Online Appendices for:

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Table A1 Dependent and explanatory variables for 26 OECD countries, 1990-2010

Variable	Measure		*N*	Mean	SD	Source(s)
Dependent variables						
Employment rate (prime working age)	People aged 25-54 in employment as a share of the total population aged 25-54	Total	538	78.33	5.66	OECD (2017a)
		Male	538	86.58	4.27	
		Female	538	70.08	9.41	
Employment rate (working age)	People aged 15-64 in employment as a share of the total population aged 15-64	Total	538	66.40	7.26	OECD (2017a)
		Male	538	73.87	6.29	
		Female	538	58.98	9.54	
Labour market participation rate (prime working age)	People aged 25-54 active on the labour market (employed or formally unemployed) as a share of the total population aged 25-54	Total	538	83.93	4.54	OECD (2017a)
		Male	538	92.31	2.34	
		Female	538	75.56	8.73	
Labour market participation rate (working age)	People aged 15-64 active on the labour market (employed or formally unemployed) as a share of the total population aged 15-64	Total	538	71.97	6.01	OECD (2017a)
		Male	538	79.76	4.83	
		Female	538	64.21	8.49	
Independent variables						
Effort on active labour market policies	Sum of public and mandatory private expenditures on active labour market policies per unemployed as a share of GDP per capita		506	15.71	12.48	OECD (2018) OECD (2017a)
Effort on early childhood policies	Sum of public and mandatory private expenditures on early childhood policies per child aged 0-5 (cf. Adema *et al*. 2011: 92) as a share of GDP per capita		453	12.03	6.96	OECD (2016a); UN DESA (2017)
Effort on services for the elderly and frail	Sum of public and mandatory private expenditures on services for the elderly and frail per adult aged 65 and older as a share of GDP per capita		531	5.01	5.51	OECD (2016a) UN DESA (2017)
Effort on education	Sum of expenditures from public, private and international sources on primary, secondary and tertiary education per student enrolled as a share of GDP per capita		392	24.09	3.76	OECD (2014a) OECD (2014b)
Effort on maternity and parental leave	Sum of public and mandatory private expenditures on maternity and parental leave per child aged 0 as a share of GDP per capita		536	26.99	24.04	OECD (2016a); UN DESA (2017)
Employment protection legislation	Summary indicator of employment protection legislation based on the average of protection for regular contracts (12 indicators) and temporary contracts (6 indicators)		557	1.89	0.88	OECD (2016b) Avdagic (2012)
Tax wedge	Amount of income taxes and social security contributions paid by the average production worker as a share of his gross wage; average of two family situations		532	20.84	7.25	Van Vliet and Caminada (2012)
Unemployment benefits	Net replacement rate of unemployment benefits during the initial phase of unemployment; average of two family situations		529	59.28	14.14	Van Vliet and Caminada (2012)
Union density	Number of trade union members as a share of all wage and salary earners		560	34.74	20.43	Visser (2016)
Wage coordination	Five-point indicator of the coordination of wage setting: 5 = economy wide bargaining by peak associations 4 = mixed economy-wide and industry bargaining 3 = industry bargaining with no or irregular pattern setting 2 = mixed industry and firm-level bargaining		561	2.83	1.37	Visser (2016)

	1 = fragmented bargaining					
Dependent population < 15	Population younger than 15 as a share of the total population		572	17.95	3.25	UN DESA (2017)
Dependent population ≥ 65	Population aged 65 and older as a share of the total population		572	14.62	2.33	UN DESA (2017)
Capital openness	Sum of inward and outward flows of foreign direct investment as a share of GDP		541	6.62	11.74	OECD (2017b)
Trade openness	Sum of exports and imports as a share of GDP		562	83.39	59.18	OECD (2017c)
Real GDP per capita (÷ 1000)	Gross domestic product in 2010 constant PPP US dollar per capita		562	26.15	11.42	OECD (2017c) ; UN DESA (2017)
Shocks in labour demand (× 1000)	The residual obtained when regressing the natural log of total employment on three lags of logged values of total employment, the log of real GDP and the log of real labour costs per employee by country (Nickell *et al*. 2005: 10)	Prime working age	512	0.08	7.80	OECD (2017a)
		Working age	512	0.04	9.17	OECD (2017c)

Table A2 Effort on social investment policies (per recipient as a share of GDP per capita), 1990-2010

