 1978) 57.

27 Van den Bergh (n 3).

28 Roland Coase, 'The nature of the firm' (1937) 16 Economica 4. See also Anthony Ogus, *Cost and Cautionary Tales: Economic Insights for the Law* (Hart Publishing 2006).

29 Donald Wittman, *Economic Foundation of Law and Organization* (Cambridge University Press 2006).

30 See Ogus (n 3) 58; and Kovac (n 22) 72.

31 This does not imply that centralised responses are faster than decentralised ones, nor that the potential need for speed outweighs the benefits of decentralisation (since decentralised responses might indeed be more immediate than centralised ones).

32 For example, Kay and King argue that although COVID-19 was neither the first nor the last pandemic to hit the world, it was sufficiently different from previous pandemics to make it impossible beforehand to compute the probability of its arrival in 2020: John Kay and Mervyn King, *Radical Uncertainty: Decision-making for an Unknowable Future* (The Bridge Street Press 2020) 4.

33 'Uncertainty must be taken in a sense radically distinct from the familiar notion of risk, from which it has never been properly separated. … the essential fact is that "risk" means in some cases a quantity susceptible of measurement, while at other times it is something distinctly not of this character; and there are far-reaching and crucial differences in the bearings of the phenomena depending on which of the two is really present and operating. … It will appear that a measurable uncertainty, or "risk" proper, as we shall use the term, is so far different from an unmeasurable one that it is not in effect an uncertainty at all', Frank Knight, *Uncertainty, Risk, and Profit* (Boston MA 1921).

where they are required. Nonetheless, despite these advantages of centralised responses to COVID-19, decentralised responses to COVID-19 also bring a potential advantage, particularly as concerns implementing testing for COVID-19 and enacting public health interventions. Namely, decentralised responses to the virus may be supported by the diverging preferences of citizens, information advantages on lower levels of government, accountability (i.e., regulators should be answerable for how they exercise their powers), monopoly problems on the side of the central government,[34] and the importance of the learning process.[35] Regarding optimal government levels, one may argue that local governments will possess better information than the distant central government about local conditions and preferences and thus have greater incentives to satisfy those local preferences. Hence, social-distancing measures and decisions on local temporary lockdowns should typically be left to local government (as in EU MS), while vaccination procurement should be left to central government (i.e., the EU Commission).

The literature identifies three main benefits of centralisation and decentralisation. Considering Van den Bergh's arguments, the benefits of using a decentralised approach include the 'diverging preferences of citizens, information advantages at lower levels of government and the importance of learning processes', while centralisation's benefits include solving problems associated with 'externalities across jurisdiction, scale economies and the risk of destructive competition between legal rules'.[36]

In addition, in the current context of the COVID-19 outbreak, the centralised allocation of resources entails a high cost for the procurement, storage, transport, and logistics for this effort to be successful.

When responses to disasters are decentralised, the risk of state responses being inadequate increases when there are insufficient supplies, a lack of capacity to manufacture supplies, an inability to meet the demand for supplies in the time frame in which the use of the supplies is truly beneficial and the possibility of moral hazard. In terms of free-riding, there may be an increased risk of local hoarding of supplies and an absence of supplies being produced when responses are decentralised. Previous studies also show that states may strategically underinvest in medical stockpiles.[37] A recent study pointed to an issue with localised responses where '[p]laces with better institutions may have a lower cost of intervening, as well as higher growth prospects'.[38] This demonstrates how cross-border externalities and destructive competition problems develop when disaster responses are fully decentralised within a federal system.

One may also argue that governments engaged in combatting a pandemic often appropriate or co-opt parts of the economy viewed as essential to the related effort in order to establish some form of production efficiency, as the free market is incapable of meeting the demand while ensuring the responses can benefit from scale economies. The same approach to obtaining and distributing material resources under the time and place constraints created by wars may also be needed in COVID-19 responses as some states and regions have been hit harder than others, leading to shifting and non-uniform demand. A centralised approach to providing a strategic supply of the resources needed to combat viral outbreaks would have been particularly valuable when the COVID-19 pandemic was spreading in early 2020. In both the EU and the USA, widespread reports of shortages of essential goods for fighting COVID-19 emerged in the first half of 2020. Medical systems in several states were stressed beyond

34 See e.g. Wittman (n 29) 39. See also Kovac (n 22) 73.

35 See e.g. Wallace E Oates, 'An essay on fiscal federalism' (1999) 37 Journal of Economic Literature 3; von Hayek (n 26) 57.

