

Thesis paper

**MANAGING ECONOMIC CRISES AND
NATURAL DISASTERS IN THIRD WORLD COUNTRIES**

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VORWORT

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PREFACE

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ABBREVIATIONS AND ACRONYMS

General Abbreviation

bill.	billion (Am), milliard (Br)
CDB	Caribbean Development Bank
CDERA	Caribbean Disaster Emergency Response Agency
CGCED	Caribbean Group for Cooperations on Economic Development
CRED	Center for Research on the Epidemiology of Disasters
DKKV	German Committee for Disaster Reduction (Deutsches Komitee für Katastrophenvorsorge e.V.)
DMF	Disaster Management Facility
e. g.	for example
ECLAC	Economic Commission for Latin America and the Caribbean
etc.	et cetera
FAO	Organization of the United States
GDP	Gross Domestic Product
HIPC	Highly Indebted Poor Country
i. a.	inter alia
i. e.	that is
IACNDR	Inter-American Committee on Natural Disaster Reduction
IDB	Inter-American Development Bank
IDA	International Development Agency
IDNDR	International Decade for Natural Disaster Reduction
IFPRI	International Food Policy and Research Institute
IFRC	International Federation of Red Cross and Red Crescent Sciences
IIASA	International Institute for Applied Systems Analysis
IMF	International Monetary Fund
ISDR	International Strategy for Reduction
KOERI	Kandilli Observatory And Earthquake Research Institute
mio.	million
MIT	Massachusetts Institute of Technology

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OAS	Organization of American States
OFTA	Office for Foreign Disaster Assistance
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
UNO	United Nations Organization
UNSPS	United States National Park Service
US\$	US dollar
USAID	United States Agency for International Development

Abbreviation of Quotation

anon.	anonymous
cf.	confer
ch.	chapter
cit.	citation
cp.	compare
ed.	editor, edition, edited
eds.	editors
et al.	and others
f.	following (page)
ff.	and the following (pages)
ibid.	ibidem
loc. cit.	loco citato (in the place cited)
No.	number
op. cit.	opera citato (in the work quoted, cited)
p.	page
pp.	pages
Vol.	Volume

EIU	Economist Intelligence Unit
GP	The Geneva Papers on Risk and Insurance
HdV	Handwörterbuch der Versicherung, edited by FARNY, D. ET. AL, Karlsruhe 1988
IFM	Infrastructure and Financial Markets Review
JRF	Journal of Risk and Finance
JRI	The Journal of Risk and Insurance
ZfW	Zeitschrift für Versicherungswesen

1. Introduction

1.1 Problem Statement

Over the past years, natural disasters have been posing an ever-greater danger for the economy of Third World countries.¹ The occurrence of catastrophic events in disaster-prone areas is not expected to decrease, and the destruction they cause in developing economies can not become constructed. Especially in Third World countries, it is necessary to finance catastrophe losses without obstructing economic development in the affected regions.

More than 18% of all natural disasters occur in Third World countries. Worldwide economic losses came to some US\$55 billion in 2002 and have increased fourteen fold since the 1950s.² Over the past 22 years, developing countries have suffered economic losses of more than US\$122.4 billion from natural disasters, of which only 3.8% was insured.³

The expression *natural disaster* is defined as a temporary event, triggered by extreme hazards like floods, earthquakes, and hurricanes, "which overwhelms local response capability and seriously affect the social and economic development of a region."⁴

Financially, governments in developing countries are inadequately prepared. Due to the weakness of the economy in Third World countries, the effects of disasters cannot be fully absorbed. Although smaller in absolute figures, the

¹ In this thesis, the term "Third World country" is used for developing countries as well which have low or minimal levels of economic production compared with developed countries. The problem of finding a good definition for Third World countries is examined more closely in section 2.1.

² CRED: EM-DAT: International Disaster Database, Center for Research in the Epidemiological of Disasters (CRED), Brussels 2003. Online in internet: URL: <http://www.cred.be/centre/intro.htm> [Cited 2003-07-30].

³ Cp. MUNICH REINSURANCE COMPANY (ED.): Topics: Annual Review: Natural Catastrophes 2002, Munich 2003, p. 2. Further data obtained from MUNICH RE, GeoRisikoForschung, October 2003. For these data, Munich Re only considers natural disasters with economic losses \geq US\$1 million.

⁴ Adapted from KRIMGOLD as cited in ANDERSEN, T. J.: Managing Economic Exposures of Natural Disasters, Inter-American Development Bank (IDB), Washington D.C. 2001, p. 2.

percentage of economic loss far exceeds that sustained by developed countries.⁵

Third World countries do not have enough experience in coping with the devastation and the consequent economic effects of extreme events due to their naturally lower economic productivity and growth. The United Nations state that "the capacity of the developing countries economies to absorb such [external] shocks has been eroded and the increasing occurrence of extreme events will increasingly contribute to a faltering or failing development."⁶

Various studies exist on the accurate modeling of catastrophes in Third World countries, and some empirical analyses on the macroeconomic impacts of natural disasters in disaster-prone areas have been written. AUFFRET, MURLIDHARAN; SHAH, and CHARVÉRIAT are noteworthy contributions which should be emphasized at this juncture.⁷ Furthermore, several papers have been written on macroeconomic effects of natural disasters, though only two of them are backed up by macroeconomic models specially designed for developing countries: "A Simple Macromodel" by ALBALA-BERTRAND⁸ and the "Revised Minimum Standard Model eXtended" by the World Bank.⁹

There exists solely a few decision models for different methods of coping with catastrophe risk in Third World countries. Additionally, only little research has been done on the relationship between government and private financing structures and the discussion of its economic effectiveness in backing catastrophe losses. This is what this thesis sets out to examine. The aim is to

⁵ Cp. UNITED NATIONS INTERNATIONAL STRATEGY FOR DISASTER REDUCTION (UNISDR): Disaster Reduction and Sustainable Development: Understanding the links between vulnerability and risk to disasters related to development and environment, background paper to the World Summit "Sustainable Development", Johannesburg 26 August - 4 September 2002, p. 3.

