

Designing Public Solutions to Catastrophe Insurance Market Failures

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Introduction

Insurance for catastrophes—floods, wildfires, windstorms, and more—is failing. The problem of substantial, correlated risk, and sometimes the unpredictability of risk, has undermined the private market for property insurance. Major insurers have stopped writing new homeowners policies in California, Florida, Louisiana, and elsewhere, and premiums in many states have increased dramatically. (Eaglesham, 2023; Flitter, 2024) The phenomenon is not new. Private insurance companies withdrew flood and earthquake coverage decades ago. (Calif. Earthquake Authority; Knowles et al., 2014) When insurance against catastrophes is unavailable, the consequences for individual property owners, communities, and the national economy are dramatic.

When the private market is perceived to fail, federal and state governments sometimes enact public programs in response. For example, the National Flood Insurance Program was established when almost all private insurers excluded flood coverage under homeowners policies, creating a huge protection gap for coastal communities and other flood-prone properties. (Knowles et al., 2014). The California FAIR Plan is representative of state-created insurers of last resort in property insurance that offer limited coverage to policyholders for whom coverage is unavailable. U.S. Representative Adam Schiff has proposed the INSURE Act to create a national reinsurance program that would revitalize the private market for a wide range of catastrophic risks. (INSURE Act, 2024)

The failure of private insurance markets in the face of catastrophic loss is the most prominent example of a broader problem: insurance market failures that lead to calls for public intervention. The other most common example is the residual market mechanism for the provision of automobile insurance. Auto insurance is sufficiently important that every state requires that vehicle owners have liability insurance or a financial equivalent. A large number of drivers, however, cannot easily pay the premiums demanded by private insurers, especially drivers with a high risk profile. States have responded by creating residual market mechanisms that provide some coverage at lower rates.

The issues in the design of public solutions to insurance market failures are similar in the different settings in which the failures occur. Many of the extant solutions are similar, too; residual market mechanisms for vehicle owners and homeowners are alike in many

^{*} This paper is based on a presentation at the National Council of Insurance Legislators Spring National Meeting, 2024: “Affordability and Availability in the Auto and Home Insurance Markets.”

respects. The focus of the paper is on property insurance, particularly homeowners insurance, in developing issues in the design of public solutions.

This paper offers no solutions to the failures of private insurance against catastrophes. Nor does it evaluate any current public solutions. Instead, it frames questions. In designing public solutions to catastrophe insurance failures, what precisely is the problem to be solved? Which risks should be included? How should prices be set? To what extent should policyholders be indemnified? And so on. The value of the project is that without asking the right questions, arriving at the right answer is purely a matter of chance.

When addressing any particular insurance failure, moreover, answering the right questions does not lead to a single “right” answer. One of the most important questions is, “What are the goals of insurance?” Insurance is a financial transaction of risk transfer and risk pooling, but it never is solely a financial transaction. Every form of insurance embodies social values and serves public policy goals. Responding to the questions in this paper in a particular context involves choices among values and goals that are economic, social, political, and even moral.

Other public interventions in the insurance market or using insurance-like solutions to social problems are sufficiently different that they will not be discussed. Social Security is a public, retirement income insurance system for working people. Medicare is a public health insurance system for the elderly with broad participation by private insurers. The Affordable Care Act has reshaped health insurance markets. Finally, there is a class of programs that adopt quasi-insurance schemes that supplement or supplant tort liability for victims of harm. The oldest of these is workers compensation. More recently developed systems include the Price-Anderson Act, which limits the liability for accidents of nuclear power plant operators and substitutes a claim scheme for injured victims. The National Vaccine Injury Compensation Program, the Black Lung Benefits program, and others perform similar functions.

1. Defining the Problem

The first step in solving a problem is to recognize that a problem exists and to understand the nature of the problem. This process involves three related questions:

- What is the problem?
- What’s causing the problem?
- What kind of problem is it?

1.1 What is the problem?

The general class of problems addressed involves losses potentially suffered by a large group of policyholders from a natural disaster such as a flood, hurricane, or wildfire. The losses are correlated, similar losses incurred at the same time from the same cause,

so they are effectively uninsurable. The usual policies cannot be offered except at very high prices, the potential losses may require excessively large amounts of capital reserves by the insurers, and sometimes the occurrence of the losses is so unpredictable that the risk cannot practically be assessed at all. Therefore, either insurers refuse to offer coverage altogether or do so only at prices that most potential insureds are unable or unwilling to bear.

