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The effectiveness of national and EU-level civil protection systems: evidence from 17 member states

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ABSTRACT
A number of high profile crises and disasters have driven the EU to increase cooperation among its member states in the area of civil protection and to enhance its capacity to conduct civil protection operations in Europe and around the world. However, in the light of recent transboundary crises in the EU, manifested by the refugee crisis, terrorist attacks, and natural disasters, it is far from clear how effective such cooperative EU arrangements can be due to differences in the way national civil protection has been organized and due to the question of whether sufficient trust exists within and between the involved organizations. In this article, drawing from a unique study of civil protection agencies in 17 EU member states, and utilizing theories on crisis management, public administration and trust, we shed light on the factors that promote national and EU-level effectiveness in civil protection and crisis management.

KEYWORDS Civil protection; crisis management; effectiveness; European Union; public administration structure; public administration culture

Introduction
To deliver on the promise of a ‘Europe that protects’, the EU and its member states must be able to respond effectively when a crisis or disaster strikes. The expression of this goal can be found in the solidarity clause in the Treaty on the Functioning of the EU (Art. 222), which establishes a legal obligation for the EU and its member states to assist each other when an EU country is the object of a terrorist attack or a natural or man-made disaster. Because the EU’s civil protection mission speaks to the EU’s entire project and is one of the most tangible instruments of European solidarity, we treat it as a crucial case for investigating which factors contribute to facilitating or hindering effective EU cooperation.

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A number of high profile crises and disasters have driven the EU to increase cooperation among its member states in the area of civil protection and to enhance its capacity to conduct civil protection operations in Europe and around the world. The EU’s expanding role in civil protection mirrors its increased involvement in other security areas such as fighting organized crime, combatting terrorism, and countering cyber threats. However, in the light of recent transboundary crises in the EU, manifested by the refugee crisis, terrorist attacks, and natural disasters, it is far from clear how effective such cooperative EU arrangements can be due to differences in the way national civil protection has been organized and due to the question of whether sufficient trust exists within and between the involved organizations. Moreover, it is unclear to what extent structural and cultural factors matter for how officials working in civil protection and crisis management agencies perceive the effectiveness of these arrangements. Using unique survey data, consisting of 670 survey responses from civil protection and crisis management agencies in 17 EU member states,1 we use our results to shed light on the factors that promote national and EU-level effectiveness in civil protection and crisis management.

The goal of civil protection is to protect people against harm from disasters and a central objective of civil protection systems at the national and EU levels is the ability to respond rapidly and efficiently in the event of a disaster or imminent disaster (European Parliament and Council 2013). The crisis management and public administration literature has identified an array of challenges that organizations must be able to address for effective and legitimate performance in times of disaster and crisis (Ansell et al. 2010; Boin et al. 2014a; Boin and ’t Hart 2010; Christensen et al. 2016a; Parker et al. 2009; Parker and Stern, 2002). Looking at the specific civil protection objectives that the member states and the EU have set for themselves in the 2013 civil protection legislation (European Parliament and Council 2013) and taking into consideration the findings from this literature on what is needed for effective crisis management, we have constructed a number of survey questions to probe the views of officials and practitioners working in this field and to gather evidence about how they assess the ability of both their national civil protection organizations and EU level organizations, such as the Directorate-General for European Civil Protection and Humanitarian Operations (DG ECHO) and its Emergency Response Coordination Centre (ERCC), to perform a number of tasks and activities central to their mission.

The research question we are exploring in this article is: What qualities are associated with effective civil protection and crisis management nationally and at the EU level? Our aim here is to explore the relationship between two theoretical perspectives on crisis management, namely the organizational structure perspective and the organizational culture perspective, with the goal of assessing the effect of structural and cultural factors on the effectiveness of
core crisis management tasks relevant to civil protection. We depart by combining the discourses on public administration and trust (Power 1997, Rothstein 2011, Waldo 2007) and the growing body of research that points to structural and cultural factors as crucial determinants of effective crisis management (Boin et al. 2014b; Bossong and Benner 2010; Christensen et al. 2016a, 2016b; Kuipers et al. 2015). For example, there are contrasting views in the scholarship regarding whether or not hierarchical organizations can coexist or nurture relations based on trust (Alter and Hage 1992; Fukuyama 1995; Kramer 1999, 2004; Goldsmith and Eggers 2004; Moynihan 2008). In addition, we also investigate a number of individual factors (IVs), such as gender, education, training, experience, etc. that may impact our dependent variable (DV) of perceived effective crisis management. To aid our analysis, we have put all the results of our performative dimensions together into an index and controlled them against our independent variables to see what, if anything, is correlated with perceived effectiveness. The objects of analysis for this study are the lead agencies responsible for civil protection and crisis management in 17 EU member states that participate in the EU Civil Protection Mechanism. These organizations deal primarily with natural and man-made disasters (including complex emergencies and accidents), rather than military and security crises.

