UNRAVELING THE ECONOMIC CONSEQUENCES OF DISASTERS: SOURCES OF RESILIENCE AND VULNERABILITY

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Executive Summary. Major disasters, such as Hurricane Katrina and the Asian Tsunami, leave in their wake death and destruction, human suffering, and obvious short-term financial losses. But do they have long-term economic consequences for the communities they impact? This article attempts to answer that question through a review of recent research on the economic consequences of disasters. It argues that the answer to the question of long-term financial disaster impacts depends largely on how "recovery" is defined and whether one is looking at individual businesses or regional economies. This article also suggests that various loss-reduction measures—including disaster preparedness and post-disaster aid—do not always work as intended, and it provides a rationale for this counter-intuitive finding. The article concludes with implications for economic development practice in disaster situations, arguing that a key to enhanced community resilience to disaster is improved cooperation between the public and private sectors.

Disasters are dramatic events that have substantial impacts on human societies. They result in loss of life, widespread physical damage, and social disruption. Human societies have always encountered crises, but they seem to be increasing in frequency, complexity, and financial costs. With continuing advances in technology and a growing percentage of the world's population living in hazardous regions, social vulnerability to extreme events is increasing (Wisner, et al., 2003). For example, recent earthquakes in India, Japan, Turkey, and Iran have resulted in thousands of deaths; the tsunami that devastated parts of Asia in 2004 took the lives of nearly a quarter of a million people; and Hurricane Katrina, which recently struck the Gulf Coast region of the United States, left in its wake a sizeable death toll, widespread human suffering, and severe damage to the built environment.

Additionally, technological disasters, such as the Exxon Valdez oil spill, the Union Carbide chemical release in Bhopal, and the Chernobyl nuclear meltdown, have caused immeasurable harm to communities, including chronic health problems for those affected, potentially irreversible damage to the environment, and severe economic...
disruption (Erikson, 1976; 1994; Picou, et al., 2004). Finally, following the 2001 attacks on the World Trade Center in New York, researchers have become more aware of the disruptive effects of terrorism on human societies (Webb, 2002; Marshall, et al., 2003).

According to the World Bank, major disasters in the 1990s resulted in economic losses averaging $66 billion per year (Benson and Clay, 2004). Yet, until recently social scientists had devoted very little attention to studying the financial impacts of disasters. Rather, they have focused primarily on the broader social dimensions of large-scale crises. For example, they have documented the prevalence of altruistic norms and helping behavior in disaster affected communities, the flexibility of responding organizations and the emergence of new groups to meet heightened demands brought on by disasters, and the overall resilience of human societies in the face of extreme collective stress (for comprehensive summaries of this research see Drabek, 1986 and Tierney, et al., 2001).

While these findings provide insights into some important aspects of disasters, several critical questions remain largely unanswered. For example, what are the long-term economic consequences of disasters? Are some sectors of the economy affected more strongly than others? What kinds of activities can be undertaken by businesses to lessen the financial impacts of catastrophic events? And, finally, do disasters have any positive economic consequences?

The primary purpose of this article is to shed light on the economic impacts of disasters through a review of relevant literature. The first section provides a brief overview of disaster research in the social sciences to show how the field has grown from being primarily concerned with disaster victims and response organizations to conducting more studies on the private sector. In the second section, sources of confusion about the economic consequences of disasters are identified, from how we define recovery to whether disasters provide opportunities for meaningful social change. The third section discusses potential sources of economic resilience in the face of disaster—that is, factors that may facilitate recovery from catastrophic events, including business characteristics (e.g., age and size), disaster preparedness, and post-disaster aid. Finally, the paper concludes with a discussion of the applied implications of research on the economic consequences of disasters.

