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**Article**

## Work Lost Due to Illness - an International Comparison

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# DICE REPORTS\*

## WORK LOST DUE TO ILLNESS – AN INTERNATIONAL COMPARISON

The economic costs of the health system are usually measured by the ratio of health expenditures to gross domestic product (GDP) or – in other words – by the contribution of the health system to GDP. Illness compared to health does not only result in a different disposition of GDP, however, say spending on health services instead of spending on other goods and services, but it also results in a lower size of GDP due to work lost due to illness. This article asks questions about

- output lost due to illness in various countries,
- the reasons for different numbers of days of illness or volume of output lost
- and the share of GDP accounted for by the total cost of illness to the economy – expenditures on health services provided and output lost – in various countries.

### Number of days of illness and output lost

The primary source of the data on work lost due to illness is the OECD Health Data base. The analysis is confined to the industrialised countries. In several cases, where data are missing or not reliable, national sources are used. For some countries, like France, Italy, Spain or Ireland, the sources quoted contain no, no comparable or very dated figures.

Work lost due to illness is stated in various ways: number of calendar days, number of working days or percentage of annual working-time per employee. Where not provided, work lost

was expressed in percent of annual working-time. It was assumed that, measured in this way, work lost is equal to output lost. This procedure permits only an approximation of the actual situation, however, primarily because in most cases the data refer only to employees and do not include the self-employed.<sup>1</sup> Table 1 contains the data on work lost due to illness and the data for calculating the percentage of working days lost in total annual working days.<sup>2</sup> Figure 1 is a graphic depiction of working days so lost in various countries.

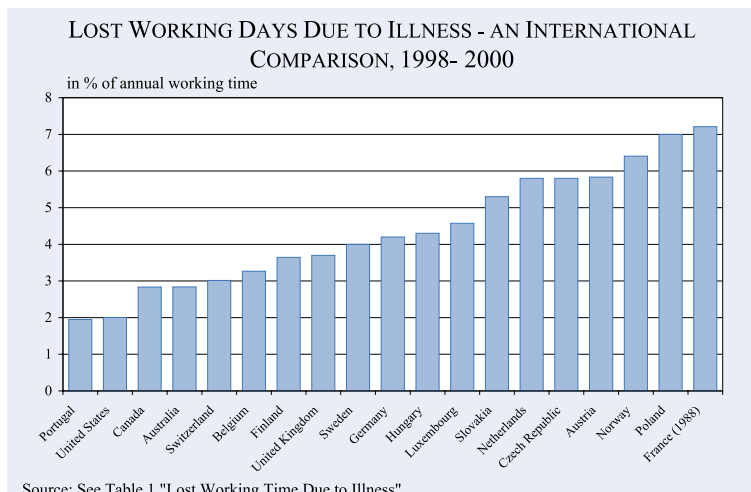
There are considerable country-to-country differences. In the United States only 2% of annual working time is lost due to illness; in Australia, Canada and Switzerland it is 3% or less.<sup>3</sup> In contrast, the corresponding figures are 4.2% for

<sup>1</sup> Furthermore, even a comprehensive record of work lost (in percent of working-time) does not necessarily imply output lost to the same extent. This would only be the case if wages equalled the marginal value product. Even if this could be assumed, there are cases where output lost could be bigger (e.g. if machines remain unmanned) or smaller (e.g. if the illness precedes or remains without a sick certificate) than the underlying output lost due to illness. In addition, work lost due to illness is measured here as a share of actual GDP (i.e. GDP with illness), although the correct reference value is the higher GDP (i.e. without illness).

<sup>2</sup> The table also contains the utilisation of health services in percent of GDP and the total costs of the health system (columns 7 and 8) to which we shall refer later.

<sup>3</sup> The extraordinarily low percentage of work lost to illness in the United States may in part also be caused by special circumstances like the relatively low percentage of people with health insurance in the total population.

Figure 1



\* DICE = Database of Institutional Comparison in Europe ([www.cesifo.de](http://www.cesifo.de)).

