

# “One, none, and a hundred thousand” recipes for a robust response to turbulence

Daniela Cristofoli<sup>1</sup>  | Maria Cucciniello<sup>2</sup>  | Marta Micacchi<sup>1</sup> |  
Benedetta Trivellato<sup>3</sup>  | Alex Turrini<sup>4</sup>  | Giovanni Valotti<sup>4</sup>

<sup>1</sup>SDA Bocconi School of Management,  
Bocconi University, Milan, Italy

<sup>2</sup>University of Edinburgh Business School,  
University of Edinburgh, Edinburgh, UK

<sup>3</sup>Università degli Studi di Milano – Bicocca,  
Milan, Italy

<sup>4</sup>Università Bocconi, Milan, Italy

## Correspondence

Benedetta Trivellato, Università degli Studi di  
Milano – Bicocca, Milan, Italy.

Email: [benedetta.trivellato@unimib.it](mailto:benedetta.trivellato@unimib.it)

## Abstract

Turbulence appears to be a “new normal” in current societies, and public organizations need to learn how to react and adapt to it. Scholars agree on the need for robust actions to respond to turbulence. Through a qualitative comparative analysis performed on the vaccination campaigns of all 20 Italian regions, our paper explores whether different and alternative models of robustness may exist to cope with turbulence. Results shed light on three alternative models featuring static, hybrid, and dynamic robustness. They also highlight that robust governance appears to involve a capacity to learn, and to employ this learning as circumstances demand.

## 1 | INTRODUCTION

We live in an era characterized by new and disruptive problems (Ansell et al., 2017; Ansell & Trondal, 2018; Boin et al., 2021; Boin & Lodge, 2016; Gofen et al., 2021). Climate change, globalized terrorism, disruptive technologies, down to the Covid-19 pandemic, challenge governments and societies with surprising, unpredictable, and uncertain events.

Drawing from physics, these problems are often referred to as turbulence. Ansell and Trondal (2018, p. 43) define turbulent problems as “situations where events, demands and support interact and change in highly variable, inconsistent, unexpected, or unpredictable ways.” Turbulence may be endogenous or exogenous and can be considered a condition or dysfunction of our societies, still, argue Ansell and Trondal (2018, p. 45), it appears to be a “new normal” in current societies, and public organizations have to learn how to “react, manage and adapt to it.”

Scholars agree on the need for robust actions to respond to turbulence (Ansell et al., 2020; Capano & Woo, 2018; Ferraro et al., 2015; Howlett et al., 2018), that is actions that are able to “uphold or realize a public

---

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2022 The Authors. *Public Administration* published by John Wiley & Sons Ltd.

agenda, function, or value in the face of the challenge and stress from turbulent events and processes through flexible adaptation, agile modification, and pragmatic redirection” of policies and governance practices (Ansell et al., 2020, p. 952). They have explored the issue from different viewpoints, thus shedding light on different components of robustness: robust politics, to pragmatically formulate and re-formulate policies able to adapt in the face of change (Ansell & Trondal, 2018; Capano & Woo, 2018; Howlett et al., 2018); robust governance, aimed at agile modification and flexible adaptation of strategies and decisions (Ansell et al., 2020); flexible organizations based on decentralized networks (Kenis et al., 2019); and communication strategies fostering a sense of civicness, gaining citizens' support even in front of continuous changes (Boin et al., 2021).

What is still missing is an attempt to explore whether and how these components may combine into robustness models, and whether different and alternative models of robustness may thus exist to cope with turbulence. Howlett et al. (2018), for example, argue that different robust responses may be necessary, in relation to different kinds or different levels of turbulence.

The aim of our paper is, then, to explore what characterizes robust government responses to different levels of turbulence. More specifically, our aim is to explore which necessary and sufficient conditions (or combinations of conditions) occur for the effectiveness of robust government responses to different levels of turbulence.

For this purpose, we studied the Covid-19 vaccination campaign in all 20 Italian regions. As better explained later, the vaccination campaign can be conceived as a turbulence within the larger turbulence caused by the pandemic, which requires an appropriate, and especially robust, government response, so as to vaccinate the highest number of people in the shortest time.

We employed qualitative comparative analysis (QCA) (Rihoux & Ragin, 2009; Schneider & Wagemann, 2012) to conduct the study. In particular, we employed QCA to explore whether and how pragmatic politics, flexible governance strategies, decentralized response networks, and a civicness-oriented public communication differently combine to successfully cope with different levels of turbulence, and produce equally effective results. More specifically, to explore whether different models of robustness might exist in relation to different levels of turbulence, we conducted the QCA in relation to two different steps of the vaccination campaign, characterized by growing levels of turbulence. The interpretation and discussion of the study results also allow to formulate some considerations about the relationship between different models of robustness and governments' legitimacy.

As a result, we first identified competing constellations of factors, characterizing robust government responses to different level of turbulence, that can simultaneously ensure effective outcomes. In particular, robust responses characterized by pragmatism, agility, and flexibility seem to be especially important during the initial phase of a turbulent period, when pragmatic politics seems almost to be a necessary condition. Second, and surprisingly, our results also shed light on the fact that even more static responses may be able to ensure effective outcomes. This happens in the second phase of the campaign, when the level of turbulence increases, but governments also have learnt how to deal with it. Drawing from Ansell and Trondal (2018), we refer to these robust models as “static robustness” to distinguish them from the “dynamic robustness” that seems to characterize the first phase of the turbulence. Third, we propose that this coexistence of multiple models of robustness is due to a sort of learning effect: robust governance appears to involve a capacity to learn, and to employ this learning as circumstances demand. Fourth, a further interpretation of our results suggests that different government responses to turbulence can be explained through a different approach to input and output legitimacy (Triantafillou & Hansen, 2022). Input and output legitimacy seems, in this sense, to act as a propeller of different models of government robustness in front of turbulence. Based on these considerations, some propositions are formulated at the end of the paper.

## 2 | HOW TO GOVERN TURBULENCE: THE NEED FOR ROBUST ACTION

The concept of robustness originates from the natural sciences: it indicates a system's ability to maintain its functions or characteristics in front of external shocks or perturbations. In politics and governance, robustness is

conceived as the ability of public organizations to maintain the same performance in front of internal or external perturbations, despite structural or procedural change (Capano & Woo, 2018). In this sense, the emphasis is on the capacity to maintain the expected outcome in front of turbulence, whatever change is necessary in the organization or process in order to achieve it. This makes robustness a dynamic property of political institutions and public organizations, which Ansell et al. (2020) define as the ability to accomplish a public action despite the challenges caused by turbulence and by virtue of “flexible adaptation, agile modification, and pragmatic redirection” of policies and governance practices.

Agility, flexibility, and improvisation seem, then, to be the basic principles for a robust response to turbulence (Ansell & Trondal, 2018; Capano & Woo, 2018; Ferraro et al., 2015; Howlett et al., 2018): flexibility and agility allow to change direction rapidly and accurately, and improvisation offers creative solutions to deal with always new challenges (Ansell & Trondal, 2018; Jessop, 2002; Lai, 2018).

Different degrees of agility, flexibility, and improvisation may be necessary in relation to different turbulent circumstances. As Howlett et al. (2018) argue, in order to understand how to cope with turbulence, it is necessary to understand how much agility and flexibility are necessary: it may in fact vary in relation to the level of turbulence.

