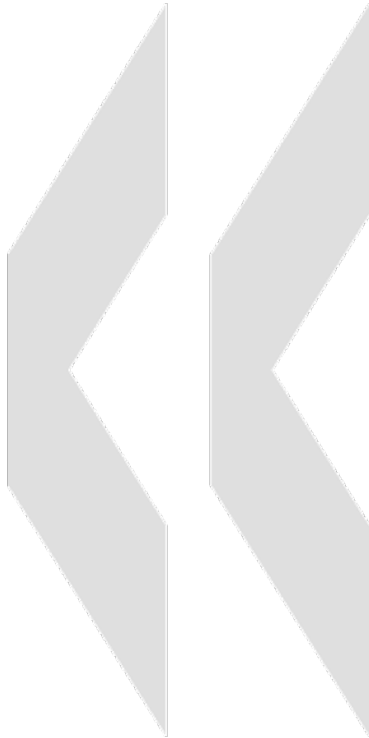




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Budgeting for Disasters

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Based on a paper by Marvin Phaup

Outline

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Reasons for This Study

- In the presence of catastrophic risks, ex ante budgeting for disasters can contribute to welfare by:
 - increasing saving,
 - promoting more effective mitigation, and
 - supporting disciplined pre-commitment to provide post disaster relief and recovery.
- The power of budgeting, however, can also be misdirected so that it increases welfare losses from national disasters.
- This paper describes both the potential gains and losses from alternative budgetary treatments of policies aimed at relieving hardship following a disaster.
 - It also develops criteria for evaluating those alternatives.

Findings

- Governments can adopt policies that successfully increase long-term well-being in the face of disasters. Those improvements, however, depend primarily on the effects of policies *before* the disaster occurs.
- Public policy can increase net benefits by:
 - shifting consumption through time from *before* to *after* a catastrophic loss;
 - reducing exposure to loss through mitigation measures; and
 - limiting the offsetting effects of changes in behavior by beneficiaries (moral hazard).
- Policies that promise financial assistance for relief and recovery to victims of disaster without increasing national saving and mitigation are likely to increase the welfare losses from disasters.

Definitions—Disaster

- **Disaster:** a loss of resources and productive capacity that is large in relation to the income and wealth of the affected country.
 - Disasters are low-frequency events whose size and timing are difficult to predict.
 - The essential economic characteristic of a disaster is that it forces a significant, unanticipated reduction in consumption and welfare.
 - Disasters are harmful in an economic sense because they disrupt long-term, or life cycle, consumption plans.
- *Some analysts distinguish natural disasters from terror incidents. But the effects of different budgetary treatments of public spending on the welfare losses from catastrophic events are largely independent of source.*

Definitions—

Ex Ante & Ex Post Budgeting

- **Ex ante budgeting** for disasters: emphasizes the practice of recognizing the cost of public policy for disaster relief and recovery *before* a loss event.
- **Ex post budgeting** for losses *after* the event may be regarded as financial reporting rather than budgeting, or more charitably, as a revision to the budget plan in light of new information.
- *The appropriate roles of ex ante and ex post budgeting for disasters are key elements in designing effective disaster policies.*

Definitions—Saving

- **Saving:** consuming less than is produced; or, the means by which to consume more in the future than is produced in the future.
 - Saving is useful from an economic perspective because it enables consumption to shift from good times, when the value of one more unit of consumption is relative low, to bad times, when an additional unit of consumption is more highly valued.
 - Many people choose to smooth their consumption relative to income over their lifetimes. They may do so by borrowing to finance consumption early in their lives when their income is low, repaying debt and saving during their highest income years, and drawing on their savings (dis-saving) in their later years.
 - Governments as well as individuals & firms, dis-save by borrowing to finance current consumption. Governments save by collecting more than they pay out for consumption, with the excess used to repay debt or finance investments that increase production of goods & services for future consumption.