The article proceeds as follows. First, we discuss past research in the field and present the empirical and theoretical departure points of our study. Following this, we provide a concise introduction to how the EU’s role in crisis management in general and civil protection in particular has grown over time. We then discuss how we conceptualize effectiveness and present our data and measures, which outlines our exploration into how structural and cultural factors correlate with the ability to effectively perform key tasks in times of crisis associated with civil protection. In the penultimate section, we provide the results of our endeavour. Finally, we end with our conclusions and discuss the implications our findings may have for the EU’s new proposal to further strengthen Europe’s disaster management.

Past research and theoretical departure points

A crisis is traditionally defined as having three components: 1) it poses a threat to core values; 2) it necessitates urgent action; and 3) it must be addressed under conditions of uncertainty (Boin et al. 2017: 5–7). For a crisis to be managed effectively it requires that managers, decision makers, and involved organizations pull together in order to contribute to the various specific phases and activities that make up crisis management. Because many crises surpass clear organizational and sector-specific boundaries, and, as in the case of transboundary crises, geographical and jurisdictional boundaries, they increasingly implicate a number of diverse organizations that must
coordinate and collaborate, sometimes intermittently and sometimes for a sustained period of time, in many areas and even across different levels of government (Boin et al. 2013; Comfort and Kapucu 2006).

In recognition of these realities and due to legal obligations, such as the solidarity clause, the EU has become increasingly involved in crisis management and different capacities at the national and EU level have been developed to assist in managing various types of crises, both civilian and military (Boin et al. 2013, 2014a; Kuipers et al. 2015). To better cope with civilian crises, the EU has created a civil protection mechanism and an accompanying operational hub in the form of the ERCC which coordinates the response of the participating countries in the event of a crisis.

As the EU has constructed its crisis management capabilities a number of studies have attempted to chart the organizational structures the EU has put in place, make sense of how and why the EU has done so, or assess how well the EU has prepared for or responded to particular crises (Boin et al. 2013, 2014a; Missiroli 2006; Nowak 2006). Some studies have examined the EU’s capacity to manage transboundary crises (Boin et al. 2014b; Bossong and Hegemann 2015), some have compared the civil security systems in European countries to assess the factors that may facilitate or impede the development of a joint EU crisis management capacity (Kuipers et al. 2015), while others have compared the national coordination structures for civilian crisis management in a limited number (six) of European countries (Christensen et al. 2016b).

In contrast to these studies, we utilize survey data from 17 EU member states (Table A1) to examine the factors that promote effectiveness in civil protection and crisis management both at the national and EU-level. In our survey, drawing on past research (Ansell et al. 2010), we investigated four core ‘performative dimensions’: 1) distributed sense-making (the ability to overcome conflicting problem definitions in situations characterized by uncertainty); 2) coordination, cooperation and communication (the ability to act in concert with the appropriate relevant actors); 3) the ability to respond appropriately (the right actions were taken by the proper actors); and 4) surge capacity, supply logistics and scaling procedures (sharing and distributing resources through clear decision-making structures and procedures). These dimensions correspond to the four performance attributes that have been identified as essential for an effective transboundary crisis response by Ansell et al. (2010).

To carry out our study we have selected the national agencies that bear the primary responsibility for coordinating national civil protection and serve as the national contact points for the Union Civil Protection Mechanism (UCPM). Our cases are taken from a representative sample of EU member states, as measured by size, prosperity, length of Union membership, and geographical location (Northern, Southern, Central, and Eastern Europe). Past research on civil protection and crisis management in the EU has revealed
important differences in administrative responsibilities, legal frameworks, and operational practices between the different national systems (Bossong and Hegemann 2015: 34–36; Kuipers et al. 2015: 2). For example, several of our countries, Germany and Austria, have federal systems with decentralized and localized bottom-up arrangements (Germany and Austria). Another group, such as the Czech Republic, Finland, Ireland, and Sweden, have largely decentralized bottom-up systems, but with some strong, albeit variable, elements of centralization. A third group consists of countries, such as Croatia and France, with fairly centralized systems with some elements of decentralization. Finally, Hungary, Latvia, and Lithuania are examples of states with fully centralized systems.

Although the organizations included in our study exhibit diversity in their organizational set-ups, institutional arrangements, and histories (Bossong and Hegemann 2015: 34–36), the selected countries and organizations also share a number of key characteristics. The countries are all member states of the EU and the organizations all take part in the UCPM. They all have important national responsibilities in the area of civil protection and they all play a central role in cooperative efforts within the EU in this sector. Many have similar functions and many carry out similar tasks of civil protection. Therefore, surveys with personnel from these organization are a valuable method to investigate whether structural and cultural factors are strongly related to perceptions of the effectiveness of crisis management within national civil protection agencies and to what extent these factors are associated with perceptions of effective crisis management at the EU level. It should be emphasized that there are limitations to this design, that is, we can only capture perceptions of the importance of structural and cultural factors for effectiveness. This should also be confirmed in studies based on more objective measures, which is beyond the scope of our assessment here.

