

The Market for Lemons: Costly Insurance, Coverage Denials, and Pooling

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Extended Abstract¹

(NOTE: A new draft with several new results that were not in the older version posted on my website will be uploaded soon. That is why I decided to submit an extended abstract instead of the outdated version.)

There are two striking predictions of monopoly models of insurance under adverse selection that are at odds with reality. The first one is that only the best risks—those *least* likely to suffer a loss—are uninsured (Stiglitz (1977); Chade and Schlee (2012)). The uninsured moreover go without coverage voluntarily: the insurer offers each consumer a menu of contracts, but the best risks simply choose zero coverage. Casual evidence—and non-casual evidence, such as Gruber (2008), Hendren (2013), and McFadden, Noton, and Olivella (2012)—suggests that some consumers are *involuntary uninsured* in the sense that they are not offered any (nonzero) contracts. For example, some insurers refuse to write health care policies for consumers with ‘pre-existing’ adverse health conditions.² And these involuntarily uninsured are those that insurers believe to be bad risks: we know of no evidence, casual or otherwise, that those believed to be good risks—those least likely to file a claim—are denied coverage.

To write the obvious, insurers deny coverage to a consumer because they expect to lose money from any policy that the consumer would accept. Such a belief presumably comes from observing an attribute of a consumer, for example a medical history. So one may think that adding to the standard model a noisy signal correlated with the consumer’s loss chance could account for these coverage denials. But such an addition is not enough: Chade and Schlee (2012) find that the monopolist *always* makes positive expected profit, i.e., there are *ex ante* gains to trade between the insurer and the consumer, no matter how pessimistic the insurer’s beliefs about the consumer’s loss chance.

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²Appendix F in Hendren (2013) contains an excerpt from Genworth Financial’s underwriting guidelines for long-term care insurance. There are two pages of ‘uninsurable conditions.’ Lists of uninsurable conditions from other insurers can be found at Hendren’s research page, <http://scholar.harvard.edu/hendren/publications>. See also the discussion on ‘lemon dropping’ (exclusion of bad risks) in the recent survey by Einav, Finkelstein, and Levin (2010).

The second striking prediction is that, with rich enough heterogeneity among the bad risks, the insurer offers a large number of *different* contracts. This is a consequence of complete sorting of types near the worst risk: with a continuum of types, it predicts a continuum of different contracts. Moreover, there are relatively weak conditions that deliver complete sorting of *all* types (Chade and Schlee (2012)). By contrast, insurers offer a relatively small variety of contracts across different market structures.

This paper shows that a parsimonious departure from the standard model can account for *both* coverage denials for only bad risks and few contracts being optimally offered by the insurer. An important assumption of the standard model is that the insurer’s only cost is payment of claims: *insurance provision itself is costless*. Yet both the empirical insurance and practitioner literatures extensively discuss provision costs.³ Consequently, we modify the standard model by introducing a general cost function that accommodates two commonly-discussed costs in the complete-information insurance literature: (multiplicative) *loading*; and a fixed cost of *claims processing*.

We first present a strong no-trade comparative static result for our general cost function: it shows that if there are no gains to trade at a belief about a consumer’s loss chance, then there are no gains to trade at any belief that is worse in the sense of *likelihood ratio* dominance (i.e., worse news about the consumer’s loss chance). As the proof makes clear, this result applies to a large class of monopoly pricing models.

At one level, the comparative static result answers our question about excluding only bad risks. It does not, however, pin down who is denied coverage and who is not. But under a smoothness condition on the cost function we obtain a necessary and sufficient condition for coverage denials for those likely to be bad risks that includes as a special case a recent result by Hendren (2013). Although the condition potentially requires that many inequalities be checked, we also provide a simple sufficient condition for coverage denials consisting of a single inequality.

These results demarcate when there are gains to trade or not. A natural question to ask is how provision costs affect properties of profit-maximizing menus when there *are* gains to trade. We provide robust pooling results in our setting. Not only do the standard properties of ‘no pooling at the top’ and complete sorting near the top fail with

³The cost of insurance provision is often referred to as an *administrative* cost. Gruber (2008) for example writes that administrative costs average 12% of the premium paid by consumers in the US health insurance industry. And they are mentioned prominently in standard textbook and survey treatments of insurance under complete information (e.g. Rees and Wambach (2008)).

costly provision, but we also show that the insurer’s optimal menu can exhibit *complete pooling* of all types at a positive contract (positive premium and coverage). Intuitively, the complete information contract can be *decreasing* in the loss chance, though incentive compatibility requires incomplete-information menus to be increasing in the loss chance: this conflict between incentive compatibility and complete-information contracts is called *nonresponsiveness* (Guesnerie and Laffont (1984), Morand and Thomas (2003)), and it is at the heart of the explanation of our pooling results. When complete pooling emerges, then insurance provision under adverse selection resembles some features of Akerlof’s well-known model: either one contract is observed, or the market shuts down.

Finally, we argue that our main results under costly provision do not hold if instead of monopoly we consider the competitive (à la Rothschild and Stiglitz (1976)) analog.

Our analysis shows that a modest and realistic departure from the standard model dramatically affects its predictions. They might prove useful in applied work that tests the implications of insurance models with adverse selection. For instance, the exclusion of only bad risks is of obvious empirical relevance (see Hendren (2013) for a thorough discussion and evidence on this point). Also, that pooling emerges in monopoly and not under competition provides an additional test for models with adverse selection. The emergence of pooling under provision costs also might help explain why menus often have one or only a few contracts in reality, without resorting to a behavioral explanation. Finally, these results could be useful for policy discussions on health care reforms, where market structure, exclusion, and administrative costs are part of the debate.

We consider monopoly insurance for three reasons. First, it is the most challenging market structure for explaining coverage denials. Since a monopolist earns the highest possible profit, it follows that if there are no gains to trade with a monopolist insurer, then there are no gains to trade with other market structures. Second, there is evidence that insurance markets are not competitive (e.g., see McFadden, Noton, and Olivella (2012) p.10 for the case of health insurance in the US and the references cited in Chade and Schlee (2012)). Third, there is no agreement about the “right” model of an imperfectly competitive insurance market (see the discussion on this point in Section 6 of Einav, Finkelstein, and Levin (2010)); monopoly seems to be a useful place to start thinking about imperfectly competitive insurance markets.

Related Literature. Our paper is obviously related to the large theoretical and empirical literature on insurance under adverse selection (see Chade and Schlee (2012) and

the papers they cite). We are not aware of any systematic analysis of the effects of insurance provision costs on monopoly contracts under asymmetric information. The closest paper on coverage denials is Hendren (2013). A major goal of Hendren (2013) is to test a model of coverage denials: he estimates the distribution of loss types for consumers rejected for coverage and those which are not for three insurance markets, and finds that the type distributions for rejected consumers have fatter right tails. Our general comparative statics result (Proposition ??) provides a new theoretical foundation for his procedure, while our result for smooth costs subsumes his result as a special case.

Several papers contain results on insurance with loading or a fixed cost per contract, such as Ramsay and Oguledo (2012), Liu and Browne (2007), Ramsay, Oguledo, and Pathak (2013), and Allard, Cresta, and Rochet (2011). None of these papers obtain our general comparative static result or the strong results on pooling that we derive.

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