Table 1

## Working days lost due to illness

	Year	Number of working days lost due to illness per employee and p.a.	Working days lost in % of total annual working days	Calendar days	Working hours p.a.	Working hours per day	Working days p.a.	Expenditure on health in % of GDP	Total cost to the economy of being ill in % of GDP (= (2) + (7))
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Austria	1995	<b>6.3</b>	2.8	365	<b>1 777</b>	8.0	222	<b>11.0</b>	13.8
Belgium	1995	<b>7.1</b>	3.3	365	<b>1 739</b>	8.0	217	<b>7.9</b>	11.2
Germany	2000		<b>4.2</b>					<b>10.5</b>	14.7
Finland	1999	<b>8.0</b>	3.6	365	<b>1 757</b>	8.0	220	<b>7.9</b>	11.5
France	1988	<b>15.7</b>	7.2	365	<b>1 742</b>	8.0	218	<b>8.5</b>	15.7
Canada	1998	<b>6.6</b>	2.8	365	<b>1 863</b>	8.0	233	<b>9.3</b>	12.1
Luxembourg	1992	<b>10.1</b>	4.6	365	<b>1 766</b>	8.0	221	<b>6.6</b>	11.2
Netherlands	1999		<b>5.8</b>					<b>8.8</b>	14.6
Norway	1995	<b>14.0</b>	6.4	365	<b>1 748</b>	8.0	219	<b>7.5</b>	13.9
Austria	1998	<b>12.6</b>	5.8	365	<b>1 728</b>	8.0	216	<b>9.0</b>	14.8
Poland	1995	<b>15.7</b>	7.0	365	<b>1 796</b>	8.0	225	<b>5.3</b>	12.3
Portugal	1989	<b>4.4</b>	1.9	365	<b>1 806</b>	8.0	226	<b>7.9</b>	9.8
Sweden	2000		<b>4.0</b>					<b>9.2</b>	13.2
Switzerland	1997	<b>7.0</b>	3.0	365	<b>1 861</b>	8.0	233	<b>10.1</b>	13.1
Slovak Rep.	1999		<b>5.3</b>					<b>8.6</b>	13.9
Czech Rep.	1998		<b>5.8</b>					<b>7.6</b>	13.4
Hungary	1998		<b>4.3</b>					<b>5.3</b>	9.6
United States	1996	<b>4.8</b>	2.0	365	<b>1 916</b>	8.0	240	<b>13.7</b>	15.7
United Kingd.	1998	<b>8.5</b>	3.7	365	<b>1 839</b>	8.0	230	<b>8.0</b>	11.7

**Notes:**

**Bold** data on sick leaves: Official statistics.

Not bold: calculated numbers; either working days lost due to illness (1) calendar days not worked (not shown) or days not worked in % (2) of working days lost (1); conversion: (3) – (6).

For the conversion of calendar days to working days, where necessary, it was assumed that the calendar days per illness are distributed pro rata among working days and not working days (holidays and vacations).

Column (2): Lost output in % of GDP.

Column (7): Contribution of the health service to GDP.

Data in columns (3) to (6) are presented only if they are necessary for calculating the column (2) data.

Timelines of information: The table contains the most recently available and internationally comparable figures.

Sources: Column (1), (2), (7): *OECD Health Data 2000* and information from country specific sources.

Column (4): *World Competitive Yearbook*.

Germany, 5.8% for Austria, and close to 9% in Poland.

In some countries sick leaves are measured in terms of the sick certificates provided by doctors. Here calendar days are counted. They are then converted into “sick days in percent of total working days” as published in the statistics. This is not identical, however, to the number of sick days of the working population as a whole. In most countries, the published aggregate statistics only contain the sick leaves of employees insured by statutory health insurance. Self-employed or privately insured employees are not included. If their sick leaves were different from those insured by statutory health insurance, the sick leaves of the entire working population would also be different and

probably lower than reflected in the official statistics on sick leaves.

On the other hand, the official statistics are too low in that they contain only those cases of disability caused by illness certified by a doctor. In many countries, such a certificate must only be presented after the illness has lasted several days. The number of sick days not recorded because of this may be considerable. For example, in Germany, where a sick certificate must be presented after the fourth day, about 30% of all reported cases of illness last up to three days, corresponding to a share of 8% in total reported sick days.<sup>4</sup>

<sup>4</sup> Federal Association of company health insurance firms.

### Possible reasons for differences in the number of sick days

There is a large number of reasons for working days lost due to illness in a particular country. Among these are the conditions resulting in illness like the availability of protective measures at the work place. Also of importance is how well and how fast illnesses are cured. Finally, a role may also be played by the particular regulation of sickness pay. We shall focus on the second and third determinant mentioned.

How fast and well new illnesses can be cured depends on the quality of the national health service. The quality of treatment and the length of time one must wait for treatment are of great importance for the number of sick days. Of course, the "quality of the health service" is a most complex indicator which can only be represented here in very simplified form, i.e. by the expenditures on health services relative to GDP.<sup>5</sup>

Figure 2 shows a negative correlation between sick days and spending on health services which is, however, not very close.<sup>6</sup> By and large, the higher the share of health service spending in GDP (i.e. the higher the quality of the health service), the lower is the percentage of sick days.<sup>7</sup>

Besides the quality of the health service, the level of continued pay is also likely to be an important determinant of the volume of work lost due to illness. Data on continued pay<sup>8</sup> contain many institutional details that are not always directly comparable. In order to create comparability and present