**Disasters and the Private Sector: A Brief History of Disaster Research**

Social scientists in the U.S. began systematically studying disasters in the early 1950s (Quarantelli, 1987). At that time, the military became interested in understanding how the civilian population would respond to an enemy attack. During World War II, the military had conducted its own studies on the impacts of bombings on German and Japanese populations. Surprisingly, it was found that the bombings did not demoralize and incapacitate those societies. Rather, in the face of bombings these societies showed remarkable resilience (Fritz, 1961). Seeking to understand how bombings might affect the U.S., the military began funding social science investigations of human responses to natural and technological disasters. Disaster studies
were funded because they were thought to serve as a proxy for wartime scenarios. Tornadoes, earthquakes, flash floods, airplane crashes, and explosions are all rapid-onset events that produce significant effects in geographically limited areas. Thus, by studying these events, it was reasoned, the military could gain insights into the effects of war on society.

Given the applied concerns of the funding agencies, early disaster studies were rather limited in scope. First, only certain types of events, like those mentioned above, were studied. Slow onset and chronic events, such as famines, droughts, and epidemics, were completely ignored because they did not resemble a surprise attack. Second, research focused on the social dynamics of the immediate response period of disasters. Other disaster phases, including mitigation (i.e., prevention) and recovery were ignored. Finally, early studies focused primarily on victims and public sector organizations. Because it was assumed that disasters would cause panic and social disorder, the military sought information that would improve the government’s ability to maintain command and control (Dynes, 1993).

Interestingly, research has consistently shown that the conventional image of chaos following disasters is a myth (Fischer, 1998). Instead, human societies are resilient in the face of catastrophe. At the individual level, people rarely panic and emergency workers generally do not abandon their professional roles (Quarantelli, 1954; Dynes, 1987). At the organizational level, bureaucracies that are ordinarily rigid and resistant to change become flexible and adaptive (Dynes, 1970). And, at the community level, a "therapeutic community" often emerges in response to natural disasters in which social solidarity is enhanced and people are more likely to help each other than during normal times (Fritz, 1961).

Although a great deal has been learned about the social dimensions of disasters over the past fifty years, knowledge about the impacts of large-scale crises on the private sector is far less developed. As Webb, et al., (2000: 83) note:

Until recently, the literature on hazards and disasters contained very few references to the ways in which private-sector organizations prepare for, respond to, and recover from disasters. Research in the disaster field has focused almost entirely on units of analysis other than businesses, most notably on families, households, and governmental units, particularly local communities.

Yet, there are several compelling reasons why social scientists should devote more attention to the private sector. First, just as households and local governments are affected by disasters, so too are businesses. Indeed, businesses often experience both direct and indirect disaster impacts (Webb, et al., 2000). Direct disaster impacts include physical damage to the building in which a business is housed, loss of infrastructure lifelines (e.g., electricity, water, and telephone service), and forced closure. While these are the most obvious and easily observed types of impacts of disasters on businesses, they are not the only ones or even necessarily the most costly. Indirect disaster impacts are
more difficult to assess, but they must be considered. These include such things as employees being unable to get to work, customers not being able to access the business or unable to afford its products or services due to their own victimization, and disruptions in the supply chain resulting from damage to the surrounding infrastructure.

Second, more research is needed on the private sector because in some cases businesses are not the victims but the culprits of disasters. Nuclear power production, transportation of hazardous chemicals, oil refinement and transport, and large-scale food processing are risky endeavors. To facilitate these activities, complex systems are developed that are prone to fail in what Perrow (1984) calls "normal accidents." As Vaughan (1999) points out, the organizations that we rely on so heavily have a "dark side," which makes them susceptible to "mistake, misconduct, and disaster." In modern society, organizations (both in the public and private sectors) play a central role in the production, management, and allocation of risk (Tierney, 1999). Yet, despite the relative autonomy and deeply entrenched legitimacy they enjoy, Freudenburg (1993) argues that organizations sometimes betray public trust when they fail to responsibly define and manage risk, and Bullard (1994) contends that poor and minority communities are unfairly subjected to societal risks.

Finally, research on the private sector should be pursued to gain a better understanding of the ways in which businesses contribute to disaster response efforts. As McEntire, et al. (2003) demonstrate, private businesses played pivotal roles in responding to the 2001 attacks on the World Trade Center in New York. In response to disasters, employees of businesses often serve as volunteers in the relief effort, manufacturers and retailers donate various kinds of goods, and construction firms lend manpower and heavy machinery for debris removal.