36 Van den Bergh (n 1). See also Tiebout (n 24); Wallace E. Oates, *Fiscal federalism* (Harcourt Brace Jovanovich 1972); Eli Noam, 'The choice of governmental level in regulation' (1982) 35 Kyklos 2; Daniel Wincott, 'Federalism and the European Union: The scope and limits of the Treaty of Maastricht' (1996) 17 International Political Science Review 4; Lee Miles and John Redmond, 'Enlarging the European Union: The erosion of federalism?' (1996) 31 Cooperation and Conflict 3; Roland Vaubel, 'Principal-agent problems in international organizations' (2006) 1 The Review of International Organisations 2; and Philippe Pochet and Christophe Degryse, 'Monetary union and the stakes for democracy and social policy' (2013) 19 European Review of Labour and Research 1.

37 Po-Ching DeLaurentis, Elodie Adida and Mark Lawley, 'A game-theoretical approach for hospital stockpile in preparation for pandemics' (2008) 101 Hospital 1.

38 Sergio Correia, Stephan Luck and Emil Verner, 'Pandemics depress the economy, public health interventions do not: Evidence from the 1918 Flu' (2022), accessed 4.5.2022. Available at SSRN: https://ssrn.com/abstract=3561560 or http://dx.doi.org/10.2139/ssrn.3561560.

capacity regarding both basic medical supplies and medicines used in everyday healthcare practice and more specialised medical devices like ventilators, leading to a greater loss of life, most notably in Italy and New York. Another potential failure that developed in 2021 concerned the efficient allocation of antiviral drugs and vaccines.

The critical point here is that there was mismanagement within some states' early responses for allocating resources for fighting COVID-19 to the areas most in need.[39] In the USA, such mismanagement appears to have been caused by the Trump Administration, specifically its disbanding of the pandemic response teams[40] and reorganising the National Security Council.[41] While no doubt many forensic studies of COVID-19 and states' responses are to follow, one can argue that in the short run (at the pandemic's start) certain EU MS and US states were performing sub-optimally in their responses.

In economics, there is only one accepted reason for adopting centralised decision-making – when it leads to gains in efficiency. In economic terms, the marginal benefits of centralising decision-making in a federal system should be equal to the marginal costs of centralisation, given that there are also costs and benefits from having decentralised decision-making. Importantly, high response costs are necessary immediately in the short term to provide benefits lasting a long period of time; that is to say, the cost of saving a life from COVID-19 is high, one that will be incurred in a short time compared to the long-term benefits of saving that life. Indeed, the most efficient way of dealing with a viral pandemic is to prepare for one, noting that they are a historical certainty. As an illustration, one may consider that Germany, South Korea, Vietnam and Taiwan seemed to have had adequately implemented pandemic plans in place in the first half of 2020.[42]

States have in practice responded with a multitude of measures designed to limit the impact of the public health interventions, such as mortgage holidays, expanded unemployment access, expanded healthcare access, stimulus spending, central bank purchasing of debt, interest-rate adjustments, and other financial support for individuals unable to financially cope with the disruptions to the economy the interventions cause.[43] These responses show how states can act as types of regulatory laboratories that may lead to innovation. However, one should also note the purely ethical problem of such responses to the COVID-19 crisis. That is, the less institutions are able to calculate the risks (notorious asymmetric information problem) and benefits in economic terms, the more an institutional response becomes a pure ethical decision, adding to the level of democratic legitimacy needed to justify an intervention (or lack thereof). Alternatively, some centralised responses can be seen as limiting cross-border externalities or preventing unnecessary competition between states. The success of government responses aimed at lowering the impact of public health interventions appears mixed, and many more studies will no doubt address this issue in the future.

Moreover, states may hold an informational advantage over federal systems about the state of the local economy and how the trade-offs between the costs and benefits of public health interventions impact the state's economy. A trade-off in human life in the short run to avoid short-term economic losses is thus susceptible to also being a short-sighted approach that does not consider the long-term benefits of preserving human life, which may be due to states falling into myopic overemphases on the short-term losses to the economy.

