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Does Paid Sick Leave Induce Welfare Burden? *

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Abstract

Purpose: The purpose of this study is to empirically evaluate the unintended welfare losses induced by paid sick leave, examine the severity of the unintended moral hazard loss caused by paid sick leave, and evaluate how much moral hazard cost society can accept to obtain paid sick leave benefits. **Research Design, Data and Methodology**: We examine the Medical Expenditure Panel Survey data collected in 2013 and 2014 by employing a panel probit analysis to control for individual heterogeneity. **Results**: The estimation result shows that the probability of absence due to paid sick leave increases from 4.91% to 7.84%. Among them, excluding the probability of increasing absence from 1.29% to 2.69% due to the actual disease, the probability of absence due to the moral hazard was estimated to be 2.41% to 6.49% in the proposed models. Based on the result, if we evaluate the increase in absence caused by moral hazard as a social cost, the estimated cost is approximately $174 to $297 per worker per year. **Conclusion**: Considering these expected costs, our society can obtain the access benefit from paid sick leave if we are willing to accept the moral hazard cost.

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

JEL Classification Code : I12, J41

1. Introduction[1]

Paid sick leave is paid absence from work due to sickness or disability. Several studies show that if paid sick leave is provided and covers the potential financial losses of workers' income, it can prevent infectious diseases, 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 for employers because they pay for the cost of workers' absence. The employers' financial burden can reduce workers' benefits and undermine their job security (Drago & Lovell, 2011; Colla et al., 2014).

The main goal of paid sick leave is for unhealthy workers to obtain paid time off from work and receive the necessary medical care and rest to achieve faster recovery, which lessens absenteeism and improves productivity. However, whether paid sick leave can achieve net welfare gains is unclear due to the classic moral hazard problem, that is, healthy workers can falsely claim paid sick leave to take unnecessary time off work, which can cause welfare losses due to increased absenteeism. A study shows that paid sick leave increases workers' absenteeism by 1.2 days per year and this increase is regarded as a moral hazard (Ahn & Yelowitz, 2016).

Not all workers' workday absences are moral hazards (Nyman, 1999). The marginal effect of paid sick leave

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includes the opportunities for unhealthy workers to access medical treatments or increase their productivity and moral hazard. In this case, researchers may overestimate the moral hazard effect and underestimate access benefits. Ahn and Yelowitz (2016) fail to identify access benefits and moral hazards from marginal effects. Thus, we argue that 1.2 days per year are not moral hazards but can be considered as access benefits.

In this study, we aim to empirically evaluate the unintended welfare losses induced by paid sick leave, examine the severity of the unintended moral hazard loss caused by paid sick leave, and evaluate how much moral hazard cost a society can accept to obtain paid sick leave benefits.

2. Background Information

2.1. Moral Hazard

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

Health insurance lowers prices of healthcare service and allows the insured to purchase more healthcare services regardless of their health needs. The price effect can increase unnecessary healthcare service purchases and induce welfare losses. However, health insurance provides the insured with access to healthcare services that they may otherwise have given up. The income effect can increase the purchase of necessary healthcare services and generate welfare gains.

The conventional evaluation of welfare losses in health insurance assumes that the income effect is insignificant and ignorable, and the greatest effect from the evaluation can be classified as welfare loss induced by moral hazard (Pauly, 1968).

However, Nyman (1999) argues that conventional evaluations may overestimate welfare losses induced by the price effect because the income effect is significant and cannot be ignored. Moreover, his analysis shows that the relevant income effect on health insurance is transferred from the insured 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 may demand if they purchase an actuarially fair contract for a reduced price for true welfare losses. In the Slutsky equation, the pure price elasticity (ξ) is given by

$$\xi = \eta + \alpha\eta, \tag{1}$$

where η is the Marshallian price elasticity of demand, ε is the income elasticity of demand, and α is the share of household income in medical expenses. He estimates the pure price effect with $\eta = 0.18$ and $\varepsilon = 0.22$ and finds that the pure price elasticity (ξ) is 0.15. His estimation shows that the Marshallian price elastic overstates the pure price effect by 20%, and the estimates of the welfare loss using Slutsky's pure price effect are 83% of the welfare loss estimated using Marshallian demand. As a result, the conventional evaluation may overestimate the welfare loss, and the price-related moral hazard welfare loss is offset by the gain from income effects.