In light of this discussion, it is encouraging that a growing body of research is being conducted on the economic consequences of disasters. Research in the area can be roughly grouped into three major camps. First, some studies attempt to assess economic losses at the community-wide or regional levels (see, for example, Rossi, et al., 1978; Friesema, et al., 1979; Cohen, 1993; West and Lenze, 1994; and Gordon, et al., 1995). Second, some research has documented the hazard- and disaster-related experiences of particular types of businesses, such as those involved in the production and transportation of hazardous materials (Quarantelli, et al., 1979; Steinberg and Cruz, 2004) and in chemical emergency preparedness (Lindell, 1994), tourist industry firms (Drabek, 1994), and small businesses (Kroll, et al., 1991). Finally, recent studies have been done at the individual business level of analysis to determine the degree to which businesses are prepared for disasters; examine the direct and indirect impacts of disaster-induced damage on businesses; and measure the extent of and factors associated with short- and long-term disaster recovery among businesses affected by major floods, hurricanes, and earthquakes (Dahlhamer and D'Souza, 1997; Dahlhamer and Tierney, 1998; Webb, et al., 2000; 2002).
As is clear from this discussion, the field of disaster research has shifted from a primary focus on victims and public response agencies (e.g., police and fire departments) to a heightened concern with the private sector. However, there remains a great deal of confusion among scholars about the economic consequences of disasters. The next section identifies some potential sources of this confusion and seeks to clarify some important issues in studying the economic impacts of disasters.

The Economic Consequences of Disasters: Sources of Confusion
Perhaps the most important point of contention among those who study the economic impacts of disasters is whether these events have long-term consequences on the communities they impact. On the one hand, some scholars argue that major disasters do not leave discernible impacts in their wake over the long term. On the other hand, some research suggests that disasters discriminate in their effects, affecting some sectors of the economy more severely than others.

The debate over the long-term effects of disasters is important for both conceptual and applied reasons. At a conceptual level, conclusions reached about the long-term consequences of disasters will be largely shaped by the way in which disaster recovery is defined, the time frame over which research is conducted, and the level of analysis at which observations are made. In an applied sense, findings about long-term disaster impacts may influence the types of policies enacted to promote economic recovery. For example, the finding that disasters have no long-term economic effects may lead to a policy of non-intervention, while the finding that some sectors of the economy are hit harder than others may lead to post-disaster relief policies that target certain kinds of businesses.

The primary aim of this section is to identify some sources of confusion about the economic impacts of disasters. While it will not resolve the debate over whether disasters have long-term consequences, this section will shed light on the nature of that debate. In the final analysis, of course, the question of disaster impacts is an empirical one that can only be answered through more research. Based on existing research, there seem to be three critical issues shaping the debate over long-term disaster impacts. First, research on the topic has been conducted at various levels of analysis, from the individual business to regional and national economies. This is important to note because the level of analysis at which studies are conducted determines what is observed and thus shapes what is found. Second, the concept of disaster recovery employed by researchers varies, ranging from short term (i.e., months) to long term (i.e., years). The way in which disaster recovery is defined matters of course because it determines the time frame over which data are gathered. Finally, the degree to which disasters provide opportunities for positive social change over the long term is unclear in the literature.

Levels of Analysis
The level of analysis at which researchers have gathered data has exerted a strong influence on the debate about the long-term economic impacts of disasters. As previously mentioned, data have been gathered at the micro- (i.e.,
individual businesses) and macro- (i.e., community or regional) levels of analysis. Depending on their approaches, therefore, researchers have drawn very different conclusions about the longer-term consequences of disasters.