### 3 | HOW TO BUILD A ROBUST ACTION: MIXING AND MATCHING DIFFERENT PERSPECTIVES

Scholars have explored the concept of robustness from different viewpoints, thus shedding light on what we can consider different components of a government's robust response to turbulence. From a political science perspective, scholars have focused on the idea of robust politics to pragmatically invent and re-invent policies when facing new and emerging challenges (Howlett et al., 2018; Sørensen & Ansell, 2021). From a governance perspective, they have highlighted the need for robust strategies to formulate and re-formulate decisions in a flexible and agile way. From a managerial perspective, scholars have shed light on the need to activate flexible organizations based on collaboration and decentralized response networks (Kenis et al., 2019). Recently, Boin et al. (2021) have also pointed out the importance of communication strategies that foster a sense of civicness, in order to gain citizens' support in front of continuously changing actions and events.

#### 3.1 | Pragmatic politics

As they explore the formulation of policies in turbulent times, political scientists have increasingly relied on the principles of pragmatism (Ansell & Boin, 2019), which features a general concern about problem solving in conditions of uncertainty, and offers a model of practical rationality (Garrison, 2000; Menand, 2001) to interpret how people act in an uncertain world. It considers all knowledge as potentially fallible and subject to continuous revisions (Dieleman, 2017), with the implication that creative action necessarily begins with doubt and contingency (Evans, 2000; Shields, 2008). Drawing on a type of inference called “abduction,” whereby a hypothesis is formed in the context of incomplete information, decision-makers acknowledge that the information they collect will never be complete: they set to adopt incremental strategies that are robust in contexts of rapid change (Ansell & Boin, 2019). In this perspective, strategy emerges through action, and is continually revised as new information becomes available. Strategies that reflect a pragmatist attitude are, for instance: experimentalism, where leaders enact decisions and monitor their impact, with small steps and rapid feedback helping to avoid making irreversible commitments (Ansell & Bartenberger, 2016), and bricolage, whereby decision-makers build on what is available (Carstensen, 2017; Duymedjian & Rüling, 2010), so that they focus on what is possible, as opposed to what is desirable (Ansell & Boin, 2019).

The pragmatist approach contrasts with the rational approach, traditionally dominating decision-making (Ansell & Bartenberger, 2016), which implies that decision-makers are guided by well-defined objectives, and then optimize the means to achieve them by collecting all the information that is necessary to understand them. It calls for the collection of more information in the face of uncertainty, and assumes that decisions are undertaken by assessing multiple scenarios, as it relies on an underlying model of rational planning and political negotiation (Ansell & Boin, 2019).

Based as it is on inquiry to collect information aimed at reducing uncertainty, evaluating trade-offs, and optimizing utility, a rational decision-making is not well suited to turbulent times. A pragmatist approach, by contrast, focuses on surprise and anomalies, and tests interpretations while searching for ways to creatively solve value conflict, thus seeming to be more adapt at policy-making in turbulent times (Ansell & Boin, 2019).

### 3.2 | Flexible governance strategies

Ansell et al. (2020) quest how to formulate strategies and take decisions in turbulent times. In front of turbulent problems, foresight and planning are not enough. New governance strategies are necessary, based on “flexible adaptation, agile modification, and pragmatic redirection” (p. 4), so that public organizations may adapt in creative and agile ways to emerging challenges.

They propose six strategies as especially conducive to robust governance, which variously embody the principles of pragmatism rather than those of a rational approach to decision-making. For instance, *scalability* implies mobilizing and demobilizing resources across organizations, levels, and sectors to meet changing needs (Ansell & Jacob, 2018). With *prototyping*, new solutions are created through rapid testing and revision that relies on swift feedback (Brown & Wyatt, 2010); *modularization*, in contrast, seeks new solutions by combining new or existing modules in various ways (Ansell & Gash, 2018). *Bounded autonomy* tackles the involvement of regional and local actors in implementation activities, by pushing them to adapt strategies to the changing conditions on the ground (Ferraro et al., 2015). Moreover, *bricolage* is also included by Ansell et al. (2020) among robust governance strategies, as it combines available tools and resources in the construction of workable solutions to turbulent problems (Chandra & Paras, 2020; Koppenjan & de Jong, 2018; Phillips & Tracey, 2007). Lastly, *strategic polyvalence* implies devising solutions that can be re-directed depending on emerging opportunities and obstacles (Padgett & Ansell, 1993).

All these strategies feature a different dimension of flexibility and experimentalism. They can be used independently or be combined in front of turbulent problems, thus featuring a different degree of agility, flexibility, and improvisation within each government response.

### 3.3 | Decentralized response networks

Networks and collaboration have been suggested as managerial practices to “mobilize valuable resources, spur innovation and build common ownership over joint solution” for a long time (Ansell et al., 2020, p. 950). For these reasons, once possible coordination difficulties have been solved, networks are considered among the best managerial practices to respond to crises and emergencies (Moynihan, 2009). Response networks allow, in fact, to timely mobilize resources and competences that would otherwise be difficult to develop. Their quite informal and shared structure allows also to rapidly adapt in response to changing conditions (Boin & Bynander, 2015; Kapucu et al., 2010; Nohrstedt et al., 2018; Nowell et al., 2018).

However, different network structures can lead to different degrees of agility and flexibility and can thus be considered suitable to varying levels of turbulence.

Provan and Kenis (2008) identify three different governance modes (i.e., shared governance, lead organizations and Network Administrative Organization [NAO]) and argue that shared and decentralized networks are the most flexible solution, to be used when network size is limited and the level of trust is high. On the contrary, as network

size increases and complexity grows, more centralized solutions are preferable. Kenis et al. (2019) explore the relationship between network structure and infectious disease threats. They add two hybrid models—the combined lead-NAO and the core-periphery network (Nowell et al., 2018)—to Provan and Kenis' (2008) typology, and conclude that the more complex is the infectious disease threat, the more preferable are hybrid solutions (mixing decentralization and centralization, flexibility and stability). They argue that a shared and decentralized governance mode is the best solution in case of simple threats. When the threat is complicated, centralized networks with a core agency are to be preferred. In case of complex threats, a core-periphery network, combining elements of centralization and decentralization, is the best solution to adapt to continuous new challenges.

### 3.4 | Civics-oriented communication

Another critical factor in the face of turbulence is civics-oriented communication (Boin et al., 2021). Citizens are often concerned in front of turbulence, because it disrupts their way of life and requires governments to act in a continuously changing way, with the implication that it is not so easy for citizens to understand this, and their trust in government is often hard tested. However, “citizens' trust in government, compliance with rules and regulations, and acceptance of new norms and values are critical to the creation and implementation of robust governance solutions, especially since government recommendations will often be subject to frequent reformulations that test the populations' understanding and patience” (Ansell et al., 2020, p. 956). In this perspective, communicating with anxious and concerned citizens is a critical component of a successful robust response to turbulence.

Alon-Barkat (2020) shows that symbolic communications can increase trust in policies even if the policy is not related to the desired outcome. Böhm et al. (2016) in their study of a vaccination campaign show the importance of activating the link between altruism and vaccine uptake. Similarly, Vietri et al. (2012) show that individuals are sensitive to the amount of good they feel they are doing for others by vaccinating. In the same way, Thomsen et al. (2020) shed light on the importance of government communication that increases self-efficacy and promotes collective, as opposed to private, benefits.

In this perspective, communication strategies cultivating a sense of altruism and civic duties look like essential when governments deal with turbulence. This allows to build a broad-based and popular support, able to foster public policies and decisions, even when the latter are continuously changing.

In summary, extant studies provide a clear picture of the principles inspiring a robust action (i.e., flexibility, agility, and improvisation). Also, they provide us with different components of a robust government action (pragmatic politics, flexible governance strategies, decentralized response networks, and civics-oriented communication). What is still missing is an attempt to explore whether and how these components may variously combine into different models of robustness, to face different levels of turbulence and produce equally effective outcomes. As Ansell and Trondal (2018), in fact, argue, flexibility and stability are not two opposite concepts and may be complementary within the same model of action leading to effectiveness. Following Ansell et al. (2020, p. 952), we conceive the outcome/effectiveness of a robust action as the ability to “uphold or realize a public agenda, function or value in the face of the challenge and stress from turbulent events and processes.”

