

A new typology for comparing scientific advisory committees. Evidence from the Italian response to the COVID-19 pandemic

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Abstract

The study of scientific advisory committees (SACs) is a recurrent topic of research in public policy and public administration. Scholars are increasingly interested in analyzing the scientization of policy advice as well as the role played by knowledge-based policymaking processes. Despite recent developments in the field, SACs studies continue to face an analytical and empirical gap due to the lack of parsimonious conceptualizations of the characteristics that enable them to be both theoretically relevant and effective in driving comparative analysis. To fill this research gap, this article proposes a novel typology of SACs based on a specific conceptualization of the motivations of policymakers that allows the selection of two classificatory criteria: the origin of the members and the degree to which their expertise is homogeneous. The theoretical relevance of this typology is illustrated by applying it to the SACs established in the Italian regions to address the COVID-19 pandemic. The article highlights the relevance of the typology to the theory underlying the empirical analysis. In doing so, it provides relevant insights into the composition and nature of SACs that is useful not only for the academic debate on evidence-based policymaking but also for both practitioners and decision-makers.

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KEYWORDS

Covid-19, evidence based policy, Italian regions, policy advice, scientific advisory committees

INTRODUCTION

The role of knowledge in policymaking is a recurrent topic of research in public policy and public administration. The literature on evidence-based policymaking is voluminous and multifaceted (Capano & Malandrino, 2022; Christensen, 2021; Head, 2008; Howlett, 2019; Laage-Thomsen, 2021; Plowden, 1987), as is the research on policy advisory systems (PASs). The latter identifies the multiple sources of policy advice that provide knowledge, information, and recommendations to governments in the context of policymaking processes (Craft & Howlett, 2012; Craft & Wilder, 2017; Halligan, 1995). Hence, the analysis of PASs requires a systematic understanding of the broad set of actors and organizations that provide advice to policymakers in each sector and jurisdiction, ranging from scientists to political advisors (Seymour-Ure, 1987). However, this literature has paid little attention to a specific type of advisory bodies known as scientific advisory committees (SACs), whose mission is to provide scientific advice based on the professional expertise of their members. The study of SACs has developed into a scholarly “niche” (Dunlop, 2010; Rimkute & Haverland, 2015) that is primarily characterized by the prevalence of case studies (Fretheim et al., 2006; Hoffman et al., 2018). In this paper, we aim to fill this research gap by building on the extant literature on SACs to propose a novel analytical framework for classifying and comparing these advisory bodies. The proposed conceptualization (based on members’ origin and the degree of homogeneity of their expertise) is effective with respect to facilitating a theory-driven comparison of SACs and their potential roles. To highlight its analytical usefulness, we use this framework to conduct a comparative analysis of the characteristics of the SACs appointed by the Italian regions to address the COVID-19 pandemic. The comparative analysis allows us not only to empirically test the proposed conceptualization but also to explore how it ultimately impacts the activities of SACs based on the perceived role of their members.

We are aware that many definitions of SACs have been proposed and that, as Hoffman et al. (2018) have rightly noted, several terms can overlap across contexts and jurisdictions—although they often refer to the same type of entity: the terms “body” or “panel” are often used instead of “committee,” but we can also find the terms “expert,” “technical,” or simply “advisory” used in place of “scientific advisory.” These bodies can exist both as a consequence of a political decision or as independent bodies autonomously established by their members. In this article, the dimension of governmental demand is pivotal because appointed SACs, as opposed to SACs established by their members, can offer insights into the overall decision-making process in relation to policy advice. In other words, focusing on SACs established by policymakers allows us to dedicate attention not only to the “supply side” of policy advice but also to its “demand side”.

Thus, building on the definition offered by Hoffman and colleagues,¹ we adopt the following definition of SAC:

- a. a group of individuals with relevant expertise,
- b. appointed by governments (or other politico-administrative bodies endowed with public authority),
- c. which provides advice to decision-makers predominantly based on professional experience or evidence drawn from research in the natural or social sciences.

What is relevant for the purpose of our article is that these bodies not only are composed of members with specific scientific and professional qualifications and competencies but also that their composition and characteristics reflect a specific governmental demand for evidence-based knowledge to solve complex and controversial issues under conditions of extreme uncertainty. As the abovementioned recent literature on policy advisors shows, that is particularly true in situations of crisis policymaking where such extreme uncertainty characterizes the context in which SACs are often established to support governmental decisions. Hence, the proposed definition focuses on policymakers' demand as the driver for the composition of SACs. It directly enlightens the criteria of choice and the functional goals of policymakers as the conditions that also shape what SACs' roles and activities are expected to be.

Overall, the typology proposed in this article provides relevant insights into the composition and nature of SACs that are useful not only for the academic debate on evidence-based policymaking but also for decision-makers.

The paper is structured as follows. In the second section, the state of the art of the literature on SACs is discussed, and the existing research gap is clarified. In the third section, a novel typology is presented alongside our expectations concerning the roles of the different types of SACs. In the fourth section, an empirical illustration of the analytical relevance of the typology is offered, by comparing the compositions and roles of the SACs established by the Italian regions during the COVID-19 crisis. The results are discussed in the fifth section. Finally, the concluding section suggests potential directions for further research.

SACs AND THE SCIENTIZATION OF POLICY ADVICE

In the era of evidence-based policy, which features major policy and technological challenges, governments as well as international and supranational organizations frequently appoint ad hoc scientific committees to acquire scientific knowledge. The establishment of scientific advisory boards has steadily grown in tandem with the increasing scientization of policymaking, in which science and technology have increasingly become important to policymakers. In this context, the creation of scientific advisory bodies is considered a way of increasing policy legitimacy when complex, disputable, and intractable problems must be solved (Cash et al., 2002). The proliferation of SACs represents a clear indicator of the need to find acceptable solutions when governments face wicked problems (Hoffman et al., 2018; Krick, 2015). It is therefore unsurprising that the literature on SACs has emphasized two general functions that these bodies can have in the policy process: effectiveness and legitimacy. For example, Boswell (2008) and Rimkute and Haverland (2015) distinguish between the "substantiating", "legitimizing" character of SACs and their instrumental "problem-solving" nature. A similar perspective has also been adopted by Dunlop (2010) in her exploration of two political functions of these bodies pertaining to the capacity of the "supply" of such advice to ensure citizens' confidence in policies ("policy credibility") and satisfy the "demand" of advice and those who receive it ("efficiency"). This dichotomy is not unexpected because it is based on the more general literature concerning the role of evidence and knowledge in policymaking (Cairney, 2016; Lindblom & Cohen, 1979; Parkhurst, 2017; Rein, 1976; Weiss, 1979).

An important issue regarding the characteristics of SACs and their role in policymaking (in terms of effectiveness and legitimacy) concerns the analysis of their composition (i.e., the variety of professional competencies that they offer). As the literature has shown (Glynn

et al., 2003; Wang & Chiou, 2015), the study of the composition of SACs is relevant precisely because it defines both the range of the expertise offered and the level of openness to the extra-institutional environment (in terms not only of highly reputed scientists who do not work in governmental institutions but also of stakeholders and other actors who can provide relevant knowledge).

To date, the efforts made by the literature to advance typologies of SACs have been limited to merely descriptive purposes and have not included relevant theoretical expectations regarding the role of SACs in policymaking. For example, by focusing on Europe and the United States, Groux et al. (2018) classify SACs according to six dimensions: (1) sector; (2) level of operation; (3) permanence; (4) target audience; (5) autonomy; and (6) nature of advice. Their analysis finds that SACs exhibited a great deal of variety with regard to these dimensions. Glynn et al. (2003) map scientific advisory bodies operating at the national and regional levels in 15 European Union (EU) member states and in the EU itself on the basis of three broad analytical dimensions: (1) general (users, policy areas, and status of advisory bodies); (2) structural (membership of advisory bodies); and (3) functional (scope of work, independence, transparency, internal changes, etc.). Wang and Chiou (2015) analyzed the composition of policy advisory committees established at the central level in Taiwan in terms of their size, the type and representatives of their members, and the recruitment methods employed.