	Social-investment oriented active labour market policies per unemployed				Early childhood policies per child aged 0-5				Services for the elderly and frail per person aged ≥ 65				Primary, secondary and tertiary education per student enrolled				Maternity and parental leave per child aged 0			
	1990	2000	2010	Change 1990-2010	1990	2000	2010	Change 1990-2010	1990	2000	2010	Change 1990-2010	1990	2000	2010	Change 1990-2010	1990	2000	2010	Change 1990-2010
Australia	5.2	7.2	8.4	3.1	5.8	7.3	9.9	4.1	5.3	13.6	8.4	3.0	—	17.3	21.9	4.6	0.0	2.4	9.4	9.4
Austria	17.9	26.5	30.6	12.7	4.8	6.5	11.3	6.5	2.4	4.2	5.4	3.0	26.8	27.3	28.3	1.5	38.4	38.7	16.6	–21.8
Belgium	14.4	17.4	13.8	–0.6	7.8	10.6	15.0	7.3	0.2	2.3	3.5	3.4	24.2	21.7	25.4	1.2	13.1	16.6	18.9	5.8
Canada	11.1	8.9	6.4	–4.6	0.8	2.0	3.4	2.6	0.0	0.0	0.0	0.0	27.3	25.1	30.4	3.2	7.8	10.7	24.9	17.1
Czech Republic	5.9	3.2	5.5	–0.4	—	8.3	8.1	–0.1	3.3	4.3	2.0	–1.4	22.8	18.0	22.2	–0.6	30.4	67.9	81.7	51.4
Denmark	16.7	56.4	35.1	18.4	24.6	25.3	31.2	6.6	17.5	17.1	20.6	3.1	29.7	29.4	30.6	0.9	36.1	41.9	47.0	10.9
Estonia	—	1.5	2.6	1.1	—	3.9	6.1	2.2	—	2.7	2.2	–0.5	—	21.5	29.0	7.5	—	51.2	127.5	76.3
Finland	28.0	13.8	19.5	–8.5	17.6	17.7	23.2	5.6	8.3	8.1	11.0	2.8	30.9	22.3	25.1	–5.8	83.0	62.0	62.4	–20.6
France	14.9	15.6	20.7	5.8	19.0	20.2	16.9	–2.1	3.9	2.2	2.8	–1.1	24.3	25.3	27.6	3.3	23.4	29.7	23.9	0.6
Germany	31.0	23.2	22.3	–8.7	10.5	12.5	18.4	8.0	1.3	2.9	2.6	1.3	25.6	23.9	25.7	0.1	24.8	26.5	34.8	10.0
Hungary	11.5	9.4	5.3	–6.2	—	18.9	20.3	1.4	—	5.0	4.5	–0.5	28.9	21.7	19.8	–9.1	—	53.4	79.7	26.3
Ireland	16.9	23.2	9.8	–7.0	3.4	4.8	9.4	6.0	3.7	2.0	5.3	1.6	16.9	16.6	24.8	7.9	5.2	3.5	11.9	6.7
Italy	—	17.7	11.8	–5.9	9.4	10.1	11.7	2.3	0.7	0.8	1.0	0.2	25.2	24.6	25.5	0.4	9.6	13.1	20.3	10.7
Japan	29.0	10.4	8.0	–21.0	12.9	17.2	23.0	10.1	1.6	4.9	7.9	6.3	20.2	24.0	30.0	9.8	6.8	10.8	20.7	13.9
Netherlands	16.0	36.6	21.8	5.8	10.7	9.5	12.6	1.9	3.9	4.6	6.0	2.0	25.0	22.4	26.2	1.2	0.0	0.0	0.0	0.0
New Zealand	18.4	13.7	7.2	–11.2	—	6.9	12.7	5.8	0.9	0.0	0.3	–0.5	—	20.9	23.8	2.9	0.0	0.0	4.9	4.9
Norway	22.5	28.3	23.3	0.8	10.8	14.5	23.3	12.4	13.3	15.5	14.9	1.7	25.8	21.7	23.2	–2.6	26.3	59.7	47.7	21.3
Poland	4.0	2.1	10.2	6.2	—	2.8	9.0	6.2	2.1	0.3	1.6	–0.5	—	19.5	25.2	5.7	20.5	30.8	29.2	8.7
Portugal	17.0	26.6	11.1	–5.9	2.4	6.2	8.2	5.7	0.2	0.3	0.6	0.4	19.8	23.7	25.5	5.7	6.6	10.7	30.9	24.3
Slovakia	7.2	1.8	3.8	–3.4	—	7.7	7.4	–0.4	5.0	5.4	5.2	0.2	—	17.6	20.8	3.2	45.6	63.7	54.9	9.3
Slovenia	—	3.8	10.1	6.3	—	11.1	8.8	–2.2	—	1.8	1.8	0.1	—	26.2	27.4	1.2	—	60.7	67.8	7.1
Spain	9.9	10.2	7.4	–2.5	6.3	11.7	13.2	6.9	1.3	1.6	4.9	3.6	20.8	22.1	26.7	5.9	6.1	13.4	32.2	26.0
Sweden	110.1	45.7	19.6	–90.5	28.8	21.3	28.3	–0.5	8.1	20.7	22.1	14.0	28.8	23.8	24.7	–4.1	73.3	64.2	60.0	–13.3
Switzerland	7.8	21.8	15.1	7.4	3.2	3.7	5.5	2.4	3.2	4.3	4.7	1.5	28.2	27.3	28.7	0.5	6.5	7.5	11.1	4.6
United Kingdom	10.8	7.4	8.8	–1.9	8.9	10.8	19.2	10.2	3.2	4.0	5.9	2.8	19.7	16.1	26.6	7.0	6.7	6.2	12.3	5.6
United States	5.9	5.2	1.9	–4.0	5.2	7.8	8.2	3.0	0.3	0.3	0.2	–0.1	21.3	28.0	29.0	7.7	0.0	0.0	0.0	0.0