Scholars who have focused on the community and regional level of analysis, for example, argue that disasters have few discernible effects beyond the disruption they cause during the immediate post-impact and short-term recovery periods (Wright, et al., 1979; Friesema, et al., 1979). Consistent with this view of disaster impacts as temporary, Drabek (1986: 251) observes, "[f]or most disasters studied... the overall picture is one of mixed, but relatively minor ripples in the long-term development cycle." Similarly, Wright, et al. (1979: 207), who used census data to examine the effects of major floods, hurricanes, and tornadoes in the U.S. between 1960 and 1970, conclude: "The expectation, therefore, is that natural disasters do not cause long-term, community-level effects, and this expectation has been consistently sustained in the analysis reported here." They also note that, "And yet, communities—or at least most communities—prove extraordinarily resilient in the face of catastrophe..." (Wright, et al., 1979: 15).

While there is a long line of research supporting the notion that communities are remarkably resilient in the face of disaster (see Tierney, et al., 2001 for a recent summary of that research), there are also recent studies suggesting that some groups—namely, women, minorities, and the poor—are affected more severely by disasters than others and thus have a more difficult time recovering from them (for recent reviews see Fothergill, 1996; Fothergill, et al., 1999; and Fothergill and Peek, 2004). Thus, the effects of disasters are not equally distributed, which means that attempts to characterize their effects at an aggregate level misrepresent their actual effects, ignoring important nuances and concealing social inequalities. It is important, therefore, that disasters be viewed from various levels of analysis.

Scholars who have studied the economic impacts of disasters at the individual business level of analysis have drawn different conclusions than those focused on the macro level. Specifically, they have concluded that disasters create both winners and losers (Dahlhamer and Tierney, 1998; Webb, et al., 2000; 2002). As Webb, et al. (2002: 56) suggest:

Some types of businesses clearly have more difficulty recovering after disasters than others. Businesses in crowded, highly competitive, and relatively undercapitalized economic niches appear to have the most serious problems in the aftermath of disasters.

For example, construction firms may do very well after a disaster because of the influx of insurance money and other sources of aid to support reconstruction. Small retail stores, on the other hand, may struggle or fail altogether because of the non-essential nature of their products and the intense competition in that sector even under normal conditions. Additionally, businesses that experience severe physical damage, loss
of infrastructure lifelines (e.g., electrical, water, and/or telephone service), various operational problems (e.g., employees unable to get to work), and prolonged closure may have a more difficult time returning to pre-disaster levels of functioning than those that do not encounter such difficulties (Webb, et al., 2000).

Clearly, the level of analysis at which data are gathered matters. If data are collected at a level of aggregation that is too high, then important differences in disaster impacts may be overlooked. On the contrary, if data are not aggregated at a high enough level, then one may overstate the negative impacts of disasters and ignore the resilience and ability of regions to absorb the economic impacts of extreme events.

*Defining Disaster Recovery.* Another important issue in the study of the economic consequences of disaster is how to define recovery. A useful definition of recovery, it would seem, must have substantive and temporal dimensions. Substantively, to claim that a household, business, or community has recovered from a disaster is to make some judgment about its current condition in relation to its pre-disaster status. The important conceptual question is whether recovery is indicated by simply returning to pre-disaster conditions or reaching a level of functioning that would have been attained had the disaster never occurred. Temporally, recovery can be seen as both a short- and long-term process. The critical question is whether it should be measured at six months after a disaster, a year, or more.

In grappling with these issues, Bates and Peacock (1987) make a useful distinction between restoration and recovery. Restoration, they argue, "refers to reaching the level of social and economic development and functioning it [the community] had already reached just prior to impact" (p. 302). Recovery, on the other hand, is defined as, "... a community reaching that point in its social and economic development that it would have reached had no disaster occurred" (p. 302).

Based on this distinction, recovery is a higher benchmark than restoration in terms of social and economic development. Although it makes a great deal of intuitive sense, this distinction has a serious limitation. In particular, it is impossible for a researcher, or anybody else for that matter, to know what level of social and economic development a community would have reached had a disaster not occurred. One could use past performance indicators (e.g., sales tax revenues or housing statistics) to make future projections, but it would essentially be speculation.

