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International comparison of labour disputes and structural change

Hagen Lesch*

Introduction

In many OECD countries, the number of working days lost per employee due to strikes and lockouts has declined during the last thirty years. Empirical research about labour disputes suggests several explanations for the shrinking strike propensity (Goerke/Madson 2004a, 2004b; Ludsteck/Jacobebbinghaus 2005). They include political and institutional factors like the objectives and sway of trade unions and labour dispute rules as well as changes in the production process. The reduction of vertical integration by outsourcing and the limitation of inventories by just-in-time production have increased firm's vulnerability during the last twenty to thirty years. Unions can substantially disrupt the production process by organising only short work stoppages. Additionally, the decline of days lost due to strikes and lockouts has macroeconomic reasons like the successful fight against inflation and sectoral structural change. In most OECD countries, labour disputes are still concentrated in production and construction industries whereas the service sector remains largely free from them. Shrinking employment in strike-prone industries, like mining and manufacturing and the shift toward the service sector automatically led to a decline in the number of working days lost because of strikes. This structural change is sometimes identified as the "most salient of the macroeconomic reasons" for the decline in the volume of labour disputes (Ochel/Selwitschka 2003, 63; Jahn 2004, 426).

Before estimating the impact of the structural change hypothesis, we should look at the changes in strike activity by industry or sector in 17 OECD countries over the years from 1981 to 2003. In order to estimate the magnitude of the structural effect I will use a shift-share approach. At the end of this paper I will briefly discuss the reasons for the trends in strike activity within sectors.

* Cologne Institute for Business Research (IW). The author wishes to thank Michael Grömling and Waltraut Peter for helpful comments.

Methodology

International comparisons of labour disputes focus on the overall economy. The most important indicator for measuring strike activity is the volume of labour disputes, defined as the number of working days lost through labour disputes per 1,000 employees (Schnabel 1995; Aligisakis 1997; Davies 2000; Lesch 2001; Monger 2005). Comparisons by industry are scarce, however, and limited to the distinction between the secondary and tertiary sector (Davies 2000; Monger 2005). A detailed analysis by industry is missing. This article tries to fill this gap. The secondary sector is disaggregated into three industries: mining and energy, manufacturing and construction. In line with the "International Standard Industrial Classification of all Economic Activities (ISIC Rev. 2)" the tertiary sector is disaggregated into four sub-sectors: the first includes wholesale, retail, restaurants and hotels, the second transport, storage and communication, the third financing and insuring and the fourth public administration and social and personal services.

The main source of data on labour disputes is the International Labour Office (ILO), which collects data from the national labour agencies. The ILO's Yearbook of Labour Statistics supplies data on disputes in different sectors and is therefore extremely useful for analysing sectoral data. Further information is supplied by Eurostat. It should be noted, however, that an exact comparison between countries is not possible because there are important differences in the methods used for compiling statistics on labour disputes in individual countries (see ILO 1993, Aligisakis 1997 or Monger 2005 for an overview). In addition, the comparison is sometimes distorted by missing data and different industry classifications and groupings used by individual countries. For example, in Spain all days lost due to political strikes are counted as "activities not adequately defined". This practice creates a difference between the number of days lost in the whole economy und the aggregate number of days lost in the production and service sector.

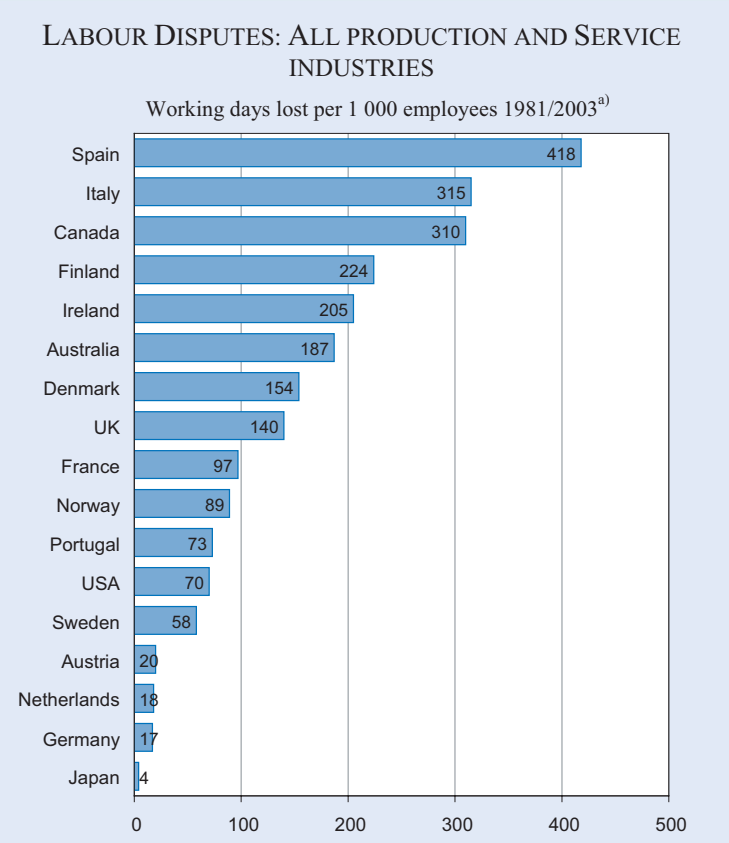
The number of employees in the analysed OECD countries differs. We can expect a positive relationship between the number of days lost due to strikes and lockouts and the number of employees. This bias is eliminated by relating the number of days lost to the number of wage and salary earners as reported in the OECD Labour Force Statistics.

