

***Low Pay, In-Work Poverty and Economic Vulnerability: A Comparative Analysis Using EU-SILC***

***1. Introduction***

Jobs were at the core of economic policy even before the economic crisis, but with growing concern that many of the jobs being created in OECD countries were “bad jobs”, insecure in nature and at relatively low levels of pay. There continues to be a great deal of debate about the extent to which these fears are well-founded, with an extensive literature on trends in earnings inequality and on the role of technological change and trade in particular (see for example the survey by Lemieux, 2008). The complexities of the way the ‘race’ between technology and education might operate have been increasingly recognized, with Autor, Levy and Murnane (2003) and Goos and Manning (2007), for example, bring out that computerization replacing “routine” (as opposed to unskilled) tasks could increase inequality towards the top but reduce it in the lower part of the distribution. Atkinson (2008) highlights that the dynamics of the ‘race’ imply that countries facing the same external shocks may have different outcomes in terms of wage dispersion. In addition, the role of wage-setting and other labour market institutions has received increasing attention (see for example DiNardo, Fortin and Lemieux, 1996, Card and DiNardo, 2002).<sup>1</sup> Comparative analysis of the extent and nature of low pay across countries clearly has much to offer in exploring these processes, if it can be done with suitably harmonised and reliable data.

Low pay for an individual earner may or may not be associated with poverty and disadvantage for the household in which they live. The issue of in-work poverty has come to the fore in policy debates at EU level and in many member states, as it becomes increasingly clear that employment does not always guarantee that the worker and household avoid poverty. While the crisis inevitably means that levels of employment and unemployment will be the primary focus in the shorter term, the nature of that employment and the extent to which it allows households to avoid poverty remain key issues for the medium-term. The relationship between low pay and poverty is a complex one, with the overlap between them often modest (see for example Nolan and Marx, 2000, Gardiner and Millar, 2006, Nolan, 2008, Marx and

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<sup>1</sup> The role of institutional versus other factors in producing cross-country variation in the level and trends in earnings dispersion is discussed in for example Freeman and Katz (1995), Blau and Kahn (1996), and DiNardo and Lemieux (1997).

Verbist, 2008, Gießelmann and Lohman, 2008). The household circumstances of individual employees and the social protection and tax systems are central to household-level disadvantage, but pay levels still clearly play a significant role. Being able to reliably compare the extent of low pay across countries and over time is again key to understanding the forces at work and the role of such institutions.

To date, comparative studies of low pay have relied on:

- aggregate estimates drawn from national sources, notably in the low pay and earnings dispersion database constructed by the OECD (see for example OECD 1996, 2008, Lucifora, 2000);
- national micro-datasets for a small number of countries, harmonising the measure of earnings and coverage of workers to the extent that those sources allow (see for example the recent in-depth studies of low pay in five advanced countries sponsored by the Russell Sage Foundation, summarised in Gautié and Schmitt eds, 2009);
- cross-country micro-datasets harmonised in concepts and measures, for example the European Community Household Panel (ECHIP) (see Nolan, Salverda *et al* (2000), European Commission (2004) and Lohman and Marx (2008) and Lohman (2008).

This paper adopts the third approach, and its main aim is to carry out comparative analysis of low pay by exploiting the availability of data recently produced from the EU data-gathering exercise that has replaced the ECHIP and covers twice as many countries, known as EU-SILC (“Statistics on Income and Living Conditions”). This is also the source of the indicators of household-level poverty and exclusion by which the EU monitors its social inclusion process, and so the relationship between low pay and those measures of household poverty can also be studied directly.

We start by presenting estimates of the overall extent of low pay for full-time full-year workers, and examine how that varies by individual and household characteristics. We then analyse how many of these low paid employees are living in households at risk of (relative income) poverty; and how this relates to a broader measure of household economic vulnerability. We conclude with some comments on further research on low pay and in-work poverty.

