Measuring Behavioral Hazard in Healthcare

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A nascent literature in economics and medicine challenges the conventional wisdom that the price elasticity of demand for healthcare is a sufficient statistic for reducing moral-hazard: larger patient cost-sharing may lower health-outcomes more than the savings from reduced utilization. To date, the evidence for this phenomena, behavioral hazard, have been indirect. We provide the first direct test of this hypothesis by exploiting variation in end-of-year drug prices due to birth month—individuals join Medicare in the month they turn 65, but cost-sharing limits are not pro-rated in their first year.

We find that reductions in drug spending of up to $250 per month leads to a significant increase in subsequent 30-day mortality, with an implied cost effectiveness of well under $100,000 per QALY. This result implies that there is substantial suboptimal decision making in how patients respond to cost-sharing, and second, that a large body work of underscoring the role of 'polypharmacy' (an extreme form of moral-hazard) in the elderly mostly reflects confounding.

Next, we further characterize the behavioral mechanisms that drive this phenomena by building machine learning estimates of individual-level benefit from specific drugs. We find that patients at the highest risk of heart attack and stroke uniformly cut back on drugs to prevent precisely those conditions—and go on to suffer these outcomes at the highest rates.

Finally, we characterize the behavioral mechanisms that underlie the response to cost-sharing. Very preliminary results suggest that the marginal benefit from treatment and the marginal willingness to pay are negatively correlated, contrary to one of the central tenets of price-theory: we find that the highest-risk patients cut back in response to small price increases, but the lowest-risk patients do not cut back until large price increases are present. This suggests that price increases may protect against moral hazard in these low-risk patients—but only after the highest-risk patients have already been forced to cut back. We discuss the implications of these findings for policy efforts to reduce overuse of prescription drugs.