Response

Health insurance: tradeoffs revisited

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Abstract

In two recent papers, [Journal of Health Economics 18(2), 141–152, Journal of Health Economics 18(6), 811–824] Nyman raised some questions about the welfare calculations and conclusions in our earlier paper [Manning and Marquis, Health insurance: the tradeoff between risk pooling and moral hazard, Vol. 15, 1996]. This note discusses the erroneous criticisms in his papers. First, although, we estimated a Marshallian demand curve, our calculations are based on compensating variations that incorporate the gains from risk pooling. Second, our estimates of second best insurance plans indicate that some cost sharing is optimal, in contradiction to his assertion that our results raise questions about the desirability of insurance coverage. The comment also deals with other issues raised by Nyman. © 2001 Elsevier Science B.V. All rights reserved.

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Two recent papers by John Nyman and a comment by Ake Blomqvist have renewed discussion of the gains from health insurance of risk protection, net of losses to moral hazard. These papers have inaccurately characterized some of our work on this topic, and we would like to correct the public record.

In the first of his papers, Nyman (1999a) points out that one gain from health insurance is that the insured budget constraint includes combinations of health and other goods that lie beyond the uninsured budget constraint. These points may have higher utility than those on the original budget constraint, at least for those sick enough to find the additional health services valuable. This is not a new insight. Nor is it excluded in our framework. The rotation

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of the budget constraint that occurs with coinsurance/copayment style insurance plans has long been recognized in the literature; for example, see de Meza (1982) in this journal. A 1978 textbook in health economics noted that for the effect of a 50% coinsurance rate: “The consumer... is able to buy more of all commodities because real income has increased”. (Page 8, The Economics of Medical Care, by J.P. Newhouse). In that example, reproduced in Fig. 1A, there was no offsetting premium increase. Had there been an associated premium,
then the result would have been something like Fig. 1B. In either case, the rotated budget constraint allows access to medical care that otherwise could not have been afforded.

In the case of Manning and Marquis (1996), the effect of the change in relative prices for medical care and other goods is captured in the indirect utility functions for the various alternatives. Whereas the conventional utility function is defined over all possible combinations of goods, the indirect utility function is the maximum utility feasible for a given budget constraint. If the budget constraint rotates away from the origin, then the indirect utility function reflects not only the new location of the constraint, the new choices made for medical care and other goods and services (by Roy’s Identity), but a higher maximum achievable utility for that new budget constraint. From comparisons among the alternatives, one can calculate (as we did) the compensating variation of various insurance alternatives relative to the uninsured or to a less generously insured state. Thus our model implicitly accomplishes all of the shifts in constraints and associated changes in individual welfare that Nyman (1999a) requires, except for the incorporation of gains from extended life expectancy resulting from medical purchases not affordable under the uninsured budget constraint. Further, our two-step approach does so including the role of risk and risk aversion, something not done explicitly in the calculations in Nyman’s first paper.

Second, Nyman (1999b) and Blomqvist (2000) incorrectly assert that we used a Marshallian approach. Earlier articles from the Health Insurance Experiment (HIE; Manning et al., 1987; Buchanan et al., 1991) as well as the book that compiled and integrated the HIE results (Newhouse et al., 1993) did rely on Marshallian measures or Harberger approximations. But in Manning and Marquis (1996), we used the compensating variation, as we stated several times in that article. The last column of Table 4 provides estimates of the Marshallian demand curve, but the following welfare calculations are based on the compensating variations for the corresponding indirect utility function, which is given in Eq. A1.1. As long as the functional form used provides an adequate approximation to the true response, then ours is exactly the measure Nyman (1999b) and Blomqvist (2000) claim is the proper estimate. Further on page 630 of Manning and Marquis (1996), we contrast our estimates based on the compensating variation with the Marshallian measure. The difference was modest.

