

# DISASTERS AND ENTREPRENEURSHIP: A SHORT REVIEW

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## 1. INTRODUCTION

It is well recognized that disasters, whether naturally occurring or the result of human invention, affect a region on many levels. Not only are disasters felt within the painful context of human tragedy, loss of life, and physical suffering, but disasters can also destroy the immediate socio-economic fabric of the affected population as well as the ability of a region to sustain itself during the slow process of recovery and reconstruction. As Newton (1997) notes, "disasters are not isolated from the social structure within which they occur; rather, they are social phenomena" (p. 219).

Within the last decade alone, the world has seen a myriad of both natural and human-created disasters. The most publicized of the natural disasters include the tsunami disaster of December 26, 2004 that destroyed broad populated areas around the Indian Ocean, killing an estimated 310,000 individuals with the majority in the Aceh province in Sumatra, Indonesia; the 2005 Kashmir earthquake in Pakistan with a death toll estimated around 100,000, and the series of hurricanes striking the Gulf States of the U.S. in 2005 killing over 1,000 people and causing extensive damage with estimates as high as \$200 billion.

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In all of these disasters, whole communities and towns were completely obliterated or severely damaged. Other devastating disasters are less well known, even within the same time frame. For example, a 1998 tsunami drowned over 2,500 people in Papua New Guinea, the 1999 Izmit earthquake in Turkey took over 17,000 lives, and over 15,000 people died in the 1999 mudslides and flooding in Venezuela. In just the last 40 years, even worse disasters have been recorded, such as the Bhola cyclone in Bangladesh in 1970, the deadly famines in North Korea and Africa during the 1980s and 1990s, and the AIDS crises in sub-Saharan Africa where the cost of human suffering is almost immeasurable. Human-caused disasters, such as war, genocide, terrorism, fire accidents, mine explosions, and toxic chemical releases have also taken a severe toll on humanity during the last century.

In fact, statistics have shown that the reported global cost of natural disasters have jumped dramatically in the past couple of decades with recovery from some natural disasters now taking significant portions of a country's gross domestic product (Benson & Clay, 2004). During the 1980s, for example, it was estimated that approximately 147 million people were affected annually by disasters. During the decade of the 1990s this increased to approximately 211 million people per year (Van de Veen & Logtmeijer, 2005).

Inevitably, after a disaster the survivors begin to rebuild, not only on a personal level, but also structurally and economically. In general, at least in modern times, part of this rebuilding process has been assisted by a combination of humanitarian foreign and domestic relief aid. In fact, humanitarian relief aid has become an important part of the political landscape for most of the world's developed countries.

For example in the year 2003, prior to the Indian Ocean tsunami, the U.S. was the world's largest provider of humanitarian relief aid of almost \$2.5 billion of government aid. On a per capita basis, the U.S. was ranked 9th in the world for direct government supported humanitarian relief aid at approximately 2.34 cents per day per person. France held the 10th place, Canada 11th place, and Germany 17th place (Development Assistance Committee, Paris, 2004). However, once private donations were included, the U.S. jumped to 3rd in the world in humanitarian aid on a per capita basis, with Norway and Sweden holding the top two spots. In addition, some countries, such as the U.S. and Australia, provide millions of dollars of direct humanitarian and relief assistance through its military, such as the large and quick response by these two countries' navies during the 2004 Indian Ocean tsunami, dollars that are not included in the official U.N. and OECD reports.<sup>1</sup>

Yet in spite of the tremendous effort placed by the world governments on post-disaster recovery, from an empirical point of view, the actual impact and

proper focus of post-disaster recovery strategies remains somewhat unascertained. While there are certainly many dimensions that need to be considered in understanding the relationship between disasters, economic recovery, and the broader socio-political context, this paper attempts to focus on only a narrow slice of the "disaster" literature – that related to small business and the relationship between post-disaster recovery strategies and entrepreneurial efforts. Within this context, we review several streams of research.