**2. Low Pay in EU-SILC**

EU-SILC includes several measures of employee earnings, offering alternative approaches to the measurement of low pay, but some turn out to be problematic in practice. Current gross monthly earnings and usual hours of work are only reported for a minority of countries, so current gross hourly earnings, often the focus of studies of earnings inequality and low pay, cannot be derived for a majority. However, most of the countries have provided information on total non-cash employee income for the previous year, and that is the core variable we use. One then wants to distinguish those in low paid employment all year, since low annual earnings for someone who has worked only half the year represents a different phenomenon. We thus only include those who say they worked for twelve months in the previous year.<sup>2</sup> Finally, while part-time work throughout the year may also be associated with low annual earnings, we concentrate on full-time full-year workers whose low annual earnings clearly reflect low pay rates.

To measure low pay we follow the OECD in using a threshold of two-thirds of median earnings, calculated over full-time full-year employees only. Table 1 shows the extent of low pay on this basis for the 22 countries for which it can be derived. This ranges from a low of 10-11% in Belgium, Denmark, Finland and France up to a high of 27-28% in Lithuania and Luxembourg. If one thinks in terms of the conventional categorisation into welfare regimes, Denmark and Finland from the Social Democratic regime have the lowest rates, while Norway and Sweden are also relatively low at 15%, though Iceland is at 22%. Among corporatist counties, Belgium, France and the Netherlands have low levels of 10-14%, Austria is at 16%, but Germany is higher at 22% and Luxembourg among the highest. Ireland and the UK, representatives of the Anglo-Saxon regime, are well above average at 19-22%. Spain, the only one of the Southern “old” member states covered, is at 17%, while Cyprus is at 22%. Slovakia, Slovenia and the Czech Republic, among the more affluent post-socialist countries, have rates of 16-19% whereas Hungary is higher at 23%; Poland and Estonia are also at 23%, with Lithuania a good deal higher at 27%. So there is a good deal of variation within these country groupings in the extent of low pay.

<sup>2</sup> SILC also includes a calendar of labour market activities each month, allowing the proportion of the year spent in work to be derived, but for some countries this has not been filled out.

Table 1: Low Pay for Full Time Full-Year Employees

	<i>% with annual earnings below 2/3 median</i>
Austria	16.3
Belgium	10.1
Cyprus	22.1
Czech Republic	17.7
Germany	22.4
Denmark	11.4
Estonia	22.8
Spain	17.2
Finland	11.1
France	11.1
Hungary	22.7
Ireland	22.3
Iceland	20.7
Lithuania	26.7
Luxembourg	28.4
The Netherlands	13.9
Norway	14.5
Poland	23.1
Sweden	15.6
Slovenia	19.0
Slovakia	16.0
UK	19.4

For most countries these figures cannot be directly compared with the widely-used OECD low pay estimates drawn from national sources, because the earnings concept in the OECD database refers more often to weekly or monthly earnings and not to full-time full-year workers. There are however four countries for which a direct comparison can be made; for Austria and Spain the OECD figures are very similar, but for Finland (7% versus 11%) and Sweden (6% versus 16%) they are considerably lower than the ones derived here from EU-SILC.

We now look at the characteristics of the low paid in SILC, via comparison of rates of low pay by gender and age. Table 2 shows that low pay rates are substantially higher for women than for men in almost all the countries covered (the exception being Hungary). Rates for women are often about twice those for men, and the gap is even greater in Cyprus, the Czech Republic, Estonia, and the UK. It is worth emphasising that this is not related to women being more likely to work part-time: we are focused on full-time workers only, and yet gaps this wide are found.

Table 2: Low Pay by Gender, Full Time Employees

	<i>Men</i>	<i>Women</i>
	<i>%</i>	<i>%</i>
Austria	10.8	26.2
Belgium	7.3	15.4
Cyprus	9.2	38.9
Czech Republic	8.9	28.7
Germany	18.5	31.1
Denmark	9.0	14.9
Estonia	12.8	32.8
Spain	11.5	27.7
Finland	9.0	13.6
France	8.7	14.8
Hungary	22.2	23.4
Ireland	18.9	28.0
Iceland	13.7	30.9
Lithuania	20.6	32.9
Luxembourg	25.1	36.1
The Netherlands	11.4	24.5
Norway	10.0	21.0
Poland	19.2	27.7
Sweden	11.8	20.6
Slovenia	15.7	22.5
Slovakia	9.7	22.8
UK	12.7	29.4

Looking at age, Table 3 shows that in most countries the percentage low paid is much higher for those aged under 30 than older workers. However, this is not the case in the Czech Republic, Lithuania or Slovakia, and in Estonia the percentage low paid is actually relatively high for workers aged 30 or over.