Liberal	11.4	10.9	7.1	–4.3	4.8	6.6	10.5	5.6	2.2	3.3	3.4	1.1	21.3	20.7	26.1	4.8	3.3	3.8	10.6	7.3
Conservative	18.7	21.7	18.9	0.2	9.8	11.5	14.7	4.8	2.4	3.6	4.7	2.4	24.9	24.6	27.4	2.5	16.1	18.5	18.0	1.9
Nordic	44.3	36.0	24.4	–19.9	20.5	19.7	26.5	6.0	11.8	15.3	17.2	5.4	28.8	24.3	25.9	–2.9	54.7	57.0	54.3	–0.4
Mediterranean	13.4	18.2	10.1	–3.3	6.0	9.3	11.0	5.0	0.7	0.9	2.2	1.4	21.9	23.5	25.9	4.0	7.4	12.4	27.8	20.3
Central and Eastern European	7.1	3.6	6.2	–0.9	—	8.8	10.0	1.2	3.5	3.2	2.9	–0.6	25.8	20.7	24.1	–1.8	32.2	54.6	73.5	41.3
Overall mean	18.8	16.8	13.1	–5.7	10.2	10.7	14.0	3.9	3.9	5.0	5.6	1.7	24.6	22.6	25.9	1.3	20.4	28.7	35.8	15.4
Standard deviation	21.3	13.8	8.6	–12.7	7.6	6.2	7.3	–0.2	4.3	5.6	5.8	1.5	3.9	3.6	2.9	–1.0	22.6	24.4	30.2	7.6
Coefficient of variation	1.1	0.8	0.7	–0.5	0.7	0.6	0.5	–0.2	1.1	1.1	1.0	–0.1	0.2	0.2	0.1	–0.1	1.1	0.9	0.8	–0.3

Notes: For some countries data are around 1990 or 2000:
AUS and SVK 1990 refer to 1994; CZE 1990 refers to 1993; EST and SVN 2000 refer to 2003; HUN and POL 1990 refer to 1992; ITA 2000 refers to 2004; CHE 1990 refers to 1991; AUS, BEL, CHE 1990 refer to 1991; CZE and POL 2000 refer to 1997; EST, HUN and SVK 2000 refer to 1999; DEU 1990 refers to 1993; NZL 2000 refers to 1998; SVN 2000 refers to 1996 CZE 1990 refers to 1995; EST and HUN 2000 refer to 1999; SVK 1990 refers to 1995; SVN 2000 refers to 1996; EST and HUN 2000 refer to 1999; SVK 2000 refers to 1995; SVN 2000 refers to 1996 AUS, NZL and POL 2000 refer to 1997; CAN and CZE 1990 refer to 1994; EST and SVN 2000 refer to 2005; DEU 1990 refers to 1995; HUN, PRT and CHE 1990 refer to 1991; SVK 2000 refers to 1999.

Source: OECD Labour Market Programmes Database, OECD Social Expenditure Database, OECD Education and Training Database and own calculations.

