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The Social and Political Impact of Natural Disasters

Investigating Attitudes and Media Coverage in the Wake of Disasters

FREDERIKE ALBRECHT

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Abstract
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Natural disasters are social and political phenomena. Social structures create vulnerability to natural hazards and governments are often seen as responsible for the effects of disasters. Do social trust, political trust, and government satisfaction therefore generally change following natural disasters? How can media coverage explain change in political attitudes? Prior research suggests that these variables are prone to change, but previous studies often focus on single cases, whereas this dissertation adopts a broader approach, examining multiple disasters. It investigates the social and political impact of natural disasters by examining their effect on social and political attitudes and by exploring media coverage as a mechanism underlying political consequences.

The results reveal that natural disasters may have a comparatively frequent, although small and temporary, effect on social trust. Substantial effects are less likely. Social trust was found to decrease significantly when disasters cause nine or more fatalities (Paper I). Political attitudes were expected to be prone to change after natural disasters, but Paper II illustrates that political trust and government satisfaction among citizens are generally hardly affected by these events. Finally, media framing and the political claims of actors explained the variation in political consequences after disasters of similar severity. Paper III also illustrates the importance of the political context of natural disasters, as their occurrence can be strategically exploited by actors to further criticism towards the government in politically tense situations.

This dissertation contributes to existing disaster research by investigating more cases than disaster studies typically do. It also uses a systematic case selection process, and a quantitative approach with a, for disaster research, unique research design. Hence, it offers methodological nuance to existing studies. A broader analysis, factoring in the variation of disaster severity and the increased number of cases offers new answers and tests assumptions about underlying patterns. The main contribution of this thesis is that it examines how common political and social effects of disasters are. Furthermore, this dissertation contributes to existing disasters research by emphasizing contextual and explanatory factors, e.g., properties of disasters and the political context that affects the media coverage of natural disasters.

Keywords: Natural disasters in Europe, social capital, social trust, sociology of disasters, politics of disasters, political trust, satisfaction with the government, government accountability, media coverage of disasters, media framing, claims-making, political claims

Frederike Albrecht, Department of Government, Box 514, Uppsala University, SE-75120 Uppsala, Sweden.

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To my parents

List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

I Albrecht, Frederike, (2017) Natural Hazard Events and Social Capital: The Social Impact of Natural Disasters. Accepted in *Disasters*.

II Albrecht, Frederike, (2017) Government Accountability and Natural Disasters: The Impact of Natural Hazard Events on Political Trust and Satisfaction with Governments in Europe. Working paper. Under review.

III Albrecht, Frederike, (2017) Perceptions of Successful and Failed Disaster Management in the Media: A Comparative Analysis of News Media Coverage Following Natural Disasters. Working paper. Uppsala University.

Contents

Acknowledgements

There are many stories about the ups and downs of this six-year long journey. But let me tell you the one about how I killed a chancellor, twice. When I started writing Paper II, I included the story of a chancellor who showed up during a flood, wearing rubber boots, which was seized upon by the media as a symbol for his competence as a crisis manager. Upon completing the paper, I realised the reference didn't make sense. I'd barely mentioned the media that was needed to glorify my chancellor. Before killing the chancellor for the first time, my advisers comforted me: "Use it in the next article, which will be about media coverage of disasters", they said. And so I started working on Paper III with the same, lovely reference. Later, however, I was forced to face the truth, again: I hadn't studied the right disaster. The chancellor needed to disappear. That was the second murder of the chancellor. But don't worry, I revived him and found him a nice little corner in the Introduction. I wish I could have found him a slightly better home, but I couldn't bring myself to kill him a third time, with the knowledge that this time he might not return.

Foremost, I want to thank my *partners in crime*, who were there when I killed the chancellor: Charles Parker and Katrin Uba. You constantly found ways to motivate me, to question me when appropriate and to be understanding when necessary. Your interest, confidence and patience have been invaluable inspiration. I want to thank you for the time we spent together, and that your doors were always open for me. In German, the doctoral adviser is called the doctoral father (*Doktorvater*). Thinking of how you have helped me to grow and find my way as a young researcher, this expression may be outdated but is actually not too far off. Katrin and Charles, I am honoured that you were my doctoral mother and doctoral father.

During these past years, two places were my research homes. The Department of Government, Uppsala University, and the Centre for Natural Disaster Science (CNDS). Both facilities were important for my development as a researcher. I want to thank all of you who I met along the way and who made this journey a better one. A special shout-out goes to the PhD student cohort of 2011 at the Department of Government and to everyone at Femman. I also thank all of you who involved me and accompanied me in teaching.

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There is one person who knows me and accompanied me like no other. I honestly do not know how to thank the man who was closest to me during this project. Jimmy, living with me and having my back through success and setbacks cannot have been an easy task. From the bottom of my heart, thank you for having been by my side.

Last and most importantly, I want to thank my family for having contributed intellectual inspiration and for having supported me throughout my life and while writing this thesis. I have not and I cannot thank you enough, Gudrun, Volker, Sophie and Moritz, for your support and endurance, despite occasional radio silence from my side, through whatever stage in life or thesis I found myself in. A heartfelt thank you for being the safety net I like to pretend I don’t need. And sorry that I forgot your birthday, Ben, while I was busy reviving the chancellor.

Uppsala, April 2017

Introduction

1 Disasters as social and political phenomena

Natural disasters do not only threaten lives or damage property; they can severely affect societies and their socio-political structures. A rather extreme and very early example of this may be the demise of the Maya civilization. The Maya civilization was severely affected by long periods of droughts in the context of changing climate. These droughts led to a shortage of resources and contributed to the social stresses that caused the collapse of the Maya civilization (Haug et al. 2003). Moreover, artificial water reservoirs played a key role in the social system. The control over them was so important for political power that "drought may have undermined the institution of Maya rulership when existing ceremonies and technologies failed to provide sufficient water" (Haug et al. 2003, p.1734).

Another example, with very different consequences for political leadership, is the devastating 2002 flooding disaster in Germany. The government offered immediate monetary help and cleverly staged a visit of the chancellor, wearing rubber boots, to flooded villages, which media took up as a symbol of the chancellor's credibility as a crisis manager (Boin et al. 2009). After the floods and at least partly due to what was perceived as successful disaster management, the government gained support among the public and won the federal elections several months later (Bytzek 2008; Bechtel & Hainmueller, 2011). Even ten years after the floods, the chancellor in rubber boots remains a vivid memory in the media (Dausend 2012, Die Zeit).

These examples illustrate a fundamental assumption for this study: Disasters do not only have an effect on the environment; they can also affect, strain, and even threaten the survival of social and political systems. However, disasters do not always have a negative social or political impact. Depending on the context, consequences for political leaders may also be positive. The purpose of the present project is to systematically investigate the political and social impact of disasters and to explore media coverage as a mechanism that explains political effects of disasters.

Natural disasters are and will remain threats to modern societies. They have, despite technological development, become more frequent over time (Dilley et al. 2005). Furthermore, climate-related hazards are affected by

climate change, which is expected to lead to an increase in frequency and severity of these disasters (Helmer & Hilhorst 2006; O'Brien et al. 2006; Schipper & Pelling 2006; van Aalst 2006). By implication, weather-related hazards, i.e., storms, floods, droughts, heat and cold waves will challenge governments and societies now and in the future.

As disasters potentially affect all of us and because they will remain frequent occurrences, it is important to better understand their general social and political effects. It becomes crucial to investigate under what circumstances disasters have certain effects and when these effects do not occur. Social and political effects, of course, can take very different forms.

Citizens may be affected directly, through damaged property or as a threat to their lives or people close to them. Disasters may also affect citizens by changing the way they think: They may have an impact on how citizens think about their neighbours who assisted them during a flood. A disaster may also change the way citizens feel about other people in general, e.g., after experiencing that the general public made donations to assist affected individuals. A disaster may also affect public opinion about the government, e.g., because citizens feel the government handled the disaster particularly well, or not well at all. In that respect, potential social and political effects of disasters occur through direct experience, but also through indirect experience of the events. Citizens may be affected through purely mediated experience of disasters. In today's world, this occurs largely through traditional news media, and more recently new types of media, such as news reporting online and social media.

After all, when a disaster occurs, citizens switch on the TV, radio, or check their phone and computer for news online to retrieve information and to keep themselves updated. The fundamental thought process that guided the present project as a whole is the assumption that disasters potentially affect citizens' social and political attitudes. This effect can occur through direct or mediated experience in a country.

This introduction proceeds as follows: After having specified the aim and research questions, the introduction will discuss concepts related to natural disasters and connect these thoughts with views on the relevance of studying disasters in general. This is followed by a comment on interdisciplinarity in disaster research, pointing out some important characteristics. A section on the theoretical framework will specify the concepts of social capital, political trust and satisfaction with the government, which were the focus of the project, and extend the discussion to prior research on the comprehensive relationships between these concepts and disasters. It will also present a presumed mechanism for change in political attitudes: media coverage of disasters and of the government's efforts to manage the event. The third section includes a detailed compilation and discussion of the data collection and all

applied methods, before the final sections summarize all papers and elaborate on the contributions and implications of the three studies.

1.1 Aim

Prior research has identified changes in social capital and political attitudes following various cases of disasters, such as Hurricane Katrina in 2005 (Forgette et al. 2008), the 1995 Kobe earthquake (Yamamura 2013; Yamamura 2016) and the 2011 Japan earthquake and tsunami (Uslaner & Yamamura 2016), floods in Europe (Bechtel & Hainmueller 2011), and wildfires in Russia and Greece (Lazarev et al. 2014; Papanikolaou et al. 2012), among other disasters (Castillo & Carter 2011; Cassar et al. 2017). But results differ and show inconsistencies concerning whether there are increasing or decreasing levels of social capital and political attitudes following these events. Hence, while previous research suggests *that* natural disasters and their management affect individuals socially and politically, there is uncertainty as to *what* this effect looks like and how widespread effects are, i.e., whether we can apply previous results to disasters in general. By investigating these issues systematically, the present project contributes to existing studies by adding more general results.

The overall aim of the study is to examine to what extent disasters generally affect social capital, political trust and satisfaction with the government among individuals and to explore media coverage as the presumed mechanism underlying why political attitudes change or remain stable. The three papers were driven by the following main research questions, which focus on social capital in Paper I, political attitudes in Paper II, and the presumed mechanism for change in political attitudes in Paper III.

First, do levels of social capital change in relation to natural disasters? Are there general explanations with a direct connection to the natural hazard event, i.e., can the type of natural hazard, the scale of the disaster (the area that it affects directly), and its severity explain changes in social capital? The study investigates twelve cases of disasters in Europe. (Paper I)

Second, to what extent are individuals' political trust and satisfaction with the government affected by disasters? The study examines ten cases of natural disasters in Europe. (Paper II)

Third, presuming that media coverage is a core mechanism that explains change in, for example, satisfaction with the government, how are government actions framed in the media following disasters of similar severity? Which actors contribute to media discourses? How can their activity explain the political consequences of disasters? (Paper III)

The basic assumptions of this project and the connections between all three papers follow a clear strategy. Paper I and II are concerned with an

investigation of disasters' social and political effects, the third study explores how we can examine the political effects of disasters using the presumed mechanism of media coverage (see Figure 1).

