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Introduction

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Crises punctuate our world. Their causes and consequences are woven through complex, interconnected social and technological systems. Consider these three recent events, each of which dramatically upended expectations about risk:

- In the fall of 2008, the global financial system experienced a full-blown panic. Credit flows seized up, ushering in the worst global recession since the 1930s and leading newspapers to convey the resulting "shocks" to financial markets.
- In April 2010, a blowout at the British Petroleum Deepwater Horizon drilling platform killed eleven workers and triggered a three-month-long oil spill, sending nearly five million barrels of crude into the Northern Gulf of Mexico, which fouled beaches, estuaries, and fishing grounds.
- In March 2011, an earthquake and a resulting tsunami killed 20,000 people in Japan. The natural disaster also caused reactor meltdowns at the Fukushima nuclear power plant, forcing the evacuation of tens of thousands of people, unleashing a long-term leak of radioactive water into the Pacific Ocean and creating a daunting set of challenges as officials sought to stabilize pools of spent fuel rods and protect local populations from radioactive fallout.

Each of these three recent events attracted extraordinary attention from the media and the global public, raising concerns about dangers that may lurk within the complex technological and social systems on which we depend to sustain our economy and way of life. They also generated criticisms of the regulatory systems that were supposed to

FIGURE 1.1 The impact of Lehman Brothers' bankruptcy ripples through world markets, chronicled by the American press
Source: http://businessjournalism.org/2013/09/5-year-recession-after-wall-streets-crash-and-a-look-at-401k-trends/

prevent such failures, as well as demands for new regulatory actions to reduce the risks that the crises had brought into sharp relief. In the aftermath, policy elites and the broader public ponder the meaning of such events and look for appropriate responses. Once a consensus emerges that they indeed constitute crises (and sometimes even before), government agencies, legislative committees, think tanks, citizens' groups, scholars, and often official commissions begin to investigate their causes, consider whether better policy might have prevented them, and debate what regulatory adjustments governments should adopt, if any.

In this multidisciplinary volume, we examine how people and policymakers respond to crises. This exercise requires care in defining what we mean by "regulatory crises," which, for us, are events that create substantial social damage and capture public attention. They may thereby call into question existing mechanisms for controlling and managing risk, and generate widespread proposals for adjustments in regulatory policy. Regulatory crises are distinct from many non-crisis events that may have substantial social damage but fail to capture public attention and lead to review of existing regulations. An example of such a non-crisis event would be particulate matter pollution from coal-fired power plants,

which kills many people but does so slowly and without much public outcry. We also distinguish regulatory crises from global catastrophes, such as a major asteroid collision, that threaten the existence of all life, or all human life, or civilization, and hence would not be amenable to subsequent regulatory responses after they occurred (Wiener 2016).

After the immediate challenges of disaster management, crises may – sometimes – reveal new evidence or frame new normative perspectives that drive new policies designed to prevent future crises. The resulting policy responses may vary widely – for example, tightening regulatory standards, creating stronger incentive systems, requiring greater transparency, reorganizing government institutions, or cosmetically masking inaction. We delve into a series of enduring puzzles about the relationships between crises and regulatory decision-making, exploring the following questions:

- How do crises change the risk perceptions of the general public, policy elites, or both?
- How do changes in the risk perceptions of policy elites, or those of the wider public, result in different policy responses?
- How do the narratives that emerge about crises shape the policy response (or inaction) that ensues?
- When crises do generate regulatory responses, how and why do those responses vary? How do differing features of crises, and of the social and political systems in which they occur, influence the adoption of different policy instruments and strategies?
- To the extent that it is possible to tell, when do crisis-driven regulatory changes lead to desirable reforms, as opposed to hasty overreactions or policy mismatches?
- How might governments (both elected officials and regulatory policy-makers), businesses, citizens' groups, and scholars do a better job of both learning to prepare for crises and preparing to learn from crises, so that regulatory responses are more successful?

We have shaped our exploration of these matters with two broad, intersecting audiences in mind. The first encompasses the many scholarly communities that study regulatory governance. Our goals for that readership are to synthesize current research findings on crisis-driven regulatory policy from many fields of knowledge, to provide extensive new evidence about regulatory policy-making in some especially salient contexts of crisis, and to lay out the most important issues deserving additional scholarly attention. The second intended audience comprises policy

elites, especially within regulatory agencies and the offices of elected officials, regulated businesses, and non-governmental organizations. For these readers, we offer a conceptual framework for how to make sense of crises as they unfold and especially how to assess options for reforming risk regulation in their aftermath. On this last point, we pay especially close attention to best practices for crisis investigatory bodies, suggesting ways that governments can prepare to learn from "policy shocks" – events that few policy-makers anticipated, or that policy-makers presumed to be so rare as not to justify significant efforts to prevent them or mitigate their impacts.

