THE JOBS CRISIS: WHAT ARE THE IMPLICATIONS FOR EMPLOYMENT AND SOCIAL POLICY? – FURTHER MATERIAL

The following pages provide supplementary material underlying the empirical analysis presented in Chapter 1 of *OECD Employment Outlook 2009* (OECD, 2009a). This material is organised into 8 annexes.

Please note that these forecasts in the Employment Outlook 2009 draw from the June fully-fledged OECD projections (EO85) that cover the entire OECD area for a period up to the end of 2010. The recently-released OECD Interim Assessment (3 September 2009) indicates a somewhat better short term outlook with a recovery taking place earlier than was expected in June. But there are still many headwinds and the recovery is still expected to be rather muted for some months to come.

We are still expecting a further increase in unemployment in the months to come, even if the unemployment rate may peak somewhat earlier and possibly at a somewhat lower level. While there is considerable uncertainty going forward, the peak may not be that different from that indicated in last June's Outlook, namely, at 9.9% in 2010 meaning that 57 million people would be unemployed across the OECD. The unemployment rate in the OECD area is already at a record high level (8.5% in July). This is why it is important that governments continue to act to prevent the recession becoming a long-term unemployment crisis.

ANNEX 1.A1. ACTUAL AND PROJECTED CHANGES IN UNEMPLOYMENT

Table 1.A1.1. **Actual and projected changes in unemployment**

	Trough date[a]	Initial unemployment rate (%)	Initial unemployment level (thousands)	A. **Actual changes (trough to 2009:Q2)**			B. **Projected changes (trough to 2010:Q4)**		
				Unemployment rate	Unemployment level		Unemployment rate	Unemployment level	
				Percentage-point change	Percentage change	Change in thousands	Percentage-point change	Percentage change	Change in thousands
OECD	**2007 Q3**	**5.6**	**31 801**	**2.7**	**51.0**	**16 228**	**4.3**	**80.1**	**25 487**
G7	**2007 Q3**	**5.4**	**19 718**	**2.8**	**52.2**	**10 294**	**4.2**	**79.9**	**15 747**
Major Four European	**2008 Q1**	**6.7**	**8 561**	**1.6**	**23.9**	**2 046**	**4.2**	**63.5**	**5 437**
Australia	2007 Q3	4.3	474	1.6	43.0	204	3.7	96.2	457
Austria	2008 Q1	4.8	212	1.0	20.6	44	3.5	73.2	155
Belgium	2007 Q3	7.0	332	1.0	16.3	54	4.3	66.3	220
Canada	2007 Q2	6.1	1 083	2.3	42.2	457	3.7	67.7	733
Czech Republic	2007 Q4	4.8	251	1.5	32.0	80	4.4	93.4	235
Denmark	2008 Q3	3.2	98	2.6	78.8	77	4.9	145.7	143
Finland	2007 Q4	6.7	179	1.8	26.9	48	4.5	65.1	117
France	2007 Q3	7.9	2 213	1.3	17.8	395	3.4	46.0	1 019
Germany	2008 Q1	7.5	3 280	0.6	7.1	232	4.2	55.9	1 833
Hungary	2006 Q2	7.5	314	3.2	41.6	131	4.2	54.3	170
Iceland	2008 Q2	3.0	6	5.2	157.1	9	7.2	223.2	13
Ireland	2007 Q1	4.5	97	7.4	168.3	164	10.6	238.4	232
Italy	2007 Q1	6.2	1 498	1.8	31.7	474	4.4	75.0	1 124
Japan	2007 Q4	3.8	2 557	1.3	33.8	863	1.9	48.5	1 239
Korea	2008 Q1	3.1	746	0.8	26.6	199	0.7	23.4	175
Luxembourg	2007 Q3	4.4	10	1.4	40.4	4	3.1	82.7	8
Netherlands	2007 Q4	3.0	269	0.5	16.9	46	4.6	152.3	410
New Zealand	2007 Q4	3.5	79	2.7	79.2	63	4.9	143.2	113
Norway	2008 Q2	2.6	66	1.1	42.6	28	1.7	67.7	45
Poland	2007 Q4	8.5	1 430	0.1	3.1	44	4.0	49.9	714
Portugal	2007 Q4	7.9	440	1.5	19.0	84	3.8	47.9	210
Slovak Republic	2008 Q4	8.8	237	2.7	30.6	73	5.0	56.4	134
Spain	2007 Q2	8.0	1 767	10.0	134.5	2 378	11.8	153.1	2 706
Sweden	2007 Q2	6.2	298	2.1	35.1	105	5.8	94.3	281
Switzerland	2007 Q4	3.5	155	0.9	27.2	42	1.7	51.9	80
United Kingdom	2007 Q3	5.3	1 643	2.7	53.1	872	4.5	84.5	1 388
United States	2007 Q3	4.7	7 158	4.6	101.8	7 288	5.4	121.5	8 698

a) Trough dates are defined using the business cycle peak (based on output gap).

Source: OECD calculations based *OECD Economic Outlook Database* (projections as published 24 June 2009).

Table 1.A1.2. **Comparing unemployment rate trajectories during previous downturns and the current downturn**

Index base 100 = unemployment rate at the business cycle peak (based on output gap), quarterly data

	Business cycle peak		Quarters since prior peak			
	Date	Unemployment rate	Q1	Q4	Q8	Q12
Australia	1973:Q4	2.13	98.32	173.64	234.08	214.36
	1981:Q3	5.79	102.51	121.21	176.49	150.64
	1989:Q3	5.78	97.14	119.20	164.71	182.21
	2000:Q2	6.38	94.16	107.05	99.88	94.57
	2007:Q3	***4.28***	***102.52***	***98.70***	***152.75***	***183.88***
Austria	1974:Q1	0.92	110.54	144.05	179.74	160.92
	1980:Q1	1.48	98.48	111.94	173.47	231.23
	1991:Q3	4.79	99.95	103.43	120.81	115.45
	2000:Q2	4.85	97.09	99.20	116.13	119.07
	2008:Q1	***4.84***	***99.47***	***104.53***	***152.23***	***..***
Belgium	1974:Q1	1.50	106.23	190.79	295.03	350.54
	1980:Q2	*6.46*	*104.47*	*129.86*	*153.68*	*165.07*
	1990:Q3	6.47	98.97	99.48	110.82	137.11
	2000:Q4	6.60	94.44	109.09	116.67	127.27
	2007:Q3	***6.97***	***101.91***	***104.31***	***124.48***	***154.95***
Canada	*1973:Q4*	*5.52*	*95.23*	*102.32*	*128.66*	*133.72*
	1981:Q2	7.19	103.88	145.05	172.93	159.86
	1989:Q1	7.55	101.47	101.08	134.27	140.84
	2000:Q3	6.93	99.66	103.76	108.29	112.26
	2007:Q2	***6.05***	***99.00***	***100.97***	***138.57***	***161.70***
Denmark	1973:Q2	0.68	105.62	208.16	564.53	554.61
	1979:Q2	4.53	98.48	106.30	153.62	164.29
	2000:Q4	4.02	106.38	116.26	116.18	141.73
	2008:Q3	***3.23***	***116.25***	***199.55***	***251.50***	***..***
Finland	1980:Q3	4.69	98.55	113.71	112.70	110.67
	1989:Q3	4.54	90.94	102.69	197.88	299.44
	2001:Q1	9.18	98.28	98.84	98.07	96.83
	2007:Q4	***6.69***	***92.80***	***98.22***	***146.44***	***167.36***
France	*1974:Q1*	*2.24*	*102.83*	*133.74*	*173.86*	*182.77*
	1980:Q1	5.10	100.00	119.61	135.29	139.22
	1990:Q1	8.00	98.75	100.00	107.50	120.00
	2000:Q4	*8.12*	*97.72*	*94.36*	*98.84*	*108.12*
	2007:Q3	***7.95***	***93.00***	***92.78***	***126.94***	***142.13***
Germany	1973:Q1	0.67	108.96	153.71	298.33	379.43
	1979:Q2	*1.85*	*94.64*	*88.62*	*144.23*	*236.54*
	1991:Q2	5.23	109.79	116.28	140.02	156.96
	2001:Q1	7.33	101.41	107.46	123.76	126.94
	2008:Q1	***7.54***	***96.71***	***98.21***	***147.20***	***..***
Iceland	1980:Q3	1.05	100.17	109.76	144.53	175.38
	1987:Q3	1.22	98.81	117.48	208.55	210.42
	2008:Q2	***3.04***	***81.89***	***270.95***	***320.21***	***..***
Ireland	1990:Q3	12.69	103.18	117.26	120.37	125.52
	2000:Q4	3.88	96.93	102.47	117.65	117.10
	2007:Q1	***4.46***	***103.70***	***108.69***	***230.96***	***325.14***
Italy	1973:Q4	4.13	98.23	99.50	110.50	123.73
	1979:Q4	5.54	102.42	100.31	124.23	128.72
	1989:Q4	*9.86*	*95.66*	*91.03*	*87.03*	*92.54*
	2001:Q1	9.53	97.86	91.40	91.38	87.24
	2007:Q1	***6.17***	***99.01***	***108.10***	***117.51***	***158.29***
Japan	1973:Q1	1.24	109.74	102.77	142.04	167.74
	1979:Q2	2.06	102.48	94.25	110.49	113.77
	1991:Q1	*2.07*	*101.25*	*100.57*	*112.29*	*138.31*
	1997:Q1	3.33	99.60	110.74	139.46	144.79
	2007:Q4	***3.83***	***100.77***	***104.64***	***146.52***	***150.42***
Korea	1977:Q4	3.57	91.43	88.81	122.41	145.08
	1988:Q3	*2.45*	*100.56*	*102.10*	*100.88*	*96.69*
	1997:Q2	2.53	94.17	269.86	275.63	169.06
	2008:Q1	***3.07***	***103.42***	***113.82***	***133.37***	***..***

Table 1.A1.2. **Comparing unemployment rate trajectories during previous downturns and the current downturn** *(Cont.)*

Index base 100 = unemployment rate at the business cycle peak (based on output gap), quarterly data