## 2. DISASTERS AND THE ENTREPRENEURIAL ECONOMY

This review will focus primarily on natural disasters, but will when appropriate, also mention ideas related to human caused disasters and/or more chronic continuing disasters.

A natural disaster is commonly defined as the "impact of an extreme natural event on an exposed, vulnerable society. If impacts exceed an affected region's coping capacity thereby necessitating interregional or international help, a large disaster is said to have occurred" (Mechler, 2003, p. 10). As stated above, disaster recovery strategies are an important part of both international and domestic policy. In an early paper, Tierney (1993) defined disaster recovery as

Longer-term efforts to (1) reconstruct and restore the disaster-stricken area, e.g. through repairing or replacing homes, businesses, public works, and other structures; (2) deal with the disruption that the disaster has caused in community life and meet the recovery-related needs of victims; and (3) mitigate future hazards (pp. 1–2).

### 2.1. *Relief Agencies and Entrepreneurial Assistance*

More and more, relief aid agencies appear to be recognizing the importance of economic recovery and rebuilding. Increasingly programs are being developed that encourage entrepreneurial activities as part of the overall recovery strategy. For example, immediately following the Indian Ocean tsunami disaster, the U.S. Agency for International Development (USAID), the principal U.S. agency responsible for disaster recovery assistance, developed a five-component reconstruction plan. The five components included direct relief, transition from "Camps to Communities," infrastructure, early warning systems, and technical assistance. Of these, the "Camps to Communities" component most directly addressed the nature of economic recovery. It included three activity areas: permanent shelter and housing programs,

credit and other livelihood programs, and funding for continuing assistance, including cash-for-work programs.

The direct strategies of this program were specifically designed to facilitate the transition from temporary camps to more permanent, economically stable communities within the post-disaster environment (USAID, 2005b).

Specifically for the tsunami-impacted areas, these "livelihood activities" focused on fisheries, agribusiness, and the construction trades. It is interesting to note that the programs targeted micro-enterprise development and vocational training. In the words of the USAID,

Many of the worst affected communities in the affected countries depended on fisheries for the bulk of their income and family consumption. In other places such as Sri Lanka and Thailand, the populations derived their income from tourism-related employment. Farmers in India have lost crops and livestock and seen their fields covered by sand and salt water. To restart the local economy of all these areas, USAID will extend cash-for-work programs begun under the relief phase and provide grants, vouchers, and credit to assist firms in replacing assets and re-establishing their businesses.

The U.S. Peace Corps will use former volunteers, mobilized through the "Crisis Corps," to assist in re-establishing fisheries and businesses in Thailand and to support reconstruction efforts in Sri Lanka.

USAID will support construction-related trades-people as well as provide assistance in community planning and construction site selection and preparation expertise.

Economic recovery programs implemented through local NGOs and community-based organizations will address tsunami recovery needs and support reconciliation. (USAID, 2005a)

But while economic recovery, and perhaps the role of entrepreneurial behavior, appears to be recognized as an important component of post-disaster response in official reports, there is certainly anecdotal evidence that it still often plays a secondary role in both chronic on-going disaster intervention policies and post-natural disaster recovery strategies.

For example, it is well recognized that the economic development and reconstruction component in the immediate 2003 post-invasion period in Iraq appeared sorely lacking. As Iraq appeared to slip deeper and deeper into an uncontrolled economic and violent spiral, General Jay Garner the U.S. official in charge of the post-war recovery was fired about a month after the occupation period started. He was subsequently replaced by Paul Bremer, who also took substantial criticism for the lack of post-war economic recovery and developmental planning during the occupation.

Even in well-profiled, large disaster situations, economic programs that would appear to be critically important immediately after a disaster

are often only slowly or partially implemented. For example, an "investor roadmap, the guiding tool for reforms that would promote foreign direct investment," only became available in August, 2005, over two years after Baghdad fell in April, 2003 (Kunder, 2005).