Figure A1 Employment and social investment, 1990-2010

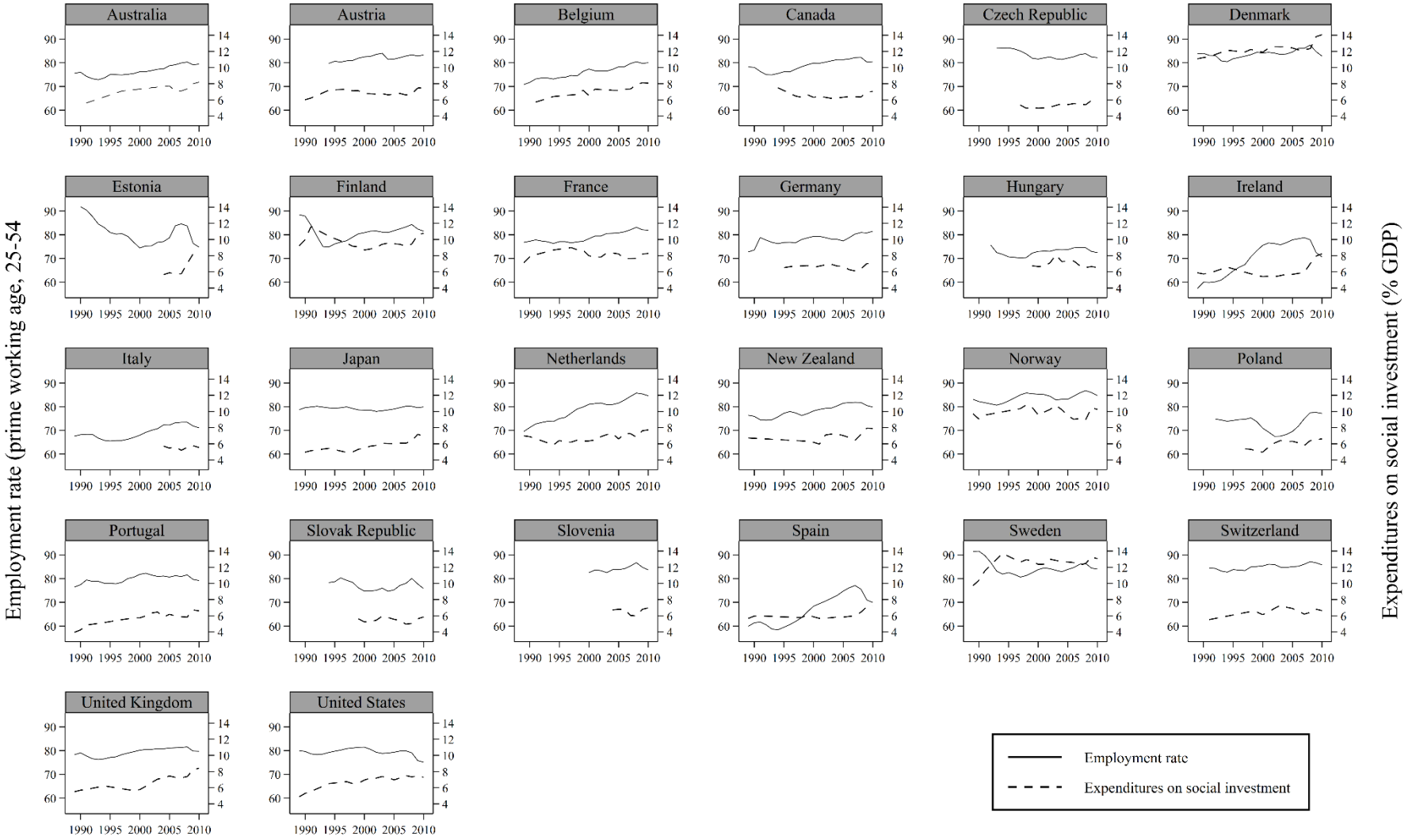
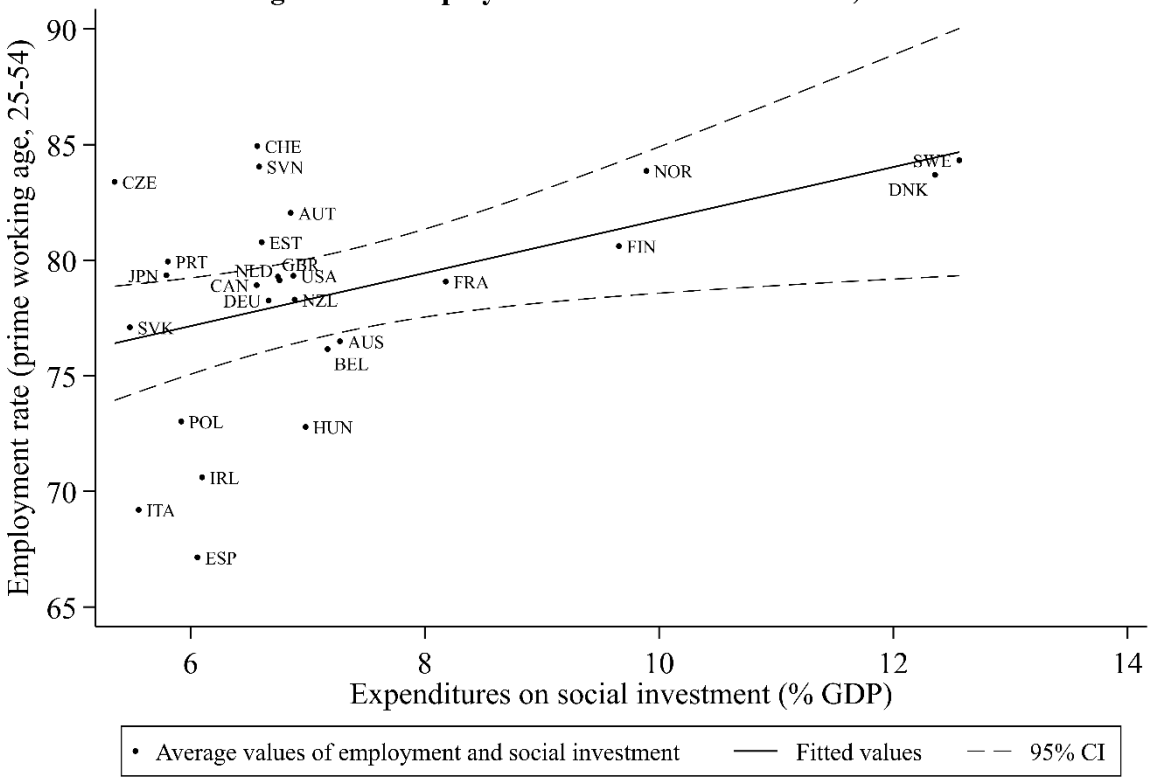


Figure A2 Employment and social investment, 1990-2010



Appendix 1: Diagnostic tests

An *F*-test suggests that the inclusion of country fixed effects better suits the data than simply pooling all data ($F = 46.65$, $p < 0.01$). A Breusch-Pagan LM test for random effects rejects the null hypothesis that the variance across panels is zero ($X^2 = 594.16$, $p < 0.01$), therefore preferring the use of random effects over simply pooling. A Hausman test, nevertheless, indicates that specifying a random effects model is likely to yield inconsistent coefficients ($X^2 = 46.86$, $p < 0.01$). The fixed effects model is hence the preferred specification. An *F*-test suggests that the additional inclusion of year fixed effects significantly improves the model ($F = 2.79$, $p < 0.01$). Therefore, our preferred model includes country fixed effects to address omitted variables bias and cross-sectional heterogeneity of the intercepts as well as time fixed effects to account for unobserved time-varying shocks that affect all countries similarly. Put differently, our within estimator focuses on variation within countries while controlling for common temporal shocks.

Several tests indicate that the data exhibits heteroscedasticity and serial correlation.[1] The use of panel-corrected standard errors (PCSE) constitutes a conventional estimation technique commonly used to address simultaneous spatial correlation of the errors and panel heteroscedasticity (Beck and Katz, 1995). To correct for autocorrelation and to produce serially independent errors, the error term $\varepsilon_{i,t}$ is allowed to follow an AR(1) process, which specifies that there is first order autocorrelation within the panels. Specifying the AR(1) process, known as Prais-Winsten transformation, was preferred to the incorporation of a lagged dependent variable to address autocorrelation, because that (i) may obscure the relationship between the independent variables of substantive interest and the dependent variable by suppressing the power of other independent variables, (ii) may in combination with the inclusion of unit fixed effects lead to a Nickell (1981) bias given the relatively small *T*, and (iii) may overestimate the effect of the independent variables given the relatively high autoregressive parameter obtained for the error term (Wilkins, 2017).