## 4 | METHODS

In order to explore whether and how our selected components of robustness—pragmatic politics, flexible governance strategies, decentralized response networks, and civics-oriented communication—differently combine to face different levels of turbulence (and produce equally effective results), we employed fuzzy-set QCA (fsQCA) (Ragin, 2000; Schneider & Wagemann, 2012) on the responses that the 20 Italian Regions put in place to cope with the turbulence generated by the Covid-19 vaccination campaign. Due to the principles of conjunctural causation,

equifinality, and asymmetry (Misangyi et al., 2017; Ragin, 2009), QCA is, in fact, the most suitable method for the purposes of our analysis.

Ansell et al. (2020, p. 949) consider the Covid-19 pandemic a turbulence, as it is characterized by “surprising, inconsistent, unpredictable, and uncertain events that persistently disrupt our society and challenge the public sector.” In this perspective, the Covid-19 vaccination campaign can be considered as a turbulence within the larger turbulence of the pandemic that requires an appropriate, and especially robust, government response. As in most European countries, the vaccination campaign in Italy started on December 27, 2020 (V-day) and progressed among newly emerging challenges, related, for example, to uncertainties about vaccines' availability, unsuspected adverse effects from the vaccines and the resulting distrust in the campaign, continuously new rules and legislation issued by the national government, and so on. This complex, changing, and volatile context forced Italian Regions to continuously re-invent their policies, governance practices, managerial solutions, and communication strategies, so as to be able to vaccinate the highest number of people in the shortest time (Garavaglia et al., 2021).

We focused on the vaccination campaign since its beginning on December 27, 2020 to June 2, 2021, when the vaccination campaign was opened to all Italian citizens regardless of their age group. After June 2, in fact, the results of the vaccination campaign were more influenced by citizens' behaviors, no-vax positions and vaccine hesitancy, rather than by government actions.

Our approach is explorative in nature. First, we conducted a QCA on the conditions for the effectiveness of a robust response to turbulence during the first phase of the vaccination campaign (December 27, 2020 to March 1, 2021), when the level of turbulence was lower. We then did the same for the second phase of the vaccination campaign (March 2, 2021 to June 2, 2021), when the level of turbulence increased. Starting March 2, in fact, unpredicted delays in vaccine supply, unexpected adverse effects of vaccine inoculation, and continuously new and changing government recommendations interacted and changed in “highly variable, inconsistent, unexpected, and unpredictable ways”, to recall Ansell and Trondal's (2018, p. 45) definition of turbulence, thus making the situation even more turbulent. Finally, we compared the resulting configurations. If the two phases are characterized by different configurations, this may lead us to presume the existence of a relationship between level of turbulence and robustness models. The interpretation of our results allows also to formulate some considerations about the relationship between robustness and legitimacy. Based on this analysis, some propositions for future research can be formulated about the relationships among turbulence, robustness, effectiveness, and legitimacy.

## 4.1 | Empirical setting

As in other parts of Europe, the vaccination campaign in Italy started on December 27, 2020, the so-called V-day. Based on existing and newly created organizational arrangements, the central government dealt with vaccine procurement (within the framework of the relevant EU agreements) and with the distribution of doses to the 20 Italian Regions, through a purposefully established Extraordinary Commissioner for the Covid-19 Emergency. Regional governments were responsible for the planning and implementation of vaccine inoculation based on the general priorities set by the central government.

At the beginning of the campaign, national guidelines stated that health workers were the first to be vaccinated, together with guests and personnel of retirement homes, followed by the general population aged 80 and over. The only available vaccine at this initial stage was the Comirnaty produced by Pfizer/BioNTech, commonly known simply as Pfizer. At the beginning of January, the EMA (European Medicines Agency) approved the Moderna vaccine, which was then included in the national and regional plans for distribution and inoculation. The initial exclusive reliance on the Pfizer vaccine, together with the uncertainty about its procurement and the announcements by the company that delivered quantities would partly be reduced, severely challenged the regional governments' ability to organize the vaccination campaign, often forcing them to review and change their plans. The vaccination campaign thus went on with different timings and methods in the various regions.

On February 13, 2021, a new government took office at the national level, followed by the appointment, on March 1, of a new Extraordinary Commissioner for the Covid-19 Emergency. He immediately changed the rules and the spirit of the vaccination campaign. After the appointment, his message to the Regions was: “We need to go fast, and we need to do it all together.” The general guidelines for the vaccination campaign were, then, reset, based on the compelling aim that the inoculation effort be accelerated. On March 12, the country adopted a new vaccination plan, identifying the conditions of seniority and fragility to be adopted as guiding principles for the organization of the campaign itself; the rest of the population was to be vaccinated according to decreasing age groups.

Despite greater clarity in the general aim to be pursued—vaccinate as many people as possible in the shortest time—and in the population to be prioritized, the period starting March 2, 2021 actually set an increase in turbulence, relative to the previous months. This was due to the stepping up of unexpected and variable circumstances: the delays in vaccine supply continued in unpredictable ways; and two additional vaccines were introduced (the AstraZeneca vaccine, later renamed Vaxzevria, and the Janssen vaccine supplied by Johnson&Johnson), but their use on a massive scale generated unexpected effects in Italy and in Europe more generally, thus undermining citizens' trust in the vaccination campaign. The vaccination campaign thus went on, among increasing levels of turbulence, requiring regional governments to adopt ever new and changing actions. On June 2, the campaign was opened to all Italian citizens, regardless of their age.

For the purpose of this study, we considered all 20 Italian Regions, which are subject to the guidelines and supervision of the national Ministry of Health, but—under the Italian Constitution—enjoy a high degree of autonomy in healthcare-related matters, and therefore also in organizing the vaccination campaign in their respective territories. We therefore collected data on the 20 regions for the period from December 27, 2020 to June 2, 2021, by distinguishing the first phase (December 27 to March 1) from the second phase (March 2 to June 2) in order to take into consideration the possible effect of different levels of turbulence.

## 4.2 | Data collection

Data were collected through multiple sources, including documentary analysis, press analysis, and official data on the vaccination campaign both at the national and regional level as relevant. In particular, we analyzed each Region's vaccination plan, together with documents about specific regional or local level provisions. To collect data about the pragmatic approach of the Regions' policy-making we analyzed press conferences by the Presidents of the regional governments and the regional Aldermen in charge of Healthcare. Moreover, for each region we collected and analyzed all the newspaper articles concerning the vaccination campaign published between December 27, 2020 and June 2, 2021. Articles were extracted from the local editions of one of the most popular and widely available Italian daily newspaper. When local editions were not available, we relied on local newspapers. In total, we collected, read, and analyzed 3,285 press articles. Data were analyzed by two researchers separately for each region, and then triangulated with press reviews of “Il Sole 24 Ore,” the main Italian national daily business newspaper, with a total of 166 articles. In this way, we collected data about the governance strategies enacted by each Region. Official data from the database github (<https://github.com/italia/covid19-opendata-vaccini>), especially created to monitor on a daily basis the development of the vaccination campaign in Italy, were also used to collect data about the decentralization of the response networks and the effectiveness of the Regions' actions in the vaccination campaign. Finally, all the slogans related to the vaccination campaign adopted by the 20 Regions were collected and analyzed in order to appreciate the civiness-orientation of their communication strategy.

## 4.3 | Operationalization and calibration

Table A1 in the Supporting information contains detailed information about data collection, operationalization, and calibration of the conditions and the outcome.

In particular, the measure of *pragmatic politics* (PRAGM POL) is based on Ansell and Boin's (2019) definition of a pragmatic approach to decision-making, centered on taking small incremental decisions and continuously adapting them (without waiting for perfect information), so as to avoid irreversible decisions and maintain flexibility under different circumstances.

