Youth unemployment in Europe and the United States*

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Summary

This paper focuses particularly on youth unemployment, why we should be concerned about it, why it is increasing again, how the present difficulties of young people entering the labour market differ from those of the past and what useful lessons have been learned that may guide future policy. We focus on Europe and USA, but introduce evidence from other countries where appropriate. Our analysis of the UK NCDS birth cohort data provides evidence supporting the notion that early adulthood unemployment creates long lasting scars which affect labour market outcomes much later in life. Our chosen variables are weekly wages and happiness. Our results show significant effects at the age of 50 from early adulthood unemployment. These effects are stronger than those of more recent unemployment experiences.

Keywords: Youth unemployment, scarring effects, happiness.
JEL classification numbers: J31, J64.

* Thanks to Lars Calmfors, Bob Hart, Stephan Heblich, Bertil Holmlund, Chris Pissarides, Oskar Nordström Skans and Doug Staiger for helpful comments.

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"Young people have suffered a disproportionate share of job losses during the global economic crisis. Many governments have boosted spending on programmes to help them. But with the economic recovery still fragile and fiscal pressures mounting, *there are concerns that many will be left behind and could face years of unemployment*."

Off to a good start? Jobs for youth, OECD, December 2010.

Youth unemployment is one of the most pressing economic and social problems confronting those countries whose labour markets have weakened substantially since 2008, following the near-collapse of worldwide financial markets. There is an element of déjà vu around this development: youth unemployment first became a serious problem for industrialized countries during the 1980s. While labour markets were booming in the early part of this century, youth unemployment was still a concern. But the particularly rapid increase in youth unemployment during the current recession has once more sharpened the attention on this issue.

This paper particularly focuses on youth unemployment: why we should be concerned about it, why it is increasing again, how the present difficulties of young people entering the labour market differ from those of the past and what useful lessons have been learned that may guide future policy. We focus on Europe and the US, but introduce evidence from other countries where appropriate.

Table 1 presents evidence on the increase in quarterly youth unemployment rates over the recession. In the EU as a whole, the rates have increased from 14.7 per cent at the beginning of 2008 to over 20 per cent in 2010Q3.[1] Youth unemployment has risen sharply over this period in Estonia (+20.7), Ireland (+18.4), Latvia (+23.2), Lithuania (+26.1) and Spain (+21.6), with percentage point increases in parentheses. Interestingly, in all these countries there have been sharp declines in house prices over the Great Recession. A direct link to the youth labour market may derive from the disproportionate number of the young who work in construction, which has suffered particularly from the effects of property price bubbles.

[1] According to the OECD youth unemployment (ages 15-24) also increased in Australia (2008 = 8.9 per cent; 2009 = 11.6 per cent); Canada (11.2 per cent and 15.3 per cent); Japan (7.2 per cent and 9.1 per cent); Korea (9.3 per cent and 9.8 per cent).

Table 1. Quarterly youth unemployment rates, 2008Q1-2010Q3 (%)

	2010Q3	2010Q1	2009Q1	2008Q1
EU (27)	20.3	20.7	18.4	14.7
Euro area (16)	20.0	20.2	18.4	14.7
Austria	8.6	9.6	9.3	8.2
Belgium	23.5	23.8	21.0	17.3
Bulgaria	20.8	22.1	13.5	13.8
Cyprus	20.8	18.7	10.9	9.1
Czech Rep.	17.7	19.3	12.8	10.0
Denmark	14.7	13.4	9.1	7.2
Estonia	28.1	39.6	24.0	7.4
Finland	20.7	22.5	18.8	15.9
France	24.2	23.4	22.9	17.9
Germany	8.8	9.9	10.1	10.2
Greece	32.1	29.7	24.4	22.5
Hungary	27.2	27.0	24.6	19.7
Ireland	28.5	27.1	20.5	10.1
Italy	28.2	27.5	24.3	20.7
Latvia	34.0	39.0	27.8	10.8
Lithuania	35.3	34.1	23.6	9.2
Luxembourg	18.4	17.4	18.6	15.4
Malta	12.1	13.9	14.2	11.5
Netherlands	8.7	8.9	6.7	6.2
Norway	8.3	8.9	8.6	6.8
Poland	22.8	23.3	18.1	17.8
Portugal	23.0	21.9	19.1	15.8
Romania	21.4	21.0	20.2	18.5
Slovakia	32.0	32.9	22.3	19.1
Slovenia	15.6	13.2	12.6	11.2
Spain	42.4	39.9	34.7	20.8
Sweden	24.8	26.3	22.5	18.9
Turkey	19.3	21.1	22.8	17.0
UK	18.9	19.7	17.9	13.8
US	18.2	18.7	15.7	11.5

Source: Eurostat.

Some countries have been notably successful in keeping youth unemployment down. Strikingly, Germany has actually experienced a decrease in youth unemployment rates, from 10.2 per cent in 2008Q1 to 8.8 per cent in 2010Q3. The general impact of short-term working subsidies and the particular effects on the youth labour market of the German system of dual vocational training are candidate explanations for this success.

Of particular concern is the rising number of young people disconnected from both education and the labour market. On average in the OECD, almost 11 per cent of all young people aged 15-24 were NEET (Not in Education nor in Employment or Training) in 2008. 33 per cent of these had been unemployed for less than a year, 7 per cent were unem-

ployed for more than a year, and 60 per cent were inactive without studying.

Recent data up to the second quarter of 2010 suggest that during the last two years, the NEET proportion among the population aged 15-24 increased by almost two percentage points in OECD countries and in Europe. The OECD (2010) noted that by mid-2010 in the 26 OECD countries where data are available, the proportion of youth aged 15-24 who were not in education, employment or training, stood at 12.5 per cent of the total population aged 15-24, up from 10.8 per cent in 2008. This represents 16.7 million young people, 10 million of whom were inactive and not studying, and 6.7 million of whom were unemployed. The OECD projects that youth unemployment rates will remain high at around 18 per cent in 2011 and 17 per cent in 2012 after a small decline in 2010.[2]

To analyse the increase in youth unemployment, we examine the most recently available micro-data files to paint a picture of unemployment in general and youth unemployment in particular across countries on a comparable basis controlling for personal characteristics. These are mostly based on survey responses by individuals, but we also make use of a company level survey in Europe. Strikingly, the influences on the likelihood of an individual being unemployed are very similar across most countries and over time.

We find that youth unemployment has broadly similar features across countries, being heavily concentrated among the least educated. However, young people are optimistic about the future and particularly happy. Unemployment reduces the happiness of the young, but less so than it does for older workers. In part, this may arise from the fact that a high proportion of young people in many countries continue to live with their parents, which may lessen the impact of being unemployed (Card and Lemieux, 2000; Cheri and Del Boca, 2008). Despite this, we find evidence that spells of unemployment when young tend to leave permanent scars.