In our study we distinguish and make use of two theoretical perspectives to investigate what factors are associated with effective civil protection and crisis management: the organizational structure perspective and the organizational culture perspective.

The organizational structure perspective emphasizes the importance of formal structures, legal frameworks, sometimes referred to as ‘hardware’ factors (Boin and ‘t Hart 2010), and the consequence of organizational design choices such as whether the organizational arrangements are vertical and hierarchical or are horizontal and network-based (Christensen et al. 2016a; Christensen et al. 2016b: 318–319). From this perspective, if the organizational setup is vertical and hierarchical then goals will likely be pursued through the use of formal mechanisms that specify how organizational units and individuals should carry out their duties and decision making will tend to be top-down, relying on steering techniques such as command and control (Boin and Bynander 2015: 125; Christensen et al. 2016b: 318). In
contrast, horizontal and network-based arrangements tend to be more bottom-up, allow for collective decision making processes and can be better suited for emergent problems that cut across sectors and policy areas (Boin and Bynander 2015: 126–127; Christensen et al. 2016b: 318).

The **organizational culture perspective** emphasizes the importance of administrative culture, shared values, shared norms, a common ethos, trust relations, loyalty, and professionalism (Christensen et al. 2016b; Putnam 1993, 2000; Rothstein 2011; Rothstein and Uslaner 2005). Past research has found that these ‘software’ factors, as they are often termed, are crucial determinants that enable or complicate the likelihood of effective and legitimate crisis management (Boin and ’t Hart 2010; Persson et al. 2017). Crisis management is not likely to work well if the people working in the various civil protection organizations do not trust each other, lack shared norms and values, or do not have a healthy administrative culture.

We are particularly interested in the relationship of hierarchy, trust and effectiveness and to what extent these are compatible. Past research has shown hierarchical arrangements to be well suited for managing crises (Christensen et al. 2016b), but it is an open question whether such structural arrangements are compatible with cultural factors that foster trust. For example the branch of public administration scholarship commonly known as New Public Management (NPM) has contended that responsive institutions can be achieved at a low cost via the replacement of hierarchical public administration structures by delegation or by devolving powers to so-called polycentric systems of governance (Gruening 2001; Ostrom and Ostrom 1971). It has been claimed that this engenders ‘synergy effects’ by allowing for cooperation across departments and administrative units, which can lead to more trust in public administration institutions and between citizens (Rondinelli 1981: 143–144; Widmalm, 2008: 47–51, 196–202). Francis Fukuyama (1995: 224) has even claimed that an excessive emphasis on rules can undermine trust, writing: ‘There is usually an inverse relationship between rules and trust: the more people depend on rules to regulate their interactions, the less they trust each other, and vice versa’.

A closely related view can be found in Roderick Kramer’s (1999, 2004) work. Kramer acknowledges that hierarchy has many merits as an organizational form, but points out that it also has many problems and can be inhospitable for building trust (Kramer 2004: 142). According to Kramer unequal relations create fear and suspicion and that these difficulties spotlight the ‘elusive quality of trust in hierarchical relations and the comparative ease with which distrust and suspicion roam over the hierarchical landscape’ (Kramer 2004: 142).

These tensions in the literature have inspired us to investigate if a healthy organizational culture can thrive in a hierarchical organizational structure and whether we can we see any relationship with how these factors might foster or impede effective national and EU crisis management.
Civil protection and crisis management in the EU

Before operationalizing our variables and evaluating our evidence, it is useful to describe in more detail the EU’s growing role in crisis management and civil protection. In a world increasingly defined by complex-interdependence, crises, such as the 2010 Icelandic volcanic ash cloud event, floods, earthquakes, disease outbreaks, industrial accidents, or mass migration flows, which start in one country have the possibility to rapidly cascade across borders and have major regional and even global effects (Ansell et al. 2010; Galaz et al. 2011; Parker 2015). Transboundary events of this kind or national events that could outstrip the capabilities of a lone country to handle alone are some of the principal reasons why the EU has assumed a central role in the management of crises. In recognition of this need the Treaty of Lisbon includes a Solidarity Clause that expresses the EU’s obligation to assist member states in the event of a disaster or other major crisis.

