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**Article**

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# How Private Health Insurance Pools Risk

Mark Pauly\*

## Introduction and Theory

Most Americans obtain their health insurance in the private sector, in both group and non-group settings, and from for-profit, non-profit, and self-insured arrangements. A matter of concern to both consumers and policymakers is how the premiums that will (in some fashion) be paid for this insurance — and even the availability of insurance at any premium — vary with the insured unit's risk level. There is tension here: to cover their costs and to avoid adverse selection, insurers need to collect premiums tailored to each buyer's expected expense. But policymakers tend to regard payment of higher premiums by higher risks as unfair, and individual consumers realize that their risk level may change over time, as chronic (though not necessarily permanent) illnesses strike.

Along with several colleagues, I have been investigating both theoretical models of efficient insurance markets when risk varies (both across individuals at a given point in time and for a given individual over time) and empirical evidence on how premiums and the securing of coverage vary with risk. The theoretical point of departure is that, from a lifetime perspective, the great bulk of people who are initially low risk will want protection against large current costs *and* protection against “premium risk,” the risk that premiums will jump at the onset of chronic illness. Howard Kunreuther,

Richard Hirth, and I<sup>1</sup> have shown, as has John Cochrane,<sup>2</sup> that there is a theoretical solution to this problem: markets can furnish incentive-compatible insurance with “a longer time perspective,” in Kenneth Arrow's words using the policy provision labeled “guaranteed renewability at class average premiums.” We also have been interested in pursuing another of Arrow's insights: that institutional arrangements other than explicit and direct market transactions may emerge to deal with this problem as with others in health care and health insurance; the main candidate for this role is employment-based group health insurance. We therefore have been investigating the extent to which premiums paid vary with risk in competitive, largely unregulated insurance markets, and the underlying arrangements that support risk pooling. This investigation has largely been one of first discovering some empirical evidence and then working backwards to understand the supporting arrangement and the theory that explains their existence.

## Individual Insurance Markets

Our primary empirical finding is that, in both group and non-group insurance, premiums actually paid for insurance in the United States pool the risk to a very great extent. That is, in *both markets*, actual premiums paid are not even close to being proportional to risk. To be specific: although total premiums do rise with risk in both individual and group markets, primarily in terms of reflecting the higher risk that accompanies older age (especially above age 50), they do not reflect the

full amount of additional risk that characterizes individuals and families. Moreover, in both markets the premiums do not increase with the onset of chronic conditions at rates close to the expected expenses associated with those conditions. Although risk pooling is present (but far from complete) in employment-based group markets, even in individual insurance markets there is relatively little risk segmentation. The difference in the extent of risk pooling in the two types of markets is modest.<sup>3</sup>

Our primary theoretical finding is that such risk pooling, far from being inconsistent with the operation of competitive insurance markets, is actually what would be predicted in an incentive-compatible competitive equilibrium, according to models of insurance purchase in which buyers demand and insurers (implicitly or explicitly) supply the policy feature of “guaranteed renewability.”<sup>4</sup>

These findings are most transparent in the individual or non-group insurance market (even though it is currently a small fraction of total private insurance). We assume that early in life people are generally of similar risk (with only 3 percent of young adults reporting the presence of chronic conditions). To obtain insurance for current coverage that also protects against so-called “reclassification risk” — an increase in premiums if one contracts a chronic condition — the great bulk of individual insurance carries a provision promising “guaranteed renewability at class average rates.” This means that the insurer promises to charge a premium — if the person renews coverage in the next period — which is the same for all of

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those who initially bought insurance as part of a “class.” Specifically, it means that the insurer promises not to single out for above-average premiums those who develop evidence of becoming higher risks. If the insurer raises the premium, it promises to do so for everyone uniformly.