A great deal of what is known about the youth labour market comes from a series of research volumes published by the National Bureau of Economic Research. These were based primarily, but not exclusively, on research done in the United States (Freeman and Wise, 1984; Freeman

[2] OECD youth unemployment rates were 2002 = 13.4 per cent; 2003 = 13.8 per cent; 2004 = 13.7 per cent; 2005 = 13.4 per cent; 2006 = 12.5 per cent; 2007 = 12.0 per cent; 2008 = 12.7 per cent; 2009 = 16.4 per cent. Source: OECD. http://www.oecd-ilibrary.org/employment/youth-unemployment-rate_20752342-table2.

and Holier, 1986; Blanchflower and Freeman, 2000). The OECD has updated the evidence on youth through its recent analysis of youth labour markets in sixteen countries.[3]

1. The effects of the Great Recession on youth labour markets

1.1 Overall developments

Table 2 reports what impact the recession has had on some of the mature economies. It shows how GDP by country changed from the first quarter of 2008 to the third quarter of 2009 – the period generally associated with the "recession" phase. It also shows the extent of growth during the "recovery" phase – which thus far stretches from the fourth quarter of 2009 to the second quarter of 2010.

Some countries, such as the Baltic States and Ireland, suffered double-digit falls in output. The output of the European Union as a whole fell by 4.6 per cent during this recessionary phase – a sharper fall than the 3.8 per cent drop in output experienced in the United States. The recovery has been less strong in some parts of Europe than it has been in the US, in terms of the proportion of the drop in GDP that has since been recovered – by 2010Q2, output in the EU was still 3 per cent below its level at the start of 2008. In Western Europe, Germany, Denmark and Sweden have experienced rapid growth, but growth in Spain, Italy, Ireland and France has been much weaker.

Table 2 also includes information on changes in employment from the start of the recession (2008Q1) to the most recently available observation (2010Q2). Employment in the European Union fell by 1.3 per cent over this period. Once more, in some countries, the change has been much more dramatic with Ireland, Latvia and Lithuania and Estonia experiencing double-digit reductions in employment. In contrast, some countries

[3] Studies are available in Australia, Belgium, Canada, Denmark, France, Greece, Japan, Korea, the Netherlands, New Zealand, Norway, Poland, the Slovak Republic, Spain, the UK and the USA at http://www.oecd.org/document/59/0,3343,en_2649_34747_38019131_1_1_1_1,00.html.

have experienced small *increases* in employment. These include Germany, Austria, Sweden and Norway.

Table 2. Employment and GDP changes in the great recession (%)

	Employment change 2008Q1-2010Q2	GDP change 2008Q1-2009Q3	GDP change 2009Q4-2010Q2
EU	-1.3	-4.6	1.6
Euro area	-1.6	-4.2	1.5
Austria	1.6	-2.9	1.6
Belgium	-0.2	-1.9	1.3
Bulgaria	-6.6	-1.6	-0.2
Croatia	-3.6	-5.1	-1.3
Cyprus	2.1	-0.4	0.7
Czech Rep.	-1.6	-3.3	1.8
Denmark	-2.7	-6.6	2.6
Estonia	-14.9	-22.3	4.4
Finland	0.5	-8.4	2.3
France	0.3	-3.1	1.5
Germany	0.7	-4.1	3.0
Greece	-1.9	-1.1	-3.4
Hungary	-1.7	-7.1	0.6
Iceland	-3.2	-7.6	-4.6
Ireland	-12.9	-12.6	-1.5
Italy	-0.7	-6.2	0.8
Latvia	-17.7	-26.8	0.5
Lithuania	-12.1	-15.5	0.4
Luxembourg	10.3	-3.9	0.9
Malta	4.9	-0.1	2.5
Netherlands	0.5	-3.9	2.1
Norway	0.9	-2.3	0.4
Poland	3.1	4.2	3.0
Portugal	-3.8	-3.0	1.3
Romania	4.1	-2.8	-1.5
Slovakia	-3.3	-4.2	3.7
Slovenia	-0.3	-7.0	1.1
Spain	-9.4	-4.4	0.1
Sweden	0.8	-6.9	4.0
UK	-1.7	-6.2	2.0
US*	-7.9	-3.8	2.5

Source: Eurostat.

Note: * January 2008-September 2010.

While all of the mature economies were affected by the financial crisis, the responses of both their product and labour markets have been very diverse. And indeed, while there is a general correlation between changes in output and changes in employment across countries, it is by no means uniform. Thus, for example the US and Spain both experienced falls in output of around 4 per cent during the recession. Employment in the US fell by almost 8 per cent and in Spain it fell by 9.4 per cent. In contrast,

output in the UK dropped by 6.2 per cent, but employment fell by only 1.7 per cent. And there is an even greater contrast with Sweden, where output fell by 6.9 per cent between 2008Q1 and 2009Q3, but employment actually grew between 2008 and 2010.

For the EU as a whole, the overall fall of 1.3 per cent in employment during the recession comprises a 2.5 per cent reduction in full-time employment and a 4.2 per cent *increase* in part-time employment. In the US, the response is even starker, with full-time employment falling by 7.9 per cent while part-time employment *increased* by 10.1 per cent. Reductions in hours of work as a response to the recession in the UK have been documented in Bell and Blanchflower (2010, 2011). They find that many workers would prefer to work longer hours, but that employers are unwilling to purchase these hours. However, reduced hours may still be a rational strategy for both employers and employees who do not wish to dissipate the specific human capital that they may have jointly accumulated. They also find that not only is unemployment prevalent among the young, so is *underemployment*.

1.2 Youth unemployment

The young do not generally possess much specific human capital. As a result, it is perhaps not surprising that they have been particularly affected by this recession. There is evidence that the youth labour market is especially volatile. When aggregate unemployment increases, youth unemployment tends to rise as firms cease hiring. This hurts new entrants. If firms decide to reduce their workforce and use last-in first-out (LIFO) rules to determine who is made redundant, the young are often the first to be fired. The recession has made it particularly difficult for young people to make a successful transition from school to work.

The first panel of Table 3 presents data on the relationship between youth and adult unemployment rates. The second panel shows unemployment rates for all ages. First, it is clear that youth unemployment rates are always higher than adult rates in every country. Second, the ratio of youth to adult rates tended to rise in 2008 as national unemployment rates started to rise. Subsequently, in most countries youth unemployment rates have stabilized or fallen back slightly, perhaps as a result of specific government policies to help younger workers.

Table 3. Ratio of youth to adult annual unemployment rates and national unemployment rates, 1983-2010

	Oct. 2010	2008	2005-7	2000-4	1990-4	1983-4
a) Ratios of age <25 unemployment rate to age 25-74 unemployment rate						
Belgium	3.28	3.05	2.98	3.01	2.74	3.02
Denmark	2.49	3.04	2.33	1.80	1.49	2.33
Germany	1.33	1.43	1.38	1.09	1.21	
Ireland	2.38	2.61	2.40	2.24	1.83	1.76
Spain	2.34	2.51	2.54	2.73	2.99	
France	3.01	2.94	2.78	2.58	2.85	4.00
Italy	3.79	3.79	3.98	3.41	4.57	7.22
Netherlands	2.36	2.63	2.16	2.24	1.45	1.71
Portugal	2.25	2.41	2.36	2.74	3.13	4.05
Finland	3.37	3.37	3.01	2.80	3.02	
Sweden	4.21	4.88	4.20	3.16	3.18	3.48
UK	3.24	3.85	3.85	3.22	1.94	2.30
US	2.27	2.78	2.89	2.77	2.46	2.34
b) Total unemployment rates (%)						
Belgium	8.5	7.0	8.1	7.5	7.7	10.8
Denmark	7.3	3.3	4.2	4.9	8.2	8.2
Germany	6.7	7.3	9.6	8.5	7.4	
Ireland	14.1	6.3	4.5	4.3	14.7	14.7
Spain	20.7	11.3	8.7	10.8	15.7	
France	9.8	7.8	9.0	8.8	9.9	8.5
Italy	8.6	6.7	6.9	8.8	9.3	7.7
Netherlands	4.4	3.1	4.4	3.6	5.3	8.2
Portugal	11.0	7.7	7.9	5.3	5.1	8.6
Sweden	8.1	6.2	6.9	6.3	5.8	3.5
UK	7.7	5.6	5.2	5.0	9.0	10.9
US	9.8	9.3	5.8	5.2	6.5	8.6

Source: Eurostat.