Based on Ansell et al.'s (2020) categorization of governance strategies, we measured the *flexibility of regional governance strategies* (FLEX STR) in terms of the degree of flexibility and experimentalism associated to the three governance strategies emerging from our content analysis of newspaper articles: scalability (1), bricolage (2), and prototyping (3).

In order to measure the *decentralization of the regional response networks* (DEC NTW, we considered the percentage of small-scale inoculation centers spread across the regional territory relative to the total number of inoculation centers (implying that a centralized network would consist mostly of a few hospitals and large-scale vaccination hubs).

The degree of *civicness-oriented communication* (CIV-O COM) is measured through a content analysis of the slogans of the vaccination campaign, which identified slogans driven by individualistic values (1), altruistic values (2), and civicness-oriented values (3).

The *effectiveness of the regional governments' robust action* (EFF) in the context of the vaccination campaign is measured as average value of the daily ratios between the number of inoculated doses and the number of doses provided by the national government. This measure gives, in fact, a clear signal of the regional government's ability to "uphold or realize a public agenda, function or value in the face of the challenge and stress for turbulent events" (Ansell et al., 2020, p. 952), which in our case corresponds to vaccinating the highest number of people in the shortest time.

To prepare the data for the QCA, then, we relied on a theory-driven calibration for the conditions "flexible governance strategies" and "civicness-oriented communication" and on the software Tosmana<sup>1</sup> to identify the thresholds for the calibration of "pragmatic politics," "decentralized response network" and for the outcome (effectiveness of the regional government's robust action).

## 5 | FINDINGS

We first performed an analysis of necessity, so as to ascertain whether any of the conditions are necessary for causing the outcome (a condition is necessary when the outcome occurs only when the condition is also present), and subsequently an analysis of sufficiency (a condition, or combination of conditions, is sufficient when each time the condition occurs, the outcome also occurs). The analysis of sufficiency relies on a process of minimization to generate a simpler equation—the so-called "minimal formula"—for the conditions (or combinations of conditions) that lead to the expected outcome. This describes the configurations that are sufficient for the outcome. We used fsQCA and Tosmana as software for the analysis.<sup>2</sup>

In the following, we first present the necessity and sufficiency analysis for the effectiveness of robust responses during the first phase of the vaccination campaign, followed by the same analysis during the second phase, when the level of turbulence increases. Finally, we compare the combinations of conditions (models of robust response) leading to effectiveness in the two phases, and discuss the resulting evidence. A further interpretation of our results allows to formulate some considerations also about robustness and legitimacy. Some propositions are then formulated about the relationships between level of turbulence, models of robust response by governments, effectiveness, and legitimacy.

### 5.1 | Robust responses to lower levels of turbulence—first phase of the vaccination campaign

Table 1 shows the results of the necessity analysis. None of the selected conditions (both in their presence and absence) seems to be necessary for the effectiveness of robust government responses to turbulence: none, in fact, exceeds the normally accepted 0.9 consistency threshold (Ragin, 2000).

**TABLE 1** Lower level of turbulence: analysis of necessity

	Consistency	Coverage
PRAGM POL	0.868504	0.761740
~PRAGM POL	0.207874	0.478261
FLEX STR	0.218898	0.643518
~FLEX STR	0.792126	0.641582
DEC NTW	0.570079	0.741044
~DEC NTW	0.480315	0.596285
CIV-O COM	0.769291	0.732933
~CIV-O COM	0.252756	0.481259

Note: the tilde sign (~) is used to indicate negation or absence of a condition.

**TABLE 2** Lower level of turbulence: analysis of sufficiency

	Path 1	Path 2
	pragm pol*~flex str*civ-o com	pragm pol*flex str*dec ntww
Raw coverage	0.574803	0.200787
Unique coverage	0.537008	0.162992
Consistency	0.900123	0.955056
Cases with greater than 0.5 membership in term	LAZ, ER, TAA, UMB, MAR	VEN, TOS Solution coverage: 0.737795 Solution consistency: 0.909709
Complex solution Frequency cut-off: 1; consistency cut-off: 0.868889		

Note: The \* sign indicates the logical operator “and,” and the + sign indicates the operator “or”; the tilde sign (~) is used to indicate negation or absence of a condition. The notation => denotes the logical implication operator. Truth table and details about the analysis of sufficiency can be found in the Supporting information.

As Table 2 displays, two configurations (or models of robustness) seem to be sufficient for the effectiveness of government responses in the face of turbulence.

*Configuration number 1* is characterized by a pragmatic political orientation coupled with governance strategies featuring a low or absent degree of agility, flexibility and improvisation, and a strong civicness-oriented communication. The centralized or decentralized nature of the vaccination network in this case is not relevant to reach the outcome.

Here decision-makers acknowledge that uncertainty is widespread and turbulence is increasing, which prevents the adoption of a conventional rational approach. They need to decide timely and have no time to collect all the necessary information. Nonetheless, governance strategies are not especially agile or experimental, which may be linked to internal/political or external constraints or a “wait and see” approach. A civicness-oriented communication helps clarify the aims and the nature of the decisions taken (even if continuously changing), and sustain motivation in the face of uncertainty, thus gaining citizens' support. The focus of such communication—in its effort to foster citizens' commitment and trust in the vaccination campaign—is the sense of civicness and care for the community.

This happens for example in the MAR region, where a pragmatic approach can be seen, for instance, in the attempt to start vaccinating school employees in conjunction with the immunization of the elderly. The effort to meet demand by increasing staff is central to local legislative measures calling for retired doctors and medics to be an active part of the vaccination campaign. From this perspective, strategies' flexibility and experimentation are quite

limited in the case of MAR, as the regional government relies mainly on *scalability*. Starting with the vaccination of the over-80 in the last days of February 2021, the link between the pragmatic approach and a civics-oriented communication becomes clearer. As they thank healthcare personnel for their efforts, and praise the decision to rely on a network of facilities for systematic screening, decision-makers ask citizens to play their part in the vaccination campaign. By evoking health professionals' courage in the darkest times of pandemic, they exhort citizens to comply, as "vaccination is life-saving and local communities need everybody's contribution for the vaccination plan to be effective." The appeal to prosocial behavior is well summarized in the slogan "the vaccine is essential for you and the ones you love", which makes a profoundly moving case for promoting vaccine uptake.

*Configuration number 2* also features a pragmatic political orientation, here coupled with flexible and experimental governance strategies and a vaccination network with a high number of decentralized inoculation points. Civics-oriented communication in this configuration is not relevant for the outcome.

In this case, decision-makers link a pragmatic approach to the exploration and experimentation that characterize those flexible governance strategies which are likely to support such approach. They also rely on a diffuse network to implement such strategies, which may be useful to get a better understanding of the problems on the ground, allow decentralized actors a certain degree of autonomy if needed, and collect the wider feedback that is crucial for the effective functioning of a pragmatist approach. In fact, pragmatism pushes against overestimating one's capacities, and in favor of acknowledging that partners in a network have their own expertise and may even have better ideas about how to respond to the problem at hand.

This is what happens, for example, in the TOS region, where the regional government shows a pragmatic approach to decision-making. Whereas at the beginning of the vaccination campaign the national government suggested to set aside 30% of the available vaccines for the second dose, the regional government decides to use (almost) all the available ones. In the same way, TOS is among the first Italian Regions to inoculate the AstraZeneca vaccine, when it becomes available, even if the rules about its inoculation are not yet clear. "As soon as the doses arrive, they need to be inoculated. One day earlier means one additional day where we fight against the virus." Following the same approach, the regional government adopts a flexible strategy aimed to continuously revise decisions (e.g. when facing delays in the provision of the vaccines) and experiment with new solutions. The vaccination of health workers is still in progress, for example, when the Region decides to launch an experiment and vaccinate for 1 week also people aged 80 and over. The results of the experiment are used to design the vaccination campaign for the wider population over 80. This approach combines well with a decentralized and diffuse inoculation network that tries to get as close as possible to people, above all the frail and the elderly. The TOS Region involves, for example, general practitioners for the vaccination of people over 80. General practitioners' practices are spread across the regional territory, thus making it easier for the elderly to reach the inoculation centers; above all, general practitioners know their patients, who in turn trust them, thus increasing citizens' trust in the vaccination campaign and in the regional government.