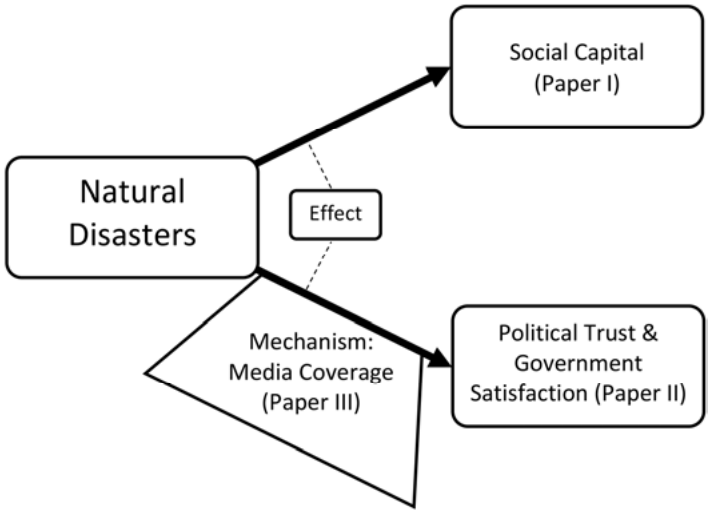

Figure 1. Structure of and connections between Paper I-III

1.2 Natural disasters – terms and concepts

Natural hazard events, natural disasters, catastrophes, major disasters versus minor or common disasters, or disasters in general – these terms appear throughout the papers included here and should be explained thoroughly to distinguish them from each other.[1] What is a natural hazard event and what is a natural disaster? Natural hazards have affected this planet long before human life existed, and they have continued to do so throughout history. Hence, natural hazard describes the natural phenomenon that occurs and does not include the event's subsequent impact on societies.

Since human life developed and human societies formed, natural hazards have affected vulnerable societies. It is only when these extreme events se-

[1] Apart from various terms that relate to disasters, the broader concept of crisis appears to some extent in the papers. A crisis is a situation in which "a community of people - an organization, a town, or a nation - perceives an urgent threat to core values or life-sustaining functions, which must be dealt with under conditions of uncertainty" (Boin & 't Hart 2007, p.42). Not every crisis is caused by natural hazards, but every disaster qualifies as crisis (Boin & 't Hart 2007). Hence, a natural disaster is a crisis with the specific characteristics that are explained in this section.

verely affect vulnerable societies that they become natural disasters. Hence, the term natural disaster does not refer to events that occur naturally. It is not just exposure to natural hazards that determines a society's risk of being struck by a disaster. Instead, human and political actions, or the absence thereof determine how vulnerable societies are, i.e., "the weaknesses in social structures or social systems" (Quarantelli 2005a, p.345). The degree of vulnerability to hazards depends on social structures and coping patterns (Perry 2007). Only the combination of being exposed to a natural hazard and being vulnerable to its occurrence describes the risk that a natural hazard will become a disaster (Birkmann 2006; Walch 2016; Wisner et al. 2004). This relationship can be expressed in this simplified, conceptual equation:

$$Disaster\ risk\ = Hazard\ \times Exposure\ \times Vulnerability$$

Hence, our vulnerability – and the extent to which societies and governments prepare for, respond to, recover and learn from the impact of natural hazards – is crucial in determining any disaster's effect. This is also reflected in the discourse on disasters, in which human and political responsibilities for natural disasters have become a dominating narrative (Dodds 2015).

There is no such thing as one common definition of disasters that can be agreed upon by all scholars in disaster research, and this seems partly related to the fact that many different disciplines are conducting research on disasters (Perry 2007). Among scholars who emphasize the social dimension of disasters, it has been stated that disasters occur suddenly, disrupt routines and call for action to cope with these disruptions. Disasters are furthermore seen as being constructed in social systems and posing a threat to them (Alexander 2005; Perry 2007). This is one possible definition among many that seek to describe the phenomenon of a disaster and disasters as an arena to study. It recognizes the social relevance of disasters and their impact on societies.

> [D]isasters are inherently social phenomena. It is not the hurricane wind or storm surge that makes the disaster; these are the source of damage. The disaster is the impact on individual coping patterns and the inputs and outputs of social systems. (Perry 2007, p.12)

Hence, the importance of social structures refers back to the aforementioned vulnerabilities to hazards that can be found in a system and that determine whether an event becomes a disaster. Realizing that disasters are social constructs also implies "that these are liable to change" (Alexander 2005, p.29).

Some scholars are sceptical of the usage of the term *natural* disasters; they argue that there is too much focus on the *naturalness* of these events which distracts from the more important causal factors within societies

(Wisner et al. 2004). I argue that the term natural disasters remains meaningful from a conceptual perspective, as long as it is clearly defined and not confused with a natural occurrence. Some disasters may be caused by technological and human failure without interference of any natural hazard. Other disasters are clearly related to a natural hazard event that challenges human or political actions and technology. These events may be characterized by properties of the natural hazard itself, for example, properties related to its predictability. Disasters caused by natural hazards may also be perceived differently among the general public than purely man-made disasters are, even if political responsibilities are recognized more and more. Hence, we need to emphasize the necessity to not mistake natural disasters for disasters whose main cause is nature. However, we should recognize that a natural hazard can play a significant role in natural disasters.

We may also look at disasters differently depending on their severity. Not every natural disaster has the same impact on a country's population. Disasters can be catastrophic, but there can also be major or even minor disasters. The difference between major or minor events can be categorized based on their scope and scale, i.e., the size of the area that the disaster affects and the severity of the disruptions that it causes.

A disaster that affects smaller communities without causing major disruptions could then be categorized as a smaller disaster, whereas cases of disaster that affect larger areas or cause severe disruptions in the system are considered major disasters (Fischer 2003; Voss & Wagner 2010). Both minor and major disasters can furthermore be distinguished from a catastrophe (Perry & Quarantelli 2005; Quarantelli 2005b). Key characteristics of a catastrophe are:

> Most or all of the community built structure is heavily impacted. (…) Local officials are unable to undertake their usual work role, and this often extends into the recovery period. (…) Help from nearby communities cannot be provided. (…) Most, if not all, of the everyday community functions are sharply and concurrently interrupted. (Quarantelli 2005b)

Quarantelli (2005b) also states that the mass media and the political arena, which are already important for disasters in general, play an even more crucial role in relation to catastrophes. Examples of catastrophic disasters are Hurricane Katrina in 2005, the 2004 Indian Ocean Tsunami, and the 2011 earthquake and tsunami in Japan.

By implication, when we examine disasters with the aim to provide answers that are valid for disasters in general, the scope of the research cannot be restricted to the most severe and catastrophic cases. Disasters include a flood that causes disruptions in a small town as much as disasters that have a larger direct impact. Hence, the disasters analysed in all studies belonging to

the present project include minor and major disasters. They vary in their scale and scope, and range from local disasters to national events and from partial to massive disruptions that they caused in the affected areas.

1.3 On the relevance of studying disasters in general

Even though disaster statistics show that generally fewer people die because of natural disasters today than did, for example, a century ago, we can also identify two other trends that emerged: The number of natural hazards that affect human societies every year has increased and the annual economic damage that natural disasters cause has risen significantly (CRED & UNISDR 2015; Dilley et al. 2005).

One part of the explanation is certainly that compiling data on natural disasters has become easier, although it is emphasized that several regions in the world still tend to under-report events (CRED & UNISDR 2015).

More importantly, due to population growth, settlements have been constructed in more vulnerable areas. Urbanization and changed patterns of land use (e.g., dredging or agricultural use) have increased risks for hydrological disasters significantly as more and more people are vulnerable to these natural hazards (Nirupama & Simonovic 2007; Zhang et al. 2008). As a third factor, the aforementioned effect of climate change on natural disasters is likely to increase their frequency and severity (van Aalst, 2006). Indeed, significantly more climate-related disasters have been observed since the 1980s, and particularly floods occur more often (CRED & UNISDR 2015; Munich RE 2016).

Disasters are furthermore not restricted to countries that are known for previous catastrophic disasters. There is no such thing as a country where disasters simply do not occur. Since the year 2000, 300-500 disasters have been reported to the EM-DAT International Disaster Database every year.

Generally, weather-related disasters, e.g., floods, storms, or extreme temperature, occur much more frequently than geophysical disasters, i.e., volcanic eruptions or earthquakes. The global economic loss caused by natural disasters was more than US$ 1.8 trillion between 1995 and 2015, and US$ 262 billion in Europe alone (CRED & UNISDR, 2015). Hence, the frequency and costs of disasters that occur without necessarily being catastrophes illustrate how important it is to study disasters in general. We need to learn from and about them to improve our understanding of these events and the mechanisms that explain why they do or do not have a certain impact. This is a crucial task that involves scholars and practitioners. Research on disasters in general can provide practitioners with important knowledge that can be of use in connection with disaster preparation, management and recovery.

1.4 Interdisciplinary disaster research

In studying phenomena that affect societies but have a dimension that originates outside any social or political system, such as natural disasters, an interdisciplinary approach improves our understanding of natural hazards and their effects across various disciplines. As part of the interdisciplinary Centre for Natural Disaster Science (CNDS), the present project was far more than a strictly disciplinary task. Although all three papers are studies within political science, there has been significant input from the interdisciplinary context of CNDS throughout the project.

CNDS creates an environment in which young researchers can share interdisciplinary course work to create awareness for the various disciplines' understandings and vocabulary about key concepts in disaster research. In addition, PhD students at CNDS present progress reports on ongoing research projects in regular interdisciplinary seminars. Furthermore, the regular conference Forum on Natural Disasters gives CNDS researchers the possibility to present their work not only to various disciplines, but also to practitioners. Combined, these cross-boundary discussions had a significant impact on my work and created a different awareness of and approach to the phenomena of natural hazards and disasters.

Discussions of disasters and their effects demand a different focus depending on the disciplinarity or interdisciplinarity of the audience. Disciplinary theoretical concepts and the vocabulary must be made more understandable for disciplines not related to social sciences. In addition, discussions in the disciplinary context demand more attention to explaining what the phenomenon of a natural disaster is and why studying disasters in general is relevant. The present project aimed to combine these two challenges. Theoretical concepts that have become more common in disaster research are approached from a disciplinary angle and discussed thoroughly in the papers and this introduction. Conceptual discourses on natural disasters were given particular attention in the previous sections of the introduction.

2 Theoretical framework and previous research

One of the main goals during this project was to investigate the social and political effects of disasters. To what extent do disasters affect social capital and political attitudes among individuals? Is there a tendency towards disasters generally having these social and political effects? How can we explain changing levels of these variables, and when can we expect stability? Social capital, political trust and satisfaction with the government were selected as theoretical points of departure.

The reason why these concepts form the theoretical framework is twofold. First, social capital and attitudes towards the government have been recognized by interdisciplinary disaster research as important in relation to disasters, but not always conceptualized thoroughly before being applied in analyses. Second, these concepts form cornerstones in relation to political culture, democratic governance, and collective action (Fukuyama 1995; Ostrom 1994; Ostrom & Ahn 2008; Putnam 2000).

Thoughts about these concepts and their relevance for disasters were refined and operationalized during the process of investigating social and political effects of disasters, and they were later combined with arguments involving media as a presumed mechanism that explains changes particularly in political attitudes among the general public.