Within the class of problems of catastrophic risk, the particular problem at issue needs to be defined carefully and thoughtfully, for at least three reasons.

1.1.1 Open solutions

The problem definition should not prejudice potential solutions. “Homeowners need insurance coverage for flooding that they cannot afford in the private market,” for example, assumes that existing homeowners should have access to coverage comparable to homeowners insurance at affordable prices. It precludes the possibility that homes have been built in flood-prone areas that are not economically sustainable, that homeowners are not homogeneous economically and therefore not equally deserving of coverage, and that some existing houses are subject to repeated losses that make it more efficient to purchase and demolish the houses instead.

1.1.2 Multiple dimensions

Problems usually have multiple dimensions. One dimension is the failure of the private market to provide insurance, a second is the extent of property development in a high-risk area, a third is the recognition of the substantial investment of shore homeowners in their existing houses, and fourth is that lower-income homeowners may be more deserving of assistance than higher-income homeowners.

1.1.3 Clear values

Defining the problem helps to clarify the values involved in considering potential solutions. One value lies in protecting the existing investments of current homeowners, particularly, say, long-time, elderly residents, but another value is in not sustaining unwise, high-risk development. Put more broadly, one value is recognizing society’s collective responsibility for community members who suffer financial distress but another is promoting efficient use of social resources.

1.2 What is causing the problem?

Defining the problem leads directly to the importance of identifying the causes of the problem, and defining causes ultimately leads to designing cures. Catastrophic loss problems never have a single cause or even a single type of cause. Floods and the increasing risk of floods due to climate change are physical phenomena, but much more is involved in the problem of providing insurance against flood losses. Often the definition of the problem is adequately filled out only by examination of its causes.

1.2.1 Insurance market failures

The private insurance market is the baseline for insurance coverage, so problems arise only when the private market fails to meet a perceived need for insurance. Market failure can arise for a variety of reasons and the reasons are relevant to defining the problem and its solution. True market failures arise because insurance cannot be offered at a price that is profitable to insurers and accessible to consumers. A first step is to distinguish true market failures from accessibility and affordability problems that may not constitute true market failures and so could be cured by lesser measures.

For example, a market failure can occur because insurers are unwilling to operate under current regulatory conditions; one of the claimed causes of California's wildfire insurance crisis has been that regulators required insurers to use only past loss experience as a basis for setting premiums even though the past experience was inadequate to predict the increased risk due to climate change. (Frazier, 2021) Consumers too seldom purchase flood insurance, but more publicity and different marketing structures might be enough to address the problem. According to the insurance industry and its allies, a large part of Florida's crisis in homeowners insurance was due to excessive litigation against insurance companies and contractor fraud. (Ma, 2022) All of these types of market failure may require changes in public regulation, but they may not require a widespread public solution.

1.2.2 Physical environment

1.2.1.1 *The potential causes of insured loss.* The predicted frequency and severity of weather events and other sources of damage obviously are a principal cause of the problem. Predicting the likelihood of storms, their intensity, and their effects, for example, is the ordinary work of actuaries and other experts and becomes even more important when addressing potential catastrophes. Potential causes also interact with geography; a storm of certain parameters will have different impact in flood zones with different degrees of inherent risk.

1.2.1.2 *Current investment.* For property insurance, the existing investment in homes and other improvements is a major cause of the problem. A wildfire that is far from a developed area poses little threat of potential insured damage. The built environment is what is at risk—buildings, their contents, and infrastructure that may be the subjects of insurance. Assessing the nature and extent of that property is a starting point. Included in that assessment is determining the extent of potential loss relevant to particular causes; for example, buildings that conform to more rigorous mitigation and resilience standards would be valued differently in calculating potential losses.

1.2.3 Economic factors

1.2.3.1 *Prior to a loss.* Economic factors about the policyholders and their context that are relevant include the wealth and income of the policyholders and the economic relations between the class of policyholders and the broader community. Less wealthy policyholders, especially those who hold less wealth relative to the value of insured property, are less able to absorb financial losses. Groups of policyholders also may have more or less significance in local or regional economies; owners of rental properties in a

shore community are key to the economy on which restaurants, retail outlets, and others depend. Both of these situations exacerbate the potential problem of uninsured losses.

