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Collective Bargaining and Poverty: A Cross-National Perspective

ABSTRACT ■ A large and increasing number of studies examine the influence of collective bargaining systems on wage dispersion, but very few analyse their influence on poverty levels. Yet it would be a mistake to assume that the relationship between wage dispersion and poverty rates is straightforward: the evidence shows that in most industrialized countries, poverty is not primarily a problem of the *working poor*. This article addresses explicitly the relationship between collective bargaining systems and relative poverty rates in OECD countries. Empirical findings suggest that industrial relations systems have a significant impact upon poverty, not through any direct effect on wage dispersion, but from their relative impact on government spending on social security.

Introduction

To what extent is the diversity of poverty levels in OECD countries explained by differences in collective bargaining systems? Findings in this area are still fairly insubstantial. Indeed, such results are generally derived from studies dealing solely with the interplay between the characteristics of collective bargaining and wage inequality. The underlying idea is that wage inequality '(i) often translates into significant disparities in living standards and increasing poverty among individuals, (ii) affects the structure of economic incentives that individuals face and (iii) influences social cohesion and worker solidarity' (Lucifora, 1999: 1).

However, few studies explicitly address the impact of collective bargaining systems on poverty rates. This is particularly surprising given that the link between wage dispersion and poverty is far from clear. Indeed, even though the poverty rate among the population at work is higher in countries where wage inequality is pronounced, the proportion of poor people in this category is generally limited (Marx and Verbist, 1998). In this article, we try to shed some light on the relationship between collective bargaining systems and poverty levels in industrialized countries

since the end of the 1970s. We look at relative poverty levels *before* and *after* net social security transfers.¹ Our analysis relies on Spearman's correlations and multivariate regressions.

The first section of the article presents a critical review of the economic literature dealing with the effect of collective bargaining systems on the extent of and trends in wage inequality. The second and the third sections address respectively the relationship between wage inequality and poverty and the interplay between collective bargaining systems and relative poverty rates among different categories of the population. This is followed by a conclusion.

Collective Bargaining and Wage Inequality

Analysis of the impact of collective bargaining systems on macro-economic performance concentrates on the determination of *aggregate* pay.² Conversely, studies dealing (explicitly or implicitly) with the social impact of industrial relations systems tend to focus on pay *structure*.

The Extent of Earnings Inequality

There are many ways in which industrial relations systems can influence earnings disparities. First is the impact of legislation governing minimum wages and overtime pay. A statutory minimum wage tends to reduce earnings inequality, though the extent to which it does so depends on the level at which the minimum is set. The impact of legislation specifying overtime premiums is less certain. If the basic pay of those working overtime is above average, then legislation providing sizeable overtime bonuses will, other things being equal, increase earnings disparities; if overtime workers are otherwise low paid, inequality will be reduced.

Second, collective bargaining and trade union policies influence pay disparities. The net impact on earnings inequality is ambiguous: they increase earnings disparities between unionized and non-unionized workers with identical production characteristics (Lewis, 1986), but also reduce earnings disparities by compressing the pay structure of workers covered by collective agreements and by driving up earnings of low-paid workers (Gottschalk and Smeeding, 1997).

The empirical debate about the causes of earnings inequality was reopened in the late 1980s by an article by Krueger and Summers (1988). They highlighted the fact that the pay structure in the USA was not compatible with the standard Walrasian (competitive) model of the labour market, according to which wage disparities are explained either by different qualifications or by 'compensating differences'.³ Krueger and Summers demonstrated that pay differentials existed between workers

with identical production characteristics employed in different sectors. Since then, equivalent results have been obtained for most industrialized countries (Abowd et al., 1994; Araï et al., 1996; Barth and Zweimüller, 1994; Hartog et al., 1997). Thus, the existence of sectoral effects has become an accepted fact in economic literature. Furthermore, it is agreed that these effects are persistent, closely correlated from one country to another (Helwege, 1992), and of varying dimensions in the industrialized countries (Hartog et al., 1997).

In seeking to explain the diversity of sectoral effects observed in the OECD countries, economists have turned their attention to the characteristics of industrial relations systems, and much can be learned from their findings. Virtually all studies show that sectoral effects are considerably greater in countries with little centralization or corporatism, or both, regardless of the period studied (Barth and Zweimüller, 1994; Freeman, 1988; Rowthorn, 1992; Teulings and Hartog, 1998). Teulings and Hartog (1998: 54), for example, report that 'from the most to the least corporatist countries overall wage dispersion increases roughly at a ratio of 1:2. For industry dispersion it is about 1:4, for tenure about 1:5 and for firm size about 1:5.'

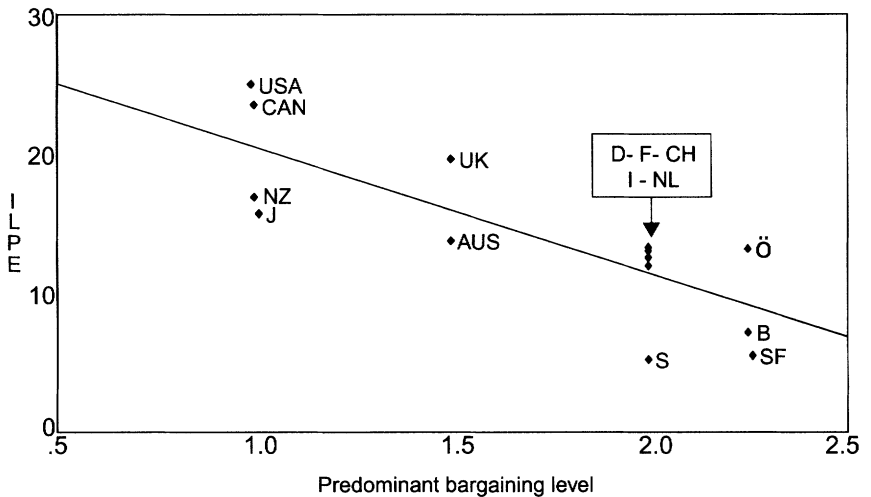
Other studies emphasize the existence of a negative correlation between the degree of centralization or corporatism, or both, and interdecile ratios of earnings inequality (D9/D1, D5/D1 and D9/D5) on the one hand, and the number of low-paid jobs on the other (Blau and Kahn, 1996; Iversen, 1999; Lucifora, 1999; OECD, 1997; Plasman and Rycx, 2000). Unfortunately, the measures of low-paid employment generally refer only to full-time workers. This is shown in Figure 1.