This section will elaborate on the theoretical concepts of social capital, political trust and satisfaction with the government, which were the core foci of Paper I and II. It is crucial to thoroughly discuss the theoretical roots of these concepts, particularly as they have been used increasingly by disaster research without being embedded in theoretical starting points. Hence, a second task of this section is to connect the disciplinary literature on utilised concepts with previous disaster research that applies these concepts in similar forms to the context of disasters. The theoretical fundament is used to form expectations about the social and political effects of disasters in general. Finally, this section will connect the theoretical concepts and previous research with the presumed mechanism of media coverage that explains why and how particularly political attitudes may be affected by disasters. Combined, these elaborations form the theoretical framework of Paper I, II, and III.

2.1 Social capital and social trust

The idea that involvement and participation in groups as a form of collective action can have positive effects on the group has been discussed since "Durkheim's emphasis on group life as an antidote to anomie and self-destruction and (…) Marx's distinction between an atomized class-in-itself and a mobilized and effective class-for-itself" (Portes 1998, p.2). However, the first systematic contemporary approach towards a concept of social capital in the social sciences was made by Pierre Bourdieu. Bourdieu defines social capital as potential or actual resources which are aggregated and linked to the possession of a strong network of relationships that are more or less institutionalized: "l'esemble de resources actuelles ou potentielles qui sont liées á la possession d'un réseau durable de relations plus ou moins institutionalisées" (Bourdieu 1980, p.2).

Coleman (1988) focuses on internal relations between actors. He states that "social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structure, and they facilitate certain actions of actors […] within the structure" (Coleman 1988, p.98). Coleman argues that the different forms of social capital are obligations and trustworthiness, information, and norms including sanctions (Coleman 1988). In addition, he describes the closure of social networks as facilitating the social structure of social capital. Coleman's approach has been assessed as a very individualistic and rational concept (Field 2008).

Another possibility to look at social capital is through categories of the functions of social capital. This is the difference between bonding, bridging and linking social capital. Putnam distinguishes between bonding and bridging social capital. While bonding social capital focuses on internal relations within a community or group and maintains homogeneity, bridging capital refers to external community ties, although these ties still connect actors with comparatively similar social status (Field 2008, Aldrich 2012, Putnam 2000). Linking social capital has generally been described as the relations that an individual or a community has "across explicit, formal or institutionalized power or authority gradients in society" (Szreter & Woolcock 2004, p.655), e.g., decision makers on various levels in the political system who can grant individuals or communities indirect access to power (Aldrich 2012). In the context of disaster research, some scholars only include bonding and bridging social capital (Koh & Cadigan 2008), while others analyse all three types: bonding, bridging and linking social capital (Hawkins & Maurer 2010).

Aldrich discusses the difficulty previous research has had with clarifying whether social capital "compromises the data about, reputations of, and information flowing between members of a group or if it *is* the network of relationships and connections itself" (Aldrich 2012, p.29). He describes that while some researchers focus on the *wires* as the social networks and relationships, others "see social capital as the 'electricity' running through those wires, that is, the information and resources that are passed back and forth" (Aldrich 2012, p.30).

Putnam's view on social capital can be ascribed to a focus on *wires*, that is, social capital is the networks and relationship itself. He defines social capital as "connections among individuals-social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam 2000, p.19). He argues that trust is an essential component of social capital because it modifies cooperation. A high level of trust causes a great likelihood of cooperation and, simultaneously, cooperation creates trust (Putnam et al., 2003). Norms of reciprocity are assumed to contribute to resolving collective action

problems and to limit opportunism. Putnam argues that effective norms of reciprocity can be associated with dense social networks. He focuses on horizontal networks of interpersonal communication and exchange[2], particularly networks of civic engagement. Moreover, Putnam states "the denser such networks in a community, the more likely that its citizens will be able to cooperate for mutual benefit" (Putnam et al. 2003, p.230). Networks are assumed to foster norms of reciprocity. Networks and robust norms of reciprocity are sources of social trust. Together, networks, norms of reciprocity, and social trust form social capital.

Lin's definition of social capital can be ascribed to the other point of view. He is interested in the *electricity* that runs through the wires of social networks. One of his basic assumptions is that "individual actors access resources through social ties. We define social resources, or social capital, as those resources accessible through social connections" (Lin 2001, p.43). He advocates open networks instead of dense and closed networks and argues, referring to previous research conducted by for example Granovetter (1973), that bridges in networks promote flows of information and influence (Lin 1999). Lin offers three explanations as to why outcomes of actions are enhanced by resources in social networks. First, the flow of information is facilitated. Second, social ties can influence agents who make crucial decisions. Third, "social tie resources, and their acknowledged relationships to the individual, may be conceived by the organization or its agents as certifications of the individual's social credentials" (Lin 1999, p.31).

Putnam's approach, and that of others who define the *wires* as social capital, has been used in several case studies on natural disasters (Hawkins & Maurer 2010; Nakagawa & Shaw 2004). But also Lin's approach, *electricity* as social capital, was used by for instance Aldrich (2012).

It is important for the purpose of the present project that social trust be seen as a form of social capital, not as a consequence of it. In previous research, there are examples of those who define social trust as an element of social capital (Krishna 2000), and those who see it as a by-product of social capital (Fukuyama 2001; Welch et al. 2005). The present project makes the case that cooperation is enabled or promoted because people generally trust each other, and these networks are reinforced by mutual norms such as norms of reciprocity and can in return strengthen social trust. Social trust is seen as a constituent element of social capital and it is argued that social trust is a crucial structure when building networks or cooperating with other people (Hearn 1997), but it is also assumed that social trust can change, for

[2] Of course, Putnam recognizes that in reality, all networks are potentially mixes of vertical and horizontal organization and that therefore the basic contrast between both types is the most important reference and that vertical networks cannot sustain trust and cooperation (Putnam et al. 2003).

example through the experience of collective action. Therefore, social trust is used as the main indicator of social capital.

Even the earliest stages in life have been found to potentially affect the level of social trust experienced the rest of our lives: Prior research has connected social trust to socio-psychological factors that are affected by socialization (Uslaner 2002; Welch et al. 2005). Psychological traits that are relevant for social trust have been identified as self-efficacy, social intelligence, and extraversion (Oskarsson et al. 2012). These traits were found to be partly conditioned by genetics (Oskarsson et al. 2012; Sturgis et al. 2010). Hence, these previous results suggest the general stability of social trust over time, as socio-psychological factors that are determined early in life should be fairly stable throughout life. This would seem to imply that we may not be able to expect large effects of disasters on social trust at all. The following section will summarize how previous disaster research has approached the relationship between disasters and social capital.

2.2 The relationship between social capital and disasters

Previous research has produced mixed findings concerning the effects of natural disasters on social capital. Some scholars have found positive effects of disasters on social capital (Cassar et al. 2017; Castillo & Carter 2011; Dussaillant & Guzmán 2014; Yamamura 2013; Yamamura 2016), while others have identified negative social effects of disasters (Papanikolaou et al. 2012). Finally, the argument that social capital is generally not affected by disasters has also been made (Uslaner 2016).

Castillo and Carter (2011) examined cooperative behaviour including trust and reciprocity after Hurricane Mitch in Honduras and conclude that trust increases most for individuals who had been affected to smaller degrees while it increased much less for individuals who had **been** affected severely. Yamamura (2013; 2016) found a long-term increase in investment in social capital one year after the Hanshin-Awaji earthquake in 1995 in all affected areas, particularly in areas that were more affected and more densely populated. Other scholars (Cassar et al. 2017) have found similar results for Thailand after a tsunami, where social trust increased among citizens affected by the event.

Another explanation for why social capital decreases or increases following disasters concerns the levels of social capital before the disaster. Research on Chile's earthquake in 2010 (Dussaillant & Guzmán 2014) concludes that the disaster's effect on social trust was dependent on pre-existing levels of social trust. While the disaster triggered an overall increase in trust, this effect was higher and more long-lasting in the area with an overall higher level of social trust.

Papanikolaou et al. (2012) found the opposite trend in Greece, where victims of wildfires were less likely to appreciate mutual support. Victim experiences after Hurricane Katrina in New Orleans also describe negative effects of the event on the community (e.g., owing to looting) and on social trust (Miller 2006). Clearly, prior research presents an array of different positions, but the majority of their findings lead to a general expectation, which is that natural disasters *do* affect social capital, in one way or another.

The varying results across different single case studies leave us with an incoherent picture of potential effects and explanations, and suggest that results may be generally affected by the context in which the disaster occurs. Only a few attempts have been made at conducting more systematic research on disaster effects on social capital in large-N studies: Skidmore and Toya (2002) brought up the relevance of distinguishing between types of natural hazards regarding the effects of natural disasters on growth and investment in human capital following a disaster.

Later, Toya and Skidmore (2014) investigated whether the propensity of various natural hazards is an underlying determinant of social trust and identified the importance of the type of the natural hazard for the development of social capital. In their study, social capital increased when more storms occurred in a region, whereas it decreased when more floods occurred in a region. Besides floods and storms, they included earthquakes, volcano eruptions and mass movements in their study; but they found no significant effect on social capital for these three types of natural disasters.

More recent research argues that social trust generally remains unaffected by disasters. "Trusting people will see negative events, even disasters, as exceptions to the norm. (...) Disasters are unlikely to lead to lower levels of generalized trust" (Uslaner 2016, p.185). Here, any potential effect of disasters on social capital is seen more as a consequence of in-group trust (i.e., bonding social capital) and social networks, not social trust in general (Uslaner 2016).

Although discussions on social capital in relation to disasters have increased over the past years, there is scant literature on the effects of disasters on social capital. The vast majority of research on the relationship between disasters and social capital focuses on the impact of social capital on the different disaster phases, particularly disaster response and recovery. Social capital has been identified as an important factor for mental health in a post-disaster situation (Wind & Komproe 2012). Moreover, high amounts of social capital contribute positively to coping efforts and collective efficacy, because an individual with high social capital needs fewer resources to recover from severe events. Hence, social capital is crucial to the individual's ability to prepare for, respond to, and recover from a natural disaster

(Aldrich & Crook 2008; Aldrich 2011; Aldrich 2012; Aldrich & Meyer 2015; Scolobig et al. 2012; Siegrist et al. 2001).

Although the effect of social capital on individuals and communities in relation to disasters was not part of the research agenda during the present project, this brief discussion illustrates the overall relevance of social capital for disasters. It is also important to emphasize that the relationship between social capital and disasters has various dimensions.

However, while the relevance of social capital for disasters has been studied by an increasing amount of disaster researchers, previous research has put too little focus on the potential social effects of disasters. Moreover, studies that have investigated disaster effects on social capital have produced various outcomes and discussions. There is no clear picture of whether social capital typically increases or decreases as a consequence of disasters, nor is there coherent evidence concerning whether social trust in particular changes at all following disasters. These incoherent results demand an investigation of the issue using a more systematic approach, which is what has been done in Paper I.

2.3 Political attitudes: Political trust and satisfaction with the government

What is political trust and which factors determine the level of political trust among individuals? Political trust can be seen as a general and more fundamental attitude towards the government that is unlikely to change quickly, for example, triggered by a specific political issue (Miller 1974). Other scholars have argued that trust is also affected by short-term events and important political challenges, e.g., economic success or political scandals, and that it is therefore a performance measure of policies and government officials (Citrin 1974; Citrin & Green 1986; Hetherington 1998; Hetherington & Husser 2012).

The present project follows empirically oriented research that defines political trust as "the ratio of people's evaluation of government performance relative to their normative expectations of how government ought to perform" (Hetherington & Husser 2012, p.313). However, even scholars who assume that political trust is prone to change have often studied changing levels of political trust over longer periods of time (Kaase 1999; Hetherington & Husser 2012).[3]

[3] Of course, these perspectives on political trust as a fundamental attitude versus political trust as a government performance measure are not mutually exclusive. It is possible that political trust is multidimensional, i.e., a mixture of both fundamental dispositions and evaluations of specific political processes.