In economic theory, states should seek to maximise the benefits of the precautions or responses to a pandemic since this minimises its costs and harm caused. This balancing within a federal system, such as that of the EU or the USA, requires a division of decision-making competences between the state (decentralised) and federal (centralised) levels of government.

39 For reports on shortages of necessary medical supplies in the USA and the EU, see: Joseph Ax and Jonathan Allen, 'At some US Hospitals, drugs, catheters, oxygen tanks run low' (2020) Reuters, 27 March 2020..

40 See, e.g., media accounts: https://www.washingtonpost.com/politics/2020/03/20/was-white-house-office-global-pandemics-eliminated/.

41 Lena Sun, 'Top White House official in charge of pandemic response exits abruptly' (2018) The Washington Post, 10 May 2018.

42 See, e.g., Jongeun You 'Lessons from South Korea's Covid-19 policy response' (2020) 50 The American Review of Public Administration 6-7; Tod Pollack, 'Emerging COVID-19 success story: Vietnam's commitment to containment' (2020) Our World in Data, 30 June 2020and Lothar Wieler, 'Emerging COVID-19 success story: Germany's strong enabling environment' (2020) Our World in Data, 30 June 2020.

43 See, e.g., International Monetary Fund, *Policy Responses to Covid-19* (IMF 2020).

As Van den Bergh says, 'the question is not "to harmonize or not to harmonize" but to find the optimal regulatory mix – the "smart mix"- between centralization and decentralization' which falls on 'the continuum between full competition of legal rules (the most extreme form of decentralization) and full harmonization (most extreme form of centralization)'.[44] Since states can act as laboratories of innovation, decentralised responses to some of the problems caused by COVID-19 allow states to experiment in the search for novel solutions to them, which in turn may benefit other states.[45] By combining a mix of centralised and decentralised responses to the challenges of COVID-19, large federal systems like in the USA and the EU can seek to maximise the potential positive externalities which may result from the ongoing pandemic.

However, it must be stressed that our societies are now being forced to make numerous choices regarding optimal responses to COVID-19.[46] A centralised response to a viral pandemic is appropriate for certain decisions, and a decentralised one is necessary for others. As mentioned, Van den Bergh has identified a need for a 'smart mix' of both centralised and decentralised responses to some of the problems facing society.[47] The COVID-19 pandemic seems to be such a problem in need of a 'smart mix'. Both centralised and decentralised responses to viral outbreaks are thus required, given that viral outbreaks are unpredictable and that regular free-market pressures may not force efficient expenditures to ensure the pre-emptive stockpiling of medical resources on the local level.[48] According to Van den Bergh, 'scale economies and market failures may justify abandoning the competitive model in both ordinary goods markets and markets for legislation'.[49] Even with cooperation between states, the implementation of public health interventions must be tailored to local areas to take account of the unique characteristics between jurisdictions within a state. This is clearly no simple task as the relationship between states in a large federal system becomes more nuanced, with ever more interactions between levels of government, resulting in a political structure which 'will unavoidably be complex and unique' in terms of 'minimum harmonization' and 'different forms of cooperation'.[50] Without a smart mix of centralised and decentralised responses to COVID-19, large federal systems like in the USA and the EU will be increasingly stressed beyond the immediate problems caused by COVID-19. This approach 'requires that the particular characteristics of lower levels of government are taken into account', which 'allow sufficient flexibility to account for divergent economic conditions' in each of the individual states within a federal system.[51]

### 4.1. PROCUREMENT AND DISTRIBUTION OF MEDICAL EQUIPMENT AND SUPPLIES

There was a serious problem leading up to the COVID-19 pandemic, with states and private hospitals having underinvested in strategic stockpiling. This, in turn, made markets ripe for destructive competition. Finding a smart mix of cooperation and independence with respect to the specific material needs created by the COVID-19 pandemic was thus essential for federal systems to adequately protect citizen's lives.