One response to rising youth unemployment has been to return, or prolong, full-time education (Rice, 1999). This implies that the 16-24 cohort are now better qualified than they were during the last recession. In the UK, 5.8 per cent of the 16-24 year olds were graduates in 1993, while in 2008 that share had risen to 13.2 per cent. The improvement in qualifications is more concentrated among females than males. By 2008, the proportion of females aged 18-24 with no qualifications had fallen to 4.6 per cent, but for males it was still over 7 per cent. In the UK, applications to attend university have increased sharply since 2008.[4] Employ-

[4] As of November 22, 2010 total applications were up 11.7 per cent compared to the same date in 2009.

ment subsidies have also helped young people find jobs as they lower their relative price.

Table 4. Employment rates (%) by educational status, ages 15-24 (ISCED, 1997)

	All (ISECD 0-6)		Pre-primary		Upper/post-secondary		Tertiary	
	2010 Q3	2008 Q1	2010 Q3	2008 Q1	2010 Q3	2008 Q1	2010 Q3	2008 Q1
Austria	55.8	54.6	42.0	38.9	69.4	70.8	58.0	73.9
Belgium	24.3	27.5	9.9	11.4	32.5	36.9	56.1	67.3
Bulgaria	23.1	24.9	5.2	5.4	40.4	46.6	59.6	65.1
Czech Rep.	24.4	27.2	3.4	4.1	43.0	48.3	33.4	44.1
Denmark	57.6	62.9	50.1	57.3	70.4	73.7	65.7	79.1
Estonia	23.5	35.5	8.4	16.8	34.2	55.1	57.2	75.3
Finland	43.0	39.3	26.9	20.1	63.5	59.5	87.4	79.9
France	30.8	31.3	13.9	16.3	41.7	42.1	54.1	51.6
Germany	45.2	47.5	32.1	34.8	63.4	65.7	71.7	83.8
Greece	20.7	22.8	12.3	16.5	26.2	25.0	47.4	59.3
Hungary	17.9	19.6	5.3	6.4	29.1	30.2	58.4	72.6
Ireland	30.8	47.0	9.3	19.6	43.9	62.0	62.8	80.5
Italy	20.5	24.2	12.3	15.0	30.9	36.1	29.3	30.7
Latvia	26.1	40.1	9.9	17.7	37.9	60.4	76.9	87.9
Lithuania	19.8	26.0	4.8	6.0	28.0	38.9	54.1	78.3
Luxemb.	19.4	21.9	11.0	14.5	33.9	30.5	41.1	54.2
Netherl.	66.0	68.0	56.8	59.2	75.0	77.3	79.6	81.5
Norway	52.3	56.9	47.9	49.4	64.1	70.2	75.1	81.2
Poland	26.3	26.6	6.6	6.5	41.8	42.3	52.8	66.9
Portugal	27.9	34.9	26.0	34.2	29.4	32.3	39.2	61.3
Romania	25.8	23.3	19.6	14.6	30.4	31.6	55.6	64.6
Slovakia	20.6	27.3	1.8	2.2	37.2	47.4	36.0	66.7
Slovenia	32.9	34.4	17.3	14.9	44.8	47.3	53.1	57.2
Spain	26.2	36.5	24.4	38.4	28.3	36.3	47.2	57.0
Sweden	43.7	39.0	26.6	22.4	63.7	64.6	68.1	53.1
UK	47.1	52.4	34.2	43.2	55.2	60.5	72.8	81.0

Notes: ISCED 0-2 = Pre-primary, primary and lower secondary education – levels 0-2. ISCED3-4 = Upper secondary and post-secondary non-tertiary education – levels 3-4 (ISCED 1997). ISCED levels 5-6 Tertiary education – levels 5-6 (ISCED 1997).

Table 4 presents employment rates for 15-24 year olds at the start of the recession in 2008Q1 and the latest data at the time of writing for 2010Q2. Employment rates for youngsters have fallen in most countries, but there are four exceptions where they have *increased* – Austria, Finland, Romania and Sweden. Unemployment rates for the least educated in the International Standard Classification of Education (ISCED) categories 0-2 jumped sharply in many countries with the biggest increases in Ireland, Latvia and especially Spain.[5] Interestingly, youth employment rates also increased for the most educated (ISCED 5-6) in a number of coun-

[5] http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm.

tries, notably Finland, France and Sweden. The unemployment problem of this age group is not solely the preserve of the uneducated.

Table 5. Estimated probability of unemployment

US

	1979	1982-83	2007	2010
15-24 years	.093	.126	.049	.076
25-34 years	.034	.057	.013	.024
35-44 years	.009	.023	.003	.006
55-64 years	-.005	-.010	.003	-.001
65+ years	-.005	-.039	.004	-.008

Europe

	1975-82	1983-89	2007	2010	2010
15-24 years	.096	.180	.131	.167	.170
25-34 years	.014	.045	.040	.037	.053
35-44 years	-.012	-.004	.009	-.004	.036
55-64 years	.029	.037	.041	.005	.020
65+ years	.028	-.002	-.042	-.060	.009

Sources: Mannheim Trend file and for 2010 No. 73.3 Eurobarometer and 2007.

Notes: Sample for 1975-89 is nine EU countries: Belgium, Denmark, France, Germany, Ireland, Italy, Luxembourg, the Netherlands and the UK. The samples for 2007 are all twenty-seven EU countries. The final column is for the same nine countries as for 1975-89. Controls include gender, schooling and country or state. Estimated with dprobit.

In Table 5, we analyse how the probability of being unemployed has varied over time and by age group in the US and Europe. We use two micro-datasets: the Mannheim Trend file (supplemented with Eurobarometer data in 2010) and the Current Population Surveys in the United States. We apply the same set of controls – gender, schooling and country (state in the US) to each dataset. We report the coefficients on the various age dummies from a number of individual regressions. The coefficients in Table 5 indicate that the incidence of unemployment is increasingly falling on the young and, as in the 1980s, is currently greater in Europe than in the United States. In 2010, it is 17 percentage points higher among 15-24 year olds in Europe than among 45-54 year olds compared to just 7.6 percentage points in the US. Although this is a continuation of previous experience, it is worth noting that this recession is unusual in that the *overall* unemployment rate in the US has risen above the European rate for the first time in some decades. But youth unemployment problems continue to be more severe in Europe than in the US.

Table 6 provides a supply-side explanation of the rise in youth unemployment. The youth cohort is large at a time when the labour market is in

the doldrums. The table reports the relative size of the number of 5, 19, 15 and 25-year-olds as compared to the number of 20-year-olds which is set to 100. The decline in the youth cohort is especially marked in the Baltic countries. Progressively shrinking cohorts will have dramatic effects on the number of entrants to the labour market over the next fifteen years or so. The decline is relatively small in the US compared to other countries, in part because of its relatively high rate of immigration. Immigrants tend to be young. By 2020, the number of twenty-year-olds in the Euro area will have dropped by twelve per cent.