An alternative to a statistical or quantitative measure of recovery is a perceptive or qualitative measure. For example, questionnaire items can be used to ask business owners whether certain aspects of their businesses (e.g., numbers of customers, profits, and employees) have decreased, remained the same, or increased since a disaster occurred. Using this approach, researchers have found that most businesses do in fact return to at least a pre-disaster level of functioning, but many do not (Webb, et al., 2000; 2002).
Disasters and Social Change. A final point of disagreement among researchers and a source of confusion in the literature is whether disasters create lasting social change. As Passerini (2000) points out, there is a widespread perception that disasters create a "window of opportunity" for making long-lasting, positive social changes. Yet, research findings regarding social change after disasters are extremely mixed. Some scholars argue that disasters produce no visible changes, some contend that disasters result in long-term negative changes, and some claim that disasters do indeed promote positive social change over the long term.

A number of researchers argue that disasters are not agents of long-term social change. While they acknowledge that disasters produce immediate changes in social structure and cultural norms, these changes are short-lived (Quarantelli and Dynes, 1977; Drabek, 1986). Moreover, the impacts that disasters do have are absorbed by parts of the community that were not damaged or by other communities (Bates and Peacock, 1987). From the perspective of these researchers, to the extent that disasters do have long-term impacts, they primarily exacerbate or accelerate economic and political trends that had already begun prior to their occurrence (Bates and Peacock, 1993).

According to other researchers, disasters have lasting negative impacts on the communities they strike. Erikson (1976), for example, argues that a dam break and resulting flood in West Virginia destroyed a small town, undermining the sense of solidarity and community once held by its residents.

More recently, Picou, et al. (2004) suggest that continuing litigation resulting from the 1989 Exxon Valdez oil spill in Alaska serves as a source of lingering stress for town residents affected by the spill.

Still other researchers suggest that disasters are capable of producing positive, long-term social change. As Dacy and Kunreuther (1969: 168) state:

In fact, a disaster may actually turn out to be a blessing in disguise. Aside from the economic boom that often follows because of the large amount of reconstruction, there is an opportunity for commercial establishments and homeowners to improve their facilities.

In the realm of politics, some scholars suggest that disasters reveal various policies, practices, and injustices, opening up the polity and creating new coalitions and mobilizing efforts (Olson and Drury, 1997; Platt, 1999).

This section has identified various sources of confusion surrounding the economic impacts and long-term consequences of disasters. It is clear that the level of analysis at which studies are conducted and the way in which recovery is defined influence what is found and the judgment as to whether or not disasters promote social change. The contradictory findings of past studies suggest that more research is needed. The next section draws on past research to identify potential sources of community and business resilience in the face of disasters.
Sources of Economic Resilience
There are plenty of things households, businesses, and communities can do to get ready for disasters, but the question is whether these activities really help. For example, it would seem that preparedness measures, such as stockpiling supplies and learning first aid, would help lessen the impacts of disasters and facilitate a more effective response. Yet, research on business disaster preparedness challenges the validity of that assumption. Just as there is confusion about the long-term economic impacts of disasters, the literature also contains contradictory and counter-intuitive findings regarding the factors that make businesses and communities more resilient to large-scale crises. This section reviews research in four areas related to disaster resilience: disaster preparedness, post-disaster aid, business characteristics, and market diversity.

Disaster Preparedness. The purpose of disaster preparedness is to equip social units—whether they be households, businesses, governments, or entire communities—to more effectively respond when disasters strike. In other words, preparing for disasters should make those units more resilient when confronted with an actual event. Yet, recent research suggests that preparedness is not significantly related to positive post-disaster recovery outcomes for businesses (Webb, et al., 2000; 2002). There are at least four reasons for this counter-intuitive finding.

First, businesses are doing very little to prepare for disasters. Indeed, it seems that the average or typical business places relatively little emphasis on disaster preparedness and other loss-reduction measures. In a study of preparedness levels among firms in Memphis, Tennessee and Des Moines, Iowa, for example, Dahlhamer and D’Souza (1997) find that businesses have undertaken very few of the checklist items on their questionnaire, which include stockpiling supplies, attending meetings, purchasing earthquake or flood insurance, talking with employees, having an engineer assess the building, obtaining an emergency generator, and various other activities. Additionally, in his study of the tourism industry, Drabek (1994) finds preparedness efforts “unsatisfactory” among the firms he studies.

