DOES PAID SICK LEAVE INDUCE WELFARE BURDEN?

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Paid Sick Leave, Absenteeism, and Moral Hazard

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ABSTRACT

The purpose of this study is to evaluate the unintended welfare losses that paid sick leave induces and how much moral hazard cost a society is willing to accept to obtain the benefits gained through paid sick leave. We examined the Medical Expenditure Panel Survey (MEPS) collected in 2013 and 2014 by employing panel probit analysis. The estimation shows that the probability of an absence due to injury/illness increases 2.41% and 5.16% with and without a perception adjustment, respectively. Based on these estimation results, we conclude that the expected cost of moral hazard would be $173 to $234 per worker per year. Thus, if the amount of the moral hazard cost is accepted, our society could obtain the access benefit from paid sick leave.

KEYWORDS: Paid Sick Leave, Absenteeism, Moral Hazard, Access Benefit, Panel Probit

JEL CLASSIFICATION: I12, J41

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I. Introduction

Paid sick leave is a paid absence from work due to sickness or disability. Several studies show that, if paid sick leave is given and covers the potential financial losses of workers' income, it could prevent them from infectious disease, frequent absences, and productivity losses in the workplace (Lovell, 2004; Liao, et al., 2012; DeRigne, et al., 2017). However, other researchers argue that offering paid sick leave might induce financial hardship on employers because they should pay for the cost of workers' absence. The employers' financial burden could reduce workers' benefits and undermine their job security (Drago & Lovell, 2011; Colla, et al., 2014).

The main goal of paid sick leave is to provide paid time off from work for those unhealthy workers to receive necessary medical care and rests needed to achieve faster recovery and therefore less absenteeism and better productivity. However, it is not clear whether or not paid sick leave can achieve net welfare gains due to the classic moral hazard problem: i.e., healthy workers could falsely claim paid sick leave to take unnecessary time off work, which could cause welfare losses due to increases in absenteeism from those healthy and productive workers. A study shows that paid sick leave increases workers' absenteeism by 1.2 days per year, and such increase is regarded as moral hazard (Ahn & Yelowitz, 2016).

All aspects of the absenteeism are not moral hazard (Nyman, 1999). The marginal effect of paid sick leave would include the opportunities for unhealthy workers to access medical treatments or increase their productivity as well as moral hazard. In this case, researchers could overestimate the moral hazard effect and underestimate the access benefit. Ahn & Yelowitz (2016) fail to identify the access benefit and moral hazard from the marginal effect. Thus, we argue that 1.2 days per year would not be all moral hazard but could include the access benefit.

In this study, we aim to empirically evaluate the unintended welfare losses that paid sick leave induces. We would examine the severity of the unintended moral hazard loss brought by paid sick leave and evaluate how much moral hazard cost a society can accept to obtain the benefits gained through paid sick leave.

In the following sections, we would discuss the method to evaluate moral hazard and welfare losses. Next, we would describe the analysis of the survey data and present the econometric model used in this study. In the results and discussion sections, we would present and discuss our estimation results, which is then followed by conclusions and policy suggestion.

II. Background

A. MORAL HAZARD

Moral hazard is defined as the situation in which the principal loses the ability to control the agent's actions that are not observed by the principal and the court of law. It occurs, for example, when agents purchase an additional health care that they would not otherwise have purchased.

Health insurance lowers health care service price and allows the insured to purchase more health care services regardless of their health needs. The price effect could increase unnecessary health care service purchase and induces welfare losses. However, health insurance provides the insured with the opportunity to access health care service and allows them to use medical services that they would otherwise have given up. The income effect could increase necessary health care service purchase and generate welfare gains.

A conventional evaluation of welfare losses in health insurance is based on the assumption that the income effect is insignificant and ignorable, and the most effect from the evaluation could be classified as welfare loss induced by moral hazard (Pauly, 1968).