Because the solidarity clause in the Treaty on the Functioning of the EU (Art. 222) introduces a legal obligation that the EU and its member states should provide assistance when a fellow member is in need and the Treaty of Lisbon also calls on the Union to support and coordinate the civil protection systems of its Member States (Art. 196), various arrangements have been established among the EU member states in order to bring about effective coordination of crisis management and to enable the EU and its member states to respond to overwhelming natural and man-made disasters. One of the centrepieces of the effort to fulfil this obligation is the Union Civil Protection Mechanism (UCPM), which was established in 2001 with the aim of fostering cooperation among national civil protection authorities across Europe. Thirty-three participating countries have ratified the Civil Protection Mechanism: 28 EU Member States, Iceland, Norway, Montenegro, the Republic of Macedonia, and Serbia.

The EU’s Civil Protection legislation was revised in December 2013 in order to bring together the various aspects needed for a comprehensive disaster management policy: disaster prevention, disaster preparedness and improved response arrangements (European Commission 2013). The revised civil protection mechanism went into effect on 1 January 2014 and the specific components that now comprise the structure of the UCPM are the ERCC, the Common Emergency Communication and Information System (CECIS), and the European Emergency Response Capacity (EERC) (European Parliament and Council 2013).

The ERCC, which was established in May 2013, is the operative hub and the heart of the UCPM. The ERCC is the EU’s main crisis monitoring and coordinating platform and it disseminates information, provides early warning, and coordinates responses from the participating countries in the event of a crisis. The ERCC, which replaced the Monitoring and Information Centre
(MIC), offers a full 24/7 capacity to monitor disasters, to provide real-time information about them, and to respond to them by providing needed data, updates, expertise, financial assistance, and resources from the voluntary pool (European Commission 2013: 2). If the solidarity clause is invoked, the ERCC acts as the main contact point to coordinate the EU’s response. The ERCC is supported in its work by CECIS, which is a web-based alert and notification system that allows for real-time information sharing among participating states and the ERCC (European Parliament and Council 2013).

In October of 2014, a strengthened EERC or what is also known as the ‘voluntary pool’ was launched. The EERC consists of a voluntary pool of pre-committed capacities from the Member States, including trained experts, relief teams, and equipment (European Parliament and Council 2013). To guarantee that committed resources are of high quality, DG ECHO subjects all assets to a certification process (European Parliament and Council 2013). The voluntary pool of pre-committed capacities was one of the new additions designed to address the weaknesses in the previous mechanism and was created to move away from the reactive and ad hoc coordination that reigned prior to 2014 (European Commission 2017a: 4), to ‘a pre-planned, pre-arranged and predictable system’ (European Court of Auditors 2016: 9). The voluntary pool creates a response capacity and range of assets that can be tapped immediately when needed. Collectively, the Civil Protection Mechanism, ERCC, CECIS, and the EERC’s voluntary pool are designed to be the concrete manifestations of European solidarity in the field of civil protection.

Since its inception in 2001, the UCPM has monitored more than 400 disasters worldwide and has been activated more than 250 times (European Commission 2017b). Inside the EU, from 2001 to 2017, there were 102 requests for assistance (DG ECHO 2018). The UCPM was activated, for example, in response to the floods in the western Balkans in 2014, a forest fire in Sweden in 2014, and the migration and refugee crisis in Croatia, Greece, Hungary, Serbia, and Slovenia in 2015. In response to the widespread forest fires in 2017, Albania, France, Italy, Montenegro, and Portugal received help from the UCPM in the form of firefighting airplanes, firefighters and vehicles.

In order to contribute to a more effective crisis management system and better civil protection for the citizens of the EU, these formal arrangements will only assume meaning and earn legitimacy if they actually can be regarded as useful and effective in relation to the responsibilities they assume and the assistance they promise to render. This implies building and managing organizations willing and able to communicate, cooperate, and act in concert with crisis management organizations in countries that vary greatly with respect to organizational culture and structures. To what extent trust and cooperation can be built between organizations that may rely heavily on a clear chain of command in a crisis situation and to what extent a central EU hub can be perceived as trustworthy and effective in times of crisis are crucial questions that
need to be investigated. In this section below, we present how our variables were operationalized and what data we used for assessing the factors associated with effectiveness in civil protection and crisis management both at the member state and EU-levels.

**Data and measures of civil protection effectiveness**

As indicated above, our goal is to assess the effect of structural and cultural factors on the effectiveness of crisis management, both nationally and at the EU level. The investigation is based on a large-scale online survey that targeted 670 officials working in civil protection and crisis management agencies in 17 member states of the EU (for selection of countries, see footnote 1). In the sample, we sought broad representation for various administrative traditions and culture (c.f. Painter and Peters 2010), and different models that exist for the organization of civil protection and crisis management in EU member states (c.f. Christensen et al. 2016b; Kuipers et al. 2015).