These recent studies on the functions and institutional design of SACs make it clear that the latter are now a common feature of the policymaking process in many countries and that their analysis is crucial to understanding changes in the advising process. However, despite this recent development, there are some important gaps in the literature pertaining to the organization and functioning of SACs that limit our understanding of their structure and content. The first challenge requires shifting our attention and emphasis from the “supply” of advice to the “demand” for advice when these bodies are established. Accordingly, based on the definition of SACs provided in the introduction, it is fundamental to understand which specific characteristics governments require when they decide to appoint members of these expert bodies. Second, more comparative analysis of SAC composition is necessary to understand how various possible SACs configurations may affect decision-making.

The analytical framework proposed in this article takes these challenges seriously by proposing a typology that considers not only the members’ origin but also the extent to which their expertise is homogenous, depending on the characteristics of the political demand—in other words, the preferences that policymakers expect to meet when appointing these committees.

AN ANALYTICAL FRAMEWORK FOR CLASSIFYING AND COMPARING SACs

As both the recent literature on PASs (e.g., Craft & Halligan, 2017; Craft & Howlett, 2012, 2013) and several recent studies conducted by the OECD have shown (e.g., OECD, 2015, 2020), policymakers are increasingly located at the center of a complex network of policy advisors who combine political viewpoints with diverse and pluralistic technical knowledge. In addition to generating various systems and types of advice, this changing “demand” for advice can challenge the traditional monopoly once held by the public service in favor of pluralized advice received from diverse outsider advisors with different backgrounds. Following Howlett (2019), we believe that content-related dimensions thus become at least as important as location in determining the features of such advice. Therefore, location-based models of policy advice, such as those

proposed by Halligan (1995) and Craft and Howlett (2012), are not by themselves able to capture these changing dynamics.

By assuming a demand-side perspective, and in line with the most recent policy literature on the processes of appointment of these advisory committees (see, among others, Krick, 2015, Manwaring, 2019, The LSE GV314 Group, 2018), we consider that policymakers' criteria of choice when appointing SACs cannot be limited to the functions that these committees are expected to perform. In fact, these functions do not explain alone the formation of SACs: all in all the function of SACs is a direct consequence of the policymakers' motivations to establishing them.

Thus, there is a need to deepen the investigation of the motivations that lead to policymakers' choices. Policymakers behave like principals that are searching for specific types of agents (advisors). They can be considered generalists who need advice for various reasons and are not only aware that science is not monolithic but also hold some kind of (more or less solid) preference about the problem to be dealt with, the possible solutions, and the timing of the decisions to be made based on SACs' advice. From this perspective, policymakers that choose members of SACs can be assumed to design the spaces on which the committees must focus on in their advice activity. By marking off specific spaces of expected advice, policymakers not only may get what they need but may also avoid a possible negative impact of the appointed committees with respect to their preferences. Thus, while SACs are established because policymakers need to rely on experts to deal with problems, at the same time they are considered by policymakers as governmental instruments for addressing policy needs.

Accordingly, policymakers decide how to establish SACs on the basis of two dimensions:

1. The level of “controllability” of processes and outputs. Higher controllability is expected to guarantee that experts' activities within SACs are aligned with policymakers' preferences and goals and thus that their advice will be taken into serious consideration. Conversely, lower controllability indicates that policymakers will consider the advice less influential and thus that they attribute a legitimizing function to SACs, possibly with a merely symbolic value.
2. The way the problem is framed. The policy problem can be framed according to a narrow definition (for example, in the case of the pandemic, simply in terms of health response), thus implying the activation of very specific expertise to get specialized advice; or it can be framed according to a wider definition (in terms of all the possible implications for other policy fields), thus requesting multidisciplinary expertise to get broad and multifaceted advice. Problem framing according to a narrow/wide definition may also depend on the degree of uncertainty policymakers attribute to the problem. If policymakers believe they are certain about the nature of the problem, they may frame it more narrowly; conversely, they will tend toward a broader framing under conditions of greater uncertainty.

Policymakers apply these two criteria by focusing on (1) the actors' origin (through which controllability can be operationalized) and (2) the type of expertise held by such actors (thanks to which policymakers decide about delimiting problem framing). These two criteria not only combine traditional location-based models focused on the source of such advice with a content-based perspective in terms of expertise but above all facilitate a parsimonious classification of SACs. Moreover, they can give clear theoretical indications of the expected activities and roles of SACs in policymaking.

The first dimension considers the origin of the experts appointed to a SAC. The necessity of considering the location and formal proximity of selected advisors with respect to the political bodies that appoint them has been emphasized since Halligan's pioneering study (Halligan, 1995), which distinguishes among three different sources from which advisors can be drawn: public service, internal to the government, and external to the government. In light of the fact that this distinction reflects a Westminster view of the way in which administrative systems are organized (Wilson, 2006), Blum and Brans (2017) propose a locational model that differentiates between advisors who are internal and external to the government (in both the academic arena and the lay arena). The internal/external dichotomy captures a recent trend in many OECD countries in which the involvement of internal actors in the creation of such SACs arrangements is no longer prioritized. An increase in participatory efforts and the use of external consultants has indeed become more frequent than in the past (Howlett & Lindquist, 2004).

Building on these indications drawn from the literature, we propose a distinction between (1) advisors internal to the government (*internal membership*) and (2) advisors external to it (*external membership*). Internal membership includes all individuals appointed by the government to be part of a SAC who have a formal institutional position within the bureaucracy closely connected to it (e.g., regulatory agencies).² From the policymakers' point of view, internal members are more controllable and identifiable in their institutional mission. Moreover, they are expected to have the necessary experience (e.g., they know the context, the involved organizational bodies, and the policy legacy) to give directly applicable advice that is congruent with the actual policy context. External members are less manipulable and may not be fully aware of the existing contextual and institutional constraints.

The second dimension pertains to the degree to which the expertise of SACs members is homogeneous or heterogeneous. The relevance of this dimension is based on the assumption that the grand challenges we are currently facing require multifaceted advice. To address complex and controversial problems adequately, policymakers need multidisciplinary knowledge (Steinebach & Knill, 2017). Therefore, advisory boards must include a multiplicity of scientific disciplines and fields of knowledge (Donovan, 2021; Head, 2010). Advisory boards may be asked to provide not only scientific knowledge but also political, strategic, and communicative expertise, potentially even incorporating conflicting political viewpoints. Hence, our model includes the concentration of expertise present within a SAC, that is, the degree of scientific homogeneity or heterogeneity exhibited by the appointed experts. We propose a distinction between SACs that exhibit (1) *homogeneity* of expertise, such that the members share a similar knowledge background (as far as their main field of expertise is concerned), and those that exhibit (2) *heterogeneity* of expertise, such that the members come from a diverse range of knowledge backgrounds. From the point of view of policymakers, homogeneous expertise is relevant if they have framed the problem to be solved in a narrow way. On the other hand, heterogeneity and multidisciplinary are appealing when policy makers are interested to get advice in a wider, more multifaceted way with respect to the potential inter-policies effects of the problem.

Finally, our line of reasoning shows how the functions of SACs are a direct consequence of the way in which policymakers make their choices when deciding on internal/external membership and homogeneity/heterogeneity of expertise. In fact, the problem-solving function is the consequence of choices where controllability tends to be high (thus oriented to be strictly operational from both a sectorial and a multisectorial point of view), while the legitimization function (which may become symbolic) prevails when controllability is low.

