

Optimal Disability Insurance with Moral Hazards: Absenteeism, Presenteeism, and Shirking

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Abstract

Presenteeism occurs when employees are present at the workplace but cannot perform at their best due to ill-health or other reasons, while absenteeism occurs when employees are absent from the workplace. While absenteeism is important, researchers now say presenteeism can be more costly to businesses and may be responsible for as much as three times the health-related lost productivity as compared to absenteeism and may cost the US economy as much as US\$150 billion per year. Given the cost of absenteeism and presenteeism, one of the objectives of this paper is to provide actuaries with the techniques and insights needed to design disability insurance policies that take into account the dynamics of absenteeism and presenteeism. To this end we develop a simple multi-state sickness-disability model of the evolution of an employee's health over time. We assume employees receive sick-pay, the size of which depends on their health state and there is a government sponsored unemployment insurance program. In our model it is possible for employees in good health to avoid work by staying home, which is called shirking. To reduce shirking, the employer decides to check the health status of a certain percentage of employees who "call in sick." Given the sick-pay structure, the probability of a health check, and the existence of unemployment insurance, employees develop rational strategies about whether to engage in shirking, absenteeism, or presenteeism. These strategies are captured in a set of Volterra integral equations. We use these Volterra integral equations to show how the employer can design a disability insurance plan that can incentivise employees to eliminate shirking and to act in a manner that will maximize the employer's expected profits.

Key words and phrases: absenteeism, presenteeism, shirking, employee strategy, multi-state model, health shock, disability insurance, Volterra integral equations, renewal equations

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