Similarly, when examining the aid and intervention strategies for disaster recovery in less-developed countries, entrepreneurial issues are only loosely addressed, if at all, within the context of more pressing aid. As Pain (2002) notes, "aid practice has been driven by simplified stories about the country reinforced through short-term humanitarian based programming that has emphasized delivery and paid little attention to learning. The result has been a monotonous landscape of interventions" (p. i).

Like the international aid literature discussed above there also appears to be a recognition regarding the general role that local small business plays in economic and social recovery after a natural disaster within developed countries (e.g., Natural Hazards Center, 2006). Newton (1997), for example, reviews the Federal disaster mitigation strategies in both the U.S. and Canada, finding that the U.S. strategies tend to be more targeted, with disaster assistance coming in the form of federal loans and grants to small business. Although it is well recognized that post-disaster economic development projects should be designed to stimulate economic growth in the post-disaster environment (see, for example, Aguirre International, 1996; Childers & Phillips, 1998; Federal Emergency Management Agency, 1997; Wachtendorf, Connell, & Tierney, 2002), and much of the professional work on disaster planning and mitigation discusses the importance of direct loans and grants to small business (e.g., Freestone & Rabb, 1998), there appears to be little comprehensive understanding as to the exact role that local entrepreneurial activity plays within the recovery effort, or in which stages small business recovery occurs.

We suggest that perhaps one reason why entrepreneurial activities appear to take a secondary role in many of the modern recovery plans, relief aid programs, and governmental efforts in a post-disaster environment is due to the general lack of research, or empirical assessment, regarding the relationships between disasters and entrepreneurial activities.

## *2.2. Economic Impact of Disasters: Country-Wide Studies*

Economic theory suggests that governments can manage the risk of natural disasters by risk pooling within the country, at least within a somewhat efficient market argument. However, less developed or smaller countries are

generally unable to assume or finance this risk, and thus must rely upon donor countries and humanitarian aid for assistance. Most of the published research tends to be somewhat theoretical in nature. Within the past decade, however, there has been an increasing amount of empirical research that attempts to examine the broad economic impact of disasters, with recognition that the economic impact of disasters includes both direct and indirect components (Otero & Marti, 1995; Mechler, 2003).

In a series of comprehensive country case analyses of the economic impact of disasters, Benson and Clay (2004) argue that major natural disasters have not only a short-run economic impact but also an increasing adverse long-term effect. It is argued that this is partly caused by the increased vulnerability and risk associated with the interrelationship and complexity of economic, political, technological, and financial components from globalization and urbanization. Freeman, Martin, Mechler, and Warner (2004) examined the impact of natural disasters on several countries, concluding that negative long-term economic effects were evident. They then developed a model of predicting economic losses based upon the indirect effects of losing capital stocks, not being able to replace these capital stocks in a timely manner, and the impacts of moving funds to relief activities. Benson (2003) performed a cross-sectional study of 115 countries from 1960 to 1993 and found that countries that had a higher number of natural disasters tended to have lower long-term economic growth.

Mechler (2003) using a simulation model examined and compared the economic impacts of natural disasters using two case examples, Honduras and Argentina, finding that disasters can have substantial impacts on GDP. Most research, in fact, has documented both short- and medium-term (three to five years) negative effects. Charveriat (2000), for example, examined 35 catastrophes in Latin America and found significant short-term GDP declines and increased debt. Crowards (2000) examined 22 hurricane events in the Caribbean and Auffret (2003) examined 16 natural disasters; both reported similar results. Other studies have also documented negative long-term impacts (i.e., Otero & Marti, 1995; Murlidharan & Shah, 2001; ECLAC, 2000).

Overall these studies of developing countries indicate that major rapid onset disasters, such as hurricanes and flooding, have the following impacts on the country's macro-economy: (a) they usually have an immediate negative impact on GDP in the short term; (b) due to increased investment and transfers, GDP may subsequent rise in following years; (c) a worsening of trade balances often occurs, continuing into the long term; and (d) country debt often increases and fiscal balances may continue to deteriorate.

