

A Theory of Optimal Sick Pay

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Introduction

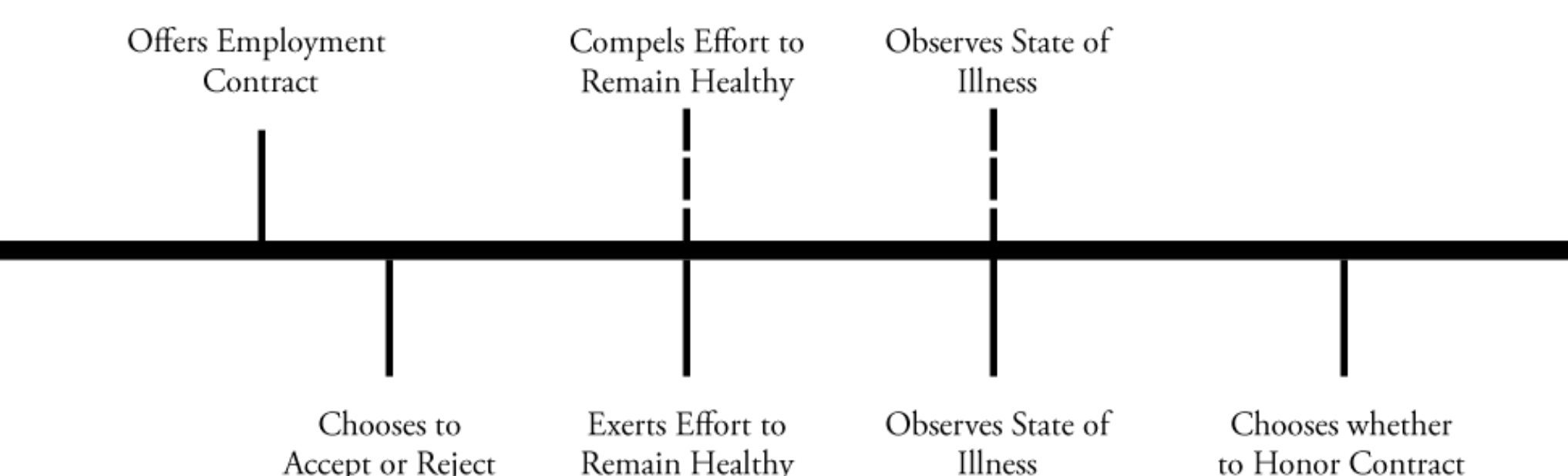
People get sick and their illness affects their work performance. For employers, illnesses can lead to diminished profits through lost worker productivity, so in response to these potential losses, firms design sick-pay policies: incentives packages which offer employees reduced compensation during times of illness and encourage healthy workers to take steps to minimize their probability of contracting illnesses. So many different approaches to sick pay exist both within and across industries that a compelling argument can be made that the optimal incentives structure for sick pay is not well understood, an argument further evinced by data from the 2003 American Productivity Audit, which pegged the cost to employers of lost productive time due to illness at 225.8 billion US dollars/year (1685 US dollars/employee per year), for which 71% of that loss was explained by reduced performance *while at work* (Stewart 2003). Such statistics suggest that employers and employees face significant information asymmetries which lead to sub-optimal sick-pay packages.

Nevertheless, studies of worker illness have been so far empirical, focused primarily on characteristics which lead to worker illness and absenteeism (Drago 1992). Thus, we sought an objective microeconomic model which accounted for information asymmetry and shed light on a theory of optimal sick pay. Ultimately, understanding the means by which employers can influence workers through salary-based incentives to mitigate cost of illness could provide firms and policy makers with a comprehensive theoretical method for formulating optimal sick pay policies.

Methods

A theoretical model for how illness affects employee utility and employer profit was developed. The firm contracts with an employee who can be either sick (*s*) or healthy (*h*) when he or she works. Sickness is treated as raising an employee's marginal cost of production from c_h —the marginal cost when he or she is healthy—to c_s , the marginal cost when he or she is sick. Mathematically, $c_s > c_h$.

Employer



Employee

The employer may influence employee decisions through an (output, payment) pair designated for each state. The employer and employee agree on terms of payment and quantity in the manner described in the Figure above, a manner which reasonably reflects how a standard employment contract might be negotiated.