Trends in Earnings Inequality

There have been many studies of trends in earnings inequality over the past 20 years (Freeman and Katz, 1995; Gottschalk and Smeeding, 1997; OECD, 1996). These indicate that earnings inequality has increased since the early 1980s, at a fairly moderate rate in most industrialized countries, more rapidly in the USA and the UK. In the USA, the real earnings of low-paid workers actually fell (OECD, 1996), while in the United Kingdom and Japan, 'real earnings rose for all workers noticeably between 1979 and 1990, with the result that despite greater inequality, the real earnings for those at the bottom of the earnings distribution grew' (Freeman and Katz, 1995: 12).

Generally speaking, the studies agree on the extent of and trends in earnings inequality, but its causes continue to give rise to a great deal of debate. Some observers point to changes in the structure of supply and demand of labour since the end of the 1970s (Johnson, 1997; Topel, 1997). Industrialized countries have indeed seen less growth in the supply of

FIGURE 1. Predominant Bargaining Level and Incidence of Low-Paid Employment, 1994



Note: predominant bargaining level: interval [1, 3].
 '1' stands for company and/or establishment bargaining. '2' stands for sectoral bargaining. '3' stands for economy-wide bargaining.
 ILPE: incidence of low-paid employment.
 Low pay is defined as being less than two-thirds of the median wage for all full-time, full-year employees.
 Source: own calculations from OECD (1996, 1997).

skilled labour (Freeman and Katz, 1995) at the same time as a shift in demand to the detriment of unskilled workers. This shift appears to reflect fiercer competition from cheap-labour countries and also the introduction of new technologies, particularly information technology and robotization.

This explanation tallies with the experience of earnings inequality in various countries, including the USA. Even so, given the similar upheavals in the structure of labour supply and demand in most of the industrialized countries (Card et al., 1996), it seems insufficient. An alternative explanation is that trends in earnings inequality reflect specific institutional features of different countries, and particularly the characteristics of industrial relations systems. Several studies show that during the 1980s and 1990s earnings inequality did not grow as fast in countries where pay rates were established on a centralized basis as in those where collective bargaining was decentralized (Gottschalk and Smeeding, 1997; OECD, 1997).

Nevertheless, it remains extremely difficult to distinguish the impact of labour market institutions from underlying economic trends. Besides the

statistical problems involved in this kind of analysis, it is also possible that the explanations mentioned earlier are interconnected (Gottschalk and Smeeding, 1997). On top of this, economists generally take a sceptical view of the real influence of industrial relations on the development of earnings inequality. Their main criticism is of the assumption that labour market institutions are exogenous, for instance, falling trade union density and increased earnings inequality might both be outcomes of intensified international trade (Fortin and Lemieux, 1997).

Although it is impossible to rule out entirely the effect of simultaneity, the growth of earnings inequalities in countries where industrial relations have undergone a major transformation provides a clear indication, albeit statistically imprecise, of the influence of labour market institutions on earnings inequality (Flanagan, 1999). Studies of the USA and the UK attribute 20 to 30 percent of the increase in earnings inequality in the 1980s to the reduction in the minimum wage and declining trade union density (DiNardo et al., 1996; Fortin and Lemieux, 1997; Machin, 1997; Machin and Manning, 1994). Furthermore, around 40 percent of the difference in pay dispersion between the USA and Canada during the 1980s is attributable to the difference in trade union density (Lemieux, 1993).

In countries with a highly regulated labour market, trends in earnings inequality principally reflect the coverage and the centralization of collective bargaining (DiNardo et al., 1996). Edin and Holmlund (1995) demonstrate that the increase in earnings inequality in Sweden from the mid-1980s was encouraged by the decentralization of collective bargaining which started in 1984. Moreover, Maloney and Savage (1996) state that the increase in earnings inequality in New Zealand from the early 1990s is linked to labour market deregulation, which began in 1991. In a similar vein, Kahn (1998) claims that the reduction of earnings inequality in Norway between 1987 and 1991 was favoured by increasingly centralized collective bargaining. For their part, Erickson and Ichino (1995) stress that labour market institutions and the 'pay solidarity' policy made it possible to curb the growth in earnings inequality in Italy during the 1980s. A study of West Germany by Abraham and Houseman (1995) backs up these findings. Lastly, we should note that Katz et al. (1995) state that the moderate increase in earnings disparities in France between 1970 and 1990 is attributable to the high minimum wage and high bargaining coverage.

An alternative approach to the question of whether labour market institutions are endogenous involves examining the impact of economic shocks on industrial relations systems. Once again, the hypothesis that labour market institutions are entirely endogenous appears unrealistic. Indeed, bargaining coverage decreased during the 1980s in the USA and the UK, but remained relatively stable in Canada and continental Europe.

This can hardly be attributed to far greater economic upheavals in the USA and the UK: as we have already indicated, empirical studies have identified similar economic shocks occurring in most industrialized countries. This suggests, therefore, that it is differences in labour market legislation, rather than labour supply and demand, which are responsible for bargaining coverage developing in very different ways (Fortin and Lemieux, 1997).

Wage Inequality and Poverty

Given the large, and increasing, number of studies examining the influence of collective bargaining systems on earnings inequality, it is somewhat surprising to find that very few analyses consider their influence on poverty levels. Any assumption that the relationship between wage dispersion and poverty rates is straightforward is mistaken.

Poverty can be defined as the incapacity of individuals to participate normally in society because of a lack of material resources. It is generally accepted that in rich societies 'income — or the ability to consume — is the key measure of economic resources and the ability to avoid poverty' (Smeeding, 1997: 4). It is common practice in cross-national poverty research to adopt a relative poverty threshold: typically, a person is said to be in poverty if the total disposable income of the household, adjusted for family size (also called equivalent income), is less than 50 percent of the mean or median equivalent income.

Measurement of the incidence of low-paid employment in international comparisons also generally relies on a relative rather than an absolute concept, for what is considered low pay changes over time and differs substantially across countries (Keese et al., 1998). In most cross-country comparisons, an individual is considered low-paid whose earnings are below a certain threshold, usually two-thirds of the national median. Note that the measurement of low pay is based on the earnings of the *individual*, while poverty is assessed by disposable *household* income.

