
**Insurance
Decision-Making and
Market Behavior**

Insurance Decision-Making and Market Behavior

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Insurance Decision-Making and Market Behavior

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Abstract

Considerable evidence suggests that many people for whom insurance is worth purchasing do not have coverage and others who appear not to need financial protection against certain events actually have purchased coverage. There are certain types of events for which one might expect to see insurance widely marketed that are viewed today by insurers as uninsurable and there are other policies one might not expect to be successfully marketed that exist on a relatively large scale. In addition, evidence suggests that cost-effective preventive measures are sometimes not rewarded by insurers in ways that could change their clients' behavior. These examples reveal that insurance purchasing and marketing activities do not always produce results that are in the best interest of individuals at risk. *Insurance Decision-Making and Market Behavior* discusses such behavior with the intent of categorizing these insurance “anomalies”. It represents a first step in constructing a theory of insurance decision-making to explain behavior that does not conform to standard economic models of choice and decision-making. Finally, the authors propose a set of prescriptive solutions for improving insurance decision-making.

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1

Introduction

Economists view insurance markets as a special case of markets for contingent claims based on the state-preference approach developed by Arrow (1953) and Debreu (1953). A contingent claim is a formal contract between two parties whereby one of the parties (the insured) purchases a ticket from another party (the insurer), which can be redeemed for money if certain states of nature occur. The ticket is more commonly referred to as an insurance policy, its cost is the insurance premium and the states of nature are the events which are covered by it such as a fire causing damage to one's property.

Insurance affects individuals prior to specific events occurring because the insurer must collect premiums. It then pays people in the event of losses suffered from events covered by the policy. Effective preventive measures on the part of insured people sometimes lower the premium, if the insurer can observe them at low cost. For example, if an insured homeowner invests in a mitigation measure that reduces the potential losses from an earthquake, and if that investment could be observed, then a competitive insurer that has the freedom to set rates based on risk has a financial incentive to lower the annual premium for earthquake coverage compared to the premium charged if there had

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been no mitigation. The benefits in the form of lower expected losses have to be sufficiently large that it is cost-effective for the insurer to incur the transaction costs of varying the premium based on mitigation behavior.

Considerable empirical evidence suggests that many individuals for whom insurance is a worthwhile purchase do not have coverage. For example, flood insurance even when heavily subsidized is not purchased by many homeowners until after they suffer damage from a disaster. Many residents in Louisiana and Mississippi only discovered that they were not covered for flood damage after Hurricane Katrina, with some allegedly under the misimpression that they were protected by their homeowner's policy. A standard homeowner's policy, normally required as a condition for a mortgage, provides protection against damage from fire, hail, storms, tornadoes and wind damage, but not from rising water due to floods and hurricanes. Homeowners in flood-prone areas are eligible to purchase such a policy through the National Flood Insurance Program (NFIP), a public program administrated by the Federal Emergency Management Agency (FEMA) that was established in 1968. In the Louisiana parishes affected by Katrina the percentage of homeowners with flood insurance ranged from 57.7% in St. Bernard's to 7.3% in Tangipahoa. Only 40% of the residents (owners and renters) in Orleans parish had flood insurance (Insurance Information Institute, 2005).

It is hard to verify what people believed before the fact since it will often be in their interest after a disaster to claim that they thought they were covered. Limited data exist on beliefs about coverage prior to the event. It is also difficult to know what insurance agents told prospective buyers, above and beyond specific insurance contract language. In a field survey of homeowners residing in disaster-prone areas in the United States, Kunreuther et al. (1978) found that 60% of the uninsured homeowners interviewed had no idea that they could cover their house against flood or earthquake damage. Some homeowners in Mississippi allege that insurance agents led them to believe that they had coverage against flooding damage from hurricanes such as Katrina.

Others who appear not to need financial protection against certain events actually have purchased coverage. For example, many consumers will buy a warranty on a new piece of electronic equipment or appliance

that pays for only small repair costs and even annual servicing, at a premium which is extremely high relative to the cost of buying a replacement. For example, extended protection plans are offered at USD 70 for two years, USD 120 for three years and USD 300 for five years on a camcorder which sells for as little as USD 180 (Cutler and Zeckhauser, 2004). Some people buy these but, of course, many do not.