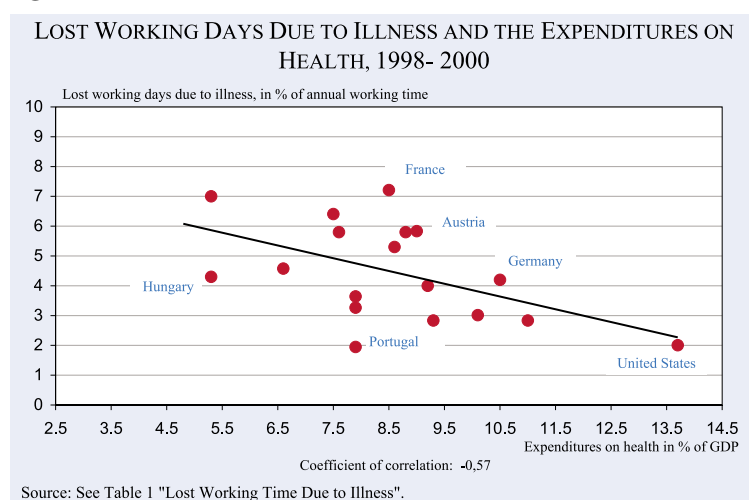
the data in a meaningful way, the data were converted in such a way that income or income lost, respectively, on certain individual days of illness can be ascertained.<sup>9</sup> Table 2 presents the various rules for continued pay.

There are considerable country-to-country differences in continued pay, especially during the first to third days of illness. Here continued pay varies from 0% to 100%. 0% corresponds to one qualifying day, i.e. one day without continued pay. In five of the 18 countries under consideration, there are one or more qualifying days, in the United States even seven. On the 50th or 100th day of illness the differences are far smaller. In Norway and Luxembourg even then 100% of income is paid, whereas in most countries the sick then receive between 50% and 90% of wages.

The information on the various systems of continued pay presented in Table 2 is already a simplification of the complex nature of these rules. In order to relate the number of sick days to the kind of continued pay system, the latter had to be condensed into one single variable that is the result of a comprehensive assessment of the generosity of the continued pay systems. This assessment focuses primarily on the rules for the initial days of illness. The rules are divided into three groups: not so generous, medium generous, very generous. The relationship with the number of sick days is shown in Figure 3.

A comparison of the percentage of sick days in the two groups of countries with medium and very generous continued pay systems shows that the differences are minor, although the cases of Poland and Belgium don't fit the supposed relationship. If these outliers are excluded, there is a clear trend toward more sick days in more generous systems of continued pay. This trend is

**Figure 2**



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<sup>5</sup> This indicator was chosen as an approximation because it measures the input whereas "quality" characterises the output.

<sup>6</sup> Correlation coefficient of - 0.57.

<sup>7</sup> The share of health services in GDP depends in turn also on the level of income per capita, as health is a superior good.

<sup>8</sup> OECD (2000) and own research.

<sup>9</sup> For the recurrence of an illness within one year, the rules vary from country to country.

Table 2

## Sick leave payments, as a percentage of earnings, 2000

	At 1st day	At 2nd day	At 3rd day	At 10th day	At 20th day	At 50th day	At 100th day	Total valuation of generosity of sick leave pay	
Austria	100	100	100	100	100	100	50	low	
Belgium	100	100	100	100	100	60	60	high	
Finland	70	70	70	70	70	70	70	medium	
Germany (2001)	100	100	100	100	100	70	70	high	
GDR (1998)	90	90	90	90	90	50	50	high	
Luxembourg	100	100	100	100	100	100	100	high	
Netherlands	70	70	70	70	70	70	70	medium	
Portugal	0	0	0	65	65	65	65	low	
Sweden	0	80	80	80	80	80	80	medium	
United Kingdom	0	0	0	Not calculable per day; upper limit at about 50% of average income				low	
Norway	100	100	100	100	100	100	100	high	
Switzerland	0	0	0	According to enterprise or branch specific contract				low	
Czech Republic	50	50	50	69	69	69	69	medium	
Hungary	80	80	80	80	70	70	70	medium	
Slovakia	70	70	70	90	90	90	90	medium	
Poland	80	80	80	80	80	80	80	medium	
Australia	Not calculable per day; upper limit at about 50% of average income								low
United States	0	0	0	60	60	60	60	low	

## Notes:

*Germany:* Figures in the table relate to new regulation in force since January 1999. In the preceding period of October 1996 till December 1998 minimum sick leave payments were set at 80 which, however, were increased to 100% in several enterprise and branch wage contracts.

*United States:* Regulations differ between states and even countries. The table contains plausible medium-range values. Start of sick leave payment is often only at the 8th day of sickness. More generous regulations are found in governments.

*France and Canada* were omitted here due to missing or unplausible data.