Results

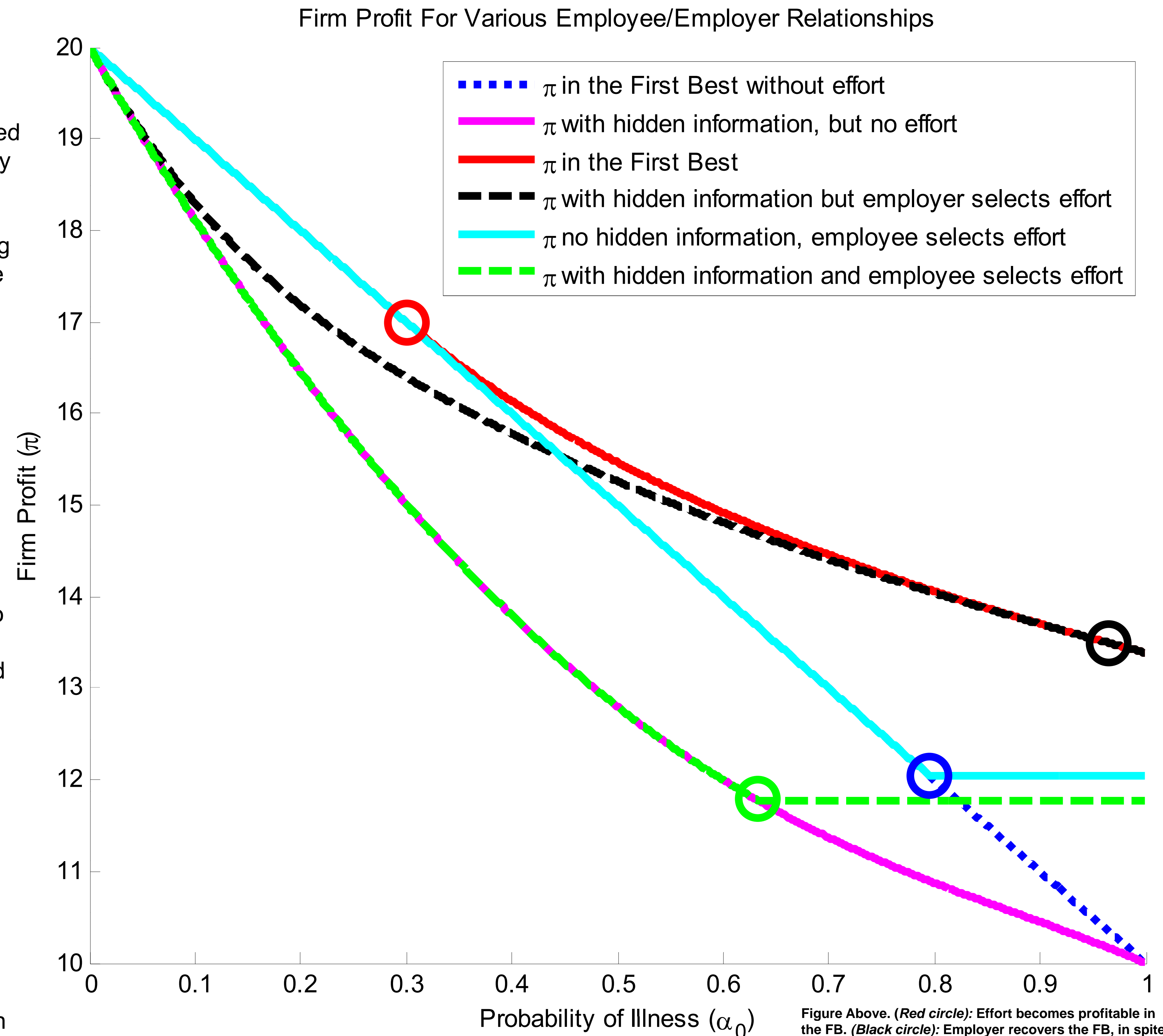


Figure Above. (Red circle): Effort becomes profitable in the FB. (Black circle): Employer recovers the FB, in spite of Hidden Information. (Blue circle): Effort becomes profitable with Hidden Information. (Green circle): Effort becomes profitable with Hidden Information & Hidden Action.