*Table 3: Low Pay by Age Group, Full Time Employees*

	<i>18-29</i>	<i>30-44</i>	<i>45-64</i>
	<i>%</i>	<i>%</i>	<i>%</i>
Austria	27.3	13.1	12.3
Belgium	20.8	7.8	4.8
Cyprus	35.9	18.7	16.1
Czech Republic	18.5	15.9	20.3
Germany	57.4	13.7	15.9
Denmark	26.9	9.5	7.8
Estonia	16.6	20.3	32.2
Spain	29.2	13.8	13.3
Finland	22.4	9.5	8.1
France	21.3	9.0	7.5
Hungary	30.5	21.4	18.0
Ireland	40.7	15.7	13.1
Iceland	38.1	17.1	15.6
Lithuania	25.8	26.7	27.5
Luxembourg	55.6	24.4	10.7
The Netherlands	41.4	7.6	3.8
Norway	32.6	11.8	10.0
Poland	37.0	18.8	17.8
Sweden	31.8	14.3	8.5
Slovenia	29.4	17.1	16.4
Slovakia	18.4	15.7	14.4
UK	32.1	14.6	18.8

As well as the relationship between the characteristics of the individual and the likelihood of being low paid, we are interested in the household context and in particular whether low paid individuals are in a position where the household is depending on their earnings. To explore this, we look in Table 4 at the proportion of low paid workers who are the sole earner in their household, by age. We see that even among younger low paid workers, a substantial proportion - often 30-40% - are the sole earner in the household. Generally speaking that proportion is greater for low paid workers aged 30 or over, with often half these workers being the only earner in the household. We will see when we come to examining the relationship between low pay and household poverty that this is a key distinguishing feature of the low paid individuals who are in poor households.

Table 4: Percentage of Low Paid Workers Who Are the Sole Household Earner by Age Group, Full Time Employees

	18-29	30-44	45-64
	%	%	%
Austria	23.6	46.5	43.2
Belgium	36.1	54.2	59.4
Cyprus	22.7	33.0	34.6
Czech Republic	20.4	29.0	32.5
Germany	33.8	63.1	63.0
Denmark	49.9	57.2	57.9
Estonia	30.8	47.2	45.6
Spain	28.6	42.0	42.8
Finland	56.9	46.7	45.8
France	40.2	50.4	51.5
Hungary	30.0	44.7	38.4
Ireland	33.4	35.3	53.4
Iceland	43.0	46.2	42.0
Lithuania	41.5	41.8	43.5
Luxembourg	28.9	46.2	45.9
The Netherlands	42.9	77.5	71.7
Norway	55.5	48.1	56.0
Poland	34.9	47.4	48.2
Sweden	55.1	49.8	70.7
Slovenia	23.3	29.8	33.8
Slovakia	18.5	25.1	26.4
UK	30.8	49.7	46.6

We now employ logistic regression to examine more formally the characteristics associated with low pay and how this varies across countries. We regress the low paid/not dichotomy on sex, age group and occupational group. The results are shown in Table 5 in the form of estimated odds ratios. We see that for all countries the odds of being low paid are higher for women than men. For the Northern European countries this is of the order of 2 or 3, rising to above 4 for the UK and Spain. There is considerable variation among the post-socialist counties, ranging from 3 for Poland and Lithuania up to 7.5 for the Czech Republic. Cyprus represents an extreme case with an odds ratio of 10.

For both the Northern and Southern European counties, we see that low pay rates are substantially higher for the 18-29 age group than for older workers, but that gap varies a great deal. The Netherlands and Luxembourg have distinctively high odds ratios for this group, whereas differentials are less sharp for the UK. For a number of the post-