Definitions—Mitigation

- **Mitigation:** the use of capital and other resources to reduce vulnerability.
- The losses from a destructive event are not fixed—rather they vary with mitigation. Examples include:
 - Strengthening structures;
 - Dispersing strategic sites;
 - Training people; and
 - Increasing surveillance and defensive measures.
- However, **all mitigation activities have a cost** in terms of consumption sacrificed.
- *Mitigation can be cost effective up to the point where the last unit of mitigation pays for itself in lower expected losses.*

Definitions—Pre-commitment

- **Pre-commitment:** an attempt to restrict the range of choices in the future when impulse may lead to a misguided and subsequently regretted departure from a considered plan.
- Disasters are occasions when the human impulse is to provide relief and recovery assistance first and to consider the costs and other consequences later.
- *In general, public policies for addressing catastrophes are more consistent with the long-term objectives if they are established in advance of the event.*

Definitions—

Crowding Out & Moral Hazard

- **Crowding-out:** where government policy displaces effective private efforts to reduce the cost of disasters, thereby creating a **moral hazard**.
 - If a government consistently chose not to provide assistance to those suffering losses from natural disasters, people would be encouraged to take private remedies to minimize the costs of such events, such as: the design & location of structures to make them more resistant & perhaps easier to re-build; the choice of occupations; risk sharing agreements among households; & precautionary savings.
 - If the policy above was replaced with a policy of compensating victims of disasters for a significant portion of their losses, the grant of public insurance would diminish private remedies. Under this **moral hazard**, which is observed in most public & private insurance schemes, people rationally reduce their own efforts to address future losses when some of the burden is assumed by others.

Note on Crowding Out & Moral Hazard

- The existence of moral hazard is not a persuasive argument against public insurance or other assistance to the victims of disaster.
 - Despite the well-known adverse effects on private behavior, disaster relief & recovery programs are nearly universal.
 - Support of the needy is consistent with humanitarian, religious, & ethical imperatives & command widespread public support.
- Nonetheless, policy-makers can improve the net benefits of post-disaster assistance by taking account of the effect of assistance in weakening private incentives for mitigation.

Principles for Budgeting for Disasters

1. Government policy should include provisions to increase national saving.
2. Governments find it difficult to avoid providing assistance directly to those suffering loss.
3. Lawmakers also need to be mindful of the financial and political incentives facing governments in the design and execution of disaster policies.
4. If budget rules treat “emergency” spending as free (they don’t have to be paid for with tax increases or spending cuts), it will be difficult to avoid overspending for disaster relief.

Governments Find It Difficult to Avoid Providing Assistance Directly to Those Suffering Loss

- Constituents at risk anticipate that government will provide assistance. Thus, private efforts to prepare for disasters are reduced & total losses increase. To limit this, governments must modify the terms of public assistance for relief & recovery. At a minimum, government needs to levy & save fees that are at least as large as the reduction in saving. Additional possible steps to limit moral hazard include the exclusion of 1st losses (deductibles), co-pays, & conditions for eligibility such as location, construction, & owner-provided mitigation features.

Some of the Financial & Political Incentives Facing Governments in the Design & Execution of Disaster Policies

- Special attention is required to the budgetary effects of federal action & to the procedural rules governing the expansion of benefits for victims. For example, if collections of fees or insurance premiums that are intended to increase savings in anticipation of future losses are recorded as resources available for spending to meet current needs, then it is unlikely that government will succeed in increasing national saving.

Why is Pre-Loss Financing Superior to Post-Loss Financing?

- Pre-loss financing imposes a smaller drop in consumption than post-loss financing & is more consistent with smoothed, constant lifetime consumption.
- Pre-loss financing helps get mitigation measures onto the policy agenda. It forces policy makers to consider the cost of disaster relief against other alternatives and how those costs might be effectively reduced when reduction is still an option.
- It is also possible than if the government's policy response is developed in advance of the urgency of loss, the policy will be more cost-effective, efficient, and consistent with long-term objectives.

