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# The Limitations of Governance Indicators in Relation to Post-Disaster Recovery

## Abstract

Catastrophic natural disasters remain a constant and recurring mortal threat to people around the world. Since prevention of the events themselves is impossible, it is important to examine those factors which can reduce the loss of life and enable successful recovery. We intuitively expect good governance to be one of these factors. This paper discusses the concepts of governance and long-term disaster recovery and the difficulties inherent in numerically capturing these qualities. It explores the correlation between governance indicators and three development and economic measurements of recovery. Three case studies are used to qualitatively and anecdotally address the topic.

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THE LIMITATIONS OF GOVERNANCE INDICATORS IN RELATION TO POST-  
DISASTER RECOVERY

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The Faculty of the Josef Korbel School of International Studies

University of Denver

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In Partial Fulfillment

Of the Requirements for the Degree

Masters of International Human Rights

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by

Susan C. Paganelli

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Author: Susan C. Paganelli

Title: THE LIMITATIONS OF GOVERNANCE INDICATORS IN RELATION TO  
POST-DISASTER RECOVERY

Advisor: Dr. Timothy Sisk

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## Acronyms and Abbreviations

ARC	American Red Cross
BRR	Agency of the Rehabilitation and Reconstruction for the Region and Community of Aceh and Nias (BRR).
CPI	Corruption Perception Index
CRED	Centre for Research on the Epidemiology of Disasters
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
HDR	Human Development Report
IADB	Inter-American Development Bank
NATO	North Atlantic Treaty Organization
NGO	Non-Governmental Organization
NRF	United States National Response Framework
OCHA	United Nations Office for the Coordination of Humanitarian Aid
OECD	Organization of Economic Co-operation and Development
QOG	Quality of Governance Institute; University of Gothenburg
UN	United Nations
UNDP	United Nations Development Programme
UNDP BCPR	United Nations Development Programme Bureau of Crisis Response and Recovery
US	United States
USAID	United States Agency for International Development
WB	World Bank
WFP	World Food Program
WGI	World Governance Indicators

## **Introduction**

Recent years have seen a number of catastrophic events caused by naturally occurring phenomena. The tolls in human terms have been staggering, over 165 thousand deaths alone in the Sumatran earthquake and tsunami of 2004 (CRED 2009). In 2005, Hurricane Katrina caused an estimated sixty billion dollars in insured catastrophe losses to the southeastern United States (Hartwig and Wilkinson 2010, 3). Haiti is still in the midst of basic recovery a year after it was hit by a 7.0 earthquake as measured on the Richter scale which displaced millions of people (U.S. Geological Survey 2011). Most recently, Japan – a nation accustomed to earthquakes – suffered an unimaginable earthquake and tsunami event that killed thousands, destroyed a large swath of coast line, and caused nuclear catastrophes at a number of power generation plants.

Although the origins of these events may be similar, the abilities of affected populations to cope with the immediate aftermath and long term recovery process after the event are not the same. A population's resiliency to a natural disaster is strongly related to the ability of its government to provide basic functions. "Supportive governance is necessary to ensure coping-capacities in societies" (UNDP/BCPR 2010). A fragile government, or one that does not possess the capacity to control development, deliver societal services, or interact constructively with its populace is less resilient to the

shocks of a crisis and its citizenry may suffer as a result (OECD/DAC 2008) (UNDP/BCPR 2010).

If one accepts that governments have the power and ability to help a country or community recover from a catastrophic event, then it is logical to assume that actions taken by the government, both daily and after the event, may help or hinder efforts of recovery. If so, it should be possible to compare the effectiveness of specific governments to find out what practices, if any, are significant in protecting and/or helping their affected populations before, during, and after a disaster.

This paper will examine the concept of governance, as measured by the World Bank Worldwide Governance Indicators, to see if higher index scores anticipate a successful post-disaster recovery. The exploration of this possible connection serves several purposes. More and more, indices that “measure” governance are being used as tools for businesses, academics, international bodies, and non-governmental organizations (NGOs) (Maurseth 2008, 6). They provide a quick method of comparison, an overview given in a snap-shot form of policy directions, strength of institutions, corruption levels, and government stability. The indices also play to a world ever looking for quick answers, empirical evidence of success or failure in order to sway a boardroom of directors or the next big donor. Less cynically, as a lead planner for the North Atlantic Treaty Organization (NATO) security expansion into southern and eastern Afghanistan explained, “When there are millions of dollars being spent on projects and very little accurate or coordinating information, any shred of reputable data is to be pounced upon and used.” (Paganelli 2011).

There is, of course, much debate on the usefulness and accuracy of these indices. Regardless of the debates, people will continue to utilize in whatever way they can the information provided by the indices. It is for this reason that this paper specifically explores using them as a predictor of post-disaster recovery. While it may seem an obvious point to state that countries with comparatively better functioning governments will have the means and resources to better effect long-term recovery within their borders, there are observable instances that suggest this is not so. For example, five years after Hurricane Katrina devastated parts of the American Gulf Coast, certain neighborhoods of New Orleans can not be called recovered. Few would argue that the United States (US) has at a minimum a functioning government. It is therefore fitting to ask, can scores or rankings predict how a country will recover from a natural disaster?

## **Background**

There are a number of terms and concepts used in this work whose definitions, contexts, and meanings vary by uses and users and are often debated. These terms are often used together, in intertwining and occasionally overlapping ways. Therefore, it will be necessary to explore each of them in some detail to better support the aim of this paper.

A critical concept in this thesis is “governance”. According to Per Maurseth of the Norwegian Institute of International Affairs, “it is a broad concept and necessarily includes many facets of a society” (Maurseth 2008, 6). Goran Hyden points out that governance is “a contested and difficult concept” and that “its multidimensional definition and use has made it difficult to apply in academic studies” (Hyden 2007, 16753). Hyden captures the complexities of governance. He writes that governance is approached from different dimensions. Some see it as an activity while others see it as a process. Within these views are overlapping considerations of whether it is a system of rules or a system of control. These separate dimensions can be visualized using two axes; one connecting the activity or process dimensions and the other intersecting axis connecting rules and control. Which quadrant best describes governance is dependent upon the academic or organizational perspective from which one views the topic (Hyden 2002, 13-14).

Governance can therefore be considered the general term used to describe the leadership and mechanisms that allow a country to run on a day to day basis. It by necessity includes many aspects; rules and regulations, policies - both foreign and domestic, the protection of civil and social rights (or non-protection), and of course, the ways in which resources are gained and dispensed within a country. Maurseth also notes that “governance denotes how a society is organized and indicates its procedures and rules for change and for allocation of resources and power” (Maurseth 2008, 8). As may be expected, a concept as broad, utilized, and studied as “governance” is defined differently by its many users.

The World Bank lists a number of definitions. In 2007, the World Bank defined governance as “the ways public officials and public institutions acquire and exercise authority to provide public goods and services, including basic services, infrastructure, and a sound investment climate” (Maurseth 2008, 6). In more recent World Bank postings, the definition is given as:

Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them” (World Bank Group 2010).

The World Bank takes the concept of governance to the next step by describing on the same page “good governance” as defined by the United Nations Development Programme (UNDP): “...among other things participatory, transparent and accountable. It is also effective and equitable. And it promotes the rule of law.” (World Bank Group

2010). Other authors go beyond the rule of law in their definitions of good governance, for instance, the authors of *At Risk* state:

We understand good governance not merely as a technical matter of free and fair elections, decentralization and audits, but as a term that covers the ideologies, power relations, formal and informal networks, and resource flow that determine the relationship between the state (at various levels: national, sub-national, local/municipal) and civil society. ‘Good governance’ has aspects that are cultural political, social, and economic. (Wisner, et al. 2004, 345).

It can be argued that governance is a normative term; one which encompasses positively imbued traits such as accountability, professionalism, transparency, and strong societal participation (Hyden 2007, 16753). Yet, governments that lack these traits are generally considered more fragile and therefore less able to meet the needs of their populations (OECD/DAC 2008). Furthermore, in the literature provided by the major actors involved with international development and state building such as the United Nations (UN), the Organization for Economic Co-operation and Development (OECD), and World Bank, a view of governance that includes the normative traits listed above prevails.

Academic debates aside, the practical application of governance, specifically good governance, creates a default understanding of the concept. This default understanding encompasses the relationships between government institutions, civil society, leaders, and the private sector. It includes the mechanisms by which these various groups are able to voice and mediate their needs and expectations. It is this broad, yet generally accepted use of the term governance which will be considered throughout this study.

Effective governance is critical for development. Development is a pivotal concept in most initiatives aimed at improving the living conditions in poorer countries. It certainly has bearing on this study as there is a strong correlation between development and disaster (UNDP/BCPR 2010). Development is another term that possesses many definitions and connotations. The scope of this paper does not allow for protracted discussion on the meaning of the term. Suffice here to say that development is a multi-dimensional process that involves changes in social structures and institutions that coincides with economic growth, the reduction of inequality and lessening of poverty (Todaro and Smith 2006, 17). Additionally, the term increasingly incorporates the ideals of enhancing freedoms and improving the quality of life, as per the writings of the noted economist and human rights scholar, Amartya Sen (Todaro and Smith 2006, 17).

For many years, economic growth has been tied to development. Studies have shown a positive correlation between economic growth and good governance (Kaufmann and Kraay 2002, 1). It is too simple to say that economic growth is in itself the cause of development, and in fact, years of economic studies and trends have indicated that economic growth is but one factor in overall development. However, economic growth is measurable in many ways, and can be used to measure some aspects of development, and by extension, governance.

Development as part of new thinking in economic studies is one reason cited by Arndt and Oman for why governance indices have become popular. They write that there is growing awareness of the benefits of government interference in economics, and conversely, evidence of the perils of economic mismanagement. They put forth that indices have become more popular due to foreign direct investment (FDI) growth which



necessitates requirements for more international information. Furthermore, they ponder the reforms initiated in the 1980s, many of which were of questionable success. There was at the time less of an emphasis on governance, resulting in a new emphasis on governance in current policy formation (Arndt and Oman 2006). New thinking about economics and development certainly explains the growing interest in governance indices, but it should be noted that the ease of finding and sharing information through the internet is also a factor. In doing research for this paper, the vast majority of the indices were open and free to access. The abundance and variety of information available requires discerning research and understanding of the material.

Governance and development merge in a critical manner when it comes to disaster recovery. Natural disasters that have occurred in recent years have affirmed the relationship between vulnerability and loss. According to the UNDP Bureau of Crisis Prevention and Recovery (BCPR):

In countries with medium to low levels of income and weak governance, disasters exacerbate existing poverty and inequality and reverse development gains. Populations that are already socially, economically and geographically vulnerable are the most affected by natural hazards (UNDP/BCPR 2010).

It is for these reasons that many development programs now incorporate disaster risk and prevention into their goals. Improving state capacity to perform the functions involved in governance, including those involved in disaster risk and recovery programs, equates to greater resiliency in the face of a natural disaster.

Governance is not easily measured or compared. Yet, there exist a vast number of indexes that attempt to measure and compare governance across types, time, and geography. In order to measure and compare, researchers have created indicators that

reflect aspects of governance. As can be expected, within these research mechanisms there are commonalities amongst the indicators. The main concepts that show up as indicators in some form or another in almost all the indices include political stability, corruption levels and control, active participation of the populace, the rule of law, and regulatory creation and effectiveness. Each of these dimensions speaks to the iterative process of governance, involving the interactions of those in leadership, the citizenry, and the institutions found in formalized society.

Opportunities to create governance indices abound. Some indices focus on one topic such as corruption. Transparency International has one of the better known indices where the *perception* of corruption is considered, while Global Integrity assesses the mechanisms that restrain public power abuses. Other organizations study particular rights and/or freedoms. Freedom House specifically reviews matters pertaining to civil liberties and political rights. Other groups have created mechanisms to measure an overall picture. The World Bank started the Worldwide Governance Indicators (WGI) project which considers six dimensions of governance (World Bank Group 2010). Many of the researchers involved in index creation use aggregate scores that often include scores from other indices when making their computations (Maurseth 2008, 18). This fact alone can limit the use of the indices and any efforts to compare them. The Quality of Government (QOG) Institute at the University of Gothenburg in Sweden is hoping to address the disorganization created by the large and diffuse amounts of data concerning governance by creating data sets that researchers around the world may access in order to formulate empirically-based conclusion on governance (University of Gothenburg; The QOV Institute 2011).

These indices were not designed as predictive models, but they can show historical trends. The discussion that is pertinent to this particular study is whether or not these tables can be used to suggest a predictive relationship with measures of recovery. Specifically, are these tools useful in forecasting how a country may handle long-term recovery after a natural disaster? This is yet another area in which the definitions are fluid, the concepts overlap, and there is no one right way to describe either “disaster” or “recovery” (short or long-term).

The terms disaster and recovery are used in the existing literature in many different ways, across multiple disciplines, and in numerous contexts. Events that trigger or cause disasters can be forces of nature, such as hurricanes and earthquakes, or they can be due to human activity, such as warfare, terrorist acts, industrial accidents, and prolonged famine. There has been consideration in the literature of time frame; does a long-running and slowly developing situation such as the AIDS epidemic count as a disaster? (Perry 2007, 1-15). Even when a disaster is narrowed down to an event related to a naturally occurring phenomenon such as an earthquake or hurricane, there is debate on whether the natural event is the disaster or the aftermath and human toll is what constitutes the disaster. “Recovery” also poses contextual problems. Does recovery mean a return to what life was like prior to the disaster, or does it refer to a new normal? Recovery is often interchangeably used with the terms “reconstruction”, “restoration”, “rehabilitation”, and “restitution” (Quarantelli, *The Disaster Recovery Process: What We Know and Do Not Know from Research* 1999, 2). Current initiatives in the realm of international response and recovery have adopted the agenda of “Building Back Better”

which incorporates reconstruction efforts with improved development and a focus on disaster mitigation (Clinton 2006) (World Bank 2011).