The long-term effects then become a function of the magnitude and enduring nature of the disaster, the degree of resulting trade imbalances and increased debt obligation, and other economic and social conditions. It is interesting to note, however, that while these macro-economic impact studies use both capital and labor stocks as explanatory variables, few, if any, include social/human capital or entrepreneurial tendencies and statistics such as those presented in the GEM database (e.g., Crowards & Coulter, 1999; ECLAC, 2002; Rasmussen, 2004).

### *2.3. Economic Impact of Disasters: Developed Country Regional Studies*

A number of similar empirical studies regarding macro-economic impacts in economically developed countries have also been published; however, most of these address inter-regional economic impacts often with essentially the same results (e.g., Jones & Chang, 1995). It is recognized that, since these economies can generally manage the risk internally, the overall long-term impact of a disaster is generally less within developed countries. However greater attention is currently being placed on the "unevenness" of impacts in developed countries. For example, Van de Veen and Logtmeijer (2005) develop a model examining more indirect economic impacts of natural disasters based upon the notion of "economic hot-spots" within an economy that are particularly vulnerable to disasters (e.g., Van de Veen & Logtmeijer, 2005).

This issue of unevenness of impacts can also be seen within both developed and undeveloped environments. From a socio-economic perspective, it is generally accepted that natural hazards present an even greater, if not the primary source of risk for poor countries, and for poor areas within even more developed countries (Freeman, 2000; World Bank, 2002; Rasmussen, 2004). The World Development Report 2000/2001 (World Bank, 2000) argues that the "effects of natural disasters (are) an important dimension of poverty. Low-income families typically live on marginal land, in the informal sector and have few, if any, resources with which to protect themselves."

Another stream of mostly sociological research has also examined the vulnerability and recovery potential of lower socio-economic groups within developed countries. For example, Fothergill and Peek (2004) review a number of studies that examine the vulnerability of poor people to natural disasters within the U.S., concluding that poor in the U.S. are more vulnerable to natural disasters due to such factors as place and type of

residence, access to economic recovery strategies, building construction, and social exclusion.

However, in spite of a well-developed literature on both the macro-economic and socio-economic impact from disasters, the vast majority of this literature tends to ignore entrepreneurial and small business activities as they related to disaster vulnerability, speed of recovery (typically the first year after a disaster), and breadth of reconstruction.

#### 2.4. *Livelihood Analysis and Food Economies: Slow Onset Disasters*

While the focus of this short review is primarily on natural disasters, the literature examining the impact and recovery of other types of disasters can also provide a useful background. For example, the literature of disaster management tends to distinguish between two different types of disasters, those that arrive suddenly with little warning, such as hurricanes or earthquakes (rapid onset), and those that are more gradual in nature, such as starvation from crop failure (slow onset).

There are various types of slow onset disasters. One of the most common is drought and the associated crop failures. Another type of slow onset disaster has been described as situations of chronic conflict and political instability (SCCPI). Characteristics of SCCPI include a strong parallel economy, high incidences of violence, forced displacement, poverty, very weak institutions, and economies that are highly vulnerable to shocks (Schafer, 2002). Unlike disasters that have one particular event, such as a tsunami, a slow onset disaster environment represents one of continuous change.

One increasingly common analytical framework for examining potential intervention strategies in disaster situations, particularly slow onset disasters in chronically impoverished economies, has been labeled a "food economy analytical framework." This framework starts from the concept of a "livelihood analysis." Livelihood analysis is a well-established methodology which models both the required assets and use patterns of these assets to understand how people survive (Carney et al., 1999; Longley & Maxwell, 2003; Farrington et al., 2002).