Missing figures on the number of employees are estimated on the basis of the total labour force and in some cases current values were extrapolated. Deviating industry classifications are adjusted as far as possible. If strike figures of two (or more) industrial sectors are aggregated, adjustment is impossible. In such cases the number of days lost is assigned to the larger sector and adjusted with respect to the respective employment. Accordingly there is no figure for the smaller sector.

Overall comparison

Figure 1 shows the volume of labour disputes defined as the number of working days lost through labour disputes per 1,000 employees over the period 1981 to 2003. The country with the highest volume was Spain with an average of 418 working days lost per 1,000 workers per year. Trailing far behind were Italy with 315 and Canada with 310 days. The ratio of days was lowest in Japan, with an annual average of 4 days lost per 1,000 workers. The next lowest were Germany (17 days), the Netherlands (18 days) and Austria (20 days). Among other countries, France, the United Kingdom and the United States were positioned in the midfield. Their volumes ranged from 70 days (U.S.) to 140 days (UK).

Figure 1



a) Average per year
Up to 1992 West Germany; France: 1981/2001; Japan, Netherlands: 1981/2002.

Source: ILO, OECED, author's calculation.

Comparisons by main sectors

Table 1 shows the changes of the ratio of days not worked in the production industries (including construction) and the service industries over the five-year periods 1981/85, 1986/90, 1991/95, 1996/2000 and for the three-year period 2001/03. The figures exclude the primary sector (agriculture, hunting, forestry and fishing) which only has a small macroeconomic impact in all countries but Portugal. Furthermore, strike rates in this sector are still very low in most countries while declining in countries with higher strike rates (Australia, Italy, Canada and Spain).

The volume of labour disputes in the production industries has declined in most countries. In the United Kingdom, Italy and Canada the number of days not worked per 1,000 employees exceeded 1,000 in the first half of the 1980s compared to 11 (UK), 96 (Italy) and 207 (Canada) days between 2001 and 2003. But there also were countries with a heterogeneous trend. This mainly concerned countries like Austria, Japan and Germany which enjoyed a high level of industrial peace. But it also concerned more strike prone countries like the Netherlands, Denmark and Norway. Whereas in the two Scandinavian countries the number of working days lost due to labour disputes peaked in the late 1990s, in the Netherlands it was highest in the early 1990s.

The volume of labour disputes in service industries decreased only in a small group of countries, including Australia, the United Kingdom, Ireland, Italy, Japan, Portugal and Finland. There was no downward trend in the other Scandinavian countries as well

Table 1

Labour disputes: Working days lost per 1,000 employees 1981/2003
– Production and service industries –