	Business cycle peak		Quarters since prior peak			
	Date	Unemployment rate	Q1	Q4	Q8	Q12
Luxembourg	1979:Q3	0.70	99.44	103.13	150.22	186.89
	1991:Q2	1.40	101.52	113.93	141.31	192.67
	2000:Q4	2.51	97.57	103.31	127.68	156.46
	2007:Q3	***4.36***	***97.04***	***100.45***	***144.57***	***167.51***
Netherlands	1979:Q4	3.75	100.65	122.62	182.85	260.08
	1990:Q4	5.69	98.23	93.86	100.18	124.30
	2000:Q4	2.83	96.07	89.06	111.29	155.01
	2007:Q4	***3.02***	***96.22***	***92.96***	***172.45***	***252.05***
New Zealand	1986:Q3	4.13	102.21	99.76	154.07	178.23
	1997:Q2	*6.75*	*103.77*	*116.23*	*107.74*	*93.30*
	2007:Q4	***3.49***	***108.36***	***133.81***	***203.19***	***240.54***
Norway	1986:Q2	1.94	107.50	95.43	157.60	251.61
	1998:Q3	3.13	91.89	103.87	109.89	114.85
	2008:Q2	***2.56***	***96.46***	***142.20***	***167.01***	..
Poland	1999:Q4	15.76	100.70	103.74	119.82	127.49
	2007:Q4	***8.47***	***92.41***	***78.73***	***120.81***	***147.60***
Portugal	1991:Q2	4.37	106.60	91.20	123.20	156.63
	2000:Q3	*3.96*	*94.44*	*100.68*	*127.85*	*155.98*
	2007:Q4	***7.86***	***97.33***	***99.71***	***131.14***	***148.95***
Slovak Rep.	1998:Q1	12.19	101.03	121.36	150.63	157.20
	2008:Q4	***8.82***	***119.21***	***145.28***	***156.62***	..
Spain	1991:Q2	11.96	104.81	108.68	141.26	160.87
	2001:Q3	*9.99*	*102.07*	*112.18*	*110.65*	*105.52*
	2007:Q2	***7.99***	***103.99***	***131.07***	***225.15***	***245.16***
Sweden	1975:Q1	2.27	95.67	93.50	100.39	127.14
	1980:Q1	2.54	105.05	115.47	159.06	175.99
	1989:Q4	1.98	95.12	134.53	238.61	394.82
	2000:Q2	*7.07*	*95.06*	*81.74*	*84.81*	*91.53*
	2007:Q2	***6.18***	***96.56***	***98.86***	***133.40***	***181.16***
Switzerland	1980:Q4	0.17	91.06	145.02	378.65	520.32
	1990:Q1	*0.42*	*101.79*	*405.50*	*594.86*	*859.30*
	2000:Q3	2.59	97.83	99.73	127.79	168.58
	2007:Q4	***3.51***	***98.15***	***102.47***	***139.49***	***149.46***
United Kingdom	1973:Q1	3.86	96.52	92.29	102.32	136.17
	1979:Q2	5.29	101.35	119.45	180.48	199.78
	1989:Q2	*7.23*	*98.08*	*95.70*	*119.83*	*135.40*
	2000:Q2	5.50	96.76	91.54	93.95	89.92
	2007:Q3	***5.31***	***97.24***	***109.95***	***164.27***	***183.60***
United States	1973:Q2	4.92	98.03	105.51	180.09	153.60
	1978:Q4	5.88	99.89	100.95	125.75	140.07
	1990:Q1	*5.30*	*100.70*	*124.04*	*139.23*	*134.91*
	2000:Q2	3.95	102.08	111.72	148.00	155.75
	2007:Q3	***4.67***	***102.35***	***129.35***	***208.87***	***216.38***
OECD	1973:Q2	3.23	96.35	99.68	149.54	148.15
	1979:Q2	4.74	101.60	113.28	125.45	149.62
	1990:Q1	5.61	98.89	104.72	117.04	129.55
	2000:Q2	*5.96*	*98.72*	*101.17*	*112.86*	*117.15*
	2007:Q3	***5.58***	***99.09***	***107.48***	***159.49***	***176.71***
G7	1973:Q2	3.39	95.47	98.92	155.60	149.67
	1979:Q2	4.53	101.95	115.03	129.30	158.08
	1989:Q1	5.60	99.05	95.94	107.56	118.61
	2000:Q2	*5.57*	*99.50*	*101.24*	*115.34*	*120.21*
	2007:Q3	***5.41***	***99.40***	***109.96***	***161.37***	***177.12***
Major Four European countries	1973:Q4	2.58	102.01	116.20	152.06	158.89
	1979:Q2	4.33	102.42	104.31	140.15	163.07
	1990:Q1	*7.08*	*97.39*	*100.47*	*111.89*	*124.92*
	2001:Q1	7.35	99.40	100.44	107.34	107.92
	2008:Q1	***6.72***	***100.48***	***112.56***	***154.85***	..

.. Not Applicable.

Source: OECD calculations based *OECD Economic Outlook Database* (projections as published 24 June 2009).

ANNEX 1.A2. THE JOBS IMPACT OF FISCAL STIMULUS

Estimating the jobs impact of fiscal stimulus packages

In order to assess the jobs impact of fiscal stimulus measures one needs an employment multiplier, which translates a fiscal stimulus of a given size into the resulting increase in employment. This annex presents new estimates of employment multipliers and then uses them to assess the employment gains which can be expected from the fiscal stimulus packages implemented in 19 OECD countries in response to the economic crisis.

A fiscal employment multiplier can be obtained by taking the product of the more common fiscal GDP multiplier and the short-run elasticity of employment with respect to GDP. The Economics Department of the OECD has estimated GDP multipliers for all 30 OECD countries (OECD, 2009c). These GDP multipliers – which differ between three types of government spending and two types of revenue measures, and also between the first and second year impacts[1]– translate a permanent expansionary fiscal stimulus, expressed as a percentage of GDP, into the resulting increase in GDP by taking into account both direct ('first round') and indirect ('second round') effects.[2] Since there is considerable uncertainty concerning the size of GDP multipliers, three different sets of multipliers are used here to illustrate how the estimated impacts of fiscal stimulus packages vary for different modelling assumptions. All three sets of GDP multipliers are based on the same average multipliers derived from a survey of macro models for 10 OECD countries and the Euro area, but somewhat different adjustments are made to these averages to account for cross-country differences in trade openness and two factors that may cause the multipliers implied by existing macro models to overstate the jobs impact of fiscal stimulus in the current conjuncture.

- The first set of output multipliers simply reflects the average GDP multipliers from the literature review, adapted to apply to a harmonised and somewhat more detailed taxonomy of spending and taxation categories, and the tendency for multipliers to be smaller in more open economies and larger in more closed economies.

- The second scenario adjusts these GDP multipliers downward to account for the possibility that the macro models reviewed do not fully account for the impact of international leakage in reducing fiscal multiplier effects (*i.e.* that some of the extra spending is for imports rather than domestically produced goods and services).

- The third scenario adds a second downward adjustment to account for the possibility that fiscal multipliers are smaller than normal in the current conjuncture, due to an unusually high propensity to save.

1 . Beyond the second year the simulations assume that fiscal stimulus packages have no additional impact on GDP (*i.e.* their cumulative effect is assumed to remain constant). This is consistent with CEA (2009).

2 . In general, these multipliers imply that increased government spending is associated with a considerably larger first-year GDP multiplier than are tax cuts, because some part of tax cuts are saved rather than spent ("leakage" to savings). However, the relative effectiveness of revenue measures tends to grow over time.

New econometric estimates of the elasticity of employment with respect to GDP are used to translate the GDP multipliers into employment multipliers. These estimates are derived from a dynamic model of employment (AR(1,2)) which is estimated using a balanced panel for the period 1970-2007 of 19 OECD countries. In error-correction form, the estimation model can be represented as follows:

(1) $\Delta lnE_{it} = \varphi_i(lnE_{it-1} - \beta_{0i} - \beta_1 lnY_{it-1}) + \alpha_1 \Delta lnY_{it} + \alpha_2 \Delta lnY_{it-1} + \alpha_3 \Delta lnY_{it-2} + \epsilon_{it}$

where *E* refers to employment, *Y* to GDP and ϵ to a random error term. The model is estimated using the Pooled Mean Group estimator as proposed by Pesaran *et al.* (1999).[3] Using the estimated coefficients of equation 1, the elasticity of employment with respect to a temporary shock in GDP in period t can be calculated for periods t, t+1 and t+2, respectively:

$\frac{\Delta lnE_t}{\Delta lnY_t} = \alpha_1$, $\frac{\Delta^2 lnE_{t+1}}{\Delta lnY_t} = -\varphi(\alpha_1 - \beta_1)$, and $\frac{\Delta^3 lnE_{t+2}}{\Delta lnY_t} = \varphi^2(\alpha_1 - \beta_1) + \varphi(\alpha_1 + \alpha_2 - \beta_1) + \alpha_3$

The average employment elasticity with respect to GDP in period t is equal to 0.43. The average impact decays to 0.23 at t+1 and 0.12 at t+2.[4]

The jobs impact of fiscal stimulus packages can be approximated using short-run employment multipliers which translate an increase in fiscal stimulus equivalent to 1% of GDP into the resulting percentage increase in employment. These employment multipliers are the product of country-specific GDP multipliers and the short-run elasticity of employment with respect to output, which is assumed to be constant across countries. In order to get an idea of the level of employment multipliers and their variation across countries, Figure 1.3, Panel C in the main text presents a set of average employment multipliers, which range from 0.19 in Belgium to 0.28 in Japan. These multipliers are based on the intermediate-sized GDP multipliers described above. The multipliers for the different spending and tax reduction categories have been weighted to correspond to a prototypical fiscal stimulus package based on the average package for the OECD as a whole. For simplicity, an employment elasticity based on a static model is used, rather than those from the dynamic model described above.[5] Since the same employment elasticities are used for all countries, this does not affect the cross-country pattern in the relative size of the employment multipliers.

One way to assess the jobs impact of fiscal stimulus packages is by comparing OECD employment projections of the impact of the crisis on employment, which take account of the expansionary impact of fiscal stimulus measures and can be treated as a baseline, with counterfactual projections that assume no fiscal package was enacted. These counterfactual projections were constructed using the information in Figure 1.3 of OECD (2009a) on fiscal packages and the three sets of employment multipliers to generate three alternative no-stimulus scenarios. The cumulative differential between the baseline projection of employment and the three no-stimulus scenarios over the period 2008-2010 is calculated as follows:

$$\Delta E_{08} = \Delta F_{08} \eta_1 \varepsilon_1$$

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3 . A time trend was not included as this was not significant.

4 . The first year employment elasticity is considerably lower than that used by CEA (2009) to assess the jobs impact of the American Recovery and Reinvestment Act (ARRA). The CEA uses the rule of thumb that a 1% increase in GDP increases employment by about 1 million jobs, which is equivalent to an elasticity of 0.75. However, the CEA employment multiplier is static and takes no account of second and third year effects. The cumulative impact over 3 years with the estimates used here are similar in size to the instantaneous impact assumed by the CEA.

5 . The estimate of the average static employment elasticity is 0.47, moderately larger than the estimated first-year elasticity in the dynamic model.

$$\Delta^2 E_{09} = (\Delta F_{09}\eta_1 + \Delta F_{08}\eta_2)\varepsilon_1 + \Delta F_{08}\eta_1\varepsilon_2$$

$$\Delta^3 E_{10} = (\Delta F_{10}\eta_1 + \Delta F_{09}\eta_2 + \Delta F_{08}\eta_3)\varepsilon_1 + (\Delta F_{09}\eta_1 + \Delta F_{08}\eta_2)\varepsilon_2 + \Delta F_{08}\eta_1\varepsilon_3$$

where *E* refers to employment, *F* to fiscal stimulus in terms of 2008 GDP, η to the cumulative GDP multiplier in year t, t+1 and t+2 and ε to the cumulative employment elasticity in year t, t+1, and t+2.