According to the conceptual treatment described above, four types of SACs can be identified (see Figure 1):

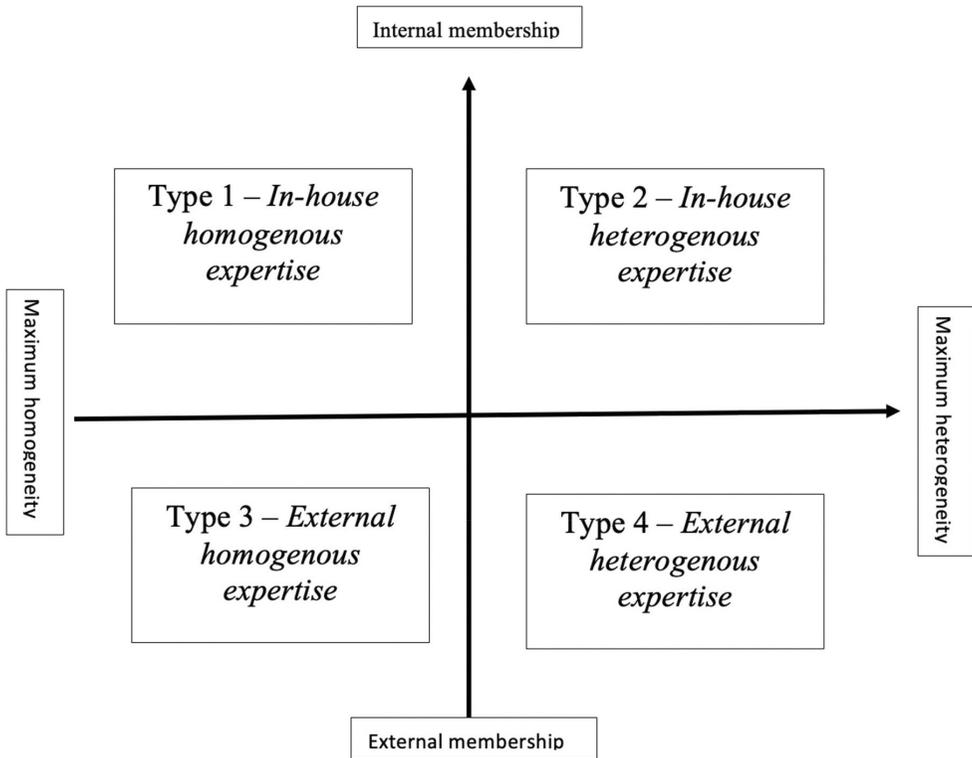


FIGURE 1 Types of SACs.

- Type 1—*In-house homogenous expertise*. By appointing this type of SAC, policymakers prioritize more control over processes and outputs and a narrow definition of the problem; thus, they are more interested in readymade solutions than in legitimation. From the point of view of policymakers, SACs of this type should provide sector-specific operational solutions that are feasible and aligned with the preferences and goals of decision-makers. Furthermore, bodies of this type are not internally conflictual. Finally, being designed to have a problem-solving function, they should meet often.
- Type 2—*In-house heterogeneous expertise*. By appointing this type of SAC, policymakers prioritize more control over processes and outputs and a wider definition of the problem. Thus, they are more interested in broad-scope solutions than in legitimation. From the point of view of policymakers, SACs of this type should provide advice that is not only technical and sectorial but also multidisciplinary. This encompasses broad-spectrum advice, including of a strategic nature (e.g., public communication, procedural contrivances). These SACs have a higher rate of internal conflict than Type 1 SACs, even if their members are fully aware of the preferences and goals of policymakers. Finally, being designed to have a problem-solving function, they should meet often.
- Type 3—*External homogenous expertise*. By appointing this type of SAC, policymakers are aware of their low control over processes and outputs; by prioritizing a narrow definition of the problem, they are more interested in the readymade solutions that these SACs could eventually offer. From the point of view of policymakers, SACs of this kind should provide sector-specific advice, contemplating a wide range of possible technical options. Bodies of this kind are hardly “controllable” by policymakers and can be moderately litigious internally. Being not enough

controllable, this type is considered by policymakers to play mostly a legitimizing role. Thus, these SACs are expected to meet infrequently.

- Type 4—*External heterogeneous expertise*. By appointing this type of SAC, policymakers are aware of their low control over processes and outputs. Thus, by prioritizing a broad-scope definition of the problem, they are more interested in the potential legitimating (even merely symbolic) role that this type of SAC can hold. SACs of this type are the most inclusive, most diversity-inspired ones. Therefore, they are perceived as the most legitimate in the eyes of public opinion. However, due to the low controllability and the heterogeneity of expertise they are also the most conflictual, very difficult to coordinate, and poorly operational. Being designed to play a legitimizing/symbolic role, these SACs are expected to meet rarely.

This typology provides an analytical framework that can help scholars and practitioners analyze, map, and appoint different SACs. It can therefore be applied to different empirical settings and shaped according to the specific characteristics of each object of analysis (e.g., the national or subnational politico-administrative structure in which the SAC is established or the type of policy sector for which it is created).

Compared to previous classifications proposed in the literature, our framework allows us to understand and compare the characteristics of SACs without limiting ourselves to a single type of crisis or a specific administrative or political system (e.g., Westminster vs. non-Westminster countries; democratic vs. autocratic countries). The typology proposed here is useful for interpreting the institutional design and characteristics of different SACs and may help us understanding how the composition of SACs influences the type of advice they provide.

Furthermore, the four types of SACs can also be considered alternative options available to policymakers when they perceive the need to establish a scientific body to help them deal with conditions of extreme uncertainty. Different combinations of the two dimensions can result in different activities on the part of the appointed scientific committee by impacting not only the committee's internal activities but also the type of contribution it offers to the government as well as its potential capacity to influence governmental decisions and strategies, that is, the main functions of SACs. As an example, internal members are subject to some form of hierarchical constraint and are socialized to follow both formal and informal rules. In-house experts are more familiar with the internal dynamics of the governmental-administrative apparatus, are closer to the decision-makers, and are occasionally appointed by the latter on a fiduciary basis. Additionally, decision-makers might decide to appoint members who are internal to the governmental-administrative apparatus because they feel that they can better control the activities of those members. This situation makes it more likely that the advice given by internal experts is not only technical but also strategic in nature. Simultaneously, a SAC featuring mostly internal advisors should favor solutions that are not only more congruent with the governmental agenda but also more feasible. However, this situation also faces the risk that the solutions proposed by in-house experts are path-dependent and less innovative. On the other hand, external membership can be more autonomous and less in line with the government's administrative logic. While external advisors may therefore favor more innovative and "breaking" solutions, the corresponding risk is that external advisors may propose solutions that are misaligned with the preferences and objectives of policymakers. A greater heterogeneity in expertise can potentially ensure more creativity in the advice produced by SACs, which is also the result of the prevalence of internal debate and conflict among the appointed members. Simultaneously, multidisciplinary advisory boards could pose the risk of a greater lack of communication and litigation among

members. A greater homogeneity in expertise should favor more internal consensus among members appointed to a SAC while simultaneously increasing the risk of lock-in and groupthink.

Thus, according to our typology, we expect that each type of SAC will show specific characteristics as follows:

- Expectation 1 —> SACs belonging to Type 1 are expected to be very influential; to reach a high degree of internal consensus with regard to advice; to be highly operational (thus to meet often); and to deliver sectorial/technical advice.
- Expectation 2 —> SACs belonging to Type 2 are expected to be very influential; to reach a low degree of internal consensus with regard to advice; to be very operational (thus to meet often); and to provide also broad-scope advice.
- Expectation 3 —> SACs belonging to Type 3 are expected to be of little influence; to reach a moderate degree of internal consensus with regard to advice; to be scarcely operational (thus to meet rarely); and to deliver sectorial/technical advice.
- Expectation 4 —> SACs belonging to Type 4 are expected to be of little influence; to reach a low degree of internal consensus with regard to advice; to be scarcely operational (thus to meet rarely); and, to provide mainly broad-scope advice.

To assess the four components of the abovementioned expectations, it is necessary to focus on the theoretical relations that we draw between these core empirical patterns of the SACs and the features of the demand side, that is, what policymakers want from SACs.

Thus, we assume that:

- the level of influence can gauge the intensity of SACs' controllability, because policymakers are expected to follow more closely the advice of those that they consider more aligned to their preferences;
- the level of consensus can be a measure of the impact of the disciplinary composition of the committees, which is in turn connected to the way policymakers frame the problem; thus, heterogeneity should show higher dissent while homogeneity should drive to higher consent;
- the frequency of meetings is an indicator of the operational relevance of the SACs (problem solving or legitimating), which can suggest how much policymakers need to get advice;
- the type of advice indicates the way policymakers operate choices on problem framing, with more sectorial/technical advice being linked to a narrower definition of the problem, and broad-scope advice being connected to a broader definition of the problem.

In the remainder of the article, we offer an empirical illustration of how the proposed analytical framework can be applied to a comparative analysis, namely, the establishment of SACs by the regions of Italy in response to the COVID-19 pandemic. While the article does not aim to test any hypotheses, it proposes and provides an empirical application for an analytical framework that includes some inherent expectations. We also discuss these expectations by reference to data that we collected using an online questionnaire distributed to the analyzed SACs. However, due to the uneven number of respondents across types, this article should be considered merely a preliminary discussion of these expectations, which can nevertheless be useful for more systematic testing in the future.