While the study of governance and political theory has existed for centuries, the study of disasters is a much newer focus of study. Indeed, it is only in the early twentieth century that studies of disasters in terms of definitions and social change have been addressed (Perry 2007, 3). There is consensus that a disaster is a “negative, agent-caused event”, although how negative and what sort of event is often still debated (Perry 2007, 4). Mandated definitions have arisen due to the need of governments and agencies to have official, defined circumstances in order to allocate resources in response to events. These definitions often look at economic losses, loss of life, and the numbers of people affected to create official declarations. The American Red Cross (ARC) calls a disaster:

An impending or occurring event that is destructive enough to dislocate people, separate family members, damage or destroy homes, and injure or kill people. A disaster produces a range and level of immediate suffering and basic human needs that cannot be promptly or adequately addressed by the affected people and prevents them from initiating and proceeding with recovery efforts (American Red Cross 2011).

To be considered a disaster by the Centre for Research on the Epidemiology of Disasters, commonly known as CRED, one of the following four requirements must be met: 1) Ten or more people reported killed 2) A hundred or more people reported affected 3) A declaration of a state of emergency 4) Call for international assistance (CRED 2009).

Sociological studies have begun to narrow the definition of disaster down to sudden-onset occasions that seriously disrupt the routines of collective units, which in turn must adopt unplanned courses of action to adjust to the disruption (Perry 2007, 4) (Quarantelli, Disaster Research 2000, 682). More recently, practitioners have developed theories of

vulnerability which focus not on lives lost or economic losses to define a disaster, but more on the failures of normative and cultural systems which cause the losses (Perry 2007, 13) (Wisner, et al. 2004).

This paper will use a classical sense of disaster; meaning, a series of negative events caused by a sudden trigger. Furthermore, only disasters triggered by natural phenomenon such as earthquakes or hurricanes will be used in this study. The reasons for this are simple. As mentioned previously, although there are many types of events that can trigger a disaster situation, natural phenomenon have been, and will continue to be, a constant in many parts of the world. Additionally, population increases are happening in areas vulnerable to natural hazards. Wisner et al. point out that human migration and the process of urbanization have created major population centers located in natural hazard areas. Some of the biggest cities in the world (by population) such as Tokyo, Mexico City, São Paulo, and Mumbai are located in areas prone to natural hazards (Wisner, et al. 2004, 71-74). This increases the potential that large populations will be affected by a single natural hazard. There is both an academic value and a humanitarian value in examining what factors either can or can not anticipate long term recovery from these types of occurrences.

Recovery from a disaster is the next item on the definition agenda. Recovery, like governance and disaster, has a plethora of meanings and conceptualizations. Similar to disaster, it may have a mandated definition from an organization or government agency. For instance, the International Federation of the Red Cross and Red Crescent Societies sets recovery within the following context:

Recovery operations...means those programmes which go beyond the provision of immediate relief to assist those who have suffered the full impact of a disaster to rebuild their homes, lives and services and to strengthen their capacity to cope with future disasters (International Federation of Red Cross and Red Crescent Societies 2006, 5).

Unlike disaster, which refers to a result of something, recovery has a temporal quality, referring to a phase or actions taken in a certain time period. It is generally understood to be “part of what goes on in the postimpact stage at some point after the crisis time period of disaster” (Quarantelli 1999, 2). As part of this temporal understanding, recovery is often referred to as a stage. For example, the US National Response Framework (NRF) lists recovery as one stage in the disaster cycle, i.e., “prevent, protect, respond, recover” (Garnett and Moore 2010, 3). To further emphasize the temporal quality of recovery, the concept is often broken down into phases, such as short-term and long-term recovery. Short-term recovery is part of the immediate response after an event. It often includes activities such as search and rescue, temporary housing, mass care of the survivors, and debris clearance. Long-term recovery begins when a community starts to repair or replace infrastructure, homes, and businesses (Natural Hazards Center 2005, 2-4). Although recovery has a temporal aspect, there is no definitive time frame in which these actions must take place besides after an event. In fact, in catastrophic disasters where there is massive amounts of damage and extreme loss of life, the recovery phases may be significantly different than in events of lesser intensity (Natural Hazards Center 2005, 2-4).

The term “recovery” is not an end result as much as a phase, or even a process, that communities and individuals progress through after a disaster. Quarantelli writes

that it is "...a period of time where deliberate actions are undertaken to routinize everyday activities..." (Quarantelli 1999, 3). As such, the decisions made and the actions taken during this time will have great impact on what becomes the recovered state, or "new" normal, to which individuals and communities eventually progress. Even as recovery is becoming more understood as a process, it continues to be a sought-after goal for governments, aid agencies, and the people affected. Government mandates, mission statements, and reports abound which include the concept of successful recovery as an ultimate goal. To ascertain whether recovery is successful depends in a large part on who is judging, who is affected, and who is involved in the decision making during the process. It is this part of post-disaster action where policy, development, expectations, and reality merge.

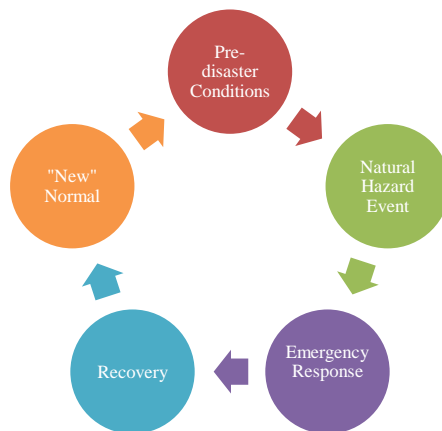
A common theme throughout the more recent literature on disasters and recovery is that of a cycle, as illustrated in figure 1. Since natural events tend to impact the same locales time and again, there is an understanding that recovery must contain provisions for mitigating future damage and loss if disaster happens again. Kathleen Tierney, an expert on natural hazards and recovery, specifically mentions mitigation against further loss in her definition of recovery:

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 (Telford, Arnold and Harth 2004, 5).

Not only do natural events create cycles in terms of location, but also in terms of vulnerable populations. Both development studies and disaster studies look at the

implications of disasters on those living in poverty. Often, these populations are least able to absorb the shock of a disaster. When they begin to rebuild their lives, they start from a position less secure than they had pre-disaster and therefore are even less able to absorb subsequent shocks (Natural Hazards Center 2005) (Wisner, et al. 2004). As this cycle is recognized and studied, there is emerging consensus that there must be ways to break the cycle through sustainable recovery methods and policies for pre-disaster planning and mitigation, such as the “Build Back Better” agenda mentioned earlier. Although the exact methods and policies involved in a successful recovery process are not germane to this writing, the concepts imbedded in sustainable recovery as a part of the disaster cycle are certainly illustrative of the connection between governance and successful long-term recovery. Effective governance should equate to the ability of a government to execute the needed policies and actions.

**Figure 1** Basic Disaster Cycle



This paper must consider what aspects of recovery can be considered successful, and which aspects can be, if possible, measured. Just as it is not easy to quantify governance, it is similarly not easy to quantify disaster recovery. Disasters do not happen



on a planned, regular basis and therefore “before and after” studies specific to each disaster do not exist. Unless statistical record keeping of a population existed prior to a natural event, there is little hope that accurate statistical conclusions can be drawn post-event. However, due to interest in economic and social growth over the recent decades, there are many records kept of economic growth indicators. Thus, for the purposes of this study, to determine successful recovery, economic growth indicators will be examined to determine if there was a return to pre-disaster levels.

## **Explanation of Terms & Metrics**

This paper will use a number of data sources to show pre-disaster governance and post-disaster recovery for three case studies. The countries chosen for the case studies were Honduras, Indonesia, and the United States. The selected governance indicators will look at scores or rankings specific to the year of the disaster and the specific country. Measuring the recovery process required information containing before and after (the disaster) quantitative data. The required sets of information proved to be surprisingly problematic to assemble. Although there are many indices and data resources available, finding the necessary time frames and data sets for all three case studies in order to conduct an accurate comparison was difficult. As such, the data used to measure recovery is limited in its scope, which will be discussed later in the paper.

Honduras, Indonesia, and the US each suffered a natural event which qualified it for use within the structured comparison designed for this study. The events needed to be of such magnitude that they caused catastrophic damage. They also needed to conform to the time and data restrictions discussed above, and had to be significant enough to warrant world attention. This similarity of disaster type and scope was the primary variable in the countries' selection. They are very different though in culture, development levels, and political situations. The US, as will be seen in the data, is an outlier among the three as far as economic indicators and governance scores. Honduras and Indonesia are similar in development levels and both had suffered from extreme

political instability in recent decades. These differences between the US and the other two countries should result in corresponding differences in recovery rates. Such a correlation would serve to support the thesis.

The governance indicators examined are the six World Bank Governance Indicators. The Corruption Perception Index (CPI), the Global Integrity Report, and the Freedom House Annual Survey of Freedom were considered by the author, but were found lacking for the following reasons. This study was limited by the time frames covered by the various indices. Although governance indicators have been in use for a number of years, early versions did not cover all countries, nor was there always geographically overlapping indices. For instance, although Hurricane Mitch which hit Honduras in 1998 was an event of interest to this study, neither the Global Integrity Report nor Freedom House Annual Survey include 1998 nor Honduras. Due to these limitations, it was necessary to narrow down the governance indices used.

The measures of successful long-term recovery also proved problematic. As discussed earlier, there is no accepted definition of what recovery actually entails. In consideration of what similarities there are in available definitions, a perfect world would have common indicators for each affected region showing return of livelihoods, rebuilt housing and infrastructure, and perhaps comparable forms of mitigation within a specified timeframe. These metrics do not at this point in time, in the needed parameters, exist. Therefore, in order to show recovery, it was necessary to find a measurable indicator that covered all three case studies over the necessary before and after timeframes. There are numerous data sets in existence; however, as with the governance indicators, they do not always cover a wide time span nor do they include all countries.

For example, the World Bank Development Indicators have poverty information for both Honduras and Indonesia, but not for the United States (United Nations Statistics Division 2011).

In some instances, finding a before and after quantification measure was stymied by changes in the indicator measurement's methodologies over time. For instance, the UNDP's Human Development Index (HDI) went through a formulation change for the 2010 report. While this no doubt results in more accurate representations of the development situation, it makes it difficult to compare data from prior years. The UNDP does go back and recalculate some of its information from prior years using the new formulations, but in doing so, it creates limitations in what years' data are readily available. Past year information using the new formulations is given in five year increments, not single.

Due to these restrictions, this study uses three economic and development indicators - Gross Domestic Product (GDP) growth rates, per capita Gross National Income (GNI) and an extrapolated form of the 2009 HDI Trends - to measure recovery. The time frame studied here will entail the year prior to the events to the point five years after the disasters. This six-year span of time should allow for observation of disaster impact and recovery data.<sup>1</sup>

#### *Worldwide Governance Indicators*

The World Bank initiated the Worldwide Governance Indicator (WGI) project in 1996. The aim of the project is to compile existing data about governance and consolidate

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<sup>1</sup> Many of the 2010 measurements for the specified indices are not yet published, so indicators for five year post-Hurricane Katrina and the US are not yet available. In these instances, the most recent data will be used.

them into new composite indicators (Maurseth 2008, 16). The database is now updated every year (between 1996 and 2002 it was a biannual production). It currently provides information on 213 economies, making it broader in scope than many other indices (World Bank Group 2010).

The WGI uses a wide range of existing indicators to create the database. Many of the sources used measure the perceptions of government functions through surveys and polls; thus, what is measured is expressed as “capturing perceptions” (Kaufmann, Kraay and Massimo 2010, 3-4). Rather than a single composite score, the WGI creates six separate indicators, each of which is an aggregate score within itself. These six indicators are constructed to relate to three areas of governance (Maurseth 2008, 17) (Kaufmann, Kraay and Massimo 2010). Kaufmann et al. recognize the “unavoidable imprecision in measuring governance” and as a result have included in their index a margin of error component which can help users better interpret the findings (Kaufmann, Kraay and Massimo 2010, 2).

The six dimensions rated by the WGI are organized into three areas of governance as defined by the original developers of the project, Daniel Kaufmann, Aart Kray, and Pablo Zoido-Lobaton (Maurseth 2008). Their definition is the one listed by the World Bank (see discussion above) and its components (dimensions) may be seen in figure 2. The specific dimensions, or indicators, as described by Kaufmann et al. are as follows:<sup>2</sup>

**1. Voice and Accountability** captures perceptions of the extent to which a country’s citizens participate in: selecting their government, freedom of expression, freedom of association and freedom of the media

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<sup>2</sup> The term “dimension” is used by the WGI authors to describe the six sub-sets of governance rated by the project. These ratings are then referred to as “indicators”. This paper will henceforth utilize the term “indicators” as used by the WGI to refer to the six dimensions listed.

