

INTRODUCTION: SYMPOSIUM ON THE METHODOLOGIES OF BEHAVIORAL INSURANCE

The generic insurance product involves an agent giving up a certain amount of money *ex ante* some risky event in the expectation of being given some money in the future if something unfortunate occurs. It is immediate that “behavioral economics” has something to say about the positive and normative evaluation of insurance from the perspective of the insured. Risk preferences play a role, and there is now a rich body of theory and empirical evidence that some agents behave differently than the standard Expected Utility Theory. Time preferences play a role, as the premium is typically paid prior to the stream of expected benefits in the future, and again there is a rich body of theory and empirical evidence that some agents deviate from the standard Exponential discounting model. Subjective beliefs play a role, as perceptions of loss probabilities need not be the same as actuarial assessments, nor need they be updated over time consistently with Bayes Rule. Trust plays a role, as there can be “fine print,” lawyers, and outright corruption in any contract, leading to nonperformance risk. Finally, some have questioned whether models of probabilities and time-dependent and state-dependent payment structures are sufficient to describe the insurance decision completely. Some have argued for an explanatory role for affective, or “emotional,” components in the decision framework for insurance demand.

These “behavioral moving parts” combine to allow one to explain a wide range of possible behaviors, and the general scientific challenge is how to rigorously identify each of their roles. Doing so, in a structural manner, clearly matters for normative policy design. Do we need better products, better decisions about insurance products, or a healthy mix of both?

Some years ago, we started an annual series of workshops on Behavioral Insurance and Risk Management, alternating between Munich (MRIC, the Munich Risk and Insurance Center, Ludwig-Maximilians-Universität) and Atlanta (CEAR, the Center for the Economic Analysis of Risk, Georgia State University). This symposium of the *Journal of Risk and Insurance* reflects research in this vein.

Research in behavioral insurance approaches this generic characterization of the insurance product by allowing a wide range of assumptions about behavior. It is possible to identify five clear methodologies with behavioral insurance, with surprisingly little overlap to date.

1. **Theorizing With Behaviorally Motivated Assumptions.** Some of the earliest behavioral insurance research involved the use by theorists of alternative

assumptions to the familiar list of neoclassical economics. As behavioral economics offers specific alternative models of decision making with respect to risk, uncertainty, ambiguity, time, and learning, one naturally finds a reconsideration of previous results.

2. **Empirics With Hypothetical Surveys.** A large body of research involves the use of hypothetical surveys of choice and valuation of insurance products that are hypothetical. There are several ways in which questions can be hypothetical. They could be questions that are about real products, but posed hypothetically in the sense that there are no monetary consequences to the respondent for one answer or another. Or they could be questions about hypothetical products altogether. Thought experiments, an important staple of theorists, fall into this category.
3. **Empirics With Laboratory Experiments.** The use of controlled, salient payments depending on the response is the hallmark of an experiment, and laboratory experiments are conventionally defined as those undertaken with a convenience sample of students for “small” stakes.
4. **Empirics With Naturally Occurring Data.** In some settings, there exist naturally occurring data on salient choices that allow one to draw inferences about behavior, without any additional incentives provided to subjects or without any randomization applied.
5. **Empirics in the Field With Randomized Control Trials.** A popular method for evaluating insurance behavior has been to conduct an explicit randomization of product, information, or other choice characteristics, and compare the effects of treatments to an appropriate control. In some settings the randomization might have occurred naturally, without experimenter intervention.

Of course there are overlaps in these methodologies: some field experiments look more like lab experiments with a nonstandard population, randomization can be used with surveys or lab experiments, and so on. But generally these five methodologies characterize what we see in this literature.

We view each of these methodologies as better suited to answer some types of questions than others. Rarely does one method have a claim to provide a general, unconditional insight, even if that is often the way we all present our research to the world. The complementarity of the different methodologies remains to be exploited fully. One can quickly ascertain behavioral insights with thought experiments or hypothetical surveys, then come back to check these with salient rewards in the convenience and cost effectiveness of the lab, then take findings that survive out into the field. Indeed, we would go further and encourage this cycle to repeat itself when, inevitably, there are puzzles emerging from interesting field settings, where one often runs into constraints in terms of what can be controlled and identified.

We also do not take the narrow view that “behavioral insurance” is defined by anomalies from the perspective of standard theory, or that deviations from that standard theory are always necessary to do interesting “behavioral” research.

Instead, we adopt the more encompassing view that behavioral insurance and risk management concerns itself with understanding behavior that allows for non-standard assumptions, recognizing that what is standard for one generation need not be for later (or earlier) generations. It is easy to set up “trip wire” tests of standard theory that will lead some individuals to violate that theory: the important questions are how representative those trip wires are, how representative the errors are, and how serious in welfare terms the errors are.

The articles in this special issue reflect, we believe, some exciting research frontiers in behavioral insurance and risk management.