Findings

The most interesting results characterize the effects of changes in the availability of information on firm profits and employee compensation.

For employees, we find that in most cases, employers develop incentives packages which compel employees to absorb the maximum loss from asymmetric information, minimizing impact on firm profits, and pushing employee average compensation to zero. However, employees are always overcompensated when there is an exogenous probability of illness (“freak illnesses”) and they can misrepresent their true state of illness. We further find that employees are overcompensated whenever firms offer non-zero incentives for effort and employee’s select effort, however this compensation diminishes as the inherent probability of illness increases.

For firms, we find they will only pay employees to select nonzero effort if the intrinsic probability of illness is greater than a threshold, which means that in cases where employee’s select effort, two distinct incentives regions arise. In addition, we find that beyond the threshold point, when employees select

their own effort, firms receive the same profit in the face of different inherent probabilities of illness for all nonzero efforts regardless of the specific values of other exogenous variables. We find however that profit in the case where employees select effort is always less than profit in the First Best with Effort.

We find that when employees select their own effort, firms will not give incentives for illnesses which have a low severity of illness, even if there is a high ratio of effectiveness of effort to cost. When employers select effort, but employees can lie about whether they are sick, firm profit is strictly higher for hidden information in the case where effort can be exerted and the employer selects it. At low inherent probabilities of illness, where the employer would normally incentivize small amounts of effort, profit is reduced to the case of lying without effort. Alternately, when the firm would already pay a large premium for effort, at high values of α_0 , the firm will see no loss at all due to hidden information. Finally, we find that once employers are committed to incentivizing employees to exert effort to reduce their probability of illness, the fact that they can misreport makes only a small difference to the employer.

Conclusion

The model developed offers an analytical tool for developing tests for variation in actual employee-employer behavior. We find that professions which entail high degrees of supervision and the possibility of aligned incentives between the employer and the employee are the least likely to require health-related bonuses and are unlikely to exhibit high-degrees of absence, since no incentives are required to maintain honest reporting and practices which reduce the probability of illness. Other types of employment might also be characterized under this model. Professions in which effort is likely to be unobserved and yet in which misreporting is difficult abound.

For instance, the findings of this thesis suggests that professions such as office work, which allow employees great latitude in making effort decisions and which have employers who are unlikely to investigate whether employee’s are actually sick, will require the largest health-related bonuses, and will also suffer the most abuse due to improper incentives. This notion that service professions and

Profession	Average Days of Sick Leave (Per worker)	Nearest Case Described in Thesis
Process, plant and machine operatives	1.21	Verifiable Illness/ Employer Effort
Professional occupations	0.87	Unverifiable Illness/ Employee Effort
Associate professional and technical occupations	1.12	Unverifiable Illness/ Employee Effort
Administrative and secretarial occupations	1.06	Unverifiable Illness/ Employee Effort
Personal service occupations	1.35	Unverifiable Illness/ Employee Effort
Skilled trades occupations	0.85	Unverifiable Illness/ Employer Effort
Sales and customer service occupations	0.65	Unverifiable Illness/ Employer Effort
Elementary occupations	0.92	Unverifiable Illness/ Employer Effort
Managers and senior officials	0.77	Unverifiable Illness/ Employer Effort
All occupations (illness ascribed to the current or most recent job)	0.96	

Table 1. Estimated days (full-day equivalent) off work and associated average days lost per (full-time equivalent) worker due to a self-reported illness caused or made worse by current or most recent job, by occupational major and sub-major group (Source: HSE).

professions exhibiting less independence would actually have fewer days of sick leave seems counter intuitive. After all, service occupations usually exhibit lower rates of job satisfaction than other professions. Yet, published figures on professions and their average rates of sick leave from the British Health and Safety Executive (HSE) actually support this claim, as shown in Table 1.

In conclusion, the possibility of misrepresenting one’s true state of health and the possibility of reducing the probability of illness through effort both significantly influence and explain the incentives firms offer across many types of employment, lending insight into the nature and limitations of these incentives. Ultimately, this study sets out a novel perspective on employee-employer interactions in response to the possibility of illness and could serve as a good point of departure for new insights into the problem of selecting optimal sick pay policies.

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