The food economy analysis expands on this by "linking livelihood analysis to an analysis of the effects of change" (Boudreau & Coutts, 2002, p. 1), by modeling the economic components and trading boundaries of the complete food chain, including both cash and barter markets, within an economy. It can be used not only to examine the underlying economic changes in slow onset disasters but also to provide an early warning system for slow

onset disasters as well as developing baselines to analyze the impact of recovery policies. During the past decade, a food economy analysis has been used extensively to examine the economic impacts of various types of crop failure economies, SCCPI, sub-national conflicts, and conflict recovery.

The basic livelihood approaches to understanding disasters, whether chronic or rapid onset in nature, has as a fundamental intervention strategy to assist households in expanding a household productive asset base with the longer-term object of avoiding future basic aid requirements (Lautze, 1997; Wood & Salway, 2000; Longley & Maxwell, 2003). While there are different approaches to livelihood analysis, many of the actual policies and interventions developed under the livelihood perspective recognize the need to re-establish pre-existing small business economic transactions by developing strategies to lower the ultimate transaction cost of recovery (Carney et al., 1999). These intervention strategies, however, are often communal economic efforts, such as a small town communally assisting in repairing individual fisherman nets. This may be due to the lack of institutional oversight, risk management strategies, and insurance markets in these chronic disaster environments. Another common approach is to address the "dependency" syndrome by developing analytical skills for self-reliance, a strategy that often results in training in specific job and productive skills, but little or no education in entrepreneurial functions.

Assessing the effectiveness of these livelihood interventions, particularly as they relate to small business development or increased entrepreneurial activity, is difficult at best. Most assessment studies are small case studies of specifically targeted programs and pilot studies, but the opinion to date suggests that a sustainable livelihood approach of interventions does appear to assist development within chronic disaster situations (e.g., Booth et al., 2006; Ashley, 2005; Archibald & Richards, 1999, 2002; Ashley & Carney, 1999).

While certainly dominant in the many sectors of disaster aid proactive, livelihood analysis, while focusing specifically on enhancing household livelihood, very rarely examines the broader context of entrepreneurial behavior or the foundations, such as institutions, property rights, intellectual capital, and social networks, that appear to stimulate entrepreneurial economies. For example, Longley and Maxwell (2003) summarize that "embedded in a livelihoods approach are assumptions about working in solidarity with communities, building their capacity, strengthening their access to resources, etc., that clearly go beyond either just the alleviation of short term suffering or a strong application of classic humanitarian principles" (p. 31) – with no reference to the role of local entrepreneurs.

This non-entrepreneurial orientation of current aid interventions and analytical techniques, such as livelihood methodologies, may in part be due to their grounding in political economy theories rather than industrial economics, strategic management, and entrepreneurship theory. However, developmental entrepreneurship thought, particularly in cases of slow onset disasters such as drought, crop failures, and SCCPI, may find important foundations in the livelihood and food economy stream of literature.

### 2.5. *Shadow Economies, Aid, and Institutions in Slow-Onset Disasters*

There have been several recent empirical thrusts that examine recovery from slow-onset disasters, such as starvation and chronic poverty, that have possible parallel applications to the topic of natural disaster recovery and entrepreneurial activity.

First is the recognition of the importance of the “shadow” economy or “extra-legal” market, particularly in very poor regions. The shadow economy can be described in two different ways, (a) as a “hidden economy” that is simply not recorded in official statistics, or (b) as a behavioral phenomenon where the members of the economy circumvent the set of institutional rules and regulations. It is now recognized that in poor countries, the shadow economy can account for a substantial percentage of the economy, and over the past two decades there have been numerous macro-economic attempts to estimate the size of this economy in almost every part of the world (see Tanzi, 1999, for a good summary). More important to our subject, however, are the recent empirical attempts to understand the nature, motivations, structure, and entrepreneurial drive of the micro-enterprises that often constitute these shadow economies (e.g., de Soto, 1989, 2000). In particular, it has been suggested that the micro-enterprises of the shadow economy should be directly addressed in aid/micro loan programs, that aid policies directed to encourage and rebuild the micro-enterprises of the shadow economy should be different than those firms that operate in the legal economy (Kaufmann & Parlmeier, 2006), that the shadow economy accounts for significant portions of cross-border trade in poor countries (MaCamo, 1998; Peberdy & Crush, 2001) and that the shadow economy may respond much quicker after natural disasters, such as the 2000/2001 floods in Mozambique (Peberdy & Crush, 2001). This suggests that an important dimension of post-disaster recovery might be found in the micro-enterprises within an impacted region’s shadow economy.