The theoretical model shows that this provision requires “frontloading” of premiums: in the early years of the time period over which a person plans to renew coverage from a given insurer, the premium exceeds the expected expense because it also includes a charge to pay any above average costs for those who later become higher risks. Recent work by Bradley Herring and me<sup>5</sup> compares the estimated age-time path of premiums for individual insurance when risk changes because of the onset of chronic conditions. We consider the actual path exhibited in the Medical Expenditure Panel Survey (MEPS) data. We find that the actual path is qualitatively similar to what the theory would predict (high front loading); the actual path is quantitatively close to the path predicted even by our crude risk prediction model; and (because health risk rises with age, even for healthy people), younger buyers still pay substantially less in premiums than older buyers for a given insurance policy. This occurs despite relatively high dropout from individual plans as people get jobs with coverage and return to the group insurance market. Although there have been some anecdotes about insurers slipping out of their policy provision to renew coverage at group average premiums for high risks by canceling the coverage entirely, we conclude that on average guaranteed renewability works in practice as it should in theory and provides a substantial amount of protection against high premiums to those high risk individuals who bought insurance before their risk levels changed. The implication is that, although there are some anecdotes about individual insurers trying to avoid covering people who become high risk (for example, by canceling coverage for a whole class of purchasers), the data on actual premium-risk relationships strongly suggest that such attempts to limit risk pooling are the exception rather than the rule.

We also examine the effects of state regulation requiring community rating, or putting bands on risk rating of premiums charged to newly covered individual insureds, and how different types of insurers behave in this regard. Using data from the 1980s and 1990s, we find little evidence that state regulation led to less variation with risk in premiums than did the absence of regulation. We do find that managed care plans vary their premiums with risk less than conventional insurers do.<sup>6</sup>

In more recent work,<sup>7</sup> Herring and I look at the effect of regulation on both differential premiums and differential purchases of individual insurance. We find that regulation modestly tempers the (already-small) relationship of premium to risk, and leads to a slight increase in the *relative* probability that high-risk people will obtain individual coverage. However, we also find that the increase in overall premiums from community rating slightly reduces the total number of people buying insurance. All of the effects of regulation are quite small, though. We conjecture that the reason for the minimal impact is that guaranteed renewability already accomplishes a large part of effective risk averaging (without the regulatory burden), so additional regulation has little left to change.

Guaranteed renewability is not the only factor affecting individual insurance premiums. Herring, David Song, and I<sup>8</sup> find that higher risk individuals engage in more aggressive search for lower premiums, with the result (as before) that the difference between premium and expected expense was much smaller for higher risk people than lower risk people. We also analyze Internet data on premiums and find that lower risk individuals (primarily young people) have relatively more to gain from using the Internet to search for lower premiums than do higher risk people. But we also find that the average gain in terms of lower premiums from using the Internet to search for individual insurance premiums is zero or negative: if there is a gain, it is primarily in reduced search time, not lower prices.

Along with Vip Patel,<sup>9</sup> I examine state regulations regarding guaranteed renewability. The federal HIPAA law

requires states to have such a provision in their regulatory code, but leaves the interpretation and the enforcement up to the states. Patel and I find that almost all state insurance departments say that they have a guaranteed renewability provision, but in some states it is an explicit prohibition on changing rates if risk changed, whereas in other states it was implicit in the state’s power to forbid “arbitrary” insurance premium rates.

## Group Insurance

People who get their insurance through their jobs are thought by economists to pay in two ways. In most firms there is some explicit premium charged to the employee and deducted from take home pay on the person’s pay stub; where there are multiple plan offerings, differences in these explicit premiums affect which plan people choose. The other way employees pay, and usually this applies for the much larger share of insured workers (about 75 percent on average), is in the form of lower money wages. This incidence of health benefits (and other employee benefits) on wages has strong theoretical and empirical support, but is often misunderstood by employers and policymakers, as I explain in my book *Health Benefits at Work*.<sup>10</sup>

Herring and I examine employment-based group insurance in the late 1980s. We find that, although the explicit employee premium did not vary with risk, it did have a huge variance across and even within firms.<sup>11</sup> In terms of explicit premiums, workers were not all paying anything close to the average. We find that total premiums varied little with health risk, and that obtaining group insurance was also largely independent of risk, except for low-wage workers in small firms. What we also find, however, is that the rate at which money wages increased with experience or seniority was much lower in firms offering health insurance than in otherwise similar firms that did not. This finding is consistent with larger differential incidence falling on older workers (reflecting their higher expected losses).