Pre-loss Financing Imposes a Smaller Drop in Consumption than Post-loss Financing

- If consumption is subject to diminishing marginal utility, then pre-disaster saving permits lower valued consumption to be deferred to periods in which its value is higher; that is, to periods in which total consumption is lower.
- Post-loss financing also attempts to transfer resources from relatively low marginal-utility consumers (those whose consumption is less affected by the event) to high utility consumers (those suffering the greatest losses). But pre-loss financing takes place when national income is higher and the tax rate and real distortions can be lower.

Other Reasons Why Pre-Loss Financing is Superior to Post-Loss Financing

- Pre-loss financing helps get mitigation measures onto the policy agenda.
 - Post-disaster assistance at current law levels is largely beyond the control of policy makers. After a disaster assistance policy is enacted and a loss has occurred, its cost is largely sunk.
- It is also possible than if the government's policy response is developed in advance of the urgency of loss, the policy will be more cost-effective, efficient, and consistent with long-term objectives.
 - Well-specified and established policies will also permit those at risk to adopt mitigation measures and make plans for their recovery, consistent with their own preferences and the government's planned response.

Why Governments Might Choose *Not* to Budget for Disasters—Primary Reasons

- Disasters are difficult to predict; putting a speculative number in the budget may reduce the budget's credibility & usefulness.
 - Projecting the government's expected cost need not be an exercise in illusion. Over the past decade, most countries have spent significant sums on recovery from various “unexpected” loss events. This experience provides a convenient data base for extrapolating expected costs from such events.
- The decision to budget *ex ante* for disasters must also overcome fear of misuse of those resources by policy makers.
 - If funds are earmarked annually for disaster response, but actual losses are less than budgeted amounts, it may be difficult to avoid reprogramming the funds for other purposes.
 - One way to reduce the risk that “unused” earmarked funds will be “raided” is for the gov't to purchase insurance from private re-insurers. With periodic payment of premiums, no unspent balances are available .
 - Similarly, gov't may obtain insurance through the use of catastrophic (Cat) bonds where, for example, the insurer purchases low risk bonds equal in value to the amount of insured coverage & assigns them to a trustee. The insurer is entitled to the interest on the bonds & the insurance premium unless or until the covered loss occurs. In that case the bonds are sold & the proceeds paid to the insured gov't. But no fund balances are available to the insured gov't prior to the disaster.

Why Governments Might Choose *Not* to Budget for Disasters—Additional Reason

- Some concern exists on the part of small, low-income countries who have received substantial post-disaster assistance from foreign donors that self-budgeting for disasters might diminish the willingness of others to provide recovery aid. There is little empirical evidence that would enable this concern to be evaluated.
 - The World Bank has an pooling arrangement through which relatively small countries can purchase catastrophic insurance from international reinsurers.

Four Options for Budgeting for Disasters

	Private Insurance	Self Insurance	“Pretend” to Self Insure	No Ex Ante Budgeting
Revenues, or cuts in other spending	100	100	100	0
Expenditures	100	100	100	0
On-Budget Insurance Account	na	na	-100	0
Deficit	0	0	-100	0
Private or Off-Budget Insurance Account	100	100	0	-?

Private Insurance

- Method: levy taxes (or reduce other spending) and use the proceeds to purchase private insurance
 - Forces private saving
 - Equivalent to requiring private parties to purchase insurance
 - No risk of misusing funds, but there is a risk of insurer insolvency and there may be high transaction costs

Self Insurance

- Method: levy taxes (or reduce other spending) and use the proceeds to set aside an insulated, off-budget insurance fund
 - Eliminates risks of insolvency and high transaction costs
 - There is a risk, however, the politicians will find a way to use the off-budget insurance fund to pay for current consumption

“Pretend” to Self Insure

- Method: levy taxes (or reduce other spending) and use the proceeds to set aside an on-budget insurance fund
 - If this fund is not used to finance consumption, this method is equivalent to self insurance
 - But putting the fund on-budget vastly increases the risk that it will be used for non-disaster activities

No Ex Ante Budgeting

- Fails principles:
 - Does not increase national savings
 - Makes insurance coverage an entirely political action
 - Does not promote mitigation activities
 - Encourages overspending
- May encourage private consumption in anticipation of a public bail-out