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3 socialist counties this odds ratio is quite low or not significant, while for Estonia and  
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5 the Czech Republic low pay is more common among older workers.  
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9 Compared with the omitted professional and managerial group, the odds of being low  
10 paid for those in routine manual occupations vary widely in scale. The countries  
11 where manual workers are in the worst position, relatively speaking, include  
12 Luxembourg, Cyprus, the UK, and the Czech Republic, whereas those where the  
13 difference between them and the professional and managerial group are least include  
14 Austria, France, and the Netherlands. For intermediate and lower technical and  
15 service occupations the odds of being low paid are again consistently higher than for  
16 the professional and managerial group, but the scale is much more modest, from about  
17 2 in Austria and France up to 4 in the UK and Cyprus.  
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26 In addition to these individual and occupational characteristics, we also investigated  
27 whether features like the employee's marital status and the number of children in the  
28 household, and the number of earners, helped predict the likelihood that the individual  
29 was low paid. The results did not in general show a strong and consistent pattern  
30 across countries, with for example the number of children or number of earners in the  
31 household sometimes being positively associated and sometimes being negatively  
32 associated with the likelihood of being low paid. As we shall see in the next section,  
33 though, the number of earners in the household may still play a key role in influencing  
34 which low paid employees are seen to be in poor households.  
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Table 5: Logistic Regression of Low Pay on Sex, Age Group and Occupational Group

<i>Odds ratio</i>	Austria	Belgium	Cyprus	Czech Republic	Germany	Denmark	Estonia	Spain	Finland	France
Women	2.98	2.95	10.19	7.52	2.48	2.48	5.17	4.08	2.08	2.11
18-29	1.26	4.10	3.30	0.89	5.45	3.52	0.35	2.35	3.73	2.81
30-49	0.56	1.50	1.17	0.67	0.67	1.81	0.46	1.02	1.44	1.09
50-63 (ref)										
Intermediate & lower technical occupations	1.51	3.53	4.43	2.18	2.11	3.24	2.58	3.09	1.52	2.22
Lower service & routine occupations	5.42	10.09	19.40	14.12	7.84	7.42	10.26	9.13	3.74	5.88
Nagelkerke R	0.197	0.211	0.410	0.301	0.314	0.131	0.286	0.223	0.115	0.144
Reduction in log likelihood ratio	508.3	353.9	1074.3	1163.9	1733.7	116.9	1195.1	1393.2	216.2	478.6

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5: Logistic Regression of Low Pay on Sex, Age Group and Occupational Group (continued)

<i>Odds ratio</i>	Hungary	Ireland	Lithuania	Luxembourg	Netherlands	Poland	Sweden	Slovenia	Slovakia	UK
Women	1.62	2.84	3.25	2.05	2.19	2.99	2.20	2.76	4.72	4.28
18-29	1.93	3.39	0.86	8.70	15.49	2.90	3.98	1.84	1.25	1.85
30-49	1.21	1.01	0.82	2.44	2.24	1.06	1.38	0.92	0.98	1.75
50-63 (ref)										
Intermediate & lower technical occupations	3.06	3.46	2.53	3.49	3.33	3.01	1.38	2.51	1.63	4.52
Lower service & routine occupations	9.83	8.24	10.10	21.88	9.33	10.72	2.08	7.95	7.35	13.92
Nagelkerke R	0.179	0.258	0.236	0.430	0.333	0.247	0.106	0.184	0.190	0.305
Reduction on log likelihood ratio	685.4	616.9	678.4	1093.4	438.4	1832.4	161.7	419.9	600.2	1274.1

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

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5 **3. Low Pay and Income Poverty**