2.2. Paid Sick Leave

Sick leaves protect workers from financial losses when they become ill and need to stay at home or visit clinics. Employers who provide paid sick leave pool the risk of absence and make the present workers fill their absence. In this situation, paid sick leave reduces the ill worker's financial loss in their workplaces.

Several empirical studies verify the argument. For example, Stearns and White (2018) argued that mandating paid sick leave decreases the aggregate rate of illness-related leave-taking. It can provide positive externalities and then reduce financial losses as sick workers stay at home to stop spreading their disease to coworkers. Additionally, DeRigne et al. (2016) showed that persons without paid sick leave were 3.0 times more likely to forgo medical care for themselves and 1.6 times more likely to forgo medical care for their family compared to working adults with paid sick leave benefits.

Information asymmetry emerges in the utilization of sick leaves. Employers fail to observe whether workers who utilize sick leave are actually sick or on time off despite being healthy. Moral hazards occur when a healthy worker falsely claims a paid sick leave and utilizes the absence when they do not need to. Although healthy workers do not need a sick leave, they utilize it and enjoy their leisure time without suffering the financial loss caused by not working. In this situation, employers cannot control the sick leave utilization because the true health status of workers is unobservable to them. Thus, sick leave utilization represents welfare losses because it is encouraged by the no-cost (to employees) leave of absence (price effect) but not health needs (income effect).

As paid sick leave would increase welfare losses, the reduction in paid sick leave improves the firm's cost of paid sick leave. Ziebarth and Karlsson (2010) investigated the reform effects of a reduction in statutory sick pay levels on sickness absence behavior and labor costs. The results indicated that employees with up to 5.5 annual absence days reduced their absence days by about 12%.

However, the estimation of welfare loss in moral hazard is difficult because surveys generally fail to identify or verify the true health state of employees and, therefore, cannot ascertain whether the utilization of sick leaves is motivated by moral hazard or health needs. The increase in the utilization of absences when an ill worker obtains paid sick leave does not account for welfare losses. Thus, I evaluate the moral hazard of welfare losses by estimating the change in an unhealthy worker's sick leave utilization if the worker is otherwise healthy. This measure splits the total effect of paid sick leave into moral hazard and access benefits.

3. Data and Method

3.1. Data and Measures

We examine data from 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, individuals, medical providers, and employers. The survey collects information on health services, including the frequency of health services use, cost of these services, number of service recipients paid for, and health insurance held by workers.

The sampling framework of the household component (HC) is obtained from respondents to the National Health Interview Survey conducted by the National Center for Health Statistics. The data for each panel is collected through five rounds of interviews over two calendar years. In this study, we use HC-183 in the Panel 19 sample collected in 2014 and 2015, which is the newest in the MEPS, to analyze the current trend of paid sick leave.

This study focuses on the subsample of workers employed during all the rounds (1-3) in Panel 19 because the dependent variable of interest in our study is not collected in round 4. Therefore, the sample size is 4,389 individuals.

The dependent variable is the measurement of sick leave utilization, that is, whether workers used sick leave in a round. We consider respondents' answers to the survey question, "How many times did you miss a half day or more from work because of a physical illness, injury, or a mental or emotional problem?" We dichotomize the respondent's answer as "absence" if the answer is one or more days and "attendance" otherwise.

The key independent variables of interest are binary indicators of whether workers have paid sick leave and those that reveal individual health or illness status that is hidden or unobservable to employers. For the former, we use the variable whether respondents have the option to use paid sick leave and dichotomize it as "having paid sick leave" if they can use paid sick leave and "no paid sick leave" otherwise. Paid sick leave is provided to workers by mandatory legislation or employers' voluntariness and not chosen by workers. Thus, we expect that sick leave utilization does not affect paid sick leave.

For the latter, perceived health status is used as a proxy for individual health and illness status. We regard a worker with an excellent perceived health status as a healthy worker. We assume that they do not need to use sick leave for medical needs, and their use of paid sick leave is a moral hazard. This 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 responds "excellent," and "unhealthy" otherwise. We also add an interaction term between paid sick leave and health and illness status to allow a nonlinear absence demand effect from paid sick leave provision.

We consider other factors that describe workers' job security. The main unobserved factor affecting paid sick leave and sick leave utilization is workers' job stability. We add job stability in our model as a control variable. We also control for the relationship between job stability and false claims of paid sick leave. Workers with low job stability may be more risk-averse in falsely claiming paid sick leave and, therefore, underutilize it.