The second relevant thrust of research examines the relationship between aid, economic growth, and poverty. While a number of researchers have argued that there is substantial evidence that aid has a positive impact on reducing poverty (see Dollar & Kraay, 2002; Kraay, 2005 for reviews), this is still a hotly debated topic (e.g., Easterly, 2001; Dollar & Easterly, 1999; Smith, 2005), and it is likely that aid only explains a relatively small portion of economic growth. This suggests that there are several non-aid determinants of poverty reduction. Research has generally indicated that good institutional governance, low corruption, and property rights are positively related to poverty reduction and economic growth (e.g., Isham & Kaufmann, 1999; Devarajan et al., 2001; Burnside & Dollar, 2000, 2004; Dollar & Levin, 2005). From the perspective of natural disasters and entrepreneurial behavior, this might suggest that future disaster recovery research might investigate the more micro-relationships between post-disaster institutional governance/property rights and entrepreneurial activity and recovery in the post-disaster period.

Finally, an important line of macro-economic research has focused on the ideas of “poverty traps.” According to Kraay (2005), poverty traps occur as, “self-reinforcing mechanisms whereby countries, or individuals, that start out poor might remain poor. If saving rates, or technology, or other positive forces for growth are low precisely because countries are poor, then countries may find themselves trapped at low levels of development.” (p. 15). In these situations, good governance and institutions may not be sufficient to pull the country out of its poverty cycle (Sachs et al., 2004). While there is substantial debate as to the source of poverty traps, or whether poverty traps actually exist, it does suggest an interesting line of future research – in “poverty trap” conditions, is there a different relationship between aid strategies, natural disasters, and entrepreneurial recovery?

### 2.6. *Recovery Strategies: Rapid Onset Disasters*

While livelihood methodologies and strategies tend to frame much of the intervention and recovery strategies in slow onset disasters, there is also an expanding body of literature addressing fast onset disasters such as natural or technological disasters. Within this respect, the literature can be divided into two areas: recovery strategies for poor economic environments such as the tsunami strike on Indonesia in 2004 (which are also often framed within a livelihood perspective) and recovery strategies in more economically developed regions, such as the 2005 Hurricane Katrina landfall in

Mississippi and Louisiana. Within this literature, most of the empirical research has focused on case studies.

For example, following the 2000 and 2001 floods in Mozambique, Wiles, Selvester, and Fidalgo (2005) examined the lessons learned from the recovery strategy. Mozambique is one of the world's poorest countries, ranking in the bottom 5% in the UN Human Development Index (HDI). During a period of internal conflict, it is estimated that approximately one-third of its population was displaced. After the peace agreement in 1992, the country stabilized. In 2000, flooding from severe tropical storms killed over 700 people, with another 650,000 displaced. In 2001 flooding displaced another 223,000. From an entrepreneurial perspective, the major findings were that the recovery success was grounded in the rehabilitation and reconstruction of damaged infrastructure and the protection of larger capital assets. The conclusions found that the use of local entrepreneurs, such as construction contractors, rather than international contractors, assisted in the recovery. Another conclusion was that recovery strategies should not just rebuild the infrastructure but also use the opportunity to expand infrastructure to encourage future economic development. Approximately 23% of the aid money was dedicated to development of the productive sectors, such as fisheries and agriculture.