[1] A Wald test for groupwise heteroscedasticity ($X^2 = 4598.00$, $p < 0.01$) and Breusch-Pagan test for heteroscedasticity ($X^2 = 16.99$, $p < 0.01$) both indicate the presence of heteroscedasticity. In addition, Wooldridge's test for autocorrelation indicates the presence of first-order serial correlation ($F = 71.52$, $p < 0.01$). A modified Bhargava, Franzini and Narendranathan (1982) Durbin-Watson test for serial correlation in the model with unit and time fixed effects derives the same conclusion as the obtained value ($DW_{BFN} = 0.405$) is outside the lower and upper bounds of the critical values that can be used to test against the alternative of positive autocorrelation. See, however, Born and Breitung (2016) for the limitations of these tests. A Cumby-Huizinga test for multiple orders of autocorrelation with strictly exogenous regressors robust to heteroscedasticity even indicates the presence of serial correlation up to two lags ($X^2 = 49.87$, $p < 0.01$, $X^2 = 24.83$, $p < 0.01$) when including both unit and time fixed effects.

Due to the focus on short-term effects, one year lags are used for all variables, except for shocks in labour demand, because it captures shocks that follow from regressing employment on its own lags. The use of one year lags can also be justified by the assumption that policy, institutional and socioeconomic changes need some time to take effect and reveal themselves through changes in the (dependent) variable that is affected. Moreover, lags are also commonly used to mitigate simultaneity (endogeneity) or reverse causality bias (see for a discussion: Reed, 2015; Bellemare *et al*., 2017).

In addition to our within estimator using two-way fixed effects, we also employ a first-difference estimator. This specification uses first differences for all variables. It is otherwise equal to the model specified in levels, except that it does not include fixed effects, because the first-difference estimator instantly realises within estimation, and excludes shocks in labour demand, because this variable is expressed as a deviation from the statistically predicted level of employment and can therefore not be specified in first-differences.

Appendix 2: sensitivity analyses using fewer variables and tests for multicollinearity

In Table A3 we present the result obtained when building up our preferred model specified in levels step-by-step. We start by including our control variables and country and year fixed effects only. As expected, the results indicate that taxes on labour are negatively associated with employment rates. This corresponds with the idea that taxes discourage employment. GDP per capita, shocks in labour demand and trade openness are all positively correlated with employment. We also obtain a positive estimate for the aged population. These results are not affected by the inclusion of social investment policies in subsequent models, although some of these models yield negative estimates for the young population. This suggests that prime age workers quit work to care for children.

In models 2-6 we augment the previous model with effort on one social investment policy at a time. Except for union density (model 5) and the youth population (models 4 and 5) this leaves our control variables unaffected. Model 7 concerns our preferred model in which we include all five social investment policies simultaneously. It shows that the estimates obtained for services for the elderly and frail and education are contingent on the inclusion of other social investment policies: the negative coefficient for effort on education is no longer statistically significant, whereas the negative estimate obtained for effort on services for the elderly and frail in model 2 becomes positive. The change in sign is not caused by the loss of observations when including additional variables. Instead, it could point at the presence of multicollinearity.

The change of signs for some of the coefficients presented in Table A3 caused by the inclusion of additional variables could possibly point at the presence of multicollinearity amongst the different covariates. A conventional method to test for the multicollinearity is the VIF test. Since the use of fixed effects usually generates very large VIF scores due to correlation amongst these dummies, we ran the VIF test after our basic model without country and time fixed effects. Although different rules of thump exist, multicollinearity is generally understood to be a problem if VIF scores are above 10. For our preferred model without fixed effects all VIF scores are below 5.

As an alternative test we computed a variance-covariance matrix to examine the correlation of the coefficients obtained through our preferred model (including country and time fixed effects). Amongst our main explanatory variables, effort on the five social investment policies, we obtain some correlation coefficients higher than 0.4. Effort on social investment-oriented ALMPs is moderately correlated with both effort on services for the elderly and frail (r = 0.55) and effort on early childhood policies (r = –0.42). For none of the