1.2.3.2 *Following a loss.* The availability of other sources of compensation or financial assistance can substitute for or supplement insurance payments. The more assistance that is available, the less of a problem exists. To be effective, the assistance must be substantial and predictable. Traditionally a variety of government and nonprofit agencies provide some sort of relief, but their scope may be limited, such as short-term housing assistance. (FEMA, 2024)

1.2.4 Social and political factors

The economics of insurance are never the whole story. Both public regulation of private insurance and public solutions to insurance market failures are political processes. The back-and-forth political history of the NFIP exemplifies the challenges. (Knowles et al., 2014) Politics is about interests, but interests also can be seen more broadly as social values. Insurance market problems are particularly likely to arise when those most affected are disadvantaged in the political process, including lower-income people and members of racial or ethnic minorities. More generally, when values of community and solidarity are lacking with respect to a particular situation or in general, there is less likely to be a perception of a problem.

1.3 What kind of problem is it?

Problems can be defined along two dimensions: their scope and their duration.

1.3.1 Scope

Even when limiting the inquiry to catastrophe-related losses, problems can be so small that they do not deserve public solutions. Homeowners insurance typically excludes coverage for pets, so many pet owners will suffer financial and emotional loss as pets are destroyed during catastrophes. This lack of insurance, however, does not rise to such a level that it demands a national pet insurance program. The general unavailability of private flood insurance is at the other end of the spectrum because potential losses from floods are enormous, so the lack of private insurance creates a need for a public solution. In between are causes of loss or limitations on coverage that create intermediate kinds of losses.

For property insurance, the primary measure of loss is financial, mostly the funds needed to repair or replace buildings and their contents. As with defining the causes of loss, social factors are relevant, too. If an uninsured class of losses would produce significant disruption to an established community, that is of more concern than financially significant losses that would have less social impact.

1.3.2 Duration

1.3.2.1 *Transient or likely to recur.* One measure of the duration of catastrophic risks is whether the underlying conditions are such that the problem is transient or is likely to recur. Most property insurance issues are recurrent, such as homes and businesses that

are located in an area that is subject to repeated risk of flood. There may be some other circumstances where the risk will be diminished over time for any of several reasons. Infrastructure improvements across a wide area, upgraded building standards, and other mitigation and resilience measures may decrease the loss incurred if a disaster occurs, for example.

A similar issue is presented by insurance market cycles. In soft markets, insurance is readily available and prices fall, and in hard markets, insurance is less readily available and prices rise. Because hard markets are cyclical, they do not in themselves require a major public solution. Temporary measures such as a Market Assistance Program may be created to address short-term effects. If the hard market reflects long-term factors rather than short-term economics, they may require more robust measures.

1.3.2.2 *Continual or transitional.* A different measure of duration is whether the risk is continual or transitional. The risk of property damage from flooding in a shore community is permanent. The NFIP responds by increasing premiums and requiring enhanced protection. The response is part of the permanent public solution, but it presents a transitional problem. Homeowners in flood zones have purchased their houses with rough assumptions about maintenance costs and insurance premiums. If either or both of those costs increase dramatically in a short period of time, arguably there is unfairness to the homeowners who have their assumptions undermined. The transitional problem is how to phase in the new rules. Risk Rating 2.0 is raising premiums to phase out subsidies, for example, but statutory limits address the transition problem by limiting increases to 18 percent annually for primary residences. (Congressional Research Service, 2024)

2. Public Solutions Other Than Insurance

Although the focus of this paper is on public solutions that employ insurance or insurance-like systems, there are alternatives. At two ends of the spectrum of government involvement, the state could let losses lie where they fall, or it could make the problems of private parties into a public responsibility.

2.1 Letting Losses Lie

In his classic lectures on *The Common Law*, Oliver Wendell Holmes, Jr., laid out the extremes of private versus public:

The state might conceivably make itself a mutual insurance company against accidents and distribute the burden of its citizens' mishaps among all its members. There might be a pension for paralytics, and state aid for those who suffered in person or estate from tempest or wild beasts. (Holmes, 1881)

Holmes's own position was clear: "The state does none of these things" and it should not. A variety of libertarian, conservative, and individualistic philosophies agree. The losses from catastrophes and other sources by and large are the problems of the

individuals who suffer them, they assert. As a matter of fairness and sound public policy, the government should not make some people bear the burdens of others,

Holmesian individualism remains a strong strain in political discourse. The New Deal, the Great Society, and modern progressive politics have been confronted by Reaganism and its conservative successors. Ronald Reagan proclaimed the core belief in his first inaugural address: “Government is not the solution to our problems; government is the problem.” (Judis et al., 2002) Individual liberty, personal responsibility, and economic opportunity are the foundations of American life, so each person should win or lose on their own, and the devil take the hindmost.