- 2. Political Stability and Absence of Violence/Terrorism** captures perceptions of the likelihood that government will be destabilized or overthrown by unconstitutional or violent means including politically – motivated violence and terrorism
- 3. Government Effectiveness** captures perceptions of the quality of public services, civil service and the degree of their independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies
- 4. Regulatory Quality** captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development
- 5. Rule of Law** captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence
- 6. Control of Corruption** captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests (Kaufmann, Kraay and Massimo 2010, 4)

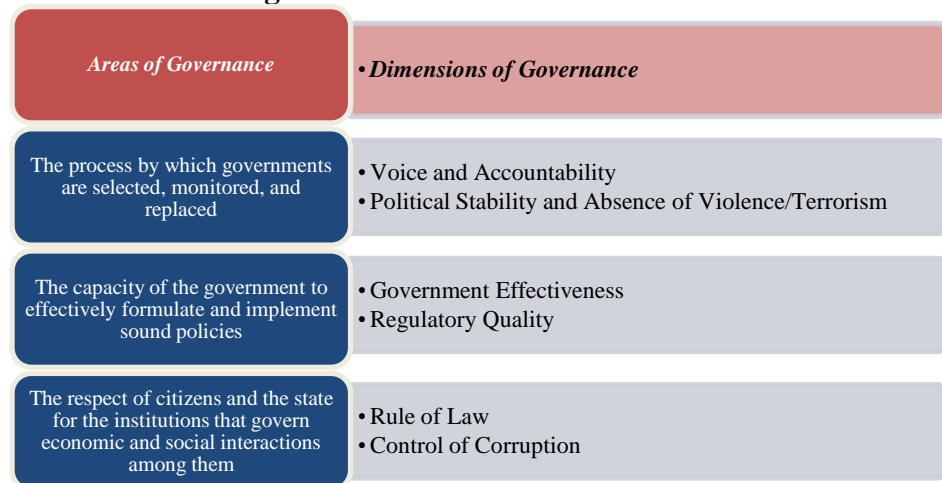
Kaufmann et al. use a statistical methodology called the “Unobserved Components Model” to standardize the data into comparable units and then construct an aggregate indicator of governance (Kaufmann, Kraay and Massimo 2010, 2). The results are then presented in two ways. The first is a governance indicator which uses standard normal units. The range is from -2.5 to 2.5, with 0 being approximately the worldwide average. The second technique is to rank the countries in percentile terms with 0 being the lowest and 100 being the highest (Kaufmann, Kraay and Massimo 2010, 12). The authors also include a standard of error which allows users to see if differences in scores (either between countries or over time) are statistically significant.<sup>3</sup> Additionally, they consider time comparison. There are small changes from year to year in the sources

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<sup>3</sup> Kaufmann et al. computed the WGI using a 90 percent confidence interval. They discuss that 90 percent is a high level and that for some purposes a lower confidence level may be more appropriate for use when comparing significant value changes in the indicators over time (Kaufmann, Kraay and Massimo, The Worldwide Governance Indicators: Methodology and Analytical Issues 2010, 14).

used. When these changes occur, the authors document the changes and update all years in the historical data to allow for comparability over time (Kaufmann, Kraay and Massimo 2010, 6).

**Figure 2** Areas & Dimensions of Governance



Source: Kauffman, Kraay, and Mastruzzi 2010

### *Gross Domestic Product Annual Percentage of Growth*

Gross domestic product (GDP) is one of the most utilized and long-standing economic indicators. It measures the total of goods and services produced by all resident producers in a country's economy regardless of allocations between domestic and foreign claims (Todaro and Smith 2006, 815) (World Bank 2011). The GDP is a basic measurement that reflects the health of a country's economy. It does not reflect other aspects of development such as income equity, literacy rates, basic health of the populace, etc. It also is an aggregate measurement of *all* goods and services within a country and therefore does not reflect sub-national or regional economic growth.

### *Gross National Income*

Gross National Income (GNI) per capita is another very common measure of a country's economic activity. It is similar to the GDP in that it measures the total of goods and services produced within a country, but it adjusts for earnings by and payments to non-residents. This is significant if there is a large nonresident population which plays a major role in the domestic economy (Todaro and Smith 2006, 50). Also, since this version of the GNI is *per capita* as opposed to the above *GDP growth rate*, it reflects income per person, thus giving a broader picture of individual earnings within a country. Like the GDP, the per capita GNI falls short of accurately measuring development. It does not reflect other development factors like income distribution, life expectancy, or literacy rates.

### *Human Development Index*

The Human Development Reports (HDR) and the accompanying Human Development Index (HDI) were developed by the UNDP in order to better capture, measure, and analyze those aspects of society that reflect human development. The HDI is a much more holistic method of measurement than either GDP growth or per capita GNI. Three indicators of development, longevity (health), knowledge (education level), and standard of living (income) are measured and calculated using a weighted formula. The resulting score reflects a comparative level of development. The scale runs from 0.0 (lowest human development) to 1 (highest human development) and countries are ranked according to four levels of development: low, medium, high, or very high (Todaro and Smith 2006, 59) (United Nations Development Programme 2011).



The index has been in existence since 1990 and has gone through numerous adjustments and changes. In the 2010 report, the measurements for both knowledge and income underwent a methodology change which required recalculations of previous years' reports in order to use them for comparisons. It also continued an earlier change of the ranking system from three groupings (low, medium, high) to the four listed above. Rather than being grouped by an absolute value, now countries are grouped by quartiles (United Nations Development Programme 2011). The methodology changes from year to year and the way in which the information is presented in the reports caused a problem for this study which will be discussed in the next section.

## **Methodology & Data**

The aim of this paper is to ascertain if governance indicators can anticipate successful disaster recovery. In order to analyze the governance/recovery relationship patterns the author chose to use quantitative comparisons supplemented by case studies. This study does not attempt to be a statistical paper, but it does use the statistics available to show relative comparisons between countries by governance scores and indicators of recovery. These comparisons required common data sets that gave information for the necessary years relating to each case study country. This would allow for systematic comparison between countries and between governance indicators and recovery indicators. As discussed earlier, there is not a defined timeframe in which recovery “ends”. This paper includes information from the year prior to the disaster to five years after the disaster (when available). It is assumed that five years is sufficient time to reflect changes to the recovery indicators.

The following sections will list which metrics were used for comparison in this paper and present them in table form. Not all of these data sets present their information in easily comparable ways making some adjustments in how the information is presented necessary. When there were necessary presentation adjustments, they are explained in the relative section. A brief discussion of the information will follow the tables, with a more in-depth analysis later in the paper.

*Pre-disaster Governance Scores – Worldwide Governance Indicators*

The WGI gives six different scores which measure six separate dimensions of government. In order to better compare the information, it was expedient for the study to calculate an overall composite score using the numerical average of the six indicators. This composite score will allow ranking of the three countries as well as a single point of comparison when comparing the WGI information to the recovery information. If governance does predict recovery, the rankings of the countries should stay the same when compared with the recovery data. Tables containing the full WGI scores for each case study country including percentile rankings and the standard error for each indicator are available in the appendix.

**Table 1** Governance Scores by Indicator including Composite Score

Governance Indicator	United States 2005	Honduras 1998	Indonesia 2004
Voice & Accountability	1.33	-0.16	-0.33
Political Stability	0.4	-0.27	-1.57
Government Effectiveness	1.52	-0.68	-0.37
Regulatory Quality	1.59	-0.12	-0.60
Rule of Law	1.49	-0.94	-0.74
Control of Corruption	1.49	-0.73	-0.90
Composite (average of 6 indicators)	1.24	-0.48	-0.75

Source: Kaufmann, Kraay, and Mastruzzi 2010, The Worldwide Governance Indicators Website <http://info.worldbank.org/governance/wgi/index.asp>

As illustrated by scores in Figure 3, the United States ranks considerably higher in governance scores than Honduras, which ranks higher than Indonesia. If governance scores do indeed predict recovery, one should see a similar pattern when comparing the recovery indicators.

*Pre- and Post- disaster Scores:*

*Human Development Indicators*

As mentioned in the last section, the HDI goes through periodic formulation changes. The UNDP advises against using different years' reports to compare to other years' due to these changes. The UNDP does adjust prior year information when they produce a new report, but it then presents it in a trend section which lists information in five year increments with a few, more recent, single year increments (United Nations Development Programme 2011). This made it difficult to use the HDI for a year-to-year analysis. Since the HDI captures the human aspect of development better than the two economic indicators used and since it is one of the few indices that go back as far as 1998, it was deemed appropriate for this study even with these limitations.

In order to best show changes in the HDI on an annual basis, the trend information provided by the 2009 HDI Report was utilized. The 2009 report gave information on the years 1980, 1985, 2000, 2005, 2006, and 2007. The 2010 report, in comparison, used the five year increments from 1980 through 2010, but only provided one additional year, 2009. Thus, the 2009 report provided more specific information for the years in question (albeit, a small amount) (United Nations Development Programme 2009, 167-170) (United Nations Development Programme 2011). Using the information for the years given, it was possible to calculate a yearly average measurement of change in the HDI scores. This average measurement of change provided a way to evaluate whether or not development conditions were affected during the timeframe surrounding the disaster.

**Table 2 Pre- and Post- Disaster HDI Scores and Changes**

Time in Relation to Disaster	United States			Honduras			Indonesia		
	Years	HDI Scores	Annual Increment of Change (average)	Years	HDI Scores	Annual Increment of Change (average)	Years	HDI Scores	Annual Increment of Change (average)
<b>Pre-</b>	1995-2000	0.939-0.949	+0.002	1990-1995	0.608-0.623	+0.003	1995-2000	0.658-0.673	+0.003
<b>During</b>	2000-2005	0.949-0.955	+0.0008	1995-2000	0.623-0.69	+0.013	2000-2005	0.673-0.723	+0.010
<b>Post</b>	2005-2006	0.955-0.955	0	2000-2005	0.69-0.725	+0.007	2005-2006	0.723-0.729	+0.006
	2006-2007	0.955-0.956	+0.001				2006-2007	0.729-0.734	+0.005

Source: UNDP 2009 Human Development Index

The scores indicate that the US, Honduras, and Indonesia all showed positive growth in their respective HDI scores. The US has the highest scores of the three countries, ranging from .939 to .956. These scores also place the US in the upper quartile of the rankings which is considered “very high human development”. Both Indonesia and Honduras showed a fair amount of growth in their prospective time frames and have very similar scores. Additionally, both Indonesia and Honduras fall within the “medium human development” category.

*Gross Domestic Product:*

The GDP data used for this study are from the World Bank (WB) Development Indicator data sets. This particular measurement of GDP is a measurement of the annual growth rate of the country’s GDP at market prices based on constant local currency (World Bank 2011).

**Table 3 GDP Percentage of Growth Comparison**

	<b>Year</b>	<b>United States</b>	<b>Year</b>	<b>Honduras</b>	<b>Year</b>	<b>Indonesia</b>
<b>Year Prior</b>	2004	3.6%	1997	5.0%	2003	4.8%
<b>Year Of</b>	2005	3.1%	1998	2.9%	2004	5.0%
<b>Post 1</b>	2006	2.7%	1999	-1.9%	2005	5.7%
<b>Post 2</b>	2007	1.9%	2000	5.7%	2006	5.5%
<b>Post 3</b>	2008	0.0%	2001	3.7%	2007	5.3%
<b>Post 4</b>	2009	-2.6%	2002	2.8%	2008	6.0%
<b>Post 5</b>	2010	<i>not available</i>	2003	4.5%	2009	4.5%

Source: <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>

The GDP table reflects an overall drop in growth rates for all three countries between the years prior to the disasters to the five year post disaster point (four years in the case of the US). The US GDP growth rate shows a continual and steady drop, but both Honduras and Indonesia reflect varied growth. Honduras went through a deep drop in its growth rate, followed by a spike upwards to 5.7% two years post-disaster and then another drop, and eventually another spike upwards. Indonesia on the other hand, shows a gradual increase in its growth rate until two years post-disaster, where it drops 0.2 percent for two years, then spikes and then drops to its lowest level throughout the focus of study, 4.5 percent.

#### *Gross National Income*

There are a number of ways to formulate and present GNI. This particular measurement of GNI is from the National Accounts Estimates of Main Aggregates/United Nations Statistics Division. The data is presented in US dollars at prices current for March 2011 (United Nations Statistics Division 2011). For comparison

reasons, it was necessary to calculate a rate of growth for the per capita GNI. This can be seen in the following table.

**Table 4** GNI per capita and GNI per capita Growth Rate

Years (in relation to event)	United States			Honduras			Indonesia		
	Year	GNI per capita in US\$	Change from previous year	Year	GNI per capita in US\$	Change from previous year	Year	GNI per capita in US\$	Change from previous year
<b>Year Prior</b>	2004	\$39,728	5.88%	1997	\$911	15.17%	2003	\$1,050	17.06%
<b>Year Of</b>	2005	\$42,137	6.06%	1998	\$1,001	9.88%	2004	\$1,041	-0.86%
<b>Post 1</b>	2006	\$44,584	5.81%	1999	\$1,021	2.00%	2005	\$1,150	10.47%
<b>Post 2</b>	2007	\$45,813	2.76%	2000	\$1,118	9.50%	2006	\$1,442	25.39%
<b>Post 3</b>	2008	\$46,236	0.92%	2001	\$1,163	4.03%	2007	\$1,694	17.48%
<b>Post 4</b>	2009	\$44,999	-2.68%	2002	\$1,165	0.17%	2008	\$2,022	19.36%
<b>Post 5</b>	2010	<i>not available</i>	<i>not available</i>	2003	\$1,188	1.97%	2009	\$2,080	2.86%

Source: United Nations Statistics Division

For the most part, all three countries showed positive growth in their GNI numbers. Only the US and Indonesia showed any loss in their per capita GNI. It is interesting to note that these drops in per capita GNI did not occur during the year of the disaster except for Indonesia. The rate of growth varied considerably for all three countries, with no apparent pattern.