Ensuring that material needs arrive in the right place at the right time has proven to be a complex problem. Treatment of COVID-19 requires the use of ventilators for the most severe

44 Van den Bergh (n 1) 944.

45 See e.g. Gewirtzman (n 26); Weissert and Scheller (n 26); and Karch (n 26).

46 According to a recent news article in Nature, Maxmen and Tollefson stated that anticipated responses to global pandemics, 'anticipated several failures that have played out in the management of COVID-19, including leaky travel bans, medical-equipment shortages, massive disorganization, misinformation and a scramble for vaccines; Amy Maxmen and Jeff Tollefson, 'The problem with pandemic planning' (2020) 584 Nature 26.

47 Van den Bergh (n 3) 43–44.

48 DeLaurentis et al. used a game-theoretical model to explain how a Nash equilibrium develops in setting the size of medical stockpiles when there are 'stockpile sharing' agreements between hospitals; DeLaurentis et al. (n 37) 1.

49 Van den Bergh (n 1) 940.

50 Van den Bergh (n 1) 963.

51 Van den Bergh (n 1) 953. Yet, ultimately, Ilman and Rubinfeld argue that the choice of an 'optimal' level of decentralisation depends on the relative importance one places upon economic efficiency and the potentially competing values of political participation, economic fairness, and personal rights and liberties; Inman and Rubinfeld (n 5).

cases. The treatment of those infected with COVID-19 also calls for medical staff to wear personal protective equipment (PPE), specifically the use of face masks, to limit the virus spreading to medical staff from infected patients. Especially at the outset, there has also been a lack of materials needed to carry out testing programmes. The testing equipment and supplies markets similarly faced forms of destructive competition between states in their procurement efforts in much of the first half of 2020. These problems undoubtedly derive from failed strategic planning and also from the complexity of meeting the time and place constraints caused by a sometimes unpredictable pandemic.

In the market for these necessary goods, early on during the outbreak of the pandemic in late 2019, states bid against each other in auctions for the sale of medical equipment, drugs and supplies by private firms that possessed or controlled their production.[52] One example is in the price of ventilators where the price for ventilators spiked over several weeks in the USA.[53] Another example is the procurement of face masks or, more specifically, respirators designed to filter out small particles which contain COVID-19 pathogens and are a highly sought-after type of personal protective equipment.[54] In addition, another problem has developed in the market for the materials needed to conduct testing for COVID-19.[55]

However, when comparing these outcomes in the USA and the EU it must be emphasised that these necessary goods, like any other goods, are subject to production costs and cycles, which then also lead to temporary shortages which could be avoided by a centralised response.[56] Further, as Jongeun shows, the Asian centralised response was apparently able to move the markets to start new production cycles and lines, whereas the decentralised US and EU responses seem to have fared worse.[57]

Given that the risk of COVID-19 is diffused across states and that each state has its own internal cases of COVID-19 to deal with, leading to its own individual demand for essential medical goods, the efficiency gains from the coordinated procurement of essential medical can be considered to be substantial. In other words, coordination would be welfare-maximising and also prevent the occurrence of the prisoner's dilemma among the states and non-cooperative behaviour. However, without an agreement (containing an effective enforcement mechanism) to coordinate procurement and distribution, states might defect, leading to higher prices for these goods. This might be due to the size of a state, the scope of its needs, and the amount of capital resources that states have available for procurement.

Centralised responses to procurement can allow federal systems to benefit from the transaction costs perspective. In the USA, the federal government enacted the Defence Production Act in 1950, which the Trump Administration could have relied on to force private companies to produce and deliver both ventilators and protective masks for the federal government.[58] Yet, the limited use of the Defence Production Act saw US states competing against each other over procuring

52 Annie Linskey and others, 'As feds play "backup", states take unorthodox steps to compete in cutthroat global markets for coronavirus supplies' *Washington Post*, 11 April 2020.

53 According to the now-former New York Governor Cuomo, 'When we started buying ventilators, they were under $20,000. The ventilators are now over $50,000 if you can find them'; Andrew Cuomo, 'Public statement: Amid ongoing COVID-19 pandemic, Governor Cuomo announces statewide public-private hospital plan to fight COVID-19' (2020) New York State office of the Governor, 30 March 2020.

54 For a review of some issues involving face and respirator masks, see: Lisa Esposito, 'Do face masks work? Types and effectiveness' *U.S. News and World Report*, 3 April 2020.

