## Natural Hazards, UnNatural Disasters

The Economics of Effective Prevention





## **Contents**

Acknowledgments		ΧV
	MEMORANDUM TO A CONCERNED FINANCE MINISTER	
Overview		1
1.	Fluctuating Deaths, Rising Damages—	
	the Numbers	23
	3.3 million deaths in the 40 years to 2010	26
	Disasters can strike anywhere	27
	Damages are rising	27
	More so in rich countries, less in poor	27
	Small island economies are hit hard	29
	Deaths expand Africa—damages shrink it	31
	Multiple hazards, clustering in different ways	32
Spo	tlight 1 on Bangladesh: The antecedents of lives saved	34
2.	Measuring Disasters' Many Effects	41
	Individuals over the edge	43
	Conflicts: Cause or consequence?	48
	Welfare falls, but what are the effects on output? And for how long?	52
	Aggregate and sectoral effects on economic output and growth in the long term	54
	Measuring the damage: Twice over and half under?	57
Spor	tlight 2 on Turkey: Where civilizations and tectonic plates meet	64

3.	Prevention by Individuals	69
	Prevention, insurance, and coping: A simple framework	70
	Prevention: Do individuals do enough?	72
	Prices reflect hazard risks when land and real estate markets work	76
	Improving individuals' decisions: What can governments do?	84
Spo	tlight 3 on Haiti: Preventing Haiti's horrors	99
4.	Prevention through Governments	105
	How much do governments spend?	106
	Who really decides government spending?	110
	How to improve collective prevention measures	115
Spo	tlight 4 on Ethiopia: Deaths from droughts or Derg?	134
5.	Insurance and Coping	141
	Insurance: Useful if the premium is priced right	-143
	Should governments borrow, set aside funds, or buy insurance?	148
	Quick and direct help for families	.154
-	tlight 5 on the 2004 Tsunami: Warnings: The most effective	
prei	vention?	164
6.	Coming Game-Changers? Burgeoning Cities, Climate Change, and Climate-Induced	•
	Catastrophes	169
	Cities: Rising exposure	170
	Climate change: Changing hazards, changing damages	174
	Climate-related catastrophes: Deep-future disasters with a	,
	global footprint	181
	Connecting the three Cs: Cities, climate, catastrophes	186
ME	MORANDUM TO A CONCERNED CITIZEN	191
Notes and References		199
Index		239