## **Case Studies**

Selecting the countries and events to study for this paper quickly became an iterative exercise. Each year nations around the world are beset by earthquakes, hurricanes, typhoons, flooding and other natural hazards, providing a wealth of material for studies of this sort. How does one choose? The methodology used to choose the three studies utilized a structured comparison based on three broad foci. The first focus used was magnitude of damage. Occasionally, one of these events will be stronger, bigger, or more damaging than the norm; it is this type of event that stands out in the world's collective memory. The three events chosen for this paper, Hurricane Mitch in Honduras, the Indian Ocean Earthquake/Tsunami in Indonesia, and Hurricane Katrina in the US were incidents of such magnitude. The second focus combined the overlapping restrictions of time and usable measurement indices. The event needed to occur in or before 2005 to allow for recovery data but after the mid-1990s when governance and development indices became more prolific. The third focus required that the event was written about extensively, either in journals or media and carried a collective perception of shock.

All three events included in this case study caused substantial loss of life, substantial damage to infrastructure, substantial damage to the economy or a combination of the three. It is true that damage may be a relative term. For the following two reasons, a parameter of monetary loss was considered as a guideline but ultimately rejected.



Estimates of loss vary widely across sources and time and there is a significant difference in estimates given when insured losses are considered versus non-insured losses. When choosing these case studies, it was necessary to consider the relative impact on the specific country. Although Hurricane Katrina caused much less loss of life than the Indian Ocean Earthquake/Tsunami, it was the deadliest and storm in recent history for the US (National Climatic Data Center 2005).

This study uses four separate indices to measure and compare governance and recovery for three individual countries. This was not a simple task. As discussed earlier, not all indices covered the needed timeframes *and* the needed countries. The type of disaster and the subsequent damage caused was also a minor consideration within this parameter. With governance and recovery being the primary variables, an attempt was made to keep other variables constant. All three of the case studies included a primary event (earthquake or hurricane) which caused extreme secondary damage by water (flooding and/or mudslides). The limitations of indices available within the specified timeframes and damage type effectively ruled out other possible large-scale disaster events such as the 2001 earthquake in Gujarat, India, the 2005 earthquake in Iran, and the 1998 flooding in Bangladesh.

The final guideline refers back to a disaster of magnitude that impacts the collective memory of the world. This is admittedly a judgment call on the part of the author. However, there are two main reasons for this distinction. The first is that a disaster of greater severity provides a large amount of anecdotal evidence and information. Access to information was critical in analyzing the governance and recovery indicators in this study. Secondly, with the ability of news stories to zip around

the world in seconds, snap-shot judgments are made by observers regarding the governance of these countries. Much of what was portrayed about Banda Aceh in Indonesia had to do with its separatist movement. Images of Honduras after Hurricane Mitch portrayed the utter destruction of an already struggling nation. Hurricane Katrina and its aftermath was a surprise to many inside and outside of the US; losses that seemingly should have been preventable were not.<sup>4</sup> Many governance indicators, including the WGI, are derived from surveys and polls that measure perception. Clearly, indicators that measure how people perceive governance are directly related to what they see.

The remainder of this section provides short summaries of the three disaster events used in this study.

#### *Honduras 1998: Hurricane Mitch*

**Figure 3** Map of Honduras



Source: CIA – The World Factbook

<sup>4</sup> The author was living abroad in 2005 and had many conversations with incredulous Europeans regarding the response and recovery issues that were abundantly portrayed in the media after Hurricane Katrina.

In late October 1998, Hurricane Mitch slowly etched out its destructive path over Honduras. It measured as a Category 5 on the Saffir-Simpson Hurricane scale and was considered at the time to be the fourth strongest Atlantic hurricane on record (National Climatic Data Center 2009). It would soon be apparent that it was also one of the deadliest hurricanes on record. In Honduras alone there were nearly six thousand deaths and more than 441 thousand people displaced (Moore, et al. 2009, 7). In addition to the wind damage, the storm caused torrential rainfall which in turn created deluges and mudslides. Estimates put the destruction of transportation infrastructure at 70 - 80 percent, including the destruction of bridges and most secondary roads. Entire villages disappeared and over one third of the buildings in Tegucigalpa, the capital city, were damaged or destroyed. Both banana and coffee producers were greatly hurt by damage to growing areas resulting in 70 percent and 11 percent drops in production, respectively. In monetary terms, the damage was estimated to be over four billion US dollars (National Climatic Data Center 2009) (Mazor 2002).

Honduras presents a compelling case study for this paper. Whereas the earthquake and tsunami in Indonesia caused severe damage to a portion of the country, Hurricane Mitch impacted the entire economy, infrastructure, and social network of Honduras. Furthermore, although Honduras had a relatively stable democratic government in 1998, it had suffered through years of instability and political turmoil (Political Instability Task Force 2008). At the time of the hurricane, 52 percent of the population was living below the national poverty line, which brings into question issues of governance (United Nations Statistics Division 2011).

According to the CIA World Fact Book and Worldmark Encyclopedia of World Economies, Honduras is about the size of Tennessee with coasts on both the Pacific Ocean and Caribbean Sea. Only about 10 percent of the land is arable, the rest being mountainous and difficult to cultivate. It was part of the vast Spanish Empire until its independence in 1821. Over the next 160 years, Honduras would struggle with influence from foreign business interests, authoritarian regimes, coups, and military rule (Central Intelligence Agency 2011) (Mazor 2002). In 1982 there was a return to civilian rule and since then there have been a series of free and fair elections (Political Instability Task Force 2008). Still, with a population of over eight million, Honduras is one of the poorest countries in Central America (Central Intelligence Agency 2011).

In 1998, Honduras was ranked by the WGI below the fiftieth percentile in all six governance indicators. Not surprisingly, state weaknesses were noted as a serious hamper to recovery by a World Bank report conducted by John Telford et al. in 2004.

The authors did not mince words when it came to the lack of state capacity:

As has been widely recognized by interviewees, including government officials, the state was unprepared in terms of policy, systems, and resources for rapid recovery. The Honduran state proved to be weak. Government leadership, organization, and overall capacity have been inadequate. The implementation capacity of entities such as SOPTRAVI (public works and transport ministry) was shown to be inadequate. (Telford, Arnold and Harth 2004, 19)

The authors also note that recovery, such as it was, after Hurricane Mitch was hampered by the weaknesses inherent in Honduras' development process. Aspects of life that should speak to good governance were lacking. These aspects include unequal wealth distribution, employment shortages, impact of the privatization of basic services,

inadequate land distribution and planning regulations, skepticism by the general populace of the ruling class, high amounts of external debt, and the continued weakness of the state to deal with these situations (Telford, Arnold and Harth 2004, vi-vii).

Ironically, some areas of immediate and continued recovery were helped by the fact that aid organizations were in place prior to the hurricane. The World Food Program (WFP) had existing programs in place in Honduras to lessen social and health pressures caused by food shortages and malnutrition. At the time, 39 percent of under-fives in Honduras suffered chronic malnutrition, 90 percent of the rural population in Honduras had unsafe water supplies, and 82 percent of the rural population had no access to latrines (World Food Program 1999, 10). Although this presence allowed the WFP to respond quickly and effectively to the disaster, the situation illustrates the low capacity of the government prior to the hurricane to provide basic services to its citizenry. Thus it is a confirmation of the WGI's twenty-third percentile ranking in government effectiveness for Honduras.

As can be imagined, international aid in all forms poured into Central America after the hurricane struck. What is important regarding this aid are the themes that were echoed in after-action reports by international organizations regarding governance issues. Both the WFP and the World Bank (WB) evaluations noted that the government of Honduras was unable to mount an effective coordination effort to handle the actions of the many aid groups and the amount or types of supplies being provided. Multiple sources indicated that individuals in key positions and functioning municipal governments are what kept the country working in the immediate aftermath of the hurricane (Telford, Arnold and Harth 2004, 12-24) (Zoba 2003).

Economic woes, the ineffectiveness of the government together with its inability to coordinate international aid, and unfinished reconstruction projects would hamper recovery efforts. Honduras, poor and mired with large amounts of international debt, struggled to meet its payment obligation even while receiving aid (Telford, Arnold and Harth 2004) (Reynolds 2007). Foreign aid for some reconstruction projects was fickle: some were dependent on national contracts, others on unrealistic timelines or expectations. This sometimes resulted in projects not being finished and often not producing results beneficial to the local population (Thomas and Fathi 2005) (Zoba 2003) (Telford, Arnold and Harth 2004, 12-24). The WFP and WB reports noted a lack of consistent rebuilding standards being used as programs to rebuild physical infrastructure were implemented. This resulted in many new buildings and infrastructure projects such as roads and bridges being rebuilt to inadequate standards while others were much more than adequate. Similarly, new housing, much of its construction being directed by various NGOs, was widely different in amenities and construction quality (World Food Program 1999) (Telford, Arnold and Harth 2004, 12-24). Related to this topic was a mention by both reports that efforts to meet human development recovery needs were subjugated to efforts centered on physical rebuilding needs (World Food Program 1999) (Telford, Arnold and Harth 2004). These issues all contributed to negative and potentially long-lasting effects on the process of recovery.

Honduras has struggled since Hurricane Mitch. At the three year point, more than one hundred thousand people were still displaced (Zoba 2003). More than ten years on, the poverty rate has rising to 65 percent of the population and one-third of the population is underemployed (Central Intelligence Agency 2011). These statistics can not all be

blamed on Hurricane Mitch, but it does illustrate the difficulty of obtaining “recovery” status when the institutions and government capabilities of a country were already in doubt.

*Indonesia 2004: The Indian Ocean Earthquake and Tsunami*



Source: [www.divetheworld.com](http://www.divetheworld.com)

Indonesia was especially hard hit by the earthquake and subsequent tsunamis that occurred in late December 2004 in the Indian Ocean<sup>5</sup>. The province of Aceh on the northern tip of Sumatra was closest to the epicenter of the 9.0 earthquake (as registered on the Richter scale) and suffered great devastation as a result of the massive waves it created. In March of 2005 official reports listed over 128 thousand people as dead, more than 38 thousand missing, and in excess of 500 thousand people displaced (Rofi, Doocy and Robinson 2006, 340). In some areas of the province, entire villages had been swept away, fishing vessels were destroyed, and farmlands were rendered unusable (Rofi,

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<sup>5</sup> The earthquake and tsunami affected numerous countries on two continents around the Indian Ocean. It is referred to in many different ways in the literature, including, but not limited to: the Indian Ocean Tsunami, the South-Asian Tsunami, the 2004 Earthquake and Tsunami. This paper will refer to it as the Indian Ocean Earthquake/Tsunami or earthquake/tsunami.

Doocy and Robinson 2006, 340-341). Economic loss estimates for Indonesia alone are in the \$4.5 billion (US) range (Risk Management Solutions, Inc. 2006, 10-11). This incident certainly qualified as a disaster triggered by a natural event.

Indonesia is a good case study for reasons beside the scope of the earthquake-caused disaster. Only six years before the event, the thirty-year old authoritarian regime of President Suharto had ended and free elections had been instituted (Central Intelligence Agency 2011). At the time of the quake, the Indonesian government was struggling with the long-running separatist movement within Aceh province. Disputes over equitable revenue sharing and autonomy had long contributed to the province's overall instability and poverty (World Bank 2011). It is fair to assume that governance, or lack thereof, would play a part in the long-term recovery of the country.

Indonesia is an island nation of over two hundred million people situated between Australia and Asia (Central Intelligence Agency 2011). Indonesia was colonized by the Dutch in the seventeenth century and was part of what was known as the Dutch East Indies or the Netherlands' Indies. During World War II (WWII) Indonesia was occupied by the Japanese. Following the war, Indonesia struggled to recover from its years of occupation and also for its independence from the Dutch, which it finally achieved in 1949 (Directorate of Foreign Information Services, Department of Information, Republic of Indonesia 2010). Independence did not bring immediate democracy or prosperity. In fact, Indonesia struggled with governance issues and development until the 1960s. Benjamin Higgins, an expert at the time on both the country and economic development, called Indonesia the "chronic dropout" and the



“number one failure among the major underdeveloped countries” (Hill 2000, 1). Major changes came with the establishment of Suharto’s regime in 1966.

The newly established government under Suharto committed itself to a New Order (*Orde Baru*) to differentiate its policies from previous governments (Kano 2008, 19). Chief among these policies was an emphasis on creating political stability and economic rehabilitation, including an effort to re-establish its economic credibility internationally (Directorate of Foreign Information Services, Department of Information, Republic of Indonesia 2010). The emphasis on development had a lasting legacy. Internal infrastructure, such as roads, ports, and communication networks as well as subsidies for agricultural supplies created as part of the government’s development goals helped enable Indonesia to create food security in the 1980s and 1990s (Gerard and Ruf 2001) (Food and Agriculture Organization of the United Nations 2011). Regardless of these gains, Suharto’s government was known for its abuses and authoritarianism (Central Intelligence Agency 2011). In 1998, following riots and uprisings of the general populace, Suharto officially relinquished power (Directorate of Foreign Information Services, Department of Information, Republic of Indonesia 2010).

The free elections in 1999 ushered in a new era of democracy in Indonesia. Douglas Ramage notes that democratic and political reforms were a priority for post-1999 governments; legislative reforms were enacted that targeted corruption, lessened the power of the military, enabled freedoms in the press, and promoted continued economic growth (Ramage 2007, 135-138). Official peace talks between the Free Aceh Movement (GAM) and the government began in 2000. This was a marked difference from the military repression in existence during Suharto’s time (Shaw 2008).