The recession has reversed recent reductions in youth unemployment in the developed world. Like other groups on the margins of the labour market, the young tend to experience particularly high rates of unemployment during recessions. The current experience fits this pattern. However, the youth cohort is diminishing in size in most countries, suggesting that, in the future, an excess supply of younger workers is less likely to occur.

Table 6. Cohort size in 2008 (age 20 = 100)

	5 years	10 years	15 years	25 years
Euro area	88	88	93	111
Denmark	105	112	114	98
Estonia	59	55	76	93
Finland	91	97	109	112
Germany	74	83	86	103
Greece	87	88	95	130
Ireland	104	98	95	137
Latvia	53	49	80	92
Lithuania	53	66	94	87
Netherlands	101	98	101	97
Norway	99	107	109	100
Spain	89	82	87	132
Sweden	86	82	111	95
UK	81	89	96	98
US	97	94	102	103

Source: Eurostat.

Table 7 uses the 2009 Eurobarometer studies No. 71.2 from May-June 2009 and No. 72.1 from August-September 2009 to analyse the individual characteristics associated with having *lost a job* during the recession, being able to *keep a job*, and self-assessed *ability to find a job*. Column 1 covers the whole sample, while columns 2 and 3 are restricted to those in employment.

Table 7. Probability of having lost, ability to keep and likelihood of finding a new job, and degree of optimism, Europe, 2009

	(1) Lost a job probit	(2) Ability to keep job ordered logit	(3) Likely to find a job OLS	(4) Optimistic ordered logit
Male	.0281 (9.82)	.0429 (1.28)	.4003 (8.32)	.1003 (4.16)
15-24*unempl.				.2859 (2.19)
15-24 years	.0583 (8.02)	-.1849 (2.39)	1.5383 (13.93)	.4662 (8.13)
25-34 years	.0519 (9.11)	-.2528 (4.26)	1.5242 (18.18)	.3190 (7.73)
35-44 years	.0432 (8.06)	-.2712 (4.74)	1.3761 (17.00)	.1625 (4.11)
55-64 years	.0422 (8.10)	-.2187 (3.83)	.6696 (8.32)	.0498 (1.14)
65+ years	-.0854 (17.83)	-.0534 (0.35)	-.5358 (2.50)	.1278 (2.45)
ALS 16-19	-.0045 (1.08)	.2430 (4.11)	.4980 (5.77)	.2249 (6.44)
ALS 20+	-.0330 (7.62)	.7075 (11.37)	1.2023 (13.39)	.5253 (13.51)
Still studying	-.0682 (14.23)			.6080 (8.40)
No FT education	-.0028 (0.19)	.1959 (0.64)	-.1431 (0.33)	-.2084 (1.42)
Home worker				-.0954 (1.95)
Unemployed				-.4865 (9.64)
Retired/disabled				-.2264 (5.16)
Immigrant	.0756 (10.26)	-.2730 (3.42)	-.1719 (1.49)	
Health problems	.0158 (3.67)	-.2885 (4.56)	-.6191 (7.04)	
cut1/constant	-3.5596	4.0107		-1.8505
cut2	-1.9104			-.0170
cut3	.1649			2.2223
N	29 484	13 462	13 129	26,164
Pseudo/ Adjustment R^2	.1124	.0798	.1354	.0590

Sources: Columns 1-3: Eurobarometer No. 71.2, May-June 2000. Column 4: Eurobarometer No. 72.1, August-September 2009.

Notes: Excluded categories: Age left school<16 and ages 45-54. The "health problems" variable relates to whether the individual suffers from a chronic physical or mental health problem, which affects her daily activities. In column 1 the dependent variable is set to one if the respondent says that "as a result of the economic crisis she has lost her job", zero otherwise and includes the full sample including those studying. In column 2, the dependent variable is "How confident would you say you are in your ability to keep your job in the coming months? Are you not at all confident; not very confident; fairly confident or very confident?" The equation is estimated as an ordered logit. In column 3 the question is "if you were to be laid off, how would you rate on a scale of 1 to 10, the likelihood of you finding a job in the next six months?" "1" means that it "would be not at all likely" and "10" means that it "would be very likely". T-statistics in parentheses. In column 4 the question is "please tell me whether you totally disagree (8.7 per cent), tend to disagree (28.5 per cent), tend to agree (44.0 per cent) or totally agree (17.4 per cent) with the following statement: You are optimistic about the future?" All equations also include 29 country dummies.

Males are more likely to have lost a job but they also have a greater confidence than females of being able to find a new job. Those aged 45-54 are significantly less likely to have lost their job than other age groups except those aged 65+. Those aged 15-24 are most likely to have lost their jobs. They are confident in their ability to find a job, perhaps because they have greater flexibility both spatially and occupationally.

Immigrants are significantly more likely to have lost their job and are less likely to believe that they can hold on to their jobs. Those with health problems have a similar set of beliefs. Among these countries, the results for Spain and Ireland are particularly negative: respondents from these

two countries are more likely to have lost a job, feel less secure in their ability to retain their job and also have little confidence in being able to find a job.

1.3 Attitudes to unemployment

Column 4 of Table 7 makes use of data from Eurobarometer No. 72.1 from August and September 2009 to estimate an ordered logit where respondents are asked how optimistic they are about the future. Youngsters are especially optimistic, and based on the youth-unemployment interaction term, the young unemployed are more optimistic than the adult unemployed, but still less so than students or the employed. The question is whether they are right to be optimistic given that they came of age in a recession?

In Table 8, we make use of a very recent Eurobarometer, conducted in May 2010, which contains information on attitudes to jobs. We test to see whether the young unemployed are different from the adult unemployed, by including an age < 25-unemployed interaction term. It is statistically insignificant in all cases.

In column 1 the theme of youngsters being especially optimistic is developed further. Here, the respondents are asked for their expectations for employment in their country and whether they think it will be worse, the same or better over the next year. Once again, the young are more optimistic than all older age categories. Men, the Swedes and the more educated are optimistic and the unemployed and the Greeks more pessimistic.

Column 2 examines whether respondents feel that, after the financial crisis is over, the deficit should be increased to create jobs. The young are supportive as, unsurprisingly are the unemployed themselves, along with the Irish. The most educated are opposed.

Respondents are asked to report the two most important issues they believe their country is facing from a list of ten. By far and away the most important of these is unemployment, which was stated by over half of the respondents, followed by 43 per cent who mentioned 'the economic situation in our country'.[6] Column 3 has the dependent variable set to one if

[6] The full set of responses with proportions mentioning the issue in parentheses: unemployment (51 per cent); economic situation (43 per cent); rising prices/inflation (19 per cent); crime (18 per cent); health care system (16 per cent); pensions (10 per cent); taxation (8 per cent); immigration (7 per cent); educational system (6 per cent); terrorism (4 per cent);

the respondent reported that unemployment was one of her two main issues and zero otherwise. The coefficients are estimates of the relevant probabilities. The young are more likely than other age groups to say that unemployment is the main problem as, unsurprisingly, are the unemployed. The main countries where unemployment is high such as Ireland and Spain, along with residents of a number of East European countries, including Latvia and Lithuania, say that this is a concern.