55 See Linskey et al. (n 55).

56 Jongeun (n 42) 7-8. See also David Argente, Hsieh Chang-Tai and Lee Munseob, 'The cost of privacy: Welfare effects of the disclosure of Covid-19 cases' (2022) 104 The Review of Economics and Statistics 1; Hyun Jung Kim, 'South Korea learned its successful Covid-19 strategy from a previous coronavirus outbreak: MERS' (2020) Bulletin of the Atomic Scientists, available at https://thebulletin.org/2020/03/south-korea-learned-its-successful-covid-19-strategy-from-a-previous-coronavirus-outbreak-mers/ ; Amy Dighe, Lorenzo Cattarino, and Gina Cuomo-Dannenburg, *Response to COVID-19 in South Korea and implications for lifting stringent interventions* (Imperial College London 2020) . doi: https://doi.org/10.25561/79388; Tran Chung Chau, Michael R DiGregorio, and Nicola Nixon, *Vietnam: A Covid-19 Success Story* (The Asia Foundation 2020); and Anoma P van der Veere, Florian Schneider and Catherine Yuk-ping Lo, *Public Health in Asia during the COVID-19 Pandemic Global Health Governance, Migrant Labour, and International Health Crises* (Amsterdam University Press 2022) .

57 Jongeun (n 42).

58 The Defence Production Act of 1950, 50 U.S.C. Chapter 55. – Memorandum on Order Under the Defence Production Act Regarding 3M Company, Exec. Memo of 2 April 2020.

medical supplies.[59] Accusations were also made by other nations and individual US states that the US government had interfered with their orders or that states had been given resources as political favours instead of being based on material needs.[60] Since early 2020, however, the EU has enacted the extensive centralised public procurement of medical and protective equipment to cut prices and reduce competition among EU MS, after having initially faced problems of competition between the MS in the obtaining of medical and protective equipment.[61] The EU has also enacted the Coronovaris Response Investment Initiative (hereinafter CRII) to enable cross-border cooperation between hospitals and medical systems.[62] At the time of writing, the EU has also successfully concluded several contracts for the purchase of a vaccine once proven safe and effective[63] and launched a centralised COVID-19 vaccination strategy where all EU MS have access to COVID-19 vaccines at the same time and where the vaccine's distribution is performed from the central hub in Belgium.[64] Wisely, certain US states have entered into regional compacts designed to enable the coordination of public health interventions.[65] In the USA, a ventilator exchange programme was launched in mid-2020 by the White House with the goal of moving ventilators to the areas where they are needed.[66] There have also been numerous examples of cooperation and the sharing of supplies across US states and the EU MS. The point is that there has been wasteful competition between states while seeking to procure the medical supplies needed to fight COVID-19, which inevitably means lost lives when essential supplies are unavailable. Moreover, one may note that some states are more affluent than others and thus have greater buying power. This asymmetry and the resulting inequality are what a centralised procurement and redistribution system can (and must) remedy.

This is not to show the actual extent of this type of behaviour, but to demonstrate how there is competition among nations over the procurement of necessary medical goods, and that federal systems are not immune from this same type of prisoner's dilemma situation between states in federal systems. Further, economies of scope offer an additional argument in favour of centralisation, namely, that one administration is taking care of procurement instead of 27 different administrations, thereby reducing the administrative burdens and costs.

To sum up, competition between states can become wasteful or inefficient given that the public-good aspect in fighting the COVID-19 pandemic may not be fully ensured, denoting a market failure. Hence, a centralised procurement process for necessary medical supplies in times of unforeseeable outbreaks of pathogens generally works better on the central governmental level. Conversely, a decentralised procurement process for necessary medical supplies contributes to the undersupply of this public good. This competition is costly, and states should recognise the benefits of cooperating to procure and distribute the medical supplies used to combat COVID-19. Importantly, this type of cooperation needs a centralised buying and distribution mechanism or scheme to be efficient. Within the matrix for a smart mix of centralised and decentralised responses to COVID-19, it appears that the wasteful competition between states in the procurement of necessary medical goods and equipment makes a centralised procurement mechanism the most efficient response because it allows states to take advantage of scale economies and purchasing power.

59 Lara Jovana, Jory Rand and Lisa Bartley, 'Coronavirus: Bidding wars break out as cities, states, hospitals struggle to procure personal protective equipment' *ABC7 News Los Angeles*, 3 April 2020.