Even with the reforms taking place in the political realm, governance scores for Indonesia prior to the 2004 earthquake/tsunami were not representative of strong governance. The WGI put Indonesia below the fiftieth percentile for all six indicators (World Bank Group 2010). Its HDI score in 2000, according to the 2010 HDI Trends Report, was .500, putting it at the lower end of medium human development (United Nations Development Programme 2011). Some of the low scores may have been caused from the situation in Aceh where the thirty-plus year conflict over self-rule had contributed to a very high poverty level. Prior to the earthquake, Aceh's poverty rate was 28.4 percent, whereas Indonesia's as a whole was 16.7 percent (World Bank 2011).<sup>6</sup> Additionally, the area had been kept isolated by the Indonesian government; prior to the earthquake/tsunami, the region had been closed to international media and aid agencies (BBC News 2005).

When the devastation of the earthquake and tsunami began to be apparent, aid poured in from around the world. Indonesia took immediate steps to declare the situation an emergency, opening the legal doors for assistance (World Bank 2011). Initially, there were many reports of the Indonesian government hampering international assistance in its efforts to maintain military control over the region (BBC News 2005). Eventually though, even that particular conflict took a back-seat to aiding the stricken region when a formal peace agreement was signed in August of 2005 (Asian Development Bank 2007) (Shaw 2008).

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<sup>6</sup> The Asian Development Bank reported pre-tsunami poverty rates in Aceh province to be closer to 48 percent (Asian Development Bank 2007, 3).

Indonesia took steps to organize and help control the aid pouring in. It created The Agency of the Rehabilitation and Reconstruction for the Region and Community of Aceh and Nias (BRR) to coordinate, plan, implement, and take responsibility for the rehabilitation of the region. The government also took steps in cooperation with the World Bank to set up a Multi-Donor Fund (MDF) to help handle and coordinate the massive amounts of financial aid that were being pledged by international donors (World Bank 2011). In stark contrast to the years prior to the earthquake/tsunami, the Indonesian government also entered into agreements with international aid agencies such as the United States Agency for International Development (USAID) to assist with the reconstruction and rebuilding efforts within the affected region (USAID 2011).

In 2009, five years after the earthquake/tsunami, much of the reconstruction had been completed. Houses, infrastructure, and services had been restored and most of the funds available for reconstruction had been dispersed. Poverty rates were at or below pre-tsunami levels (World Bank 2011). To a certain extent, this qualifies as “recovery”, as defined earlier in the paper. Additionally, some improvements have been made. The peace agreement between GAM and the Indonesian government that was finalized in August of 2005 significantly reduced political instability in the region (Shaw 2008, 8). Furthermore, many of the programs initiated by international aid agencies or the Indonesian government were undertaken with improvements to development dimensions and disaster risk reduction as primary goals (World Bank 2011) (USAID 2011) (UNDP BCPR 2011). These goals, which often included forms of mitigation planning, will strengthen the Indonesian population’s capacity to prepare for and recover from similar events in the future.

**Figure 5** Map of United States



Source: The CIA – The World Factbook

In late August of 2005, Hurricane Katrina formed near the Bahamas off the southeastern US coast. Over the next few days, it would make landfall in southern Florida, cross into the Gulf of Mexico and become a behemoth Category 5 storm on the Saffir-Simpson scale (National Climatic Data Center 2005). Hurricane Katrina slammed into the Gulf Coast states of Louisiana and Mississippi on August 29<sup>th</sup>, packing sustained 125 mile-an-hour winds. Hurricane-force winds extended 103 miles from the center of the storm, impacting over ninety thousand square miles of land. Although the winds had dropped to Category 3 status by landfall, their force created an exceptionally destructive storm surge. In some coastal areas, the storm surge crested at or above twenty-seven feet and extended more than six miles inland (Townsend 2006, 5-6, 33) (National Climatic Data Center 2005). Over 1,300 people died due to the storm and more than seven hundred thousand were displaced. The coastal area of the state of Mississippi and the portions of Louisiana surrounding New Orleans were the hardest hit. Entire

communication systems and transportation infrastructure along the coast were destroyed or totally disabled (Townsend 2006, 34). The city of New Orleans suffered catastrophic damage when levees were topped and/or breached due to the force of the storm surge; over 80 percent of the city was flooded. Damage estimates run in the range of ninety billion US dollars, making Hurricane Katrina one of the deadliest and costliest natural disasters in US history (Townsend 2006) (Gross and Muir-Wood 2006).

Hurricane Katrina creates an interesting case study in comparison to Hurricane Mitch and the Indian Ocean Earthquake/Tsunami. Whereas both Indonesia and Honduras were ranked relatively low by the WGI, in contrast the US ranked well above the eightieth percentile in all governance indicators save Political Stability. This indicator, while at the forty-ninth percentile, was still significantly higher than Honduras' or Indonesia's rankings which came in at the thirty-second and sixth percentiles, respectively. The US also had a significantly higher standard of living, as measured by HDI and per capita GNI, than either Honduras or Indonesia. However, response and recovery efforts at all levels were highly criticized at the time of the storm and questions regarding the quality of local governance, particularly in New Orleans, abound.

There were two broad areas that affected response and eventually, recovery, after Hurricane Katrina. The first had to do with the framework within which the states and the federal government interact. There is a long history of the states having primary duties when it comes to disaster response, with the Federal Government playing back-up if necessary (Townsend 2006, 11). The second was the quality of local government and the overall demographics of the region. Louisiana and Mississippi have two of the highest incidents of people living in poverty in the US (U. S. Census Bureau 2011).

Louisiana has been known for and continues to be known for its in state political and legal corruption issues (Shulte 2005) (Jurkiewicz 2009). These factors all speak to governance issues at both regional and national levels.

In the US, the Federal Government does not rush in at the first hint of a regional disaster. Based on federalist roots and precedent, both legal and traditional, states are expected to and demand the ability to be first in line for response and recovery responsibilities. State and local governments will often plan on help from neighboring states and/or local agencies prior to involving the Federal Government (Townsend 2006). This nature of power-sharing had considerable ramifications in the aftermath of Hurricane Katrina. As the storm grew to its full strength, the states of Louisiana and Mississippi prepared for its impact. They took the preliminary legal steps to get federal assistance once the storm was over. In the US, the states must go through a process of declaring an emergency and requesting federal aid before the federal government will step in (Townsend 2006).<sup>7</sup> By the time the leadership of the two states realized that they would need immediate federal intervention, it was too late. Hurricane Katrina had wiped out the communication system for the entire coastal region, as well as the transportation conduits. This mistiming of communication while various agencies, both state and federal, tried to uphold the established chain of command structures and authority frameworks would continue to blight the response and recovery process.

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<sup>7</sup> Since the events of September 11, 2001 and the creation of the Department for Homeland Security, policies regarding federal jurisdiction and involvement in what had traditionally been matters of state-level governance continue to evolve and change. A National Response Plan (NRP) and a National Incident Management System (NIMS) had been approved at the time of Hurricane Katrina, but both programs were still being implemented at the time of the storm and were not utilized to their fullest (Townsend 2006, 12-13).

When the storm finished, the true scale of devastation became evident. Contingency plans based on interstate cooperation and resources fell apart due to the overwhelming damage to the entire area. This necessitated the intervention of federal action, but as the scope of the disaster was so large, no plans were available that allowed for adequately coping with the situation (Townsend 2006). The federal government did respond, mobilizing military units, the Coast Guard, and multiple other agencies to the response effort. As can be imagined, with a disaster this encompassing, mistakes were made at all levels. What is more germane to this paper than the mistakes that took place is the fact that the government did react, and overall, did provide adequate aid and assistance to the region.

After the initial, critical response phase was over and the stricken area moved towards rebuilding and recovery, the federal government took a more active role. The devastation was great enough to require congressional emergency funds and aid packages (Townsend 2006) (Fletcher 2010). Some of this aid was provided directly to individuals for rebuilding lost homes. There were incidents, some quite serious, of blunders in the allocation of this direct aid. The Federal Emergency Management Agency (FEMA) was understaffed, under resourced and miscommunications abounded (Townsend 2006, 46-50). Other aid was given to the states; again, federalism precedents affected the process. The federal government provided the bulk of the recovery aid directly to the states to allocate as necessary. This poses a question: What, if any, responsibility or authority did the federal government have over the use of the funds at that point? This question is relevant to this study as the WGI scores reflect governance at the federal level, but it may

be that local and state governance has more to do with overall recovery resource allocation and success.

Aspects of a society that speak to development, and therefore, indirectly governance, are worth mentioning in terms of the stricken states. Such aspects, such as poverty, equitable distribution of wealth, and corruption of the local governments are issues in the Deep South.

In 2004, Louisiana and Mississippi ranked forty-ninth and fiftieth out of fifty states, respectively, in their populations' poverty rates. For Louisiana, 19.8 percent of its population lived at or below the poverty level. In Mississippi, it was 21.3 percent. This was significantly higher than the national average at the time of 13.3 percent (U. S. Census Bureau 2011). As in Honduras and Indonesia, the poor were the most vulnerable to the ravages caused by the storm. In New Orleans, over ninety thousand people would not, or more significantly, could not heed the late call for evacuation (Jurkiewicz 2009, 360-361). During the recovery stage, disparate experiences existed. A housing executive in New Orleans noted five years after Hurricane Katrina that people who were well off prior to the storm were more likely to be back in their homes with jobs and access to health care, while those who were not well off prior had the opposite experience (Fletcher 2010).

Wealth distribution prior to the storm also impacted recovery. Many people living in poverty in Louisiana and Mississippi did not have hazard insurance (including flood insurance) on their homes. Much of the relief aid allocated through the states was insurance dependent; if one had insurance, he or she qualified, if one did not have coverage he or she did not receive full amounts of aid (Fletcher 2010). Furthermore, aid



in some areas was dependent on house values prior to the storm rather than on the cost of repair and/or rebuilding. Houses in less affluent areas are worth less, so those who owned property in these areas received less aid than others who lived in more affluent areas, even though both groups would pay the same rates for repairs and rebuilding (Fletcher 2010). Some may consider this a point of sound business practice and insurance guidelines and not one of wealth distribution. That is a debate for another study. The fact remains that many people needed aid and aid was apportioned in some cases on relative wealth rather than relative need.

Corruption of the local government, or perceptions of, must be considered when discussing Louisiana and Mississippi's recovery efforts. There are many accounts of unethical behavior by many people, organizations, and agencies during the recovery period. The accounts include fraudulent claims by individuals to FEMA, breach of contract by insurance companies, contracts given in return for political contributions or favor, unethical behavior by those in positions of responsibility, and misuse of funds (Jurkiewicz 2009, 360).

## **Analysis**

During the course of analyzing the information, three main points stand out. The first refers to the original question: “Can governance scores help predict the success of long-term recovery?” The short answer is no. The second point (perhaps most pertinent to the issues surrounding long-term recovery after a natural disaster) is the lack of recognized definitions and appropriate metrics. Thirdly, anecdotal evidence seems to support the thesis, but there are caveats.

In accordance with the thesis, one would expect to see a drop in economic and/or development scores the year of the disaster or the immediate year post, followed by a positive increase trend as recovery commenced. Additionally, the WGI indicators used in this study ranked Honduras and Indonesia fairly closely to one another with the US far outscoring either. If governance indicators predict recovery, one would expect to see the US performing far better on the recovery indicators than either of the other two countries. The data did not support either of these assumptions.

By looking at visual representations of the data in graph form, it is possible to visualize the growth trends for GDP, GNI, and HDI. Beginning with the GDP information, one can see in figure 6 that Indonesia had an increased growth rate both the year of the earthquake/tsunami, 2004, and the year after, 2005. The US showed growth in the years prior to Hurricane Katrina, but then experienced a steady decline in GDP

**Figure 6** Indonesia's Annual GDP Growth Rate 2003-2009



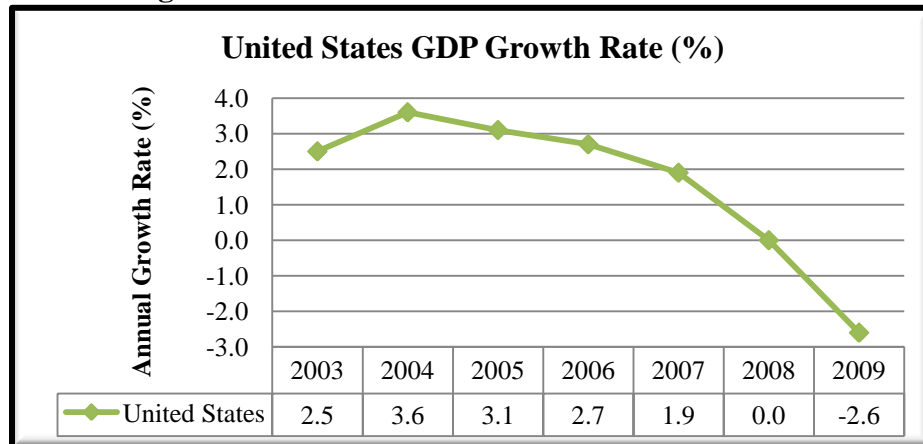
Source: World Bank Development Indicators

<http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>

growth rates starting in 2004, the year prior to the storm, actually reaching negative rates in 2009 as can be seen in figure 7. Figure 8 illustrates how Honduras registered a decline and a possible recovery, but the decline started in 1997, the year prior to the Hurricane Mitch. It continued its steep dive in 1999, improved dramatically in 2000, but then took another decline in 2001, with slow gains in subsequent years. In short, Honduras was the only country whose GDP growth rate dropped in either the year of or year after the event and then returned to a positive growth rate (even then, it had the secondary drop a year later). Contrary to expectations, the US did not show a positive growth trend after its pre-Katrina drop.