Similar studies of recovery strategies have been conducted by the World Bank. For example, Beck (2005) studied recovery following the 1998 floods in Bangladesh, while Telford et al. (2004) examined recovery strategies after Hurricane Mitch struck Honduras in October 1998 and found similar results. From an entrepreneurial perspective, the aid-based replacement of lost capital assets from individual businesses tended to force a new communal business entrepreneurial activity upon an existing, more family or individual business culture (Wiles et al., 2005). This communal process was due to a combination of an economic scarcity in asset replacements (such as one fishing boat donated to a community to replace five family-owned boats that were lost, forcing a communal use of the donated asset) or a planned strategy of communal behavior, such as community receipt of assets at a distribution center, or forcing communal ownership of farm animals even when the replacement asset is somewhat abundant. Although in most cases it was recognized that the communal economy was at odds with the local economies, there is little evidence as to whether the resulting communal entrepreneurial elements will be long lasting or economically productive, or that a community might return to its more individual entrepreneurial economy after a period of time.

Within these studies it is interesting to also note that often the only reference to entrepreneurs is within a negative context, such as entrepreneurs taking advantage of the credit situation to charge high interest, or "entrepreneurs may take advantage of the poor" (Benson, 2003).

In a somewhat related theme, Deare (2004) argues that disaster recovery strategies have overemphasized the reconstruction of infrastructure, and not examined closely enough the mitigation issues related to social structure. In this analysis, Deare (2004) is suggesting certain social differences (in this case, gender) be incorporated into both assessment models and intervention strategies. While not specifically examining entrepreneurial behavior, Deare (2004) does suggest that response activity among the local affected population does vary significantly by certain social and gender characteristics. The same argument can be made for entrepreneurial propensities.

In addition, these studies recognize the importance of credit for economic recovery, noting that in most cases in spite of widespread networks of micro-finance institutions and donor gifts, there appeared to be chronic shortages of credit available in the recovery periods.

### 3. IMPACT AND RECOVERY OF SMALL BUSINESS

Most of the literature reviewed above only tangentially discusses entrepreneurial or small business activity, either in terms of the impact a disaster has upon small business or the role that entrepreneurs can play in recovery and reconstruction. There is, however, a small, but expanding literature examining the behavior and failures of small business in a post-disaster environment. The vast majority of this literature has focused on small business within the U.S.

In a comprehensive survey and empirical analysis of business recovery after various natural disasters in the U.S. between 1992 and 2000 (two hurricanes, one earthquake, one wildfire, one tornado, and eight flooding events), Alesch, Holly, Mittler, and Nagy (2001) found that marginal businesses prior to the disaster event were much more likely to not reopen after the disaster even when the disaster event was not catastrophic – "we were unable to establish a statistical relationship between the amount of structural damage businesses experienced and business survival" (p. 8). The authors note that the traditional precautions aimed at protecting life and property within a disaster area were not correlated with post-disaster business survival. Those marginal organizations that did reopen, often subsequently failed. Stronger businesses, typically lost market share in regional and national markets. The authors offer several interesting recommendations

for "managerial mitigation" including lease provisions for disasters and diversification of a firm's customer or locational base, and recognition that business interruption insurance can not reestablish a pre-event marginal business. This study built upon findings from previous empirical research by the authors (Alesch & Holly, 1996, 1997) following the 1994 Northridge-Resda earthquake.

Another similar line of research by the Delaware Disaster Research Center includes surveys and case examination of businesses after the 1993 floods within the Midwestern states of the U.S. (Tierney, Nigg, & Dahlhamer, 1996) and the Northridge earthquake (Dahlhamer & Tierney, 1998; Tierney, 1997). Much of this research is focused on developing a post-disaster small business firm survival model, with an emphasis on four components of small business survival: firm characteristics, direct and indirect disaster impacts, loss containment measures taken, and previous disaster experience. Webb, Tierney, and Dahlhamer (2000, 2003) provides a summary of this stream of research, focusing on three major areas: factors influencing business disaster preparedness, disaster-related sources of business disruption and financial loss, and factors that affect the ability of businesses to recover following major disaster events. A number of conclusions are offered, such as that business owners tended to use personal assets to cover disaster losses and that the success of small business recovery may be more a function of the larger regional economy than disaster-related factors.