What is the link between low pay and poverty? We begin by addressing the question of wage mobility among low-paid workers. Most literature on the interaction between collective bargaining systems and low pay uses 'snapshot' measures of wage inequality; yet a large proportion of the low paid in one year might earn significantly higher wages next year. It is generally assumed that inegalitarian countries are characterized by a high earnings mobility. If true, this would imply that the probability of exit from low pay is higher in decentralized and deregulated bargaining systems such as the USA and the UK. Conversely, countries with a lower incidence of low-paid employment (the Scandinavian and Benelux

countries or Germany) would have a lower earnings mobility and thus possibly a more unequal distribution of *lifetime* earnings.

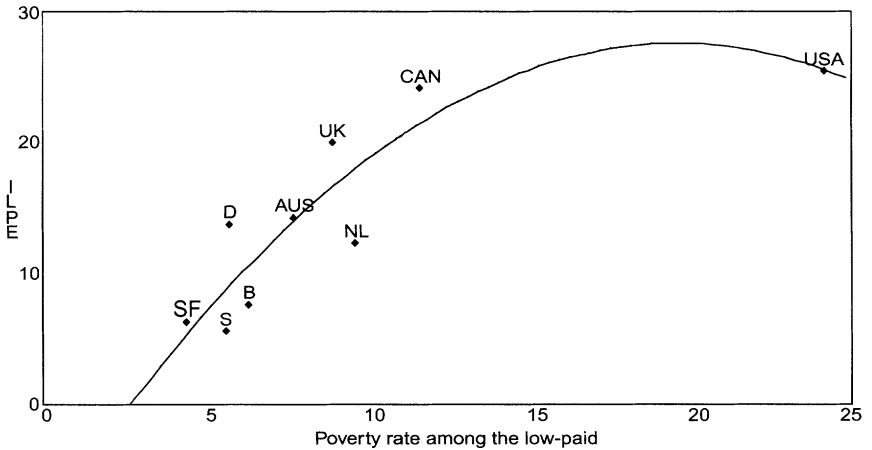
Although much research has been devoted to the question of earnings mobility,⁴ comparative analysis has not progressed very far. Nevertheless, current evidence does not support the hypothesis that earnings mobility among low-paid workers is higher in inegalitarian countries. According to the threshold chosen to define low pay, there is either no major difference in patterns of wage mobility across OECD countries, or even a negative correlation between wage dispersion and the probability of exit from low pay (Keese et al., 1998; OECD, 1996). The latter result should, however, be viewed with caution. When the incidence of low-paid workers is small, their greater mobility occurs across a more compressed earnings distribution (Siebert, 1997); and of workers who exit from low pay, some may obtain a better paid job, but others may move into non-employment (Lucifora, 1999).

Be that as it may, results suggest that it is likely that the ranking of industrialized countries based on 'snapshot' wage dispersion provides a good approximation of 'effective' wage dispersion, that is, measured over a longer period. Hence, findings concerning the impact of collective bargaining on wage inequality would not be appreciably different if wage mobility was taken into account.

Let us now examine the association between pronounced wage inequalities, and in particular a high proportion of low wages, and poverty. As shown in Figure 2, there is a strong positive correlation between wage dispersion, represented by the incidence of low-paid employment, and relative poverty among low-paid workers. In other words, the poverty rate among low-paid workers is higher in countries where the frequency of low-paid employment is pronounced (Marx and Verbist, 1998; OECD, 1996; Smeeding, 1997). This suggests that the proportion of working poor is higher in inegalitarian countries. This result must, however, be read with caution; although the number of poor people as a proportion of the working population is significantly higher in countries with large earnings inequalities, it rarely exceeds 10 percent — the USA being the main exception. This is because a large number of low-paid workers belong to dual-income households and escape poverty. Although households with a single income earner face a substantial poverty risk, especially in countries where the social security system is less developed, poverty among the working-age population is still essentially concentrated among households with *no* income earner.

Hence, even though evidence shows that decentralized collective bargaining systems result in a higher proportion of low-paid workers, this interaction is insufficient to explain why the latter might lead to significantly higher poverty rates.

FIGURE 2. Incidence of Low-Paid Employment and Poverty Rate Among Low-Paid Workers, 1994



Note: ILPE: incidence of low-paid employment.

Low-paid workers are workers who work full-time all year and who earn less than two-thirds of the median gross wage for full-time, full-year workers.

Poverty rate is defined as 50 percent of average equivalent income.

Source: own calculations from Marx and Verbist (1998) and OECD (1996).

Collective Bargaining and Poverty

In this section, we try to shed light on the relationship between collective bargaining systems and poverty levels in 1980, 1990 and 1994. We investigate this problem, first, for each year separately (disaggregated approach) and then for the three years simultaneously (aggregated approach). The disaggregated approach, based on Spearman's correlations, allows us to verify whether the impact on poverty levels of different collective bargaining systems has been stable since the end of the 1970s; the aggregated approach, based on pooled data regressions, provides insight into long-run dynamics.

Short Description of the Data

We examine the following characteristics of collective bargaining systems: the predominant bargaining level; the degree of coordination among the social partners; the coverage rate; and trade union density. Data on these variables is taken from OECD (1997). For an extended description of the data, see Appendix 1.

In conformity with the literature on cross-national comparisons of poverty, we rely on a *relative* definition of poverty based on total disposable household income, adjusted for family size. Two different thresholds are considered here: 50 percent of *mean* and *median* equivalent income. We also look at relative poverty levels for different categories of the population, before and after net social security transfers. This enables us to examine the means by which the collective bargaining features may affect poverty. Data on poverty levels are taken from Marx and Verbist (1998), Smeeding (1997), and Van den Bosch and Marx (1996).

Disaggregated Results

The analysis below is divided into three parts. First, we examine the correlation between collective bargaining and poverty rates across the OECD countries, before and after net social security transfers, in 1980, 1990 and 1994. We then turn to the relation between these same characteristics and the diversity of social expenditure, as well as to the impact of social expenditure on poverty rates.

Table 1 reports the Spearman's correlation coefficients between collective bargaining characteristics and the poverty rate among the total population and the population of working age, before and after net social security transfers. In fact, as shown by Table 1, the correlation between collective bargaining and poverty is significant only when net social security transfers are taken into account. This means that social security expenditure seems an important channel through which the collective bargaining systems influence poverty rates, even more than earnings inequality.

Hence we obtain the *extended* frame of reference shown in Figure 3.

Table 1 also shows that the predominant bargaining level is the main characteristic to be negatively correlated with the poverty rate among the entire population and the population of working age (after net social security transfers).