Figure 1.4 of OECD (2009a) juxtaposes the baseline employment projections with these three counterfactual projections for selected OECD countries. Table 1.A2.1 below summarises the results for all 19 OECD countries which adopted positive fiscal stimulus packages and for which these calculations could be conducted.[6]

6 . The most common reason for not including countries in the analysis is the non-availability of employment data for the period 1970-2007, which is necessary for the estimations of the employment elasticity.

Table 1.A2.1. **Jobs impact of fiscal stimulus packages in OECD countries, 2007-10**

	Percentage change								
	Scenario 1			Scenario 2			Scenario 3		
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Australia	0.21	1.28	1.90	0.15	1.03	1.63	0.15	0.99	1.40
Austria	0.00	0.18	0.32	0.00	0.10	0.25	0.00	0.07	0.13
Belgium	0.00	0.14	0.35	0.00	0.08	0.23	0.00	0.07	0.17
Canada	0.09	0.60	1.17	0.06	0.46	0.94	0.04	0.38	0.72
Denmark	0.00	0.33	0.97	0.00	0.23	0.75	0.00	0.23	0.59
Finland	0.00	0.37	0.85	0.00	0.25	0.63	0.00	0.18	0.38
France	0.00	0.16	0.25	0.00	0.12	0.21	0.00	0.12	0.17
Germany	0.00	0.47	1.02	0.00	0.33	0.81	0.00	0.32	0.61
Japan	0.04	1.57	2.00	0.06	1.21	1.69	0.06	1.21	1.30
Korea	0.26	1.19	1.41	0.18	0.81	1.14	0.15	0.67	0.64
Netherlands	0.00	0.34	0.76	0.00	0.25	0.61	0.00	0.23	0.48
New Zealand	0.05	0.62	1.14	0.04	0.44	0.86	0.02	0.28	0.49
Norway	0.00	0.46	0.44	0.00	0.37	0.40	0.00	0.37	0.29
Portugal	0.00	0.29	0.29	0.00	0.21	0.25	0.00	0.21	0.16
Spain	0.35	0.99	1.08	0.23	0.77	0.87	0.19	0.59	0.56
Sweden	0.00	0.37	0.95	0.00	0.23	0.67	0.00	0.19	0.45
Switzerland	0.00	0.09	0.15	0.00	0.05	0.11	0.00	0.05	0.06
United Kingdom	0.05	0.43	0.51	0.03	0.32	0.43	0.02	0.25	0.28
United States	0.36	1.13	1.83	0.26	0.87	1.43	0.15	0.63	1.01
OECD[a]	**0.18**	**0.92**	**1.38**	**0.13**	**0.69**	**1.11**	**0.09**	**0.58**	**0.80**
	Absolute change								
	Scenario 1			Scenario 2			Scenario 3		
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Australia	22	136	200	16	110	172	16	106	148
Austria	0	8	13	0	4	10	0	3	5
Belgium	0	6	15	0	3	10	0	3	7
Canada	15	101	193	10	77	156	6	63	120
Denmark	0	9	26	0	7	20	0	7	16
Finland	0	9	20	0	6	15	0	4	9
France	0	42	63	0	32	52	0	30	42
Germany	0	183	387	0	132	308	0	125	233
Japan	27	971	1 220	40	754	1 030	40	754	796
Korea	60	275	326	41	188	265	36	156	148
Netherlands	0	29	63	0	21	50	0	20	40
New Zealand	1	13	24	1	9	18	0	6	10
Norway	0	11	11	0	9	10	0	9	7
Portugal	0	14	14	0	10	12	0	10	8
Spain	71	185	195	46	144	156	39	110	102
Sweden	0	16	40	0	10	28	0	8	19
Switzerland	0	4	6	0	2	5	0	2	3
United Kingdom	14	124	143	9	91	119	6	71	79
United States	521	1 571	2 525	371	1 207	1 988	223	882	1 404
OECD[a]	**731**	**3 709**	**5 484**	**534**	**2 816**	**4 427**	**367**	**2 370**	**3 197**

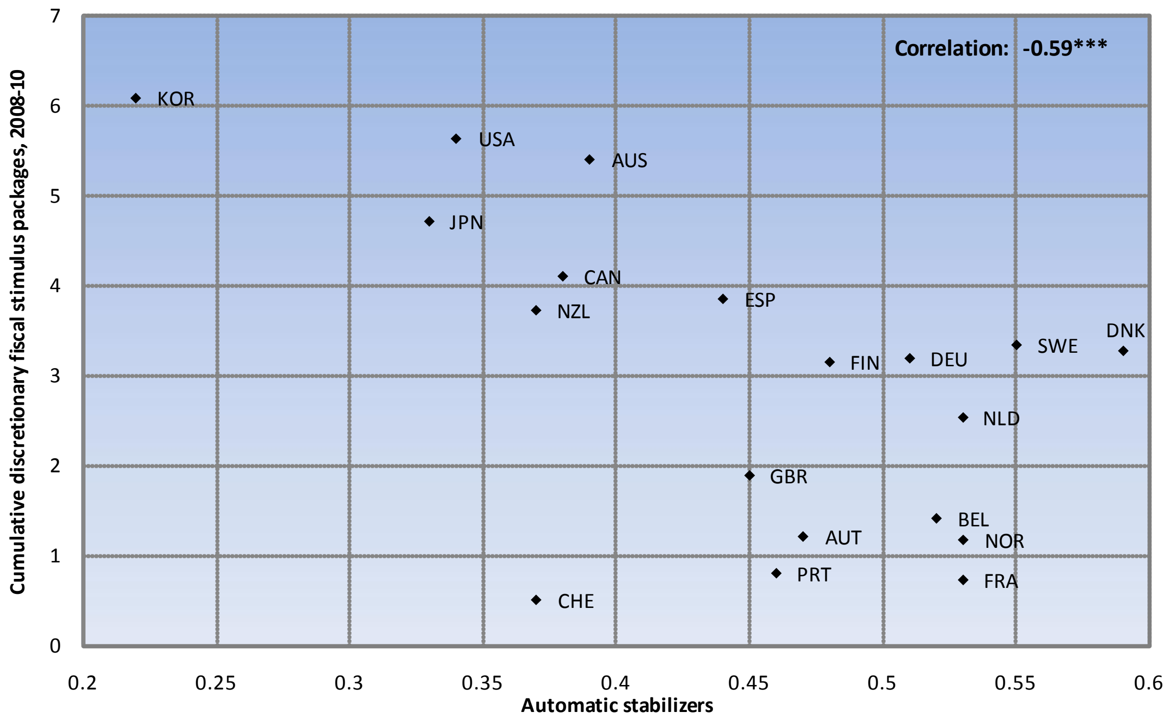
a) Based on total employment of 19 countries shown.

Source: OECD calculations based *OECD Economic Outlook Database* (projections as published 24 June 2009; cut-off for fiscal package information 11 June 2009).

The relationship between automatic stabilisers and discretionary fiscal stimulus

Cross-country differences in the scale of fiscal stimulus packages are likely to reflect a combination of factors, including the severity of the downturn, the size of automatic stabilisers and the ability to issue additional debt on international capital markets. In order to get some idea of the role automatic stabilisers play in explaining the scale of fiscal stimulus packages, Figure 1.A2.1 presents a scatter plot of the size of announced fiscal packages against an index of the strength of automatic stabilisers. The figure suggests that fiscal packages tend to be smaller in countries with stronger automatic stabilisers. The correlation coefficient is -0.6 and is statistically significant at the 1% level. This association is consistent with national fiscal structures determining, to an important degree, how much governments rely upon discretionary fiscal measures in the downturn.

Figure 1.A2.1. **Additional fiscal stimulus packages tend to be smaller when automatic stabilizers are larger**[a]



***: Statistically significant at the 1 % level.

a) As a percentage of 2008 GDP.

Source: OECD calculations based on data from the OECD *Economic Outlook* 85 and N. Girouard and C. André (2005).

ANNEX 1.A3. BUSINESS-CYCLE SENSITIVITY AT THE MICRO-LEVEL

Analysis of business-cycle sensitivity analysis at the micro-level

The micro-level effects of aggregate business-cycle shocks for individual labour-market segments are analysed across the following dimensions: industry, gender, age, education and job status. As there is no single data source that covers a sufficiently long time period to allow for an analysis across all dimensions simultaneously, the analysis is conducted separately for each dimension (referred to as class). This should also help to reduce measurement error associated with small-sample statistics. The remainder of this annex discusses how to isolate the cyclical component of employment and hours, how to measure business-cycle sensitivity and some basic extensions to get a better understanding of the results.

The most natural way to decompose *trend* and *cycle* in the present context is to make use of so-called band-pass filters. These are statistical devices that pass frequencies within a certain range and reject or attenuate frequencies outside that range. The two most commonly used band-pass filters are those proposed by Hodrick and Prescott (1997) and Baxter and King (1999). The Hodrick-Prescott (HP) filter is derived from an optimization problem based on the trade-off between the smoothness of the trend and its goodness-of-fit to the actual series. The relative weight given to smoothness and goodness-of-fit is determined by a smoothing parameter λ. In the present analysis λ is set to 100, as suggested by Hodrick and Prescott when using annual data. The Baxter-King filter eliminates both low and high-frequency variation reflecting the idea that business cycles are fluctuations of a certain frequency. In the present chapter, the limiting frequencies are set to 2 and 8 years in line with the literature.

A simple way to describe the absolute level of business-cycle volatility of labour-market segment *i* in class *k* is by calculating the percentage standard deviation of the cyclical component of employment and hours, σ_i^k. Three alternative measures of business-cycle sensitivity are used. First, business-cycle sensitivity is measured by calculating the percentage standard deviation of the cyclical components of hours and employment that is obtained after filtering the data with an HP filter. Second, an adjusted measure of business-cycle volatility is constructed following Gomme *et al.* (2004) in order to remove high frequency movements in the data that stem from other sources than business cycles such as measurement error or idiosyncratic shocks. This adjustment involves regressing each HP-filtered series on a constant, aggregate employment (or hours) and its first lag (both detrended with HP filtering). The predicted values provide the cyclical component of employment (or hours) that can be used to calculate the adjusted measure of business-cycle sensitivity. Third, business-cycle sensitivity is also measured using on the cyclical components of employment and hours after filtering the data with a BK filter.