## 5.2 | Robust government responses to higher level of turbulence—second phase of the vaccination campaign

In order to obtain robust government responses to higher levels of turbulence, neither the pragmatism of politics and the flexibility of governance strategies, nor the decentralization of the response networks and the civics orientation of communication strategies are necessary conditions (Table 3).

The analysis of sufficiency, on the other hand, shows four paths that are sufficient for the effectiveness of governments' responses to higher levels of turbulence (Table 4).

*Configuration number 3* features an approach that is more rational than pragmatic, combined with low flexibility and experimentalism in governance strategies, and a rather centralized vaccination network. Civics-oriented communication in this configuration is not relevant to attain the outcome.

**TABLE 3** Higher level of turbulence: analysis of necessity

	Consistency	Coverage
PRAGM POL	0.780552	0.865889
~PRAGM POL	0.308147	0.746815
FLEX STR	0.726675	0.808480
~FLEX STR	0.352168	0.848101
DEC NTW	0.716820	0.797515
~DEC NTW	0.341656	0.822785
CIV-O COM	0.705650	0.805701
~CIV-O COM	0.333114	0.760120

Note: the tilde sign (~) is used to indicate negation or absence of a condition.

**TABLE 4** Higher level of turbulence: analysis of sufficiency

	Path 3	Path 4	Path 5	Path 6
	~pragm pol*~flex str*~dec ntw	~pragm pol*~dec ntw*civ-o com	pragm pol*flex str*~civ-o com	pragm pol*dec ntw* civ-o com
Raw coverage	0.107096	0.084757	0.243758	0.449409
Unique coverage	0.017740	0.033509	0.088699	0.329172
Consistency	0.862434	0.969925	0.883333	0.998540
Cases with greater than 0.5 membership in term	MOL, MAR	LOM, MAR	CAM, FVG, LIG	ER, PIE, ABR, TOS, TAA
	Solution coverage: 0.648489 Solution consistency: 0.945402			
Complex solution Frequency cut-off: 1; consistency cut-off: 0.857143				

Note: The \* sign indicates the logical operator ‘and’, and the + sign indicates the operator ‘or’; the tilde sign (~) is used to indicate negation or absence of a condition. The notation = > denotes the logical implication operator. Truth Table and details about the analysis of sufficiency can be found in the Supporting information.

The political approach is guided by the main overall aim of vaccinating as many people as possible in the shortest possible time: a rational orientation guided by an overarching principle, or a principled approach (Ansell & Bartenberger, 2016). Combined with this approach is a set of governance strategies that are mostly confined to either conventional planning based on available resources, or the scalability type as proposed by Ansell et al. (2020)—that is, which involve the mobilization and/or shifting of resources across organizations as a response to emerging needs, without much experimentation or innovation—and a vaccination network that relies mostly on a small number of main hospitals/hubs rather than a wider setup of local centers.

A case that exemplifies this configuration is the MOL region: here decision-makers are aware of their (and the overall) inability to build an accurate picture of the situation based on reliable data, nonetheless they rely on a “default” approach that can be seen as an adaptation of the rational approach. Vaccination scheduling follows the priorities set at the national level, and is re-arranged only when vaccines’ deliveries are postponed or reduced. A rational approach here supports rather ‘basic’ governance strategies and is reinforced by them: decision-makers devise and implement simple plans that mostly reflect the guidelines supplied by the national government, with no space for experimentation or trial of innovative solutions to tricky problems. Healthcare personnel and the necessary physical resources are deployed as required, without much need or incentive to recombine or organize them in novel

ways. These relatively simple strategies do not require a complex organizational effort for vaccines distribution and inoculation, which translates into a network consisting of a few, mainly hospital-based, vaccination hubs.

*Configuration number 4* is also characterized by a rational rather than pragmatic political orientation, a centralized vaccination network, and the presence of civiness-oriented communication. The types of governance strategies here are not relevant to reach the outcome.

Decision-making in this case is still based predominantly on planning rather than experimentation, where such planning and coordination also extend to a relatively small network of vaccination hubs, reflecting the fact that a rational approach would call for bureaucratic structures in order to coordinate implementation networks (Ansell & Boin, 2019). Civiness-oriented communication here is likely to play a crucial role in sustaining citizens' trust and their willingness to join the vaccination campaign. In a highly turbulent context where rational decision-making is not likely to supply quick and visible positive results, such civiness-oriented communication may serve the purpose of clarifying decision-makers' wider aims and perspective, and promoting citizens' commitment with a focus on their critical role in ensuring the well-being of the entire community.

The LOM region embodies this combination of conditions. The use of a rational approach pervades every step of the second phase of the campaign. Decision-makers adhere to a rational crisis management style, despite struggling with endogenous turbulence. Big calls are made, providing an accurate schedule of each step of the vaccination campaign, regardless of the incompleteness of the information available, notably that pertaining to vaccines' supply. One of the protagonists of the vaccination campaign signals clear leadership by proposing different scenarios that, depending on vaccines' supply, foreshadow when herd immunity will be reached. These elements show the predominance of a rational approach inspired by the guiding principle of "vaccinating as many people as possible as soon as possible." This sense of urgency resonates in the daily targets of vaccines that are announced to be administered to achieve the main goal of winning the battle against the Covid-19 pandemic. In this respect, LOM adopts a civiness-oriented communication that is summed up by the slogan "the more we are, the sooner we win." The emphasis on solidarity and vaccination adherence is combined with the image of a "war machine" that demands unity of purpose from the citizens-soldiers. This unity of purpose reflects in rates of compliance to the vaccination campaign which do not decrease even after rare problems with Astrazeneca's inoculation emerge. Citizens' compliance with the vaccination campaign is not only the product of civic consciousness but also the result of a well-defined strategy that does not allow people to choose when, where and which type of vaccine they will be given. A centralized network is a necessary complement of the command-and-control model followed by the LOM Region. A core agency designs strategy and implementation from the top as it relies mainly on hospitals and large vaccination hubs, where general practitioners are co-opted in. In this light, actors in the response network have little room for maneuver so that a flexible strategy is not required.

*Configuration number 5* features a pragmatic political orientation coupled with flexible and experimental governance strategies, with a civiness-oriented communication strategy that is either absent or centered on individualistic rather than altruistic or civic-minded principles. The centralized or decentralized nature of the vaccination network in this case is not relevant to achieve effectiveness.

Here once again decision-makers adopt the pragmatic and piecemeal approach and strategies that allow them to adapt and make critical choices as the situation develops. The communication strategy is relied upon to foster citizens' commitment and clarify when necessary the rationale of such choices. In contrast with other configurations, here the focus of the communication is on the individual and on how their joining the vaccination campaign will allow them to return to a "normal" life. The emphasis here is on individualistic rather than on altruistic motives to ultimately reach the same aim, that is, getting vaccinated as soon as the possibility arises.

