Selection on Moral Hazard in Health Insurance: How Important Is Forward Looking Behavior?

Aviva Aron-Dine, Liran Einav, Amy Finkelstein, and Mark R. Cullen

One approach to constraining healthcare spending is through consumer cost sharing in health insurance. Yet, health insurance contracts in the United States are highly non-linear, so trying to estimate the behavioral response to a single out-of-pocket price is, in most cases, not a well-posed exercise, as it begs the question “which price?”. A typical private health insurance plan has a deductible, a coinsurance rate, and an out-of-pocket maximum (or “stop loss”). The consumer faces a price of 100% of medical expenditures until he has spent the deductible, at which point the marginal price falls sharply to the coinsurance rate (typically around 10-20%), and then falls to zero once out-of-pocket expenditures have reached the stop-loss amount. Public health insurance programs, such as Medicare, also involve non-linear schedules, including occasionally schedules in which the marginal price rises over some expenditure range and then falls again (as in the famous “doughnut hole” in Medicare Part D prescription drug coverage).

In the context of such non-linear budget sets, trying to characterize an insurance policy by a single price could produce misleading inferences. For example, one cannot extrapolate from estimates of the effect of coinsurance on health spending to the effects of introducing a high-deductible health insurance plan without knowing how forward looking individuals are in their response to health insurance coverage. A completely myopic individual would respond to the introduction of a deductible as if his “price” has sharply increased to 100%, whereas a fully forward looking individual with annual health expenditures that are likely to exceed the new deductible would experience little change in the effective marginal price of care and therefore might not change his behavior much. Understanding how medical spending responds to the design of health insurance contracts therefore requires that we understand how consumers account for the non-linear budget schedule they face in making their medical consumption decisions. A fully rational, forward-looking individual who is not liquidity constrained should recognize that the “spot” price applied to a particular claim is not relevant; this nominal price should not affect his consumption decisions. Rather, the decision regarding whether to undertake some medical care should be a function only of the end-of-year price.

In this paper, we therefore investigate whether the common practice of summarizing health insurance contracts with a single price is a reasonable approximation by examining whether and to what extent individuals respond to the expected end-of-year price, or “future price” of medical care. The key insight behind our empirical strategy is that, as a result of certain institutional features of employer-provided health insurance in the United States, individuals who join the same deductible plan in different months of the year initially face the same spot price, but different expected end-of-year prices. Employer-provided health insurance resets every year, typically on January 1. When new employees join a firm in the middle of the year, they obtain coverage for the remainder of the year. While their premiums are prorated, deductible amounts are fixed at their annual level. As a result, all else equal, the expected end-of-
year price is increasing with the join month over the calendar year; individuals who join a plan later in the year have fewer months to spend past the deductible. We use this feature in order to test for forward looking behavior in the response to health insurance contracts. We also compare the behavioral effects of those joining a plan with a deductible (where the month of a joining the plan matters), and those joining a plan with no deductible (where the month of joining should not matter).

We find that as employees join a plan later in the year (and the expected end-of-year price rises for those in the deductible plan) initial medical utilization in the deductible plan tends to fall, both in absolute terms as well as relative to the corresponding pattern in the no-deductible plan. It therefore appears that individuals understand something about the nature of their dynamic budget constraint and make their healthcare consumption decisions with at least some attention to forward-looking considerations.

In the last section of the paper we attempt to move beyond testing the null of complete myopia and toward quantifying the extent of forward looking behavior. We estimate that a ten cent increase in the future price (for a dollar of medical spending) is associated with a 6 to 8 percent decline in initial medical utilization. This implies an elasticity of initial medical utilization with respect to the future price of -0.4 to -0.6. To provide an economic interpretation of this estimate, we develop a stylized dynamic model in which utilization behavior in response to medical shocks depends on both the underlying willingness to substitute between health and residual income and the degree of forward looking behavior. Our calibration of the model suggests that the elasticity estimate may be substantially smaller than the one implied by fully forward-looking behavior, yet it is sufficiently high to have an economically significant effect on medical utilization. Overall, our results point to the empirical importance of accounting for dynamic incentives in analyses of the impact of health insurance on medical utilization.

The full working paper is available on our website, [www.nber.org/programs/ag/rrc/books&papers.html](http://www.nber.org/programs/ag/rrc/books&papers.html), as paper NB12-15.

**Aviva Aron-Dine** is a graduate student in economics at MIT.

**Liran Einav** is Associate Professor of Economics at Stanford University and an NBER Research Associate.

**Amy Finkelstein** is Professor of Economics at the Massachusetts Institute of Technology and an NBER Research Associate.

**Mark Cullen** is Professor of Medicine at Stanford University Medical School and an NBER Faculty Research Fellow.

This research was supported by the U.S. Social Security Administration through grant #RRC08098400-04-00 to the National Bureau of Economic Research as part of the SSA Retirement Research Consortium. The findings and conclusions expressed are solely those of the author(s) and do not represent the views of SSA, any agency of the Federal Government, or the NBER.