60 Zolan Kanno-Youngs and Jack Nicas, 'Swept Up by FEMA: Complicated medical supply system sows confusion' *New York Times*, 6 April 2020.

61 'The EU launched a joint procurement procedure on 17 March to buy ventilators on behalf of 25 member states, in a bid to cut prices and reduce competition among EU nations seeking the machines which help coronavirus patients breathe and are in short supply'; Francesco Guarascio, 'EU says Britain had chance to join ventilator procurement scheme' *Reuters World News*, 27 March 2020.

62 https://ec.europa.eu/regional_policy/en/newsroom/coronavirus-response/.

63 On 17 June, the European Commission presented a European vaccine strategy to accelerate the development, manufacturing and deployment of vaccines against COVID-19; European Commission, 2020; https://ec.europa.eu/info/live-work-travel-eu/coronavirus-response/public-health_en.

64 European Commission, 'Communication from the Commission to the European Parliament and the Council: Preparedness for COVID-19 vaccination strategies and vaccine deployment', COM(2020) 680 final, Brussels, 15.10.2020.

65 Aziz Huq, 'States can band together to fight the virus- no matter what Trump does' *Washington Post*, 15 April 2020. https://www.washingtonpost.com/outlook/2020/04/15/states-coronavirus-agreements-reopen/.

66 Steve Holland, 'Trump announces ventilator loan plan to fight virus' *Reuters*, 14 April 2020.

## 4.2. PUBLIC HEALTH INTERVENTIONS, BORDER CLOSURES, TESTING IMPLEMENTATION AND PUBLIC SOCIAL-DISTANCING MEASURES

States must make an internal decision concerning the movement of people within their territory, i.e., the decision to implement public health interventions that impose restrictions on individuals' movements and limit economic activities involving public interaction in response to COVID-19's spread. Implementing these health measures is done in the hope it will help limit the peak infection in a local population and spread the infection out over time, preventing the medical infrastructure from becoming stressed to the point of failure.[67] This has the added utility of preventing loss of life, i.e., if the disease rate among the population peaks, then some ill individuals, including those not ill with COVID-19, will be unable to obtain lifesaving medical services because of the lack of capacity in the system.

Further, internal measures to implement public health interventions may de facto close internal borders in the USA or the EU or create a type of waiting line before entry, where those entering the state must quarantine for a given amount of time. It should be noted that the issue of closing borders varies greatly between the EU and the USA. There is no legal option for US federal states to unilaterally impose travel restrictions that close internal borders between US states, while according to the current Schengen rules the EU MS[68] can – albeit for a limited time – introduce border checks on their internal borders if there is a serious threat to public policy or internal security. The EU MS must notify the European Commission and the Parliament of such closures. Nevertheless, the reintroduction of border control is a prerogative of the MS.[69] The Commission may issue an opinion with regard to the need for the measure and its proportionality, but cannot veto such a decision if a MS takes it.[70] Current anecdotal evidence may, however, suggest that this decentralised EU approach (while being extensively criticised) might indeed be a more effective one for containing the COVID-19 outbreak than the US approach, where such border closures by US federal states are impossible. Nonetheless, in the USA, states have taken various measures short of outright travel bans, including mandatory quarantine upon entry, voluntary quarantine upon entry, or the submission of proof of a negative test result upon entry.[71]

Numerous viral infection models of COVID-19 outbreaks predicted that medical services would be overwhelmed by the number of patients requiring medical treatment.[72] One way in which states can seek to avoid an overwhelmed system is to try to slow the spread of pathogen in their communities by implementing public health interventions designed to keep people from encountering infected persons and spreading the virus. The scope of these public health interventions has varied across states and there is no consensus on what are the best forms of measures. In Italy, approaches have included a strict stay-at-home order put in place during the peak infection spread, which only allows individuals to leave home for specified essential purposes, such as purchasing food from a grocery store or going to a pharmacy.[73] Other states like the Netherlands implemented more tailored approaches that still allowed for additional forms of economic activity.[74]

67 Hatchett et al. observed, when reviewing the use of public health interventions in the USA during the 1918 flu pandemic, that 'cities in which multiple interventions were implemented at an early phase of the epidemic had peak death rates 50% lower than those that did not and had less-steep epidemic curves'; Richard J. Hatchett, Carter E. Mecher and Marc Lipsitch, 'Public health interventions and epidemic intensity during the 1918 influenza pandemic' (2007) 104 Proceedings of the National Academy of Sciences 18, 7582.