We remain too close in time to the Global Financial Crisis of 2008, or BP Deepwater Horizon, or Fukushima to have a clear sense of their long-term implications for regulatory policy-making. But they collectively raise the sorts of questions that we identify above about the relationship between "crisis" and policy formulation. One common tendency in thinking about these questions, articulated by several observers in the wake of these recent disasters, is that crisis episodes can dramatically reconfigure perceptions of reality, which then at least sometimes, and perhaps often, drive major policy changes. One can certainly point to many examples that fit this pattern. Indeed, significant turning points in the history of regulatory governance frequently have been triggered by crisis.

HISTORICAL CONTEXT

Over the last two centuries, and across the globe, far-reaching changes in regulatory policy have often (though of course not always) represented responses to sudden, largely unexpected and damaging events (Percival 1998; Birkland 2006; Repetto 2006; D. Carpenter and Sin 2007; Wuthnow 2010). To be sure, not all crises lead to regulation, and not all regulations derive from crises (Kahn 2007). Consider the following list of episodes – hardly exhaustive, but lengthy enough to suggest the wide range of contexts in which crises have generated major shifts in regulatory policy.

We begin with some examples from the regulation of health and safety, whether in specific industries or across the wider environment. As early as 1838, exploding boilers on American river steamboats brought forth a congressionally mandated safety inspection regime (Burke 1966). On both sides of the Atlantic, the introduction of modern public health regulation during the nineteenth century ensued in the wake of infectious disease epidemics (Rosenberg 1987; Bourdelais 2006). In late nineteenth-

century Europe and the United States, the imposition of new safety protocols for coal mines followed mining disasters that dramatized the dangers of deep-level mineral extraction (Reid 1986; Aldrich 1997). Harrowing industrial workplace tragedies, like the 1911 fire at New York City's Triangle Shirtwaist Factory, frequently gave rise to tougher safety rules and inspection regimes (Pool 2012). Significant changes in the twentieth-century regulation of pharmaceuticals often occurred only after some vivid demonstration of an unsafe drug's terrible impact (the American deaths caused by ethyl glycol-infused antibiotics in 1937; the European birth defects caused by thalidomide in the early 1960s), or because of the widely covered death toll from a new disease (HIV/AIDS in the 1980s). In several countries, significant movement to limit industrial air pollution arose after dramatic episodes like the killer fogs that beset London in the 1950s. Clean water laws were enacted after incidents such as the Cuyahoga River catching fire. The Seveso dioxin accident of 1976 gave rise to new European directives on chemical facility safety, just as the discovery of hazardous waste at Love Canal, New York, spurred the 1980 US CERCLA Superfund cleanup law, and the 1984 Bhopal, India, chemical plant disaster encouraged the refashioning of safety regimes throughout the global chemical industry (King and Lenox 2000; Lenox and Nash 2003) as well as enactment of the US Emergency Planning and Community Right-to-Know Act in 1986. This dynamic, moreover, could operate at the global as well as national level. Thus the identification of the stratospheric ozone hole in 1985–86 (along with other factors such as a shift in industry lobbying and a favorable cost-benefit analysis within the government) helped trigger the US government's adoption of the 1987 Montreal Protocol to phase out chlorofluorocarbons (Litfin 1994).

Another policy terrain strongly marked by crisis-driven regulation involves oversight of corporate governance and the financial markets. Governments tended to adopt tougher rules on corporate governance and accounting after well-publicized corporate scandals – the South Sea Bubble in the 1720s, the over-issue of stock at the New York and New Haven Railroad in the 1850s; the collapse of several American insurance companies in the early 1870s (Harris 1994; Shaw 1978; *The International Review (1874–1883)* 1877). New schemes of financial regulation also tended to emerge in the aftermath of economy-wide financial panics (as with much tighter capital requirements for American trust companies and the creation of the Federal Reserve after the Panic of 1907, and the dramatic refashioning of securities regulation in the wake of the 1929 stock market crash) (Tallman and Moen 1990; Seligman 2004).