AN EMPIRICAL APPLICATION TO THE RESPONSE OF ITALIAN REGIONS TO THE COVID-19 PANDEMIC

Case selection

We applied the proposed typology to map and analyze the SACs established in the 20 Italian regions during the COVID-19 pandemic. Investigating regional cases allows us to study whether and how 20 different subnational units responded to a common external shock, thus leading to the creation of different types of SACs. In turn, this approach confers a comparative dimension to our research, which scholars have recognized as an important requirement of policy advice studies (Oliphant & Howlett, 2010).

As in many other countries, a national technical-scientific committee was established in Italy a few days after the declaration of a state of emergency, and this committee was the main policy advisory body during the pandemic (Capano, 2020; Vicentini & Galanti, 2021). However, regional governments in Italy have room to maneuver in several policy sectors, including health-care (Casula et al., 2020; Malandrino & Capano, 2022). This led them to create, albeit without any obligation imposed by the national government, ad hoc regional bodies to support the decisions to be made by regional governments to deal with the outbreak of the pandemic (Toth, 2021). Hence, the selection of regional committees is also justified considering the relevance of regional decision-making during the pandemic.

We mapped a total of 46 regional bodies established in 2020 with the explicit function of supporting governments in managing the COVID-19 pandemic. The majority (nearly two-thirds) of these regional bodies were established between February 21, 2020 and April 7, 2020. Depending on the region, these bodies were named differently. At least a dozen different labels were used. The most commonly used designations were “crisis unit” (13 cases), “Coronavirus task force” (12 cases), and “technical” and/or “scientific” committee (8 cases). However, these labels were not used consistently across regions. Of the 46 regional coronavirus emergency bodies taken into account, 31 were “technical-scientific” advisory boards, which the regional governments established to obtain scientific support and/or request technical opinions, suggestions, and solutions. In addition to scientific advisory boards, the majority of regions established operational coordinating bodies, which were often called “crisis units” (including regional heads of Civil Protection, senior executives of regional administration offices, general managers of local health authorities and hospital trusts, prefects, mayors, etc.). Across all regions, 15 such operational/coordinating bodies were established. Since these “operational” bodies were not assigned scientific advisory functions, they were excluded from our analysis. All Italian regions established at least one “technical-scientific” advisory board, and some regions established more than one such board (two in Abruzzo, Liguria, and Sardinia; three in Emilia-Romagna and Veneto; and four in Piemonte). Altogether, across all 20 regions of Italy, 31 regional scientific boards were established (see Table A1 in the Appendix).

Data collection and methods

Data concerning all the scientific boards created to support regional administrations in addressing the COVID-19 pandemic were collected via online desk research. In particular, official regional sources as well as national and local newspapers were analyzed. Where the online search was not sufficient, regional health departments were contacted to obtain additional information.

The members of all selected regional SACs ($N=31$) were identified as per the regional act of appointment. For each of the 508 members identified, we scanned the curriculum vitae and collected the following information:

- Name and surname
- Appointment start date
- Appointment end date
- Degree
- Postgraduate specialization (if any)
- Affiliation and position held

We coded all the relevant information systematically, according to a specific categorization focused on the two dimensions included in the typology (the origin and expertise of the members).

Regarding the origin of the members, the coding categories were as follows: (1) internal to the regional government and/or regional public healthcare system on the appointment start date (*internal membership*) and (2) external to both the regional government and the regional public healthcare system on the appointment start date (*external membership*). Regarding expertise, we aimed to cover the full range of skills and competencies that are likely to be useful in the context of public health and crisis management (see, among others, Head, 2010; Lancaster et al., 2020; Masood et al., 2020; OECD, 2020). The coding categories were created inductively; that is, we allowed them to emerge from the data. To identify these codes, we triangulated information regarding the members' degrees, postgraduate specializations, and current and past affiliations and positions. We derived the following categories pertaining to the members' fields of expertise:

- Medical doctors
- Healthcare management
- Other healthcare professionals (excluding medical doctors)
- Law/public administration
- Economics/statistics
- Chemistry/pharmacy
- Engineering/computer science
- Logistics
- Communication
- Psychology
- Politics
- Physical and natural sciences
- Other

On the basis of this coded material, we constructed two indexes for “origin” and “expertise” to capture the differences in the characteristics of the composition and the type of advice provided by the 31 regional scientific advisory boards included in our analysis more effectively:

1. the “Origin” index, which was based on a normalization of the percentage of the members who were internal to the governmental administrative apparatus (where 1 indicates fully internal membership and 0 indicates fully external membership);

2. the “Expertise” index, which was based on a normalization of the Gini heterogeneity index³ constructed with the aforementioned coding categories (where 0 indicates maximum homogeneity and 1 indicates maximum heterogeneity).

Finally, we conducted an online flash survey of all the identified members of the 31 selected regional SACs. The survey—which consisted of multiple-choice and scaled questions—covered the period from April 13, 2022 to May 23, 2022, and was administered using the computer-assisted web interviewing (CAWI) approach with the assistance of the IdSurvey software. It covered the characteristics of the 4 types of SACs in order to assess the four dimensions of our expectations, thus to gauge: (1) the influence of SACs (indicator of controllability); (2) the level of consensus in the committees (indicator of the effect of the disciplinary composition of SACs, in turn linked to problem framing); (3) the frequency of meetings held (indicator of the operational relevance of SACs, in turn linked to controllability); and (4) the type advice provided to the regional government (indicator of problem framing). These topics have been framed in direct relation to the expected characteristics of the four types of SACs as proposed above.

In the event that a member had served on different scientific boards, he or she was given the opportunity to respond multiple times. The total population surveyed with completion rates above 90% included 67 individuals, for a response rate of 13.4%. All twenty Italian regions were covered with the exceptions of Campania and Molise. For details of the instant survey, see Table A2 in the Appendix. We have to underline that the results of the survey are not representative. In fact, we received responses from members of only 25 out of 31 committees, and the low response rate for each committee is not sufficient to allow us the treatment of the responses received from every single committee. Hence, we opted to group them by type.⁴ Furthermore, the low and nonrepresentative response rate does not allow any sophisticated statistical treatment. Thus, we limit ourselves to presenting and discussing the cross tables constructed between the elaborated types of SACs and the perceived role of SAC members. In doing so, we avoid claiming to be able to advance any type of correlation and restrict ourselves to exploring the validity of the advanced theoretical expectations. In other words, we are conscious that the empirical evidence of the perceptions of the members of the analyzed SACs is not robust, yet it allows a reasonable exploration of the analytical relevance of the proposed typology.

Findings

The composition of the SACs: Origin and expertise

With a few exceptions, all the regions of Italy created SACs composed predominantly of men. Only four regions established scientific boards in which women are represented more than men (although in all cases, women do not constitute more than 60% of the total members).

Regarding the origin of the members, whereas members drawn from either regional governments or the regional public healthcare system predominate on most scientific boards, external members are predominant on only five boards—those in Liguria, Lombardia, Molise, Sardegna, and Trentino Alto-Adige. One board in Sardegna is entirely composed of external members (however, this scientific board includes only five members). Interestingly, on some scientific boards, the regional government is not represented—those in Liguria, Lombardia, Piemonte, Sardegna, Trentino Alto-Adige, and Veneto.

Concerning expertise, members with medical expertise (i.e., where the “Medical doctors” category is prevalent) are naturally present on all regional scientific boards. However, in several boards (14 out of 31), medicine is not the predominant type of expertise. In fact, in two boards (in Liguria and Puglia), the percentage of members with medical expertise is very low. In some regions, we could observe members with expertise in regional and administrative law as well as local government administration. A reason for this situation might arguably be that these regions expected conflicts with the central government or the national scientific-technical committee. Moreover, in several regions (above all in Umbria, Abruzzo, Marche, Toscana, and Lazio), we found experts in crisis management, who were mostly drawn from the regional Civil Protection Departments. We could expect this tendency to be associated with the region's history of dealing with natural disasters. However, we should be cautious regarding this potential hypothesis. In fact, we did not find experts in crisis management in regions that experienced major floods and earthquakes in the (recent) past, such as Emilia-Romagna and Campania.