This is what happens in the CAM region, for example. The level of turbulence increases, due, in particular, to the delays in the delivery of the AstraZeneca vaccine and to the adverse effects related to its inoculation. However, the regional government does not move back: it takes a very pragmatic and flexible approach. It does not wait for perfect information and ideal conditions, but continuously invents and re-invents new solutions to engage people in the vaccination campaign. It experiments the "vaccination on the road" to reach elderly people living in the poorest suburbs

of Naples. To use all the available AstraZeneca doses, the regional government, then, organizes specific events for the youth, such as “Notte Bianca dei vaccini,” “Astra day,” “Maratona vaccini,” that is sort of open days when the youth can be vaccinated with AstraZeneca or Johnson&Johnson despite the campaign being not yet open to their age group. This approach combines with a communication strategy that is based on individualistic values, emphasizing that through vaccination it is possible to “take back one’s own life.”

*Configuration number 6* shows a pragmatic political orientation together with a decentralized vaccination network and the presence of civics-oriented communication. The types of governance strategies here are not relevant to attain the outcome.

In this configuration, regardless of the types of strategies being adopted, the outcome is reached by coupling a pragmatic approach based on exploration and testing with reliance on a decentralized network. The role of decision-makers here may be mostly to provide an overall aim, whose implementation methods, however, are still to be discovered through interaction and cooperation among partners (Boin & Bynander, 2015; Jarzabkowski et al., 2012). Formal organizational structures may be relied upon to attain coordination, but most important is the process of coordinating (Jarzabkowski et al., 2012), with rules that are flexible enough to allow flexibility (Eisenhardt & Sull, 2001). Here again communication is also an important instrument to promote citizens’ commitment and to clarify the way forward, by focusing on altruistic and civics-related motives rather than individualistic ones.

The ABR region sets an example of how these conditions come together. The pragmatic approach is well exemplified by political leaders who underline the need to re-modulate guidelines by postponing second doses. The proposal to revise target groups, by including high school students to reopen schools, provides another example of the ability to flexibly rethink and redirect decisions and strategies in the light of values that differ from the public-safety all-out choice. Notwithstanding this high degree of flexibility, decision-makers appear to be guided by the same principle of “reaching herd immunity as soon as possible,” which echoes like a mantra. This is perfectly transposed in the slogan chosen by the Region, which claims “ABR one mile an hour. Fast against Covid-19.” To get back to normal as soon as possible, decision-makers appeal to citizens for “not being afraid of AstraZeneca as what they actually should fear are the economic and social consequences of their denial, which will prevent many vulnerable people to get their vaccine.” To achieve the primary goal of herd immunity, a decentralized network is needed to reach all the people, including many elderly living in mountain areas far from urban vaccine centers. General practitioners play a key role in the hub and spoke network designed by the Region. A flexible strategy is not required as the innovation introduced by the Region during the first phase of the campaign (the fragility criterion) has become an integral part of the national strategy.

## 6 | DISCUSSION

The extant literature proposes that turbulence requires robust action, that is action that allows to maintain a certain level of performance when facing an internal or external shock, thanks to flexible adaptation, agile modification and pragmatic redirection (Ansell et al., 2020).

Our study contributes to this growing body of literature by suggesting that there is no single model of robust action, fitting all possible situations. More specifically, three models of robustness seem to emerge from our data as conducing to high effectiveness in conditions of turbulence (Table 5).

The first model, comprising configurations 2 and 6, is the one that most closely corresponds to the idea of robustness as a dynamic property of political institutions and public organizations (Ansell et al., 2020). Coherently with the existent literature, configuration 2 features a pragmatic political approach and governance strategies that are to varying degrees flexible and experimental, and a decentralized vaccination network that allows not only to adapt such strategies to local conditions, but also to provide a diversified feedback on their impact. On the other hand, configuration 6 combines a pragmatic approach to decision-making with a decentralized response network, which allows also to be closer to citizens, and a communication strategy fostering civics in order to gain citizen

**TABLE 5** Government responses to growing level of turbulence

	Lower level of turbulence		Higher level of turbulence			
	1	2	3	4	5	6
PRAGM POL	●	●	○	○	●	●
FLEX STR	○	●	○		●	
DEC NTW		●	○	○		●
CIV-O COM	●			●	○	●
Cases with greater than 0.5 membership in term:	LAZ, ER, TAA, UMB, MAR	VEN, TOS	MOL, MAR	LOM, MAR	CAM, FVG, LIG	ER, PIE, ABR, TOS, TAA

Note: Black circles represent the presence of a causal condition and white circles represent the negation of a causal condition; blank cells represent irrelevant conditions.

support even in front of continuous changing decisions. Both configurations feature, thus, an adapting approach to turbulence characterized by a high degree of flexibility and agility, where the former is more centered on the organization, and the latter is more centered on the relationship with citizens.

The second model (configurations 3 and 4) is the most surprising. It features a political approach that is mostly rational although inspired by a major guiding principle, with governance strategies that are to varying degrees more conventional rather than experimental, and a centralized vaccination network. These characteristics are unlikely to present “flexibility, agility and improvisation” (Ansell et al., 2020; Capano & Woo, 2018; Howlett et al., 2018) to a significant degree and seem to feature a sort of “static” robust response to turbulence. Configuration 3, in particular is marked by the absence of almost all the characteristics of a dynamic robust response (with the exception of civiness-oriented communication which, however, is not relevant here to obtain the outcome). In configuration 4, robust strategies may or may not be present but are not relevant to the outcome, whereas a role in reaching the outcome is played by the presence of a civiness-oriented communication.

The third model (configurations 1 and 5) is a hybrid one. It seems to mix and match elements of dynamism and stability. In fact, both configurations feature the adoption of a pragmatic political approach which, however, is coupled with conventional strategies and civiness-oriented communication in configuration 1, and with flexible strategies and individualistic communication in configuration 5. This model provides evidence to the idea that, as pointed out by Ansell and Trondal (2018), stability and flexibility may be complementary rather than mutually exclusive: “(e)ffective governance often entails balancing continuity and stability on the one hand with adaptability and experimentation on the other” (Ansell & Trondal, 2018, p. 53).

The analysis of these three models of robustness allows us to propose three main contributions to extant studies on robust action in turbulent times.

As a first contribution, and by borrowing from the title of a novel by the Italian writer Luigi Pirandello, we suggest that there might be one, none, and a hundred thousand recipes for the effectiveness of robust government responses in turbulent times. Whereas one of the three models we identify is a hybrid combining elements of the other two, the other two seem to embody an idea of robustness featured by a different level of dynamism. Echoing Ansell and Trondal (2018) (and their distinction between dynamic and static resilience), we propose to label them as a “dynamic robustness” and a “static robustness” model. At the same time, all three models feature a certain degree of political robustness, as defined by Sørensen and Ansell (2021): although they vary in the extent to which they are dynamic, adaptive, and entrepreneurial, all three display these characteristics, and contribute to the local political systems' capacity to authoritatively allocate value in response to tensions.

As a second contribution, we find that our results are counterintuitive as we compare the two phases of the vaccination campaign. In fact, we were expecting higher flexibility and agility as turbulence increased from phase 1 to phase 2. However, this is not what transpires from our analysis. In the first phase, when turbulence is still relatively

low but new and unexpected, both successful configurations (nos. 1 and 2) consist more of a pragmatic rather than rational approach, embracing experimentation rather than stability and decentralized rather than centralized networks. In phase 2 we see an increase in turbulence, but we also see a wider variety of successful response models as reflected by configurations 3–6, which include configurations reflecting both dynamic and static robustness. This may be explained with the fact that our two phases are subsequent stages of the same turbulence: if we adopt a longitudinal perspective, we may hypothesize the presence of a learning effect. In phase 1, the turbulence is new, and there is no time to collect and evaluate comprehensive data in order to take action. Pragmatism in this situation is almost a necessary condition: in front of a shock, it is necessary to react and to do it as quickly as possible. In phase 2, turbulence increases but decision-makers also appear to learn to manage it. Most of what was surprising in phase 1 now becomes routine despite the persisting unpredictability: we see the “routinization of the unexpected.” In this context, also a model that combines elements of a rational and a traditional approach with the ability to redirect actions may be appropriate. In this perspective, developmental learning is what seems to allow the coexistence of multiple models of robustness: robust governance appears to involve a capacity to learn, and to employ this learning as circumstances demand. Further studies will be needed to develop longitudinal analyses of turbulence and explore the evolution of different government responses.