However, Nyman(1999) argues that the conventional evaluation could overestimate welfare losses that are induced by the price effect because the income effect is significant and not ignorable. In his analysis, he argues that the relevant income effect on health insurance is transferred from insureds who remain healthy to those who become ill and allows access to otherwise unaffordable health care. He evaluates the amount of medical care an insured would demand, if, when will, they purchase an actuarially fair contract for a reduced price for true welfare losses. His estimation result shows that the estimates of the welfare loss by using Slutsky's pure price effect are 83% of the welfare loss estimated by using Marshallian demand. As a result, the conventional evaluation could overestimate the welfare loss and the price-related moral hazard welfare loss is offset by a gain from income effects.

B. PAID SICK LEAVE

Paid sick leave protects workers from financial loss when they become ill and need to stay at home or visit clinics. Employers that provide paid sick leave, pool the risk of an absence and make present workers fill the absence.

The information asymmetry emerges in the utilization of a sick leave. The employers fail to observe whether or not workers who utilize a sick leave are actually sick or enjoy their leisure despite being healthy. Moral hazard is healthy workers' utilization of an absence when they obtain paid sick leave. Although the healthy workers do not need a leave absence, they utilize it and would enjoy their leisure time without a financial loss. In this situation, the employers cannot control the utilization because the true health status of workers is unobservable to employers. Thus, the utilization represents welfare losses because it is encouraged by the cheaper leave of absence (price effect), but not health needs (income effect).

However, the estimation of the welfare loss from moral hazard is difficult because surveys generally fail to identify whether the utilization of a sick leave is from moral hazard or health needs. The increase in the utilization of an absence when an ill worker obtains paid sick leave does not account for the welfare losses. Thus, I evaluate the moral hazard welfare losses by estimating the change in an unhealthy worker's utilization of an absence if this worker would be healthy. This measure would split the total effect of paid sick leave to moral hazard and the access benefit.

III. Data and Methods

A. DATA

We examined the Medical Expenditure Panel Survey (MEPS) conducted by the Agency for Healthcare Research and Quality (AHRQ, 2017). This survey is a set of large-scale national surveys of households and individuals, medical providers, and employers. The survey collects the information on health services including the frequency to use health services, the cost of these services, the amount the service recipients paid for, and health insurance held by workers.

The sampling framework of the Household Component (HC) is drawn from respondents to the National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics. The data for each panel are collected in five rounds of interviews for two calendar years. In this study, we use only the household component (HC-183) in Panel 19 sample collected in 2014 and 2015.

This study focuses on the subsample of the employed for the entire period of Panel 19. However, the Panel 19 survey included the dependent variable this study used in only the round

one to three. Thus, I considered the subsample that had been employed for the round one to three in Panel 19. The sample size for HC-183 is 4389 in this study.

The dependent variable for this study is whether or not workers used a sick leave in a period. We considered respondent's answer to the survey question, “How many days did you miss a half day or more from work because of a physical illness or injury, or a mental or emotional problem?” We dichotomized the respondent's answer to the question as “absence” if the answer is one or more days, “attendance” if otherwise.

The key independent variables of interest are a binary indicator of whether or not workers have paid sick leave and the ones that reveal individual health/illness status that is hidden/unobservable to employers. We used two relevant variables as a proxy for the individual health/illness status: (1) perceived health status and (2) an illness/injury condition that needed care right away in the last twenty months. The former indicator is the respondents’ response to the question, “In general, compared to other people of your age, would you say that your health is excellent, very good, good, fair, or poor?” This variable is dichotomized as “healthy” if a respondent responded “excellent,” otherwise, “unhealthy.” The latter indicator is from the SAQ that the MEPS periodically administers to supplement the data collected by interviewers. This is dichotomized as “healthy” if a respondent responded “no,” otherwise, “unhealthy.” We also considered an interaction term between paid sick leave and health/illness status to identify the reciprocal relationship between such variables. Furthermore, an interaction term between the paid sick leave indicator and the health/illness status is also added to the model.