To facilitate the interpretation of the results and to make the results comparable across classes, it is useful to normalise business-cycle sensitivity with respect to the national aggregate. Define aggregate business-cycle volatility as the employment-weighted average of each group:

(1) $\sum_i e_i^k \sigma_i^k = \bar{\sigma}^k$

where *e* refers to the average employment share of labour-market segment *i* over the sample period. While aggregate business-cycle volatility should in theory be identical for all classes, this is not the case in practice due to differences in sample composition and aggregation schemes. As a result, one cannot compare business-cycle sensitivity across classes. This can be addressed by normalising aggregate business-cycle volatility to unity so that:

$$(2) \quad \frac{\sum_i e_i^k \sigma_i^k}{\bar{\sigma}^k} = \frac{\sum_j e_j^l \sigma_j^l}{\bar{\sigma}^l} = \cdots = 1$$

The corresponding measure of relative business-cycle volatility $\sigma_i^k / \bar{\sigma}^k$ gives an indication of the volatility of group *i* in class *k* relative to the national aggregate. A value above one indicates that business-cycle volatility is high in comparison to the national average level; a value below one indicates relatively low levels of volatility. The percentage contribution of segment *i* in class *k* to aggregate business-cycle volatility is given by its relative volatility times its share in total employment: $e_i^k \sigma_i^k / \bar{\sigma}^k$.

The role of class composition in class *k* for business-cycle volatility of segment *j* in class *l* is given by the share of σ_j^l that is due to the difference in the actual distribution of *j* across *i* and that when *j* had been distributed proportionally to *i* weighted by σ_i^k:

$$(3) \frac{\sum_i \sigma_i^k [e_{ij}^{kl} - e_i^k e_j^l)]}{e_j^l}$$

If *j* is distributed proportionally across *i* so that $e_{ij}^{kl} = e_i^k e_j^l$ then the class composition of *j* over *i* does not contribute to the cyclicality of σ_j^l. If, on the contrary, $e_{ij}^{kl} \neq e_i^k e_j^l$ then the class composition of *j* over *i* positively contributes to the volatility of σ_j^l.

The effects of changes in workforce composition on aggregate business-cycle volatility can be assessed by replacing average employment shares in equation (1) by the change in employment shares over the entire sample period: $\Delta\bar{\sigma}^k = \sum_i \Delta e_i^k \sigma_i^k$.

Data sources and sample coverage

Table 1.A3.1 gives an overview of the data sources used and the country and time dimensions of the sample.

Table 1.A3.1. **Data sources and sample coverage**

Panel A. **Total hours worked**

	Industry	Gender	Age groups	Education	Job status
Australia	1970-2005	. .	. .	1982-2005	. .
Austria	1970-2005	. .	. .	1980-2005	. .
Belgium	1970-2005	1983-2007	1983-2007	1980-2005	1983-2007
Denmark	1970-2005	1983-2007	1983-2007	1980-2005	1984-2007
Finland	1970-2005	. .	. .	1970-2005	. .
France	1970-2005	1983-2007	1983-2007	1980-2005	1983-2007
Germany	1970-2005	1983-2007	1983-2007	1970-2005	1984-2007
Greece	1970-2005	1983-2007	1983-2007	. .	1983-2007
Ireland	1970-2005	1983-2007	1983-2007	. .	1983-2007
Italy	1970-2005	1983-2007	1983-2007	1970-2005	1983-2007
Japan	1970-2005	. .	. .	1970-2005	. .
Korea	1970-2005	. .	. .	1970-2005	. .
Luxembourg	1970-2005	. .	. .	. .	. .
Netherlands	1970-2005	1987-2007	1987-2007	1979-2005	1987-2007
Portugal	1970-2005	1986-2007	1986-2007	. .	1986-2007
Spain	1970-2005	1986-2007	1986-2007	1980-2005	1987-2007
Sweden	1970-2005	. .	. .	1981-2005	. .
United Kingdom	1970-2005	1983-2007	1983-2007	1970-2005	1983-2007
United States	1970-2005	. .	. .	1970-2005	. .
Source	**EUKLEMS**	**European Union Labour Force Survey (EULFS)**	**European Union Labour Force Survey (EULFS)**	**EUKLEMS**	**European Union Labour Force Survey (EULFS)**

Panel B. **Total employment**

	Industry	Gender	Age groups	Education	Job status
Australia	1970-2005	1978-2007	1978-2007	1982-2005	. .
Austria	1970-2005	. .	. .	1980-2005	. .
Belgium	1970-2005	1983-2007	1983-2007	1980-2005	1983-2007
Denmark	1970-2005	1983-2007	1983-2007	1980-2005	1984-2007
Finland	1970-2005	1963-2007	1963-2007	1970-2005	. .
France	1970-2005	1968-2007	1968-2007	1980-2005	1983-2007
Germany	1970-2005	1970-2007	1970-2007	1970-2005	1984-2007
Greece	1970-2005	1983-2007	1983-2007	. .	1983-2007
Ireland	1970-2005	1983-2007	1983-2007	. .	1983-2007
Italy	1970-2005	1970-2007	1970-2007	1970-2005	1983-2007
Japan	1970-2005	1962-2007	1962-2007	1970-2005	. .
Korea	1970-2005	1980-2007	1980-2007	1970-2005	. .
Luxembourg	1970-2005	. .	. .	. .	. .
Netherlands	1970-2005	1971-2007	1971-2007	1979-2005	1987-2007
Portugal	1970-2005	1974-2007	1974-2007	. .	1986-2007
Spain	1970-2005	1972-2007	1972-2007	1980-2005	1987-2007
Sweden	1970-2005	1963-2007	1963-2007	1981-2005	. .
United Kingdom	1970-2005	1984-2007	1984-2007	1970-2005	1983-2007
United States	1970-2005	1960-2007	1960-2007	1970-2005	. .
Source	**EUKLEMS**	**OECD labour Force Statistics**	**OECD labour Force Statistics**	**EUKLEMS**	**European Union Labour Force Survey (EULFS)**

. .: Not available.

Baseline results

The baseline results that make use of the HP-filtered hours data after adjusting for measurement error and idiosyncratic shocks are discussed in OECD (2009a).

Sensitivity analysis

Four alternative measures of business-cycle sensitivity are used. First, business-cycle sensitivity is measured by calculating the percentage standard deviation of the cyclical components of hours and employment that is obtained after filtering the data with an HP filter. Second, an adjusted measure of business-cycle volatility is constructed to remove high-frequency movements in the data that stem from other sources than business cycles such as measurement error or idiosyncratic shocks. This is the measure used in the baseline results. Third, business-cycle sensitivity is also measured using the cyclical components of the data after filtering the data with a BK filter. Finally, the series obtained from the BK filter are adjusted for measurement error and idiosyncratic shocks using the same procedure as before. These measures are calculated both for total hours and employment.

The results are reported in Table 1.A3.2. They suggest that, at least for the OECD average, the baseline results are robust to the metric used (hours or employment) and the filtering method (HP or BK). The biggest differences arise as a result of the data adjustment that is used to remove idiosyncratic shocks and measurement error. In general, the results based on the adjusted data appear to be the most sensible.

Table 1.A3.2. **Sensitivity analysis of business-cycle volatility by economic group**

Unweighted average across countries

Panel A. **Total hours worked**

	Industry										
	Agriculture and fishing	Mining and Quarrying	Manufacturing, durable goods	Manufacturing, non-durable goods	Electricity , gas and water supply	Construction	Wholesale and retail trade	Hotels and restaurants	Transport and communication	Financial intermediation	Real estate and business activities
Relative business-cycle volatility (HP filter)	0.847	2.062	1.159	0.845	1.026	1.543	0.750	0.979	0.767	0.984	1.263
Relative business-cycle volatility adjusted (HP filter)	0.542	1.067	1.425	0.955	0.404	1.756	0.799	0.711	0.680	0.803	1.238
Relative business-cycle volatility (BK filter)	0.909	2.189	1.136	0.859	1.157	1.390	0.795	1.009	0.785	0.927	1.235
Relative business-cycle volatility adjusted (BK filter)	0.618	1.103	1.381	0.937	0.460	1.556	0.913	0.720	0.683	0.751	1.211

	Gender		**Age groups**			**Education**			**Job status**		
	Men	Women	Youth (15-24)	Prime age (25-54)	Older workers (55 and over)	Low-skilled	Medium-skilled	High-skilled	Self-employed	Permanent workers	Temporary workers
Relative business-cycle volatility (HP filter)	0.976	1.046	1.965	0.774	1.448	1.223	0.850	1.111	1.035	0.709	3.330
Relative business-cycle volatility adjusted (HP filter)	0.992	1.014	1.798	0.872	0.993	1.107	0.974	0.870	0.970	0.880	2.072
Relative business-cycle volatility (BK filter)	0.996	1.007	1.955	0.759	1.560	1.233	0.844	1.113	1.240	0.684	3.025
Relative business-cycle volatility adjusted (BK filter)	1.047	0.911	1.747	0.890	0.930	1.040	1.018	0.841	1.197	0.805	2.129

Panel B. **Employment**

	Industry										
	Agriculture and fishing	Mining and Quarrying	Manufacturing, durable goods	Manufacturing, non-durable goods	Electricity , gas and water supply	Construction	Wholesale and retail trade	Hotels and restaurants	Transport and communication	Financial intermediation	Real estate and business activities
Relative business-cycle volatility (HP filter)	0.832	2.078	1.151	0.812	1.082	1.581	0.749	1.002	0.760	0.979	1.283
Relative business-cycle volatility adjusted (HP filter)	0.535	1.098	1.395	0.922	0.478	1.802	0.785	0.826	0.631	0.818	1.258
Relative business-cycle volatility (BK filter)	0.901	2.216	1.142	0.813	1.210	1.429	0.760	1.065	0.763	0.904	1.314
Relative business-cycle volatility adjusted (BK filter)	0.735	1.144	1.457	0.890	0.466	1.586	0.794	0.847	0.586	0.649	1.261

	Gender		**Age groups**			**Education**			**Job status**		
	Men	Women	Youth (15-24)	Prime age (25-54)	Older workers (55 and over)	Low-skilled	Medium-skilled	High-skilled	Self-employed	Permanent workers	Temporary workers
Relative business-cycle volatility (HP filter)	0.969	1.045	1.514	0.805	1.430	1.266	0.821	1.141	0.871	0.699	3.524
Relative business-cycle volatility adjusted (HP filter)	0.981	1.028	1.493	0.884	1.040	1.140	0.958	0.865	0.727	0.895	2.363
Relative business-cycle volatility (BK filter)	0.968	1.046	1.331	0.849	1.411	1.263	0.814	1.175	1.143	0.644	3.357
Relative business-cycle volatility adjusted (BK filter)	0.966	1.048	1.496	0.845	1.241	1.079	1.010	0.789	1.032	0.798	2.438

Source: OECD estimates based on EUKLEMS for education and industry and the European Union Labour Force Survey (EULFS) for age groups, gender and job status in Panel A, and EUKLEMS for education and industry and OECD Labour Force Statistics for age groups and gender and the European Union Labour Force Survey (EULFS) for job status in Panel B. See Annex Table 1.A4.1 for further details on sample.