The study was conducted in two stages. We first visited all authorities that were willing to participate and conducted interviews with senior officials to learn more about the activities of the agency. In a second stage, an online survey was distributed to a wider selection of employees, mostly high-ranking officials working in management, strategic positions, or operational units. The response rate is unfortunately impossible to calculate with any precision since the selection of respondents was in part of ‘snowball’ character. We sought primarily to obtain a sufficient number of respondents per authority, depending on the size of the agency (see Table A1 in Appendix). Due to this uncertainty, however, we should interpret the results cautiously. Nevertheless, our survey contributes with unique information on the perceptions of a large number of officials working in European civil protection authorities. To our knowledge this is the most comprehensive study conducted in the field and the survey spans a large number of EU member states.

In this section, we discuss how we conceptualized effectiveness, present how our variables are operationalized and what data we use for the assessment, before we present the results of our statistical model in the next section.

**Studying civil protection effectiveness**

The study of effectiveness is a complicated and contested subject. Some researchers have tried to distinguish between effectiveness as goal attainment and effectiveness as problem-solving (Young 1994). The large literature in the field of policy analysis has attempted to make distinctions among outputs (activities, policies, regulations), outcomes (performance, implementation), and impacts (goal attainment, problem-solving, change) (Easton 1965). Crisis and disaster management researchers have concentrated on
identifying criteria for assessing performance, on the professional competencies of emergency managers, and on the attributes necessary for addressing the ‘transboundary dimensions’ of crises and disasters (Ansell et al. 2010; Boin et al. 2014a; Boin and ‘t Hart 2010).

In our effort to shed light on the factors that promote effective civil protection and crisis management at the national and EU levels, we have utilized the last-mentioned notion of effectiveness, the aptitude to perform crucial crisis management activities, and selected a number of specific objectives, as laid out by articles 3, 8, 11, 14, 15 and 18 in the revised 2013 civil protection legislation (European Parliament and Council 2013), when formulating our survey questions about how respondents assess the ability of national and EU-level organizations to carry out these crucial tasks. Effectiveness in this sense is closely related to the functional dimension of crisis management (cf. Ansell et al. 2010), and the performance indicators we asked about are those that our respondents would recognize as central to their mission as civil-protection practitioners.

**Dependent variables**

Our main indicators of effective crisis management are based on the civil protection goals the member states have set for themselves and on what previous researchers have identified as crucial factors. As mentioned above, on this basis we have selected four core ‘performative dimensions’: (1) distributed sense-making; (2) coordination, cooperation, and communication; (3) appropriate response; and (4) surge capacity, supply logistics, and scaling procedures. We have taken measurements along each performative dimension, on the basis of a number of questions in the survey. Taken together, these measurements form four additive indices, each measured at both national and EU levels. (For exact phrasing of the questions included, see the online Appendix). Finally, the four indices for each level are merged into an effectiveness index, *Index on Effectiveness in Crisis Management*, where each component has equal weight. There is one index for the national level (ECMNA) and one for the EU level (ECMEU). (The way the indices are measured is outlined in the online Appendix. For descriptive statistics, see Table A2).²

**Independent variables**

Our main indicators of structural and cultural characteristics of civil protection and crisis management organizations rely on what has been identified as crucial factors in previous research. These factors have been identified both in more general public administration research and in the crisis management literature (see, e.g., Christensen et al. 2016a, 2016b). In the questionnaire, many questions were posed on a variety of issues related to administrative
structures and culture, such as the way work was organized and the cultural values that exist in the organization. Interestingly enough, a factor analysis shows that the questions belong to two underlying dimensions that are similar to those identified in the literature (see Table 1). The first dimension consists of two questions, concerning the organizational structure, that is, the extent to which the organization was characterized by hierarchy and rule-governance. The second dimension contains several issues related to the culture of the organization, such as loyalty, trust, and professionalism (for exact phrasing of the questions included, see online Appendix). Based on the factor analysis, we have chosen to focus on two core ‘administrative dimensions’: 1) a structural dimension; and 2) a cultural dimension. Thus we have created two additive indices, Public Administration Structure (PAS) and Public Administration Culture (PAC), both measured at the national level, which compose our main independent variables.3 (The way the indices are measured is outlined in the Appendix. For descriptive statistics, see Table A2).

**Control variables**

To assess the effects of structural and cultural factors on the effectiveness of crisis management institutions, we also control for some individual characteristics and experiences. The following control variables are included in the model. (The way the control variables are measured is outlined in the Appendix. For descriptive statistics, see Table A2). Experience of crisis management and/or civil protection issues is a continuous variable that measures the respondents’ experience of civil protection work; Experience of working with the EU Civil Protection Mechanism is a dummy variable which measures whether or not you have this experience; Experience of training exercises or simulations with the EU is a dummy variable which measures whether or not you have this experience; Gender is a dummy variable which measures the respondents’ gender; Education is a dummy variable that measures whether the