We considered other factors that describe workers' job security because workers with low job stability may be more risk-averse in falsely claiming paid sick leave and even under-utilizing it. We added several indicator variables that represent job security such as seasonal job status,

temporary job status, and the number of employees. In addition, we added socio-demographic factors including age, gender, race, marital status, education, and logged hourly wage to out econometric model.

B. ECONOMETRIC STRATEGY

We employed the panel probit regression model. For panel analysis, we used the random-effect probit regression rather than the fixed-effect model because the key variables included in our model shows minimal variations over time. Furthermore, it is reasonable to argue that our empirical model is a reduced-form that none of the control variables are contemporaneously choice variables as the paid sick leave utilization. The random-effect probit regression with a latent variable is given by:

$$y_{it}^{*} = x_{it}'\beta + \mu_i + \nu_{it}, \mu_i \sim N\left(0, \sigma_{\mu}^{2}\right), \nu_{it} \sim N(0,1) \qquad ()$$

for $i = 1, \dots, n$ and $t = 1, \dots, T$, where$y_{it} = 1$ if $y_{it}^{*} > 0$ and $y_{it} = 0$ otherwise. Also, we assume that μ_i and ν_i are independent of x_{it}.

The estimation strategy for quantifying moral hazard problem is as follows. For the total utilization of a sick leave, we estimated the change in the probability of utilizing an absence when paid sick leave is given to unhealthy workers. This evaluation is represented by the length between (A) and (C) in Figure *1*. For the moral hazard evaluation, we define moral hazard as the healthy workers' utilization of an absence when they obtained paid sick leave. Based on the independent variables, workers are defined to be healthy if s/he had "excellent" perceived health status. Thus, we evaluate moral hazard by estimating the change in the probability of missing work days when paid sick leave was given to the healthy worker. This evaluation is represented by the length between (A) and (B) in Figure *1*. For the access benefit evaluation, we assumed that the probability of sick leave utilization increase and excluding the moral hazard evaluation

will capture the marginal increase in the benefit. Thus, we subtract the total utilization from the estimated moral hazard to evaluate the access benefit. This evaluation is represented by the length between (B) and (C) in Figure *1*.

[Figure *1* about here]

For dependent variable, first, we dichotomized the respondent's answer to the question as "absence" if the answer is one or more days, "attendance" if otherwise (Model 1). This dichotomization is based on the assumption that workers who report excellent health status would miss no work day during a round. However, an excellent perceived health does not guarantee no absence because healthy workers could feel sick with light disease and claim a sick leave. Thus, we relaxed this assumption and allowed them to miss at least one day because of their injury/illness or refreshment. For the perception adjustment, we dichotomized the respondent's answer to the question as "absence" if they miss two or more work days, "attendance" if otherwise (called Model 2).Furthermore, we allowed them to miss at least two days despite their excellent health. We dichotomized the respondent's answer to the question as "absence" if the answer is three or more days "attendance" if otherwise (called Model 3).

IV. Results

A. DESCRIPTIVE STATISTICS

Table 1 shows the descriptive statistics by each round and pooled observation. The descriptive statistics, first, indicates that if a respondent has paid sick leave, his/her average number of days missed increases when compared to a respondent who does not. For example, in pooled observations, a respondent who has paid sick leave misses about 1.212 days while it is about

1.013 if s/he does not have paid sick leave. Thus, paid sick leave would increase the number of work days missed due to injury/illness.

[Table 1 about here]

Furthermore, the descriptive statistics also shows that if respondents report higher perceived health status, they would miss fewer days than those who report lower perceived health status. For example, in pooled observations, if a respondent whose perceived health is excellent, his/her average number of days missed is 0.613. However, if a respondent has poor perceived health status, his/her average number of days missed is 8.975.