Under this approach, the private insurance market bases its pooling, risk classification, and pricing mostly on actuarial risk. Doing so is morally sound as well as economically efficient, making each policyholder bear the cost of their own risks. Where the private market fails, such as in flood insurance, the government may step in, but it still should embody individualist pricing. In that spirit, the Biggert-Waters Flood Insurance Reform Act of 2012 aimed to restore solvency to the NFIP by eliminating subsidies, remove grandfathering, and shifting to risk-based pricing. Politics intervened the next year as the Homeowner Flood Insurance Affordability Act delayed implementation of Biggert-Waters, but Risk Rating 2.0 has restored the momentum to have the NFIP mimic private-market insurers.

2.2 Public Responsibility for Private Losses

Today, Holmes’s statement could not be more wrong as an empirical matter. The state does, in fact, make itself “a mutual insurance company against accidents” and provide a “pension for paralytics,” through Medicaid, Social Security Disability Insurance, and other programs. On the present issue, the state does provide aid for those who “suffered in estate . . . from tempest,” through FEMA and other entities. (Wild beasts are not a great concern at the moment.)

Since at least the New Deal, there has been broad recognition that some level of collective responsibility is essential; the only questions are where and how much. Whether individuals should bear their own benefits and losses or whether society through federal and state governments should share in their benefits and assume some of the burden of their losses recurs in legal and political issues. In the health insurance realm, for example, the Affordable Care Act provides subsidized health insurance for many Americans, and Medicare is nearly untouchable politically.

Insurance solutions are not the only type in use. The public already assumes substantial responsibility for private disaster losses through various programs of FEMA and other government entities. Among others, Hazard Mitigation Assistance grants use federal funds to reduce or eliminate risks from future disasters and Individuals and Households Program grants provide aid to individuals to repair or rebuild disaster damaged homes when adequate insurance is not available. (FEMA, 2024) At the other end of the spectrum from letting losses lie, the state could play an even larger role in dealing with catastrophes.

3. Defining Public Insurance Solutions

Public policy on disaster losses lies between the poles of letting losses lie and having the state assume all of the burdens on those losses. The focus of this paper is on insurance or insurance-like solutions to the problem, whether the particular solution is fully provided by a public entity or involves a mixed public-private program.

Insurance contains three essential elements: (1) A definition of risk, risk transfer to an entity, and risk pooling and distribution; (2) the principle of indemnity, or compensation for a loss; and (3) an insurer-insured relationship between the entity and the policyholder.

Defining risk is the first step: Risk is defined as uncertainty concerning the occurrence of a loss. Uncertainty can be about whether something will happen or when it will happen. What counts as a risk is defined in the insurance policy, which of course represents society's ideas about what uncertain events might occur and which should be insurable. The risk is transferred from the policyholder to the insurance entity, which pools similar risks together. In that way, the risk is distributed among the members of the pool instead of being borne by the individual policyholder alone.

The indemnity principle states that the purpose of insurance is to make the insured whole in case of a loss. If the insured loss comes to pass, the insured can recover to the extent of its loss but no more. There's a catch, too: Insurance almost never provides for complete indemnity through reimbursement for the entire amount of the loss. Deductibles, policy limits, and coverage limitations reduce the amount paid to the policyholder.

Insurance establishes a relationship between a policyholder and an insurance entity that pools the risk of all policyholders. The entity can be a private company or a public entity, such as the National Flood Insurance Program.

Answers to a series of questions are required to evaluate potential insurance solutions to catastrophe losses:

- What are the goals of the insurance?
- What is the risk the insurance protects against?
- What is the pool?
- How are insureds classified?
- What does the insurance cover?
- How is the premium set?
- What does the insurance pay?
- How are claims paid?
- What type of institution will operate the insurance?
- What are the secondary effects of insurance?

The questions are described more fully in the following sections. As the introduction noted, asking the right questions is the key to getting the right answers.

3.1 What are the goals of the insurance?

The ultimate goal of a public insurance solution is to solve the problem, which is why careful definition of the problem and its causes is so important. Problems have many

elements, however, and any particular solution is not necessarily addressed to resolving every element. Tradeoffs and limits are inherent in designing a public solution. The solution also is likely to have effects other than directly addressing the problem, and those need to be considered as well.

3.1.1 Indemnification

Because an insurance solution has been adopted rather than some other form of intervention a primary goal is to indemnify the policyholder for a loss through a system of risk transfer and risk distribution. What indemnity means and how to distribute the losses are discussed in subsequent sections.