		1981/85[a)]	1986/90[a)]	1991/95[a)]	1996/00[a)]	2001/03[a)]	1981/03[a)]
Australia	Production sector	862	606	359	257	172	476
	Service sector	154	87	62	39	14	76
Austria	Production sector	1	1	1	0	30	4
	Service sector	0	1	10	2	185	27
Canada	Production sector	1,110	922	324	302	207	605
	Service sector	298	228	114	185	152	199
Denmark	Production sector	815	102	129	718	84	395
	Service sector	93	17	13	138	7	58
Finland	Production sector	457	590	256	81	64	309
	Service sector	255	322	212	40	19	183
France	Production sector	177	87	70	63	n. a.	97
	Service sector	26	18	81	66	n. a.	49
Germany	Production sector	114	5	22	3	15	33
	Service sector	0	4	14	1	0	4
Ireland	Production sector	689	354	69	63	24	258
	Service sector	364	187	132	106	49	178
Italy	Production sector	1,177	398	262	143	96	443
	Service sector	433	266	124	36	44	192
Japan	Production sector	13	5	2	1	0	5
	Service sector	9	5	3	2	0	4
Netherlands	Production sector	21	34	105	6	79	45
	Service sector	23	4	10	4	6	10
Norway	Production sector	87	263	17	396	43	172
	Service sector	48	98	78	57	20	64
Portugal	Production sector	210	75	49	31	24	77
	Service sector	110	108	30	14	16	57
Spain	Production sector	572	664	457	312	172	458
	Service sector	113	372	171	100	37	169
Sweden	Production sector	18	204	47	1	12	60
	Service sector	51	135	54	12	70	64
United Kingdom	Production sector	1,027	167	21	15	11	269
	Service sector	120	127	25	25	38	70
United States	Production sector	249	114	108	89	10	123
	Service sector	61	70	21	51	17	46

n.a. = not available; [a)] Average per year.
Missing values: Production sector: Austria: 2000; France: 2002, 2003; Japan, Netherlands: 2003; Service Sector: Japan, Netherlands: 2003, France: 2002, 2003.

Sources: Austrian Trade Union Federation, Eurostat, ILO, OECD, author's calculations.

as in Canada and Spain. In France, the volume of labour disputes even increased. This surprising trend could be based on changes in the method used for compiling the statistics. Labour disputes in public administration, where unionisation and workers' mobilisation are comparably high, were excluded from the statistics until 1994.

Between 1981 and 2003 the number of working days lost due to labour disputes was higher in the production sector than in the service industries. As the scatter diagram (Figure 2) shows, in most countries more working days were lost in production than in services. Exemptions were Austria and Sweden, where the ratio was reverse. Most service industries have experienced strong employment growth in the past thirty years, whereas declining employment has hit mining, manufacturing and construction. As a result of this structural change, the loss of working time caused by labour disputes is falling systematically. On the other hand, we can observe a marked and fairly steady downward trend in the volume of labour disputes in the production industries. In Ireland, the United Kingdom and France this trend was so substantial that the relation between the strike intensity in the two sectors was reversed during the 1990s with fewer strike days in production than in services.

Structural effect

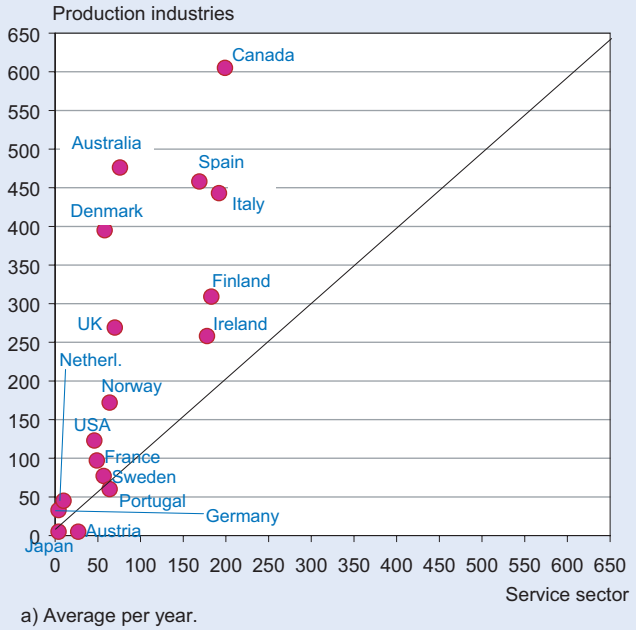
We calculate the influence of the structural effect on the changes in the volume of labour disputes by

using a shift-share analysis. The employment shares are used as a measure for the structural change. First, we estimate how many working days would have been lost if the employment shares of the production and service sector had remained unchanged (hypothetical number of working days). By comparing the observed number of working days with the hypothetical number we can isolate the structural effect. A negative (positive) sign indicates, that the structural change has decreased (increased) the number of working days lost due to industrial disputes.

Figure 2

PROPENSITY TO STRIKE IN PRODUCTION AND SERVICE INDUSTRIES

Working days lost per 1 000 employees 1981/2003[a)]



a) Average per year.