For the present study, the most important assumption is that government performance potentially matters for political trust. It makes a case that political trust includes an individual's evaluation of the government which could be prone to changes caused by specific political processes or outputs that the individual experiences, for example, poor or effective disaster management on the part of the government. However, Paper II also recognizes that changing levels of political trust are more likely to become visible as long-term effects, as previous studies with research designs over prolonged periods of time illustrate. This would form the expectation that political trust is less likely to change following disasters.

Despite being collected under the same umbrella of political trust, there are different views on what political trust is and how it should be measured. Political trust could be defined as trust in government (Hetherington & Husser 2012), or as trust in political institutions, e.g., the justice system or the parliament (Kaase 1999). This raises the question of whether political trust has multiple dimensions or is empirically one-dimensional. Although one might argue that for example political parties and the parliament, or politicians and parties should be separated (Fisher et al. 2010), previous research showed that this separation is more useful at the conceptual level, not the empirical level (Hooghe 2011). In contrast, there are arguments for the empirical one-dimensionality of political trust towards representative institutions and actors, simply because the citizen expects the political system to have one, joint political culture. "[P]olitical trust can be considered as a comprehensive assessment of the political culture that is prevalent within a political system, and that is expected to guide the future behavior of all political actors" (Hooghe 2011, p.275).[4]

Besides the aforementioned factors related to political performance, there are of course additional variables that have previously been identified as determinants of political trust. Those with a political identification with the governing party are expected to have higher levels of political trust (Citrin 1974). An individual's interest in politics and her placement on the left-right scale have also been found to correlate with political trust (Newton 2001). Socio-demographic factors have a mixed relationship with political trust. Some scholars found only very weak effects (Citrin & Luks 2001), others identified that gender, age and socioeconomic status (education or income) can affect political trust, although these findings were context dependent (Christensen & Laegreid 2005; Cook & Gronke 2005; King 1997).

[4] Previous research has provided some evidence for the two-dimensionality of political trust that separates representative from order institutions (e.g., court, police) (Rothstein & Stolle 2008). However, as the present study does not include trust in these order institutions and focuses on political trust as trust in political actors related to representative institutions, this separation does not apply here.

A fundamental difference between interpersonal trust and political trust is that interpersonal trust is achieved through direct interaction with other people, whereas "political trust is most generally learned indirectly and at a distance, usually through the media" (Newton 2001, p.205). For some researchers this becomes of such importance that they argue that trust in political institutions is impossible, and therefore the term 'trust' should not be used in the context at all, while others find it sufficient to distinguish between social and political trust, seeing them as two different types of trust (Hardin 2002).

Trust is generally relational, and it is something specifically given to individuals or institutions (Levi & Stoker 2000). Besides that, past research has used various perspectives to study trust. Some studies are more interested in the perceived characteristics, the trustworthiness, of the trusted person or institution (Hardin 2002), while others show more interest in the person expressing trust (Uslaner 2002).

Although social trust and political trust have been found to be related to each other by some, there is evidence that this connection is only valid at the aggregate level. Results on the individual level are primarily explained by different individual factors (Newton 2001; Zmerli & Newton 2008). Hence:

> [A]lthough the concepts of social and political capital are equivalent in some ways, it seems sensible to keep the two apart for analytical purposes. They are not two sides of the same coin at the individual level, and the link between the two at the aggregate level is not simple, symmetrical, or direct. (Newton 2001, p.212)

This condition was the reason why political trust was investigated separately from social trust during the present project.

Here, the overall central argument is that, although political trust is a more fundamental disposition towards the political system, it is also affected by the perceived performance of the government and other political actors in specific situations. Therefore, it could be prone to changes. In the context of natural disasters, this implies that poorly perceived disaster management could lead to decreasing political trust. Disasters that are managed successfully, however, could lead to stable or increasing levels of political trust.

However, because it was also recognized that political trust is a potentially more stable and rigid political attitude, a second political attitude was introduced. This second variable is restricted specifically to the current and more recent trends in perceived governmental performance. Satisfaction with the government focuses on the current government instead of, for example, politicians in general or political institutions including parties from opposition and government. It does not include any perspectives related to confidence in actions made by the government and should naturally be more prone to change if evaluations of the government change among individuals.

The survey question used by the European Social Survey (ESS) to examine government satisfaction illustrates the focus on an assessment of the government's performance: "Now thinking about the government (the people now governing/the present regime) how satisfied are you with the way it is doing its job?" (European Social Survey 2012, p.9).

Clearly, there may be other guiding factors that are affected by other conditions. Satisfaction with the government is likely to be partly dependent on whether the party an individual supports is part of the government. But it should generally be affected by politics and policies that have been advanced more recently. Satisfaction with the government is an appropriate indicator of the individual's short-term perception of governmental performance. Furthermore, in contrast to political trust, it may be expected that satisfaction with the government will capture more, even temporary, changes. It is therefore more prone to being affected by the citizen's perceptions of successful or failed disaster management on the part of the government.

Political trust has been studied in only a few cases of natural disasters. The government and trust in the government have been of primary interests of previous research, as will be demonstrated in the following section.

2.4 The relationship between political attitudes and disasters

Similar to social capital, the connection between natural disasters and political trust has been studied from various angles. Although the present project focuses on the effect of disasters on political trust and satisfaction with the government, it is useful to be aware of the fact that the relationship between political trust and disasters has several dimensions.

Scholars have identified an effect of political trust on disaster preparedness and management, arguing that people who have trust in political institutions will also assess the government's risk estimates as credible and accept their hazard policies (Johnson 1999). A low level of trust in public institutions therefore means that citizens may ignore the recommendations and disregard the information provided by these institutions (McCaffrey 2004). However, a high level of trust in authorities can also imply that citizens believe in these institutions' capacity to control a natural hazard while low levels of trust are seen in combination with active citizens (Scolobig et al. 2012). If individuals are confident they will receive sufficient aid from the government when a natural disasters occurs, they might not be motivated to take measures on their own (Kim & Kang 2010).

Failed disaster management can turn into political crises that significantly affect political systems (Boin et al. 2008). The effect of disasters on political attitudes has often been referred back to the government's perceived disaster management (Forgette et al. 2008; Nicholls & Picou 2012; Uslaner &

Yamamura 2016). A citizen's perception of the government's capacity to respond to and cope with a disaster can affect her assessment of the government, because the effects of disasters are considered part of the political responsibility of the government (Dodds 2015). Political trust and similar political attitudes and their relationship to natural disasters, however, have not been studied to a large extent. Scholars have discussed insecurity when it comes to answering the question of how widespread potential effects of disasters on political trust are (Uslaner 2016). Paper II contributes to this research gap by investigating systematically to what extent political trust is affected by disasters in general.

Scholars have approached the measurement of how governmental performance is evaluated following disasters from different perspectives. It could be measured as political support during the next elections, taken up by studies on retrospective voting following natural disasters (Arceneaux & Stein 2006; Bechtel & Hainmueller 2011; Cole et al. 2012; Eriksson 2016; Gasper & Reeves 2011; Healy & Malhotra 2010). But it is important to recognize that general elections are far from the only possible way to measure the political impact of disasters, and most disasters do not occur close to general elections. Hence, we also need to pursue methods of measuring political effects of disasters even when there is no impending election.

Natural disasters have often been argued to be examples of fast-burning crises (Boin & 't Hart 2001; Boin et al. 2005; Houston et al. 2012; Kruke & Morsut 2015). The fact that disasters are generally fast-burning crises is illustrated by findings showing that media coverage is usually focused on reactions made by the government during and shortly after the disaster, which makes temporally shorter effects possible (Healy & Malhotra 2009). Hence, in order to understand and investigate processes related to accountability following natural disasters, it is crucial to investigate disaster effects that occur in close imminence to the disaster event itself.

The present project acknowledges and emphasizes the importance of this immediate stage following natural disasters. Perceptions of governmental performance that are measured in individual political attitudes, e.g., satisfaction with or confidence in the government, can be used to examine a disaster's political effects among the general public. These political attitudes have been found to be particularly relevant in the context of disasters: "In the wake of a natural disaster, how quickly and successfully a government responds will shape the level of trust in government" (Uslaner 2016, p.185).

Previous research has shown that political effects following natural disasters are generally more negative, and disasters have even been found to affect political attitudes on a more systemic level, as lowered support for democratic values in less established democracies (Carlin et al. 2014). Trust in

and satisfaction with the government have been studied in the context of various disasters.

Investigations into Hurricane Katrina in 2005 identified a negative effect of the catastrophe on trust in government and satisfaction with the federal government (Nicholls & Picou 2012; Forgette et al. 2008). These findings can be explained by the political context of the disaster, which was shaped by criticism of the disaster management and preparedness of the federal government (Parker et al. 2009). Another catastrophe that was studied is the 2011 earthquake and tsunami in Japan. Again, scholars identified decreasing levels of trust in government following the disaster (Uslaner 2016; Uslaner & Yamamura 2016).

Related political attitudes, such as the perception of political leadership were found to be negatively affected by the 2010 Pakistan floods, particularly among citizens whose property had been damaged by the disaster (Akbar & Aldrich 2015). Hence, the perception of failed governmental performance following disasters appears to be a rather common phenomenon among the various political effects of disasters.

There are also studies illustrating cases of disaster management that were perceived as successful and found to lead to positive political effects. Scholars have identified increasing support for the government following the 2002 floods in Germany (Bechtel & Hainmueller 2011; Bytzek 2008). Others found increasing political trust in the national government after an earthquake in China (Han et al. 2011), and increasing support for the Russian government following wildfires (Lazarev et al. 2014). The general political context of the latter cases however could explain these positive changes. Media coverage that is favourable to the government is much more likely in countries where media are more influenced or controlled by less democratic regimes.

Hence, prior studies have revealed a relationship between political attitudes and natural disasters. Despite theoretical assumptions that formed expectations that change in political trust was less likely due to its characterization as a fundamental disposition towards the political system, disasters were found to affect political trust. They were also frequently found to affect support for the government.

However, there is no clear evidence showing that disasters have a general effect on political trust and satisfaction with the government. Moreover, the political effects of several catastrophes that have been studied may not be applicable to disasters in general. These issues have been taken up and investigated in Paper II. In addition, the context of the disasters may be crucial to predicting positive or negative effects of disasters. The following section elaborates on a presumed mechanism for explaining political consequences following disasters: media coverage.

2.5 Most of what we know about disasters, we know through media

Media coverage plays a crucial role in our perception of actions by the government. Perceived failed disaster management can have a significant impact on political systems (Boin et al. 2008). Previous research has shown that there are risks of negative political consequences when disaster management is perceived as having failed (Brändström et al. 2008; Brändström 2016; Kofman-Bos et al. 2005; Malhotra & Kuo 2008; Preston 2008). Negative political consequences may become visible in the form of policy changes, effects on the political elite through resignations of office-holders, or impacts on public opinion, for example expressed through a change in political trust or support for the government (Boin et al. 2009; Uslaner 2016). In contrast, other disasters were found to have positive political consequences for incumbents when the government's disaster management was perceived as successful (Bytzek 2008; Bechtel & Hainmueller 2011; Boin et al. 2009).