ANNEX 1.A4. VARIANCE DECOMPOSITION OF TOTAL HOURS WORKED

Changes in total hours worked may be accommodated through changes in average hours (the intensive margin) or through changes in the number of employed (the extensive margin). Changes in employment may in turn be accommodated through changes in the unemployment and in labour force participation. This annex presents the methodology and the disaggregated results by country.

Methodology

One may decompose the variation in total hours worked per capita into the proportions that can be attributed to the variation in average hours worked, the ratio of employees to the labour force, and the labour force participation rate.

(1) $\frac{h}{n} = \left(\frac{h}{e}\right)\left(\frac{e}{l}\right)\left(\frac{l}{n}\right) = \left(\frac{h}{e}\right)\left(1-\left(\frac{u}{l}\right)\right)\left(\frac{l}{n}\right)$

where *h* refers to total hours worked, *e* refers to the number of employed, *n* the population, *u* the number of unemployed, and *l* the number of labour force participants and *n* the total population. Taking logs yields:

(2) $\log\left(\frac{h}{n}\right) = log\left(\frac{h}{e}\right) + log\left(1-\left(\frac{u}{l}\right)\right) + log\left(\frac{l}{n}\right)$

Denoting $x^k = log\left(\frac{h}{e}\right), log\left(1-\left(\frac{u}{l}\right)\right), log\left(\frac{l}{n}\right)$ and $y = \log\left(\frac{h}{n}\right)$, the variance of total per capita may be decomposed into *k* variance terms and their covariance terms as follows:

(3) $Var(y) = \sum_k Var(x^k) + 2\sum_{k\neq j\ \&\ kj\neq jk} Cov(x^k, x^j)$

Exploiting the fact that the decomposition holds as an identity, one can use the following expression: $\frac{1}{T}\sum_t \sum_k (x_t^k - \bar{x}^k) = \frac{1}{T}\sum_t (y_t - \bar{y})$ to rewrite the variance of hours per capita into the covariance between hours per capita and each component x^k:

(4) $Var(y) = \sum_k Cov(x^k, y)$

One can now express the total proportion of the variation in hours per capita due to x^k as:

(5) $\beta^k = \frac{Cov[log(x^k), log(y)]}{Var[\log(y)]}$ with $\sum_k \beta^k = 1$

In order to apply the decomposition using the trend or cycle components of each series, one needs to slightly modify the decomposition since it is unlikely to hold as an identity after the data have been treated with a band-pass filter. In this case, equation (1) ought to be augmented with a multiplicative error term, ϵ. This will result in one additional covariance term in equation (4), $Cov(\log(\epsilon), y)$. The unobservable component of the variance in hours per capita is given by $1 - \sum_k \beta^k$. However, in practice the unobservable component is negligible. Also note that the contribution of each component to the variation in total hours is not necessarily a weighted average of its contribution of the cyclical and the trend variation in total hours. This is essentially because the variance of total hours is not the same as that of the sum of the variance of its cyclical and trend components.[7]

Results

The baseline results are reported in Figure 1.10 of OECD (2009a). Details on the sample can be found in Panel A of Table 1.A3.1.

7 . The contribution of each component to the variation in total hours is not necessarily a weighted average of its contribution to the cyclical and the trend variation in total hours. There are at least two reasons why this may not be the case: i) because the variance of total hours is not the same as that of the sum of the variance of its cyclical and trend components; and ii) because of the way the results are averaged across countries.

ANNEX 1.A5. UNEMPLOYMENT DYNAMICS

There is a large and rapidly growing literature on unemployment dynamics. In this chapter, the literature is extended in two directions. First, labour dynamics are analyzed not only at the country level, but also for specific labour-market groups according to age and gender. Second, the impact of certain labour market policies for unemployment flows is analyzed. This annex focuses on: *i)* the measurement of unemployment inflow and outflow rates; *ii)* describes average unemployment flows; *iii)* presents the methodology that is used to analyze the relative importance of the in- and outflow rate for cyclical changes in unemployment; and *iv)* discusses the methodology to analyze the role of labour-market policies role for unemployment in- and outflow rates.

1. Measuring unemployment in- and outflows

The evolution of unemployment over time can be written as:

(1) $\frac{du_t}{dt} = x_t e_t - f_t u_t = x_t(l_t - u_t) - f_t u_t$

where u_t denotes to the number of unemployed, e_t the number of employed, l_t the number of individuals in the labour force, x_t the employment-exit rate (defined as $-\ln(1 - X_t)$ where X_t refers to the employment-exit probability) and f_t the job-finding rate (defined as $-\ln(1 - F_t)$ where F_t refers to the job-finding probability).

In steady-state, unemployment is constant, such that: $x_t(l_t - u_t^*) = f_t u_t^*$. Consequently, one may express the steady-state unemployment rate as:

(2) $\frac{u_t^*}{l_t} = \frac{x_t}{f_t + x_t}$.

Dividing steady-state unemployment by the inflow rate yields the average duration of *completed* unemployment spells. As unemployment duration is measured in months, it is useful to rewrite equation (1) in discrete time under the assumption that individuals cannot lose and find a job within a single period, as follows:

(3) $\Delta u_{t+1} = \tilde{X}_t e_t - \tilde{F}_t u_t$

where X_t refers to the fraction of employed that loses their job and F_t to the fraction of unemployed that finds a job each month. This implies assuming that employed workers that lose their job do not find a new job in the same month and that unemployed workers who find a job do not lose their job within the same month. Accordingly, one can measure the monthly job-finding and employment-exit probabilities respectively as:

(4) $\tilde{F}_t = 1 - \frac{u_{t+1} - u_{t+1}^{<1}}{u_t}$ and $\tilde{X}_t = \frac{u_{t+1}^{<1}}{e_t}$

In reality, however, individuals can lose and find jobs in a single period generating a downward bias in the measurement of the employment-exit and the job-finding probability. This is called *time-*

aggregation bias. Time aggregation matters particularly when using annual data as in the present case and when one is interested in the relative importance of the employment-exit to the job-finding probability as the probability of losing and finding a job in the same period is much larger than that of finding and losing a job.

Shimer (2007) proposes a method to deal with the problem of time aggregation for the measurement of the employment-exit probability whilst assuming that time aggregation for the job-finding probability is negligible. As the data on unemployment and its duration are only observed once every year, this involves solving (1) forward by 12 months under the assumption that the monthly employment-exit and job-finding rates are constant within years, which yields:

(5) $u_t = \lambda_t u_t^* l_t + (1 - \lambda_t) u_{t-12}$

where $\lambda_t = 1 - e^{-12(x_t + f_t)}$ is the annual rate of convergence to steady-state. Equation (5) expresses x_t as a function of u_t and f_t. In order to take account of the fact that unemployment is only observed at annual frequencies, $\tilde{F}_{t-1}$ is measured as $= 1 - \frac{u_t - u_t^{\leq 1}}{(u_{t-12} + 11u_t)/12}$. in practice. In order to solve equation (5) for x_t, the algorithm developed by Elsby, Hobijn and Sahin (2008) has been used. Data on unemployment duration are obtained from the OECD Unemployment Distribution Database.

Table 1.A5.1 gives an overview over the sample that is used to analyse unemployment dynamics as well as the sub-sample for which inflows into unemployment by initial economic status can be analyzed.

Table 1.A5.1. **Unemployment dynamics: country and year coverage**

	Panel A. Unemployment inflow and outflow	Panel B. Unemployment and Inactivity inflow by reason
Australia	1978-2007	. .
Belgium	1983-2007	1992-2007
Canada	1976-2007	. .
Denmark	1983-2007	1992-2007
France	1975-2007	1992-2007
Germany	1983-2007	1992-2007
Greece	1983-2007	1992-2007
Ireland	1983-2007	1992-2007
Italy	1983-2007	1992-2007
Japan	1977-2007	. .
New Zealand	1986-2007	. .
Norway	1978-2007	1995-2007
Portugal	1986-2007	1992-2007
Spain	1977-2007	1992-2007
Sweden	1971-2007	1995-2007
United Kingdom	1983-2007	1992-2007
United States	1968-2007	. .

. .: Not available.

The procedure to measure monthly in– and outflow rates can be amended to calculate the 3-monthly, 6-monthly and 12-monthly in- and outflow rates. Analogously to monthly rates, the average duration of completed unemployment spells can be calculated. Table 1.A5.2 reports the estimated average duration by country using the monthly, 3-monthly, 6-monthly and 12-monthly inflow and outflow rates. The table suggests that in the majority of countries the estimated average duration of completed unemployment spells increases with the length of the period over which the in-and outflow rates are calculated. This reflects the fact that the outflow rate falls with the length of the unemployment spell. This is typically referred to as negative duration dependence. However, in a number of countries, the estimated average duration of unemployment appears to be constant or even fall. These countries are indicated with an asterisk in the table. As measurement error is likely to be a problem in the current data due to the relatively small samples from which the monthly in- and outflow rates are calculated, the analysis makes use of the 3-monthly in- and outflow rates for countries where there is no apparent evidence of negative duration dependence (the countries with an asterisk). Elsby, Hobijn and Sahin (2008) use a somewhat similar procedure to correct for measurement error, but use a formal test for the presence of negative duration dependence. Their results indicate that in about two-third of the countries in their sample, there is no evidence of negative duration dependence.

Table 1.A5.2. **Average unemployment duration of completed spells and duration dependence**[a]

	Number of month[b]			
	One-month based	Three-month based	Six-month based	One-year based
Australia	4.4	5.0	6.3	8.2
Belgium	15.8	19.4	19.4	21.4
Canada	3.6	3.1	3.7	5.1
Denmark	5.9	7.8	6.8	7.9
France*	19.2	11.4	10.7	11.8
Germany*	13.7	14.2	13.3	15.4
Greece*	17.9	19.6	17.2	17.5
Ireland*	16.5	16.8	15.2	16.4
Italy*	22.3	30.7	22.0	22.0
Japan	5.5	5.5	6.9	8.1
New Zealand	3.8	4.5	5.5	6.7
Norway	2.8	3.6	4.6	5.7
Portugal*	19.4	13.2	11.9	14.5
Spain*	23.7	11.8	12.0	14.1
Sweden	4.2	5.0	5.9	7.5
United Kingdom	6.8	7.6	8.1	9.9
United States	1.9	2.4	3.1	4.7
Average[c]	**11.1**	**10.7**	**10.2**	**11.6**

a) Average unemployment duration is calculated by dividing steady-state unemployment by the
b) Calculations based for countries with an asterisk on three-monthly inflow and outflow rates as these countries do not exhibit negative duration dependence.
c) Unweighted average of countries shown.
Source: OECD calculations based on the OECD Unemployment Distribution Database. See Annextable 1.A5.1 for further details on sample.