Second, as recent research shows, businesses appear to show a preference for particular kinds of preparedness activities over others—namely, those that are relatively simple and inexpensive to do and those that are geared toward life safety (Webb, et al., 2000). Thus, businesses are much more likely to have first aid supplies on hand, have employees with first aid experience, obtain earthquake-related information, and talk with their employees about preparedness than they are to prepare business recovery and business relocation plans, purchase generators for emergency power, engage in extensive employee training and disaster drills, or employ engineering consultants to conduct structural assessments. While life safety measures are important and worthwhile, they are not enough to ensure that a business can remain functional after a disaster.

Third, the types of preparedness measures often taken by business owners focus primarily on avoiding or handling problems that may occur at their specific
location when a disaster occurs, rather than on coping with problems originating offsite, such as transportation system and community-level disruption. Thus, businesses that score high in site-specific preparedness activities may nevertheless find themselves ill-equipped to deal with other sources of disaster-related disruption and loss, including supply chain disruptions caused by damage to the broader infrastructure.

Finally, much of the preparedness work done by businesses is symbolic and superficial. As Clarke (1999) points out, the disaster plans produced by many businesses are little more than "fantasy documents." These ritualistic documents may appease industry regulators and give the public the impression that a business has taken necessary precautions to keep them safe, but they are often unrealistic and inadequate when a real emergency occurs.

Post-Disaster Aid. Post-disaster aid, such as loans from the Small Business Administration (SBA), is intended to facilitate recovery, so it seems fair to assume that the use of outside sources of aid helps businesses, just as post-disaster assistance has been shown to improve recovery outcomes for households (Bolin, 1994). However, just as in the case of disaster preparedness, recent research challenges that assumption. In a study of long-term recovery from Hurricane Andrew (1992) and the Loma Prieta earthquake (1989), for example, no evidence was found to suggest that outside aid helps businesses recover following disasters (Webb, et al., 2002). Businesses that tried to take advantage of various sources of recovery assistance, ranging from SBA and bank loans to public disaster assistance, showed no improvement over those that had utilized less aid. Indeed, there was not a statistically significant relationship between the number of aid sources businesses relied on during the post-disaster period and the extent to which they had recovered.

There are at least two potential reasons for this counter-intuitive finding. First, it may be the case that businesses that use external aid are also those that have suffered higher losses and are thus worse off in the first place (Dahlhamer and Tierney, 1998).

Second, the lack of a relationship between the use of post-disaster aid and recovery may lie in the kinds of aid that are available for businesses, as compared to households. Although in many cases households can rely on outright grants from agencies such as the Federal Emergency Management Agency (FEMA), direct assistance from agencies like the Red Cross, and insurance, a sizeable proportion of business recovery aid comes in the form of loans that businesses must repay. For many businesses, then, recovery assistance brings additional indebtedness, so they rely instead on personal savings in order to recover.

Business Characteristics. Characteristics of businesses—namely, their age and size—are thought to influence their ability to cope with severe disruptions to their environments. Intuitively, it seems that older and larger businesses would be more resilient in the face of disasters than smaller, younger firms. However, research findings in this area are mixed. For example, in their study of short-term business recovery, Dahlhamer and
Tierney (1998) find that larger firms were significantly more likely than their smaller counterparts to have recovered eighteen months after the Northridge earthquake. Yet, in a study of long-term recovery from disasters Webb, et al. (2002) find no relationship between business size and recovery and a surprising relationship between age and recovery—namely, that younger firms reported more positive recovery outcomes than older firms.

Indeed, the broader literature on organizations also contains mixed findings on the impacts of age and size on business functioning. On the one hand, some scholars point to a "liability of newness," which makes young or new organizations more prone to failure than established firms (Stinchcombe, 1965). Similarly, small businesses are arguably more vulnerable because their larger counterparts generally have more resources on which to draw (Aldrich and Auster, 1986). On the other hand, some researchers have found that older and larger firms may actually be at higher risk of failure due to organizational inertia and a reluctance to alter their practices in a changing environment, a phenomenon that has been termed the "liability of obsolescence" (Barron, et al., 1994).