With respect to members' medical specializations, overall, most members hold a specialization in hygiene and preventive medicine or emergency medicine. One might expect this tendency to be linked to the existing organizational characteristics of the regional health systems. In particular, on the one hand, we could expect to find a prevalence of members with a specialization in hygiene and preventive medicine in regions featuring a system that predominantly relies on a community-based type of care (e.g., Veneto, Piemonte, Liguria, Emilia-Romagna, and Toscana). On the other hand, specialists in emergency medicine may be prevalent in systems characterized by hospital-based types of care (e.g., Abruzzo, Lazio, Sicilia, and Friuli VG). However, while this explanation seems to hold true for some regions that use community-based models (e.g., Liguria, Veneto, and Piemonte), no clear pattern is evident based on the analysis of the other regions. Finally, on some boards, a large portion of members have expertise in health management (Calabria, Campania, Piemonte, and Veneto).

Table 1 and Figure 2 present the (distribution of the) values of the two indexes for each regional scientific board (for the distribution of the four types per each region see Table A3 in the Appendix).

A large number of regional scientific boards (48.4% of the total) are composed predominantly of members with in-house heterogeneous expertise drawn from both regional governments and regional public health systems (Type 2), whereas in some regions (in particular Abruzzo, Liguria, Piemonte, Sardegna, and Veneto), these boards that provide in-house expertise are supplemented by other types of boards, in other regions (in particular Basilicata, Emilia-Romagna, Lazio, Sicilia, and Toscana), no other type of board is present. The other type of advice that appears most frequently in the material is Type 1—in-house homogenous expertise (35.5% of the total). Three regions (Lombardia, Molise, and Sardegna) created scientific boards with external homogeneous expertise (Type 3), whereas only two boards in Liguria and Trentino Alto-Adige feature external heterogeneous expertise (Type 4).

What emerges is a great variety in the composition of the SACs that reflects an unexpected variety in the policymakers' motivations with respect to what can be considered a common challenge (the response to a pandemic).

The perceived role of SAC members

As mentioned earlier, while all members of the 31 regional scientific advisory boards were invited to participate in an online flash survey that was conducted in the spring of 2022, we received

TABLE 1 Indexes of expertise and origins.

Region	SACs	Expertise index	Origin index	Type of SAC
Abruzzo	ABR1	0.89	1	Type 2
	ABR2	0.43	0.81	Type 1
Basilicata	BAS1	0.41	0.89	Type 1
Calabria	CAL1	0.7	0.85	Type 2
Campania	CAM1	0.86	0.9	Type 2
Emilia-Romagna	ER1	0.4	1	Type 1
	ER2	0.38	0.95	Type 1
	ER3	0.62	1	Type 2
Friuli VG	FVG1	0.75	1	Type 2
Lazio	LAZ1	0.44	1	Type 1
Liguria	LIG1	0.26	1	Type 1
	LIG2	0.86	0.3	Type 4
Lombardia	LOM1	0.3	0.31	Type 3
Marche	MAR1	0.7	1	Type 2
Molise	MOL1	0	0.33	Type 3
Piemonte	PIE1	0.9	0.94	Type 2
	PIE2	0.61	1	Type 2
	PIE3	0.61	0.63	Type 2
	PIE4	0.48	0.84	Type 1
Puglia	PUG1	0.93	1	Type 2
Sardegna	SAR1	0.57	0.95	Type 2
	SAR2	0.35	0	Type 3
Sicilia	SIC1	0.48	0.58	Type 1
Toscana	TOS1	0.42	0.88	Type 1
Trentino Alto-Adige	TAA1	0.76	1	Type 2
	TAA2	0.9	0.36	Type 4
Umbria	UMB1	0.78	0.95	Type 2
Valle d'Aosta	VDA1	0.72	0.53	Type 2
Veneto	VEN1	0.4	1	Type 1
	VEN2	0.82	1	Type 2
	VEN3	0.34	0.73	Type 1

Note: The "Origin" index is based on a normalization of the percentage of the members internal to the governmental administrative apparatus (where 1 indicates a full internal membership, and 0 indicates a full external membership). The "Expertise" index is based on a normalization of the Gini heterogeneity index (where 0 indicates maximum homogeneity, while 1 indicates maximum heterogeneity). Type 1 = In-house homogenous expertise; Type 2 = In-house heterogenous expertise; Type 3 = External homogenous expertise; Type 4 = External heterogenous expertise.

Regional scientific boards are reported by code. For details, see Tables A2 and A3 in the Appendix.

responses only from 24 committees. Furthermore, there are cases in which there is variance among members belonging to the same committee. For these reasons, we present the results by aggregating the responses for each type. However, we also present the responses aggregated for each committee in the Appendix.

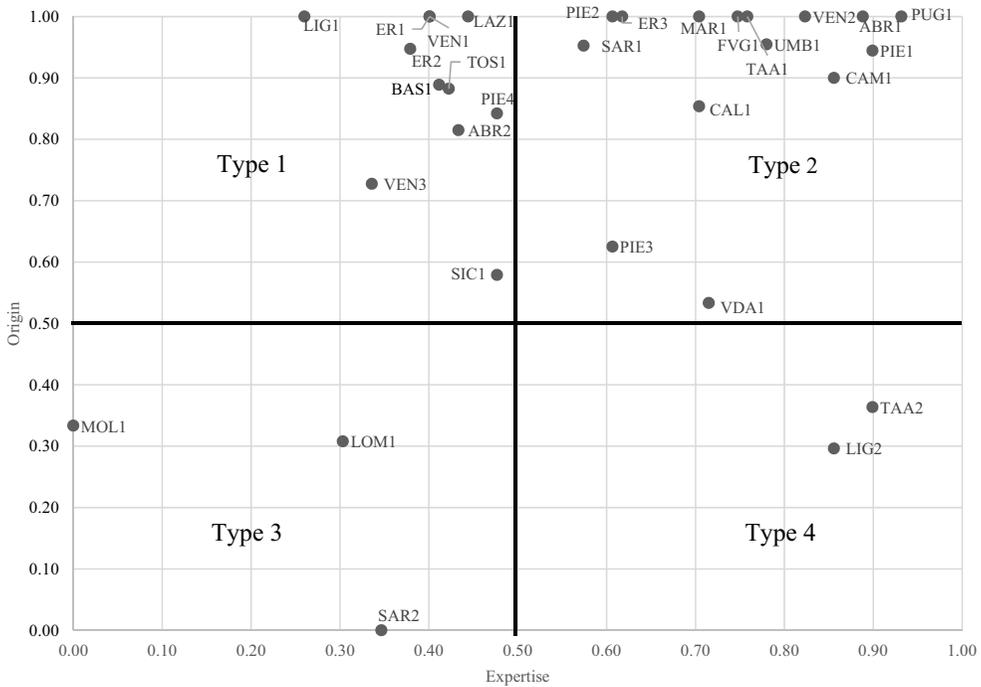


FIGURE 2 Distribution of the indexes of expertise and origins.

Perceived influence

One of the questions included in the survey focused on the experts' self-perception of influence. The answers to this question—sorted by the type of scientific advisory board in question—are found in Table 2.

The data collected show that in all four types of regional scientific advisory boards, perceptions of influence are rather high, with most respondents rating their influence above 6 (on a scale ranging from 1 to 10). The differences among the types are not striking although they show that Type 1 and Type 2 are more consensual than Type 3. Thus we could say that the results are moderately coherent with the expectations with respect to the first three types, while this is not the case for Type 4. However, it has to be underlined how for Type 4 we got responses only from one committee. This general trend is confirmed by Table B1 in the Appendix, which shows that six out of nine Type 1 committees, eight out of fourteen Type 2 committees, one out of two Type 3 committees, and the only Type 4 committee are considered influential by their members.

Consensus versus dissent

The online questionnaire contained a question concerning the level of internal cohesion/conflict within the regional scientific advisory boards. Respondents were asked to rate the extent to which the discussions held by the advisory boards were characterized by harmony or conflict. The results are presented in Table 3.

Respondents to the questionnaire, as a general trend, felt that the discussions held by their advisory boards were more “consensual” than “conflictual”. Within the same type of advisory board, however, ratings were highly variable. What emerges from the responses is similar to what emerged above on the dimension of influence. Type 1 and 2 are slightly more consensual than Type 3. Type 4 seems to be consensual too—although we got responses from one committee only

TABLE 2 Answers to the question “On a scale of 1 to 10, indicate the extent to which the opinions expressed by the board to which you belong have influenced the decisions made by the regional government” (N= 60).