Neither of these examples is totally conclusive: some uninsured homeowners may not be very risk averse and some appliance buyers worried about product failures may choose warranties even at a high price. But the circumstantial evidence suggests that “more than a few” people do things that are not expected if they were both rational (in a sense to be defined more carefully below) and well informed. One or both conditions for efficient markets may be absent.

On the supply side, certain types of events for which one might expect to see insurance widely marketed are viewed today by insurers as uninsurable unless there is public sector involvement. For example, following the Northridge, CA earthquake in 1994 insurers concluded that they could not continue to provide coverage to residents in the state. This led to the formation of the California Earthquake Authority, a state-run program (Roth Jr., 1998). Novel insurance policies where there is likely to be considerable interest by consumers have not been marketed by private insurers. For example, Shiller (2003) has proposed home equity insurance as a way to protect property owners against adverse changes in the market values of their house. He notes that data exist to construct such a product that could be attractive to homeowners and profitable to insurers.

Other policies that one might *not* expect to be successfully marketed do indeed exist on a relatively large scale. Health and life insurers often guarantee buyers that they will be allowed to renew coverage at premiums which are not affected by any adverse changes in their health; this “guaranteed renewability at class average premiums” in principle provides a solution to risk segmentation (and perhaps adverse selection, described in Section 5.1) which many experts think to be insurmountable problems in competitive insurance markets. Finally, evidence suggests that cost-effective preventive measures are sometimes rewarded by insurers in ways that could change their clients’ behavior.

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For example, some insurers offer lower insurance premiums for buying a car with airbags or automatic seat belts. But insurers do not discount health insurance premiums for joggers or reduce premiums for windstorm coverage for homeowners who engage in mitigation.

The above examples reveal that insurance purchasing and marketing activities do not always produce results that are in the best interest of individuals at risk. This paper discusses such behavior with the intent of categorizing these anomalies. It represents a first step in constructing a theory of insurance decision-making to explain behavior that does not conform to standard economic models of choice and decision-making. In this sense it differs from the very insightful paper by Cutler and Zeckhauser (2004) that also discusses selected kinds of anomalies related to insurance but makes no effort to develop a framework for describing or categorizing a wide range of them.

Our approach to the problem is first to discuss benchmark models of demand for insurance and supply of coverage in a world where there is perfect information and no transaction costs between parties. Buyers of insurance are assumed to maximize a conventional von Neumann–Morgenstern utility function (1947); choices made in accordance with such a function are defined as “rational.” We will assume that all people are risk averse, but we place no a priori limits on risk aversion. This implies that people could pay premiums very much in excess of their expected claim payments and still be called rational. The assumption of risk averse individuals also implies that (1) if the premium is below the actuarially fair value, rational people definitely should buy insurance. On the other hand, (2) a rational person should not pay a premium greater than the maximum claim that could be received from the insured event.

Insurers are assumed initially to maximize expected profit. This means that they would not require a premium in excess of their expected costs in order to be willing to supply insurance.¹ If given the opportunity they would be eager to collect premiums higher than that amount. These benchmark models enable us to develop a positive

¹We are assuming the expected costs include the marketing and administrative costs associated with a policy.

theory of demand and supply of insurance that will incorporate other factors such as information imperfections, biases and simplified choice models used by individuals, effort and attention costs, and multi-attribute preferences, insurer market power, and insolvency concerns by firms or capital suppliers.

We then introduce a set of anomalies related to insurance behavior that shows when and how the assumptions in the benchmark positive models of choice appear to be violated. We define an anomaly on the demand side where those individuals at risk should want to buy coverage but do not and where those who do purchase coverage should have decided to forego this protection. An anomaly on the supply side has an analogous interpretation. In some cases insurers should want to offer coverage but do not and in others they do offer protection but it is unclear why they are providing a policy. There is obviously the possibility of the less stark anomaly in which people purchase insurance but buy either more or less coverage than is rational. Determining whether behavior is anomalous requires knowing the strength of risk aversion and the administrative cost of supplying insurance which is often difficult to measure.

The most serious challenge is to develop a positive theory of choice that can explain these anomalies in a simple way – as opposed to developing an ad hoc explanation for every strange form of behavior that we observe. This is, to put it mildly, a daunting task, but one that we begin here. The concluding section of the paper proposes a set of prescriptive solutions for improving insurance decision-making by addressing the above anomalies. These solutions may require government to take on one or more of the following roles: act as a partner with the private sector; serve as a key party enforcing certain standards and/or require insurance protection when individuals would not voluntarily purchase coverage.

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