Source: Austrian Trade Union Federation, Eurostat, ILO, OECD, author's calculation.

The results are presented in Table 2. The table shows five-year averages. In order to show the relative magnitude of the structural effect, the table also displays the observed changes in the number of working days for the whole economy (adjusted for the primary sector and all activities which are not classifiable by economic activity). Due to the high level of industrial peace, structural change did not change the volume of labour disputes in Japan. Furthermore, there was only a marginal effect in Germany for all periods except 2001/2003. Likewise, the structural change decreased the number of working days lost in the United States, Portugal and Sweden, but the effect was rather small. Surprisingly we find a significant reduction of the strike rate only for a minority of countries, including Australia, Canada, Italy, Denmark and Finland. As shown by five-year averages, the structural change reduced the volume by 14 to 17 days in Australia, by 1 to 22 days in Canada and 1 to 15 days in Denmark. The table shows similar but smaller effects for Finland and Italy. In addition, for some periods we can observe large reductions in the strike rate in Norway (1996/00) and in the more peaceful Netherlands (1991/95 and 2001/02).

The results are mixed for all other countries. Especially between 2001 and 2003, structural change increased the number of working days lost in Austria. This is mainly because political strikes in 2003 were concentrated in the public sector as well as in transport and communication which also led to a historically high volume of labour disputes. In the absence of structural change, Austria as well as Spain, Ireland and the United Kingdom would have had fewer working days lost due to strikes and lockouts.

Overall, we can conclude that structural change did not generally decrease the number of working days lost due to labour disputes. In addition, in cases of a positive influence of structural change, the effect was often rather small. This becomes apparent by comparing the structural effect with the five-year periodical change in the volume of labour disputes of the whole economy. By looking at the countries with the biggest structural effects, we find that only a minor part of the whole change was determined by the structural effect:

– *Canada*: The number of working days lost decreased by 273 days in the early 1990s, but only 14 days of this reduction were determined by structural change. A higher part was based on trends within sectors. The number of working days lost decreased from annually 922 days during the late 1980s to 324 days during the early 1990s in the production industries and from 228 to 114 days in the service sector.
– *Italy*: The volume of labour disputes decreased by 457 days in the late 1980s, but only 6 of those days

Table 2

Structural change and the volume of labour disputes
– Structural effect[a] and change in the volume of labour disputes[b] –

		1986/90	1991/95	1996/00	2001/03
Australia	Structural effect	– 15.3	– 17.4	– 15.6	– 13.6
	Change	– 167.7	– 93.9	– 44.8	– 40.1
Austria	Structural effect	0.0	0.5	0.2	19.8
	Change	– 0.7	4.9	– 4.9	132.1
Canada	Structural effect	– 21.6	– 13.9	– 5.5	– 1.0
	Change	– 80.1	– 272.8	56.6	– 49.7
Denmark	Structural effect	– 0.8	– 2.0	– 14.9	– 3.8
	Change	– 263.8	4.2	248.3	– 251.3
Finland	Structural effect	– 10.2	– 4.3	– 3.5	– 4.4
	Change	81.2	– 192.4	– 162.3	– 22.1
France	Structural effect	– 2.7	0.8	0.3	n. a.
	Change	– 0.3	– 16.7	– 28.5	n. a.
Germany	Structural effect	– 0.0	– 0.3	– 0.2	– 1.6
	Change	– 46.7	12.5	– 15.4	3.6
Ireland	Structural effect	– 4.2	2.3	14.0	1.4
	Change	– 235.1	– 132.4	– 19.0	– 49.3
Italy	Structural effect	– 6.1	– 6.3	– 6.0	– 3.6
	Change	– 456.6	– 132.6	– 106.4	90.9
Japan[c]	Structural effect	0.0	0.0	0.0	– 0.0
	Change	– 6.0	– 2.3	– 0.9	– 1.0
Netherlands[c]	Structural effect	– 0.7	– 4.7	– 0.1	– 16.8
	Change	– 8.9	19.9	– 28.3	16.4
Norway	Structural effect	– 3.9	3.4	– 22.2	– 1.8
	Change	84.8	– 81.3	70.6	– 108.3
Portugal	Structural effect	1.1	– 1.7	– 1.4	– 0.7
	Change	– 102.2	– 46.3	– 15.0	– 1.8
Spain	Structural effect	– 6.4	11.3	6.2	2.5
	Change	3.0	– 144.0	– 268.4	17.2
Sweden	Structural effect	– 0.8	0.3	– 1.5	– 1.0
	Change	93.5	– 81.4	– 42.5	46.5
United Kingdom	Structural effect	– 3.5	0.2	0.9	3.0
	Change	– 305.4	– 114.0	– 1.7	9.3
United States	Structural effect	– 0.8	– 4.5	– 2.1	0.5
	Change	– 45.3	– 40.5	17.7	– 44.5