Figure 4 shows the relationship between bargaining level and poverty among the working population, before (left) and after (right) net transfers. The post-transfer correlation is particularly strong. It is also noteworthy that the impact of coverage rate and trade union density is more modest, but not negligible. The negative correlation between coordination among social partners and poverty rates results mainly from the fact that most highly coordinated countries are also highly centralized. Indeed, when this is not the case, as in Japan (company bargaining and high indirect coordination), the poverty rate is as high as in decentralized countries.

What about the poverty rate (after net social security transfers) among the other categories of the population (see Appendix 3B)? First, when we

TABLE 1. Collective Bargaining and Poverty, Before and After Net Transfers

	Bargaining level				Degree of coordination				Bargaining coverage				Trade union density			
	1980	1990	1994	1994	1980	1990	1994	1994	1980	1990	1994	1994	1980	1990	1994	1994
Poverty rate <i>before</i> net transfers among:																
Total population ^a	/	-04	-30	/	-22	-53	/	-40	-42	/	-13	-08	/	-13	-08	
Total population ^b	-11	-40	-17	-29	-28	-17	-13	-09	.00	-39	-46					
Adult population ^a	/	-10	-19	/	-36	-48	/	-08	-08	/	-26	-26				
Adult population ^b	.05	-44	-25	-09	-50	-37	.13	-18	-09	-25	-31	-30				
Poverty rate <i>after</i> net transfers among:																
Total population ^a	-52	-60*	-88**	-51	-22	-48	-51	-67*	-68**	-35	-50	-59*				
Total population ^b	-68*	-38	-69**	-74**	-56*	-64*	-55	-26	-37	-75**	-64*	-65*				
Adult population ^a	-49	-60*	-93**	-56*	-52	-77**	-54	-58*	-59*	-45	-44	-47				
Adult population ^b	-65*	-49	-72**	-63*	-64*	-65*	-47	-34	-45	-84**	-64*	-65*				

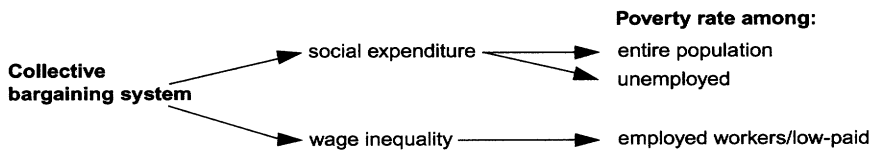
Spearman's correlation coefficients, '/': no data available, * / **: significant at probability level 5 and 1 percent.

^a Smeeding (1997): poverty rate corresponds to 50 percent of median equivalent income, 14 countries.

^b Van den Bosch and Marx (1996): poverty rate corresponds to 50 percent of average equivalent income, 14 countries.

Source: own calculations from OECD (1997), Smeeding (1997) and Van den Bosch and Marx (1996).

FIGURE 3. The Extended Frame of Reference



analyse the poverty rate among the population aged 16–64, in or out of work, the impact of the predominant bargaining level is quite similar. Nevertheless, the correlation is more intense with the poverty rate among the non-employed. The other characteristics of collective bargaining prove insignificant overall. Second, all the characteristics of collective bargaining covered here are negatively correlated with the poverty rate among low-paid, full-time employees in both 1990 and 1994. Yet the best results are obtained with the coverage rate (see Table 5). Third, there appears to be no significant correlation between the characteristics of collective bargaining and the poverty rate among people aged over 65 in 1980, 1990 and 1994. Consequently, this population group has not been included in the remainder of our analysis.

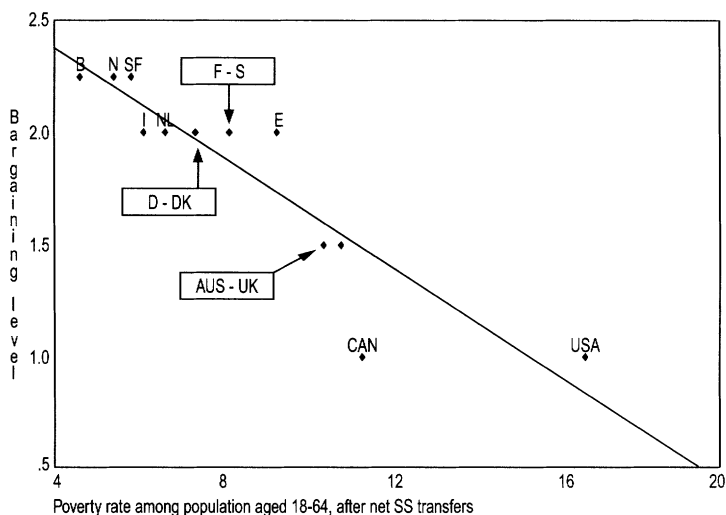
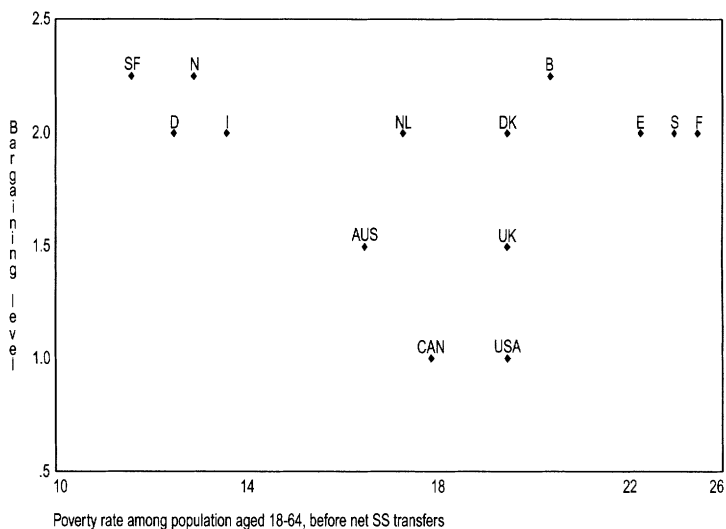
These conclusions can be better understood by examining the impact of collective bargaining on social expenditure and the relationship between social expenditure and rates of poverty. The data on social expenditure come from the OECD (1999), and are described in more detail in Appendix 2. The findings are set out in Tables 2 and 3.