Jan Hansen, Rasmus Jacobsen, and Morten Lau combine a series of remarkable data sets in order to evaluate the willingness to pay for insurance in Denmark. They have access to claims data from a large insurance company, measures of individual risk attitudes and discount rates from field experiments from a comparable sample, and administrative records that allow them to characterize household income and wealth. The results show a striking effect from assuming nonstandard models of decision making under risk. If agents are assumed to be characterized by Rank Dependent Utility theory, they find that willingness to pay is many multiples of the actuarially fair value; on the other hand, if agents are assumed to be characterized by Expected Utility Theory, willingness to pay is roughly equivalent to actuarially fair value. This implies that the expected consumer surplus from insurance in Denmark depends critically on how one behaviorally characterizes decision making under risk.

Ulrich Schmidt considers a simple theoretical application of some ideas from Prospect Theory to the demand for insurance. He considers two possible reference points in the case of insurance: initial wealth or final wealth after purchasing full insurance. Using a particular empirical parameterization of the probability-weighting function, he finds that individuals will either demand full insurance or no insurance at all, depending on the probability of the loss. Although these results are specific to the particular parameterization adopted, and there is considerable behavioral evidence for heterogeneity of probability-weighting behavior, they illustrate how one can start to apply selected insights from Prospect Theory to help understand the demand for insurance.

Glenn Harrison and Jia Min Ng consider the methodological questions that arise when attempting to identify the welfare effects of insurance demand using behavioral tools to measure attitudes toward risk. They employ laboratory experiments to measure the risk preferences of individuals, allowing those risk preferences to depend on standard and nonstandard models of decision making under risk. Using the best descriptive model for each individual, they then evaluate the welfare gain from observed purchases of a simple indemnity insurance product. They find evidence of considerable welfare losses overall, but can also identify which mistakes are “minimal” in the sense that they entail a small expected welfare loss. They demonstrate that using product take-up as a welfare metric for evaluating insurance products can be quantitatively and qualitatively misleading.

Yanyan Liu and Robert Myers consider the effect of adding two realistic features to the insurance options faced in developing countries: liquidity constraints and a risk of

insurer default. Each of these extensions has been individually considered in previous theoretical literature, and it turns out that both are empirically important in developing countries. Both are expected to lead to lower take-up of insurance contracts. They consider the normative option of delaying premium payment until the end of the horizon. As expected, this option relaxes the liquidity constraint and leads to higher take-up. They also discuss the potential problem of the nonpayment of the premium in the event that there is no loss.

Jeffrey Brown, Arie Kapteyn, and Olivia Mitchell show that decisions in the United States to claim benefits under Social Security can be dramatically influenced by framing effects, contrary to standard theory. Using hypothetical surveys, they employ a randomization design to show that it is possible to encourage early claiming of benefits with one frame, and to encourage later claiming of benefits with another frame. This is important evidence to show the possibility of effective nudges, but of course requires that we understand if the individual is behaving suboptimally by claiming benefits too soon or too late. In other words, this research is valuable in the sense that it provides concrete suggestions once we are able to identify which direction is “up” in terms of welfare for the individual.

Christian Knoller considers a puzzle in the design of life annuities from a behavioral perspective. Some research has suggested that annuities containing a capital guarantee, so-called “principal protected annuities,” might be preferred to standard annuities by individuals exhibiting some of the characteristics of Prospect Theory and mental accounting. However, he notes that this combination of behavioral characteristics would instead lead people to invest funds in some risk-free alternative. He considers the design of annuities with capital guarantees for such subjects in a way that would encourage them to think of the annuity as providing an opportunity to avoid losses relative to some reference points, so that the capital guaranteed annuity provides a “cushion” against those less desirable outcomes. This design feature might encourage more risk-seeking behavior and demand for these annuities, resolving the behavioral puzzle, and indeed this hypothesis is consistent with evidence from controlled laboratory experiments designed to test it.

Rachel Huang, Alexander Muermann, and Larry Tzeng provide a valuable theoretical model in which they consider the effects in a standard insurance market of having two types of agents purchasing insurance, where one type of agent regrets making suboptimal choices and the other does not regret those choices. They find that the equilibrium characterization of this market includes pooling and separating equilibria. Furthermore, they characterize some of the separating equilibria, noting the existence of situations in which there might be either a positive or negative correlation between the amount of insurance coverage and risk aversion. In other words, with this behavioral extension of standard theory, one might observe either conventional adverse selection, or less conventional “advantageous selection” in these markets. Their model points to yet another dimension in which empirical work might identify more rigorously the welfare effects of offering insurance products to behaviorally interesting agents.

Johannes Jaspersen provides a literature survey of experimental studies and hypothetical surveys of insurance demand. His survey is structured to allow

assessment of the existing literature, as well as the differences in methodological approaches adopted across various studies. The survey points to the vast number of insights that have been obtained to date using hypothetical surveys, and that are crying out for validation using incentivized experiments in the laboratory and the field. By pointing out more and less appropriate experimental methodologies, the survey provides a rich guide to the design of future experiments in behavioral insurance to fill this gap.

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