Examples of Public Disaster Insurance: Japan, Mexico, NZ—I

	Property eligible for coverage	Types of risk covered	Is coverage compulsory?
Japan	Residential buildings & personal property	Earthquakes or other hazards resulting from earthquakes	Insurance co's obligated to offer, but individuals not obligated to purchase
Mexico	Infrastructure owned by the federal, state, & local governments	Earthquakes, seaquakes, volcanic eruption, drought, cyclones, floods, tornados, & wildfires	Federal agencies required to include the cost of insurance in their budgets
New Zealand	Residential buildings, personal property & land under & surrounding the residential building	Earthquake, natural landslip, volcanic eruption, hydrothermal activity, tsunami; for residential land, a storm or flood; or fire caused by any of these	Insurance is compulsory with the purchase of fire insurance. If fire insurance is not purchased, there is no obligation to purchase earthquake insurance

Examples of Public Disaster Insurance: Japan, Mexico, NZ—II

	Factors affecting premium prices	Incentives for mitigation	Reserve funds investments	Who bears risk?
Japan	Base rate, discounts for mitigating factors & the term (years) of coverage.	Premium reduction based on mitigation	Government, municipal & corporate bonds; & foreign securities	Private reinsurer retrocedes some liability back to government
Mexico	No premiums: states & federal agencies contribute portion of their budget to FONDEN trust fund	Program covers costs of improvements to reduce likelihood of damage	Catastrophe bond issues for earthquakes underwritten by Swiss Re & Deutsche Bank	Financial market investors
New Zealand	Flat rate	None	Bonds & international equities	Public corporation provides insurance, government provides reinsurance & a state guarantee

Examples of Public Disaster Insurance: Spain, Turkey, US—I

	Property eligible for coverage	Types of risk covered	Is coverage compulsory?
Spain	Business & residential buildings; includes business income exposure, & personal injury	A series of natural events (flood, earthquake, seaquake, volcanic eruption, etc.) & some sociopolitical acts (terrorism, rebellion, sedition, riot, etc.)	Coverage of extraordinary risks is compulsory with purchase of insurance, if not included, Consorcio supplies it on subsidiary basis
Turkey	Residential	Earthquakes	Yes, for all residential buildings within municipal boundaries
US –TRIA	Virtually all property & casualty lines, including workman’s compensation	Terrorism (Terrorism Risk Insurance Act)	No, insurers are required to offer insurance, but purchasing it is not compulsory
US—NFIP	Residential & business property located in participating communities	Flooding (National Flood Insurance Program)	Program is voluntary except for homeowners in designated risk zones with federally secured mortgages

Examples of Public Disaster Insurance: Spain, Turkey, US—II

	Factors effecting premium prices	Incentives for mitigation	Reserve funds investment	Who bears risk?
Spain	Type of insured property	None	Equalization reserve	Public corporation
Turkey	Geographic risk area & construction type	Premium reduction based on type of construction		Public entity managed by board of directors
US—TRIA	No premiums unless the gov't sustains costs as the result of another terrorist attack	None	No premiums to invest	Private insurance companies, gov't provides reinsurance
US—NFIP	Value insured, location, age, type of occupancy, building design, & in designated zones the building's elevation	Community participation requires the community to adopt flood management measures, & premium reduction for mitigation	Premiums do not cover costs of payouts, & credits required from the federal treasury for Katrina losses ²⁸	Government

Examples of Public Disaster Insurance: Other Information

	Do premiums cover costs?	Are insurance funds separate from general budget?	Gov't measures to reduce insolvency of insurers
Japan	Yes, private company insures earthquake risk	Insurance funds are kept in an "earthquake insurance special account"	Private company retrocedes some liability to government
Mexico	No premiums		
New Zealand			
Spain			
Turkey		Insurance run by separate public entity	
US—TRIA	Premiums levied after loss	No reserves	
US—NFIP	No	No	