68 Regulation (EU) 2016/399 of the European Parliament and of the Council of 9 March 2016 on a Union Code on the rules governing the movement of persons across borders [2016] OJ L77/1.

69 For example, in March 2020 ten EU MS had fully sealed their borders to non-nationals over the COVID-19 pandemic (Cyprus, Czech Republic, Denmark, Germany, Hungary, Latvia, Lithuania, Poland, Slovakia and Spain); Andrew Rettman, 'EU States close borders due to virus' (2020) EU Observer, 16 March 2020.

70 See https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/schengen/reintroduction-border-control_en.

71 Megan Marples and Forrest Brown, 'Covid-19 travel restrictions state by state' (2020) CNN Travel updated 16 November 2020. https://www.cnn.com/travel/article/us-state-travel-restrictions-covid-19/index.html.

72 IHME COVID-19 health service utilization forecasting team and Christopher J L Murray, 'Forecasting COVID-19 impact on hospital bed-days, ICU-days, ventilator-days and deaths by US state in the next 4 months' (2020) MedRxiv.

73 For a list of public measures made in Italy in response to COVID-19, see: Italian Ministry of Health, 'Rules, circular and ordinances and Civil protection ordinances'.

74 See Mark Rutte, 'Television address by Prime Minister Mark Rutte of the Netherlands' speech, 16 March 2020.

Since the use of some public health interventions can limit economic activity, it is essential to consider not only the benefits of such interventions but also their costs. Within Van den Bergh's criteria for centralised and decentralised federal responses, we can also claim that states may have an informational benefit in determining the costs and benefits of public health interventions.[75] The informational advantages that states possess over federal systems are likely to mean that decentralised responses in the form of public health interventions are more accurately determined on the state rather than the federal level, because states can more accurately identify the marginal costs and marginal benefits of these interventions given the unique characteristics of the state's population and economy. It should also be noted that there were failures – on both state and federal levels in the USA and the EU – to take efficient precautions to prevent harm from the pandemic prior to COVID-19, which may be due to a type of political distortion described by Van den Bergh.[76]

It is important to note that states may possess different qualities that make the impact of public health interventions on local economies unique. The population density of a given state is, for example, a factor, as is the prevalence of other illnesses in a population which add to complications from COVID-19, the scope of public transport use, the prevalence of communal living (an issue shown to be a critical factor in limiting COVID-19's spread within assisted-living facilities) and numerous other pieces of information which are best understood at the local level. This includes considering the local standards for valuing life and the local costs of implementing containment measures to reduce the loss of life from COVID-19.

Given that some characteristics of COVID-19 or any other pathogen make it challenging to know who is infected (or not) with COVID-19 within a state, a decentralised approach to implementing testing programmes and implementing public health interventions may be justified because information about how to handle local outbreaks and implement testing and public health interventions is best gathered and implemented on the state level using existing state resources related to health and safety enforcement. A centralised approach might thus not be efficient in implementing local responses to the COVID-19 outbreak due to 'the need to cope with information asymmetries between regulators and subjects of regulation'.[77] Another reason that decentralised approaches to implementing testing and public health interventions may be more efficient is that, in the absence of a clear consensus on which method is best to use, it permits 'different experiences and may improve an understanding of the effects of alternate legal solutions to similar problems'.[78]

To sum up, testing is a prime example of the need for 'smart mixes' in centralised and decentralised responses in federal systems. The potential for destructive competition in the procurement of tests means a centralised federal system must take the lead in the procurement process, while administering the tests requires local information about the population and the use of local medical professionals. As discussed, the production of the tests, and perhaps the laboratory side of the testing, is best done centrally to take advantage of economies of scale. However, the human capacity to administer testing is best organised in a decentralised manner at local governmental levels, as local jurisdictions have greater capacity to gather local information and implement testing plans. In addition, local jurisdictions are best positioned to track local cases of COVID-19. The scale economies of centralised procurement and the information advantage for local administration fit well within the criteria for a 'smart mix' approach. As to border closures, current anecdotal evidence may suggest that the present decentralised EU approach might be more effective for containing the COVID-19 outbreak than the US approach, where such border closures by US federal states are impossible. Finally, implementing public health interventions such as public social-distancing measures generally works better on the state (decentralised) governmental level.