3.1.2 Incentives

A traditional concern of insurance is the creation of moral hazard. Once insurance is in place, moral hazard suggests that an insured has less incentive to avoid or minimize an insured loss. Moral hazard often is more theoretical than real; because of the risk to their own safety or property, insured homeowners are unlikely to be less careful with fire risk than uninsured homeowners. Nevertheless, the possibility of moral hazard at least needs consideration.

The reverse of moral hazard is an incentive to reduce the likelihood of a loss or to minimize its extent, and that incentive often is an incentive of public solutions. Different programs have as their objectives mitigating flood or wildfire risk before events occur or being more resilient if losses due occur, in addition to indemnifying property owners. California, for example, requires insurers to provide premium discounts for specified efforts at wildfire risk mitigation. (Calif. Code of Regulations, 2022) Policyholders, communities, or both can be given incentives to engage in these actions.

3.1.3 Conflicting goals

The goals of a form of insurance can be in conflict and choices need to be made among them. Two goals of homeowners insurance include coverage for common causes of significant accidental loss and broad coverage for covered losses. (Feinman, 2018) A version of the indemnity principle states, however, that insurance payments should not put the policyholder in a better economic position than they were before the loss. Most homeowners policies, therefore, pay for loss of the contents of the building, such as furniture and personal items, only at Actual Cash Value, the depreciated value of the goods. The policyholder will only receive the value of a used sofa that is destroyed in a fire, so they will have to pay out-of-pocket for a new one, even though to them the sofa is not regarded as an economic asset. (This version of the indemnity principle also reduces premiums, which is attractive to many policyholders.) The limitation to ACV effectuates an economic version of indemnity, but it does so at the expense of the goals of broad coverage for causes of loss. Balancing conflicting goals needs to be a conscious choice in design of the program and well understood by the policyholder.

3.1.4 Risk and responsibility

Goals such as these are specific. In a more general sense, goals of insurance include allocating responsibility for risks and losses among individual communities, levels of government, and the insuring entity. In addition to operationalizing actions such as mitigation, the goals may include building a consciousness of the risk and a sense of responsibility for it among those different groups.

3.2 What is the risk the insurance protects against?

Risk is defined as uncertainty concerning the occurrence of a loss. In catastrophe situations, the uncertainty is about whether something will happen—whether a flood will occur. The risk is not a single risk (flood or no flood) but a range of possibilities, such as floods of different severity causing different degrees and kinds of loss.

Catastrophes arise from events in nature, but risks are not naturally occurring phenomena. Risks are socially constructed for the purpose of being transferred and distributed in service of the goals of the insurance. In a typical homeowners insurance policy, risks are defined quite generally with detailed exclusions that substantially narrow the definition. Risks also may be defined in detail or even by reference to an external standard, such as being a named storm. Because it defines the risk to be transferred, the choice among these and the precise content of the language follows directly from the goals of the insurance and is not merely a technical drafting issue.

The definition of the risk is related to but not identical to the questions of risk classification and insurance payment. Once the risk is defined, classification of insureds may be used to limit coverage or set premiums, and payment terms will define how much of the risk will be covered in the event of a loss.

3.3 What is the pool?

Insurance involves risk transfer and risk distribution, the transfer of a defined risk from an individual to a pool that will bear the risk. Construction of the risk pool should follow from the goals of the insurance.

Every risk pool contains members who are alike in some respect relevant to the risk. Members in the pool may be substantially similarly situated with respect to the risk or can have hugely different profiles. Where the risk covered is flood, for example, homeowners in a given area are subject to a similar risk; if the risk is direct physical loss under homeowners insurance, the insureds may differ much more in many respects.

3.3.1 Broad and narrow inclusion

The potential variability of members of the risk pool creates several issues. The most relevant is who should be included in the pool in order to further the goals of the insurance and to balance potential conflicts among the goals. Selection criteria that are narrow may exclude some higher-risk potential members of the pool, for example; doing so may

decrease premiums but also exclude many for whom there is a perceived need to provide coverage. Broader criteria may bring higher-risk but deserving insureds into the pool, but at the expense of increasing potential losses and therefore premiums.

Whether the insurance is optional or mandatory also may affect the goals. Mandatory coverage avoids an adverse selection problem and provides coverage to the most participants and, depending on the distribution of risk among members, may reduce average premiums.