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair treatment</td>
<td>.73</td>
<td>-.17</td>
</tr>
<tr>
<td>Freedom of dissent</td>
<td>.60</td>
<td>-.30</td>
</tr>
<tr>
<td>Professionalism</td>
<td>.61</td>
<td>-.16</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>.28</td>
<td>.61</td>
</tr>
<tr>
<td>Rule-governed</td>
<td>.55</td>
<td>.52</td>
</tr>
<tr>
<td>Autonomy</td>
<td>.71</td>
<td>-.23</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.66</td>
<td>.09</td>
</tr>
<tr>
<td>Trust</td>
<td>.49</td>
<td>.07</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>3.35</td>
<td>1.36</td>
</tr>
<tr>
<td>Number of cases</td>
<td>519</td>
<td>519</td>
</tr>
</tbody>
</table>

Notes: The factor analysis was conducted in SPSS using the maximum likelihood method. The 519 respondents included in the analysis (out of 670 in all) are the ones who gave answers on all eight items.
respondents have high (graduate university education or PhD) or low education (high school, college and undergraduate at university); and Country dummies capture any country-specific effects.

Results

In general, officials are quite pleased with the effectiveness of the civil protection institutions that we have assessed. They tend to consider their national institutions somewhat more effective (average 4.5 on a scale running from 0 to 6) than EU institutions (average 4.2); however, the differences are quite small between the national level and the EU level (see Table A2).

In order to tap into the effect of structural and cultural factors associated with crisis management effectiveness we first need to see if there are any bivariate relationships between our main indices of each administrative dimension and the effectiveness indices. Figure 1 presents a scatter plot showing the relationship between the index on public administration structure (PAS) and the perceived effectiveness of crisis management at national level (ECMNA), based on country aggregates. It shows a positive relationship, meaning that higher values on the structure index (i.e., more hierarchical and rule-governed organizations) tend to be judged as more effective. The Czech

Figure 1. Scatter-plot on relationship between PAS index and ECMNA index.
Republic and Hungary are illustrative examples of this relationship, where officials assess both the hierarchy and the national effectiveness as high. Croatia, Ireland and Sweden are examples where the opposite seems to prevail. Here, officials have low values on both indices.

However, the same relationship exists between the index on public administration culture and effectiveness, i.e., the more loyalty, trust, and professionalism that can be found in organizations; the more effective it is considered to be by the respondents (see Figure 2). This relationship is most clearly demonstrated in Finland, whose officials have the highest values both on the index on public administration culture and the effectiveness index. In Lithuania, opposite conditions seem to exist as their officials have low values on both indices.

If we look instead at the relationship between public administration structure and the effectiveness of EU level institutions (ECMEU), we find a similar positive relationship. Hungary is again an illustrative case, where officials assess both the hierarchy and the national effectiveness as high. However, the relationship disappears for the cultural index, where the countries’ average values on the two indices do not follow any clear pattern (see Figures 3 and 4). To get a better understanding of these relationships we need to test them in multivariate regression analyses.

Figure 2. Scatter-plot on relationship between PAC index and ECMNA index.
The first model in Table 2 displays a simple bivariate regression between public administration structure and the perceived effectiveness of crisis management at national level. The results show clear evidence of a positive relationship between the structure of national institutions and the extent to which they are considered effective. On average, the more hierarchical and rule-governed, the more effective crisis management institutions tend to be seen by officials. This effect is both statistically significant and substantively strong. Similarly, there is a positive relationship between the culture of national institutions and perceived effectiveness. The more an organization is characterized by trust loyalty, autonomy, professionalism, etc., the more effective it is considered to be by officials. When testing the effect of both indices in the same model on the effectiveness of national civil protection institutions we find that the effects of the culture and structure indices are more or less equally strong. A one-unit increase on the culture-scale is estimated to increase the sense of effectiveness of crisis management institutions by .34 units on a scale running from 0 to 6, whereas the effect of the structure index is .31. When introducing our control variables in Model 4, we find that the significant relationships remain while only one of the control variables is significant: the experience officials have of crisis management and civil protection issues. However, this effect disappears when we introduce country

Figure 3. Scatter-plot on relationship between PAS index and ECMEU index.
dummies in Model 5. Then, only the relationships between the culture and structure indices remain significant. Moreover, this model explains 47 percent of the variation in the dependent variable.

When looking instead at the effects of the structure and culture indices on the perceived effectiveness of EU level institutions we find similar results. Four things are worth noting (see Table 3). First, the effect of the culture index is more than twice as big as the effect of the structure index when assessing EU level effectiveness, although both indices are significant. Second, there is significant gender difference in these models, suggesting that women tend to value the effectiveness of EU level crisis management institutions slightly higher than men. Third, having experience of training exercises or simulations with the EU significantly increases the way officials value EU level effectiveness. Fourth, the explained variance is somewhat lower when looking at the EU level compared to the national level, 38 per cent in Model 5.