We add several indicator variables that represent job security, such as seasonal job status, temporary job status, and number of employees. In addition, we add sociodemographic factors, including age, gender, race, marital status, education, and logged hourly wage, to the econometric model.

3.2. Econometric Strategy

We employ a panel probit regression model. The use of panel data can control for individual heterogeneity (Hsiao 2003, Baltagi 2013). Even though various covariates are added into a cross-sectional model as many as possible, all unobservable individual characteristics cannot be controlled. The panel data analysis can alleviate the endogeneity problem.

Among two panel analysis methods, fixed- and random-effect models, we use the random-effect probit regression rather than the fixed-effect model, because the key variables included in our model show minimal variations over time with a binary dependent variable.

Our empirical model is a reduced form, in which none of the control variables are concurrent choice variables as paid sick leave utilization. A suspicious endogenous variable is an indicator of paid sick leaves. Employers (voluntary paid sick leave) or local governments (mandatory paid sick leave) give paid sick leave to workers. Thus, we conclude that paid

sick leave is purely exogenous because it is not a worker's decision.

The random-effects probit regression with a latent variable is given by:

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

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

The estimation strategy for quantifying moral hazard problems is as follows. For the total utilization of sick leave, we estimate the change in the probability of utilizing paid sick leave when it is provided to unhealthy workers. For the moral hazard evaluation, we define moral hazard as the healthy workers' utilization of paid sick leave when it is available. Based on the independent variables, workers are defined to be healthy if they have "excellent" perceived health status. Thus, we evaluate moral hazard by estimating the change in the probability of missing workdays when paid sick leave was given to a healthy worker. For the access benefit evaluation, we assume that the probability of sick leave utilization increases and, excluding the moral hazard evaluation, captures the marginal increase in the benefit. Thus, we subtract the total utilization from the estimated moral hazard to evaluate the access benefit.

We construct an econometric model based on the assumption that workers who report excellent health status do not miss workdays during a round. However, our analysis does not consider two restrictive situations: First, the assumption that workers with an excellent perceived health status are healthy is flawed. Second, our assumption does not accept the possibility that healthy workers may use sick leave because of minor diseases or short refreshments at home, which is not regarded as a moral hazard. Thus, we apply two adjustment strategies to relax these situations and evaluate variations.

For the dependent variable, we dichotomize the respondent's answer as "absence" if the answer is one or more days and "attendance" otherwise (Model 1). This dichotomization is because healthy workers do not miss workdays during a round. We relax this assumption and allow them to miss one day, which is not regarded as a moral hazard because of their injury, illness, or refreshment. In this case, we dichotomize the respondent's answer as "absence" if they miss two or more workdays and "attendance" otherwise (Model 2).

For the health status variable, we dichotomize the respondent's answer as "healthy" if they have excellent health status or "unhealthy" otherwise (Model A). This dichotomization is because respondents who report excellent health status are healthy workers. We broaden this definition and regard respondents who report excellent or very good health status as healthy workers (Model B). We combine these adjustments and establish four types of econometric models. Table 1 shows the adjustments and corresponding models.

Table 1: Adjustment Strategies and Proposed Models

	"Healthy" if excellent health status only (A)	**"Healthy" if excellent or very good health status (B)**
"Absence" if missing one or more days (1)	Model 1A	Model 1B
"Absence" if missing two or more days (2)	Model 2A	Model 2B

4. Results

4.1. Descriptive Statistics

Table 2 shows the descriptive statistics for each round and the pooled observations. The descriptive statistics indicate that if a respondent has paid sick leave, their average number of days missed is more than that of an average respondent who does not. For example, in the pooled observations, a respondent who has paid sick leave misses about 1.212 days, while it is about 1.013 if paid sick leave is not provided. Thus, paid sick leave increases the number of workdays missed due to injury or illness, which is an indicator of paid sick leave functioning as intended.

Table 2: Descriptive Statistics

Variable	**Round 1**	**Round 2**	**Round 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 + days missed	460	438	378	-
By paied sick leave	1.083	1.316	0.993	-
Average Yes				
Average No	1.178	1.405	1.054	1.212
By self-assessed health	0.949	1.188	0.903	1.013
Average Excellent				
Average Very good	0.564	0.754	0.520	0.613
Average Good	0.826	0.846	0.881	0.852
Average Fair	1.353	1.684	0.918	1.320
Average Poor	1.969	3.528	2.963	2.763

Furthermore, the descriptive statistics show that if respondents report a higher perceived health status, they may miss fewer days than those who report a lower

perceived health status. For example, in pooled observations, for an average respondent whose perceived health is excellent, the average number of days missed is 0.613, whereas an average respondent reporting poor perceived health status misses 8.975 days, which is significantly higher.