Previous research has emphasized the importance of perceptions of actions, and discussed how success and failure can be perceived differently. When government success and failure are assessed, actors do not solely rely on clear pieces of evidence. The framing and perception of the events by those who assess government actions and the general public are very important in this process (Bovens & 't Hart 2016; McConnell 2015). Failure, but also success, is therefore something that is constructed in the political discourse by those who dominate this discourse. Failure "is a construction by those whose social power allows them to articulate and succeed in securing a dominant failure narrative" (McConnell 2015, p.223).[5]

The present project is particularly interested in the perceptions of success and failure in the media discourse of disasters, which is the focus of Paper III. Media are important channels of information in times of crisis. Most of what we know about disasters, we learn though media (Quarantelli 1991; Quarantelli 2002). Because of this role, media have been described as the primary arena for framing contests between the government and its critics (Boin et al. 2009). "The media are not just a backdrop against which crisis actors operate, they constitute a prime arena in which incumbents and critics, status-quo players and change advocates have to 'perform' to obtain or preserve political clout" ('t Hart & Tindall 2009, p.31).

Media discourses are also recognized as being of importance to political trust and satisfaction with the government. While social trust can be created

[5] In addition to the importance of framing and perception, failure and success of disaster management are not binary judgements. Instead, they should be seen as a scale and, previous research argues that there is certainly a grey-area between success and failure of public policy in general, and in relation to disasters (Eriksson & McConnell 2011; McConnell 2010).

through much more personal contact with others, political trust is something that is commonly not acquired through direct contact with political actors. Instead, political trust is generally learned through media (Newton 2001). Media coverage of disasters, which may include the government's failing attempts to manage the disaster but also successful disaster management, is available for everybody, affected and not affected by the disaster itself. "What average citizens and officials expect about disasters, what they come to know of ongoing disasters, and what they learn from disasters that have occurred, are primarily although not exclusively learned from mass media accounts" (Quarantelli 1991, p.2).

Therefore, media coverage of failed or successful disaster management is examined in the present project as one of the key mechanisms for changing political attitudes following a disaster. Effects of natural disasters on political trust may occur regardless of the disaster's direct impact on an individual if media coverage brings attention to the topic. Therefore, the role of media coverage of disasters is particularly important. If individuals are not spatially close to the event but gain knowledge about it through a mediator, they experience the event indirectly (Stoop 2007). Hence, media coverage can affect political attitudes among all citizens when a disaster occurs, and the government's performance in managing the disaster is perceived as a success or failure.

In research on media and political systems, media have long been recognized as important agenda setter (Benton & Frazier 1976; Erbring et al. 1980; McCombs 1993; McCombs 2005). In addition, the framing of news and the potential of non-neutral content in media have been discussed as potentially affecting how people think (Entman 1989; Entman 2007). Whether this regards the media's agenda-setting role and decision to report on a specific topic (McCombs & Shaw 1972; McCombs 2014) or framing of news content, i.e., the question of how an issue is reported on (Scheufele & Tewksbury 2007): The media affects what recipients of media content think about and how they think about it.

When a disaster occurs, any action that is taken by a government can be framed as success or failure by the news media, leading to positive or negative consequences for political incumbents (Bytzek 2008; Brändström et al. 2008). Hence, news media and coverage of disasters have been described as being used during framing contests between various political actors. This may involve managing blame in attempts to salvage situations where disaster management has been perceived as a failure, or situations where disaster management that is perceived as successful can be exploited by governments (Boin et al. 2009; Olsson & Nord 2015; Olsson et al. 2015).

The theory of crisis exploitation provides different categories of strategies and outcomes for political leaders. When facing a disaster, political incum-

bents, the opposition, and other potential actors in the process have several possibilities to exploit the crisis for their own benefit. The extent to which blame is articulated by other actors in the first place and how the government reacts to articulated blame determines whether we identify blame as being minimized or avoided, accepted, or challenged by various actors. These challenges between actors in framing contests have been called blame showdowns. Negative political consequences are unlikely when no blame is articulated, regardless of the government's reaction (blame minimization or avoidance). Negative effects are likely when blame is attributed and the government accepts responsibility (blame acceptance), and possible when blame is articulated but rejected by the government in a blame showdown (Boin et al. 2009).

Media coverage of disasters and the question of blame management in the media have been investigated by various scholars. Research on media coverage of crises has investigated the conditions for political consequences through the articulation of blame (Boin et al. 2009; Brändström & Kuipers 2003), as well as the content of frames or topics discussed in the media, such as responsibility for the events, and their consequences (An & Gower 2009; Pan & Meng 2016; Tierney 2006). Some studies have focused on the media framing as an issue, and investigated the tone-of-voice in media coverage (Barnes et al. 2008; Kuttschreuter et al. 2011; Olsson et al. 2015; Olsson & Nord 2015), including how the media framing potentially affects the public (Nilsson et al. 2016).

Previous research that is concerned with actors that are relevant in discourses on disasters and their management has often focused on the role of and consequences for political leaders and governments (Boin et al. 2009; Littlefield & Quenette 2007; Masters & 't Hart 2012). The opposition is seen as one of the important actors who can engage in framing contests with the government (Boin et al. 2009). Prior research has also illustrated that, when it comes to the articulation of anger, the general public can be a central actor in media coverage (Pantti & Wahl-Jorgensen 2011).

Although the media, including journalists, have been recognized as potentially influential actors through their functions as gatekeepers and agenda setters in general (Coleman et al. 2009; Shoemaker & Vos 2009; Zeh 2008), and in relation to disasters (Boin et al. 2008; Boin et al. 2009), journalists' role as active actors in the process has only been systematically investigated more recently (Olsson & Nord 2015; Olsson et al. 2015). How journalists' evaluation of the government affects media coverage has also been explored (Cho & Hong 2016).

According to previous research, certain journalistic styles and strategies affect the likelihood of crisis exploitation in the media (Olsson & Nord 2015; Olsson et al. 2015). The journalistic styles that are studied in Paper III

are interpretive journalism and game framing. Journalists make use of interpretive journalism when their stories analyse and evaluate or explain a situation, e.g., a disaster and its management, by utilizing value laden terms and overt commentary, while descriptive journalism focuses on a more neutral language and excludes evaluations and analyses of the occurrences (Olsson & Nord 2015; Olsson et al. 2015; Salgado & Strömbäck 2012; Strömbäck & Aalberg 2008).

It is also important whether journalists focus on the actual events, including the actions that take place in relation to the reported situation (issue framing), or whether they discuss political strategies or power plays that are observed or suspected to underlie the occurring events (game framing) (Olsson & Nord 2015; Olsson et al. 2015). "[H]igh amounts of issue framing and descriptive journalism (...) contribute to portraying political actors as credible crisis managers" (Olsson et al. 2015, p. 159). Hence, interpretive journalism and game framing can be expected to be found in situations where journalists become more active as critics of the government.

In sum, media framing appears to be influential for the perception of success and failure in relation to disaster management. In addition, the role of various actors in the media discourses has been taken up in past research. These actors were the government, the opposition, the general public, and journalists. However, previous studies have typically focused on single actors, or a very limited amount of groups of actors. There is a lack of research that systematically investigates the roles of all of these actors in comprehensive analyses. Paper III applies a holistic approach that examines all identified actors and can therefore contribute to this research gap by adding more systematic findings on these actors' roles and contributions in the media discourse on disasters.

The following sections will present and discuss all utilized methodological approaches that were applied to investigate all research objectives in the present project. They involve methods for studying media coverage of disasters, and for systematically examining the effects of disasters on social trust, political trust, and satisfaction with the government.

3 Research design and methods

The previous sections were used to explain natural disasters from a social science perspective as well as theoretical concepts concerning social and political attitudes that are particularly interesting to investigate in relation to disasters. Furthermore, media coverage was discussed as a presumed mechanism for political consequences after disasters, among them effects on satisfaction with the government. How can we study whether specific social or

political attitudes change following disasters in general? And how can we systematically examine media framing and the role of different actors in media discourses? The variety of research goals resulted in the utilization of different methods. Paper I and II are built on a quantitative statistical analysis, whereas Paper III follows a mixed-methods approach, combining a quantitative content analysis of media coverage with a political claims analysis.

3.1 The dataset

3.1.1 The combination of data from different sources

How can we study changes in social and political attitudes following a disaster if the aim is to deliver results that can serve as a basis for a broader range of cases, i.e., disasters in general? As the first two studies have several aspects in common with regard to case selection and data collection, they will be discussed together before turning to the third, methodologically different topic.

Ideally, a statistical analysis of disaster effects on attitudes among individuals should be based on longitudinal data. A panel study would make it possible to track changing attitudes for each individual. But we typically do not know when disasters will occur beforehand, which means that surveys are usually not conducted until after the event. Hence, although data collection on natural disasters has improved in the past, there is still no adequate solution that would suggest a method of collecting individual data before and after the disaster – especially in imminence to the disaster event. This lack of longitudinal data is a challenge when studying disaster effects among the general public. Therefore, a unique approach to individual data in relation to disasters was developed and applied. The fact that it is not possible to predict precisely when or where a disaster will occur does not only lead to restrictions on panel data; it also opens up an unexpected possibility: Someone may have collected individual data without knowing that a disaster would occur in the same area. And this data may be suitable for a statistical analysis of individual data in relation to the occurrence of the disaster. This is the approach that was followed in the present project, utilizing the European Social Survey (ESS) to obtain individual level data.

The case selection followed a systematic, stepwise process (visualized in Figure 2). First, all fieldwork dates for all ESS countries for rounds 1-6 were collected. Second, the Emergency Events Database (EM-DAT) was utilized to compile a dataset with all natural disasters that occurred during any of the fieldwork periods for all countries that participated in the ESS rounds 1-6 (between 2002-2012). This pool of disasters formed the basis for all cases studied in Paper I and II.

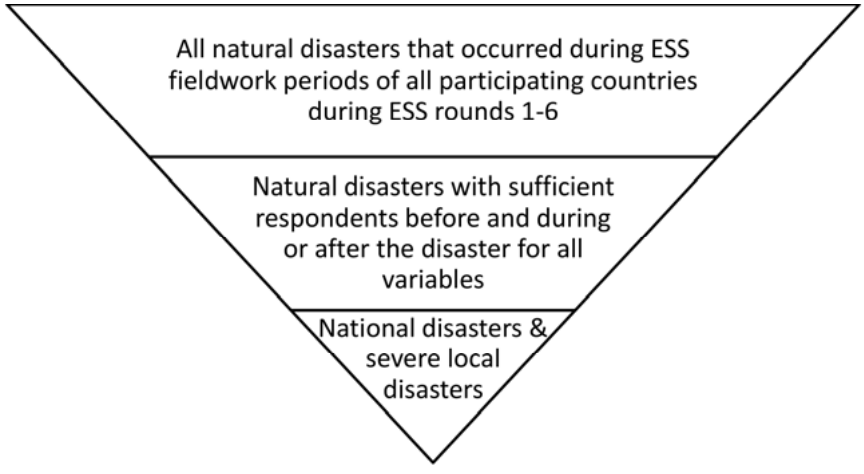

Figure 2. Systematic case selection process, Paper I and II

Several further criteria were applied to create the final list of disasters that would be part of the study, referring to the number of respondents and exclusion of the least impactful regional and local disasters.[6] This systematic selection of cases led to twelve (Paper I), and ten cases of disasters (Paper II), between 2002 and 2012, that would be part of the study.