Market Diversification. A final source of economic resilience is market diversification. This source of resilience is documented in the literature, and it operates at both the individual business and community levels of analysis. At the business level, firms whose primary markets are mainly regional, national, or international in scope are more likely to recover from disasters in the long-term than businesses that rely on mainly local markets in providing goods and services (Webb, et al., 2000; 2002). By tapping into markets beyond the local economy, business owners are able to disperse their risks to a greater degree because they are not solely dependent on customers and other businesses in the disaster-stricken area. Thus, because disasters typically disrupt local business and residential ecologies, a firm may fare better in the aftermath of a disaster if its economic activities are tied more to broader markets.

At the community level, market diversity also provides a buffer against devastating disaster impacts but in a different way. As mentioned previously, it is well established in the literature that certain sectors of the economy thrive after disasters while others struggle. Therefore, to the extent that a local or regional economy is diversified—that is, consisting of businesses in various sectors, such as manufacturing, construction, tourism, and retail—it is better positioned to deal with the ups and downs of the post-disaster time period. On the other hand, if the local economy is over-dependent on one sector, economic recovery may be more difficult. Thus, given the prominence of the gaming and tourism industries in the Gulf Coast region, it will be interesting to see how the recovery process unfolds in the wake of Hurricane Katrina.

This section has discussed various potential sources of economic resilience to disasters. It has shown that business characteristics and market conditions that exist prior to a disaster exert influence over what happens in the post-disaster environment. It has also shown that policies and practices that are commonly assumed to facilitate post-
disaster recovery—namely, pre-disaster preparedness and post-disaster aid—do not necessarily do so. The final section discusses some of the practical implications of research on the economic consequences of disasters.

Conclusions and Applied Implications
In recent years there has been an expansion in interest in advising businesses on how to prepare for, respond to, and recover from disasters. Contingency planning for businesses has grown into a lucrative enterprise, and practitioner publications, such as Disaster Recovery Journal, have been established specifically for giving guidance to private sector organizations. The research findings and issues discussed in this article provide an empirical basis for these kinds of efforts. The research literature shows, for example, that businesses are more likely to undertake particular types of preparedness activities—such as learning first aid and stockpiling supplies—while overlooking other measures that, while more costly, would likely pay better dividends should an actual disaster occur. These findings provide guidance for economic development practitioners who are trying to encourage more comprehensive planning among business owners in the communities they serve. While educational programs and other strategies may be useful for enhancing business disaster preparedness among larger firms in particular economic sectors, they are of limited value if they do not reach smaller firms operating in less prepared sectors of the economy.

Research findings also suggest that businesses need to think about disasters in broader terms. While they may be affected by direct physical damage, businesses also encounter a wide range of indirect disaster impacts, including supply chain interruptions caused by damage to the surrounding infrastructure, employees being unable to get to work, and customers being unable to access the business. Business owners must realize, therefore, that their chances of coping with and recovering from disasters are intricately linked to community-wide mitigation and preparedness activities. Concentrating on reducing losses only at the business level will not address these broader sources of vulnerability. Indeed, individual business owners have a vested interest in promoting higher levels of disaster resilience in their communities. If a community has an effective plan in place for responding to disasters, businesses will benefit directly, because they can resume operations more rapidly in the event of a disaster. Thus, the more businesses work with governmental organizations in their communities to reduce potential community-wide disaster impacts and streamline the recovery process, the more confident they can be that their own disaster-related problems will be less severe.

Ultimately, more research is needed on what kinds of approaches work best in encouraging businesses to undertake preparedness activities, what forms of assistance actually help businesses recover when they do experience disasters, and how to foster better public-private relationships in the effort to make communities safer from large-scale disasters.
References and for further reading


Dynes, R.R. "Disaster Reduction: The Importance of Adequate Assumptions about Social Organization."


Olson, R.S. and A.C. Drury. "Un-Therapeutic Communities: A Cross-National Analysis of Post-Disaster


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