n.a. = not available; [a] Difference between the observed and the hypothetical number of working days lost per 1,000 employees (with constant employment shares); a positive (negative) sign indicates, that structural change has increased (decreased) the number of working days lost. – [b] Periodical change of the number of working days lost (whole economy adjusted for the primary sector and all activities which are not classifiable by economic activity). – [c] Only 2001/02 instead of 2001/03.

Sources: Austrian Trade Union Federation, Eurostat, ILO, OECD, author's calculations.

were due to structural change. Trends within sectors were more decisive. In the production industries, the number of working days lost fell by one half during the late 1980s compared to the early 1980s (from 575 to 274 days).

– *Spain*: The number of working days lost decreased by 268 per year between 1996 and 2000, but only 6 days can be explained by structural change. Again a major part of the change was due to trends within sectors. The volume of labour disputes dropped by one third in the production industries (207 days).

Trends within sectors

The shift-share analysis indicates that the decline in the volume of labour disputes mainly depended on trends within sectors, in particular in the production industries. To describe the trends within sectors in more detail, I will first look at more disaggregated data. After that, I will discuss two driving forces behind the observed trends: changes in manufacturing conditions and growing international competition. As mentioned above, I disaggregated the two main sectors in to seven sub-sectors. Five-year aver-

ages of the number of working days lost are shown in Table 3:

1. *Mining and energy:* The volume of labour disputes almost steadily dropped during all periods considered in Australia, Italy, Ireland, Japan, Portugal, the United Kingdom and the United States. This trend has also been observable in Sweden since the early 1990s and in Spain since the second half of the 1990s. We can find the sharpest drop in Australia and Spain. About 2,000 workings days per 1,000 employees were lost in both countries during the 1980s compared to only 176 and 129 days in the last period considered. Due to the famous miners' strike in 1984/85 more than 8,000 working days per year were lost per strike in the United Kingdom during the first half of the 1980s, with 32,731 days per 1,000 employees in 1984 alone. A less strike-prone group of countries which included Denmark, Germany, Finland, France, the Netherlands, Norway and Austria followed a more heterogeneous trend.
2. *Manufacturing*: The volume of labour disputes dropped in most countries. This is not true for such countries with a high level of industrial peace like Austria, Germany, the Netherlands as well as for Denmark and Norway. The trend in Denmark was distorted by the general strike in 1998. Overall, the number of working days lost was relatively high in Norway in the second half of the 1990s.
3. *Construction*: There was no common trend in this sector. While labour disputes were rather rare in Germany, they often occurred in Australia, Denmark, Finland and Canada. A nearly steady downward trend was observable only for Italy, Ireland, Canada, Portugal, the United Kingdom and the United States.
4. *Retail, wholesale, hotels and restaurants*: In comparison to the service sector as a whole, the volume of labour disputes was relatively low. There was no common trend. To a greater or a lesser extent the volume declined only in Australia, Finland, Italy, Canada and Portugal. The volume fluctuated in all other countries, whereas labour disputes were rather rare in Austria, Germany, Japan and the UK.
5. *Transport and Communication*: Compared to other service industries this sector had consistently high strike rates. The number of days lost in transport and communication was nearly as high as in manufacturing in Canada and Norway, and even higher in Ireland, Portugal, Spain, the United Kingdom and the United States. However, the volume of labour disputes sharply dropped in some countries, particularly in those with high strike rates (in this sector) like Australia, Finland, Italy or Canada. The number of working days lost per 1,000 employees decreased from 797 to 86 days per year in Italy, from 621 to 75 days in Ireland and from 500 to 22 days in the United States. On the other hand, there was a small group of countries, including Germany, Spain and the UK, with no clear trend. For example, in Spain about 200 working days were lost per strike during the early 1980s, while this number jumped to 820 days in the late 1980s and to over 400 days in the 1990s.
6. *Financing and insurance*: Compared to the service sector as a whole, this sector showed relatively low strike rates in most countries. Therefore it is not surprising that we do not find a general downward trend in these countries. But there was a second group of countries which had relatively high strike rates and for which we can observe a general downward trend at least since the early 1990s. This group included Finland, Italy, Sweden, Portugal and the United States. For example, in Italy, the number of working days lost dropped from about 500 during the early 1980s to 19 days between 2001 and 2003.
7. *Public administration, social and personal services*: The strike rates in the public sector (including personal services) were rather low in Ireland, Portugal, the United States and Denmark and rather high in France, Canada, Spain, Australia and the United Kingdom. The volume of labour disputes dropped particularly in Finland, Spain, Italy and Australia. A similar trend was observed for the UK in the 1990s but has reversed recently (2001/03). The strike rate did not decline in the other countries. The rising number of working days lost during the 1990s in France could be a result of the inclusion of public administration in the statistics.