6 Having analysed how many employees, and which ones, are most affected by low  
7 pay, we turn to the relationship between low pay for those individuals and economic  
8 disadvantage for their households. We focus first on relative income poverty risk,  
9 which is widely used as a measure of household economic disadvantage, before  
10 turning in the next section to a broader concept of economic vulnerability which we  
11 have also operationalised using data available in EU-SILC. The measure of relative  
12 income poverty we employ corresponds to the “risk of poverty” indicator at the core  
13 of the EU’s so-called Laeken indicators of social inclusion/exclusion. It is based on  
14 annual household income from all sources, equivalised using the “modified OECD”  
15 scale to adjust for household size and composition; the threshold below which the  
16 household (and all those living in it) is taken to be “at risk of poverty” is the most  
17 widely-used one of 60% of median income in the country in question.<sup>3</sup> The measure  
18 of low pay we are concentrating on here is also based on annual earnings, so while  
19 this has some disadvantages compared with “current” earnings it has the advantage in  
20 the current context of being aligned with the income concept used to measure poverty.  
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34 Table 6 shows the overall levels of income poverty for full-time full-year employees,  
35 distinguishing those who are low paid and those who are not. We see first that poverty  
36 risk for all full-time full-year employees are generally low – in the 2-3% range for  
37 countries such as Belgium, Denmark, Finland, France, Ireland, the Netherlands,  
38 Norway, Slovenia, Sweden and the UK. Countries with relatively high rates of 5-6%  
39 include Austria, Cyprus, Estonia, Spain, Lithuania and Poland, with Luxembourg an  
40 outlier at 9%. So in most countries few such employees are in households below this  
41 poverty threshold. Of course, full-time full-year employees are distinctive among all  
42 employees, and one would expect their poverty rates to be lower than those employed  
43 part-time all year or those in and out of employment during the year.<sup>4</sup>  
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58 <sup>3</sup> Alternative thresholds set at 40%, 50% and 70% of the median are also employed in the EU’s  
59 indicators, as are alternative equivalence scales.  
60 <sup>4</sup> For this reason, the indicators of in-work poverty employed as part of the broader set of Social  
Inclusion indicators by the EU includes separately the at risk of poverty rate for full-time and part-time  
workers, and for those employed all year as opposed to only part of the year.

Table 6: Levels of Income Poverty Risk by Low Pay Status, Full Time Employees

	Not Low Paid	Low Paid	All Full-time Full-year Employees
	% at risk of poverty		
Austria	1.9	19.5	4.8
Belgium	0.8	7.0	1.4
Cyprus	3.4	15.4	6.0
Czech Republic	1.6	9.0	2.9
Germany	1.3	11.6	3.6
Denmark	0.3	10.5	1.5
Estonia	1.3	17.2	4.9
Spain	3.7	15.7	5.8
Finland	0.5	10.0	1.5
France	1.9	12.9	3.2
Hungary	1.9	15.0	4.8
Ireland	0.8	8.4	2.5
Iceland	1.1	15.8	4.1
Lithuania	1.6	18.6	6.1
Luxembourg	2.2	24.6	8.6
Netherlands	0.9	4.0	1.3
Norway	1.0	11.5	2.5
Poland	2.8	16.6	6.0
Sweden	1.1	15.0	3.3
Slovenia	1.1	8.5	2.5
Slovakia	2.4	12.4	4.0
UK	1.2	9.6	2.8

So how much difference does it make whether the individual earner him or herself is low paid? We see that for those who are not low paid, income poverty is a rare phenomenon, with only Cyprus and Spain having rates of 3% or higher. The low paid in each country generally face a multiple of that poverty risk – with their poverty rates ranging from 4% in the Netherlands up to 17-20% in Austria, Estonia and Lithuania, with Luxembourg once again an outlier at 25%. Table 7 shows how these differences translate into relativities in terms of odds ratios. We see that the greatest disparities are found in Austria, Denmark, Estonia, Finland, Iceland and Sweden, but that even in the countries with the lowest odds a low-paid employee is at least four or five times more likely to be in a poor household than an employee above the two-thirds of median low pay threshold.

Table 7: Odds Ratios for Income Poverty Comparing Low Paid with Others, Full Time Employees

	<i>Income Poverty Odds Ratio</i>
Austria	12.6
Belgium	9.3
Cyprus	5.2
Czech Republic	6.1
Germany	10.2
Denmark	38.0
Estonia	15.6
Spain	4.9
Finland	23.3
France	7.5
Hungary	9.2
Ireland	11.9
Iceland	17.7
Lithuania	14.2
Luxembourg	14.3
The Netherlands	4.5
Norway	12.5
Poland	6.8
Sweden	16.0
Slovenia	8.0
Slovakia	5.8
UK	8.8

To explore what distinguishes the low-paid employees who are in poor households, we look first at poverty rates by gender and age. Table 8 shows that, among the low paid, income poverty rates are generally higher for men than women, often very much higher. In the UK, for example, the poverty rate for low-paid men is nearly three times that for low-paid women. Table 9 shows that poverty risk for the low paid is generally highest in the 30-49 age group, and lowest in the 18-29 one, though there is some variation across countries.