Collective bargaining coverage rates, trade union density and more particularly the predominant bargaining level account to a significant extent for the diversity in social expenditure (expressed as a percentage of GDP) allocated to the entire population and to the population of working age within the industrialized countries in 1980, 1990 and 1994. We can surmise that this finding is attributable to the following:

1. When bargaining occurs at a more centralized level, unions have a broader overview of the economy. Hence, they are more likely to internalize the social repercussions of the agreements they negotiate and, more generally, the weaknesses of the market economy.
2. When negotiations are centralized, unions have more bargaining power to enforce greater solidarity through a relatively generous social security system. Furthermore, other things being equal, the higher the collective bargaining coverage and trade union density, the stronger their bargaining power.

The poverty rate among the entire population and among the population of working age correlates negatively with the social expenditure (expressed

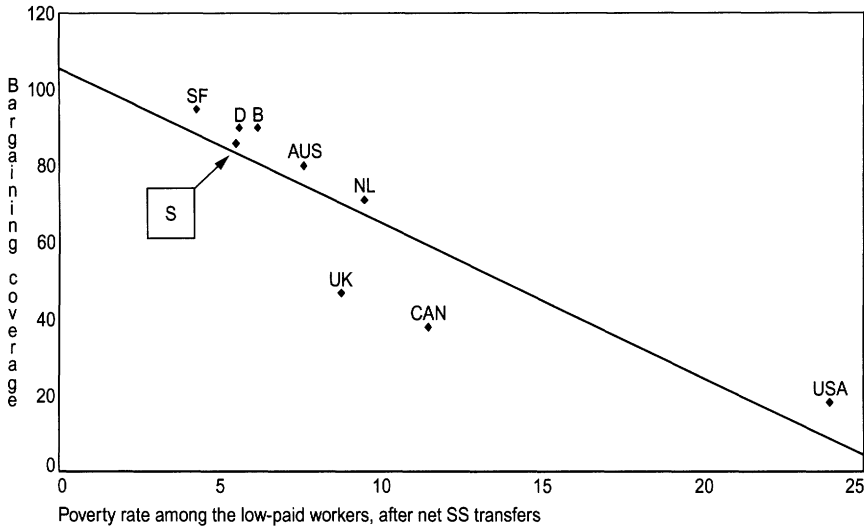
FIGURE 4. Bargaining Level and Poverty Rates Among the Working-Age Population in 1994, Before and After Net Social Security Transfers



Note: poverty rate is defined as 50 percent of median equivalent income. For bargaining level, see Figure 1. Source: own calculations from OECD (1997) and Smeeding (1997).

as a percentage of GDP) allocated to these two population groups. This relatively unsurprising finding is borne out by several empirical studies, including that by Smeeding (1997). Indeed, the latter points out that, in general, 'low poverty reduction nations have lower social expenditures on

FIGURE 5. Coverage Rate and Poverty Rate Among Low-Paid Workers in 1990, After Net Social Security Transfers



Note: poverty rate is defined as 50 percent of mean equivalent income.
 Source: own calculations from Marx and Verbist (1998) and OECD (1997).

the non-elderly, while high expenditure nations achieve higher rates of poverty reduction'. It follows that 'high spending societies produce lower poverty rates in large part due to their safety nets'.

What conclusions can we draw from this disaggregated approach? The relation between collective bargaining and poverty has been intense and stable since the end of the 1970s. We also conclude that the dominant bargaining level and, to a lesser extent, collective bargaining coverage rates

TABLE 2. Collective Bargaining and Social Expenditure

	Social expenditure as a percentage of GDP for:					
	Total population ^a			Population of working age ^a		
	1980	1990	1994	1980	1990	1994
Bargaining level	0.64**	0.46*	0.70**	0.60**	0.43	0.57*
Degree of coordination	0.35	0.22	0.34	0.27	0.16	0.15
Bargaining coverage	0.56*	0.52*	0.65**	0.44	0.36	0.50*
Trade union density	0.34	0.50*	0.51*	0.35	0.56*	0.52*

Spearman's correlations, * / **: significant at probability level 5 and 1 percent.

^aFor definitions, see Appendix 2.

Source: own calculations from OECD (1997, 1999).

TABLE 3. Social Expenditure and Poverty Rates, after Net Social Security Transfers

	Social expenditure as a percentage of GDP for:					
	Total population ^a			Population of working age ^a		
	1980	1990	1994	1980	1990	1994
Poverty rate among:						
Total population ^b	-0.70**	-0.69*	-0.70*			
Total population ^c	-0.63*	-0.80**	-0.78**			
Population of working age ^b				-0.60*	-0.59*	-0.57*
Population of working age ^c				-0.38	-0.79**	-0.77**

Pearson's correlations, * / **: significant at probability level 5 and 1 percent.

^aFor definitions, see Appendix 2.

^bSmeeding (1997).

^cVan den Bosch and Marx (1996).

Source: own calculations from OECD (1999), Smeeding (1997) and Van den Bosch and Marx (1996).

and trade union density correlate negatively with the poverty rate among the entire population and the population of working age; the reason being principally their impact on social expenditure and marginally on wage inequality. The degree of coordination among the social partners, on the other hand, proves to be less significant overall.

Aggregated Results

The methodology applied until now has certain limitations. First, it ignores the interactions that may exist simultaneously between poverty rates and collective bargaining characteristics. Second, it only reveals complementary relations and thus neglects the causality issue. Lastly, it does not provide any insight into long-run dynamics. Hence additional regressions were run on pooled data. Pooled data estimations stress the cross-sectional dimension and, given that in many countries there is only little variation over time in the institutional variables, the coefficients represent essentially cross-country effects averaged over all periods. This technique is adequate because 'the hypothesis under consideration refers to cross-sectional effects, not to the effect of institutional dynamics over time within countries' (Traxler and Kittel, 2000: 50).

All models are constructed as a panel of three years (1980, 1990 and 1994), controlling for common developments in the dependent variable by including a dummy for 1990 and 1994. Moreover, to avoid the multicollinearity problem induced by the strong correlation between the

coverage rate and the prevailing bargaining level, two models were estimated each using one of these variables.

As shown in Table 4, the results, obtained by pooled data regressions (generalized least squares), confirm the fact that the prevailing bargaining level, the coverage rate and the trade union density have a negative impact on the poverty rate among the entire population and the population of working age.⁵ We can surmise (see Table 5) that this finding is at least partly attributable to the impact of these variables on social expenditure.