3.1.2 EM-DAT International Disaster Database

EM-DAT was launched by the Centre for Research on the Epidemiology of Disasters (CRED) at the School of Public Health of the Université catholique de Louvain in Brussels, Belgium, in 1988. Initially, EM-DAT was supported by the World Health Organization (WHO) and the Belgian Government. EM-DAT has collected data on more than 22,000 disasters from 1900 to 2016. The many sources of data used to compile the database include UN agencies, governments, non-governmental organizations (NGOs), research institutes, the insurance sector and press agencies.

One of the core reasons to create EM-DAT was that systematic collection and analysis of data on disasters are expected to contribute to reducing the

[6] A sufficient number of respondents (for all variables) must have been interviewed before, during and after the event. All cases that had fewer than 30 interviews in any of these phases were excluded from the case selection. Furthermore, regional events were only included if they caused at least 10 fatalities or affected at least 10,000 people directly. The study recognizes the potential importance of the time period during which a disaster occurs. Disasters are generally fast-burning crises during which actions and reactions often progress immediately after the disaster onset (Boin & 't Hart 2001; Kruke & Morsut 2015). The disaster duration varied among the cases. Some disasters were of very short duration and others of a longer duration. To ensure that the initial and important time period during the disaster was represented well even for disasters of very short duration, a sufficient number of respondents was demanded before, after, and during the event.

impact of disasters, because they are assumed to provide crucial information to those in charge of managing disasters. "Yet there is still no international consensus regarding best practices for collecting these data. Together with the complexity of collecting reliable information, there remains huge variability in definitions, methodologies, tools and sourcing" (CRED 2017a).

One of the areas for which definitions cannot be clearly agreed upon, is the definition of disasters. The conceptual diversity of disasters has been discussed in previous sections. Naturally, to distinguish between events that classify as disasters and those that do not, a systematic database needs to apply a definition of disasters that is less abstract. In the case of EM-DAT, specified disaster criteria are utilized. Disasters are collected in EM-DAT if they fulfil at least one of the following four criteria: 10 or more fatalities; 100 or more people affected; a state of emergency is declared; there is a call for international assistance.[7]

EM-DAT compiles data for natural and technological disasters. It collects geographical and temporal information, and data on the human and economic impact of disasters. Fatalities and numbers of people injured or affected are provided, next to estimates of the economic damage caused by the disaster.

Obviously, there are occasions when access to reliable data is difficult, particularly in countries that lack the resources needed to collect data. This weakness of EM-DAT can partly be found in the lack of data on specific cases of disasters in the database, which also appears among several cases in the present project.[8] CRED includes a reliability score in order to categorize the quality of the source, and it prioritizes information that originates from UN agencies, governments, and the International Federation of Red Cross and Red Crescent Societies in order to counteract these problems (CRED 2017b).

In sum, even if the availability of data and the rigid definition of disasters may entail restrictions in the database, it needs to be emphasized that it is a difficult task to collect equally reliable data on events over the world when these events, by definition, often cause major disturbances and disruptions in communities and societies. EM-DAT remains the best possible available source with comprehensive information on disasters on an international

[7] EM-DAT does not specify for every disaster which of the criteria are fulfilled to make the event eligible for the database. A second issue is that data on, for example, the number of affected citizens is often not reported and hence missing from the EM-DAT database. Unless the number of lives lost is ten or more, there are limited ways of knowing which of the criteria classified the event as a disaster.

[8] Several cases in Paper I and II lacked data on the economic impact of the disaster, because these data were not available via EM-DAT. A part of the lacking data was retrieved by researching official reports after the disaster. These data were included in the case descriptions.

level. Hence, the present project relies on EM-DAT to extract information on disasters.

3.1.3 European Social Survey (ESS)

The second source of information used to construct the dataset was the European Social Survey (ESS). The ESS is a cross-national survey that has been conducted in most European countries since 2001. It includes individual level data on manifold topics, among them social and political attitudes. The ESS works with face-to-face standardized interviews that are conducted biannually with cross-sectional samples. There is a new sample of respondents for every ESS round and they are created using random probability sampling for every resident within private households aged 15 and over.

ESS fieldwork is then conducted over a period of at least one month and within a time window of four months. Survey agencies conduct the interviews in every country according to ESS instructions. They are monitored by national coordinators and the Core Scientific Team within ESS (European Social Survey 2015).

For the purpose of Paper I and II, data on various variables were extracted for all selected cases. The items of interest – the dependent variables – were: social trust (consisting of the variables general trust, perceived fairness and helpfulness of others), political trust (trust in politicians), and satisfaction with the government. A number of socio-demographic and geographical factors and political control variables were also utilized.

There is no specific rule on how the survey agencies should distribute their interviews geographically in the country. That means it is possible that an analysis that only focuses on a certain time window within ESS fieldwork, for example interviews before a disaster occurred, is built on a pool of respondents who are distributed geographically unevenly, e.g., only in one region of the country. To eliminate this potential problem, efforts were made to ensure that the respondents from the time periods before, and during or after the disaster were evenly distributed across the country's regions. For all selected cases studied in Paper I and II, interviews had been conducted in all regions of the country before, and during or after the disaster.

The dependent variables utilized for Paper I and II are part of the ESS standard questionnaire and are collected for every participating country every other year. Social trust (Paper I) is measured by combining three different items in the ESS questionnaire. These three items were combined as one variable, forming the independent variable social trust in Paper I. Political trust and satisfaction with the government are of core interest for paper II. Table 1 presents an overview of all utilized dependent variables.

Apart from these variables, the analysis furthermore used socio-demographic and political control variables that originate from the ESS. The

socio-demographic control variables are used in Paper I and II: gender, age and education. Paper II also utilizes several political control variables: interest in politics and self-placement on the left-right scale are available directly through items in the ESS questionnaire (European Social Survey 2014). The last factor that is controlled for in Paper II is the question of whether the respondent voted for one of the governing parties. To construct this variable, an item in the ESS that asks for which party the respondent voted for during the most recent election was matched with information on every country's governing parties at the time of the fieldwork.[9] These combinations of variables form the fundament of the analysis in Paper I and II.

Table 1. Independent variables in Paper I and II

Variable	ESS item	Item in ESS questionnaire
Social trust	General trust	"[G]enerally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" (European Social Survey 2014, p.4)
Social trust	Perceived fairness of others	"[D]o you think that most people would try to take advantage of you if they got the chance, or would they try to be fair?" (European Social Survey 2014, p.4)
Social trust	Perceived helpfulness of others	"Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?" (European Social Survey 2014, p.4)
Political trust	Trust in politicians	Political trust is investigated in the survey with multiple political institutions: "[P]lease tell me on a score of 0-10 how much you personally trust each of the institutions I read out" (European Social Survey 2014, p.7). The item among these institutions that is utilised are politicians.
Satisfaction with the government	Satisfaction with the government	"Now thinking about the government (the people now governing/the present regime) how satisfied are you with the way it is doing its job?" (European Social Survey 2012, p.9)

[9] In Paper I, the pooled models also include a control variable for corruption that did not originate from the ESS. It was created by collecting the Transparency International Corruption Perceptions Index (CPI) for every country and respective year. It was used to control for the negative effect that decreasing quality of governance typically has on social trust.

3.2 The quantitative research design

3.2.1 Methods of analysis

Naturally, cross-sectional data are not the same as panel data. Different people are interviewed before and during or after the disaster. How could it still be suitable to identify changes in individual attitudes over time? A, for disaster research, unique design was developed and is applied to solve the problem of lacking panel data. A simple division of the respondents into categories reflecting the time of the interview is conducted: before, during, and after the disaster. The treatment group are respondents who have been interviewed during or after the disaster, the control group are respondents who have been interviewed before the disaster. With the help of this variable, we can investigate whether levels of social trust, political trust, and satisfaction with the government among respondents interviewed during or after the disaster differ significantly those among respondents interviewed before the disaster.

One part of the methodological approach used in Paper I & II is based on a similar model; the other statistical models vary between the studies. Generally, both studies utilize ordinary least squares (OLS) regression analysis to examine whether social and political attitudes among individuals are significantly different following disasters.

Paper I focuses, furthermore, on different pooled models based on OLS regression that investigate several more universal explanations that could help to predict under which circumstances social trust is more likely to change in relation to a disaster. These examined circumstances are disaster properties and the type of natural hazard, which are included as interaction effects with the main independent variable, assuming that disaster properties and the type of natural hazard may have an impact on the treatment's effect on social trust. It is expected that the disasters' effects on social trust depends on disaster properties and natural hazards. The pooled models in Paper I are specified as follows:

$$y_i = \alpha + \beta_1 T_i + \beta_2 x_i + \beta_3 T_i x_i + \varepsilon_i$$

Where: T_i= the treatment indicator for observation i (= 1 if interviewed during or after the disaster, otherwise 0); and x_i = the disaster property or natural hazard of observation i. Hence, the core interest here is the dependence of the treatment effect – does the disaster affect social trust – on disaster properties or the type of natural hazard.

The case-specific analysis in Paper I and one model in Paper II focus on the effect of the treatment only, which is expressed in the simple regression model:

$$y_i = \alpha + \beta_1 T_i + \varepsilon_i$$

Where: T_i= the treatment indicator for observation i (= 1 if interviewed during or after the disaster, otherwise 0).

Although Paper II follows a similar principle by using OLS regression analysis, there are several differences. There is no pooled model of all disasters combined. The decision to not study the cases in a pooled model is based on the fact that the disaster response by the government not only varies between countries, but potentially also between different disasters in one country. Within the same country, some disasters may be managed more successfully, while other cases of disaster management may be perceived as failures. These differences could be further affected by a change in government between two disasters, although even the same government might manage two disasters differently well.

These different contextual factors could not be controlled for in the context of Paper II, but they could have a decisive effect on the direction of the disaster's effect on satisfaction with the government. That is, whether a government manages a disaster well or less successfully will affect whether the general public is more or less satisfied with the government after the disaster. Hence, all cases are examined separately using several statistical models.

The change in the assessment of governmental performance is examined using two OLS regression models. Political trust and satisfaction with the government are the two dependent variables. The first model examines whether the dependent variables are generally different during or after the disaster, compared to before the event.

The second model assumes that the occurrence of a natural disaster forms a threshold, after which any change in political trust or government satisfaction may develop over time. It examines this possibility by testing for linear and curvilinear relationships in the time window after the onset of the disaster. The variable *days* measures the distance between the date of the interview and the disaster's onset. By implication, the treatment effect (development over time) is determined by *days*.

For this model, the analysis focuses only on respondents interviewed after the onset of the disaster, hence, the treatment group. It assumes that the effect for the treatment group might change significantly over time, for example fade away or become stronger with increasing discussion of the disaster management. By regressing days on the dependent variables, the model tests for a linear development over time.

A curvilinear development is the second possibility, leading to the inclusion of $days^2$. A curvilinear relationship could be identified if there is a temporary variation in the dependent variables, i.e., if there is a significant in-

crease or decrease in, e.g., satisfaction with the government some time after the disaster's onset, which then is reverted over time. This is a plausible scenario, as it will take some time after the onset of the disaster until citizens assess their government's actions, while considering the fact that natural disasters are generally fast-burning crises. The model is expressed in the equation:

$$y_i = \alpha + \beta_1 days_i + \beta_2 days_i^2 + \varepsilon_i$$

Where: i= only observations i among the treatment group T; and $days_i$= the distance for observation i from the threshold (the start of the disaster).