In public solutions to catastrophe problems, pool definitions that are broad may be especially useful in solving uninsurability problems. State FAIR programs often require all insurers to effectively participate as reinsurers, and the INSURE Act, for example, would effectively put the entire nation in a pool to cover a variety of catastrophic risks, including flood, wildfire, earthquake, and others.

3.3.2 Adverse and propitious selection

Adverse selection always is a concern with insurance. Adverse selection is the tendency for higher risks to purchase insurance; sicker people buying health insurance is the traditional example. That increases the costs to the pool and may even do so to such an extent that lower risks drop out of the pool, creating a “death spiral” as costs increase. Like moral hazard, in many insurance markets adverse selection is more theoretical than real. Propitious selection may be more common; people who buy more insurance also tend to be more careful, actually lowering costs.

Once the pool is defined, members of the pool still may be treated unequally, either with respect to how much coverage is provided and how much they are charged for it. That is the next issue: How are insureds classified?

3.3 How are insureds classified?

3.3.1 Advancing the goals

Once insureds subject to a certain cause of loss are included in the pool, the insureds are classified for a variety of reasons, the most important of which are the extent of coverage and the premiums charged. Based on a large volume of information about past losses, current conditions, and future predictions, the insurer assesses the risks posed by each member of the pool and acts accordingly. This process is the work of actuaries who assess the risks and underwriters who evaluate the individual insureds, but it is not merely a statistical process. The classification of insureds follows from the goals of the insurance, which typically include considering and balancing widespread availability, broad coverage, affordable pricing, and secondary effects.

3.3.2 Detailed risk classification

In addition to advancing the particular goals of the insurance, a broad issue underlies risk classification, namely the compromise between precision and other factors. Calculating the risk posed by one insured compared to another could involve a thousand-

and-one factors. As the insurer accumulates more and more information about more and more factors, it can produce finer risk classification and pricing.

One view of this process is that finer risk classification and pricing are good. Because insurance involves risk transfer, the better that risks can be calculated and priced, the better the process works. From a certain normative approach, that process is morally justified as well as economically efficient. Each insured is entitled to be judged on their own worth, even in the process of defining and pricing their insurance.

Some problems inhere in this process, however. One problem is that detailed information may be available only from the insured, from the insurer, from public or proprietary sources, or not at all. Acquiring and processing that information is not costless. Even if detailed information is available, at some point it costs the insurer more to obtain and process information than it saves by more accurately classifying and pricing the risks. Therefore, every classification, policy, and premium puts insureds who are different in significant respects in the same risk pool at the same price.

3.3.3 Risk classification and social values

There is a deeper problem. Favoring finer risk calculation is a normative choice. Social values may conflict with accuracy in underwriting, and when they do, precision may yield to values. An actuary may discover that men and women or Black people and white people have different risk profiles in some relevant respect, but society abhors discrimination based on gender or race. In catastrophes in particular, broad coverage may be a principal goal. Even more generally, living in society carries benefits and burdens. Some benefits and burdens should be shared, perhaps including sharing the burdens of insured risk.

3.4 What does the insurance cover?

The risk covered determines the event that triggers coverage. Once coverage is triggered, there are separate issues about what losses the insurance covers, discussed in a this section, and how much it pays for those losses, discussed in a later section.

3.4.1 Homeowners insurance as a template

Property insurance almost always covers only determinate financial losses. These are not all of the losses that occur, but for reasons of administrability and cost, other types of losses are excluded. Homeowners insurance pays for the cost to repair a damaged building, but it does not pay for the time the insured homeowner has to spend dealing with contractors. Within that limitation, several types of loss may be covered and the ISO HO-3 common homeowners policy provides a useful template of the choices.(ISO, 2022) Property covered in case of loss or damage includes dwellings, other structures, and personal property. Other forms of loss may be treated as additional coverages. Additional living expenses while an uninhabitable property is under repair or fair rental value compensate for loss of use, just like business interruption coverage does under a commercial policy. Debris removal, temporary repairs, and fees for fire service or other entities all are collateral but determinable losses.

3.4.2 Broad or narrow definitions

Typically grants of coverage are broad, such as “personal property owned or used by an insured” and “direct physical loss.” Detailed exclusions then narrow the coverage, such as nine listed types of personal property in the ISO HO-3 and comprehensive definitions of excluded “flood” and “earth movement.”

Each of these issues sets out choices in the design of a public solution. The balance involves issues of coverage, efficiency, and cost. Determining some types of losses may be more costly than they are worth, at least in the aggregate, and limiting coverage limits cost. In each case, the values to be furthered by the insurance are the basis for the decision.