The GNI scores are interesting, especially if one views both the raw per capita amount and the annual percentage of growth. Again, according to the original premise, one should expect to see a drop followed by a recovery and the US performing better than its counterparts. Once again, this was not exactly what the data showed.

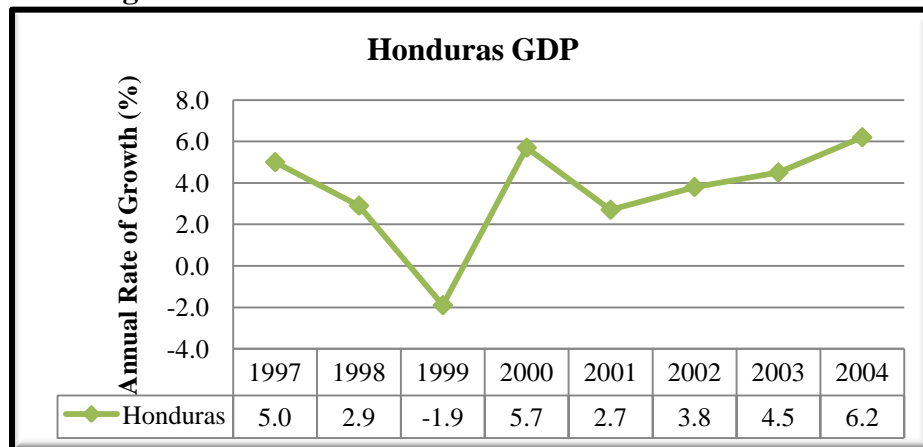
**Figure 7 US's GDP Annual Growth Rate 2003-2009**



Source: World Bank Development Indicators

<http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>

**Figure 8 Honduras' Annual GDP Growth Rate 1997-2004**



Source: World Bank Development Indicators

<http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>

As pointed out in the methodology section, all three countries showed overall GNI growth except for Indonesia in 2004 and the US in 2009. These trends can be seen in the right-hand graphs, figures 9, 11, and 13.<sup>8</sup> However, if one were to look at the yearly

<sup>8</sup> GNI information used in figures 9 through 14 obtained from the National Accounts Estimates of Main Aggregates, United Nations Statistics Division, <http://data.un.org>. Figures 10, 12, and 14 derived from author's computations using GNI data.

Figure 9 Honduras per capita GNI

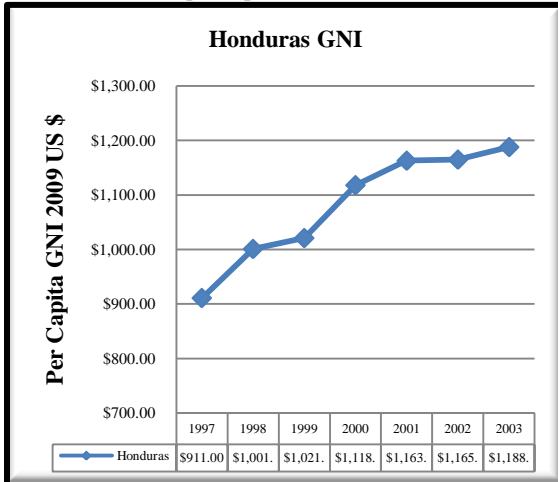


Figure 10 Annual Percentage of GNI Change for Honduras

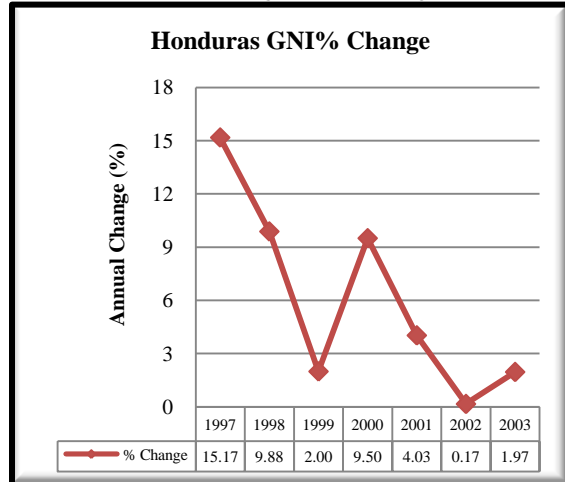


Figure 11 Indonesia per capita GNI



Figure 12 Annual Percentage of GNI Change for Indonesia

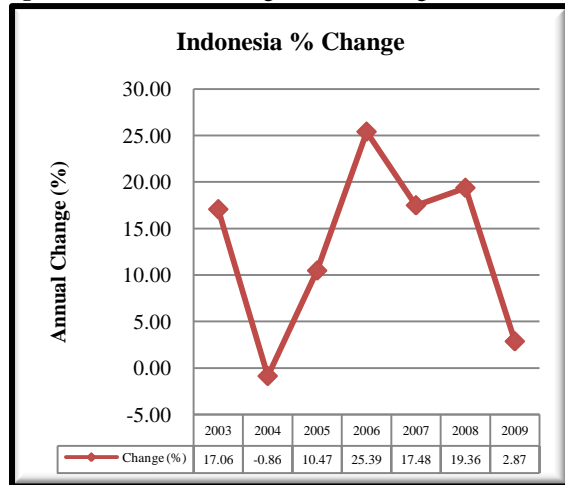


Figure 13 US per capita GNI

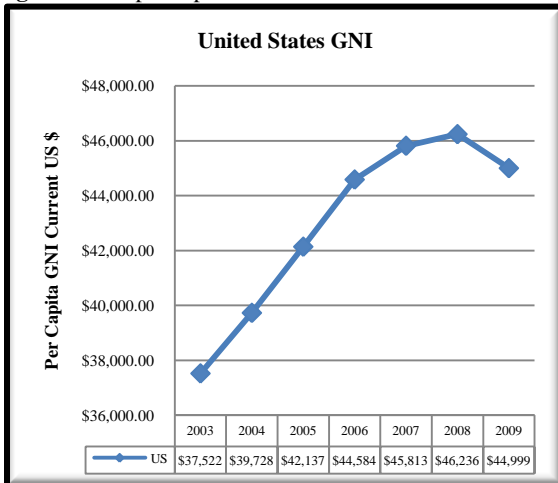
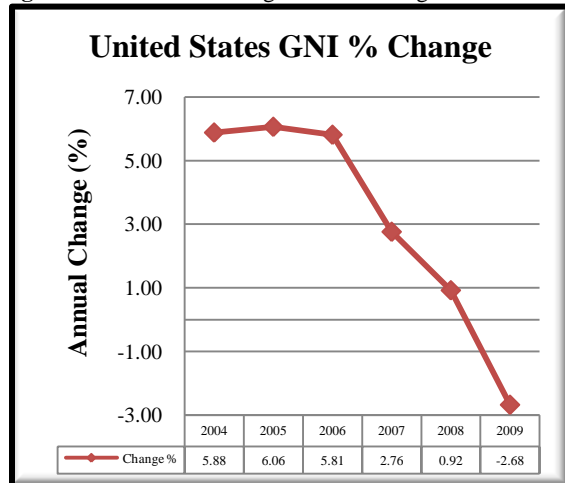


Figure 14 Annual Percentage of GNI Change for US



percentage of change in the GNI during the years surrounding the disasters, there is a pattern to be seen, as is presented in the left-hand graphs, figures 10, 12, and 14. Honduras shows a significant drop in both 1998, the year of, and 1999, the year after, Hurricane Mitch. Indonesia's drop occurs in 2004, the year of the earthquake/tsunami. In Indonesia's case, since the earthquake happened in the last week of that year, one has to wonder if it is a true representation of the damage caused by the event or related to some other economic trends; regardless, it matches the expected pattern. The US per capita GNI did not start dropping until 2009, a full four years after Hurricane Katrina and its rate of change actually increased in the year of the storm.

It could be said that the expected pattern of drop and recovery did show up in both Indonesia's and Honduras' rate of GNI change; but, they also both showed a drop after the initial recovery which would lead the observer to consider the possibility that recovery did not actually take place and that there is some other reason for the sharp spike in growth. It is possible that the massive influx of aid coupled with an upswing in domestic reconstruction projects could have made an impact on these numbers, making the spike an anomaly. According to the United Nations Office of Coordination of Humanitarian Affairs (OCHA), donors gave over 680 million dollars (US) to Honduras in 1998 (OCHA 2001).<sup>9</sup> Indonesia received over one billion dollars (US) in 2004 and 2005 in committed and paid donations (Financial Tracking Services 2011).

The critical part of the thesis, however, is that governance rates should anticipate the better recovery rate. The US, which possesses the best pre-event governance scores, does not follow the pattern, nor does it show better numbers. It actually shows a slowing

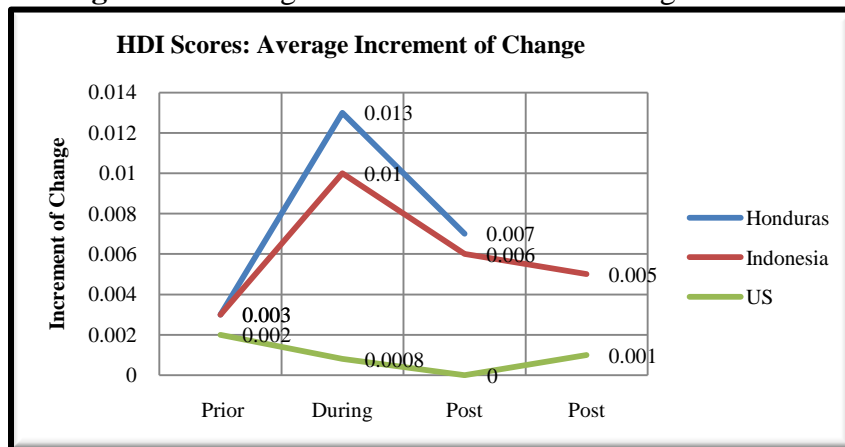
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<sup>9</sup> This amount does not include services, in-kind donations, or contributions not reported to the OCHA.

and continuous drop in its rate of change for the recovery years. There are a number of possibilities for why this is so. One is that perhaps the US has not ever recovered from the hurricane. This is not supported by anecdotal evidence. Therefore, the thesis is not supported by these numbers, even though there is a pattern that seems to indicate some recovery in Honduras and Indonesia.

The HDI numbers were also not supportive of the thesis. In fact, as illustrated in figure 15, they showed an inverse curve when a dip was expected for Honduras and Indonesia and a shallow dip where none was expected for the US (Figure 16).

**Figure 15** Average Annual Increment of Change for HDI Scores



Note: The period of the graph is relative to the date of the natural disaster of each case study. Please refer to Appendix B or table 2 on page 28 for further data.

Source: UNDP 2009 Human Development Index and computation by author

The US was the only country of the three to show a drop in the amount of change during the period of its disaster, 2000-2005. However, all three countries showed a smaller increment of change in the years post-disaster. Whereas the US increment of growth lessened in the five year timeframe of Hurricane Katrina, both Honduras and Indonesia show a larger annual average of change. All three countries drop the amount by which their HDI scores improve in the years following the disaster events. It must be

pointed out that the relative changes in the HDI numbers are trace amounts. It would be difficult to argue that thirteen one-thousandths change on this scale is truly significant.

After reviewing the information for all three recovery indicators, it can be seen that the data was at best inconclusive and for the most part, unresponsive of the thesis. The author expected to see certain patterns relating to the effects of the disaster and subsequent recovery from the disaster. Only the information about Honduras showed any relation to the expected pattern. The second assumption made by the author was that the data would match up to expectations derived from the WGI scores. Thus, it was expected that Honduras and Indonesia would have similar patterns. With the exception of having similar changes to their respective HDI scores, this also was not the case. Lastly, contrary to expectations, the US did not show better recovery than the other two countries, in fact, it reflected worse.

The premise that the WGI scores would anticipate recovery is not borne out by the data. Logically this suggests that either there is no correlation between the two or that the metrics used were not sufficient to show a relationship. The WGI program is not designed to be a predictive tool. It is designed to show trends over time in certain dimensions of governance (Kaufmann, Kraay and Massimo 2010). These dimensions have come under criticism as being too subjective and weighted towards democratic processes (Arndt and Oman 2006). It is quite possible that the information provided by the WGI was not sufficient for this particular study. However, as mentioned at the beginning of the paper, governance has been shown to have positive correlations to development, so it is logical to assume governance (however one measures it) would be positively correlated to recovery (which contains many aspects of development). The



author is not convinced that governance does not play a part in recovery. Therefore, issues surrounding the four metrics utilized are worth discussion.

All four of the metrics used to measure governance and recovery are aggregate, large-scale measurements. The HDI, in particular uses three weighted statistical measurements to derive its scores. It would take significant, major changes in one or more of the component variables to register in the overall trend-lines. In the case of the US which already sits very high on the scale, there is little room for improvement mathematically. It would take extraordinary gains to nudge its scores upwards. Additionally, six years is barely sufficient to show significant change, especially considering the large-scale measurements.