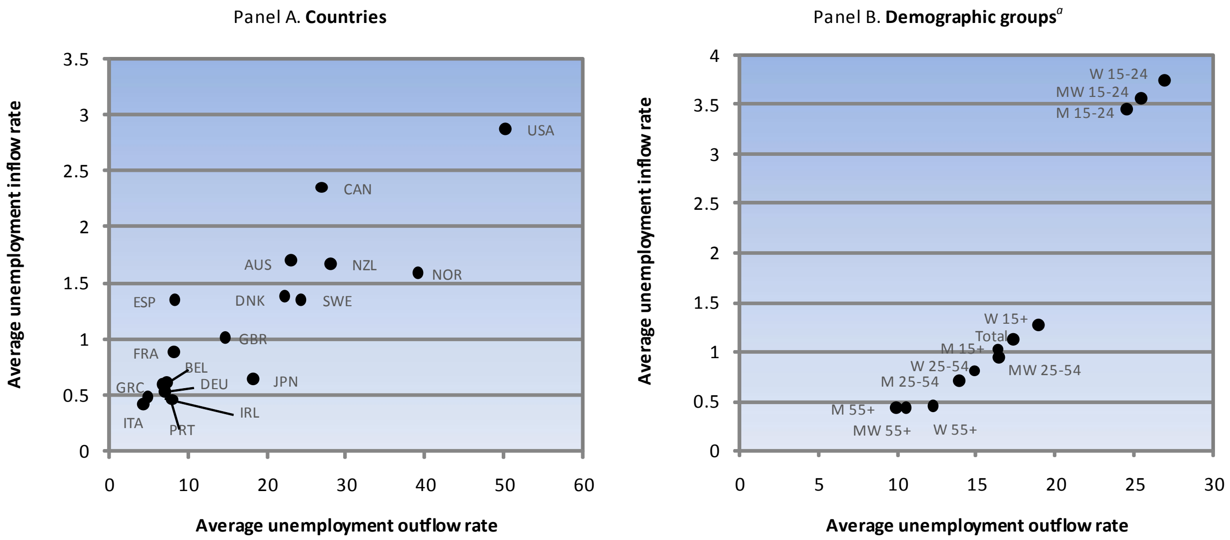
Average unemployment flows and unemployment duration

As an intermediate step to analyzing the cyclicality of unemployment in- and outflows, the average levels of in- and outflows are documented in Figure 1.A5.1. Panel A provides a scatter diagram of the average unemployment inflow and outflow rates by country.[8] It can be seen: *i)* that the average in-and outflow rates are strongly positively correlated; and *ii)* that average worker flows are much larger in mainly English-speaking and Nordic countries than in other countries. The cross-country pattern in average unemployment flows is very stable across individual groups. Panel B reports average unemployment flows by labour-market group. Unemployment turnover differs substantially across age groups with very high

8. This is similar to Figure 1 in Elsby, Hobijn and Sahin (2008). The main differences are that in the current analysis the sample has been extended with three countries and that inflow and outflow rates have not been adjusted to account for measurement error in the same way.

levels for the young and very low levels for the 55+. By comparison, gender is relatively unimportant. If anything, unemployment turnover is somewhat higher for women than for men.

Figure 1.A5.1. **Unemployment inflow and outflow rates by country and demographic group**



a) MW: Both sexes; M: Men; W: Women.

Source: OECD calculations based on the OECD Unemployment Distribution Database. See Annex Table 1.A5.1 for further details on sample.

The in- and outflow rate together determine the average duration of completed unemployment spells. Table 1.A5.3 presents the average duration in months of unemployment spells by country and group. Average unemployment duration in the OECD amounts to almost one year (10 months). However, this Figure hides substantial variation across countries and age groups. Gender does not appear to play a major role. The average unemployment duration for youth is relatively low amounting to about 7 months. This is due to their high job-finding probability compared to other age groups. This is even the case in countries where youth unemployment is very high such as Spain and Italy. Older workers, by contrast, have relatively high average unemployment durations amounting to more than two years on average. These figures suggest that it is extremely difficult for older workers in many countries to return to employment after having been displaced.

Table 1.A5.3. **Average duration of completed unemployment spells**

Number of month

	Men	Women	Youth (15-24)	Prime-age (25-54)	Older workers (55 and over)	Total
Australia	5.1	3.6	3.4	4.9	7.7	4.4
Belgium	16.4	15.4	8.9	20.9	..	15.8
Canada	3.7	3.4	2.4	4.1	4.9	3.6
Denmark	7.9	7.8	4.2	9.6	33.4	7.8
France	10.9	11.8	6.7	12.8	27.8	11.4
Germany	13.9	14.6	8.1	14.5	31.7	14.2
Greece	15.2	23.6	14.2	21.7	24.6	19.6
Ireland	20.7	12.6	11.8	19.3	85.1	16.8
Italy	29.6	30.4	23.3	34.4	51.3	30.7
Japan	6.4	4.6	3.4	5.9	13.7	5.5
New Zealand	4.4	3.2	2.8	4.5	8.6	3.8
Norway	3.0	2.6	1.7	3.7	..	2.8
Portugal	11.9	14.5	9.0	15.2	32.8	13.2
Spain	9.9	13.8	7.9	13.2	18.4	11.8
Sweden	4.6	3.8	2.3	5.1	11.0	4.2
United Kingdom	8.2	5.3	5.0	7.6	11.8	6.8
United States	2.0	1.8	1.4	2.3	2.6	1.9
Average	**10.2**	**10.2**	**6.9**	**11.7**	**24.4**	**10.3**

..: Not available.

Source: OECD calculations based on the OECD Unemployment Distribution Database. See annex Table 1.A5.1 for further details on sample.

The relative importance of in and outflows for unemployment dynamics

To evaluate the relative contribution of the employment-exit and job-finding hazard for changes in unemployment, one needs to decompose unemployment changes into comparable and separable components associated with each hazard. Such a decomposition can be derived for infinitesimal small changes as long as one concentrates solely on unemployment changes in steady-state. Log differentiating (2) yields the following decomposition of changes in the steady-state unemployment rate, $ur_t^* = \frac{u_t^*}{l_t}$.

(6) $dlogur_t^* = \left(1 - ur_{t}^*{}_{t}\right)dlogx_t - (1 - ur_t^*)dlogf_t$

In practice, (6) only holds as an approximation due the discrete nature of the data. Moreover, by focusing exclusively on steady-state unemployment, one may not get an accurate picture of the full impact of changes inflow and outflow rates on changes in unemployment, especially during a cyclical downturn. Shimer (2007) argues that in the United States where inflow and outflow rates are relatively high, steady-state unemployment is very similar to the actual level of unemployment (*i.e.* $\lambda_t \approx 1$). However, in other countries where unemployment flows are much smaller, deviations from steady-state may be quite important. Elsby, Hobijn and Sahin (2008) propose a decomposition that accounts for the full contributions of unemployment flows even when unemployment is not in steady-state. Fujita and Ramey (2008) propose a dynamic decomposition of unemployment changes that takes account of the fact that inflows lead, and potentially affect, outflows.

Using variance-decomposition techniques (see Fujita and Ramey, 2009 and Annex 1.A4 on the decomposition of hours), one can use (6) to express the proportion of the total variation in steady-state unemployment due to changes in unemployment inflows and outflows respectively as:

(7) $\beta^k = \frac{Cov(z_t^k, y_t)}{Var(y_t)}$ for $k = x, s;\ z = (1 - ur^*)dlogk$ and $y = dlogur^*$

The results of this analysis are reported in OECD (2009a).

The role of employment policies for unemployment in- and outflows

In order to analyze how unemployment in- and outflows rates are associated with labour market policy settings, and especially how policies affect the propagation of demand shocks to labour markets, the following regression model is used.

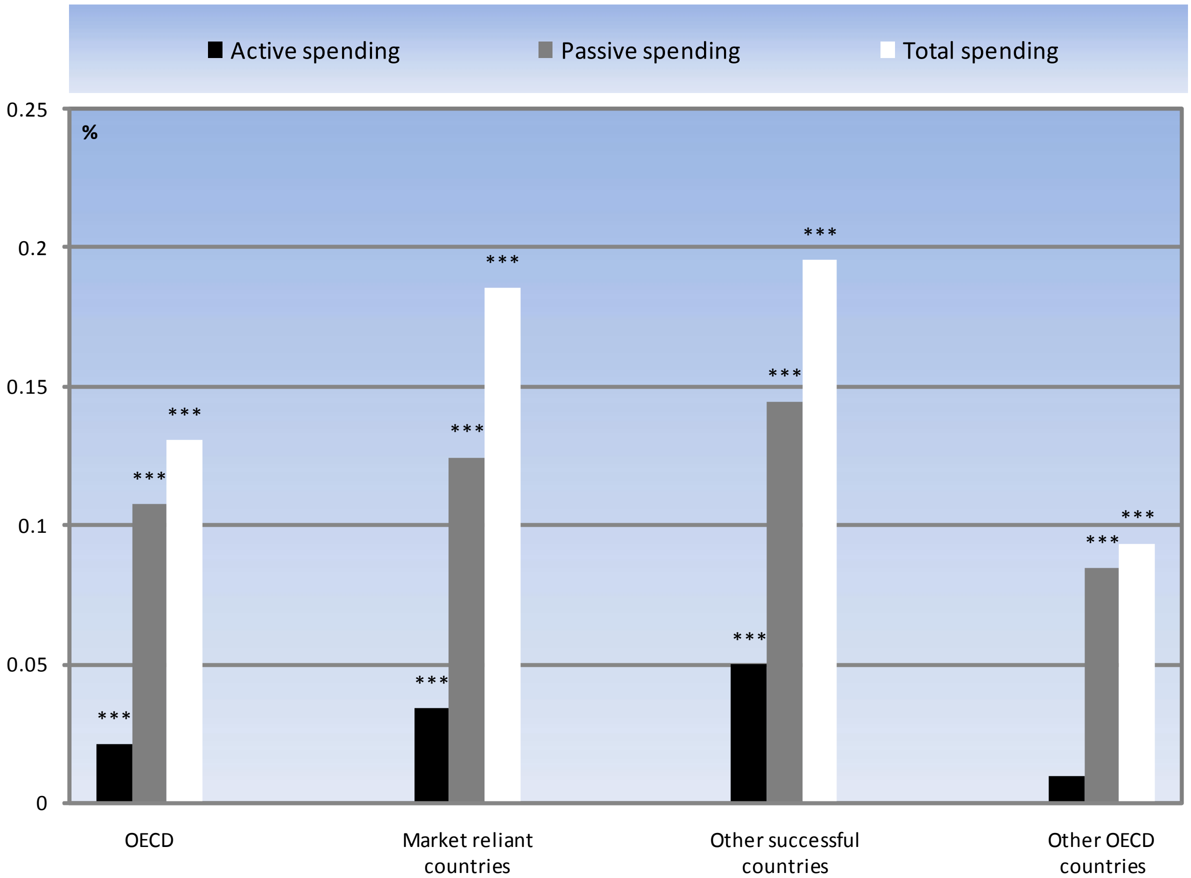
(8) $logk_{it} = \alpha_i + \beta_0 GAP_{it} + \sum_n \beta_n X_{it}^n + \sum_n \gamma_n X_{it}^n GAP_{it} + \delta_t + \varepsilon_{it}$

where *k* refers to the employment-exit rate or the job-finding rate, $k = x, s$, *GAP* refers to the output gap (measured in percentage), *X* to employment policies including the average replacement rate, the tax wedge, spending on active labour-market policies per unemployed (with separate measures for spending on PES and administration, training and labour demand) and employment-protection legislation (separately for permanent and temporary workers). The output gap and the policy variables are all expressed as deviations from the sample mean so that the associated coefficients can be directly interpreted as marginal effects. α_i is a country fixed effect to control for time-invariant differences in unemployment rates across countries and δ_t a time fixed effect to control for changes in inflows and outflows that are common across countries. ε_{it} is a random error term. The results of this analysis are reported in OECD (2009a).