Table A3 Regressions of employment and effort on social investment policies *including* one policy at a time, 1990-2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Effort on social investment policies							
Active labour market policies$_{t-1}$		0.11***					0.13***
		(0.01)					(0.01)
Early childhood policies$_{t-1}$			0.01				–0.04
			(0.04)				(0.04)
Services for the elderly and frail$_{t-1}$				–0.20***			0.17**
				(0.04)			(0.07)
Education$_{t-1}$					–0.08*		–0.05
					(0.04)		(0.05)
Maternity and parental leave$_{t-1}$						–0.02*	–0.03**
						(0.01)	(0.01)
Labour market institutions							
Employment protection legislation$_{t-1}$	0.46	–0.18	0.47	0.25	0.51	0.44	–0.05
	(0.34)	(0.36)	(0.31)	(0.35)	(0.32)	(0.34)	(0.44)
Tax wedge$_{t-1}$	–0.12***	–0.11***	–0.10***	–0.13***	–0.10**	–0.13***	–0.12***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)
Unemployment benefits$_{t-1}$	–0.01	–0.02	0.01	–0.02	0.02	–0.01	–0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Trade union density$_{t-1}$	0.04	0.04	0.05	0.04	0.08**	0.04	0.07**
	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)
Coordination of wage bargaining$_{t-1}$	0.16	0.14	0.16	0.16	0.18	0.16	0.20
	(0.11)	(0.11)	(0.12)	(0.11)	(0.14)	(0.11)	(0.14)
Socioeconomic factors							
Dependent population < 15$_{t-1}$	–0.13	–0.19	–0.55***	–0.09	–0.58***	–0.15	–0.71***
	(0.16)	(0.16)	(0.16)	(0.17)	(0.19)	(0.16)	(0.14)
Dependent population ≥ 65$_{t-1}$	0.87***	0.75***	0.68***	0.84***	0.61**	0.87***	0.54***
	(0.20)	(0.18)	(0.22)	(0.20)	(0.26)	(0.20)	(0.20)
Capital openness$_{t-1}$	0.01	0.00	0.00	0.00	0.00	0.01	–0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Trade openess$_{t-1}$	0.02***	0.02***	0.02**	0.02***	0.02***	0.02**	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Real GDP per capita$_{t-1}$	0.39***	0.34***	0.36***	0.36***	0.33***	0.38***	0.28***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.08)	(0.06)	(0.07)
Shocks in labour demand	38.61***	39.53***	34.13***	37.82***	35.74***	36.84***	34.87***
	(6.49)	(6.75)	(7.68)	(6.60)	(10.10)	(6.58)	(10.36)
Constant	62.63***	65.79***	73.61***	64.91***	74.86***	63.29***	78.53***
	(5.73)	(5.81)	(5.76)	(5.83)	(7.23)	(5.61)	(6.06)
Number of observations	483	463	410	479	357	479	339
Adjusted *R*-squared	0.981	0.984	0.987	0.981	0.990	0.981	0.991
Rho	0.685	0.684	0.668	0.679	0.683	0.685	0.622

Notes: All models include country and year fixed effects (not presented here); panel-corrected standard errors in parentheses; * $p < 0.1$, * $p < 0.05$, *** $p < 0.01$

coefficients for effort on social investment policies we obtain a correlation coefficient higher than 0.4 with our control variables, except for the effort on education and real GDP per capita ($r = 0.45$). Even though our control variables capture rather similar things like labour market

institutions and socioeconomic conditions, we obtain correlation coefficients higher than 0.4 between only a couple of the coefficients: the young population and old population ($r = 0.55$), the young population and real GDP per capita ($r = 0.40$), the old population and real GDP per capita ($r = 0.70$), and trade openness and shocks in labour demand ($r = 0.41$). Last, we tested the joint significance of effort on the five social investment policies. Whenever the significance level of individual coefficient estimates may be biased as a result of multicollinearity, this approach can be employed to examine the significance of a group of variables by testing the hypothesis that none of the collinear variables has a coefficient that differs from zero (Allison, 1998). This test rejects the null-hypothesis of no effect ($X^2 = 186.08$, $p < 0.01$), which means that the joint effect of our social investment variables on the employment rate is significantly different from zero.

In addition to the various tests to detect the presence of multicollinearity, we also estimated a couple of models with fewer variables. In contrast to including one social investment policy at a time we exclude one policy at a time in Table A4. This shows that the positive effects obtained for social investment-oriented ALMPs and services for the elderly and frail are relatively robust to the exclusion of other social investment policies. Only when effort on ALMPs is excluded, we obtain a negative estimate for services for the elderly and frail. Likewise, the negative estimate for education is only found when excluding maternity and parental leave.

Subsequently, we also estimated our preferred model without time fixed effects (model 2 of Table A5). In comparison to our preferred specification (model 1) this leaves the coefficient estimates for our social investment variables unaffected. Only the corresponding significance levels are affected, whereby the negative estimate for effort on education becomes statistically significant. Models 3 and 4 present our preferred model after removing non-significant control variables twice. In comparison to models 1 and 2 the results are similar, except that we no longer obtain significant estimates for services for the elderly and frail. The positive estimate for effort on ALMPs is, however, replicated. The same holds for the negative estimate for effort on maternity and parental leave. Finally, models 5 and 6 are similar to models 3 and 4, except for the fact that they only include the two social investment policies that figure most prominently in the literature: ALMPs and ECEC. The positive association between effort on social-investment oriented ALMPs is again replicated. We obtain a negative estimate for effort on early childhood policies when excluding time fixed effects. In this model the negative association for the tax wedge is no longer statistically significant.