B. ESTIMATION RESULTS

Table *2* and Table *3* shows the estimates/standard errors and marginal effects of paid sick leave by perception adjustments. From the estimation, we find several important aspects of paid sick leave and moral hazard.

[Table *2* and Table *3* about here]

Our estimation result shows that the probability of utilizing an absence due to injury/illness increases when paid sick leave is given to workers. If we assume Model I, we observe that the average marginal effect of paid sick on the absence is 7.84%. If we adjust the variation of individual perception (Model 2), the average marginal effect of paid sick leave on the absence decreases to 4.94%. If we assume the more extreme adjustment (Model 3), the average marginal effect decreases to 2.66% when a worker obtains paid sick leave.

Our estimation result also shows that the probability of utilizing an absence increases by 5.16% if a worker who reports excellent health status has paid sick leave without perception adjustment. After a perception adjustment (Model 2), the probability of utilizing an absence

increases by 2.41% if a worker who reports excellent health status has paid sick leave. The marginal effect changes to about 0.30% if we assume Model III in which we consider two or more missing days as actual sick days for illness.

The marginal probability of utilizing an absence also increases as workers are perceived to be unhealthier. We observed in Model I that the marginal effect of paid sick leave on the absence is 25.33% if a worker reports poor perceived health. However, the corresponding marginal effect of paid sick leave is 5.16% if s/he reports excellent perceived health. Thus, the probability of utilizing the absence would increase as his/her health status changes to poor. After a variation adjustment (Model 2), the marginal effect of paid sick leave increases from 2.41% to 23.13 if his/her perceived health status changes to poor. The average marginal effect also increases from 0.30% to 12.39% if his/her perceived health status changes to poor.

From these estimation results and our estimation strategy, we evaluated the marginal probability of utilizing an absence to treat their injury/illness if they obtain paid sick leave. If we consider Model 1, paid sick leave increases the probability of utilizing an absence to treat their injury/illness by 2.69%. After a perception adjustment, we observed that the probability of utilizing an absence to treat their injury/illness increases by 2.53% in Model 2 and 2.37% in Model 3, respectively, especially if they obtained paid sick leave.

V. Discussion

From the estimation result, we argue that paid sick leave would induce moral hazard problem. Workers who are not very healthy could utilize an absence because of the cheap cost of the absence but not for sickness treatment. For our empirical analysis, without perception adjustment, we observe that paid sick leave encourages workers who were very healthy to utilize

a sick leave by 5.16%, even though they had a low chance to be sick. This observation indicates that some workers would not use an absence for the treatment of their illness if they can claim paid sick leave. Thus, we conclude that moral hazard would exist in paid sick leave.

After our perception adjustment, we also observed that the moral hazard induced by paid sick leave decreases to 2.41% and even 0.30%. We obtained this result based on the assumption that missing one day during about six months (one round in data) is generally accepted as actual days to treat their sickness for healthy workers. Thus, we also argue that the cost of moral hazard could be less than we expected, even if moral hazard actually exists.

To evaluate the expected cost of moral hazard, we calculated the average cost of an absence in the work place first. The average number of days missed due to injury/illness per year is 2.26 based on the sample in this study. The average hourly wage in this sample is $19.67, and the corresponding daily wage is $157.32 if we assume that workers in this sample work for eight hours a day. Therefore, the average cost of work days missed due to sickness in this sample would amount to $355.86 per year.

Table *4* shows the proportion and average cost of the moral hazard and the access benefit induced by paid sick leave, respectively. The proportion that the moral hazard accounts for is about 65.8% in Model 1, 48.7% in Model 2, and 10.9% in Model 3. Based on these proportions, we conclude that the expected cost of moral hazard would be $39 to $234 per worker per year according to the perception adjustment. Considering this cost, we argue that if we accept the amount of the moral hazard cost, our society could obtain the access benefit from paid sick leave.