Third, our results seem to suggest a possible link between these different response models and legitimacy. More specifically, the adoption of one rather than another model may reflect different consensus-building approaches. The dynamic robustness model stems from a consensus-building approach that is based on being close to citizens on the ground, making them participate and provide feedback, thereby supporting mainly forms of input legitimacy. By contrast, the static robustness model may be linked to a consensus-building approach that is based on output legitimacy. Decision-makers are distant from citizens and rely on bureaucratic though well-functioning organizational structures and processes: consensus and legitimacy here are accomplished because of the results obtained, rather than through participatory processes. Whereas the first approach rests mostly on input-legitimacy and is value-based, the second approach rest on output-legitimacy and is more results-driven. Based on these observations, we suggest that the extent to which decision-makers rely on one or the other consensus-building approach—and the related prioritization of input versus output legitimacy—may be a predictor of the response model that will most likely be adopted when facing turbulence. More specifically:

**Proposition 1.** *The more decision-makers prioritize input-legitimacy as a consensus-building principle, the higher the likelihood that they will adopt a dynamic robustness approach in the face of turbulence.*

**Proposition 2.** *The more decision-makers prioritize output-legitimacy (effectiveness) as a consensus-building principle, the higher the likelihood that they will adopt a static robustness approach in the face of turbulence.*

Further studies may be conducted to test the above-mentioned propositions and, more generally, to explore what causes different robustness models in different circumstances and in relation to different levels of turbulence.

## 7 | CONCLUSION

Once upon a time in a land far away, there lived wicked problems. They were characterized by “unclear problem definitions, complex causalities, conflicting goals and lack of standard solutions” (Ansell et al., 2020, p. 47), but governments have learnt how to cope with them quite soon. Sometimes then “grand challenges” (Ferraro et al., 2015), “unknown unknowns, black swans, and mega-crises” (Ansell & Boin, 2019; Helsloot et al., 2012), or generally, simply, “crisis” (Boin & Lodge, 2021) occurred. They were disruptive, and severely challenged governments, but they were limited in time and scope, and after the storm the calm always returns. Nowadays, however, new disruptive problems have arisen (Ansell et al., 2017; Ansell & Trondal, 2018). They generate turbulence and severely disrupt government

and societies' way of life. They can be considered a condition or dysfunctions of our societies, still they represent our “new normal” and governments have to learn how to cope with them.

The results of our study offer a contribution in this direction insofar as they suggest that more than one response model—in fact, we identify three—may be effective in dealing with turbulence. Moreover, as we distinguish between a first and a second phase of the Italian vaccination campaign, we observe certain evolving dynamics of dealing with turbulence. For instance, in the first phase we see a critical role played by decision-makers' determination to decide fast in the midst of uncertainty. Here the relationship with citizens is at the center of the decision-makers' attention, as reflected either by civiness-oriented communication (configuration no. 1) or by reliance on a decentralized vaccination network that allows action and feedback closer to citizens (configuration no. 2). In other words, the shock of phase 1 produces a reactive response on the part of those in charge of the vaccination campaign. In phase 2, decision-makers adjust their perspective on a longer time frame, and enhance their ability to manage the unexpected. The short-term (robust) reactivity of phase 1 leaves the way to a variety of response models in phase 2, which to a greater or lesser degree present the characterizing marks of robustness, but still are capable of leading to effectiveness. Future research efforts may involve longitudinal analyses, so as to explore which factors affect changes in approach and strategies over time. A specific focus may be placed on learning processes which—as our results suggest—are likely to occur on the part of decision-makers, and which may explain unexpected responses such as the adoption of a rational/mixed approach in the context of increasing turbulence. This may also help to address what is currently one of the main limitations of this study, that is its limited ability to understand what causes different solutions at different levels of turbulence. Another limitation, linked to the requirements imposed by QCA, relates to the relatively narrow choice of conditions included in the analysis: further research may include different conditions within QCA studies, or additional variables within other kinds of quantitative analyses. Examples may include the role played by IT-based solutions, such as the internet-based platforms implemented by Italy's regional governments to manage the booking and assignment of the vaccination appointments. Lastly, our analysis of the necessary and sufficient conditions—and combinations thereof—leading to effectiveness shows that none among the conditions considered by this study satisfies the requirement for necessity. In other words, none among those conditions is necessary for an effective response to turbulence: a combination of factors appears to be of critical importance not only as shown by practice, but also as proposed theoretically. Therefore, future efforts to better understand effective governance models of turbulence, and their evolution over time, will benefit from the adoption of a multidisciplinary approach.

## ACKNOWLEDGMENT

Open Access Funding provided by Università degli Studi di Milano-Bicocca within the CRUI-CARE Agreement.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request.

## ORCID

Daniela Cristofoli  <https://orcid.org/0000-0003-3618-1934>

Maria Cucciniello  <https://orcid.org/0000-0001-8942-0412>

Benedetta Trivellato  <https://orcid.org/0000-0002-5125-257X>

Alex Turrini  <https://orcid.org/0000-0001-9878-594X>

## ENDNOTES

<sup>1</sup> Cronqvist, L. (2018) Tosmana [Version 1.6]. University of Trier. Internet: <https://www.tosmana.net>

<sup>2</sup> Ragin, C., S. Davey. (2014) Fs/QCA (Computer Program), Version (2.5/3.0). Irvine, CA: University of California.