The apparent connection among crisis events, reshaped risk perceptions, and regulatory policy change has continued over the last quarter-century. One might point to American contexts such as the savings & loan crisis of the late 1980s, which led to a reversal of some banking deregulation; the fraud-related bankruptcies at Enron, Worldcom, and Tyco in the late 1990s, which engendered a new regime for corporate accounting and the 2002 US Sarbanes-Oxley Act (Rockness and Rockness 2005); or the 9/11 terror attacks in the United States, which prompted a massive expansion of the national security apparatus, its reorganization into a new cabinet-level Department of Homeland Security, and two wars (Cohen, Cuéllar, and Weingast 2006). Similarly, one might look to European events such as a series of food safety crises in the late 1980s and 1990s, notably mad cow disease and foot and mouth disease, which undermined public confidence and added momentum for various food safety policies; or the volcanic ash crisis of 2011, which encouraged a centralization of air traffic management (Alemanno 2011). Or one might stress events in emerging economies, including recent episodes in China concerning unsafe milk, toys, and other products that generated pressures for tougher regulatory oversight of manufacturing standards (Bamberger and Guzman 2008); or even more recent accidents in South Asian clothing factories that elicited new avenues of workplace safety regulation both nationally and through global supply chains (Venkatesan 2013).

FRAMING "CRISIS" AND THE DESIRABILITY OF CRISIS-DRIVEN REGULATORY RESPONSE

Scholars of regulatory governance have long noted the salience of crisis episodes in reshaping policy agendas and forging political environments conducive to significant regulatory change, especially once modern media outlets existed to spread public awareness of these events and to shape public perception of them. Graphic newspaper descriptions and mass-produced prints brought the human impact of nineteenth-century disasters to a wide audience. The advent of photography, radio, cinema, television, round-the-clock cable news networks, and then the Internet and social media platforms only further expanded the avenues for conveying the social costs of crisis events in captivating, personal terms, such as the pictures in Figures 1.2 and 1.3. This news coverage often generated compassion for innocent victims and outrage directed toward culpable villains. In democratic societies, such coverage can generate strong political pressures for governmental action – both to redress the wrongs

FIGURE 1.2 A shorebird covered in crude oil from the BP Deepwater Horizon oil spill
Source: http://archive.boston.com/bigpicture/2010/06/caught_in_the_oil.html

FIGURE 1.3 *Business Week* shows a Japanese girl being tested for radiation after the Fukushima reactor meltdowns
Source: www.wsj.com/articles/SB10001424053111903639404576515890556446756

already inflicted on victims and to reduce the risk of recurrences. By galvanizing general public concern, crises can also curb the capacity of business groups to stymie policy changes that they viewed as inimical to their interests, or generate a rethinking of how best to conceptualize what those interests are.

Accidents and disasters, however, do not automatically produce politically salient crises. Instead, proponents of new directions in regulatory policy always have had to shape the public meaning of such events, convincing decision-makers that their immediate consequences and long-term portents were so great as to demand priority consideration despite all the other issues and interests clamoring for attention. Sometimes the key actors in shaping such evaluations have been policy entrepreneurs within the state; in other circumstances, corporations, interest groups, social movements, or even lone experts have taken the lead. Usually, the manufacturing of a full-blown crisis depends on the emergence of a coalition that shares policy goals, if not necessarily motivations or rationales.

In modern industrialized, democratic societies, such coalitions typically have faced a common set of challenges. First, they must effectively personalize the social and economic losses resulting from the event, while developing a persuasive explanation of its causes. Second, they have to imagine a cluster of proposed solutions that allow policy-makers and the wider public to see the problems exposed by the event as amenable to action. Finally, they have to chart a plausible path for the formulation and implementation of the proposed solutions, taking account of the social, political, and institutional contexts that mediate policy-making. Absent such clearly defined and realistic reform programs, politicians and ordinary citizens are far more likely to indulge in some form of psychological denial, refusing to see a need for prompt action (Campbell and Kay 2014). These are potentially daunting obstacles. And yet the basic recipe of crisis-driven policy initiatives has become sufficiently well known that savvy political operators remain alert for situations that lend themselves to labeling as a crisis, thereby opening up avenues for policy reforms. As President Obama's chief of staff Rahm Emmanuel framed this sensibility after the 2008 financial crash, "you never want a serious crisis to go to waste."