[Table *4* about here]

Actual welfare gain or loss from paid sick leave depends on whether or not and how many welfare gains exist from the access benefit. Conventional economic theory would argue that paid

sick leave increases work days missed, and the cost of the increase generates an inefficiency that is called the moral hazard welfare loss. Thus, our society could obtain welfare gains if the access benefit offsets or overwhelms the cost of the inefficiency.

Nyman (1999, 2004) presents a clue to the answer to the question, why welfare gains exist in the access benefit? First, paid sick leave provides workers with more opportunities to be treated medically or refreshed at home, which could not be available otherwise. Suppose that there is a worker who needs care right away, but if this worker does not claim paid sick leave and cannot visit hospitals for medical treatments, then their health care cost could increase more than when s/he would take a care right away.

Second, paid sick leave plays a role in the cost sharing that is similar to health insurance. Paid sick leave incurs the labor or productivity transfer from workers who hold productivity to those who are sick. This type of the income effect, as called by economists provides welfare gain from paid sick leave that would be welfare loss by conventional economic theory. Employer transfers the labor force or productivity from healthy workers to sick workers who need a care or refreshment right away.

Therefore, these situations significantly improve workers' health, and such health improvement is invaluable socially as well as individually. This improvement would become welfare gains from paid sick leave that dominate the cost associated with moral hazard.

Furthermore, several studies assert that paid sick leave plays a significant role in protecting workers from Influenza-like illness (ILI). Approximately 28% of workers are present in their workplaces even if they are sick with ILI, and such ILI-related working prevents workers from performing to their full productivity (Kumar, et al., 2013). In this situation, if paid sick leave is given to workers, ILI absenteeism costs would be reduced by $0.63 to $1.88 billion per year

based on the conservative estimation (Asfaw, et al., 2017). These savings would be welfare gains obtained by paid sick leave.

VI. Conclusion

This study estimates how much moral hazard and access benefit paid sick leave induces. Our estimation result indicates that moral hazard increases the probability of missing work days by 5.16% without any perception adjustment and 0.3% to 2.41% with perception adjustments. Based on this result, we argue that the society could obtain welfare gains from the accessible benefit if it accepts about $39 to $234 per worker per year as a cost of moral hazard. The welfare gains would be obtained by sharing productivity among workers and extending the availability of medical care, which would not be available without paid sick leave.

Mandatory paid sick leave is a good policy to obtain the accessible benefits if we accept the moral hazard cost. Five states, twenty cities, and one county had laws providing mandatory paid sick leave in the United States in 2016. Our suggestion is to extend this policy to more states by Sharing the moral hazard cost employers should pay.

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Tables

Table 1Descriptive statistics: counts and means of workdays missed due to injury/illness

Variable	RD 1	RD 2	RD 3	Pooled
Workdays missed				
Count No day missed	3,622	3,729	3,892	-
Count One day missed	439	409	341	-
Count Two days missed	318	263	228	-
Count Three and more days missed	460	438	378	-
Average Workdays missed	1.083	1.316	0.993	-
By paid sick leave				
Average Yes	1.178	1.405	1.054	1.212
Average No	0.949	1.188	0.903	1.013
By self-assessed health				
Average Excellent	0.564	0.754	0.520	0.613
Average Very Good	0.826	0.846	0.881	0.852
Average Good	1.353	1.684	0.918	1.320
Average Fair	1.969	3.528	2.963	2.763
Average Poor	9.538	9.211	7.742	8.975