Table A4 Regressions of employment and effort on social investment policies ex*cluding* one policy at a time, 1990-2010

	(1)	(2)	(3)	(4)	(5)	(6)
Effort on social investment policies						
Active labour market policies$_{t-1}$		0.13***	0.12***	0.12***	0.13***	0.13***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Early childhood policies$_{t-1}$	0.04		–0.01	–0.04	–0.04	–0.04
	(0.04)		(0.04)	(0.03)	(0.05)	(0.04)
Services for the elderly and frail$_{t-1}$	–0.22***	0.15**		0.14**	0.18***	0.17**
	(0.06)	(0.07)		(0.06)	(0.07)	(0.07)
Education$_{t-1}$	–0.05	–0.07	–0.05		–0.10**	–0.05
	(0.05)	(0.05)	(0.05)		(0.05)	(0.05)
Maternity and parental leave$_{t-1}$	–0.03*	–0.03**	–0.03**	–0.03**		–0.03**
	(0.01)	(0.01)	(0.01)	(0.01)		(0.01)
Labour market institutions						
Employment protection legislation$_{t-1}$	0.09	–0.13	–0.22	0.02	0.05	–0.05
	(0.38)	(0.43)	(0.44)	(0.35)	(0.43)	(0.44)
Tax wedge$_{t-1}$	–0.12***	–0.12***	–0.11***	–0.11***	–0.11***	–0.12***
	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
Unemployment benefits$_{t-1}$	0.01	–0.00	–0.01	–0.01	–0.00	–0.00
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
Trade union density$_{t-1}$	0.07*	0.08**	0.05	0.06*	0.07*	0.07**
	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
Coordination of wage bargaining$_{t-1}$	0.21	0.20	0.16	0.14	0.19	0.20
	(0.14)	(0.14)	(0.13)	(0.12)	(0.13)	(0.14)
Socioeconomic factors						
Dependent population < 15$_{t-1}$	–0.54***	–0.70***	–0.65***	–0.64***	–0.72***	–0.71***
	(0.17)	(0.15)	(0.16)	(0.14)	(0.15)	(0.14)
Dependent population ≥ 65$_{t-1}$	0.53*	0.52***	0.49**	0.59***	0.55***	0.54***
	(0.27)	(0.19)	(0.21)	(0.19)	(0.21)	(0.20)
Capital openness$_{t-1}$	–0.00	0.00	–0.00	0.00	–0.00	–0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Trade openness$_{t-1}$	0.02**	0.02**	0.01**	0.02**	0.02***	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Real GDP per capita$_{t-1}$	0.28***	0.28***	0.26***	0.31***	0.29***	0.28***
	(0.08)	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)
Shocks in labour demand	32.60***	35.93***	33.09***	35.02***	36.24***	34.87***
	(10.41)	(9.85)	(9.97)	(7.88)	(10.65)	(10.36)
Constant	78.92***	78.38***	80.68***	75.52***	78.67***	78.53***
	(7.02)	(5.92)	(5.97)	(5.58)	(6.40)	(6.06)
Number of observations	350	344	339	395	339	339
Adjusted *R*-squared	0.990	0.991	0.992	0.989	0.991	0.991
Rho	0.661	0.631	0.665	0.654	0.631	0.622

Notes: All regression include country and year fixed effects (not presented here); panel-corrected standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A5 Regressions of employment and effort on social investment policies using less explanatory variables, 1990-2010

	(1)	(2)	(3)	(4)	(5)	(6)
Effort on social investment policies						
Active labour market policies$_{t-1}$	0.13***	0.14***	0.12***	0.13***	0.10***	0.12***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Early childhood policies$_{t-1}$	–0.04	–0.07	–0.02	–0.07	–0.03	–0.14**
	(0.04)	(0.05)	(0.04)	(0.05)	(0.03)	(0.05)
Services for the elderly and frail$_{t-1}$	0.17**	0.11*	0.10	0.07		
	(0.07)	(0.07)	(0.07)	(0.08)		
Education$_{t-1}$	–0.05	–0.14**	–0.08	–0.17***		
	(0.05)	(0.06)	(0.05)	(0.07)		
Maternity and parental leave$_{t-1}$	–0.03**	–0.04***	–0.04***	–0.04***		
	(0.01)	(0.01)	(0.01)	(0.02)		
Labour market institutions						
Employment protection legislation$_{t-1}$	–0.05	–0.15				
	(0.44)	(0.46)				
Tax wedge$_{t-1}$	–0.12***	–0.13***	–0.10***	–0.10***	–0.09***	–0.05
	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)
Unemployment benefits$_{t-1}$	–0.00	0.01				
	(0.02)	(0.03)				
Trade union density$_{t-1}$	0.07**	0.09*				
	(0.03)	(0.05)				
Coordination of wage bargaining$_{t-1}$	0.20	0.32*				
	(0.14)	(0.17)				
Socioeconomic factors						
Dependent population < 15$_{t-1}$	–0.71***	–0.78***	–0.69***	–0.68***	–0.61***	–0.52***
	(0.14)	(0.16)	(0.15)	(0.17)	(0.16)	(0.20)
Dependent population ≥ 65$_{t-1}$	0.54***	0.12	0.39*	0.16	0.43**	0.04
	(0.20)	(0.14)	(0.21)	(0.16)	(0.20)	(0.18)
Capital openness$_{t-1}$	–0.00	0.00				
	(0.01)	(0.01)				
Trade openness$_{t-1}$	0.02**	0.02				
	(0.01)	(0.01)				
Real GDP per capita$_{t-1}$	0.28***	0.14***	0.22***	0.14***	0.26***	0.19***
	(0.07)	(0.05)	(0.07)	(0.05)	(0.06)	(0.05)
Shocks in labour demand	34.87***	50.19***	32.27***	45.67***	34.93***	47.95***
	(10.36)	(14.31)	(9.95)	(15.50)	(8.12)	(13.69)
Constant	78.53***	87.59***	83.45***	89.23***	80.76***	82.90***
	(6.06)	(5.58)	(5.97)	(5.70)	(5.70)	(6.20)
Number of observations	339	339	341	341	397	397
Adjusted *R*-squared	0.991	0.990	0.990	0.986	0.988	0.980
Rho	0.622	0.634	0.565	0.520	0.602	0.534
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	No	Yes	No	Yes	No