75 Van den Bergh (n 1).

76 According to Van den Bergh, 'private politics rather than welfare considerations may be the driving force behind (de)centralization', which 'may cause… types of political distortions'; Van den Bergh (n 1) 944.

77 Van den Bergh (n 3).

78 Van den Bergh (n 3). See also Inman and Rubinfeld (n 4).

## 5. CONCLUSION

This paper has considered how states within federal systems, such as in the EU or the USA, make decisions in response to viral pandemics like the COVID-19 pandemic. Findings concerning procurement and public health interventions in times of unforeseeable outbreaks of pathogens may be generalised. So, procuring and distributing the material goods needed for testing, and the procurement of medical supplies required for treating the severely ill may best be centrally administered, in order to: limit cross-border externalities that may spill across the states in a federal system; take advantage of the economies of scale and distribution advantages of a centralised approach; and prevent inefficient competition between states in the procurement of those material goods. Moreover, the current COVID-19 pandemic is responsible for radical uncertainty and such radical uncertainty, as opposed to a quantifiable ordinary risk, calls, as we argue, for a centralised approach.

A centralised procurement and distribution mechanism might also be needed to address the moral hazard problem whereby states may act to hoard materials, as well as to ensure that private firms do not take advantage of their increased market power regarding the sale of essential medical goods. In particular, the market for ventilators used to treat the most seriously ill and the personal protective equipment used to protect medical workers from becoming infected while treating infected patients, was impacted by a moral hazard problem. However, a decentralised (state-level) approach to implementing testing for COVID-19 or the temporary closure of internal borders may be necessary because of the information advantages that decentralised decision-makers possess over centralised decision-makers concerning the impact of closing borders.

In addition, the decision to implement public health interventions (like social-distancing measures) may be most efficiently realised through a decentralised decision-making process by states due to an information advantage on the state level over the federal level. A decentralised response to implementing testing and enacting public health interventions may also provide the information needed on how best to implement these measures, noting the uncertainty over the best course of action. This decentralised approach allows state jurisdictions within federal systems to test which method is best amidst the uncertain nature of COVID-19.

Finally, legal and regulatory adaptations have already been made in the EU to address the deficiencies revealed in this paper. Namely, with the implementation of EU joint procurement procedures for vaccines, ventilators and other necessary medical supplies, the EU has, in line with the theoretical arguments presented above, shifted the previous decentralised decision-making process to a centralised one. Thus, in this respect the existing arrangements are adequate and reform is not needed. However, the decentralised, state-level approach to testing, closure of internal borders and social-distancing measures and other public health interventions is still governed at the state governmental level. Such regulatory response is also in harmony with the presented arguments on the most effective allocation of governmental competences, and once again reform in this respect is not needed. In order to prepare and enable the most effective health responses for future pandemics and achieve the most effective integration of EU MS, these regulatory and legal adaptations and allocation of competences should also become a permanent feature of the constitutional landscape of the EU.

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The authors have no competing interests to declare.

## AUTHOR AFFILIATIONS

**Paul Aubrecht, PhD Candidate**
Erasmus University Rotterdam, Erasmus School of Law, Rotterdam Institute of Law and Economics, Burgemeester Oudlaan 50, 3062 PA Rotterdam, The Netherlands

**Jan Essink, PhD**
ECORYS Public Policy Consultant (Security & Justice), Watermanweg 44, 3067 GG Rotterdam, The Netherlands

**Mitja Kovac** orcid.org/0000-0003-0308-1865
Professor of civil and commercial law, University of Ljubljana School of Economics and Business, Kardeljeva ploscad 17, 1000 Ljubljana, Slovenia

**Ann-Sophie Vandenberghe**
Associate Professor, Erasmus University Rotterdam, Erasmus School of Law, Rotterdam Institute of Law and Economics, Burgemeester Oudlaan 50, 3062 PA Rotterdam, The Netherlands

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