In contrast, Nyman overestimated the difference between the measures because he used overestimates of the income elasticity of demand and of the share of the budget devoted to health care, as Blomqvist correctly points out. If budget shares are low and demand is relatively income inelastic, then the Marshallian measure is very close to the compensating variation (Willig, 1976). In the US in 1997, the fraction of personal consumption expenditures out-of-pocket on health was 0.034 (United States, 1999). Further, Nyman’s income response is not an economist’s *ceteris paribus* measure because it does not correct for the correlations among income, insurance generosity, and health status leading to an omitted variable bias in his estimates. In contrast, our estimates take advantage of a randomized

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1 The uninsured individual faces income $I$, medical price $p$, and a price for other goods and services that has been normalized to one. With a pure coinsurance plan with coinsurance rate $0 < c < 1$, and premium $\pi$, the individual has net income $I - \pi$ and faces medical prices $cp$. The individual is better off insured if $IU(p, I) < IU(cp, I - \pi)$ where $IU$ is the indirect utility function. The compensating variation $CV$ is the amount such that $IU(p, I) = IU(cp, I - \pi - CV)$. 
experiment that renders the income and insurance generosity correlation zero, and we explicitly controlled for health status using a far more comprehensive and reliable set of health measures than available in other studies, including Feenberg and Skinner (1994).

Nyman’s use of the Feenberg and Skinner (1994) results raises an additional complication. Their sample is aged 55 and older in 1968 (page 639). As they note in their descriptive results, those individuals 65 and older are more likely to have large out-of-pocket amounts as a fraction of income than do the nonaged. Our results are for a nonaged population. Thus the income elasticity used by Nyman is in large part the income elasticity for the elderly.

Third, Nyman (1999a page 142 and 1999b, page 812) implies that our estimates would lead one to question why someone would buy insurance at all. We are puzzled by his statement. Table 5 of our paper and the associated discussion clearly shows that the optimal pure coinsurance plan (no deductible and no upper limit or stop-loss on out-of-pocket expenditures) has some cost sharing rather than either no insurance or no cost sharing. We state on page 629 that our optimal pure coinsurance plan has a 45% coinsurance rate. If we allow for plans to have first dollar cost sharing and a stop-loss, then the subjects would be better off with a 50% coinsurance rate and a stop-loss of about $8000 per year (Table 6).

Fourth, Nyman (1999a) suggests that our estimates of the risk gain from insurance are too liberal because they include the variance of expenditures that are unaffordable. For each level of coinsurance, our calculations of the risk gain, as well as the waste and net gain are for the choices made possible (affordable) with that insurance policy. Thus they not only include the value of access to points unattainable under the uninsured state, but they also include the variability in expenses and expected utility that result from the budget constraint for that specific insurance policy. Whether they are unaffordable while uninsured is immaterial. What matters in the welfare calculations are comparisons based on the choice sets under each alternative considered.

Finally, Nyman suggests that there is a potential bias in Marshallian measures if individuals earmarked transitory changes in income triggered by ill health for use on medical care (page 817 of Nyman, 1999b). We find that there are three problems with this argument. First, we are unaware of any standard neoclassical demand model that produces such behavior except the case where the income elasticity of all other goods and services is zero. Second, we tested the earmarking conjecture as a part of the Health Insurance Experiment and found that people treated transitory income from the insurer (us) as purely transitory. Finally, if earmarking had been going on, then the incentive payment to participants to enroll in the experiment would have been set aside for days of poor health, with no resulting response to cost sharing across the HIE plans. The larger the cost sharing in the plan to which participants were assigned, the greater was the incentive payment. Thus, in the higher cost-sharing plans, the more participants would have earmarked to cover health bills, undoing the usual incentive to economize in the presence of higher cost sharing. For further details, see Manning et al. (1987).

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2 The text on page 149 of Nyman (1999a) appears to imply that we used a variance based approximation to the valuation of risk reduction. Actually, our estimate was derived directly from the demand for insurance.

3 This payment was based on the largest amount that the family could conceivably have to pay out-of-pocket during the year. See Manning et al. (1987) and Newhouse et al. (1993) for more information.
References


