Optimal employee behavior and optimal sickness insurance design when employers penalize sickness presenteeism

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In a recent paper [1], Ramsay and Oguledo considered the optimal design of an employer sponsored sickness-disability insurance plan that maximizes the employer's expected discounted profits over each employee's working lifetime. They used a simple multi-state model of the evolution of an employee's health over time to capture the impact of sickness induced absenteeism, presenteeism, and shirking on the employer's profits. They also assumed sick employees were asymptomatic, i.e., they showed no signs of illness at work, and thus were able to work regardless of their level of illness. In this paper, we extend the Ramsay-Oguledo model by introducing a new 'severely ill' sickness state where employees are symptomatic, i.e., they show signs of illness while at work, and presenteeism exists. To combat presenteeism, we also introduce the new concept of a presenteeism penalty whereby employers penalize employees who are found to be very sick while at work. Specifically, penalized employees are sent home and receive a penalized sick-pay that is lower that the normal sick pay. Thus sick employees must decide whether to stay at home and receive a sick pay (that is less than their working pay) or go to work sick and run the risk of being sent home and penalized. Assuming employees get a positive utility from income and a disutility (negative utility) from work, we determine each employee's optimal behavior/strategy in each sickness state (i.e., whether to stay home or to work) that maximizes her discounted expected utility over her working lifetime. As in [1], permissible employee strategies are captured in a set of Volterra integral equations that are solved numerically to determine each employee's optimal strategy/behavior. Assuming employees are expected utility maximizers, we determine the employer's optimal sick pay, presenteeism penalty, and health check probabilities that maximize the employer's discounted expected profits over an employee's working lifetime.

References

[1] Ramsay, C.M., Oguledo, V.I. (2015). Optimal disability insurance with moral hazards: absenteeism, presenteeism, and shirking. *North American Actuarial Journal* **19**, 143–173.