Table 8: Income Poverty for Low Paid by Gender

	<i>Men</i>	<i>Women</i>
	% income poor	% income poor
Austria	27.4	13.7
Belgium	9.4	4.8
Cyprus	19.8	14.0
Czech Republic	11.3	8.1
Germany	12.7	10.1
Denmark	11.9	9.3
Estonia	15.6	17.8
Spain	23.2	10.1
Finland	15.8	5.6
France	19.1	7.4
Hungary	18.8	11.0
Ireland	12.0	4.4
Iceland	23.4	10.9
Lithuania	23.7	15.3
Luxembourg	31.0	14.2
The Netherlands	5.3	1.3
Norway	13.9	9.9
Poland	22.7	11.4
Sweden	20.5	10.8
Slovenia	10.4	7.1
Slovakia	15.2	11.1
UK	15.5	5.8

Table 9: Income Poverty for Low Paid by Age

	18-29	30-44	45-64
	% income poor		
Austria	12.6	22.3	30.2
Belgium	3.9	9.0	12.3
Cyprus	13.0	18.0	13.0
Czech Rep	6.4	13.2	4.7
Germany	9.2	15.4	10.4
Denmark	15.9	9.0	5.0
Estonia	13.3	22.5	12.2
Spain	10.4	20.0	15.9
Finland	11.8	9.3	8.9
France	10.8	12.8	18.6
Hungary	11.4	19.1	9.6
Ireland	5.4	10.9	13.5
Iceland	14.3	20.4	7.5
Lithuania	16.2	21.4	13.0
Luxembourg	16.9	29.1	35.8
Netherlands	2.6	7.3	
Norway	19.8	7.5	6.5
Poland	11.4	21.7	13.0
Sweden	23.6	9.5	13.1
Slovenia	6.1	9.8	7.5
Slovakia	6.7	17.0	7.1
UK	8.3	11.3	8.7

Rather than individual characteristics, it may well be that household composition, and in particular the presence or absence of other earners, plays a key role in whether low pay is associated with in-work poverty for the household. To investigate this, Table 10 again shows income poverty rates for low paid individuals by age, but now distinguishing low paid sole earners from those in households with more than one earner. We see that the sole-earner low paid have very much higher poverty rates in all cases. Poverty rates for the low paid in multiple earner households vary a good deal across countries, but are often in low single figures. For low paid sole earners, by contrast, poverty rates are often as high as one-third or more. So it is indeed the role which the earnings of the low paid individual play in the household that is critical in determining whether low pay is associated with household poverty.

*Table 10: At Risk of Poverty for Low Paid by Age Group by Number of Earners in the Household, Full Time Employees*

% income poor	18-29		30-44		45-64	
	One earner	Multiple earner	One earner	Multiple earner	One earner	Multiple earner
Austria	27.1	8.4	35.8	9.9	35.0	20.4
Belgium	10.9	0.0	15.3	3.7	12.3	0.0
Cyprus	35.7	7.7	44.1	9.3	31.7	2.5
Czech Republic	26.4	0.9	43.8	2.6	14.8	0.2
Germany	23.2	1.9	24.5	0.5	17.7	0.2
Denmark	25.3	0.0	6.8	10.7	6.2	0.0
Estonia	30.9	4.1	43.6	5.8	26.8	1.8
Spain	27.6	2.4	40.8	2.5	39.4	2.6
Finland	19.0	1.6	13.1	2.5	14.5	6.1
France	22.3	1.6	23.3	1.4	28.0	4.8
Hungary	29.7	3.9	36.5	6.6	19.0	8.0
Ireland	11.2	1.4	22.3	2.2	23.7	1.8
Iceland	26.9	5.2	33.9	14.0	12.9	5.4
Lithuania	35.1	3.2	38.5	8.3	28.6	6.0
Luxembourg	38.5	8.2	49.3	13.3	45.3	17.9
The Netherlands	6.1	0.0	10.2	0.0	3.7	0.0
Norway	33.6	2.1	12.5	0.0	11.7	2.7
Poland	20.7	3.8	36.4	4.5	27.1	5.7
Sweden	36.9	4.9	15.4	1.2	15.5	4.0
Slovenia	15.9	1.9	24.4	1.5	15.5	3.4
Slovakia	27.3	2.3	30.8	10.2	25.4	7.4
UK	23.4	1.8	23.9	1.3	14.1	2.4