4.2. Estimation Results

Table 3 presents the estimates and standard errors of the covariates. From the estimation, we find that the unhealthier a respondent, the more likely they are to use their sick leaves. For example, if the perceived health status changes from "excellent" to "very good," "good," "fair," or "poor," the estimates change to 0.250, 0.433, 0.766, and 1.214, respectively, in Model 1A. Similar patterns are observed in Models 1B, 2A, and 2B. Paid sick leave increases the use of sick leaves. The estimates of paid sick leave are 0.239, 0.257, 0.163, and 0.181, respectively, and are statistically significant in Models 1A, 1B, 2A, and 2 B.

The interaction terms of perceived health status and paid sick leave are partially significant in increasing sick leave usage. The estimates of fair health status with paid sick leave and poor health status with paid sick leave are 0.066 and 0.448, respectively, and statistically significant in Model 1A. In addition, the estimates of poor health status with paid sick leave are 0.425 and 0.438, respectively, and are statistically significant in Models 1B and 2A.

Table 3: Estimation Results

Variable	Model 1A		Model 1B		Model 2A		Model 2B	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
Socio-demographic factors								
Age	-0.005	0.007	-0.004	0.008	-0.010*	0.005	-0.009	0.007
Age^2	0.000	0.000	0.000	0.000	0.000*	0.000	0.000	0.000
Female (ref: male)	0.132**	0.016	0.139**	0.015	0.156**	0.014	0.160**	0.027
White (ref: non white)	-0.120**	0.023	-0.121**	0.023	-0.049**	0.010	-0.051	0.029
Married (ref: not married)	-0.088**	0.021	-0.088**	0.020	-0.098**	0.014	-0.098**	0.029
College or higher (ref: below college)	0.196**	0.024	0.198**	0.023	0.133**	0.018	0.136**	0.031
Logged wage	0.052**	0.016	0.052**	0.015	0.063**	0.012	0.063*	0.028
Job stability								
Seasonal job (ref: full-time job)	-0.121*	0.060	-0.133*	0.058	-0.122	0.109	-0.132	0.072
Temporary job (ref: full-time job)	0.005	0.065	0.001	0.058	-0.075	0.075	-0.076	0.062
Perceived health status								
Very good (ref: excellent)	0.250**	0.034	-	-	0.200**	0.044	-	-
Good (ref: excellent)	0.433**	0.072	0.285**	0.054	0.389**	0.072	0.270**	0.049
Fair (ref: excellent)	0.766**	0.097	0.616**	0.108	0.781**	0.108	0.661**	0.068
Poor (ref: excellent)	1.215**	0.252	1.068**	0.235	1.354**	0.310	1.236**	0.163
Paid sick leave (PSL) status								
Having PSL (ref: no PSL)	0.239**	0.047	0.257**	0.031	0.163**	0.047	0.181**	0.041
Interaction term between perceived health status and paid sick leave								
Very good and having PSL (ref: Very good and no PSL)	0.033	0.027	-	-	0.031	0.070	-	-
Good and having PSL (ref: Very good and no PSL)	0.052	0.084	0.031	0.067	0.127	0.069	0.106	0.061
Fair and having PSL (ref: Very good and no PSL)	0.066**	0.010	0.046	0.025	0.114	0.067	0.095	0.090
Poor and having PSL (ref: Very good and no PSL)	0.448*	0.197	0.425*	0.180	0.438*	0.202	0.415	0.238

Note: ** p<0.01, * p<0.05.

Variables related to job stability, including whether the job is seasonal or temporary, measured against full-time job and wage level, show a significant increase in sick leave utilization. In Models 1A and 1B, the estimates of the seasonal job status are -0.121 and -0.133, respectively. They significantly decrease the use of paid sick leave. In addition, the higher the wage a respondent earns, the more likely they are to use sick leave. The estimated logged wages are 0.052 and 0.063 in Models 1 and 2, respectively.

Several sociodemographic factors, including gender, race, marital status, and educational levels, are statistically significant in increasing sick leave use. In all models, respondents who are female, white, married, and college- or higher-level educated are more likely to use sick leave than those who are not. However, age is not a significant factor in increasing the use of sick leaves in all the models.