Sources: Social Security Programs Throughout the World of the US Government; Database MISSOC of the European Commission; Ifo Country Data Research; Re-calculation of the data, presentation and valuation: Ifo Institute for Economic Research, Munich.

stronger yet if we compare the not so generous with the medium generous and very generous countries.

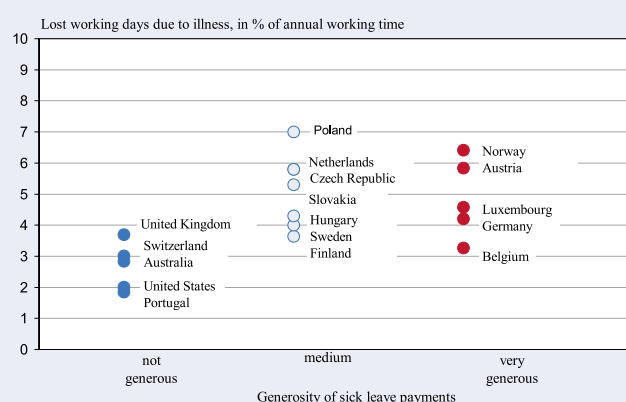
There are various other factors which affect the number of sick days, but were not analysed statisti-

cally. Thus, the higher the labour force participation rate, especially of women, the more frequent may be the cases of sick children being cared for at home by their mothers or fathers who then call in sick. Furthermore, official and legal second jobs as well as activities in the underground economy may

result in additional (incorrect) sick leaves in the first job. Thus, the extraordinarily high number of sick days in Poland (last available data from 1995: 8.9% of working time) may in part be due to the fact that some Poles take sick leave, receive 80% of their wages in sick pay and then go to work abroad.<sup>10</sup> Satisfaction at the work place should also play a role for the

Figure 3

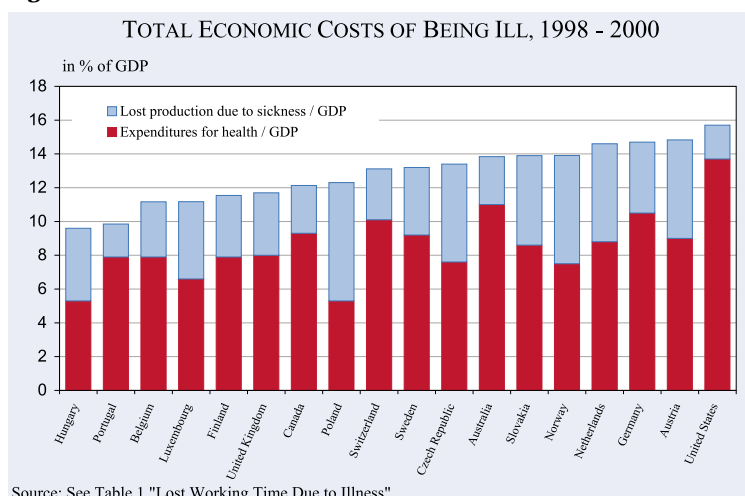
## LOST WORKING DAYS DUE TO ILLNESS AND THE GENEROSITY OF CONTINUED PAY, 1998- 2000



Source: See Table 1 "Lost Working Time Due to Illness".

<sup>10</sup> As part of the Polish health system reform started in 2000 it is planned to have the sick leaves certified by doctors reviewed by special physicians who enjoy the trust of the authorities and business.

Figure 4



duration of illnesses.<sup>11</sup> The state of the business cycle and the related risk of losing one's job is also important. Finally, there are demographic factors like the age composition of the population as well as the ratio of handicapped.

### The total costs of being sick

Finally, the data on output lost due to illness and the data on expenditures on health services are added, as shown in Figure 4.

If the total costs to the economy are taken into consideration, the country-to-country differences are somewhat smaller, reflecting the fact that the size of health service costs tends to have a favourable effect on the length of sick leaves. The United States is now at the top (15.7%)<sup>12</sup>, closely followed by Germany. Hungary and Portugal are at the bottom of the list (9.6%).

### Outlook

Among the numerous possible reasons for work lost due to illness only two were highlighted here. Other factors were mentioned, but not analysed. There is, therefore, ample room for further research. Economic policy conclusions for a particular country, especially with respect to the effect of a change in the duration and volume of continued

pay, should not be drawn hastily. In view of the relationships shown above it seems reasonable, however, to assume that generous rules for continued pay are being exploited<sup>13</sup>, but other factors that were not analysed may also be significant. Furthermore, besides cross-section analyses time-series analyses are also needed.

Rigmar Osterkamp

<sup>11</sup> Large companies in Germany report on relevant findings and efforts (Bertelsmann Foundation/Hans-Böckler Foundation, 2000).  
<sup>12</sup> The United States are level with France whose data are very dated, however (1988).

<sup>13</sup> This may be due to moral hazard or to incorrect behaviour.