## REFERENCES

- Alon-Barkat, S. (2020) Can government public communications elicit undue trust? Exploring the interaction between symbols and substantive information in communications. *Journal of Public Administration Research and Theory*, 30(1), 77–95.
- Ansell, C. & Bartenberger, M. (2016) Tackling unruly public problems. In: Ansell, C., Trondal, J. & Øgård, M. (Eds.) *Governance in turbulence times*. Oxford, UK: Oxford University Press.
- Ansell, C. & Boin, A. (2019) Taming deep uncertainty: the potential of pragmatist principles for understanding and improving strategic crisis management. *Administration & Society*, 51(7), 1079–1112.
- Ansell, C. & Gash, A. (2018) Collaborative platforms as a governance strategy. *Journal of Public Administration Research and Theory*, 28(1), 16–32.
- Ansell, C. & Jacob, T. (Eds.). (2018) *How does collaborative governance scale?* Bristol: Policy Press.
- Ansell, C., Sørensen, E. & Torfing, J. (2017) Improving policy implementation through collaborative policymaking. *Policy & Politics*, 45(3), 467–486.
- Ansell, C., Sørensen, E. & Torfing, J. (2020) Covid-19 as a game changer for public administration and leadership. *Public Management Review*, 23(7), 949–960.
- Ansell, C. & Trondal, J. (2018) Governing turbulence. *Perspectives on Public Management and Governance*, 1(1), 43–57.
- Böhm, R., Betsch, C. & Korn, L. (2016) Selfish-rational non-vaccination: experimental evidence from an interactive vaccination game. *Journal of Economic Behavior & Organization*, 131, 183–195 Experimental and Behavioral Economics of Healthcare.
- Boin, A. & Bynander, F.J. (2015) Explaining success and failure in crisis coordination. *Geografiska Annaler: Series A, Physical Geography*, 97(1), 123–135.
- Boin, A. & Lodge, M. (2016) Designing resilient institutions for transboundary crisis management: a time for public administration. *Public Administration*, 94(2), 289–298.
- Boin, A. & Lodge, M. (2021) The attractions and limitations of pragmatist crisis management: a discussion in light of COVID-19 experiences. *LSE Public Policy Review*, 1(4), 1–8.
- Boin, A., McConnell, A. & Hart, P. (2021) *Governing the pandemic. The politics of navigating a mega-crisis*. Cham, Switzerland: Palgrave Pivot.
- Brown, T. & Wyatt, J. (2010) Design thinking for social innovation. *Development Outreach*, 12(1), 29–43.
- Capano, G. & Woo, J.J. (2018) Designing policy robustness: outputs and processes. *Policy and Society*, 37(4), 422–440.
- Carstensen, M.B. (2017) Institutional bricolage in times of crisis. *European Political Science Review*, 9, 139–160.
- Chandra, Y. & Paras, A. (2020) Social entrepreneurship in the context of disaster recovery: organizing for public value creation. *Public Management Review*, 23(12), 1856–1877.
- Cronqvist, L. (2018). Tosmana [Version 1.6]. University of Trier. Internet: <https://www.tosmana.net>
- Dieleman, S. (2017) Pragmatist tools for public administration. *Administration & Society*, 49, 275–295.
- Duymedjian, R. & Rilling, C.C. (2010) Towards a foundation of bricolage in organization and management theory. *Organization Studies*, 31, 133–151.
- Eisenhardt, K.M. & Sull, D.N. (2001) Strategy as simple rules. *Harvard Business Review*, 79(1), 106–176.
- Evans, K.G. (2000) Reclaiming John Dewey: democracy, inquiry, pragmatism, and public management. *Administration & Society*, 32, 309–328.
- Ferraro, F., Etzion, D. & Gehman, J. (2015) Tackling grand challenges pragmatically: robust action revisited. *Organization Studies*, 36(3), 363–390.
- Garavaglia, C., Sancino, A. & Trivellato, B. (2021) Italian mayors and the management of COVID-19: adaptive leadership for organizing local governance. *Eurasian Geography and Economics*, 62(1), 76–92.
- Garrison, J. (2000) Pragmatism and public administration. *Administration & Society*, 32, 458–477.
- Gofen, A., Lotta, G. & Marchesini da Costa, M. (2021) Working through the fog of a pandemic: street-level policy entrepreneurship in times of crises. *Public Administration*, 99(3), 484–499.
- Helsloot, I., Boin, A., & Comfort, L., Jacobs, B.D. (Eds.) (2012). *Mega-crises: understanding the prospects, nature, characteristics and effects of cataclysmic events*. Springfield, IL: Charles C Thomas, Publisher.
- Howlett, M., Capano, G. & Ramesh, M. (2018) Designing for robustness: surprise, agility and improvisation in policy design. *Policy and Society*, 37(4), 405–421.
- Jarzabkowski, P.A., Lê, J.K. & Feldman, M.S. (2012) Toward a theory of coordinating: creating coordinating mechanisms in practice. *Organization Science*, 23(4), 907–927.
- Jessop, B. (2002) Governance and meta-governance in the face of complexity: on the roles of requisite variety, reflexive observation, and romantic irony in participatory governance. In: Heinelt, H., Getimis, P., Kafkalas, G., Smith, R. & Swyngedouw, E. (Eds.) *Participatory governance in multi-level context*. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Kapucu, N., Arslan, T. & Collins, M.L. (2010) Examining intergovernmental and interorganizational response to catastrophic disasters: toward a network-centered approach. *Administration & Society*, 42(2), 222–247.
- Kenis, P., Schol, L.G.C., Kraaij-Dirkzwager, M.M. & Timen, A. (2019) Appropriate governance responses to infectious disease threats: developing working hypotheses. *Risk, Hazards & Crisis, Public Policy*, 10(3), 275–293.

- Koppenjan, J. & de Jong, M. (2018) The introduction of public-private partnerships in the Netherlands as a case of institutional bricolage: the evolution of an Anglo-Saxon transplant in a Rhineland context. *Public Administration*, 96(1), 171–184.
- Lai, A.Y.-H. (2018) Agility amid uncertainties: evidence from 2009 A/H1N1 pandemics in Singapore and Taiwan. *Policy and Society*, 37(4), 459–472.
- Menand, L. (2001) *The metaphysical club*. New York, NY: Farrar, Straus and Giroux.
- Misangyi, V.F., Greckhamer, T., Furnari, S., Fiss, P.C., Crilly, D. & Aguilera, R. (2017) Embracing causal complexity: the emergence of a neo-configurational perspective. *Journal of Management*, 43(1), 255–282.
- Moynihan, D.P. (2009) The network governance of crisis response: case studies of incident command systems. *Journal of Public Administration Research and Theory*, 19(4), 895–915.
- Nohrstedt, D., Bynander, F.J., Parker, C. & 't Hart, P. (2018) Managing crises collaboratively: prospects and problems—a systematic literature review. *Perspectives on Public Management and Governance*, 1(4), 257–271.
- Nowell, B., Steelman, T., Velez, A.L.K., & Yang, Z. (2018) The structure of effective governance of disaster response networks: Insights from the field. *The American Review of Public Administration*, 48(7), 699–715.
- Padgett, J.F. & Ansell, C. (1993) Robust action and the rise of the Medici, 1400–1434. *American Journal of Sociology*, 98(6), 1259–1319.
- Phillips, N.W. & Tracey, P. (2007) Opportunity recognition, entrepreneurial capabilities and bricolage: connecting institutional theory and entrepreneurship in strategic organization. *Strategic Organization*, 5(3), 313–320.
- Provan, K.G. & Kenis, P. (2008) Modes of network governance: structure, management, and effectiveness. *Journal of Public Administration Research and Theory*, 18(2), 229–252.
- Ragin, C. & Davey, S. (2014) *Fs/QCA (computer program), version (2.5/3.0)*. Irvine, CA: University of California.
- Ragin, C.C. (2000) *Fuzzy-set social science*. Chicago: University of Chicago Press.
- Ragin, C.C. (2009) Qualitative comparative analysis using fuzzy sets (fsQCA). In: Rihoux, B. & Ragin, C.C. (Eds.) *Configurational comparative methods: qualitative comparative analysis (QCA) and related techniques*. London: Sage, pp. 87–121.
- Rihoux, B. & Ragin, C.C. (Eds.). (2009) *Configurational comparative methods. Qualitative comparative analysis (QCA) and related techniques*. Thousand Oaks, CA: Sage.
- Schneider, C.Q. & Wagemann, C. (2012) *Set-theoretic methods for the social sciences: a guide to qualitative comparative analysis*. Cambridge: Cambridge University Press.
- Shields, P.M. (2008) Rediscovering the taproot: is classical pragmatism the route to renew public administration? *Public Administration Review*, 68, 205–221.
- Sørensen, E. & Ansell, C. (2021) Towards a concept of political robustness. *Political Studies*. <https://doi.org/10.1177/0032321721999974>
- Thomsen, M.K., Baekgaard, M. & Jensen, U.T. (2020) The psychological costs of citizen coproduction. *Journal of Public Administration Research and Theory*, 30(4), 656–673.
- Triantafyllou, P. & Hansen, M.P. (2022) Introduction to the PMR special issue on accountability and legitimacy under collaborative governance. *Public Management Review*, 24(5), 655–663.
- Vietri, J.T., Li, M., Galvani, A.P. & Chapman, G.B. (2012) Vaccinating to help ourselves and others. *Medical Decision Making*, 32, 447–458.

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Cristofoli, D., Cucciniello, M., Micacchi, M., Trivellato, B., Turrini, A., & Valotti, G. (2022). “One, none, and a hundred thousand” recipes for a robust response to turbulence. *Public Administration*, 1–18. <https://doi.org/10.1111/padm.12870>