Table 4 shows the marginal effects of paid sick leaves through perception adjustment. The estimation finds several important aspects of paid sick leave and moral hazard. The marginal effects show that the probability of utilizing an absence with reasons tied to injury or illness increases when paid sick leave is available to workers. If we assume that healthy workers do not miss workdays during a round, the average marginal effect of paid sick leave on absence is 7.84% (Model 1A: excellent health status) and 7.78% (Model 1B: excellent or very good health status). If we allow healthy workers to miss one day, the average marginal effect of paid sick leave on absence decreases to 4.94% (Model 2A: excellent health status) and 4.91% (Model 2 B: excellent or very good health status).

Table 4: Average Marginal Effects of Paid Sick Leave

Variable	Model 1A	Model 1B	Model 2A	Model 2B
Moral Hazard	5.16%	6.49%	2.41%	3.17%
Access Benefit				
Average effect	2.69%	1.29%	2.53%	1.74%
(Excellent)	-	-	-	-
(Very Good)	(2.40%)	-	(1.36%)	-
(Good)	(4.17%)	(2.69%]	(4.84%)	(4.00%)
(Fair)	(6.28%)	(4.83%]	(6.87%)	(6.04%)
(Poor)	(20.17%)	(18.61%]	(20.73%)	(19.79%)
Total Effect				
Average effect	7.84%	7.78%	4.94%	4.91%
(Excellent)	(5.16%)	-	(2.41%)	-
(Very Good)	(7.56%)	(6.49%)	(3.77%)	(3.17%)
(Good)	(9.32%)	(9.18%)	(7.25%)	(7.17%)
(Fair)	(11.44%)	(11.32%)	(9.28%)	(9.21%)
(Poor)	(25.33%)	(25.10%)	(23.13%)	(22.96%)

Note: All marginal effects are statistically significant at 99% significance level.

Furthermore, the probability of utilizing an absence increases by 5.16% if a worker who reports excellent health status has paid sick leave (Model 1A) and by 6.49% if a worker who reports excellent or very good health status has paid sick leave (Model 1B). After we allow healthy workers to miss one workday, the probability of utilizing an absence increases by 2.41% if a worker who reports excellent health status has paid sick leave (Model 2A) and 3.17% if a worker who reports excellent or very good health status has paid sick leave (Model 2 B).

From the above results, we can evaluate the marginal probability of utilizing an absence to treat injury or illness if they obtain paid sick leave (i.e., the access benefit). In Model 1, paid sick leave increases the probability of utilizing an absence to treat injury or illness by 2.69% if a worker who reports excellent health status has paid sick leave (Model 1A) and 1.59% if a worker who reports excellent or very good health status has paid sick leave (Model 1B). After we allow healthy workers to miss one workday, we observe that the probability of utilizing an absence to treat their injury or illness increases by 2.53% if a worker who reports excellent health status has paid sick leave (Model 2A) and 1.74% if a worker who reports excellent or very good health status has paid sick leave (Model 2B).

Finally, we note that the marginal probability of utilizing an absence increases as workers are perceived to be unhealthy. The average marginal effect of paid sick leave on absence is 25.33% if a worker reports poor perceived health (Model 1A). However, the corresponding marginal effect of paid sick leave is 5.16% if participants report excellent perceived health. In Model 2A, the average marginal effect of paid sick leave increases from 2.41% to 23.13% if the perceived health status changes to poor. Thus, the probability of utilizing the absence increases as a worker's health status becomes unhealthy.

5. Discussion

From the estimation results, we argue that paid sick leave induces a moral hazard problem. Healthy workers can utilize an absence because of its low cost but not for sickness treatment. Our empirical analysis shows that paid sick leave encourages healthy workers who have paid sick leave to utilize it, even though they have a low chance of being sick. This observation indicates that some workers do not use an absence for the medical treatment of their illness if they can claim a paid sick leave. Furthermore, unhealthy workers do not use all sick leaves for medical treatment. Although they use sick leaves for medical purposes, they also use sick leaves for personal non-medical purposes. Thus, we conclude that moral hazard exists when paid sick leave is provided to workers.

However, the cost of moral hazard depends on its definition. We observe that the probabilities of utilizing falsely claimed sick leave in Model 1 are much higher than those in Model 2. The only difference between these models is whether we regard one missing workday as a moral hazard. Thus, the cost of moral hazard can be lower than expected, even if moral hazard actually exists.