Table 8. Attitudes and expectations, 2010

	(1) Employment expectations Ordered logit	(2) Necessary to create jobs Ordered logit	(3) Unemploy-ment main issue Probit	(4) Life satisfaction Ordered logit
Male	.0816 (3.46)	-.0439 (1.81)	-.0199 (3.19)	-.1083 (4.56)
15-24*unemployed	.0692 (0.61)	.1364 (1.12)	.0139 (0.45)	.1725 (1.51)
15-24 years	.3658 (5.77)	.2017 (3.03)	.0493 (2.93)	.7983 (12.24)
25-34 years	.3094 (7.56)	.0484 (1.15)	.0152 (1.40)	.3761 (9.11)
35-44 years	.1685 (4.43)	-.0562 (1.44)	.0053 (0.53)	.1645 (4.31)
55-64 years	-.0038 (0.09)	.0214 (0.51)	-.0141 (1.30)	.1288 (3.12)
65+ years	.0445 (0.88)	.0532 (1.01)	-.0508 (3.82)	.4234 (8.31)
Home worker	-.0748 (1.54)	-.0133 (0.26)	.0288 (2.27)	-.2595 (5.35)
Unemployed	-.1191 (2.73)	.1577 (3.40)	.1421 (12.35)	-1.0957 (25.10)
Retired/disabled	-.0123 (0.30)	-.0407 (0.94)	-.0054 (0.50)	-.2314 (5.54)
ALS 16-19	.0401 (1.17)	-.0343 (0.95)	-.0151 (1.70)	.3066 (9.06)
ALS 20+	.2142 (5.67)	-.1555 (3.94)	-.0346 (3.48)	.7817 (20.55)
Still studying	.2634 (3.80)	-.1279 (1.77)	-.0282 (1.54)	.8798 (12.35)
No FT education	-.0025 (0.02)	.0024 (0.02)	-.0123 (0.37)	-.5343 (4.11)
Living together	.0640 (1.53)	-.0489 (1.13)	.0032 (0.29)	-.2068 (4.83)
Single	.0152 (0.42)	-.0532 (1.42)	-.0083 (0.87)	-.4421 (12.05)
Divorced/separated	-.0770 (1.69)	-.1234 (2.60)	.0060 (0.50)	-.6695 (14.67)
Widowed	.0466 (1.04)	.0284 (0.59)	-.0265 (2.27)	-.5337 (11.93)
Other EU state	.3255 (4.67)	.1307 (1.89)	-.0219 (1.20)	-.1095 (1.61)
Europe non-EU	.0724 (0.77)	.6146 (6.06)	.0434 (1.76)	-.2596 (2.83)
Asia/Africa/Latin	.0693 (0.68)	.2933 (2.76)	.0158 (0.58)	-.3784 (3.66)
America/Japan	.3858 (1.22)	.2610 (0.79)	-.0780 (0.89)	.4890 (1.41)
Austria	.6499 (7.67)	.5683 (6.66)	-.0679 (2.98)	-.1571 (1.77)
Bulgaria	.3983 (4.57)	.6092 (6.13)	.0808 (3.61)	-2.5190 (28.63)
Croatia	-.2970 (3.40)	.8936 (10.10)	.1716 (7.78)	-.8078 (8.85)
Cyprus	-.6810 (6.04)	.5175 (4.69)	-.0466 (1.68)	-.2290 (2.08)
Czech Rep.	.0444 (0.52)	.5587 (6.56)	.0311 (1.38)	-.8571 (9.71)
Denmark	1.4015 (16.33)	.8335 (9.85)	-.0557 (2.44)	1.6625 (17.53)
East Germany	-.1181 (1.12)	-.0352 (0.33)	-.0087 (0.31)	-.8928 (8.24)
Estonia	1.2726 (14.88)	.2446 (2.75)	.2445 (11.38)	-1.1404 (12.98)
Finland	.8308 (9.83)	.8371 (9.98)	.0833 (3.74)	.3291 (3.72)
France	.1171 (1.38)	-.1218 (1.42)	.1404 (6.41)	-.4543 (5.13)
Greece	-1.2808 (13.37)	-.2708 (3.16)	-.0111 (0.49)	-2.3419 (26.54)
Hungary	.8139 (9.63)	.2399 (2.80)	.1502 (6.82)	-1.8973 (21.70)

housing (3 per cent); the environment (3 per cent); energy (3 per cent) and defence/foreign affairs (1 per cent).

Table 8. continued….

	(1 Employment expectations Ordered logit	(2) Necessary to create jobs Ordered logit	(3) Unemploy-ment main issue Probit	(4) Life satisfaction Ordered logit
Iceland	1.0515 (10.19)	.8136 (8.19)	.0853 (3.17)	1.0579 (9.62)
Ireland	.0402 (0.47)	1.0639 (11.97)	.1870 (8.54)	.4466 (4.97)
Italy	.1316 (1.54)	.1629 (1.84)	.0503 (2.25)	-1.1695 (13.30)
Latvia	.6578 (7.89)	-.2165 (2.49)	.1953 (8.92)	-1.5730 (17.94)
Lithuania	.0006 (0.01)	.9632 (11.05)	.1422 (6.46)	-1.8912 (21.48)
Luxembourg	-.3927 (3.62)	.6086 (5.82)	-.0041 (0.15)	.5996 (5.50)
Macedonia	.0895 (1.05)	1.7473 (19.10)	.1491 (6.74)	-1.4650 (16.23)
Malta	.8118 (7.34)	.2218 (1.97)	-.3147 (10.97)	-.4782 (4.22)
Netherlands	.6657 (7.80)	-.1490 (1.80)	-.2631 (11.62)	.7077 (7.98)
Poland	.5324 (6.30)	.7238 (8.23)	.0552 (2.45)	-.7725 (8.66)
Portugal	-.4724 (5.27)	.3512 (3.95)	.1618 (7.26)	-2.0441 (23.35)
Romania	-.8601 (9.42)	1.0423 (11.45)	-.0617 (2.73)	-2.8260 (32.07)
Slovakia	.2379 (2.78)	1.1254 (13.15)	.1889 (8.67)	-.8867 (9.99)
Slovenia	-.0969 (1.13)	-.0445 (0.53)	.0713 (3.20)	-.3659 (4.14)
Spain	.3549 (4.07)	.3472 (3.82)	.2510 (11.58)	-.4443 (4.96)
Sweden	2.0228 (23.05)	.9473 (11.35)	.1523 (7.00)	.8669 (9.82)
Turkish Cyprus		.5669 (4.89)		-1.1993 (10.63)
Turkey	.1997 (2.21)	.1934 (1.99)	.2080 (9.16)	-.9630 (9.93)
UK	.6303 (7.79)	.7395 (9.23)	-.1200 (5.62)	.7489 (8.93)
West Germany	.3498 (4.16)	-.2990 (3.53)	-.0465 (2.06)	-.1130 (1.28)
/cut1	.1006	-1.6815		-3.4753
/cut2	1.8205	-.0159		-1.7428
/cut3		2.1023		1.2795
N	28 872	25 418	30 215	30 580
Pseudo/Adjusted R^2	.0599	.0286	.0625	.1505

Source: Eurobarometer No. 73.4, May 2010.