Before jumping to conclusions, however, we do need to consider this relationship in more detail. First, we will break down the effectiveness index in its four components and look what happens if we consider each part on its own. In Table A3 and A4 we show the effects on national and EU level effectiveness in four models: Model 1 refers to the distributed sense-making index

![Figure 4. Scatter-plot on relationship between PAC index and ECMEU index.](image-url)
Table 2. Determinants of effectiveness in crisis management institutions at national level.

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.77***</td>
<td>2.68***</td>
<td>1.78***</td>
<td>1.93***</td>
<td>1.98***</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.20)</td>
<td>(0.20)</td>
<td>(0.19)</td>
<td>(0.21)</td>
</tr>
<tr>
<td>PAS</td>
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<tr>
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<tr>
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<tr>
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<td>(0.06)</td>
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<td>0.41</td>
<td>0.47</td>
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Notes: Robust standard errors are in parentheses. OLS refers to ordinary least squares regression. We find significant country dummies at 95% significance level for the following countries, suggesting that there are country-specific effects to consider: Bulgaria, Germany, Greece, Lithuania, Slovenia, Sweden (with Austria as the excluded dummy variable).

* $p < .1$.
** $p < .05$.
*** $p < .01$.

(DSM), Model 2 to the coordination, cooperation and communication index (CCC), Model 3 to the ability to respond appropriately index (ARA) and, finally, Model 4 to the surge capacity, supply logistics and scaling procedures index (SSS). Interestingly enough, the main results are similar, i.e., that both the structure and culture indices have significant effects on the perceived effectiveness of national and EU level civil protection institutions regarding all dimensions.

Second, we also break down the structure and culture indices in its components, and look what happens if we consider each variable on its own. What is interesting with these models is that not all variables seem to have significant effects on the effectiveness index. At national level, both the hierarchy and rule-governed variables are statistically significant in all models, whereas among the culture variables trust, loyalty, autonomy, professionalism and freedom of dissent (only the last model) are significant, but not fair treatment. This indicates that officials are less concerned about fair treatment when passing judgement on the effectiveness of their national civil protection organization (see Table A5). When looking instead at the EU level, only the rule-governed variable is significant across all models while the hierarchy variable is not significant when introducing country dummies in the last model. Moreover, among the culture variables it is only loyalty, freedom of dissent
and professionalism that are significant in the last model. This indicates that in contrast to the national level assessments of effectiveness, the right to present dissenting views is essential for the assessment of EU level effectiveness. Furthermore, there is also a significant difference between men and women when it comes to valuing EU level effectiveness; women tend to be more positive to EU level crisis management institutions than men (see Table A6).

**Conclusions**

In this article we set out, with the aid of an extensive survey of practitioners and officials working with civil protection in 17 member states, to study the effectiveness of civil protection at the national and EU levels with respect to four core performative dimensions of crisis management. Our surveys were carried out at an opportune time which means our investigation was able to capture attitudes informed by early assessments of the revised EU Civil Protection Mechanism legislation. It is also notable that this research was carried out during a trying time for the EU. In recent years, the EU has been buffeted by a number of crises, such as the Eurozone financial crisis, Brexit, and the refugee and migration crisis, all of which have proved challenging to the EU’s ability to solve problems and cooperate. Also, while the European Court of Auditors (2016) recently praised the UCPM for its role in coordinating
the response to disasters and the European Commission (2017a) released a report on the progress made on building up the EU’s emergency response capacity, prior to our study, we have lacked evidence on the extent to which those working in the field judged civil protection to be effective at the national and EU levels. What we learned is, while there is some national variation, that in general those working in civil protection view both the national level and the EU level to be effective and although the national level is viewed as more effective than the EU level, the difference is not dramatic.

Having established this we then investigated which characteristics and qualities were associated with our findings by examining the relationship between two perspectives – a structural model and a cultural model – and how key factors impacted perceptions of effectiveness. The analysis we performed leads to several interesting conclusions. We found both the extent to which a national civil protection agency is organized hierarchically and adheres to a rule governed structure and the extent to which the agency scores highly with regards to a trust-based, professional culture are significantly related to the degree to which civil protection practitioners will value national and EU-level civil protection institutions. The findings indicate that both structure and culture matter for the way officials working in civil protection and crisis management agencies value effectiveness.

Respondents from national civil protection agencies that score more highly on the hierarchy scale, also rate the national civil protection system as more effective. Respondents from national civil protection agencies in which professionalism is highly valued, also rate the national civil protection system as more effective. Similarly, respondents from national civil protection agencies that score more highly on the hierarchy scale, also consider the EU civil protection system as more effective and respondents from national civil protection agencies in which professionalism is highly valued, also rate the EU civil protection system as effective.