National and international competition

The significant decline in the volume of labour disputes in mining and energy as well as in manufacturing is not surprising, because international competition hit mining and manufacturing, two sectors which primarily produce tradable goods, many

Table 3

Labour disputes: Working days lost per 1,000 employees by sub-sectors 1981/2003
– Average per year –

		1981/85	1986/90	1991/95	1996/00	2001/03
Australia	Mining and Energy	2,106	1,882	958	576	176
	Manufacturing	599	414	324	132	133
	Construction	921	419	145	465	256
	Retail, Wholesale, Hotels and Restaurants	62	33	18	3	3
	Transport and Communication	605	188	138	72	35
	Financing and Insurance	39	20	32	11	4
	Community, Social and Personal Services	134	125	87	79	25
Austria	Mining and Energy	0	0	1	0	0
	Manufacturing	1	1	0	0	35
	Construction	0	0	0	0	21
	Retail, Wholesale, Hotels and Restaurants	1	0	0	1	3
	Transport and Communication	0	0	12	0	364
	Financing and Insurance	0	0	0	0	0
	Community, Social and Personal Services	0	1	21	4	362
Canada	Mining and Energy	1,086	1,133	486	652	455
	Manufacturing	1,125	784	350	301	243
	Construction	1,052	1,324	161	151	39
	Retail, Wholesale, Hotels and Restaurants	173	125	65	106	58
	Transport and Communication	643	754	273	476	362
	Financing and Insurance	204	49	33	20	22
	Community, Social and Personal Services	289	214	148	263	253
Denmark	Mining and Energy	249	7	11	142	6
	Manufacturing	959	134	157	717	106
	Construction	408	13	45	788	30
	Retail, Wholesale, Hotels and Restaurants	131	10	3	233	10
	Transport and Communication	127	55	43	559	36
	Financing and Insurance	51	0	0	0	0
	Community, Social and Personal Services	79	16	15	59	2
Finland	Mining and Energy	51	193	2	7	5
	Manufacturing	526	264	334	107	47
	Construction	310	1,751	17	0	141
	Retail, Wholesale, Hotels and Restaurants	271	100	131	1	0
	Transport and Communication	114	443	313	121	39
	Financing and Insurance	187	872	38	10	19
	Community, Social and Personal Services	296	242	263	49	23
France	Mining and Energy	19	23	90	45	n. a.
	Manufacturing	218	107	61	59	n. a.
	Construction	67	33	96	11	n. a.
	Retail, Wholesale, Hotels and Restaurants	20	9	7	14	n. a.
	Transport and Communication	103	94	65	71	n. a.
	Financing and Insurance	31	13	11	22	n. a.
	Community, Social and Personal Services	8	10	151	116	n. a.
Germany	Mining and Energy	0	0	42	0	0
	Manufacturing	144	6	26	4	18
	Construction	4	0	2	1	8
	Retail, Wholesale, Hotels and Restaurants	0	1	4	1	1
	Transport and Communication	2	6	52	1	2
	Financing and Insurance	1	0	9	1	1
	Community, Social and Personal Services	0	7	12	1	0