TABLE 4. Pooled Data Regressions (Generalized Least Squares), 1980, 1990, 1994

	Poverty rate (%) among:			
	Total population		Working age population	
Bargaining level (1-3)	-4.107** (0.001)		-2.762* (0.011)	
Degree of coordination (1-3)	-1.335** (0.001)	-1.875* (0.000)	-1.125** (0.002)	-0.507 (0.153)
Bargaining coverage (%)		-0.090** (0.000)		-0.067** (0.000)
Trade union density (%)	-0.023* (0.021)	-0.021** (0.001)	-0.016** (0.001)	-0.031** (0.000)
Dummy for 1990	0.107 (0.783)	0.597 (0.117)	0.283 (0.240)	0.449 (0.102)
Dummy for 1994	0.134 (0.734)	0.689 (0.071)	0.265 (0.271)	0.647* (0.020)
Constant	20.228** (0.000)	19.760** (0.000)	15.814** (0.000)	15.089** (0.000)
N (countries, time)	43 (14/15, 3)	43 (14/15, 3)	41 (13/14, 3)	41 (13/14, 3)
R ² adjusted	0.535	0.649	0.538	0.616
Fisher test	357.15** (0.000)	131.17** (0.000)	853.79** (0.000)	276.42** (0.000)

Regressions relative to the poverty rate among the entire population refer respectively to 13 countries in 1980 (Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Sweden, UK, USA), and also Japan and Spain in 1990 and 1994.

Regressions relative to the poverty rate among the adult population refer to the same 13 countries in 1980, plus Spain in 1990 and 1994.

The *p*-values are indicated in parentheses.

* /**: significant at the level of 5 and 1 percent.

Source: own calculations from OECD (1997, 1999) and Smeeding (1997).

TABLE 5. Pooled Data Regressions (Generalized Least Squares), 1980, 1990, 1994

	Social expenditure as percentage of GDP for:			
	Total population		Working-age population	
Bargaining level (1-3)	6.051** (0.000)		3.203** (0.000)	
Degree of coordination (1-3)	-0.207 (0.707)	0.140 (0.801)	-1.078** (0.008)	-0.662 (0.077)
Bargaining coverage (%)		0.130** (0.000)		0.062** (0.000)
Trade union density (%)	0.129** (0.000)	0.102** (0.000)	0.100** (0.000)	0.089** (0.000)
Dummy for 1990	4.402** (0.000)	3.996** (0.000)	2.155** (0.001)	1.756** (0.000)
Dummy for 1994	6.903** (0.000)	6.358** (0.000)	3.716** (0.000)	3.258** (0.000)
Constant	1.973 (0.098)	4.798** (0.000)	-2.126* (0.028)	-0.335 (0.625)
N (countries, time)	57 (19, 3)	57 (19, 3)	57 (19, 3)	57 (19, 3)
R ² adjusted	0.498	0.532	0.482	0.456
Fisher test	451.76** (0.000)	347.97** (0.000)	94.92** (0.000)	93.22** (0.000)

Regressions refer to 19 OECD countries in each period (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK, USA).

The *p*-values are indicated in parentheses.

* / **: significant at the level of 5 and 1 percent.

Source: own calculations from OECD (1997, 1999).

Conclusion

Studies dealing (explicitly or implicitly) with the social impact of collective bargaining systems normally focus on pay structure. The vast majority of these identify a negative correlation between earnings disparities and a country's degree of centralization or corporatism. They also demonstrate that trends in earnings inequality derive at least as much from institutional change as economic upheavals. Yet very few studies examine the influence of collective bargaining systems on poverty levels.

This is why in this article we have tried to shed light on the relationship between collective bargaining systems and relative poverty rates in a

cross-national perspective. We have considered the impact of different collective bargaining features (bargaining level, coordination among the social partners, coverage rate and trade union density) at various points in time (1980, 1990 and 1994). The analysis was subdivided in three parts. First, we identified the main characteristics of collective bargaining as being significantly correlated with the poverty rates among different categories of the population, before and after net social security transfers. We then turned to the relationship between these same characteristics and the diversity of social expenditure, as well as to the impact of social expenditure on poverty rates.

Our findings, based on Spearman's correlations and on multivariate regressions, show that the relationship between collective bargaining and relative poverty rates, among the entire population and the population of working age, has been intense and stable in OECD countries since the end of the 1970s. They also suggest that this is due to their impact on social security expenditures and marginally to their interaction with earnings inequality. In addition, they point out that in terms of poverty rates, the predominant bargaining level, coverage rate and trade union density are variables of much greater importance than the degree of (indirect) coordination between the social partners. By way of conclusion, our results emphasize that, in the debate about the relative performance of collective bargaining systems, the social repercussions of the latter must not be neglected.

To sum up, empirical evidence suggests that centralized industrial relations systems have a significant impact in reducing relative poverty. Moreover, this impact seems to follow only marginally, if at all, from any direct effect on wage formation, but from obliging that state or government to spend more on social security.

Appendix 1. Description of Collective Bargaining Characteristics

A: Data

Country	Predominant bargaining level			Degree of coordination among the social partners		
	1980	1990	1994	1980	1990	1994
Australia	2+	2+	1.5	2+	2+	1.5
Austria	2+	2+	2+	3	3	3
Belgium	2+	2+	2+	2	2	2
Canada	1	1	1	1	1	1
Denmark	2+	2	2	2.5	2+	2+
Finland	2.5	2+	2+	2+	2+	2+
France	2	2	2	2-	2	2
Germany	2	2	2	3	3	3
Italy	2-	2-	2	1.5	1.5	2.5
Japan	1	1	1	3	3	3
The Netherlands	2	2	2	2	2	2
New Zealand	2	1.5	1	1.5	1	1
Norway	2	2+	2+	2.5	2.5	2.5
Portugal	2-	2+	2	2-	2	2
Spain	2+	2	2	2	2	2
Sweden	3	2+	2	2.5	2+	2
Switzerland	2	2	2	2+	2+	2+
UK	2	2-	1.5	1.5	1+	1
USA	1	1	1	1	1	1

Country	Collective bargaining coverage rates			Trade union density		
	1980	1990	1994	1980	1990	1994
Australia	88	80	80	48	41	35
Austria	(98)	98	98	56	46	42
Belgium	(90)	90	90	56	51	54
Canada	37	38	36	36	36	38
Denmark	(69)	69	69	76	71	76
Finland	95	95	95	70	72	81
France	85	92	95	18	10	9
Germany	91	90	92	36	33	29
Italy	85	83	82	49	39	39
Japan	28	23	21	31	25	24
The Netherlands	76	71	81	35	26	26
New Zealand	(67)	67	31	56	45	30
Norway	(75)	75	74	57	56	58
Portugal	70	79	71	61	32	32
Spain	(76)	76	78	9	13	19
Sweden	(86)	86	89	80	83	91
Switzerland	(53)	53	50	31	27	27
UK	70	47	47	50	39	34
USA	26	18	18	22	16	16

Notes

Parentheses indicate that information was not available for 1980. The numbers in parentheses correspond to the value in 1990. High indices are associated with 'centralized/coordinated' countries.