That reality is a key reason that the desirability of crisis-driven regulatory change remains a hotly contested question. All too often, some academics worry, policy-makers may take advantage of public clamor to enact their own pet programs, potentially unrelated to the risks exposed by the crisis (Romano 2005; Coglianese and Carrigan 2012). More

generally, critics argue that the emotional punch associated with crisis-driven regulatory reform encourages overreaction or policy mismatches (Kuran and Sunstein 1999; Wuthnow 2010). On this view, when legislators and regulatory officials face insistent popular demands to take action, whipped up by news coverage of a rare event that brought harm to innocent individuals, they tend to adopt aggressive policies that impose heavy costs, induce new perils, and sometimes do little to prevent the risks at issue. For example, although the 2011 tsunami killed more than 20,000 people in Japan, the subsequent evacuation of the area around the damaged Fukushima Daiichi nuclear power plant apparently saved few or no lives from radiation exposure while costing an estimated 1,600 lives through dislocation of frail residents (Johnson 2015).

Skeptics of crisis-driven policy change often advocate reliance on strong regulatory oversight mechanisms to ensure deliberative analysis of the wide range of risks facing society, and the pros and cons of policy proposals (Breyer 1993). Such oversight mechanisms include the United States Office of Information and Regulatory Affairs (OIRA), the European Union's Impact Assessment Board (IAB) (renamed the Regulatory Scrutiny Board in 2015), and a growing number of similar institutions around the world (Wiener 2006; Wiener 2013; Wiener and Ribeiro 2016). OIRA and the IAB can serve as institutional brakes on hasty regulatory decision-making, using regulatory impact assessments (RIAs) to facilitate sober evaluation of both the risks highlighted by a crisis event and the advisability of proposed reforms. Conceptually similar "think before you act" laws have also been enacted to protect the environment against hasty construction projects via environmental impact assessments. Analogous proposals have called for regulations to undergo multiple stages of legislative scrutiny so that final passage of new regulatory constraints only occurs well after crisis-related passions have cooled; or even for automatic sunset provisions so that crisis-generated regulations later require legislative reaffirmation, presumably on the basis of a considered evaluation of policy impacts (Romano 2005). Some scholarly critics of crisis-driven regulation also argue that policy-makers too often neglect needed regulation of important risks that do not come to the fore, because they do not give rise to dramatic episodes that would attract the media's cameras and emotion-laden narratives of avoidable suffering (Slovic, Flynn, and Kunreuther 2013; Weber 2006). Everyday risks that take many lives, such as tobacco smoking, traffic accidents, gun violence, influenza and malaria, or slow-developing harms such as climate change, receive far less notice than immediate crisis events – from the news media,

the public, legislators, and regulators – and yet may deserve greater regulatory attention.

On the other hand, some observers of regulatory governance argue that crises can present rare opportunities for needed reform. They stress the capacity of concentrated interest groups to resist regulatory proposals during ordinary political times, and of policy-makers to deflect the popular pressures created by a crisis event. As a result, they contend that bold new policies need to be adopted in the wake of crisis, to seize the political opportunity created by public outcry, and to overcome the foreseeable moderation of these policies as powerful interest groups later influence the less well-covered details of bureaucratic implementation (Coffee 2012). Meanwhile, other scholars point out that good policy analysis and centralized oversight mechanisms such as OIRA, the IAB, and executive orders can be used not only to brake but also to prompt new regulatory policies (Kagan 2001; Graham 2007). Such prompts might be warranted when accumulating evidence or a sudden crisis strengthens the case for new policies that regulatory agencies had not yet pursued.

To be sure, the historical record also makes clear that crises do not necessarily motivate significant regulatory responses or shift political agendas and the parameters of policy debates. In retrospect, the oil crises of the 1970s did not generate dramatic reorientation of regulatory policies to foster American investment in alternative energy. Nor did Hurricane Katrina (2005) prompt serious regulations of greenhouse gases as a means of mitigating global climate change. In some instances, policy-makers defuse popular demands through study commissions or minor concessions, perhaps rearranging institutional deck chairs or adopting new rules without much attention to enforcement. In still other contexts, governments implement new policies without crises, such as the pioneering sulfur dioxide (SO_2) allowance trading system enacted in the US in 1990 to reduce acid rain, and the major 1996 reforms to the American Safe Drinking Water Act.

The inescapable conclusion is that the desirability of crisis-driven policy change varies enormously. Sometimes such policy change is hasty and misguided. But other times it reflects justified and well-conceived boldness. Often it incorporates both problematic and effective features. In at least some instances, crises reveal new dimensions of a complex problem, create channels for overcoming seemingly intractable political impasses, and lead to sensibly crafted regulatory policies that mitigate risks at reasonable cost. Such laudable reforms might occur either by creating new political support for long-germinating policies with much to