#### **4. Low Pay and Economic Vulnerability**

Finally, we look briefly at a more encompassing measure of household-level economic disadvantage, which we term “economic vulnerability”. The limitations of relative poverty measures based solely on income are coming to be widely recognised. These relate to the extent to which such unidimensional approaches can capture the multidimensional nature of social exclusion (Nolan and Whelan, 2007), and to the relevance of applying purely country-specific standards of reference across countries at very different levels of average income.<sup>5</sup> Vulnerability is a concept which is now being employed in a variety of settings, for example by the World Bank and other multilateral organisations, and has some appeal in this context. Following Chambers (1989), vulnerability can be defined as not necessarily involving current

<sup>5</sup> This has been given increased prominence in EU debates in the light of the much wider variation in income per head across the EU after Enlargement, see e.g. Fahey, 2007.).



deprivation but rather insecurity and exposure to risk and shock. It can be seen as implicitly involving a multidimensional and dynamic perspective that is consistent with the notion of social exclusion as a process rather than simply an outcome. As Moisiu (2004) notes, implicit in the notion of multi-dimensional measurement of exclusion is the assumption that there is no one ‘true’ indicator of the underlying concept, but rather a sample of indicators that tap different aspects. A multidimensional approach to the operationalisation of this concept using latent class analysis has been developed and implemented in earlier work (for example Whelan and Maître, 2005a and b), and is employed here.

In applying latent class analysis, each of a set of indicators is taken as an imperfect measure of the underlying latent variable economic vulnerability. Here we use as indicators:

- 1) whether the household is below a relative income poverty threshold,
- 2) whether it scores above a threshold (of three or more out of 7 items) on a deprivation index of everyday consumption items, and
- 3) whether it reports that it would not be able to cope with unanticipated expenses.

The objective is to identify groups who are vulnerable in the sense of distinctive in the risk of falling below a critical resource level, being exposed to consumption deprivation and experiencing subjective economic stress. While the income aspect of this vulnerability measure is relative in the sense of being framed vis-à-vis the median for the country in question, the same deprivation items and threshold are used in all the countries. Thus it can be seen as “quasi-relative”, incorporating both differences in absolute living standards and in within-country relativities, which may be an advantage in capturing the complexity of poverty and exclusion in the enlarged EU.

Table 11 shows the percentage of low-paid, other and all (full-time full-year) employees living in households categorised as economically vulnerable on this basis. We see that the level of economic vulnerability for all employees ranges from 4-5% in Denmark and Finland all the way up to 28% in Cyprus, Hungary and Slovakia and 35% in Lithuania and Poland. Levels of economic vulnerability are higher than income poverty (except in Luxembourg), but the divergence is much greater in some countries than in others – with the percentage vulnerable being 1.5 or 2 times the

poverty rate in countries such as Austria, Estonia, Spain, the Netherlands and UK, but 4 times as great or more in Cyprus, Czech Republic, Poland, Slovenia and Slovakia.

*Table 11: Levels of Economic Vulnerability by Low Pay Status for Full Time Employees*

	<i>Economically Vulnerable</i>		
	<i>Not Low Paid</i>	<i>Low Paid</i> %	<i>All Employees</i>
Austria	8.0	22.7	10.4
Belgium	5.9	17.4	7.1
Cyprus	22.6	45.1	27.6
Czech Republic	12.8	32.1	16.2
Germany	7.3	24.6	11.1
Denmark	2.5	16.7	4.1
Estonia	7.5	28.0	12.1
Spain	9.5	26.0	12.3
Finland	3.7	13.3	4.8
France	10.2	25.0	11.8
Hungary	23.8	44.9	28.6
Ireland	4.7	20.3	8.2
Iceland	5.4	19.2	8.2
Lithuania	26.9	57.1	34.9
Luxembourg	2.5	25.6	9.0
The Netherlands	3.6	8.1	4.3
Norway	3.1	12.4	4.4
Poland	28.5	56.3	34.9
Sweden	2.8	9.1	3.8
Slovenia	9.8	27.9	13.2
Slovakia	24.6	44.2	27.8
UK	4.7	16.3	6.9

Within countries, low paid employees are much more likely to be in vulnerable households than those who are not low paid, as highlighted by the odds ratios in Table 12. We see that the low paid are generally 3 or 4 times as likely as the non-low-paid to be in vulnerable households – a marked difference, but often a good deal more modest than the gap between them in income poverty risk.