Table 2 Estimates and standard errors by regression models

Variable	Model 1	Model 2	Model 3
Self-assessed health			
Very Good	0.250**	0.200**	0.120**
	(0.018)	(0.062)	(0.039)
Good	0.433**	0.389**	0.379**
	(0.045)	(0.053)	(0.062)
Fair	0.766**	0.781**	0.804**
	(0.098)	(0.149)	(0.073)
Poor	1.215**	1.354**	1.425**
	(0.237)	(0.304)	(0.268)
Paid sick leave			
Having paid sick leave	0.239**	0.163**	0.032**
	(0.026)	(0.042)	(0.006)
Health status × paid sick leave			
Very Good	0.033*	0.031	0.185**
	(0.015)	(0.080)	(0.036)
Good	0.052	0.127*	0.181**
	(0.046)	(0.055)	(0.035)
Fair	0.066*	0.114	0.149**
	(0.032)	(0.083)	(0.012)
Poor	0.448*	0.438*	0.286*
	(0.177)	(0.192)	(0.125)

Table 3 Marginal effects of paid sick leave by regression models

Variables	Model 1	Model 2	Model 3
Moral Hazard			
Excellent	5.16%	2.41%	0.30%
Accessible Benefit			
Average effect	2.69%	2.53%	2.37%
(Excellent)	-	-	-
(Very Good)	(2.40%)	(1.36%)	(2.50%)
(Good)	(4.17%)	(4.84%)	(3.59%)
(Fair)	(6.28%)	(6.87%)	(4.74%)
(Poor)	(20.17%)	(20.73%)	(12.09%)
Total Effect			
Average effect	7.84%	4.94%	2.66%
(Excellent)	(5.16%)	(2.41%)	(0.30%)
(Very Good)	(7.56%)	(3.77%)	(2.80%)
(Good)	(9.32%)	(7.25%)	(3.89%)
(Fair)	(11.44%)	(9.28%)	(5.04%)
(Poor)	(25.33%)	(23.13%)	(12.39%)

Table 4 Proportion and cost of moral hazard and accessible benefit by regression models

Variable	Model 1	Model 2	Model 3
Proportion			
Moral Hazard	65.8%	48.7%	10.9%
Accessible Benefit	34.2%	51.3%	89.1%
Cost of absences			
Moral Hazard	$234	$173	$39
Accessible Benefit	$122	$183	$317

Figures

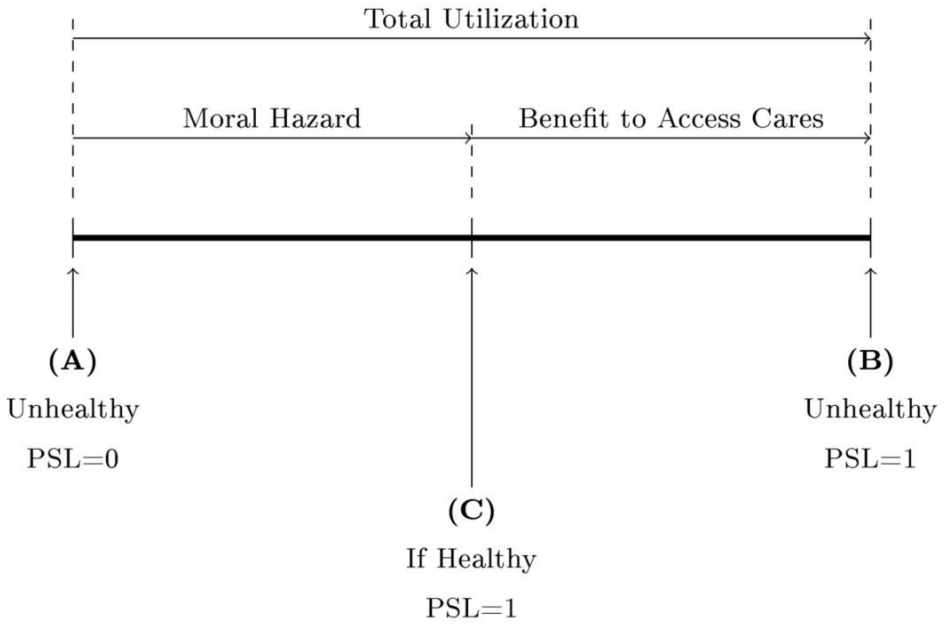

Figure 1 Estimation strategy