Notes: Excluded categories: Age left school<16 and ages 45-54, Belgium, EU national and married. T-statistics in parentheses. Question 1: What are your expectations for the next twelve months: will the next twelve months be better (= 3), worse (= 2) or the same (= 1), when it comes to the employment situation in (our country). Question 2: In an international financial and economic crisis, it is necessary to increase public deficits to create jobs. Totally agree (= 4); Tend to agree (= 3); Tend to disagree (= 2); Totally disagree (= 1). Question 3: What do you think are the two most important issues facing (our country) at the moment – unemployment? Question 4: On the whole, are you very satisfied (= 4), fairly satisfied (= 3), not very satisfied (= 2) or not at all satisfied (= 1) with the life you lead?

Finally, in column 4, we report a life satisfaction equation. Happiness measures are of interest in themselves but also more broadly it appears that such scores are correlated with positive health outcomes (Blanchflower, 2009). Happiness, for example, is associated with improved heart rate and blood-pressure measures of response to stress and a lower risk of coronary heart disease. Happy people even heal faster (Ebrecht et al., 2004). Consistent with the findings in the happiness literature, most people report themselves to be happy. We include a set of controls that are relatively standard in the literature including labour force status, gender, region, schooling and marital status, plus controls for smoking and exercise. It is well known in the literature that the unemployed are unhappy

and that is true here; we also observe that happiness is U-shaped in age with the young being happiest. Happiness is high in the Nordic countries, notably in Denmark, Iceland and Sweden.

2. Identifying the effects of past unemployment

Attempts to identify the scarring effects of unemployment have a long history. Heckman and Borjas (1980), Ellwood (1984) and Corcoran (1984) made early contributions, with the former two papers exploring the econometric issues associated with identifying scarring, which is a form of state dependence. There are two main issues. First, individuals may differ in those fixed characteristics that influence their likelihood of experiencing unemployment. In contrast, state dependence implies changes in actual or perceived worker characteristics due to previous unemployment history. Thus, correlations between current and past unemployment may incorrectly be viewed as causal rather than the result of individual heterogeneity. Second, omitted exogenous variables that are serially correlated may induce spurious state dependence effects.

Heckman and Borjas (1980) argue that there are three main forms of state dependence: They base their argument on a discrete-state continuous-time Markov process with an "employment" process and an "unemployment" process which respectively determine the probability of transition between these states. These probabilities are time invariant. Then, it follows that the distribution of time in either state follows an exponential distribution which is independent of the time in the current state (Cox and Miller, 1965). Thus, the length of time in the current spell of unemployment does not affect the rate of transition out of this state and hence, there is no state dependence. By changing the structure of this model, they formalize their three models of state dependence.

In the first type, the event of unemployment alters the probability of being in the unemployed state. This is known as *occurrence dependence* and means that the chance of being unemployed at present increases with the number of previous unemployment spells. The second type, *duration dependence*, posits that the probability of remaining unemployed depends on the length of the *current* unemployment spell and therefore requires relaxation of the time-invariance aspect of the Markov process. The third

type is a natural extension of the second, and is known as *lagged duration dependence* and posits that the probability of unemployment depends on the lengths of previous spells of unemployment and not just the current spell. Heckman and Borjas further note that the probabilities of unemployment may vary both with time and, crucially for our application, age.

The issue of finding a consistent estimate for the lagged duration dependence form of state dependence is analogous to the problem of finding a consistent estimator for a model with a lagged dependent variable and serially correlated errors. Estimators for the other forms are more complex. Consistency for the lagged duration dependence case can be achieved through the use of an appropriate instrument. Gregg (2001) investigated lagged duration dependence using the UK National Child Development Survey (NCDS). Seeking to explain whether individuals were unemployed at the ages of 28 and 33, he used local area unemployment at the age of 16 as an instrument for unemployment experience up to the age of 23. His argument for this instrument was that the local labour market in which individuals find themselves at the age of 16 is largely exogenous. Variations in conditions in these markets will explain some of the variation in early labour market experience strengthening its case as a valid instrument. However, he acknowledges that the local labour market will not be independent of parental characteristics, which may also influence children's subsequent labour market experience. This weakens the validity of the instrument. In general, it is difficult to find a truly exogenous instrument within the labour market. Interdependence is characteristic of the labour market, particularly if one takes account of serial correlation. Nevertheless, Gregg argues that his instrument "does at least take the unobserved heterogeneity back a generation". His results suggest that the number of months of unemployment between the ages of 28 and 33 increases by two months for every three months spent unemployed before the age of 23.

Gregg and Tominey (2005) also use data from the NCDS and apply the same identification strategy as Gregg (2001) and find that there is a significant *wage* penalty of youth unemployment on males even after controlling for education, region, wealth of family and personal characteristics. Their results suggest a scar from youth unemployment of 13-21 per cent at the age of 41 although this penalty was lower at 9-11 per cent if individuals avoid repeat exposure.

Taking a different approach, Beaudry and DiNardo (1991) use a cohort-based argument to identify state dependence. They argue that the distribution of heterogeneity is constant across cohorts, but that cohorts have differential experience of unemployment because they enter the labour market at different stages of the economic cycle. They argue that current wages may be affected by past labour market experience since, in a world of long-term contracts, workers' current wage will reflect the reservation wage of workers at the time they entered the labour market which, in turn, depends on unemployment rates at that time.

Similar evidence that even youngsters who choose to go to college or university are hurt if they enter the labour market during a recession is provided by Kahn (2010). She shows that the labour market consequences of graduating from college in a bad economy have large, negative and *persistent* effects on wages. Lifetime earnings are substantially lower than they would have been if the graduate had entered the labour market in good times. Furthermore, cohorts who graduate in worse national economies tend to end up in lower-level occupations.

Research by Giuliano and Spilimbergo (2009) suggests that the period of early adulthood (between 18 and 25) seems to be the age range during which people are more sensitive to macroeconomic conditions. They find that being exposed to a recession before the age of 17 or after the age of 25 has no impact on beliefs about life chances. However, youngsters growing up during recessions tend to believe that success in life depends more on luck than on effort; they support more government redistribution, but have less confidence in public institutions. Recessions seem to adversely affect youngsters' beliefs.

Nordström Skans (2004) uses sibling fixed-effects to identify the effect of previous unemployment on current labour market outcomes. In a search theory of the labour market, individual outcomes may be affected by entirely random events. State dependence is indicated if the effects of these events persist. The use of siblings is aimed at controlling for other influences on labour market outcomes. Differences between siblings that are correlated with early unemployment and subsequent labour market outcomes are controlled for using observed *individual* characteristics.

Nordström Skans compares the siblings model with OLS estimates where unobserved individual components are proxied by observable *family* characteristics instead of the sibling fixed effect. This model requires

strong identification assumptions to infer causation. All differences between individuals that are correlated with both initial unemployment and later labour market performance must be captured either by observed individual or family controls.

The siblings fixed-effects model shows a significant negative effect on earnings for up to five years following initial unemployment. These effects decline over time and are consistent with a theoretical model where employers' recruitment decisions are more influenced by recent unemployment spells. The individual-based model gives somewhat larger state dependence effects which potentially, but not necessarily, suggest that OLS estimates are upward biased.

In previous work (Bell and Blanchflower, 2010) we examine the relationship between current unemployment and previous unemployment spells. We first focus on the negative effects of lagged unemployment durations on subsequent wages, building on the literature that not only includes Gregg and Tominey, but also Mroz and Savage (2006), Nickell et al. (2002) and Stewart (2000). The underlying argument is that prolonged spells of unemployment reduce human capital and act as a negative signal to employers, both of which are likely to adversely affect the future evolution of wages. The novelty of our approach is the use of the most recent data from a birth cohort study, the NCDS whose members were aged 50 at the time of the most recent sweep.