		1981/85	1986/90	1991/95	1996/00	2001/03
Ireland	Mining and Energy	2,105	331	325	95	0
	Manufacturing	685	456	62	63	33
	Construction	212	5	7	14	8
	Retail, Wholesale, Hotels and Restaurants	n. a.	n. a.	n. a.	92	9
	Transport and Communication	621	449	258	111	75
	Financing and Insurance	n. a.	n. a.	1	45	0
	Community, Social and Personal Services	n. a.	n. a.	n. a.	58	97
Italy	Mining and Energy	504	296	163	66	48
	Manufacturing	1,463	478	297	171	119
	Construction	446	175	168	46	19
	Retail, Wholesale, Hotels and Restaurants	368	103	95	21	16
	Transport and Communication	797	689	272	151	86
	Financing and Insurance	509	429	81	16	19
	Community, Social and Personal Services	366	219	116	24	56
Japan	Mining and Energy	40	31	0	0	0
	Manufacturing	16	6	2	1	1
	Construction	2	0	0	0	0
	Retail, Wholesale, Hotels and Restaurants	0	0	0	0	0
	Transport and Communication	50	27	17	11	4
	Financing and Insurance	1	0	0	3	0
	Community, Social and Personal Services	n. a.	n. a.	n. a.	n. a.	n. a.
Netherlands	Mining and Energy	1	0	0	0	0
	Manufacturing	17	15	21	5	5
	Construction	33	99	453	9	275
	Retail, Wholesale, Hotels and Restaurants	1	2	2	0	n. a.
	Transport and Communication	100	29	75	5	n. a.
	Financing and Insurance	0	0	0	0	n. a.
	Community, Social and Personal Services	23	2	6	9	n. a.
Norway	Mining and Energy	252	117	0	177	80
	Manufacturing	87	239	16	366	52
	Construction	32	375	28	606	11
	Retail, Wholesale, Hotels and Restaurants	2	48	2	30	72
	Transport and Communication	224	31	201	223	2
	Financing and Insurance	1	0	16	48	0
	Community, Social and Personal Services	28	162	100	38	8
Portugal	Mining and Energy	431	145	68	69	26
	Manufacturing	265	89	61	41	36
	Construction	47	13	3	0	0
	Retail, Wholesale, Hotels and Restaurants	23	12	7	4	2
	Transport and Communication	897	615	145	111	135
	Financing and Insurance	7	336	65	11	11
	Community, Social and Personal Services	6	3	3	1	3
Spain	Mining and Energy	1,471	1,556	2,050	799	129
	Manufacturing	434	497	427	177	198
	Construction	824	987	267	518	133
	Retail, Wholesale, Hotels and Restaurants	66	56	102	52	4
	Transport and Communication	196	820	441	472	184
	Financing and Insurance	211	222	72	45	18
	Community, Social and Personal Services	96	471	178	73	36

		1981/85	1986/90	1991/95	1996/00	2001/03
Sweden	Mining and Energy	14	1,595	49	4	4
	Manufacturing	23	182	8	0	0
	Construction	2	0	191	3	54
	Retail, Wholesale, Hotels and Restaurants	5	0	57	0	0
	Transport and Communication	14	20	40	98	6
	Financing and Insurance	102	414	4	0	0
	Community, Social and Personal Services	64	140	69	6	129
United Kingdom	Mining and Energy	8,439	278	40	5	28
	Manufacturing	330	184	22	11	10
	Construction	98	36	8	14	10
	Retail, Wholesale, Hotels and Restaurants	8	2	1	4	5
	Transport and Communication	465	583	61	160	62
	Financing and Insurance	6	1	2	5	1
	Community, Social and Personal Services	151	159	44	19	71
United States	Mining and Energy	1,793	111	294	1	28
	Manufacturing	174	140	111	124	9
	Construction	294	29	38	10	8
	Retail, Wholesale, Hotels and Restaurants	21	4	13	4	44
	Transport and Communication	500	739	179	124	22
	Financing and Insurance	0	0	5	242	1
	Community, Social and Personal Services	29	21	5	5	6

n.a. = not available; some missing values for France, Japan, the Netherlands, Austria and Portugal; mining/energy: 1983 only mining in Portugal; 1981/82 only energy in Sweden; 1998, 2000, 2001 including agriculture in Denmark; 1981 to 84 only mining in the USA; manufacturing: 1987, 2001 including energy and 1989 including agriculture in the Netherlands; 2003 including mining and energy; retail, wholesale, hotels and restaurants: 1985 to 1993 excluding hotels and restaurants in Australia; 1981 to 2003 excluding hotels in Japan; 2000 including transport and communication in Austria; 2003 excluding hotels and restaurants in the UK; transport and communication: 1981 to 2001 excluding France Telecom and La Poste in France; 1999 including IT and other business services in the Netherlands; 2000 including retail, wholesale, hotels and restaurants in Austria; financing and insurance: 1996, 1998, 1999 excluding IT and other business services in the Netherlands; community, social and personal services: 1985 to 1993 including hotels and restaurants in Australia; 1981 to 2001 including France Telecom and La Poste and 1981 to 1993 excluding public administration in France; 1993 excluding social and personal services, 1995 excluding public administration, social and personal services, 1998 including IT and other business services in the Netherlands; 1981 to 2003 excluding public administration in Portugal.