Herring and I also examine strategies available to employers to limit

adverse selection when multiple plans with different levels of insurance coverage are offered.<sup>12</sup> We look at the specific example of employers adding a high deductible (catastrophic) option, often accompanied by a spending account — similar to the Medical Savings Account or Health Savings Account now enacted into federal law. We find that adverse selection by low risks is possible if employers follow some type of contribution strategies (for example, fixed dollar contributions to all plans with premium differentials reflective of the average difference in cost across plans), but we also develop a model of optimal employer contribution strategies which greatly reduces the extent of adverse selection and, in some cases, permits both high and low risk workers to gain from the addition of such a plan.

Finally, Herring and I examine the differences between the amounts and types of insurance that people with different characteristics obtain, depending on whether they use the individual or group market.<sup>13</sup> We use observed demand in the individual market as the “gold standard” of the kind of insurance people would choose if they had completely free choice (though at much higher loading). We find that most characteristics that predict both the choice of any insurance and the degree of restrictiveness of the plan, such as income, education, and location, are quite similar in the individual and the group market. Most people do seem to get the kind of plan we would predict that they would want, even within group settings. We find a major difference among worker types who are heavily unionized though: in group settings (whether the firms itself was union-

ized or not), such workers tend to be more likely to select coverage than they would have in the individual market, and to choose coverage with fewer restrictions. There are also some differences in the effect of ethnicity (Hispanic or Black) in individual versus group markets.

## Conclusion

Our overall conclusion is that private health insurance in the United States involves a great deal of risk pooling as long as individuals initially obtain insurance (whether individual or group) before they contract chronic illnesses and thus become high risks. Both private guaranteed renewability provisions and state rate regulation encourage pooling, but guaranteed renewability seems to have fewer adverse side effects in the sense of driving lower risks out of the market, albeit with slight smaller efficacy. The major difference between individual and group insurance, then, is not the price differences charged to high versus low risks. Rather, the high loading in individual insurance means that it is costly for people at all risk levels. Attention should be paid to ways to lower administrative costs across the board.

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<sup>1</sup> M. Pauly, H. Kunreuther, and R. Hirth, “Guaranteed Renewability in Insurance,” *Journal of Risk and Uncertainty*, 10 (2) (1995), pp. 143-56.

<sup>2</sup> J. Cochrane, “Time-consistent Health Insurance,” *Journal of Political Economy*, 103 (3) (1995), pp. 445-73.

<sup>3</sup> M. Pauly and B. Herring, *Polling Health Insurance Risks* (Washington: AEI Press, 1999).

<sup>4</sup> B. Herring and M. Pauly, “Incentive

Compatible Guaranteed Renewable Health Insurance,” NBER Working Paper No. 9888, August 2003.

<sup>5</sup> See B. Herring and M. Pauly, “Incentive Compatible Guaranteed Renewable Health Insurance.”

<sup>6</sup> M. Pauly and B. Herring, “Premium Variation in the Individual Health Insurance Market,” *International Journal of Health Care Finance and Economics*, 1 (1) (2001), pp. 43-58.

<sup>7</sup> M. Pauly and B. Herring, “Premiums and Insurance Purchasing in Individual Health Insurance Markets,” Report to the Office of the Assistant Secretary for Policy and Evaluation, Department of Health and Human Services, forthcoming.

<sup>8</sup> M. Pauly, B. Herring and D. Song, “Health Insurance on the Internet and the Economics of Search,” NBER Working Paper No. 9299, October 2002.

<sup>9</sup> V. Patel and M. Pauly, “Guaranteed Renewability and the Problem of Risk Variation in Individual Health Insurance markets,” *Health Affairs Web Exclusive*, August 28, 2002.

<sup>10</sup> M. Pauly, *Health Benefits at Work: An Economic and Political Analysis of Employment-based health Insurance* (Ann Arbor: University of Michigan Press, 1997).

<sup>11</sup> See M. Pauly and B. Herring, *Polling Health Insurance Risks*.

<sup>12</sup> M. Pauly and B. Herring, “An Efficient Employer Strategy for Dealing with Adverse Selection in Multiple-plan Offerings,” *Journal of Health Economics*, 19 (4) (2000), pp. 513-28.

<sup>13</sup> M. Pauly and B. Herring, “The Demand for Health Insurance in the Group Setting: Can You Always Get What You Want?” *Journal of Risk and Insurance*, forthcoming.