Table 12: Odds Ratios for Economic Vulnerability by Low Pay, Full Time Employees

	<i>Economic Vulnerability Odds Ratio</i>
Austria	3.4
Belgium	3.4
Cyprus	2.8
Czech Republic	3.2
Germany	4.1
Denmark	7.7
Estonia	4.8
Spain	3.4
Finland	4.0
France	2.9
Hungary	2.6
Ireland	5.2
Iceland	4.2
Lithuania	3.6
Luxembourg	13.6
The Netherlands	2.3
Norway	4.4
Poland	3.2
Sweden	3.4
Slovenia	3.6
Slovakia	2.4
UK	4.0

It is still the case that in most countries only a minority of the low paid are in vulnerable households, so once again we want to know what characteristics are associated with a higher or lower probability of being in that situation. The proportion vulnerable is generally higher for men than women, as was true of income poverty, but the differences are more modest. In age terms economic vulnerability is most often highest for the 30-49 age category, but the variation across age groups is once again rather more limited than in the case of income poverty. Finally, as in the case of income poverty, it is once again whether the low paid individual is sole earner in the household that has the greatest impact on whether they are in a vulnerable household.

5. Conclusions

This paper has exploited the availability of data recently produced from the EU-SILC data-gathering exercise to investigate in a comparative perspective the extent of low pay and the relationship between low pay and household poverty and vulnerability in Europe. It employs a measure of low annual earnings for those in full-time

employment throughout the year, for 22 countries for which this could be constructed. Part-time workers and those in and out of work during the year are more likely to experience poverty, but those working full-time for the whole year but still not avoiding poverty constitute a group of particular interest and concern. We found that the percentage of these employees below the conventional two-thirds of median threshold varies from 10% up to almost 30%. In terms of the welfare regimes, countries from the social democratic regime generally have low rates, corporatist countries generally have higher but still relatively low levels (although Germany and Luxembourg were exceptions). Ireland and the UK, representatives of the liberal regime, are above average, as were Spain and Cyprus, while there is a good deal of variation among the post-socialist countries. The likelihood of being low paid is generally higher for women than for men, and for young than for older workers.

Looking at the relationship between employee pay and household income poverty, we find that for employees who are not low paid income poverty is a rare phenomenon. Low paid employees, however, face a much higher poverty risk than those who are not low paid. the greatest disparities are found in Austria, Denmark, Estonia, Finland, Iceland and Sweden, but even in other countries a low-paid employee is at least four or five times more likely to be in a poor household than an employee above the two-thirds of median low pay threshold. was seen to be linked to gender, age and in particular the presence or absence of other earners. Sole-earner low paid employees have very much higher poverty rates than those in multiple-earner households in all countries. Poverty rates for the low paid in multiple earner households vary a good deal across countries, but are often in low single figures, whereas for low paid sole earners poverty rates are often as high as one-third or more.

Finally, the relationship between low pay and a broader concept of economic vulnerability was analysed, complementing income-based poverty measures. While in most countries only a minority of low paid individuals are in vulnerable households, this minority was considerably larger than the proportion at risk of poverty, especially in the new EU member states; the structuring of vulnerability was also seen to be associated with gender and age, though these relationships appeared more attenuated than was the case for income poverty risk, and once again the number of earners in the household was key.

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In developing the comparative analysis of low pay and in-work poverty in Europe data from EU-SILC will clearly play a central role. This will require, in the first instance, that the problem of missing data for some countries be addressed so that the full span of countries can be included. If annual earnings are the central focus, one will also want to incorporate into the analysis part-time workers and, with more difficulty, of those who are in work for only part of the year - entailing in-depth analysis of “low pay-no pay” processes and how they impact on individual and family income. Finally, the role of social protection and taxes/social insurance contributions in influencing whether low paid individuals are in poor or vulnerable households will have to be included, perhaps by making use of tax-benefit simulation models (notably EUROMOD, which allows for comparative simulation analysis.<sup>6</sup>

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<sup>6</sup> See <http://www.iser.essex.ac.uk/research/euromod>

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