3.5 How is the premium set?

The price of private insurance, like other market prices, generally is set to match potential policyholders’ demand for the insurance and the price at which the insurer can supply it profitably. (Unlike most other market prices, of course, insurance premiums are subject to state regulation.) An insurer’s costs are its loss expenses, loss adjustment expenses, and other expenses, and its income includes premiums received and investment income earned on premiums held until they must be paid out.

The situation is different with public solutions because the goal is to correct market failures in support of other goals.

3.5.1 Advancing the goals

The determination of the premiums for a public insurance solution to a catastrophe problem is more complex because it immediately involves the goals of the insurance other than profitability; if the insurance could be sold to enough members of the pool of potential insureds profitably, the market would supply the insurance and no public solution would be needed. The premiums need to be set in a way that best advances the goals of the insurance, including balancing conflicting goals.

3.5.2 Subsidized premiums

As discussed in a previous section, classification of insureds can be accomplished at different degrees of detail at different costs. The goals such as broad coverage discussed there are relevant here, too. With respect to the premiums, those goals are implemented in large part through subsidies of two kinds.

Intrinsic subsidies occur because risk classification is never perfectly individualized, and sometimes far from individualized by design. Therefore, lower-risk policyholders subsidize the premiums of higher-risk policyholders. The subsidy is intrinsic in the sense that it is built into the policy and pricing.

Extrinsic subsidies are provided outside the pool of insureds. Because the need for a solution arises from a private market failure, there also is likely to be a need for an external subsidy. That may be done by effectively taxing other insurance pools, as is done with many residual market plans, or by direct public expenditures, as the federal government has done to make up shortfalls in the NFIP.

3.6 What does the insurance pay?

3.6.1 Indemnity

Insurance operates under the indemnity principle; the purpose of insurance is to make the insured whole in the event of a covered loss. Indemnity has various meanings, however. Tautologically, indemnity requires the insurer to pay what is owed under the policy. In insurance law, indemnity is most often used as a limitation on payment; the insured can recover to the extent of its loss, no less but no more, with nearly all cases emphasizing the “no more” rather than the “no less.” Because of deductibles, policy limits, and coverage limitations, full compensation is rarely if ever accomplished in property insurance.

In designing a public solution, the relevant meaning of indemnity is to pay according to the loss incurred, related to the risk transferred and the goals of the insurance. The principal goal is compensation to the insured, but others are relevant as well. As with payment for private insurance, payment under a public solution is unlikely to fully indemnify the insured. Limiting payment makes the insurance more affordable, thereby likely increasing participation, reduces the need for subsidy, and serves other ends such as encouraging mitigation efforts. Depending on the solution and its context, other benefits may include the prevention of moral hazard, the reduction of administrative costs, or the prevention of small claims.

3.6.2 Extent of individualization

As with setting the premium, payment can be based on degrees of individual assessment of the loss. Individualized losses, as in homeowners insurance, can approach fuller indemnity and reduce intrinsic subsidies. However, they require a more detailed claim process, which is not costless and may lead to more disputes. At the other extreme, payment under parametric insurance streamlines the process of determining if a loss has occurred and the extent of the loss. As with life insurance, however, parametric insurance still requires a front-end calculation of whether the insured is at risk and what amount of coverage is appropriate.

There are two general forms of limitation. One is limitations on amounts paid for covered losses, such as policy limits or sublimits, deductibles and coinsurance, or roof depreciation tables. The other is through coverage limitations, such as not paying for loss of contents, only paying ACV, or limiting law and ordinance coverage.

3.7 How are claims paid?

Once the losses covered and the amount for which they will be covered are determined, the losses must be paid. To a considerable extent, the choices in those cases will have a large effect on the claim process. As with every other element of the solution, the claim process ultimately should vindicate the values.

3.7.1 Claim process

At the extremes, covering and paying for a large, complex set of losses requires substantial documentation and investigation, while parametric insurance requires none at all. Therefore, the first step in designing the claim process depends on the prior choices.

In all but the simplest claim processes, however, a degree of complexity is required. One issue, obviously, is cost. The related issue is what the extent of the benefit in reducing errors in the amount owed.