Sources: Austrian Trade Union Federation, Eurostat, ILO, OECD, author's calculations.

years ago. Accordingly, trade unions have been increasingly faced with a trade-off between higher wages and loosing competitiveness, thus accelerating the process of shifting production and employment abroad. This trend has influenced the behaviour of unions and employers. Trade unions had to be more peaceful while employers changed their "concession schedule". Without the alternative of shifting production abroad, employers prefer time-limited stoppages over long-term wage increases. With this option employers can circumvent higher wages by outsourcing, thus avoiding strikes and lockouts. Therefore we can conclude that globalisation reduces the volume of labour disputes.

International competition entered energy, construction and most of the service industries some years later. Liberalisation of the service industries in the European Union (EU) did not start until the completion of the Single Market in 1993. Although there was much progress in trade liberalisation (GATT and WTO) there has been no equivalent progress in service markets outside the EU until now. Because international competition in service markets did not take place before the early 1990s we cannot expect a significant influence on strike behaviour.

However, most service sectors faced national or regional competition. But this kind of competition did not generate comparable adjustment pressure on the bargaining partners as international competition. Since wages were mostly collectively agreed at branch level and many services were only supplied regionally, the trade-off between higher wages and lower employment was weaker than in the case of international competition and

internationally traded goods. Accordingly, trade unions were less disciplined. In addition, employers were less strike-averse because they could not circumvent higher wages by shifting production abroad or by substituting labour by capital (services are usually more labour intensive than goods). The fact that the number of working days lost due to labour disputes is higher in production industries than in services can also be explained by different strike traditions of manual and non-manual workers and by the fact that blue-collar workers are better unionized.

Changes in manufacturing conditions

Increasing international competition also influenced the behaviour of the bargaining partners by permanent changes of the manufacturing process (Döring 2001). The reduction of vertical integration and the cut in inventories resulting from just-in-time production increased the susceptibility of the production process to disruption. Trade unions changed their strike strategy. Long-lasting mass strikes were replaced by highly targeted strikes during the 1990s. Today, unions choose final producers, plants with high vertical integration or with major inventories for very short strikes, moving daily from one plant to another. This increases the efficiency of strikes and minimises strike costs, thus reducing the financial risk of industrial actions and probably increasing unions' propensity to strike. One the other hand, the risk of long-lasting production losses in a networked economy has increased employers' preference for concessions to avoid strikes.

Thus more and more firms threatened employees and unions with a shift of production and employment abroad to make them more willing to make concessions. For example, German employees and works councils now accept wage reductions or working time expansions in order to prevent outsourcing often by agreeing on a pact for competitiveness and employment at plant-level. Such a decentralisation of collective bargaining policy has reduced the bargaining power of trade unions.

However, the increased vulnerability of the production process only explains the decline of labour disputes in production industries. No comparable enhancement in the effectiveness of strikes has taken place in the service sector. Here, targeted strikes are actually no more effective than twenty years ago. Furthermore, labour disputes in the service sector affect consumers immediately and directly in contrast to strikes in the production industries. This difference makes strikes in the service sector more risky, because a strike will be more successful if it is supported by the public. In addition, public support decreases with the duration of the strike and the lack of services. Therefore, unions must time-limit labour disputes. This also explains the lower volume of labour disputes in the tertiary sector compared to the secondary sector.

Conclusion

In order to retain national and international competitiveness, bargaining partners need to solve industrial disputes cooperatively. If wages rise faster than productivity, production and employment will be shifted abroad. In addition, production in the developed OECD countries has become more and more specialised. They supply capital-intensive goods and services produced by highly qualified employees, who demand fair wages. In this environment of growing human capital intensity, labour disputes are no longer adequate instruments of collective bargaining. Therefore we should expect a further convergence of the number of working days lost due to strikes and lockouts in the production and service industries in the long run. However, in the short term, the volume of industrial conflicts is influenced by other factors as well. Above all, the rising number of political strikes could increase the number of working days lost (Lesch 2003). For example, the increasing need to reform pay-as-you-go social insurance systems as the population ages already triggered political protest particularly in Austria, France, Italy and Spain, where industrial conflicts have traditionally centered around wages and working conditions.

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