Another major weakness of all four metrics was their national scope. It was assumed that a disaster of the magnitude that each case study examined would alter the overall scores. In reality, only Honduras suffered damage throughout the majority of its territory and much of its economy. For Indonesia, although the province of Aceh was catastrophically impacted at all levels of society, one measurement put the impact of the earthquake/tsunami on Indonesia's overall GDP growth rate at a mere two-tenths of a percent, barely causing a ripple, economically speaking (Risk Management Solutions, Inc. 2006, 10). According to the US Bureau of Economic Analysis, "The impact of a disaster on gross domestic income, national income, or personal income cannot be quantified because the source data record actual activity and do not attempt to separately identify the effects of the disaster." (BEA 2011). The actual portion of land affected by

Hurricane Katrina was only 2.4 percent of the overall landmass of the US.<sup>10</sup> This is not so much an economic measure as one that illustrates the relative impact of the storm on the US as a whole.

A further weakness was the assumption that the disasters would be the only variable that would register on the recovery indicators. A country undergoes many events that can affect its economic health. Honduras' economy suffered greatly from a large drop in worldwide commodity prices in the years following Hurricane Mitch (Telford, Arnold and Harth 2004, vii). Both the US and Indonesia have been affected by the worldwide recession started in 2007 by the collapse of the housing market and banking industry. The downward trends of both GDP and GNI are much better explained by these considerations than by the disasters alone.

What metrics would be better suited to this task? Perhaps the question should be: What better explains the connection between governance and recovery? Metrics alone are insufficient to provide the explanatory data. To accurately measure something, one must often narrow the scope of what is being measured. In doing so, other aspects of the situation are left out of the analysis. Anecdotal evidence may fill in the gaps that the metrics are unable to detect. Perhaps aspects of governance are better explored individually, either in how they are accounted for in policy or implemented through leadership and action rather than through aggregate measurements. The following section will examine the anecdotal evidence which may help to illustrate the effectiveness of each country's actions as they began the process of response and recovery.

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<sup>10</sup> This amount was derived by taking the earlier cited 90,000 square miles and dividing it by the CIA World Factbook total for US territory of approximately 3,656,506 square miles.

The ability to respond immediately to a crisis speaks both towards the effectiveness of a government and also to its potential to usher its citizenry and economy to a point of recovery. Both the US and Indonesia were able to react immediately. The US, even with the issues discussed earlier regarding communication and implementation, was able to mobilize its resources from all over the nation and immediately start towards a process of recovery. The government had the ability to recognize that mistakes were being made in the process. It was able to attempt real-time adjustments to the process, as well as evaluate its performance later on in order to learn from and mitigate these mistakes in the future. Interestingly, it was some of the strengths of the US governmental processes, the checks and balances that exist to limit federal government abuses, which created choke points in the US response. As mentioned earlier, the federalist structure which affords the state and local governments control and responsibility for local response created barriers to effective and rapid action by the national.

Indonesia also was able to react quickly. It is a point of debate whether the Indonesian Government had the best interests in the Aceh region in mind, but since it had a military presence in place, the government was able to begin preliminary response and organization efforts. Furthermore, it was able to communicate and work with international agencies to set up both the Multi-Donor Fund with the WB and an Indonesian agency (the BRR) for coordination of relief efforts and long-term reconstruction plans.

**Figure 16 Summaries of Damage and Recovery**

	<b>WGI Composite Score</b>	<b>Event Type and Damage</b>	<b>Recovery Assessment</b>
<b>Honduras – 1998<sup>1</sup></b>	-0.48	-Category 5 Hurricane. -Massive damage throughout whole of country, impacting transportation, communication, agriculture, & government services -Deaths: 5,757 -Displaced People:441,000	-Recovery suffered due to government weaknesses. -Little to no coordination amongst aid agencies or within government regarding recovery projects -At three years' post-event, 100,000 people were still displaced -At ten years post-event, unemployment had risen as had the poverty rate -Honduras is still heavily involved with international aid and development programs
<b>Indonesia – 2004<sup>2</sup></b>	-0.75	-9.0 Earthquake on Richter Scale followed by massive tsunami. -Extreme damage to transportation, communication, housing, and local industry, but limited to northern portions of Sumatra, including province of Aceh -Deaths: 128,645 -Displaced People: 532,898	-Military presence both helped and hindered initial response efforts -Government responded to massive influx of aid by forming reconstruction agency (BRR) and partnering with World Bank on a Multi-donor Fund -Government has also initiated long-term plans to strengthen disaster-risk management -Reconstruction and recovery projects continue, many in partnership with international organizations
<b>United States – 2005<sup>3</sup></b>	1.24	-Category 4 Hurricane -Powerful storm surge caused massive damage to communities inland, including levee breaches resulting in extensive flood damage to city of New Orleans -Communication, transportation, and emergency services compromised -Major damage to oil, fishing, and tourist industries -Damage limited to coastal areas of Louisiana, Mississippi, Alabama, and portions of Florida.  -Deaths: 1500* - People Displaced: 770,000	-State and local disaster response plans already in place were overwhelmed by scope of storm -Federal response was hampered by miscommunication and poor national-level response planning -Government structure in place allowed for flexibility and evaluation to rectify mistakes and change plans as needed -Much of affected population had and/or were given resources to rebuild homes and business, although questions of equitable distribution of aid linger

Sources <sup>1</sup>Telford, Arnold and Harth 2004, <sup>2</sup>Rofi, Doocy, and Robinson2006, World Bank 2011, <sup>3</sup>Townsend 2006, Knapp, Rhome and Brown 2006, \*Numbers of deaths and displaced people directly related to Hurricane Katrina vary between sources

Compare Honduras' reaction to Indonesia's. Honduras had the higher governance score by .27, but as seen in the case study, the Honduras Government was practically paralyzed in its response.<sup>11</sup> Furthermore, Honduras was highly dependent upon the actions of international aid organizations to help it through the recovery process (Telford, Arnold and Harth 2004). It is true that Honduras suffered catastrophic damage throughout the whole of the country, where the bulk of Indonesia was unaffected by the physical damage of the earthquake/tsunami. It is also true that Indonesia lost over one hundred thousand people and Honduras lost just under six thousand people (Moore, et al. 2009, 7) (Rofi, Doocy and Robinson 2006, 340) . Clearly, the numbers do not always tell the whole story.

All three recovery efforts were beset by claims of corruption. Corruption is the “abuse of entrusted power for personal gain” (Transparency International 2011). The WGI lists the control of it as one of the six indicators of governance. Other indices such as Transparency International's Corruption Perception Index and Global Integrity Report make it the subject of their studies. According to Transparency International, corruption is one of the leading causes of poverty and one of the greatest barriers to reducing it, at the same time it undermines the rule of law and jeopardizes sound governance (Transparency International 2011).

This is one area where two of the three countries' governance scores indicate a potential problem. Both Honduras and Indonesia ranked low in Control of Corruption, in the twenty-fifth and nineteenth percentiles respectively. The US however ranks in the

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<sup>11</sup> Honduras' composite score was higher, although if one considers the standard of error for each indicator, the two countries' scores overlap in all indicators except Political Stability in which Honduras had the higher score (World Bank Group 2010).

ninety-first percentile. Thus, governance indicators for a nation do not necessarily account for local levels of governance. In 2008, the New York Times reported on three surveys concerning state corruption; all three put Louisiana in the top ten most corrupt states (Jurkiewicz 2009, 354). Other studies consistently rank Louisiana and Mississippi higher on corruption conviction rates than other states, suggesting the existence of more corruption in those places rather than better legal enforcement (Alt and Lassen 2008). Although it is difficult to document the actual harm that individual instances of corruption caused, it is quite reasonable to assume that corruption hindered the process of recovery and contributed to unequal allocation of aid.

A last point on the inadequacy of metrics is that they are not able to portray the relative impact of the disaster on subsets of society. Due to this, they are also unable to accurately portray recovery for these same groups. In Honduras, the rural poor lost much in terms of capital assets, income, and unanticipated costs which put them at a severe disadvantage to withstand future losses or disaster events (Morris, et al. 2002). As discussed in the US case study, low-income families in Louisiana and New Orleans displaced by Hurricane Katrina were still struggling at the five year point to find and settle into permanent housing (Fletcher 2010). In Indonesia, one study examined the demographics of deaths in parts of Aceh Province. It found that young children and the elderly were much more likely to have died than adults. Additionally, among adults, women represented a higher fatality rate than men (Rofi, Doocy and Robinson 2006). Economic metrics and even development metrics would be challenged to accurately portray what the loss of two generations means to the recovery of a region.

The previous section portrays the inadequacy of the metrics used in this study to accurately illustrate the relationship between governance and long-term recovery. It is possible though, to look at the US case study and make an argument that good governance does in fact, correspond to better recovery than the two countries with the lower governance scores. Three areas which illustrate this well are: an institutional framework that allows citizens to seek redress for governance incompetence or malfeasance; an effective culture of preplanning and preparation for natural disasters; and an existing level of development prior to the disaster which facilitated the process of recovery.

The ability for citizens to seek redress against its government, and the culture of pre-planning and preparedness both speak to effective governance. The former allows for citizen input and justice as well as government accountability. The latter implies government resources being spent for the benefit of its citizenry. Both of these dimensions of effective governance were at play during the recovery from Hurricane Katrina.

As the response and recovery processes commenced, there were numerous public outcries pointing to mistakes made by local and federal levels of government. Not only were these outcries publicized, but official investigations began to identify mistakes and recommendations made to avoid similar mistakes in the future. The official report written for the then-President Bush by Frances Townsend reviewing and critiquing federal action was one such action taken. Where necessary, criminal proceedings against wrongdoing commenced, as in the case of New Orleans police officers who acted inappropriately and/or criminally (US Department of Justice 2010). As mentioned

earlier, wealth distribution and claims of corruption were evident in how aid was allocated after the hurricane. In 2010 in both Louisiana and Mississippi, two separate court cases found fault with the aid allocation systems in place which confirmed discrimination against minority populations and forced changes to the systems (Fletcher 2010).

The Gulf Coast is at a high risk for hurricanes and can expect one or more to threaten the coastal areas annually. Over the years, plans to help citizens prepare for and guard against loss have developed. Due to efforts at all levels of government, most Gulf Coast residents in the US know well in advance if a hurricane is heading their way and they can take action to safeguard their belongings and evacuate if necessary. At the state and local levels, governments and aid agencies have created evacuation procedures as well as emergency mass care plans. There are mechanisms in place to respond to the needs of the citizens during a hurricane, immediately after, and into the recovery stage (Townsend 2006) (American Red Cross 2011). The ability to educate citizens as well as procure, organize, and mobilize these types of resources speaks to the effectiveness of government and the accountability it shows its citizenry.

Lastly, and perhaps most importantly, the US sits at a higher level of overall development than either Honduras or Indonesia (United Nations Development Programme 2011). In general, US citizens are better able to cope with the devastating effects of a major disaster because of how they are situated socially, culturally, and economically prior to the disaster. Many have the means to insure their property, most have the ability to evacuate if necessary. Those who do sustain loss have the power of a functioning government behind them during recovery. They are not as vulnerable to



catastrophic consequences as many people in developing countries. Consider a report completed by the International Red Cross in 2003 which found that HDI scores and deaths by natural disaster are highly correlated. The report found that while over half of the events studied happened in countries with medium HDI scores, two-thirds of the deaths occurred in countries with low HDI scores and a mere two one-hundredths of the deaths occurred in high development countries (Wisner, et al. 2004, 25-26). This reality is what propels the topic of recovery firmly into the realm of development and further complicates measurement methods.

The concept of recovery is where the true difficulty of usable metrics lies. Recovery is far more complex than rebuilding destroyed structures, and how people, governments, and aid agencies view it is also just as complex. If recovery is simply a matter of regaining a “number” that existed prior to the disaster, such as a city’s unemployment rate or number of lived-in houses, then it can be measured. These metrics are often used by those involved in recovery to illustrate the progress that has been achieved in the recovery process. However, the reality of disasters is that changes are made in the recovery stages that forever alter and/or fundamentally change what “was” normal to what this author calls “recovery-plus”. The basic numbers of unemployment and housing may fit into the framework of this thesis, but they do not paint an accurate picture of what recovery entails.

Recovery-plus exceeds the scope of the original thesis question, but it must be discussed in order to illustrate the reality of current trends in disaster and recovery studies. As mentioned earlier, “Building Back Better” became a driving goal for many aid organizations after the Indian Ocean Earthquake/Tsunami (World Bank 2011).

Another prime example of these trends is the UNDP's Disaster Risk Reduction agenda which now guides UNDP development plans. This agenda compliments efforts to meet the Millennium Development Goals by helping countries strengthen their overall capacity to reduce disaster risk and lessen their populations' vulnerability to extreme events (UNDP/BCPR 2010).

Recovery-plus is a broad concept which takes on a new level of significance when the populations affected by disaster do not have the safety net of development to bolster them. Two main questions are prominent. Firstly, how can something be rebuilt, such as government functioning or infrastructure when it barely existed prior? Secondly, when rebuilding does take place, is it not logical to consider the future while doing so? Telford, et al. in their report for the WB on Hurricane Mitch and Honduras stated, "...issues during post-disaster recovery cannot usefully be separated from the broader dynamics of a society prior to, during, and after a disaster" (Telford, Arnold and Harth 2004, vi). When working with recovery issues in Indonesia after the earthquake/tsunami, the WB states, "The international community committed an unprecedented amount of resources to the reconstruction of the province, adopting the objective of 'building back better'" (World Bank 2011). There exists within recovery-plus a logical cycle of thought. If a country is better able to manage its affairs and its citizenry is better able to withstand the effects of the next event, it follows that there will be less loss of life and less need for international intervention and aid when the next event occurs.