Type of SAC	Not at all influent at all or not influent (1–5 values)	Influent or extremely influent (6–8 values)	Number of respondents
Type 1 (in-house homogenous expertise)	31.8% (7)	68.2% (15)	22 (9 SACs)
Type 2 (in-house heterogenous expertise)	25% (7)	75% (21)	28 (12 SACs)
Type 3 (external homogenous expertise)	42.9% (3)	57.1% (4)	7 (2 SACs)
Type 4 (external heterogenous expertise)	0% (0)	100% (3)	3 (1 SAC)

Source: Authors' elaboration from survey data.

TABLE 3 Answers to the question “On a scale of 1 to 10, assess the overall experience of the body to which you belong and indicate whether there was consensus or dissent” (N= 61).

Type of SAC	Consensus and full consensus (1–5 values)	Dissent and full dissent (6–10 values)	Number of respondents
Type 1 (in-house homogenous expertise)	59.1% (13)	41.9% (9)	22 (9 SACs)
Type 2 (in-house heterogenous expertise)	68.8% (20)	31.2% (9)	29 (12 SACs)
Type 3 (external homogenous expertise)	57.2% (4)	42.9% (3)	7 (2 SACs)
Type 4 (external heterogenous expertise)	66.6% (2)	33.3% (1)	3 (1 SAC)

Source: Authors' elaboration from survey data.

and the responses are not homogeneous (two respondents perceive consensus as prevailing while one perceives the opposite). Furthermore, Table B2 in the Appendix shows that seven out of nine Type 1 committees and nine out of twelve Type 2 committees are perceived to be consensual. The comparison with the consensus that emerges in two out of two Type 3 committees and in the one Type 4 committee is very problematic due to the asymmetry of cases and the low number of responses. However, all things considered, it emerges that the expectations on this dimension are substantially confirmed, at least as a potential trend, for the first three types of committees.

The frequency of meetings

One of the questions was devoted to getting information about the frequency of the committee meeting, by assuming that higher frequency can be considered as a proxy of the operational relevance of the committee for the policymakers (according to the problem solving-legitimizing functional dichotomy). The results are presented in Table 4.

Type 1 and Type 2 committees have met more frequently than Type 3 committees, while Type 4 committees present the usual problem (the respondents are divided in their memories about their experience in the committee). Thus, again, it emerges that the expectations for Type 1, 2 and 3 are generally confirmed while there are contrasting results for Type 4. As shown in Table B3 in the Appendix, on this dimension there is a very low level of agreement among the respondents; in fact, if we consider only the 16 committees from which we received two or more

TABLE 4 Answers to the question “Between March 2020 and April 2021, how many times did the body of which you are/were a member meet?” ($N = 65$).

Type	From 1 to 6	More than 7	Do not know	Number of respondents
Type 1 (in-house homogenous expertise)	33.3% (8)	50% (12)	16.7% (4)	24
Type 2 (in-house heterogenous expertise)	19.3% (6)	61.3% (19)	19.4% (6)	31
Type 3 (external homogenous expertise)	42.9% (3)	42.9% (3)	14.2% (1)	7
Type 4 (external heterogenous expertise)	33.3% (0)	66.6% (2)	0.0% (0)	3

Source: Authors' elaboration from survey data.

responses, only two present an equal response to this question (one Type 1 committee and one Type 2 committee).

Type of advice provided

A further question was included in the online survey to understand the kind of advice the regional scientific advisory boards provided. The objective of this question was to understand whether the experts thought that they provided purely technical advice or whether they thought that they (also) provided broader-scope advice. The possible response options to this question are shown in Table 5. Respondents could select more than one answer (which explains why the sum for each row can exceed 100%).

A large majority of the respondents reported that they did not limit themselves to merely technical evaluations (leaving the task of formulating solutions up to the decision-makers); rather, they drafted and submitted technical proposals and solutions to the decision-makers. In addition, more than one-third of the respondents noted that they provided advice not only on the technical level but also on the strategic and communicative levels. The latter response option was selected mainly by members of Type 1 and Type 2 advisory boards (i.e., boards on which in-house members predominate). With respect to our four expectations, the emerging picture is more complex than the other analyzed dimensions. Indeed, only Expectation 3 is clearly confirmed, because there is a clear prevalence of the operative dimension of this committee. Type 1 and Type 2 seem to have done almost the same job, while we expected that Type 2 would be devoted to giving mainly broad-scope advice. Type 4 appears to have given operative advice while we expected it to have a broader-scope role.

DISCUSSION

The empirical application of the proposed typology of SACs to the case of the Italian regional response to COVID-19 can be considered from different perspectives.

Although the empirical evidence does not firmly confirm our expectations, and despite the low number of responses as well as their asymmetric distribution among the committees, it emerges that the expected behavior of the committees is generally confirmed for three types (1, 2, 3) on three indicators (perceived influence, consensus vs. dissent, frequency of meetings). Expectation 4 is not confirmed, but the fact that there are contradictory answers for members of one committee makes this result very weak.

TABLE 5 Type of advice provided based on the answers to the question “What kind of contribution did the board to which you belong provide to the regional government? (More than one answer possible)” (N = 62).

Type of SAC	(1) We formulated proposals and technical solutions that we submitted to the regional leadership only in the areas of strict competence	(2) We provided advice and solutions not only on the technical level but also on the strategic and communication level	(3) We provided our technical input so that the decisions already made by the regional leadership could be implemented	Do not know	Number of respondents
Type 1 (in-house homogenous expertise)	52.2%	39.1%	13%	13%	23
Type 2 (in-house heterogenous expertise)	55.2%	37.9%	20.7%	3.4%	29
Type 3 (external homogenous expertise)	85.7%	28.6%	14.3%	0%	7
Type 4 (external heterogenous expertise)	66.7%	0%	33.3%	0%	3

Source: Authors' elaboration from survey data.

Our empirical illustration must also be understood in its context, that is, within an emergency setting and more specifically within the COVID-19 pandemic. In this regard, it must be acknowledged that the choices taken in times of crises can be tumultuous and very often based on the urgency to find immediate solutions. For example, internal consensus can be prevalent because in an emergency could manifest the will to contain frictions and minimize discussion, regardless of the composition of the SAC itself. That could be especially valid for those regions particularly affected by the COVID-19 pandemic between February 2020 and April 2020, when these SACs were established. As recent studies have shown (Capano & Lippi, 2021; Casula et al., 2020; Toth, 2021) the Italian regions that experienced an intense diffusion of infections during the first months of the pandemic adopted very different strategies to mitigate the transmission of the virus. Thus, the fact that the first three expectations are confirmed only as a tendency rather than in a more clear-cut way could be considered an effect of deciding under pressure. However, despite the critical context, the fact that Types 1, 2, and 3 emerge to behave as expected on three out of four dimension looks very promising in terms of analytical relevance of the typology. Furthermore, the problem with respect to the fourth dimension (the type of advice) can be directly justified by the need to make decisions under pressure, which means that the urgency of the day appears as more relevant than reasoning about the future. This can justify the fact that the first three types tend to give a mix of operational and strategic advice. But obviously this issue would need deeper investigation, because the survey cannot tell much about how the advice process has been managed by policymakers over time.

Thus, from an analytical perspective, it can be seen that the proposed typology helps bring order to the field of SACs in an effective way by highlighting the most relevant information regarding the members. As a result of the dichotomization of members' origin and expertise and the creation of two related indexes, it is not only possible to map the highly variegated reality of regional SACs but also to highlight the variation both among the four different types and within each type. This approach appears to be very promising in terms of the reliability of the proposed typology as an analytical tool that can be used to order and shed light on the tumultuous world of SACs. Furthermore, precisely because the proposed typology is designed from a demand perspective, it helps to understand why policymakers choose specific composition of SACs. Thus, it can also be useful from an explanatory point of view to better understand the dynamics and the outputs of policymaking. This perspective also seems to be productive for further advancement of the theoretical and analytical framework proposed in this article. More specifically, the explored expectations could be transformed into testable hypotheses with a large-N sample.

