How price sensitive is the demand for health care?

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Abstract:
The size and rapid growth of the health care sector has created great interest among both academics and policymakers in possible approaches to reducing healthcare spending. On the demand side, the standard, long-standing approach to constraining healthcare spending is through consumer cost sharing in health insurance, such as deductibles and coinsurance. The degree to which these measures can be successful crucially depends on the elasticity of health care demand with respect to the price consumers face. Most health insurance contracts create strong nonlinearities and discontinuities in the marginal price of health care for the patients. For deductibles, the marginal price is one until the deductible is completely paid for and drops to 0.1 (a 10% coinsurance rate) in the case of Switzerland.

Insurance coverage in Switzerland is mandatory for a rather comprehensive ‘basic’ basket of medical services and pharmaceuticals, written by some 80 not-for-profit insurers competing in a regulated market. Insurers must accept all applicants during semi-annual open enrolment periods. Premiums can be differentiated only by area of residence. Reductions are possible for young adults (19-25) and individuals who have accident coverage through the employer. In the baseline contract, insured individuals enjoy unlimited access to all licensed physicians and most hospitals in their region of residence. They face a minimum annual deductible of CHF 300 (EUR 200 in 2009) and a co-insurance rate of 10 percent up to a cap of CHF 700 (EUR 470) per year. Physicians in independent practice are reimbursed fee-for-service according to a nationwide fee schedule that is collectively bargained between the providers’ and the insurers’ associations. Hospitals receive per diems for patients treated (the introduction of a DRG system is in 2012).

This paper adds to the large empirical literature that tries to estimate moral hazard in health insurance, or the price sensitivity of demand for medical care. Much of this literature tries to estimate a demand elasticity with respect to a single price (see Chandra, Gruber, and McKnight (2007) for a recent review of this literature and its estimates), although different studies consider a different relevant price to

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which individuals respond. For example, the famous RAND elasticity of -0.2 is calculated assuming individuals respond only to the spot price (Manning et al., 1987), while more recent estimates have assumed that individuals respond only to the expected end-of-year price (Eichner, 1997), or to the actual (realized) end-of-year price (Eichner, 1998; Kowalski, 2009; Marsh, 2011)

This paper uses the discontinuous drop of the marginal price at the deductible to estimate the elasticity of health care demand. The identification strategy basically assumes that patients whose total health care expenditure are close to the deductible are comparable in their health status, but the incentives to increase demand are fundamentally different due to the different marginal price they face. This setup resembles the regression discontinuity (RD) design in which an exogenous forcing variable generates exogenous treatment assignment in the neighbourhood of the threshold. This can be used to identify treatment effects. In the current case the standard RD approach is not applicable because the outcome variable (health care costs) is also the forcing variable: the drop of the marginal price is the treatment that is caused by the costs exceeding the deductible. Recently, Bajari et al. (2011) have proposed an estimator for RD designs with endogenous forcing variables. I apply and extend this estimator to estimate the elasticity of health care demand nonparametrically. The approach is related to the bunching method used to estimate the elasticity of earnings with respect to the marginal tax rate (Saez, 2010). By contrast to the tax case, deductibles create nonconvex kinks in the budget constraint which do not lead to bunching, but rather to “holes” in the density surrounding the deductible threshold. The proposed estimator is based on these expected discontinuities in the density of observed health care expenditure.

I employ data from a large Swiss health insurance company covering 4 years and roughly 200'000 individuals per year. The data contain complete information on total health care costs per year, the contract terms (level of chosen deductible, regular contract or a managed care type contract), age, gender and regional information. There is also information on the different sources of health care expenditure (general practitioners, specialists, drugs, physical therapy, outpatient hospital services, and inpatient hospital services).

The first empirical results are very promising. There is a clear discontinuity in the density of health care expenditure around the deductible level for patients who have chosen a high deductible (1500 or 2500 CHF). I apply the method proposed by McCrary (2008) to test for manipulation of the forcing variable in the RD design. By contrast to the standard case, here we need evidence for a manipulation in order
to show behavioural effects of the price change. This discontinuity in the density at 1500 and 2500 is not there for patients who have a low deductible level, as one would expect because for them there is no change of the marginal price. Applying the Bajari et al. (2011) estimator gives estimates in the range of -0.3 to -0.5 for the elasticity of health care expenditure. These estimates are in the same order of magnitude as most other in the literature.

References


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