Hence, Model 1 examines whether levels of studied attitudes generally vary significantly between the control (interviewed before the disaster) and treatment group (interviewed during or after the disaster). Model 2 investigates to what extent and how this effect changes over time.[10]

3.2.2 Limitations of the applied methods

There are several limitations associated with the models used to estimate a disaster's social and political effects. First, the pooled models in Paper I were restricted by the fact that a multilevel model was not possible because comparatively few countries were involved in the analysis. A separation between countries would also have ignored the issue of disasters occurring within their context, which may differ between different events in the same country.

This risk that disasters may be unique events that are difficult to combine in pooled models was further examined through an investigation of the robustness of the pooled models. I ran the analyses with clustered standard errors (based on cases). As a result, several coefficients for disaster property and hazard variables became insignificant. Floods, however, remained a statistically significant predictor of changing levels of social trust. This may imply that the results of the pooled models are not very robust, which justifies the decision to examine the relationships separately for every case that was already followed up on in Paper I and became the focus in Paper II.

[10] As a test of robustness, propensity score matching was also applied to all cases that revealed significant changes during the analyses in Paper I and II. Propensity score matching is used to estimate the effect of a treatment. It calculates potential outcomes by using an average of the outcome of similar respondents (based on defined variables, here socio-demographic characteristics). Then, an average treatment effect (ATE) is computed. It utilizes the potential and observed outcomes and calculates the average difference between them. While propensity score matching was applied and included in Paper II, it was not a formal part of Paper I. When applied to the cases that illustrated significant changes at a 95% confidence level in Paper I, matching the respondents based on socio-demographic variables (gender, education and age) with propensity-score matching confirms the results identified in the analysis.

In sum, all of the statistical models and the inclusion of multiple cases have one limitation, which is part of their nature and not preventable. The context of each disaster can only be taken into account to a limited extent, e.g., through control variables that were utilized in Paper I and II. The results of both papers also suggest that contextual factors matter for the social and political effects that disasters may have. Hence, Paper III focused on a mechanism that allows a thorough analysis of the context through media coverage of the disasters.

3.3 Analysis of media coverage

3.3.1 Data and cases

Paper I and II are two systematic and quantitative studies. Their results illustrated the importance of further exploration of potential mechanisms that may explain why we should or should not expect changing levels of social or political attitudes. Paper II pointed out media coverage as one of the presumed key mechanisms. Hence, Paper III follows up on this presumption with an investigation of media coverage. The methodological approach was built on the theoretical assumption that media framing and the appearing actors and their contributions to the media coverage are of core interest in determining perceptions of success or failure which can have political consequences.

First, instead of including as many cases as possible, the approach taken in Paper I and II, the studied cases in Paper III are two strategically selected disasters in the United Kingdom: floods in 2005 and in 2015. Both cases were major disasters that severely affected a similar region of the country (particularly the county of Cumbria). They were caused by the same natural hazards and were characterized as 100-year floods, i.e., floods for which there is an annual probability of occurrence of 1%. However, these two disasters of similar severity led to very different political outcomes: While satisfaction with the government increased following the 2005 floods, one of the findings in Paper II, the 2015 floods led to the resignation of the Environment Agency Chair and government sceptical public opinion polls on flood austerity budgets following the disaster. Paper III aims to explain these differences in political consequences in relation to the media coverage.

The first case was part of the dataset used in Paper I-II, United Kingdom floods of 2005 (initiated by a storm). No significant effects of the disaster on social trust were found in Paper I, but a significant, positive effect of the event on satisfaction with the government was identified in Paper II. Hence, we would expect that the government was perceived as having managed the disaster comparatively well and that media framing should be positive. The second case is the United Kingdom floods of 2015 (initiated by a storm). While this case was not part of any quantitative study of political attitudes,

the disaster had negative political consequences. Based on the theoretical framework, we would expect the media framing of this disaster and actions the government made related to it to be negative.

The media analysis was conducted on selected newspaper articles for both events. The reason for this selection of material is that the traditional media, despite increasing usage of other online sources and social media, are perceived by the population as crucial sources of information when it comes to disasters. Particularly newspapers, despite declining readership due to increased usage of electronic news, are deemed trustworthier by the public than is, for example, television. Their possibility for in-depth analysis of critical issues is also seen to increase their potential impact on public opinion (Miles & Morse 2007; Quarantelli 2002; Steelman et al. 2015). These characteristics of newspapers in the aftermath of disasters qualify them as suitable material for investigating media coverage that is suspected of having affected public opinion.

A period of 30 days following the onset of the disasters was examined. The study focuses on one month following the events because natural disasters are typically fast-burning crises, for which media coverage can be expected to be of shorter duration (Boin & 't Hart 2001; Houston et al. 2012; Kruke & Morsut 2015). Newspaper articles were retrieved through the Factiva news database, which provided access to all national newspapers and many local or regional publications. For the 2005 floods, all available newspapers were examined. For the 2015 floods, all national newspaper and one local newspaper in Cumbria was selected.[11]

Furthermore, only articles on the disaster events with a specific political context were selected for the analysis. All articles included at least one of the words storm*, gale*, winds, flood*.[12] In a second step, all articles must contain at least one of these words to establish a broad political context: politi*, govern*, opposition*, minist*, agency, parliament*, council*, mayor*, officer*, director*, leader*.[13] This strategy lead to 392 news articles analysed

[11] Paper III controls for the potential impact that the difference between many local newspapers in contrast to one selected local newspaper has. The difference was not found to have a significant impact on the study's main variables.

[12] For the 2015 United Kingdom floods, the number of articles was furthermore restricted by the condition that the word Cumbria* must be included in the article, in order to focus on the flood events and discussions related to Cumbria. Asterisks indicate that all search results that start with the same word stems are included.

[13] Besides the more obvious keywords that relate to government institutions on various levels, the analysis also included titles for positions within the administration that may have a connection to the management of the disaster. There were very few cases where the job titles officer, director, or leader led to an article where these terms were used in a non-political way (for example for businesses). Coders were instructed to manually exclude articles that used political keywords solely in non-political way.

for the period of 7 January 2005-11 February 2005, and 486 news articles analysed for the period of 5 December 2015-28 January 2016.[14]

3.3.2 Quantitative content analysis and political claims analysis

The reasoning behind a media analysis was that media coverage was seen as an important mechanism that may explain political consequences following disasters, e.g., consequences expressed through changing political attitudes. How the government's disaster management is perceived through media is crucial in the accountability process, and it is assumed to affect the general public's satisfaction with government.

The first task is to systematically investigate media framing: How are actions by the government framed in print media? A second task was to examine which actors appear in the media coverage, and to examine their contributions to media framing in form of political claims and, for journalists, journalistic styles.

First, media framing of actions by the government are examined utilizing a quantitative content analysis of all articles. The study investigates to what extent media coverage is favourable or unfavourable for the government. The research design applies a broad definition of government, that includes both politicians and government agencies which can be non-departmental bodies (e.g., the Environment Agency). These agencies are sponsored by government departments, and political incumbents (minsters, secretaries) are ultimately responsible for the actions of these bodies. Hence, they can be interpreted as governmental actors in a broad sense. Media framing can vary between negative, mixed, neutral, and positive. Table 3 presents a detailed operationalization of media framing of government actions. It also includes examples from both selected cases.

In a second step, the analysis explores the role of actors in and their contributions to the media coverage. A quantitative political claims analysis is utilized to identify actors and the object or addressee of their political claims. Political claims analysis has been utilized more frequently in the context of research on social and political movements in the media (Lindekilde 2013).

Claims are demands or requests for something considered one's due (e.g., the government's due in the political context). Claims can also appear in the form of statements indicating that something is a fact or true, assertions that would typically be made without providing specific evidence (Stevenson 2010). In relation to political discourses, prior research has defined claims-making as "the conscious articulation of political demands in the public sphere" (Lindekilde 2013, p.1). It has been used in the context of media debates to analyse framing of contested political issues (della Porta & Caiani 2009; Koopmans & Statham 2001;

[14] Both disasters were characterized by several impacts. Hence, the analysis period was set to be 30 days from the last significant onset of the disaster events (11 January 2005 and 28 December 2015).

Lindekilde 2008), and to some extent in the context of environmental risks (Hansen 2000; Trumbo 1996).

Table 2. Media framing of government actions

Actions by the government	**Media framing**	**Examples**
Actions described, no assessment	Neutral	"The Environment Agency urged people to head for higher ground yesterday afternoon as they slapped severe flood warnings on the Conwy Valley and Llanrwst" (Powell 2005, Daily Post). "The Environment Agency (...) warned the city's residents that their homes would be flooded" (Gallagher 2015, The Independent).
Actions described/assessed as inappropriate	Negative	On by the Environment Agency incorrectly installed flood relief pumps: "Not only could the pumps have burned out leaving Boroughbridge at severe risk of flooding, but it could have caused the town to flood during the night before anyone knew anything wrong. The situation is completely unacceptable" (Dooks et al. 2005, Yorkshire Post). "[T]he prime minister has overseen underinvestment in flood defences" (Carrington 2015, The Guardian).
Inactivity of government described	Negative	"Penrith and the Border MP, David Maclean has called on the Government to make a statement in the House of Commons on the damage caused to Cumbria because of the recent violent weather" (Anon 2005a, Newsquest Media Group Newspapers). "New Environment Agency 4x4s worth £1million are standing on a garage forecourt while the North reels from devastating floods" (West 2015, The Sun).
Actions described as inappropriate and appropriate (e.g., two sides of a story)	Mixed	"The Government has announced a £50million fund to help victims of the floods. (...) However, there has been anger that measures which were supposed to protect vulnerable homes, and only recently put in place, were overwhelmed so quickly" (Lee & Collings 2015, The Daily Express).
Actions described/assessed as appropriate	Positive	"The government has taken us seriously on issues such as sewer flooding, the Thames Gateway and flood defences" (Anon 2005b, Post Magazine). "This is a helpful intervention from the government for families and businesses forced out of their properties by Storm Desmond" (Treanor et al. 2015, The Guardian).

Political claims analysis is applied to media coverage of disasters and utilized to examine actor appearance and contribution in relation to both cases. Each identified claim is carefully analysed to identify the actor of the claim (the claim-maker), and the object or addressee of the claim (e.g., the national government). Relevant actors in this process have been identified as the government, opposition, the public (citizens and civil society organizations), and

journalists. In addition to this quantitative political claims analysis, a qualitative analysis of claims in the media discourse is added to identify which actors initiate discussions that dominate the media coverage, and how claims contribute to media framing and the dominating narrative in the media.

Claims in the media coverage were, for example assertions made by angry citizens following the floods: "They spent £25million on flood defences (...) but it has made no difference" (Brooke & Hull 2015, Daily Mail). The opposition also appeared as a claim-making actor, and demanded that the government "must look again at the swingeing cuts to departments needed to help communities back on to their feet" (Perrie & Moriarty 2015, The Sun). Another group of actors that made claims were journalists, typically in columns and similar opinion articles in the media:

> The foreign aid racket is an illustration of profoundly warped political priorities and a disdain for the British public. The first duty of a government should be to look after its own people. There is nothing compassionate about underfunding flood defences at home while finding the cash for profligate environmental projects abroad. But that is exactly what is happening today. (...) The misused funds from overseas aid should be diverted to help meet this burden. But that is unlikely to happen since the vain politicians see the colossal aid budget as a badge of their moral superiority. It is nothing of the sort. In a truly moral system the needs of the British people would come first. (McKinstry 2015, The Daily Express)

As journalists were found to play a particularly important role due to their functions in relation to agenda setting and gatekeeping, the analysis applied and adapted findings on journalistic styles in a quantitative content analysis of two styles: interpretive journalism and game framing.