Source: OECD (1997).

B: Definitions

The data on the collective bargaining characteristics are taken from OECD (1997). They are defined below.

Predominant bargaining level Within certain limits set by each country's labour legislation, bargaining parties are, as a rule, free to choose the appropriate level, or specific mixture of levels, for their negotiations. To simplify, three levels, not necessarily mutually exclusive, may be distinguished as follows:

- *Economy-wide* bargaining is a bipartite or tripartite form of negotiation or 'concertation' between union confederations, central employer associations and government agencies. It aims at providing a

floor for lower level bargaining on the terms of employment, often taking into account macro-economic goals.

- *Sectoral* bargaining, which aims at the standardization of the terms of employment in one industry, includes a range of bargaining patterns. Bargaining may be either broadly or narrowly defined in terms of the industrial activities covered and may be either split up according to territorial sub-units or conducted nationally.
- The third bargaining level involves the *company* or *establishment* (OECD, 1994).

‘In no country is bargaining conducted at only one level — in some, it even takes place at all three levels. Nevertheless, in most countries one of these levels is distinctly preferred.’ (OECD, 1997.) The data on the prevailing bargaining level which appear in OECD (1997) are taken from the OECD (1994). Certain amendments have, however, been made in order to take account of recent changes in some countries.

Degree of coordination among the social partners This is a composite indicator which takes account of coordination between trade unions and between employers. It measures the degree of direct or indirect coordination between the different bargaining levels. ‘*Direct* or *overt* coordination refers to the explicit pursuit of economy-wide coordination goals by the principal bargaining agents (i.e. the peak associations of business and labour, possibly joined by government agencies in tripartite arrangements). When coordination is achieved through the internal governance of the associations and/or through the pace-setting role of bargaining in key sectors, it may be termed *indirect* or *covert* coordination.’ (OECD, 1994.) The values reported in OECD (1997) are based on Visser’s (1990) classification of trade union coordination, on the index developed by Calmfors and Driffill (1988) (which takes into account the number of employee or employer confederations coordinating their decisions nationally and the dominant level of coordination among employee and employer organizations) and on information gathered by the OECD on employers’ associations.

Collective bargaining coverage rates This indicates the extent to which terms of employment are affected by collective negotiations. ‘It is important to differentiate between:

- the *unadjusted* coverage rate, defined as employees covered by a collective agreement as a proportion of all employees, and
- the *adjusted* coverage rate, defined as the ratio of employees actually covered to the potential number who could in principle be covered as determined by the formal provision of bargaining rights.’ (OECD, 1994.)

The statistics included in OECD (1997), relating to the years 1980 and 1990, are taken from OECD (1994). They correspond to the adjusted rate because, according to the OECD (1994), 'it better measures the diffusion of collective bargaining within its potential domain and because it shows the relative importance of collective bargaining compared with individual contracts as an alternative mode of employment and governance'. The rates for 1994 are based on household and labour force surveys, where such surveys exist. Otherwise, they were obtained by calculating the ratio of employees covered to the total number of employees. This information is drawn from the OECD publication *Labour Force Statistics*.

Trade union density 'Save a few exceptions (Portugal and Canada), the figures are established on a net basis, i.e. excluding self-employed, retired and unemployed workers who belong to a trade union.' In most cases, therefore, they correspond to the proportion of unionized employees. The data for European countries are taken from the study by Visser (1996); the others come from OECD (1994) and from household and company surveys.

Appendix 2. Description of the Data on Social Security Expenditure

- *Social expenditure (public and private mandatory) as a percentage of GDP allocated to the total population.* The numerator includes the following spending categories (based on the classification of Adema (1999)): old-age cash benefits, disability cash benefits, occupational injury and diseases, sickness benefits, services to the elderly and disabled, family cash benefits, family services, unemployment compensation, active labour market programmes, public expenditure on health, housing benefits and other contingencies (including non-categorical social assistance benefits). Data refer to 1980, 1990 and 1994. Source: OECD (1999), *Social Expenditure Database*, Paris.
- *Social expenditure (public and private mandatory) as a percentage of GDP allocated to population of working age.* As above, but excluding old-age benefits, services to the elderly and disabled, and public expenditure on health.
- *Social expenditure (public and private mandatory) as a percentage of GDP allocated to the elderly.* The numerator includes: old-age cash benefits, survivors benefits and services to the elderly and disabled.

Appendix 3. Collective Bargaining and Poverty (12–14 OECD countries)

A: Before net social security transfers

	Bargaining level			Coordination		
	1980	1990	1994	1980	1990	1994
<i>Poverty rate among:</i>						
Entire population (1)	/	-0.04	-0.30	/	-0.22	-0.53
Entire population (2)	-0.11	-0.40	-0.17	-0.29	-0.28	-0.17
Working-age population (3)	/	-0.10	-0.19	/	-0.36	-0.48
Working-age population (4)	0.05	-0.44	-0.25	-0.09	-0.50	-0.37
Population over 65 (5)	0.22	0.67	0.33	0.20	0.56	0.13
<hr/>						
	Coverage rate			Trade union density		
	1980	1990	1994	1980	1990	1994
<i>Poverty rate among:</i>						
Entire population (1)	/	-0.40	-0.42	/	0.13	0.08
Entire population (2)	-0.13	-0.09	0.00	-0.39	-0.42	-0.46
Working age population (3)	/	-0.08	-0.08	/	-0.26	-0.26
Working age population (4)	0.13	-0.18	-0.09	-0.25	-0.31	-0.30
Population over 65 (5)	0.00	0.16	0.21	0.19	-0.06	-0.12

Spearman's correlations (two-tailed), * / **: significant at the level of 5 and 1 percent.

- (1) Smeeding (1997): poverty rate among entire population, before transfers and taxes, 50 percent of median equivalent income, 14 countries, LIS.
 - (2) Van den Bosch and Marx (1996): poverty rate among entire population, before transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
 - (3) Smeeding (1997): poverty rate among population aged 18–64, before transfers and taxes, 50 percent of median equivalent income, 14 countries, LIS.
 - (4) Van den Bosch and Marx (1996): poverty rate among population aged 16–64, before transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
 - (5) Van den Bosch and Marx (1996): poverty rate among population over 65, before transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
- Source: own calculations from Van den Bosch and Marx (1996), Smeeding (1997) and OECD (1997).