3.7.2 Agency

The process is threatened by what economists call the agency problem, the ability to affect the interests of a contracting partner. (Feinman, 2018) Initially the policyholder has agency because of its control of information concerning the loss, which may result in exaggeration of loss or even fraud. Thereafter, the insurer has the opportunity to delay or deny payment because it may be to its financial advantage to do so. A private insurance company has an incentive to delay claim payments and force policyholders to litigation to increase investment income, and to deny uncertain or even valid claims to reduce claim costs, all of which are balanced against its concern for right action, regulatory supervision, and reputational effect. In a public solution, the incentive depends on the structure and compensation of the insurance entity.

3.8 What type of institution will operate the insurance?

3.8.1 Levels

Insurance operates at several levels.

- What entity will provide the insurance?
- If relevant, what entity will provide reinsurance?
- What entity will sell the insurance?
- What entity will process claims?

3.8.2 Options

There are a variety of options with respect to each of these:

- Private, subject to more or less public regulation and more or less public mandate. This the traditional private market, with private insurance companies operating as usual and sales direct-to-consumer or through agents.
- Organizational, such as fraternal organizations or employers. In many cases these are vehicles for distribution, perhaps informally.
- Public. The NFIP as insurer illustrates, even though other elements of the operation are carried out through others, such as sales and claims processing through the write-your-own companies.
- Private with public reinsurance, as the INSURE Act proposes.
- Hybrid. An example is the use of FAIR plans as publicly mandated reinsurance organizations.

The choice among these entities for each of the functions should be directed by the values of the public solution. Often a major factor will be ease of administration; the NFIP, for example, makes use of the existing infrastructure of private insurers to sell and process claims, obviating the development of a federal bureaucracy to do the same. Medicare, by contrast, was designed to be universal and relatively simple to administer, so a federal structure was deemed appropriate. As coverage options expanded, private insurers were made available as alternatives, with Medicare Advantage or Medicare Supplement plans.

3.9 What are the secondary effects of the insurance?

The primary benefit of insurance is to indemnify the policyholder if they suffer a loss. Insurance has many other consequences for individual policyholders and for society as a whole, too.

3.9.1 Effects on policyholders

When a policyholder buys an insurance policy, they buy a relationship with the insurance company. Part of the benefit of that relationship is economic, that they will be made whole financially if a loss occurs. Another benefit is mental and emotional; the policyholder experiences less concern about the future, expecting that they will be protected. This peace of mind is important even if it is immeasurable. People who feel more secure are better able to participate in socially beneficial activities.

The insurance relationship also qualifies policyholders for activities they could not engage in otherwise. Registering a car or obtaining a mortgage requires insurance, so the insurance marks the insured as a more responsible member of society.

In many situations, the presence of insurance actually makes policyholders less likely to suffer a loss. Insurers have many ways to shape behavior, such as charging lower premiums for a homeowner in a wildfire-prone area who clears away brush or a driver who has a clean safety record. Because many of these behaviors affect other people as well—control of wildfires and fewer accidents—they generate a social benefit.

3.9.2 Social effects

Indemnity itself provides a social benefit. Because the policyholder is compensated for a loss, the community is saved economic disruption. The victim of a loss who has insurance does not need to rely on others for financial support, whether they are friends and family members or assistance programs of nonprofit groups or government. Because insurance covers losses, the economy and community can continue to function largely as before.

To the extent that actions of the insurer reduce the likelihood that an individual will suffer a loss, there is a corresponding social benefit. More broadly, insurers engage in knowledge production and loss prevention that benefit everyone. Underwriters Laboratories, the Insurance Institute for Highway Safety, and individual insurers develop information about the causes of harm and describe ways of avoiding them. Government

regulates safety, too, but insurance companies who want to lower their risks do a lot to create a safer society.

3.9.3 Costs and benefits

These benefits are not costless. The costs of operating an insurance program are significant; employees must be paid, buildings must be maintained, and other costs incurred, and that money could be spent elsewhere. The benefits should outweigh the costs, looking at financial benefits and social benefits, some measurable and some not, that add to the plus side of the ledger.

3.9.4 Inequality

Because insurance has social benefits, how those benefits are distributed also is important. People benefit if they have insurance, although they need to pay premiums to get the benefits. Members of society benefit from insurance purchased by other people and from insurance institutions at large. In thinking about who gets insurance, what kinds of insurance they get, how much they pay, and who benefits from other people having insurance, it is necessary to see if race, gender, ethnicity, class, and similar factors have an impact.

Conclusion

As floods, storms, wildfires, and other catastrophes become increasingly common, the availability and affordability of property insurance has become a high-visibility political issue. Politics involve choices. The aim of this paper is to frame questions that will assist politicians and others in making better choices.

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