3. Data and empirical analysis

Consider an equation of the form:

$$\gamma_{it} = \beta x_{it} + \phi z_{it} + f\left(U_{i0},..,U_{i\tau}\right) + \lambda_i + u_{it}\,, \tag{1}$$

where γ_{it} is some labour market outcome for individual *i* at time *t*, x_{it} is a vector of personal characteristics, z_{it} is a set of labour market characteristics, $U_0 \ldots U_\tau$ are characteristics of previous unemployment spells observed in τ previous time intervals, λ_i is a measure of heterogeneity for each individual and u_{it} is the disturbance. This equation is sufficiently general to capture occurrence dependence, duration dependence and lagged duration dependence. From these possibilities, we focus on the

lagged duration dependence due to the relative simplicity of the estimator. Thus, our estimation equation is equation (2), which is a linear version of (1), where the length of unemployment spells, L^{U_t}, is used to capture state dependence:

$$\gamma_{it} = \beta x_{it} + \phi z_{it} + \mu_0 L_i^{U_0} + .. + u_\tau L_i^{U_\tau} + u_{it}. \quad (2)$$

Our data comprise a cohort study where data have been collected at irregular intervals. Past unemployment spells have been observed when members of the sample are of the same age. Hence, the coefficients are both time and age specific. If the effects of unemployment on outcomes decline over time, one would expect $\mu_0 >> \mu_\tau$. On the other hand, if early spells of unemployment have scarring effects, this expectation would be reversed, i.e. $\mu_0 << \mu_\tau$. Further, if lagged unemployment is driven by fixed individual heterogeneity, then one would not expect to see large changes in the μ coefficients if local labour market conditions are controlled for.

If unobserved heterogeneity affects individuals' lifetime propensity to become unemployed, then one might expect a positive correlation between the λ_i and $L_i^{U_j}$, which would cause an upward bias in the coefficients on the $L_i^{U_j}$. One way of reducing this effect is to increase the number of individual controls. Another is to instrument unemployment spells. But it is also worth noting that the effects of past unemployment are likely to vary with the cycle.

We can now add to the literature on scarring by exploring some new evidence using a specification similar to (2). Following Gregg and Tominey, we use the 1958 birth cohort in the National Child Development Study (NCDS). The NCDS has followed a cohort of people who were born in one week – March 3-9 1958. There have been eight attempts to trace all members of this birth cohort to monitor their physical, educational and social development. The first three sweeps were carried out by the National Children's Bureau, in 1965, when the respondents were aged 7, in 1969 (NCDS1) aged 11 (NCDS2) and in 1974 aged 16 (NCDS3). The fourth sweep, NCDS4, was conducted in 1981, when the respondents were aged 23. The fifth sweep was carried out in 1991, when the respondents were aged 33 (NCDS5). For the sixth wave, conducted in 1999-2000, when the respondents were aged 41-42 (NCDS6), fieldwork

was combined with the 1999-2000 wave of the 1970 Birth Cohort Study (BCS70). The seventh sweep of NCDS was conducted in 2004-05, when the respondents were aged 46-47 (NCDS7). The eighth and most recent sweep was conducted in 2008-09 when the respondents were aged 50.

In 1981, at the age of 23, there were 12 537 responses to the question of whether the respondent had ever been unemployed since the age of 16. Unemployment rates in the UK had risen from 5.4 per cent in 1979 to 6.8 per cent in 1980 and 9.6 per cent in 1981, when the UK had moved into recession. Unemployment would eventually peak at 11.4 per cent in the spring of 1984. In the sample, 44 per cent reported that at some point in their working lives, they had been unemployed. The question is whether unemployment when young has an impact on outcomes later in life and whether the effect of an unemployment spell when young is greater than when older. It turns out that it is.

3.1 Effects on wages

Using the most recent data from the 2008-09 sweep, we estimate a wage equation. Our sample is therefore limited to 6 811 employees. To capture individual and labour market characteristics, we include controls for full-time/part-time status, permanent/temporary job, region (10), school dummies (8), industry dummies (59) and workplace size (4). To test for scarring, we include the number of months unemployed before the age of 23 as a regressor and also whether the individual was unemployed at the age of 46. This means that we exclude from our sample nearly a thousand employees who report their wages but who either did not respond to the fourth sweep of the survey (NCDS4) or did not report the number of months unemployed.

Table 9 illustrates the difficulties in distinguishing scarring effects from individual heterogeneity. The information on IQ and math scores at the age of 11, and the reading score at 16, suggests that these would be reasonably good predictors of months unemployed before the age of 23. Yet, whether the cause is scarring or heterogeneity, adverse outcomes occur, and may indicate the need for policy intervention due to lost output as well as other social and economic costs.

Our regression results are reported in Table 10. The dependent variable is the log of weekly wages at the age of 50. We have around 6 000

observations for our simplest regression. The sample size declines as we introduce additional controls. We focus on the coefficients on early unemployment and unemployment in 2004, which is effectively, lagged unemployment, since 2004 was the time of the previous observation. As additional controls are added, the size of the coefficients on the unemployment variable decline as would be expected in the presence of heterogeneity.

Table 9. Characteristics of individuals in the NCDS according to number of months unemployed between ages 16 and 23

	0	>0<3	≥3< 6	≥6<12	≥12<24	≥24
Social class (1958) – I	5	5	4	4	3	2
Social class (1958) – II	14	13	15	12	9	3
Social class (1958) – III – non-manual	11	10	9	8	9	6
Social class (1958) – III – manual	51	49	50	52	50	50
Social class (1958) – IV	11	15	11	13	15	16
Social class (1958) – V	7	9	10	11	15	23
IQ score at 11	45.3	45.0	43.1	42.5	38.0	32.7
Math score at 11	18.0	17.9	16.3	16.2	13.6	10.5
Reading score at 16	26.3	26.4	25.7	25.0	22.9	19.9
Math score at 16	13.6	13.5	12.6	12.1	10.2	8.7
Malaise score at 23	2.48	2.67	2.94	3.27	3.65	4.21
Malaise score at 50	1.36	1.43	1.52	1.86	1.96	2.22
Unemployed at age 33 (%)	1.1	0.6	1.1	3.0	2.5	9.5
Unemployed at age 42 (%)	1.1	1.5	1.8	4.1	4.5	8.9
Unemployed at age 50 (%)	1.6	1.7	3.3	4.1	4.4	10.0
Very difficult financially at 50 (%)	1.6	3.3	1.9	5.4	6.6	5.0
Happy at 50	3.54	3.51	3.46	3.4	3.27	3.19
Life satisfaction at 50	7.45	7.28	7.09	7.1	6.92	6.63
Gross weekly pay at 50	£592	£578	£501	£479	£428	£373
No academic qualification at 50 (%)	15.1	15.9	16.4	21.4	30.8	51.0

Notes: 'Very difficult financially' refers to an individual's assessment of her personal situation. Social class refers to mother's husband in the Perinatal Mortality Study in 1958.

Following our earlier argument regarding the difficulty of finding appropriate instruments within the labour market, we use OLS, noting that in the Gregg and Tominey study, which employs the same dataset estimated over an earlier period, the IV results "are not largely different from the OLS estimates" (p 505). In any case, it is extremely hard to find any convincing instruments that are not related to the respondent's earnings, especially including the local unemployment rate (Blanchflower and Oswald, 1994).