ANNEX 1.A6. LABOUR MARKET PROGRAMME EXPENDITURES

Figure 1.A6.1. **Passive and active spending on labour market programmes in OECD countries as automatic stabilizers, 1985-2006**

Estimated percentage-point increase in spending (as a percentage of GDP) in response to a one percentage-point decrease in the output gap[a,b]



*, **, ***: statistically significant at the 10%, 5% and 1% level, respectively.

a) OLS regression coefficients from unbalanced panel regressions which contain decadal dummies for the 1990s and 2000s and a full set of country dummies. Robust standard errors are used to assess statistical significance.

b) The three country groupings shown are defined as follows: "Market reliant countries" grouping includes Australia, Canada, Japan, Korea, New Zealand, Switzerland, the United Kingdom and the United States; "other successful countries" grouping includes Austria, Denmark, Ireland, the Netherlands, Norway and Sweden; and "Other OECD countries" grouping includes Belgium, the Czech Republic, Finland, France, Germany, Greece, Italy, Luxembourg, Mexico, Poland, Portugal, the Slovak Republic and Spain.

Source: OECD estimates based on the OECD Labour Market Programmes and OECD *Economic Outlook* Databases.

Table 1.A6.1. **Regression evidence on the cyclicality of passive and active spending on labour market programmes in OECD countries, 1985-2006**

OLS estimates of unbalanced panel models for programme expenditures as a percentage of GDP [a,b]

Panel A. **Active Spending**

	OECD			**Market reliant countries**			**Other successful countries**			**Other OECD countries**		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
ILO unemployment	0.021 ***			0.049 ***			0.027 ***			0.005		
Trend unemployment		0.024 ***			0.059 ***			0.016 *			0.013	
Cyclical unemployment		0.014			0.032 ***			0.065 **			-0.006	
Output gap			-0.022 ***			-0.034 ***			-0.050 ***			-0.010
Decade 1991-2000	0.162 ***	0.167 ***	0.140 ***	-0.011	0.004	-0.059 *	0.308 ***	0.279 ***	0.324 ***	0.203 ***	0.207 ***	0.159 ***
Decade 2001-2006	0.081 ***	0.086 ***	0.042	-0.007	0.014	-0.098 ***	0.094	0.058	0.088	0.173 ***	0.173 ***	0.134 ***
Observations	497	497	458	156	156	149	128	128	128	213	213	181
R^2	0.880	0.880	0.870	0.660	0.660	0.580	0.830	0.840	0.850	0.860	0.860	0.870
Trend unemployment= Cyclical unemployment [c]		*0.910*			*2.380*			*2.970* *			*2.490*	

Panel B. **Passive Spending**

	OECD			**Market reliant countries**			**Other successful countries**			**Other OECD countries**		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
ILO unemployment	0.154 ***			0.198 ***			0.187 ***			0.115 ***		
Trend unemployment		0.161 ***			0.208 ***			0.175 ***			0.122 ***	
Cyclical unemployment		0.137 ***			0.177 ***			0.232 ***			0.104 ***	
Output gap			-0.108 ***			-0.125 ***			-0.145 ***			-0.085 ***
Decade 1991-2000	0.091 ***	0.101 ***	0.082	-0.072 *	-0.060	-0.145 *	0.153 **	0.120 *	0.194 *	0.221 ***	0.224 ***	0.223 **
Decade 2001-2006	-0.118 ***	-0.106 ***	-0.297 ***	-0.172 ***	-0.152 ***	-0.463 ***	-0.230 ***	-0.271	-0.486 ***	0.075	0.076	-0.008
Observations	527	527	495	161	161	154	129	129	129	237	237	212
R^2	0.900	0.900	0.830	0.870	0.870	0.710	0.920	0.920	0.810	0.870	0.870	0.830
Trend unemployment= Cyclical unemployment [c]		*1.590*			*1.560*			*3.420* *			*1.560*	

Panel C. **Total Spending**

	OECD			**Market reliant countries**			**Other successful countries**			**Other OECD countries**		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
ILO unemployment	0.177 ***			0.247 ***			0.213 ***			0.120 ***		
Trend unemployment		0.188 ***			0.270 ***			0.191 ***			0.136 ***	
Cyclical unemployment		0.152 ***			0.206 ***			0.294 ***			0.097 ***	
Output gap			-0.131 ***			-0.186 ***			-0.196 ***			-0.094 ***
Decade 1991-2000	0.276 ***	0.294 ***	0.227 ***	-0.082	-0.049	-0.342 ***	0.460 ***	0.400 ***	0.517 ***	0.484 ***	0.492 ***	0.452 ***
Decade 2001-2006	-0.038	-0.019	-0.270 ***	-0.178 ***	-0.129 *	-0.684 ***	-0.110	-0.185 *	-0.368 **	0.263 ***	0.263 ***	0.173
Observations	496	496	457	156	156	149	128	128	128	212	212	180
R^2	0.910	0.910	0.870	0.870	0.870	0.740	0.920	0.920	0.870	0.890	0.890	0.870
Trend unemployment= Cyclical unemployment [c]		*1.850*			*3.270* *			*4.980* **			*1.370*	

*, **, ***: statistically significant at the 10%, 5% and 1% level, respectively.

a) All regressions contain a full set of country dummies. Robust standard errors are used to assess statistical significance.

b) The three country groupings shown are defined as follows: "Market reliant countries" grouping includes Australia, Canada, Japan, Korea, New Zealand, Switzerland, the United Kingdom and the United States; "other successful countries" grouping includes Austria, Denmark, Ireland, the Netherlands, Norway and Sweden; and "Other OECD countries" grouping includes Belgium, the Czech Republic, Finland, France, Germany, Greece, Italy, Luxembourg, Mexico, Poland, Portugal, the Slovak Republic and Spain.

c) Test for equality between the coefficients of trend and cyclical unemployment (F-statistic).

Source: OECD estimates based on the OECD Labour Market Programmes, OECD Labour Force Statistics and OECD *Economic Outlook* databases.

Table 1.A6.2. **Regression evidence on the responsiveness of labour market programme spending to unemployment in OECD countries, 1985-2006**

OLS estimates of unbalanced panel models of expenditures by programme category[a]

Panel A. **Expenditures as a percentage of GDP**

	PES and Administration		Training		Employment incentives[b]		Integration of disabled		Direct job creation	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
ILO unemployment	0.003 ***		0.012 ***		0.001		0.000		0.002	
Trend unemployment		0.003 ***		0.018 ***		0.001		0.000		-0.001
Cyclical unemployment		0.003 **		-0.002		0.003		0.001		0.009 ***
Decade 1991-2000	0.031 ***	0.031 ***	0.045 ***	0.054 ***	0.045 ***	0.044 ***	0.000	0.000	0.041 ***	0.036 ***
decade 2001-2006	0.045 ***	0.046 ***	0.013	0.024 *	0.042 ***	0.040 ***	0.004	0.004	-0.002	-0.008
Observations	500	500	525	525	495	495	423	423	443	443
R^2	0.860	0.860	0.780	0.790	0.820	0.820	0.920	0.920	0.690	0.690
Trend unemployment= Cyclical unemployment[d]		*0.050*		*20.600* ***		*0.350*		*0.070*		*4.250* **

	Unemployment benefits		Early retirement		Total active spending		Total passive spending		Total spending	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
ILO unemployment	0.154 ***		0.003		0.021 ***		0.154 ***		0.177 ***	
Trend unemployment		0.161 ***		0.005		0.024 ***		0.161 ***		0.188 ***
Cyclical unemployment		0.138 ***		0.000		0.014		0.137 ***		0.152 ***
Decade 1991-2000	0.100 ***	0.111 ***	-0.040 **	-0.039 **	0.162 ***	0.167 ***	0.091 ***	0.101 ***	0.276 ***	0.294 ***
decade 2001-2006	-0.088 **	-0.076 **	-0.071 ***	-0.070 ***	0.081 ***	0.086 ***	-0.118 ***	-0.106 ***	-0.038	-0.019
Observations	524	524	282	282	497	497	527	527	496	496
R^2	0.870	0.870	0.840	0.840	0.867	0.880	0.889	0.900	0.910	0.910
Trend unemployment= Cyclical unemployment[d]		*1.380*		*0.630*		*0.910*		*1.590*		*1.850*

Panel B. **Expenditures per unemployed person**[c]

	PES and Administration		Training		Employment incentives[b]		Integration of disabled		Direct job creation	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
ILO unemployment	-0.007 ***		-0.007 ***		-0.005 ***		-0.009 ***		-0.006 ***	
Trend unemployment		-0.008 ***		-0.005 ***		-0.005 ***		-0.011 ***		-0.007 ***
Cyclical unemployment		-0.005 ***		-0.011 ***		-0.006 ***		-0.005 ***		-0.004 ***
Decade 1991-2000	-0.004	-0.005	-0.004	-0.001	-0.003	-0.003	-0.028 ***	-0.030 ***	0.003	0.001
decade 2001-2006	-0.002	-0.004	-0.014 **	-0.012	-0.005	-0.005	-0.031 ***	-0.034 ***	-0.007	-0.009
Observations	500	500	525	525	495	495	423	423	443	443
R^2	0.690	0.700	0.690	0.700	0.820	0.820	0.680	0.680	0.600	0.600
Trend unemployment= Cyclical unemployment[d]		*3.370* *		*5.990* **		*0.260*		*6.470* **		*2.280*

	Unemployment benefits		Early retirement		Total active spending		Total passive spending		Total spending	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
ILO unemployment	-0.004 *		-0.006 ***		-0.032 ***		-0.010 ***		-0.043 ***	
Trend unemployment		-0.002		-0.007 ***		-0.033 ***		-0.008 ***		-0.041 ***
Cyclical unemployment		-0.007 **		-0.006 ***		-0.032 ***		-0.013 ***		-0.045 ***
Decade 1991-2000	0.005	0.007	-0.064 ***	-0.065 ***	-0.029 *	-0.029 *	-0.021	-0.019	-0.046 *	-0.044
decade 2001-2006	-0.046 ***	-0.043 ***	-0.088 ***	-0.088 ***	-0.056 ***	-0.056 ***	-0.085 ***	-0.083 ***	-0.143 ***	-0.141 ***
Observations	524	524	282	282	497	497	527	527	496	496
R^2	0.860	0.860	0.700	0.700	0.730	0.730	0.850	0.850	0.820	0.820
Trend unemployment= Cyclical unemployment[d]		*1.990*		*0.100*		*0.020*		*1.310*		*0.180*

*, **, ***: statistically significant at the 10%, 5% and 1% level, respectively.

a) All regressions contain a full set of country dummies. Robust standard errors are used to assess statistical significance.

b) Combined expenditures for employment incentives, job rotation and job sharing, and start-up incentives.

c) Expenditures per unemployed person are adjusted for per capita income.

d) Test for equality between the coefficients of trend and cyclical unemployment (F-statistic).