The occurrence of the "next event" is not in question, nor is combining development with recovery. Consider Honduras and actions taken for mitigation and recovery after Hurricane Mitch. Honduras is set in a major target zone for hurricanes. It

suffered six hurricanes and four tropical storms between 1969 and 2001 (Moore, et al. 2009, 7). Its mountainous terrain when coupled with environmental degradation issues such as deforestation put it at risk for mudslides and floods. It is also at some risk for earthquakes (Central Intelligence Agency 2011). It is inevitable that natural phenomena will strike Honduras again. In order to lessen the severity of the impact from future events, recovery issues have overlapped and combined with development issues. A clear example of this conceptual overlap was demonstrated by the actions of the Inter-American Development Bank (IADB) in the period following Hurricane Mitch.

The IADB set up a Consultancy Group meeting for the Reconstruction and Transformation of Central America soon after Hurricane Mitch struck, followed by another meeting in Stockholm, Sweden in May of 1999. The principles outlined during the Sweden conference were centered on transformation as a necessary and intertwined part of recovery. Interestingly but not surprisingly, concepts that were identified for transformation or improvement paralleled the dimensions of governance identified by the WGI. The concepts that were specifically outlined included “improving transparency ...decentralization and municipal participation ...poverty alleviation, and the strengthening of democratic institutions and the rule of law” (Inter-American Development Bank 2011). It is clear that policies for recovery do involve tenants of development and actions for mitigation.

The literature involving disaster recovery is broad, diverse, and without clear parameters. Although there is universal agreement that recovery is intertwined with development, it should include actions for mitigation against future loss, and it must be sustainable, a theoretical framework is lacking. In fact, Smith and Wenger emphatically

state that a comprehensive theory of sustainable community disaster recovery does not exist (Smith and Wenger 2007, 245). As long as the concept of recovery remains wide and lacking in definitive theory, the parameters that allow for its measurement will also remain elusive.

## **Conclusion**

Natural events have always had the potential to wreak havoc and cause great loss of life and property. When they strike, these disasters shock the world both for their violent strength and the massive human suffering they cause. There is no reason to believe that these natural events will lessen in severity or frequency; thus, it becomes essential to understand how governance aids in the recovery of those affected. This paper was an effort to judge the viability of using governance indicators to anticipate effective post-disaster recovery. At first glance, it seemed clear that good governance and recovery should go together, yet upon delving into the meanings of each concept and examining available metrics, correlations between the two concepts were difficult to identify.

During the analytical process it became clear that the thesis would not be supported by the metrics used. However, anecdotal evidence suggested that the premise of good governance positively affecting recovery was accurate. It is quite possible that the conceptual scope of the thesis itself created both data and analysis limitations. Perhaps a narrowed scope of study, limited to specific aspects of governance that helped and/or hindered certain aspects of recovery would have shown a stronger connection between governance and recovery. In terms of this study though, it was necessary to explore the origins of the disconnect between the metrics and the anecdotal evidence. Primarily this disconnect was due to the broad definitions of the terms governance and recovery and the weaknesses inherent in the metrics used to measure them.

The metrics chosen for this analysis best fit the requirements of the study; however, they had certain limitations. The WGI measures six dimensions of government that do not necessarily speak to a country's ability to act during a crisis. Nor do these dimensions measure cultural variables such as self-reliance and community cohesiveness, which could theoretically have a great impact on recovery. All four of the metrics used were large scale and derived from numerous variables, which meant their accuracy to measure specific aspects of recovery or governance suffered. Additionally, the scope of all four metrics was at a national level. Sub-national indices, had they been available for all three cases, would have provided more accuracy for this study. Lastly, an assumption was made that the disasters would be significant enough to register on the GDP and GNI indices; in reality, it is not possible to isolate the effects of the disasters from other economic variables. Much of the difficulty in picking metrics was the lack of definite meanings to the concepts in question.

Governance is a term that covers a broad range of concepts. It is a general description of how the mechanisms within the dimensions of a government function. Although there is general agreement on what these mechanisms and dimensions consist of, there is less recognition of how to measure and subsequently compare them. Over the course of recent decades, there has been a rise in the number of indices used to measure governance or specific dimensions of governance. While these indices continue to evolve in methodology and results, there is still certainly room for discussion regarding their accuracy. As this study illustrated, Honduras and Indonesia had similar governance scores prior to their respective disaster events, yet the response capabilities of the two

countries were not equal. Yet, even with space for debate, governance seems much more defined than the concept of recovery.

Recovery is a highly sought after goal of both governments and aid agencies after disasters. This is somewhat ironic since recovery was the term with the least agreed upon parameters in this study. The term recovery and the metrics used to measure it exist in the minds of the beholders and as of yet, do not have clear and definitive parameters. It is logical to assume that as the theoretical and academic parameters of recovery take shape complimentary measurement instruments will also be developed. Until then, studies such as this one will continue to use what metrics are available, even if the metrics do not accurately capture information about the impact and subsequent recovery from a disaster.

Perhaps the most significant obstacle to defining and measuring recovery is its inseparability from issues of development. Two observations garnered from this study show this to be a critical point. The first is that higher development of a country prior to the disaster results in a different level of recovery efforts. The US had higher levels of development and was able to quickly respond to the crisis. Although there were blunders in the response, the US had the institutional capabilities to address and if necessary, redress the situation. Most of the population was able to absorb the shock using resources at their disposal, such as insurance. The populations that were least likely to make a strong recovery after Hurricane Katrina were in those areas that registered lower in terms of development indicators such as poverty and education. While these populations may still be struggling, there are mechanisms in place to aid in their recovery. Compare the US situation to both Indonesia and Honduras. Overall, development indicators for these countries are substantially lower than the US. Both

countries required extensive international aid after their disasters. Indonesia continues to make progress toward recovery, but poverty rates are still unequal between the country as a whole and Aceh province. Honduras, which was struggling economically prior to Hurricane Mitch, continues to grapple with desperate levels of poverty and unemployment.

The second observation made during this study regarding development and recovery is their conjunction with mitigation in aid efforts. This topic was identified in the paper as recovery-plus. Perhaps it is best expressed by in the WB report regarding Honduras and Hurricane Mitch:

The principal lesson from this study is that recovery is essentially a development issue. ... If we are serious about recovery, we must be serious about development. If we are serious about development, however, we may not need to be so serious about recovery. (Telford, Arnold and Harth 2004, vi)

Recovery-plus is not simply rebuilding. It commonly includes improving both the physical and societal situation of those populations affected. Additionally, it entails improving the capacity of these populations to withstand another disastrous event. Without considerations of mitigation and overall development, vulnerable populations will not benefit from improved protection and will continue to suffer the brunt of destructive events.

Development plays an important role not only in reducing vulnerabilities to disasters, natural or otherwise, but also in terms of human rights. The Universal Declaration of Human Rights puts forth that each individual has the right to such things as liberty and security of person, freedom from hunger,



favorable conditions of work, and a right to participate in government, among many others (Donnelly 2003, 24). These aspects of inalienable human rights should be, theoretically, improved by development. If so, those organizations and governments involved in recovery may well find that focusing on the human rights elements of recovery and development will foster an improved capacity of vulnerable populations to withstand future events.

This paper originated with the concept of predicting long-term recovery after a disaster using governance scores. Throughout the literature, good governance has been shown to have a positive effect on development. If this is so, then good governance with respect to recovery would best be measured by metrics that focus on development. Specifically, those aspects of development that should be used as metrics are those that represent improving the capacity of a population to withstand an event through pre-disaster preparation, planning and mitigation.

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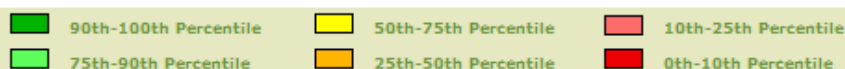
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## APPENDIX A

### Worldwide Governance Scores

#### HONDURAS

Governance Indicator	Sources	Year	Percentile Rank (0-100)	Governance Score (-2.5 to +2.5)	Standard Error
<a href="#">Voice and Accountability</a>	6	1998	44.2	-0.16	0.22
<a href="#">Political Stability</a>	4	1998	32.7	-0.27	0.28
<a href="#">Government Effectiveness</a>	4	1998	23.8	-0.68	0.17
<a href="#">Regulatory Quality</a>	5	1998	46.8	-0.12	0.30
<a href="#">Rule of Law</a>	7	1998	17.6	-0.94	0.21
<a href="#">Control of Corruption</a>	4	1998	25.2	-0.73	0.25



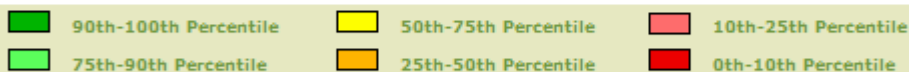
Source: Kaufmann D., A. Kraay, and M. Mastruzzi (2010), *The Worldwide Governance Indicators: Methodology and Analytical Issues*

**Note:** The governance indicators presented here aggregate the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think tanks, non-governmental organizations, and international organizations. The WGI do not reflect the official views of the World Bank, its Executive Directors, or the countries they represent. The WGI are not used by the World Bank Group to allocate resources.

Source: [http://info.worldbank.org/governance/wgi/sc\\_chart.asp](http://info.worldbank.org/governance/wgi/sc_chart.asp)

#### INDONESIA

Governance Indicator	Sources	Year	Percentile Rank (0-100)	Governance Score (-2.5 to +2.5)	Standard Error
<a href="#">Voice and Accountability</a>	11	2004	38.5	-0.33	0.16
<a href="#">Political Stability</a>	8	2004	6.3	-1.57	0.24
<a href="#">Government Effectiveness</a>	10	2004	44.7	-0.37	0.15
<a href="#">Regulatory Quality</a>	11	2004	26.8	-0.60	0.17
<a href="#">Rule of Law</a>	14	2004	27.6	-0.74	0.14
<a href="#">Control of Corruption</a>	13	2004	19.9	-0.90	0.14









Source: Kaufmann D., A. Kraay, and M. Mastruzzi (2010), *The Worldwide Governance Indicators: Methodology and Analytical Issues*

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Source: [http://info.worldbank.org/governance/wgi/sc\\_chart.asp](http://info.worldbank.org/governance/wgi/sc_chart.asp)

## UNITED STATES

Governance Indicator	Sources	Year	Percentile Rank (0-100)	Governance Score (-2.5 to +2.5)	Standard Error
<a href="#">Voice and Accountability</a>	8	2005	89.9	+1.33	0.19
<a href="#">Political Stability</a>	8	2005	49.0	+0.04	0.23
<a href="#">Government Effectiveness</a>	6	2005	89.8	+1.52	0.17
<a href="#">Regulatory Quality</a>	7	2005	96.1	+1.59	0.20
<a href="#">Rule of Law</a>	7	2005	91.4	+1.49	0.16
<a href="#">Control of Corruption</a>	7	2005	91.7	+1.49	0.16

	90th-100th Percentile		50th-75th Percentile		10th-25th Percentile
	75th-90th Percentile		25th-50th Percentile		0th-10th Percentile

Source: Kaufmann D., A. Kraay, and M. Mastruzzi (2010), *The Worldwide Governance Indicators: Methodology and Analytical Issues*

**Note:** The governance indicators presented here aggregate the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think tanks, non-governmental organizations, and international organizations. The WGI do not reflect the official views of the World Bank, its Executive Directors, or the countries they represent. The WGI are not used by the World Bank Group to allocate resources.

Source: [http://info.worldbank.org/governance/wgi/sc\\_chart.asp](http://info.worldbank.org/governance/wgi/sc_chart.asp)



## APPENDIX B

### Human Development Index Trends

#### 2009 HDI Trends

										Average Annual Growth Rates (%)				
										Rank	Change in Rank	Long term	Medium term	Short term
HDI Rank	1980	1985	1990	1995	2000	2005	2006	2007	2006	2006-2007	1980-2007	1990-2007	2000-2007	
13 United States	0.894	0.909	0.923	0.939	0.949	0.955	0.955	0.956	12	-1	0.25	0.21	0.11	
111 Indonesia	0.522	0.562	0.624	0.658	0.673	0.723	0.729	0.734	111	0	1.26	0.95	1.25	
112 Honduras	0.560	0.593	0.608	0.623	0.690	0.0.725	0.729	0.732	112	0	0.94	1.09	0.84	

Source: Human Development Report 2009, Human Development Index Trends, p. 166-170

[http://hdr.undp.org/en/media/HDR\\_2009\\_EN\\_Indicators.pdf](http://hdr.undp.org/en/media/HDR_2009_EN_Indicators.pdf)

#### 2010 HDI Trends

HDI Rank	HDI							HDI Rank		Average Annual Growth Rate (%)		
	Value							Change				
HDI Rank	1980	1990	1995	2000	2005	2009	2010	2005-2010	2009-2010	1980-2010	1990-2010	2000-2010
4 United States	0.810	0.857	0.873	0.893	0.895	0.899	0.902	0	0	0.36	0.25	0.10
106 Honduras	0.436	0.495	0.523	0.552	0.579	0.601	0.604	0	0	1.09	0.99	0.91
108 Indonesia	0.390	0.458	0.508	0.500	0.561	0.593	0.600	2	2	1.43	1.35	1.82

Source: Human Development Report 2010, Human Development Index Trends, p. 148-151

[http://hdr.undp.org/en/media/HDR\\_2010\\_EN\\_Tables\\_reprint.pdf](http://hdr.undp.org/en/media/HDR_2010_EN_Tables_reprint.pdf)