To evaluate the expected cost of moral hazard, we first calculate the average cost of absence in the workplace using

the MEPS data. The average number of days missed due to injury or illness per year is 2.26 based on the study sample. The average hourly wage in this sample is $19.67 and the corresponding daily wage is $157.32, assuming an eight-hour workday. Therefore, the average cost of workdays missed due to sickness in this sample amounts to $355.86 per year.

Table 5 shows the proportion and average cost of moral hazard and access benefit induced by paid sick leave. Moral hazard accounts for about 65.8% to 83.4% in Model 1 and 48.7% to 64.6% in Model 2. Based on these proportions, we conclude that the expected cost of moral hazard is $174 to $297 per worker per year. Considering these expected costs, we argue that if we accept the moral hazard cost, our society can obtain the access benefit from paid sick leave.

Table 5: Proportion and Cost of Moral Hazard and Accessible Benefit

Variable	Model 1A	Model 1B	Model 2A	Model 2B
Proportion				
Moral Hazard	65.8%	83.4%	48.8%	64.6%
Accessible Benefit	34.3%	16.6%	51.2%	35.4%
Cost of absences				
Moral Hazard	$234	$297	$174	$230
Accessible Benefit	$122	$59	$182	$126

Actual welfare gains or losses from paid sick leave depend on whether access benefits exist and how many welfare gains can be received from them. Conventional economic theory argues that paid sick leave increases the number of missed workdays, and the cost of the increase generates an inefficiency called moral hazard welfare loss. Thus, society can obtain welfare gains if the access benefit offsets or overwhelms the cost of inefficiency.

Nyman (1999, 2004) presents a clue to answering this question. First, paid sick leave provides workers with more opportunities for medical treatment or rest at home, which may not be otherwise available. Suppose a worker in need of urgent care does not claim paid sick leave and visit the hospital for medical treatment, their health care cost can increase more than when they obtain care immediately.

Second, paid sick leave plays a role in cost-sharing, which is similar to health insurance. Paid sick leave requires labor or productivity transfer from workers who are productive to those who are sick. This type of income effect, as called by economists, provides welfare gain from paid sick leave, which may be welfare loss in conventional economic theory. Employers transfer the labor force or productivity from healthy workers to sick workers who need care or rest immediately. Therefore, these situations significantly improve workers' health, which is invaluable both socially and individually. This improvement may become a welfare gain from paid sick leave that dominates the cost associated with moral hazard.

Furthermore, several studies assert that paid sick leave plays a significant role in protecting workers from influenza-like illnesses (ILI). Approximately 28% of workers are present in their workplaces, even if they are sick with ILI, and working under ILI prevents workers from performing at their full productivity level (Kumar et al., 2013). In this situation, if paid sick leave is given to workers, ILI absenteeism costs can be reduced by $0.63 to $1.88 billion per year based on conservative estimates (Asfaw et al., 2017). These savings would be the welfare gains obtained by paid sick leave.

In this study, we faced the restriction in using the MEPS dataset. The last data including both paid sick leave status and sick leave days was HC-183 in Panel 19 released in 2017. Since the current pandemic started around 2019, the estimated value of the paid sick leave policy may fluctuate if more recent data is released. Thus, the more informed dataset is imperative to evaluate the value of paid sick leave for public health and health care policies in the United States.

6. Conclusion

This study estimates the extent to which moral hazard and access benefits from paid sick leave are induced. Our estimation results indicate that moral hazard increases the probability of missing workdays by 2.41% to 6.49%, and the corresponding expected cost is $174 to $297 per worker per year. Based on these results, we argue that society can obtain welfare gains if the accessible benefits exceed the expected cost of moral hazard. Welfare gains can be obtained by sharing productivity among workers and extending the availability of medical care, which cannot be possible without paid sick leave.

Although paid sick leave is one of the means to protect workers from viral infection, especially during pandemics, such as swine flu and COVID-19, there are no federal legal requirements for paid sick leave and only unpaid sick leave is required based on the Family and Medical Leave Act. In 2021, 16 states, 23 cities, and 2 counties had laws providing mandatory paid sick leave in the United States (ABB, 2021). Other jurisdictions have proposed legislation to enact paid sick leaves. Mandatory paid sick leave is a good policy to obtain accessible benefits if the moral hazard cost is acceptable.

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