The analysis examined whether the style of reporting was descriptive or interpretive (adding a commenting or evaluating nuance) journalism. The difference between issue framing and game framing was the second item: Is there a focus on actions and the actual event or on political strategies and power plays?

A detailed codebook with clear coding instructions was used for the quantitative content analysis to guide coders through the process (see Appendix Paper III for codebook).

3.3.3 Limitations of the applied methods

By focusing on a political claims analysis, the analysis puts a distinct focus on actors who contribute to the media coverage by making demands, requests, or assertions. While this is a suitable strategy for identifying statements that are typically made within a framing contest between the government and its critics who argue about the appropriateness of disaster preparedness and response, a political claims analysis is not a discourse analysis of

the entire media discourse on the disasters. Hence, statements that were not political claims were not part of this analysis.

The focus on media framing of government actions furthermore restricts the analysis to said actions. Hence, the analysis does not focus on the general tone of voice in newspaper articles, which has been investigated by other studies in relation to crises (Barnes et al. 2008; Kuttschreuter et al. 2011; Olsson & Nord 2015; Olsson et al. 2015).

Although these choices limit the ability of Paper III to make conclusions on a broader fundament of the media discourses, these methodological decisions were conscious and enable a more specific analysis of core items of interests. For instance, the framing of actions by the government would appear to be crucial when studying disaster preparedness and disaster response. What the government does, has done, or has failed to do is expected to be of particular importance in this context. In a similar way, a discourse on disaster response and preparedness in the context of blame management was expected to be emphasized in potential assertions or accusations without evidence, and in demands by actors. Hence, the articulation of blame and responsibility for the disaster management was expected to become particularly visible through political claims. Hence, the methodological choices for Paper III may limit how broad the conclusions are, but they offered a lot more detailed knowledge on aspects that were deemed to be particularly important in the context of natural disasters and their management.

4 Summary of papers

Paper I, entitled 'Natural Hazard Events and Social Capital: The Social Impact of Natural Disasters', investigates whether and to what extent social capital is affected by natural disasters. It examines twelve cases of disasters in Europe that occurred between 2002 and 2012. Utilizing data from the European Social Survey and the EM-DAT International Disaster Database, the paper examines the social impact of disasters on individuals by applying OLS regression models on single cases and pooled models. Results provide evidence that changing levels of social trust is a frequent occurrence among the cases studied, but it is not an inevitable consequence of disasters in general. Small effects of potentially temporary duration could be a comparatively common phenomenon, while substantial effects of longer duration are less likely. The analysis reveals that social trust decreases significantly after disasters with death tolls of nine or more fatalities, and it changes generally more frequently after disasters that affected the whole country directly, rather than regional events. The type of natural hazard and disaster properties only partially explained changing social trust, illustrating that disasters

may be more dependent on case-specific, contextual factors, such as perceived management of the disaster or pre-existing levels of social capital, than on underlying broader characteristics.

Paper II, entitled 'Government Accountability and Natural Disasters: The Impact of Natural Hazard Events on Political Trust and Satisfaction with Governments in Europe', investigates whether natural disasters and their management by governments generally affect political trust and satisfaction with the government among individuals. It analyses ten cases of disasters in Europe between 2002 and 2012 using a quasi-experimental quantitative design that includes two models based on OLS regression. While it is expected that changes in political attitudes are more common because citizens generally hold political incumbents accountable for their actions, the study finds that alterations in satisfaction with the government only occur in very specific instances. Furthermore, effects are generally small. Changes in the second dependent variable, political trust, are even more unlikely. Hence, disasters generally hardly affect political trust or satisfaction with the government among citizens. Instead, the selected political attitudes among individuals appear largely unaffected. By implication, it appears to be uncommon that governments can exploit a disaster when disaster management is perceived as a success or are blamed for failed actions.

Paper III, entitled 'Perceptions of Successful and Failed Disaster Management in the Media: A Comparative Analysis of Print News Media Coverage following Natural Disasters', explores media coverage as a potential mechanism that can describe and explain variability in political consequences, such as changing political attitudes, between two cases of disaster. The analysis examines and compares various characteristics and the content of media coverage of the 2005 and the 2015 floods in the United Kingdom. The constellation of cases is interesting because they are rather similar disasters with very different political consequences: Satisfaction with the government increased following the 2005 floods, but the 2015 floods led to the resignation of the Environment Agency Chair and caused criticism of the government's flood austerity budget in public opinion polls. A systematic analysis of media framing and a holistic approach to actors in the media discourse via political claims were applied to investigate how media coverage can explain the significantly different political consequences of natural disasters of similar severity. Results show that actors were more passive and abstained from articulating blame towards the government following the 2005 floods. But the opposition and journalists became much more active and the government received severe criticism for the perceived failed disaster preparedness and actions of the Environment Agency during the disaster response to the 2015 floods. Claims made by these actors implemented a dominating narrative of government failure in the media coverage of the

disaster. Hence, the national government was assessed as being responsible for the flood's effects by all actors, and it was held accountable for inappropriate measures prior to and during the disaster. In contrast, local and regional councils were framed as more responsible for the disaster response to the 2005 floods, but they were not blamed for the negative effects of the flood. The study showed that the generally politically tense situation during the 2015 floods facilitated actors in exploiting the natural disaster to discuss other, at that time relevant political issues.

5 Contributions and implications of the findings

Previous research has often focused on single case studies of disasters, which provide very important in-depth knowledge of a specific case, but lack a systematic approach to understanding disasters in general. In fact, the extent to which prior studies select particularly impactful disasters with long-lasting social and political effects on societies may have produced findings that are only valid for a very small proportion of major or catastrophic disasters. When talking about disasters in general, previous research may therefore have over-determined their political and social impact.

This project approached the question of social and political effects of disasters from a different angle. Disasters have been examined by including far more cases than disaster studies typically do (Paper I and II).

By including multiple cases of disasters, two of the three studies opted for a more systematic, quantitative approach. Hence, Paper I and II contribute methodological nuance to questions that are typically addressed by examining single cases of disasters. Studying multiple cases at the same time offers broader answers and allows examination and testing of assumptions about underlying explanations and patterns.

A variety of non-catastrophic disasters were investigated in all three papers, instead of focusing on catastrophic disasters, which have appeared much more frequently in previous studies. The results of all three studies are therefore applicable to many cases of disasters that occur regularly and that challenge governments much more frequently in many countries (Paper I, II and III). When studying disasters, particularly when aiming to gather knowledge that is valid for a larger corpus of disasters than the cases studied, it is important to not focus disproportionally on catastrophic disasters.

Paper I and II are built on a pool of disasters that vary in severity and impact. They range from minor disasters that did not cause major disruptions in society and were of comparatively short duration, to one of the most severe disasters in Europe: the 2003 European heat wave that has been estimated to have caused from 30,000 up to 70,000 fatalities. By doing so, the present

project acknowledges and emphasises the relevance of studying disasters in general, including disasters categorized as minor or small. In fact, prior research has already discussed the possibility that "even 'minor' disasters such as floods and snowstorms can lead to a loss of trust in government" (Uslaner 2016, p.187), but has not investigated how common these effects are. Paper II contributes to this research gap by investigating how widespread the disaster effects on political attitudes are. Paper III contributes further to this discussion by investigating how media coverage as a presumed mechanism can explain differences in the political effects of disasters.

A methodological contribution of this project to disaster research is the development of a research design to study disaster effects with the cross-sectional data utilized in Paper I and II. As it is generally not possible to predict exactly when and where disasters will occur, panel data on these events are mostly not and cannot be made available. Hence, the present project offers a research design that enables utilizing cross-sectional data to analyse disaster effects on individuals' social and political attitudes. It illustrates a way for future disaster research to go about conducting more systematic and large-N analyses.

The project also contributes to existing research by building a comprehensive analysis that, across all three papers, utilizes several methods, including various statistical models examining cross-sectional data, as well as a mixed-methods approach involving a quantitative content analysis and political claims analysis to answer its research questions. By doing so, the three studies can provide broader results as well as an in-depth analysis of two selected cases as a combined project. The existence of one overlapping case between Paper I, II and III also illustrates how statistical results can be illustrated and explained when utilizing a different methodological approach to study the mechanism that explains the statistical effects identified in Paper II.

Through the application of a political claims analysis, Paper III contributes to existing research with a holistic approach that included all actors in the media coverage of disasters, which allowed a systematic analysis of their appearance in and contributions to the media discourse. Furthermore, the application of a political claims analysis (Paper III) is uncommon within disaster research. It is generally used in contexts that are more clearly identified as social and political problems and crises. However, as disasters are inherently social phenomena, facilitated by social vulnerability and recognized as events for which there is a human and political responsibility, the application of a political claims analysis in the context of disasters was a fruitful approach that should be utilized further in future disaster research.

On a theoretical level, Paper I and II furthermore contribute to the interdisciplinary field of disaster research by approaching and utilizing concepts

that have been applied and identified as crucial by prior disaster research from the disciplinary perspective of political science. By making use of existing disciplinary conceptual discussions of social and political attitudes, the present research offers a more structured entrance point to the understanding of these increasingly used concepts in disaster research.

The results in Paper I and II encourage future research to engage in an investigation of contextual factors that could be the mechanism that explains under what circumstances change in social and political attitudes is likely. Media coverage was one of the presumed mechanisms. Paper III explored media coverage as a mechanism to explain the perception of failed and successful disaster management that becomes visible in the political consequences of the disaster.

The implications of the results in Paper III are that media coverage of disaster management and the activity of a variety of actors are decisive for the political effect of these events. Most importantly however, the discourse on the disaster and its management was woven into an existing criticism of the government, partly shaped by populist arguments in the politically tense situation the United Kingdom was dealing with at that time. Whether or not the government reacts swiftly and appropriately to address the impact of the disaster certainly matters for its presentation in the media; but if there is a situation in which the government is already under fire for other issues, essentially unrelated to the disaster, a disaster may easily be exploited by the government's critics to reinforce and extend this criticism and turn the situation into a political crisis.

Paper III illustrates how non-catastrophic disasters quickly become politically critical issues. It encourages future research to further investigate the linkage between disasters and discourses in the broader political context, such as populist discussions in the aftermath of the 2015 floods. The discourse on flood management was utilized by various actors in the media to criticize the government for its disaster preparedness and response, but simultaneously also to refer to broader political issues.

Paper III also invites future research to extend the analysis of media coverage in newspapers as a mechanism for political consequences of disasters to other types of media, e.g., to new media, including social media. There is scant literature on the relevance of social media in the context of political discussions and attitudes towards the government following disasters (Tagliacozzo & Arcidiacono 2016), which calls for further, systematic investigations.

The implications of Paper I and II for disaster management practitioners may at first sight appear to be that careful management of disasters in general resembled much ado about nothing. However, both papers also showed that even minor disasters are not *nothing*. They *can* have a significant social

and political impact, even if this impact only occurs under co-existing further conditions. Paper III illustrated how the discourse on disaster management can reinforce a pre-existing politically tense situation. By implication, practitioners in the field of disaster management need to remain aware of the sensitivity of these discourses and the potential for even minor events to have a major political impact.

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