The models explaining perceptions of national civil protection effectiveness have higher explained variance (explains more) than the EU-level models. In addition, we find significant country-specific effects for a couple of countries, suggesting that there are contextual effects to consider. The individual factors (gender, experience and education) that we used as control variables have no significant effects, with a few exceptions. For example, there is a gender difference concerning views on the EU-level. Women tend to value the effectiveness of EU level civil protection and crisis management institutions higher than men.

When reflecting on our findings, we can say that the results of our survey demonstrate that if crisis management is to work well and be perceived as effective by the people working with civil protection, it is clear that organizational cultural factors are vital: trust levels must be high, loyalty is prized,
and professionalism must be valued. Regarding organizational structural factors, the importance of hierarchy and a rule governed structure stand out. This finding appears compatible with insights from past studies that have concluded that the management of crises spurs ‘a demand for clear leadership and central direction, clear-cut responsibilities and chains of command through hierarchical structures’ (Christensen 2016b: 317; Rykkja and Lægreid 2014). One of our interesting findings, which differs from scholarship that has contended that hierarchy is inimical for trust (Fukuyama 1995; Kramer 1999, 2016), is that a hierarchical structure can be compatible with cultural factors, such as trust, loyalty, and professionalism. This suggests that a healthy organizational culture can thrive even in an organization with a hierarchical structure and that practitioners from such hybrid organizations associate these qualities with effective national and EU crisis management.

What implications do our findings suggest for civil protection cooperation and arrangements at the EU level? Since our findings are based on the attitudes of practitioners and officials that primarily deal with the functional and practical side of civil protection, rather than the political decision-makers that will ultimately decide on the EU’s role in this area, we must be cautious. When it comes to questions about delegating tasks and resources to the EU, the member states are always wary of not losing their sovereignty. Nonetheless, we think our findings are germane to discussions about how EU civil protection should develop in the future. Since the EU is not a standalone mechanism that can be separated from its national systems, any move to strengthen EU cooperation at the central level must not neglect the national level. Moreover, the institutional design of the system must not forget the importance of the cultural factors we found strongly associated with effectiveness.

Recently, the European Commission (2017c) has made a new proposal, rescEU, to further strengthen Europe’s ability to better deal with natural disasters. Thus, rather than opting for a more decentralized network or attempting to make the entire system more hierarchical with DG ECHO acting as a full-fledged network lead organization (Boin et al.2014b), the EU has proposed to strengthen civil protection cooperation both from below and from above (European Commission 2017b, 2017c). From the bottom-up, the plan proposes to boost national capacities by providing financing to upgrade the assets and resources of member states. These upgraded national capacities would in turn be made available to a shared European Civil Protection Pool. From the top-down, the plan proposes to provide the EU with its own independent response capacity, which would create a reserve of assets, such as firefighting aircrafts, water pumps, urban search and rescue capabilities, and field hospitals, which would be managed by DG ECHO to be deployed upon request by member states if needed.
Would the proposed reform address questions of substantive cross-border solidarity in crisis management? While cross-border solidarity in the EU has been questioned in dealing with protracted problems such as the financial crisis and refugee and migration crisis, the UCPM has worked remarkably well in responding to requests for assistance to deal with disasters in Europe. Inside the EU, since 2001, there has been over a 100 activations to provide member states assistance in responding to fires, floods, and other contingencies (European Commission 2017b; DG ECHO 2018). The times when the UCPM did not deliver as hoped for in key moments, for example, during the 2017 forest fires, occurred when multiple member states were facing disasters simultaneously. This diagnosis is reflected in rescEU’s plan to boost both national and EU level capacities.

The rescEU’s two-pronged strategy of strengthening the capacity of the national component parts of civil protection cooperation while improving the operational agency of the EU level is in line with views, such as Boin et al. (2014b: 431), who have observed that the ‘agenciﬁcation’ of networks can create systems ‘uniquely suited’ for the organizational and political realities of the EU. In effect, the rescEU proposal would give the EU more independent agency, a somewhat more hierarchical character, while increasing its inﬂuence over the professionalization and standardization of civil protection in Europe through its training programs and the provision of guidance regarding national prevention strategies, but without the politically sensitive step of formally making it a network lead organization. Our ﬁndings suggest that the features of this proposal, if approved by the member states, would likely enhance civil protection effectiveness at the national and EU levels.

Notes

1. The countries included in the study are the following: Austria, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Portugal, Slovenia, Spain, and Sweden. A few more countries were asked to participate but were unable or declined. For details of the organizations included in the study, see Table A1 in Appendix.
2. A factor analysis using the maximum likelihood method reveals that all nine items measuring national effectiveness in crisis management belongs to one underlying dimension (Eigenvalue 4.29), and similarly only one underlying dimension is found also for items measuring EU-level effectiveness (Eigenvalue 4.73).
3. It should be added that we only asked respondents to assess the organization in which they work because it cannot be expected that they have a close knowledge of the organizational structure and culture that exist at the EU level.

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