The addition of controls reduces the coefficient on months unemployed when aged less than 23 from –0.01382 to –.0092. Nevertheless, the effect on current wages of cumulative unemployment experience when aged less than 23 is highly significant. The same cannot be said for unemployment in 2004, which is not significant even at the 10 per cent

level. Males are consistently and significantly more likely to be unemployed than females.

Our results update Gregg and Tominey (2005) using the same data. But our focus is on outcomes in the most recent sweep of the NCDS data at the age of 50. We also find evidence of scarring. Our evidence supports the general notion that unemployment experience in early adulthood can have a continuing negative effect on labour market outcomes even up to three decades later. Conditional on early labour market experience, later spells of unemployment do not have a negative impact on wages.

Table 10. Log weekly wages in 2008/09 at the age of 50 (employees only)

	(1)	(2)	(3)
Months unemployed ≤23	-.0138 (10.00)	-.0092 (8.10)	-.0090 (7.15)
Male	.6813 (35.73)	.3263 (17.15)	.3183 (15.63)
Unemployed in 2004		-.1249 (1.50)	
Part-time dummy	No	Yes	Yes
Permanent job dummy	No	Yes	Yes
Region dummies (10)	No	Yes	Yes
School dummies (8)	No	Yes	Yes
Industry dummies (59)	No	Yes	Yes
Workplace size dummies (4)	No	Yes	Yes
Constant	5.7595	5.3279	5.2758
Adjusted R^2	.1878	.5017	.4923
Observations	5 879	5 878	5 309

Source: National Child Development Study, 1958 birth cohort.

3.2 Effects on happiness

In Table 11 we examine a different outcome, again in the context of equation 1: self-reported happiness at the age of 50. The sample is larger because we now include all individuals and do not restrict the sample to employees as in Table 9. The exact question asked is: on balance I look back on life with a sense of happiness (n = 9845). Never = 1 per cent; not often = 7 per cent; sometimes = 34 per cent and often = 58 per cent.

Again consistent with the findings in the happiness literature, most people report themselves to be happy. We include a set of controls that are relatively standard in the literature including labour force status, gender, region, schooling and marital status, plus controls for smoking and exercise. In column 1, we include months unemployed up to the age of 23 in an OLS regression and this enters significantly negatively. In column

3, we also include lagged unemployment variables, from NCDS7 and NCDS6 at ages 42 and 47. Interestingly, with this variant of equation 1, both are insignificant and the significance of the months unemployed early in life variable remains. The two more recent lagged unemployment variables are insignificant in columns 3 and 4. So spells of unemployment while young reduce happiness at the age of fifty, even though unemployment in the mid forties does not. And the extent of the decline in happiness increases with the number of months unemployed at this early age.

Table 11. Happiness in 2008/09 at the age of 50

	(1)	(2)
Months unemployed ≤23	-.0051 (5.38)	-.0048 (4.38)
Unemployed in 2004		-.0856 (1.21)
Unemployed in 2000		-.0659 (1.03)
Part-time employee	-.0052 (0.24)	-.0008 (0.04)
Full-time self-employed	.0243 (1.02)	.0147 (0.57)
Part-time self-employed	-.0523 (1.14)	-.0965 (1.96)
Unemployed	-.1876 (3.90)	-.0454 (0.77)
Full-time education	-.1900 (1.28)	-.2397 (1.59)
Government scheme	-.5055 (1.11)	-.7448 (1.17)
Temporarily sick/disabled	-.0828 (0.85)	-.0352 (0.34)
Permanently sick/disabled	-.3755 (10.16)	-.3842 (9.09)
Looking after home/family	-.1183 (3.57)	-.1040 (2.93)
Wholly retired	-.1144 (1.37)	-.1516 (1.62)
Other labour force status	.0075 (0.11)	.0010 (0.02)
Male	-.0741 (4.61)	-.0629 (4.02)
Takes daily exercise	.0482 (2.83)	.0445 (2.43)
Smoker	-.0991 (5.17)	-.1024 (4.94)
Constant	3.2761	3.2970
Adjusted R^2	.0798	.0727
Observations	8 4267 234	6 679

Source: National Child Development Study, 1958 birth cohort.

Notes: All equations include ten region dummies, five marital status dummies and eight schooling dummies. Excluded category: full-time employees. T-statistics in parentheses. Question. 'On balance I look back on life with a sense of happiness (N = 9 845)'. Never = 1 per cent; not often = 7 per cent; sometimes = 34 per cent and often = 58 per cent.

Thus, we have presented stark findings, consistent with much earlier evidence that youth unemployment reduces wages and happiness more than thirty-five years later. And the more months of unemployment when young, the bigger the effects. Our empirical strategy could potentially provide biased estimates. The extent to which it does so depends on the extent to which the experience of unemployment while young is simply driven by fixed effects: some people may simply have a propensity for unemployment and the fact that there is something fundamentally differ-

ent about them, rather than a result of their early labour market experiences, is why they are unemployed in later life.

We cannot fully address this issue with the data at hand. But given that youth unemployment is correlated with a number of negative outcomes, our view is that it would be dangerous to conclude that youth unemployment is simply driven by genetics. Even if the scarring we have observed was driven by the unobserved fixed effects, it is unclear why this would matter for policy. Policy should focus on reducing the harmful effects of youth unemployment notwithstanding if individuals were scarred by earlier spells of unemployment or by some permanent disposition to being unemployed. It is quite clear that the most harmful effects appear to be on the least skilled and least educated. If there had been earlier interventions to help such individuals, they would not be in a similar situation in their middle age. As the OECD (2010) noted recently, "with the economic recovery still fragile and fiscal pressures mounting, there are concerns that many will be left behind and could face years of unemployment". The consequences of inaction may well be large.

4. Conclusions

In this paper, we have documented the increase in youth unemployment since the start of the Great Recession. While youth unemployment rates have increased in almost all countries, there has been a wide divergence in the size of this increase. There is evidence that the least educated have been hit the hardest. Particularly large increases have occurred in countries that have suffered house price declines crises such as Spain, Latvia, Lithuania and Ireland. In contrast, youth unemployment has remained relatively low in Austria, Denmark, Germany and the Netherlands.

The concern is that such spells of unemployment while young have long-lasting effects, which would be bad for the individuals and for the countries themselves, potentially raising the natural rate of unemployment in the long run. Our micro-econometric analysis confirms that broadly the same specification provides a consistent explanation of higher rates of youth unemployment in Europe, the US and the UK. We also find that these specifications are consistent through time in the UK and the US,

though it appears that the relative disadvantage of youth in the labour market has increased during the Great Recession.

Our analysis of the UK NCDS data supports the notion that early adulthood unemployment creates long lasting scars which affect labour market outcomes much later in life. We focus on weekly wages and happiness. Our results showed significant effects at the age of 50 from early adulthood unemployment but none from recent unemployment experience.

Given these negative effects of early unemployment experience, the immediate policy response might therefore be to increase the demand for labour in general, or to seek to change the balance of demand in favour of younger workers. The most readily available lever for either of these approaches is fiscal policy. But this should not be taken as suggesting that efforts to improve the education, skills and employability of the young should not also be a focus of policy intervention. This age group was not responsible for the recession. It should not be expected to pay for it through potentially long-run adverse labour market outcomes.

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