From an empirical perspective, an equally important challenge can be seen with respect to the great variation in the composition of the established SACs that emerges from our analysis. This variation clearly indicates that the choice of the type of advisory board, at least during a time of unprecedented crisis, depends entirely on contextual factors related to the traditional dynamics of the center-periphery relationships in Italy. Accordingly, the twenty Italian regions reacted like independent political systems when facing the situation of high uncertainty caused by the pandemic. This can be attributed to the dynamics of the Italian (healthcare) regionalism (Baldi, 2019; Giovannini & Vampa, 2020; Terlizzi, 2019), which has had a clear impact also in the response to the pandemic as shown by the many cases of conflict between regions and the central government, as well as by the significant variety of regional practices and responses over time (Casula & Pazos-Vidal, 2021; Malandrino & Capano, 2022; Vampa, 2021).

Furthermore, from a general perspective, this empirical evidence raises the possibility of hypothesizing that the type of demand for advice is not a direct, mechanic, consequence of the type of challenge that policymakers must face but rather that it is embedded in the institutional

context and the more general preferences and ideas of policymakers. Hence, more research is necessary to explore this topic.

CONCLUSION

In this paper, a novel typology of SACs is presented by reference to the extant literature with the aim of developing an analytical tool that can facilitate the analysis of SACs while overcoming the limitations of the classificatory proposals made by previous research. By assuming a demand-side perspective, and thus starting to theorize about the criteria of choice (controllability and problem framing) through which policymakers can achieve their functional goals, a typology of SACs has been proposed based on two criteria, that is, the origin of members and the degree to which their expertise is homogeneous, which are measured using two specific indexes, and then applied to a specific comparative case study (the establishment of SACs by the 20 Italian regions in response to the COVID-19 pandemic). This empirical illustration improves our understanding of some characteristics of the analyzed case and highlights the relevance of the typology itself to the theoretical underpinnings of the analysis of SACs. The analytical framework based on the proposed typology is applied to what can be defined as “hot” (short-term) advice. In this respect, our study contributes to the limited but recently growing body of literature investigating subnational (regional and municipal) policy responses to the COVID-19 pandemic (Bosa et al., 2021; Casula et al., 2020; Clement et al., 2023; Malandrino & Demichelis, 2020; Sparf et al., 2022). However, the reliability of our framework also makes it potentially fruitful with respect to the “cold” (long-term) type of advice, in which context SACs are established to solve known problems and thus to prepare a strategy for dealing with such problems in a proactive manner (Howlett, 2019; Prasser, 2006).

Overall, this novel typology also appears to be very promising in terms of the issues that it does not cover, thus opening the door for future research on both the drivers of the choices made regarding the composition of SACs and their role in policymaking. Both lines of research can find in this novel typology a relevant contribution to clarify their theoretical designs.

We are aware that this research is not exempt from possible criticism, primarily concerning the response rate of the survey used to understand the perceived role of SACs and their role in the policymaking process. However, the research design adopted in this article, in combination with the analytical effort made to propose a novel typology of the characteristics, structures, and activities of SACs, represents a significant advance in the literature on SACs and thus in our understanding of the processes by which policy advice is included in policymaking.

Moreover, this research can provide decision-makers with important information not only concerning how they should structure advisory committees when they need to solve complex and controversial problems but also with respect to the different roles that these bodies can play in providing knowledge to support policymaking depending on the characteristics of the experts appointed to the committees.

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ENDNOTES

- ¹ Hoffmann et al. define SACs “(a) a group of individuals with relevant expertise (b) that provides advice to decision-makers (c) predominantly based on research evidence from the natural or social sciences” (2018, p. 1).
- ² According to this perspective, members from universities or research centres will be considered external.
- ³ The Gini heterogeneity index provides a measure of the degree of heterogeneity present in each population. Based on the abovementioned categories pertaining to the members' fields of expertise, it has been calculated by subtracting the sum of the squares of the relative frequencies from 1 through the following statistical formula: $G = 1 - \sum_{i=1}^k f_i^2$. We finally normalized it through the following formula: $G_N = G * \frac{k}{k-1}$, where k indicates the number of modalities used in our coding related to the expertise of the SACs members.
- ⁴ To testify this intrinsic problem, in section B of the Appendix (Tables B1–B4), we present the results of the questionnaire by distributing the responses for each of the 24 SACs from which at least one member answered.

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APPENDIX A

TABLE A1 Regional scientific boards included in the analysis ($N = 31$).

Region	Total number of SACs	Name of the scientific board (in Italian)	ID. SAC
Abruzzo	2	Task force sanitaria	ABR1
		Gruppo tecnico- scientifico (GTSR)	ABR2
Basilicata	1	Task force coronavirus	BAS1
Calabria	1	Task force	CAL1
Campania	1	Task force/Unità di crisi regionale covid-19	CAM1
Emilia-Romagna	3	Unità di crisi	ER1
		Cabina di regia regionale SARS-CoV-19	ER2
		Cabina di coordinamento	ER3
Friuli VG	1	Task force	FVG1
Lazio	1	Task force	LAZ1
Liguria	2	Task force regionale per la sorveglianza, il controllo e la gestione clinica dei casi di infezione da nCoV	LIG1
		Comitato tecnico per la fase 2	LIG2
Lombardia	1	Comitato tecnico scientifico	LOMB1
Marche	1	GORES (Gruppo Operativo Regionale Emergenza Sanitaria)—Gruppo di esperti per il supporto tecnico	MAR1
Molise	1	Comitato Scientifico	MOL1
Piemonte	4	Unità di crisi	PIE1
		Gruppo di lavoro sulla riorganizzazione ospedaliera	PIE2
		Gruppo di lavoro per la gestione della fase 2	PIE3
		Comitato Tecnico Scientifico	PIE4
Puglia	1	Unità di crisi	PUG1
Sardegna	2	Unità di Crisi Regionale	SAR1
		Comitato Tecnico Scientifico	SAR2
Sicilia	1	Comitato Tecnico Scientifico (II)	SIC1
Toscana	1	Task force sanitaria	TOS1
Trentino Alto-Adige	2	Task force per l'emergenza coronavirus	TAA1
		Commissione di Esperti coronavirus	TAA2
Umbria	1	Unità Strategica Emergenza coronavirus	UMB1
Valle d'Aosta	1	Cabina tecnica di regia	VDA1
Veneto	3	Task force	VEN1
		Comitato di crisi coronavirus	VEN2
		Comitato Scientifico COVID-19	VEN3

TABLE A2 Methodological note concerning the instant survey.

The survey was coordinated by the Political and Social Analysis Laboratory (LAPS) of the Department of Social, Political, and Cognitive Sciences (DISPOC) of the University of Siena from April 13 to May 23, 2022. The survey was administered in self-managed mode using the CAWI (computer-assisted web interviewing) method with the assistance of IdSurvey software.

The total population interviewed with completion rates higher than 90% included 67 individuals, who were members of a population of approximately 500 experts engaged on the selected scientific boards established in response to the COVID-19 pandemic in various capacities (rate of response 13.7%). The average percentage of emails opened was 30%.

The target population was contacted via e-mail at their institutional e-mail addresses. In the first contact email, which was sent on 11 April 2022, the subject and purpose of the research were presented. Participants were also invited to read the privacy policy. Two days after sending the invitation to participate in the survey, an additional e-mail was sent (April 13, 2022) that contained a unique link to the questionnaire. After this e-mail was sent, each contact who had not previously completed the survey (or had completed it only partially) received four successive reminders on April 20, April 27, May 4 and May 11 2022.

TABLE A3 Types of SACs: Distribution per region.