Using an inertia theory application, Faircloth and Bronson (2001) found that small businesses tend not to alter their business strategy in a post-natural disaster environment. Following the 1997 Grand Forks Flood, a survey found that the majority never altered their strategies related to target markets, product offering pricing, promotional strategies, or distribution network. This appears consistent with research investigating SBA loan activities in a post-disaster environment.

Other notable research include Kroll, Landis, Shen, and Stryker (1991) who surveyed businesses following the 1989 Loma Prieta earthquake in Oakland, CA and Alesch, Taylor, Ghanty, and Nagy (1993) who created a small business post-disaster financial bankruptcy prediction model based on financial ratios.

#### 4. CONCLUSIONS

The scholarly literature that examines impact of disasters on small business and the role that entrepreneurial activities play in post-disaster recovery and

reconstruction is sparse at best. While there appears to be several distinct streams of literature that examine natural disasters from a macro-economic point of view, most of this empirical research tends to examine the issue of entrepreneurship and small business only in a tangential manner. Distinct literatures appear to exist in the areas of (a) appropriate relief aid management, (b) the impact of disasters on both short- and long-term economic development, (c) hazard and natural disaster risk management, and (d) the relationship between disasters and socio-economic condition, such as poverty and gender. Within these literatures there appears to be a general recognition regarding the importance of small business development as it related to disaster management. Only the literature that empirically examines the impact of natural disasters on small business, and the strategies that these businesses employ to recover from disasters, appears to directly address the topic. And even this literature is relatively small, tends to be focused on natural disasters within well-developed countries, such as the U.S., and often approaches the problem more from a sociological perspective than an economic perspective.

There are several ways in which entrepreneurial enterprise might play into the issue of disaster management. First, a strong entrepreneurial foundation may act as a mitigating buffer to reduce a community's vulnerability to disasters. Second, policies that emphasize small business development may offer an effective intervention strategy for countries suffering from chronic violence or slow onset disasters. Third, while the evidence points to both short- and long-term negative economic impacts from disasters, the entrepreneurial propensity within an affected economy may mitigate some of these structural economic problems. Fourth, entrepreneurial solutions may assist to mitigate some of the apparent unevenness of natural disasters on certain socio-economic groups of people. And finally, disasters clearly have a negative impact on local small business, yet the evidence suggests that the impact may be more fundamental in nature. Understanding how small firms successfully respond within a post-disaster environment may be critical in framing future relief efforts targeted toward the local business community.

No doubt the recent world disasters such as the Indian Ocean tsunami in 2004, Hurricane Katrina in 2005, the 2005 Kashmir earthquake in Pakistan, and the multiple chronic problems within sub-Saharan Africa will provide the impetus for a closer look at the role of entrepreneurship in mitigating disaster vulnerability and providing a vehicle for improving post-disaster recovery and reconstruction.

## NOTES

1. In this discussion, it is important to note that humanitarian or relief aid is different from the much broader foreign aid, which is often reported as official development assistance (ODA) by the OECD. While the U.S. rates relatively low in per capita ODA, the ODA does not capture the majority of actual U.S. foreign aid which includes private donations, direct aid provided by the military, private transfers to individuals, forgiveness of non-aid designated debt, volunteer time, grants to foreign students, delivery costs, aid to "part II" countries, and direct individual transfers. In addition, much of the world's foreign aid may ultimately fuel corruption in the recipient countries, with a rousing debate as to whether foreign aid actually has much impact on real economic development (e.g., Easterly, 2001; Dollar & Easterly, 1999; Smith, 2005; Kraay, 2005). Humanitarian or relief aid, however, tends to be more directly applied.

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