B: After net social security transfers

	Bargaining level			Coordination		
	1980	1990	1994	1980	1990	1994
<i>Poverty rate among:</i>						
Entire population (1)	-0.52	-0.60*	-0.88**	-0.51	-0.22	-0.48
Entire population (2)	-0.68*	-0.38	-0.69**	-0.74**	-0.56*	-0.64*
Working-age population (3)	-0.49	-0.60*	-0.93**	-0.56*	-0.52	-0.77**
Working-age population (4)	-0.65*	-0.49	-0.72**	-0.63*	-0.64*	-0.65*
Working-age population (5)	/	-0.68**	-0.74**	/	-0.68**	-0.54*
Working-age population: employed (6)	/	-0.53	-0.68**	/	-0.44	-0.39
Working-age population: not employed (7)	/	-0.66*	-0.89**	/	-0.58	-0.79**
Low-wage workers (8)	/	-0.82**	-0.80**	/	-0.84**	-0.79*
Population over 65 (9)	-0.34	0.13	-0.23	-0.34	0.09	-0.17

	Coverage rate			Trade union density		
	1980	1990	1994	1980	1990	1994
<i>Poverty rate among:</i>						
Entire population (1)	-0.51	-0.67*	-0.68**	-0.35	-0.50	-0.59*
Entire population (2)	-0.55	-0.26	-0.37	-0.75**	-0.64*	-0.65*
Working-age population (3)	-0.54	-0.58*	-0.59*	-0.45	-0.44	-0.49
Working-age population (4)	-0.47	-0.34	-0.45	-0.84**	-0.64*	-0.61*
Working-age population (5)	/	-0.35	-0.36	/	-0.61*	-0.64*
Working-age population: employed (6)	/	-0.40	-0.44	/	-0.32	-0.28
Working age population: not employed (7)	/	-0.57	-0.54	/	-0.48	-0.53
Low-wage workers (8)	/	-0.93**	-0.90**	/	-0.78*	-0.70*
Population over 65 (9)	-0.37	0.09	-0.03	-0.31	0.01	-0.10

Notes: Spearman's correlations (two-tailed), * / **: significant at the level of 5 and 1 percent.

(1) Smeeding (1997): poverty rate among entire population, after transfers and taxes, 50 percent of median equivalent income, 14 countries, LIS.

(2) Van den Bosch and Marx (1996): poverty rate among entire population, after transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.

- (3) Smeeding (1997): poverty rate among population aged 18–64, after transfers and taxes, 50 percent of median equivalent income, 14 countries, LIS.
- (4) Van den Bosch and Marx (1996): poverty rate among population aged 16–64, after transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
- (5) Marx and Verbist (1998): poverty rate among population aged 16–64, after transfers and taxes, 50 percent of average equivalent income, 14 countries, LIS.
- (6) Marx and Verbist (1998): poverty rate among working-age population in employment, that is, the population aged 16–64 with non-zero annual wage income (freelance workers excluded), after transfers and taxes, 50 percent of average equivalent income, 14 countries, LIS.
- (7) As (6) among population aged 16–64 not employed.
- (8) Marx and Verbist (1998): poverty rate among low-paid (full-time) workers, after transfers and taxes, 50 percent of average equivalent income, 9 countries, LIS.
- (9) Van den Bosch and Marx (1996): poverty rate among population over 65, after transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
- Source: own calculations from Marx and Verbist (1998), OECD (1996), Smeeding (1997) and Van den Bosch and Marx (1996).

Appendix 4. Social Expenditure and Poverty

(12–14 OECD countries)

1980	Social expenditures as a percentage of GDP		
	Entire population (6)	Working-age population (7)	Population over 65 (8)
<i>Poverty rate among:</i>			
Entire population (1)	–0.70**	/	/
Entire population (2)	–0.63*	/	/
Working-age population (3)	/	–0.60*	/
Working-age population (4)	/	–0.38	/
Population over 65 (5)	/	/	–0.38
1990	Social expenditures as a percentage of GDP		
	Entire population (6)	Working-age population (7)	Population over 65 (8)
<i>Poverty rate among:</i>			
Entire population (1)	–0.69*	/	/
Entire population (2)	–0.80**	/	/
Working-age population (3)	/	–0.59*	/
Working-age population (4)	/	–0.79**	/
Population over 65 (5)	/	/	–0.58

1994	Social expenditures as a percentage of GDP		
	Entire population (6)	Working-age population (7)	Population over 65 (8)
<i>Poverty rate among:</i>			
Entire population (1)	-0.70*	/	/
Entire population (2)	-0.78**	/	/
Working-age population (3)	/	-0.57*	/
Working-age population (4)	/	-0.77**	/
Population over 65 (5)	/	/	-0.56

Note: Spearman's correlations (two-tailed), * / **: significant at the level of 5 and 1 percent.

- (1) Smeeding (1997): poverty rate among entire population, after transfers and taxes, 50 percent of median equivalent income, 14 countries, LIS.
 - (2) Van den Bosch and Marx (1996): poverty rate among entire population, after transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
 - (3) Smeeding (1997): poverty rate among population aged 18–64, after transfers and taxes, 50 percent of median equivalent income, 14 countries, LIS.
 - (4) Van den Bosch and Marx (1996): poverty rate among population aged 16–64, after transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
 - (5) Van den Bosch and Marx (1996): poverty rate among population over 65, after transfers and taxes, 50 percent of average equivalent income, 12 countries, LIS.
 - (6), (7) and (8) See Appendix 2.
- Source: own calculations from OECD (1999), Smeeding (1997) and Van den Bosch and Marx (1996).

NOTES

- 1 Transfer payments net of direct taxation.
- 2 For a review of this literature, see, for instance, Flanagan (1999).
- 3 According to the standard neo-classical model, wages are determined by marginal productivity and thus workers with identical production characteristics necessarily receive the same pay. However, there may be 'compensating differences' between similar individuals working in different conditions.
- 4 For a comparison of these studies, see, for instance, OECD (1996).
- 5 The degree of coordination among the social partners seems also to exert a negative impact on poverty. However, as mentioned previously, given that our data set does not allow us to distinguish between direct and indirect coordination among the social partners, we emphasize the role of the predominant bargaining level.

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