⁶ Ibid., p. 1.

⁷ Cp. AUFFRET, P.: High Consumption Volatility: The Impact of Natural Disasters?, The World Bank, Washington D.C. 2003; MURLIDHARAN, T. L.; SHAH, H. C.: Catastrophes and Macro-economic Risk Factors: An Empirical Study, paper presented at the First Annual IIASA-DPRI Meeting on Integrated Disaster Risk Management: Reducing Socio-Economic Vulnerability, International Institute of Applied Systems Analysis (IIASA), Laxenburg 1-4 August 2001; CHARVÉRIAT, C.: Natural Disasters in Latin America and the Caribbean: An Overview of Risk, IDB, Washington D.C. 2000.

⁸ ALBALA-BERTRAND, J. M.: Political Economy of Large Natural Disasters With Special Reference to Developing Countries, Oxford 1993, in particular chapter 7, pp. 161ff.

examine how and under which influencing factors a Third World Country can efficiently manage economic impacts from natural disasters.

The outline is restricted to the financial effects of extreme events in the Third World. The subject is so comprehensive that it would go beyond the scope of this paper to include other external shocks. Furthermore, different impacts depending on the kind of natural catastrophes in Third World countries are disregarded.¹⁰ The same applies to other than catastrophe financing problems in emerging economies.

1.2 Focus and Structure of the Study

Fundamentally, this work deals with natural hazards in Third World countries, economic impacts and financing measures. This paper should focus on investment opportunities after disaster occurred. In addition, this paper focuses on the following subjects:

- the cause of macroeconomic impacts of catastrophic events in Third World countries
- the nature of economic crises after natural disasters
- available private and public sector financial protection and
- the problem of optimal investments for catastrophe finance.

Chapter 2 presents a demarcation of Third World countries and describes the catastrophe potential in this area. The areas struck by disaster are not able to cope with their impacts. This section includes attempts to highlight the problem of absorbing catastrophe losses in disaster-prone areas, what is influenced by the economic environment.

⁹ THE WORLD BANK (ED.): RMSM-X User's Guide, Washington D.C. 1998.

¹⁰ Detailed analyses of the various economic and social effects of natural disasters, broken down by type, can be found in CUNY, F. C.: Disasters and Development Prevention, New York 1983; ORGANISATION OF AMERICAN STATES (OAS): Primer on Natural Hazard Management: Integrated Development Planning and Natural Hazards. Washington D. C. 1996. Online in internet: URL: <http://www.oas.org/usde/publications/Unit/oca66e-/begin.htm> [Cited 2003-08-23].

Chapter 3 deals with the impact of natural disasters. Disasters with enormous loss potential can have disastrous consequences for the whole country. Short-, and especially long-term effects on the economy are analyzed.

The essential problem addressed in chapter 4 is highlighting conceptually different ways of dealing with catastrophic risk. Possible alternatives of hedging and financing solutions are explored. These instruments can be used by both the private and public sector; the pros and cons of financial protection are explained, as well as potential problems.

A theoretical part in chapter 5 develops a model to simplify the decision process for a Third World country to choose from among different strategies for coping with natural disasters. Generated trade-offs between different financing solutions (options discussed in chapter 4) are compared. Later, this chapter undertakes an assessment of the model.

Chapter 6 summarizes and concludes with a discussion of the results.

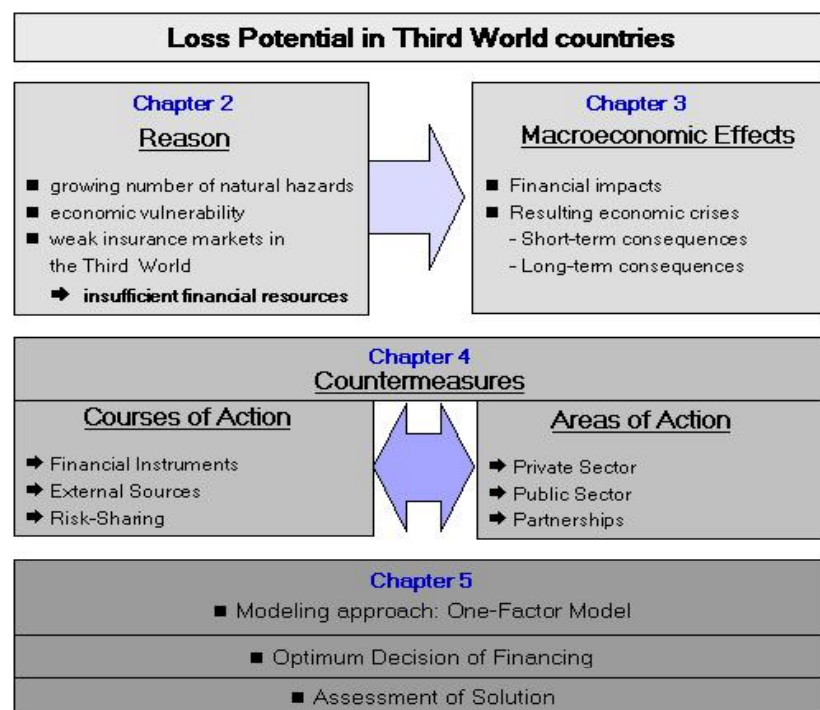


Figure 1: Structure of the Thesis

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