Region (number of SACs)	Type 1—In-house homogenous expertise	Type 2—In-house heterogenous expertise	Type 3—External homogenous expertise	Type 4—External heterogenous expertise
Abruzzo (2)	ABR2	ABR1		
Basilicata (1)	BAS1			
Calabria (1)		CAL1		
Campania (1)		CAM1		
Emilia-Romagna (3)	ER1; ER2	ER3		
Friuli Venezia Giulia (1)		FVG1		
Lazio (1)	LAZ1			
Liguria (2)	LIG1			LIG2
Lombardia (1)			LOMB1	
Marche (1)		MAR1		
Molise (1)			MOL1	
Piemonte (4)	PIE4	PIE1; PIE2; PIE3		
Puglia (1)		PUG1		
Sardegna (2)		SAR1	SAR2	
Sicilia (1)	SIC1			
Toscana (1)	TOS1			
Trentino Alto-Adige (2)		TAA1		TAA2
Umbria (1)		UMB1		
Valle d'Aosta (1)		VDA1		
Veneto (3)	VEN1; VEN3	VEN2		
Total	11 (35.5%)	15 (48.4%)	3 (9.7%)	2 (6.5%)

APPENDIX B

TABLE B1 Answers to the question “On a scale of 1 to 10, indicate the extent to which the opinions expressed by the board to which you belong have influenced the decisions made by the regional government” (N= 60).^a

Type of SAC	SAC	Number of members	Type of influence (average value)	Number of respondents
Type 1	ABR2	27	Influent (7.0)	3
	BAS1	18	Influent (8.0)	2
	ER2	19	Influent (7.0)	1
	LIG1	41	Not influent (4.5)	2
	PIE4	19	Influent (7.4)	5
	SAR1	21	Influent (6.0)	1
	SIC1	19	Influent (5.3)	3
	TOS1	17	Not influent (4.7)	3
	VEN1	14	Not influent (4.5)	2
Type 2	ABR1	15	Influent (8.5)	4
	CAL1	41	Influent (5.2)	5
	FVG1	7	Influent (8.0)	1
	MAR1	15	Influent (7.5)	2
	PIE1	18	Not influent (3.0)	1
	PIE2	11	Not influent (4.5)	2
	PIE3	8	Not influent (1.0)	1
	PUG1	10	Influent (7.0)	4
	SAR1	21	Influent (9.0)	1
	TAA1	14	Influent (9.0)	3
	VDA1	15	Not influent (3.0)	2
	VEN2	10	Influent (10.0)	2
	Type 3	LOMB1	26	Influent (6.5)
SAR2		5	Non influent (5.0)	1
Type 4	LIG2	27	Influent (7.0)	3

^aType of influence (average value): Not influent = from 1 to 5.0 value; influent: from 5.1 to 10.0 value.

Source: Authors' elaboration from survey data.

TABLE B2 Answers to the question “On a scale of 1 to 10, assess the overall experience of the body to which you belong and indicate whether there was consensus or dissent” ($N = 61$).^a

Type of SAC	SAC	Number of members	Type of consensus/dissensus (average value)	Number of respondents
Type 1	ABR2	27	Consensus (4.0)	3
	BAS1	18	Consensus (2.0)	2
	ER2	19	Consensus (2.0)	1
	LIG1	41	Consensus (4.0)	2
	PIE4	19	Dissent (6.0)	5
	SAR1	21	Consensus (3.0)	1
	SIC1	19	Dissent (6.0)	3
	TOS1	17	Consensus (4.3)	3
	VEN1	14	Consensus (4.5)	2
Type 2	ABR1	15	Consensus (4.0)	3
	CAL1	41	Consensus (4.2)	5
	FVG1	7	Consensus (3.0)	1
	MAR1	15	Consensus (1.0)	2
	PIE1	18	Consensus (2.0)	1
	PIE2	11	Dissent (6.0)	2
	PIE3	8	Consensus (5.0)	1
	PUG1	10	Dissent (5.5)	4
	SAR1	21	Consensus (3.0)	1
	TAA1	14	Consensus (3.3)	3
	VDA1	15	Consensus (3.5)	2
	VEN2	10	Dissent (8.5)	2
Type 3	LOMB1	26	Consensus (4.0)	6
	SAR2	5	Consensus (2.0)	1
Type 4	LIG2	27	Consensus (5.0)	3

^aType of consensus/dissensus (average value): Consensus = from 1 to 5.0 value; dissent = from 5.1 to 10.0 value.

Source: Authors' elaboration from survey data.

TABLE B 3 Answers to the question “Between March 2020 and April 2021, how many times did the body of which you are/were a member meet?” (N=60).^a

Type	SAC	Number of members	Never	From 1 to 3	From 4 to 6	From 7 to 9	More than 10	Do not know	Number of respondents	
Type 1	ABR2	27	0.0% (0)	25.0% (1)	0.0% (0)	0.0% (0)	50.0% (2)	25.0% (1)	4	
	BAS1	18	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (2)	0.0% (0)	2	
	ER1	19	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	1	
	ER2	41	0.0% (0)	100.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	1	
	LIG1	19	0.0% (0)	50.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	50.0% (1)	2	
	PIE4	21	0.0% (0)	0.0% (0)	40.0% (2)	0.0% (0)	40.0% (2)	20.0% (1)	5	
	SAR1	19	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	1	
	SIC1	17	0.0% (0)	0.0% (0)	33.3% (1)	0.0% (0)	66.7% (2)	0.0% (0)	3	
	TOS1	14	0.0% (0)	0.0% (0)	33.3% (1)	66.7% (2)	0.0% (0)	0.0% (0)	3	
	VEN1	27	0.0% (0)	50.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	50.0% (1)	2	
	Type 2	ABR1	15	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	75.0% (3)	25.0% (1)	4
		CAL1	41	0.0% (0)	0.0% (0)	20.0% (1)	20.0% (1)	20.0% (1)	40.0% (2)	5
		FVG1	7	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	1
		MAR1	15	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (2)	0.0% (0)	2
		PIE1	18	50.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	50.0% (1)	2
		PIE2	11	0.0% (0)	0.0% (0)	50.0% (1)	0.0% (0)	0.0% (0)	50.0% (1)	2
		PIE3	8	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	1
PUG1		10	0.0% (0)	0.0% (0)	25.0% (1)	25.0% (1)	25.0% (1)	25.0% (1)	4	
SAR1		21	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	1	
TAA1		14	0.0% (0)	0.0% (0)	33.3% (1)	0.0% (0)	66.7% (2)	0.0% (0)	3	
UMB1		22	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	1	
VDA1		15	0.0% (0)	0.0% (0)	50.0% (1)	0.0% (0)	50.0% (1)	0.0% (0)	2	
VEN2		10	0.0% (0)	0.0% (0)	0.0% (0)	33.3% (1)	66.7% (2)	0.0% (0)	3	

(Continues)

TABLE B 3 (Continued)

Type	SAC	Number of members	Never	From 1 to 3	From 4 to 6	From 7 to 9	More than 10	Do not know	Number of respondents
Type 3	LOMB1	26	0.0% (0)	16.7% (1)	16.7% (1)	0.0% (0)	50.0% (3)	16.7% (1)	6
	SAR2	5	0.0% (0)	0.0% (0)	100.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	1
Type 4	LIG2	27	0.0% (0)	33.3% (1)	0.0% (0)	33.3% (1)	33.3% (1)	0.0% (0)	3

Source: Authors' elaboration from survey data.

TABLE B4 Type of advice provided based on the answers to the question “What kind of contribution did the board to which you belong provide to the regional government? (More than one answer possible)” (*N* = 62).

Type of SAC	SAC	Number of members	Advice based on technical input	Advice based on solutions also at the strategic and communication level	Number of respondents
Type 1	ABR2	27	50.0% (2)	25.0% (1)	4
	BAS1	18	0.0% (0)	100.0% (2)	2
	ER2	19	100.0% (1)	100.0% (1)	1
	LIG1	41	0.0% (0)	0.0% (0)	2
	PIE4	19	80.0% (4)	40.0% (2)	5
	SAR1	21	100.0% (1)	0.0% (0)	1
	SIC1	19	100.0% (3)	66.7% (2)	3
	TOS1	17	100.0% (3)	0.0% (0)	3
	VEN1	14	50.0% (1)	50.0% (1)	2
Type 2	ABR1	15	100.0% (4)	50.0% (2)	4
	CAL1	41	100.0% (5)	0.0% (0)	5
	FVG1	7	0.0% (0)	100.0% (1)	1
	MAR1	15	100.0% (2)	100.0% (2)	2
	PIE1	18	0.0% (0)	0.0% (0)	1
	PIE2	11	100.0% (2)	0.0% (0)	2
	PIE3	8	100.0% (1)	0.0% (0)	1
	PUG1	10	50.0% (2)	50.0% (2)	4
	SAR1	21	0.0% (0)	0.0% (0)	1
	TAA1	14	66.7% (2)	66.7% (2)	3
	UMB1	22	100.0% (1)	0.0% (0)	1
	VDA1	15	100.0% (2)	0.0% (0)	2
	VEN2	10	50.0% (1)	100.0% (2)	2
	Type 3	LOMB1	26	100.0% (6)	16.7% (1)
SAR2		5	0.0% (0)	100.0% (1)	1
Type 4	LIG2	27	100.0% (3)	0.0% (0)	3

Source: Authors' elaboration from survey data.