Source: OECD estimates based on the OECD Labour Market Programmes, OECD Labour Force Statistics and OECD Economic Outlook Analytical databases.

ANNEX 1.A7. DYNAMIC LABOUR DEMAND ESTIMATION

The short-term impact of stock subsidies can be assessed by estimating the short-term elasticity of labour demand. The long-term impact of a permanent subsidy in labour-market equilibrium can be assessed by combining estimates of the long-term elasticity of labour demand with plausible values of the labour-supply elasticity. Labour hoarding can be analysed by estimating the speed with which labour demand responds to economic shocks. In order to obtain estimates of the short and long-term labour demand elasticities as well as labour hoarding, the following dynamic specification of conditional labour demand is used:

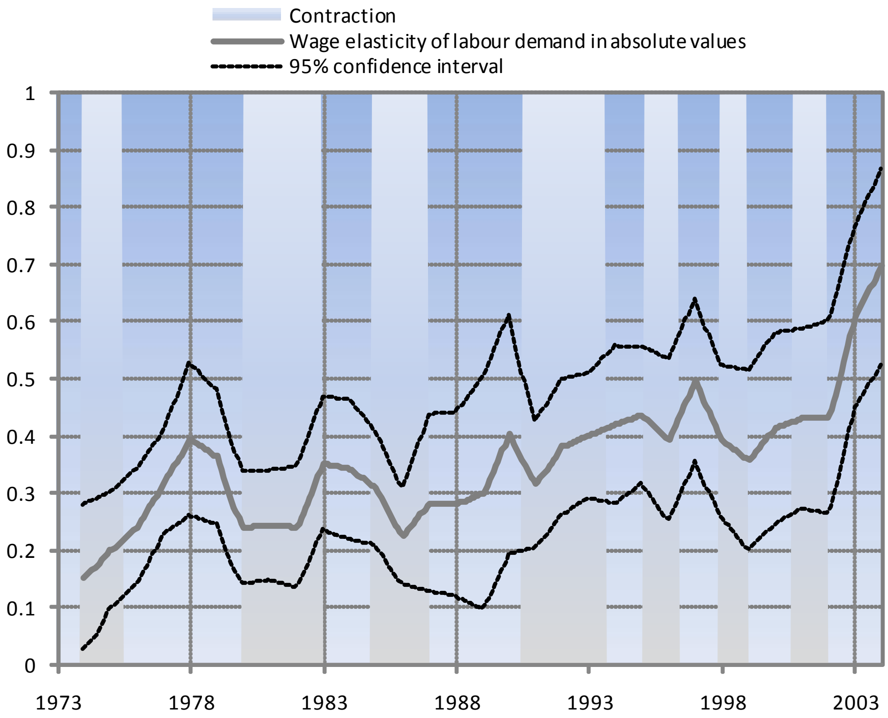
$$\ln L_{it} = \alpha_o + \alpha_1 L_{it-1} + \sum_{j=w,m} \alpha_j \ln w_{ijt} + \sum_{j=w,m} \alpha_{1j} \ln w_{ijt-1} + \sum_{j=k,q} \beta_j \ln x_{ijt} + \sum_{j=k,q} \beta_{1j} \ln x_{ijt-1} + \varepsilon_i \quad (4)$$

where L refers to labour demand in industry-country pair i at time t, w the price of labour and materials, x to the capital stock and output and ε_i to a random error term. Each regression makes use of five years of data.[9] The dynamic model in equation (4) is estimated with fixed-effects and difference GMM. The fixed effects estimates are biased due to the correlation of the (transformed) lagged dependent variable and the random error term (Nickell, 1981). The major advantage of the difference-GMM is that it corrects for this bias, but also tends to be somewhat less precise. The short-term wage elasticity is directly given by the estimated wage coefficient (α_w). In order to calculate the long-term elasticity, one needs to adjust the wage coefficient using the coefficient on the lagged dependent variable (α_1) which represents an (inverse) measure of the speed of adjustment and a direct measure of labour hoarding. The estimates are conducted on a panel of 16 countries, for 11 manufacturing industries for the period 1970-2005. The baseline results that make use of fixed effects are reported in OECD (2009a), the GMM estimates of the short-term elasticity and the lagged dependent variable are reported in Figure 1.A7.1 and Figure 1.A7.2, respectively.

9. For example, data for the period 1980-1984 were used to estimate the elasticity for 1982.

Figure 1.A7.1. **The time-profile of the short-term elasticity of labour demand**

GMM of dynamic labour demand estimates conditional on output[a]



a) Estimates on t-2 to t+2 in manufacturing sector only.

Source: OECD estimates based on EUKLEMS Database.

ANNEX 1.A8. INCOME-SUPPORT MEASURES

Table 1.A8.1. **Net unemployment replacement rates of youth in OECD countries**

Net replacement rates at different points during an unemployment spell, 2007 [a]

	year 1	year 2	year 3	year 4	year 5	5-year average
Norway	72%	72%	72%	72%	72%	72%
Belgium	65%	63%	63%	63%	63%	63%
Austria	59%	58%	58%	58%	58%	58%
Ireland	50%	50%	50%	50%	50%	50%
Denmark	59%	59%	59%	59%	9%	49%
Germany	64%	48%	42%	36%	36%	45%
France	67%	64%	31%	31%	31%	45%
Finland	60%	58%	33%	33%	33%	43%
Australia	42%	42%	42%	42%	42%	42%
Sweden	66%	63%	41%	8%	8%	37%
New Zealand	37%	37%	37%	37%	37%	37%
Iceland	57%	54%	54%	8%	8%	36%
United Kingdom	27%	27%	27%	27%	27%	27%
Switzerland	82%	41%	0%	0%	0%	25%
Spain	62%	25%	25%	9%	2%	25%
Luxembourg	87%	8%	8%	8%	8%	24%
Portugal	79%	24%	3%	3%	3%	23%
Canada	52%	14%	14%	14%	14%	22%
Hungary	43%	13%	13%	13%	13%	19%
Czech Republic	33%	11%	11%	11%	11%	15%
Poland	31%	13%	8%	8%	8%	14%
Turkey	46%	0%	0%	0%	0%	9%
Slovak Republic	32%	3%	3%	3%	3%	9%
Greece	33%	5%	1%	1%	1%	8%
Italy	37%	0%	0%	0%	0%	7%
Netherlands	21%	3%	3%	3%	3%	7%
United States	28%	0%	0%	0%	0%	6%
Japan	17%	3%	3%	3%	3%	5%
Korea	18%	0%	0%	0%	0%	4%
Median	***50%***	***25%***	***14%***	***9%***	***8%***	***25%***

a) Countries are shown in descending order of the overall generosity measure (the 5-year average). Calculations consider cash incomes (excluding, for instance, employer contributions to health or pension insurance for workers and in-kind transfers for the unemployed) as well as income taxes and mandatory social security contributions paid by employees. To focus on the role of unemployment benefits, they assume that no social assistance or housing-related benefits are available as income top-ups for low-income families (covered in Figure 1.19). Any entitlements to severance payments are also not accounted for. Net replacement rates are evaluated for an older worker (aged 59) with a 'long' and uninterrupted employment record. They are averages over 12-months, four different stylised family types (single and one-earner couple, with and without children) and two earnings levels (67% and 100% of average full-time wages). Due to benefit ceilings, net replacement rates are lower for individuals with above-average earnings. See OECD (2007) for full details.

Source: OECD tax-benefit models (www.oecd.org/els/social/workincentives).

Table 1.A8.2. **Net unemployment replacement rates of older workers in OECD countries**

Net replacement rates at different points during an unemployment spell, 2007 [a]

	year 1	year 2	year 3	year 4	year 5	5-year average
Portugal	79%	79%	79%	79%	79%	79%
Belgium	81%	78%	78%	78%	78%	79%
Norway	66%	67%	67%	66%	66%	66%
Denmark	68%	68%	68%	68%	0%	54%
Austria	56%	51%	51%	51%	51%	52%
France	67%	67%	67%	28%	28%	51%
Spain	67%	64%	32%	32%	32%	46%
Netherlands	70%	70%	70%	12%	0%	44%
Finland	55%	55%	55%	25%	25%	43%
Ireland	42%	42%	42%	42%	42%	42%
Germany	59%	48%	34%	28%	25%	39%
Iceland	53%	49%	49%	0%	0%	30%
Switzerland	75%	75%	0%	0%	0%	30%
New Zealand	29%	29%	29%	29%	29%	29%
Sweden	64%	61%	20%	0%	0%	29%
Australia	28%	28%	28%	28%	28%	28%
Luxembourg	85%	42%	0%	0%	0%	25%
United Kingdom	16%	16%	16%	16%	16%	16%
Hungary	42%	8%	3%	3%	3%	11%
Japan	55%	0%	0%	0%	0%	11%
Canada	44%	2%	2%	2%	2%	10%
Italy	47%	0%	0%	0%	0%	9%
Turkey	46%	0%	0%	0%	0%	9%
Czech Republic	45%	0%	0%	0%	0%	9%
Poland	37%	0%	0%	0%	0%	7%
Korea	35%	0%	0%	0%	0%	7%
Greece	30%	4%	0%	0%	0%	7%
Slovak Republic	30%	0%	0%	0%	0%	6%
United States	29%	0%	0%	0%	0%	6%
Median	***53%***	***42%***	***20%***	***3%***	***0%***	***29%***

a) Countries are shown in descending order of the overall generosity measure (the 5-year average). Calculations consider cash incomes (excluding, for instance, employer contributions to health or pension insurance for workers and in-kind transfers for the unemployed) as well as income taxes and mandatory social security contributions paid by employees. To focus on the role of unemployment benefits, they assume that no social assistance or housing-related benefits are available as income top-ups for low-income families (covered in Figure 1.19). Any entitlements to severance payments are also not accounted for. Net replacement rates are evaluated for an older worker (aged 59) with a 'long' and uninterrupted employment record. They are averages over 12-months, four different stylised family types (single and one-earner couple, with and without children) and two earnings levels (67% and 100% of average full-time wages). Due to benefit ceilings, net replacement rates are lower for individuals with above-average earnings. See OECD (2007) for full details.

Source: OECD tax-benefit models (www.oecd.org/els/social/workincentives).

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