Notes: Panel-corrected standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix 3: Sensitivity analyses using different operationalisations of effort on social investment policies

To test the robustness of our results several subsequent analyses have been conducted in which slightly different indicators are used for some of the variables (Table A6). In order to facilitate comparison of the results obtained from the different models, the first column of Table A6 presents our preferred model. The second column presents the results we obtained when using only public expenditures (instead of the sum of public and mandatory private expenditures) for all social investment variables except for effort on education (as this would result in a major loss of observations). This excludes social programmes stipulated by legislation but operated through the private sectors such as payments by employers to sick employees as well as maternity and parental leave benefits and services financed by employers (Adema *et al*., 2011). Such programmes are however not very prevalent for the countries and period studied here. It is therefore not surprising that all results are replicated. In model 3 we include the sum of all active labour market programmes instead of only those programmes that reflect social investment aspects. This does not affect the estimates of our preferred model. In model 4 we use our original indicator of effort on ALMPs, but distinguish between the two categories 'upskilling' (training) and 'employment assistance' described by Bonoli (2010). Our results show that both training and employment assistance are positively associated with employment. In addition, none of our estimates – apart from the centralisation of wage bargaining – are affected.

In model 5 we use a more inclusive definition of services for the elderly and frail, which also includes incapacity related expenditures on rehabilitation services. Originally we did not consider such services social investments, because they are focused on 'repairing' personal damages instead of 'preparing' individuals for new social risks. Nevertheless, these services do prepare and support people to participate on the labour market again by mobilising and preserving skills and human capital, which would qualify them as social investment following the definition of Garritzmann *et al*. (2017). Again, our results are replicated. When using a more exclusive definition of early childhood policies that covers ECEC only (cf. Hemerijck *et al*., 2016), we obtain identical results (model 6). In model 7 we examined the effect of using an alternative indicator for effort on education. In order to model the long-term returns of education we follow Nelson and Stephens (2012) and use cumulative average effort on education, calculated by dividing the cumulative sum of yearly expenditures per student over

period t_n by the number of years n that constitute period t_n.[2] The negative coefficient for effort on education is now statistically significant. In model 8 we estimated separate effects for effort on primary, secondary and tertiary education.[3] The impact on our results is limited. None of the other social investment policies are affected. Regarding the separate indicators for the different levels of education we obtain negative coefficient estimates, but none of them are statistically significant.

So far we have estimated the employment effects of investments in human capital through effort on education, operationalised as expenditures per student as a share of GDP per capita. As has been noted, the positive effects of education are likely to materialise over the life-course. It is therefore not surprising that we do not find any positive effects for education within the year following the (change in) effort. A better indicator might be educational attainment. This captures the quality of the 'stock' of human capital given previous efforts on education, both monetarily and regulatory. In columns 9 to 11 we therefore estimate our preferred model using educational attainment instead of effort on education (cf. Nelson and Stephens, 2012).[4] Data on educational attainment by 5-year age group is from Barro and Lee (2013). This series is available at five year intervals over the period 1950-2010. Attainment in intermediate years was estimated using linear interpolation. In line with our dependent variable, we measure educational attainment for the population aged 25-54 specifically. In model 9 we operationalise educational attainment as the number of people aged 25-54 that have *attained* at least primary education as a share of the total population aged 25-54. Model 10 uses the share of people that attained higher education (secondary and tertiary education), whereas model 11 uses a slightly modified operationalisation that measures the number of people aged 25-54 that *completed* primary, secondary or tertiary education as a share of the total population aged 25-54. For our three indicators of educational attainment we obtain positive estimates, which are

[2] Note that our use of *effort* deviates from Nelson and Stephens (2012), who simply focus on cumulative average *expenditures*. Also note that this results in a loss of nine observations.

[3] This leads to an additional loss of fourteen observations as disaggregated expenditure data for education are available for fewer years.

[4] In their analysis Nelson and Stephens (2012) operationalise educational attainment as the average years of education of the population above 25 available from Barro and Lee (2001). Theoretically they "expect the investment variables [cumulative average expenditures on ALMPs, public education and ECEC; all as a percentage of GDP] to operate entirely through their effect on human capital stock [average years of education]", so that the former are not significant when including both the investment variables and stock variable in the regression analysis. Nonetheless, they state that "given the deficiencies of our stock variables, average years of education, this might not be the case" (Nelson and Stephens, 2012: 214). When including their stock variable instead of the spending variables in model 4, Nelson and Stephens obtain a positive and statistically significant coefficient for average years of education. In their fifth model, which includes all these variables at the same time, they no longer find a statistically significant effect for expenditures on education, whilst they obtain a statistically significant, positive effect for educational attainment. As they briefly suggested beforehand, the positive estimates for spending on ALMPs and ECEC remain (*ibid*: 220).

Table A6 Robustness checks of regressions of employment and effort on social investment policies using different operationalisations, 1990-2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Effort on social investment policies														
Active labour market policies$_{t-1}$	0.13***	**0.13*** **	**0.09*** **		0.13***	0.13***	0.12***	0.13***	0.11***	0.12***	0.12***	0.12***	0.10***	**0.11*** **
	(0.01)	**(0.01)**	**(0.01)**		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	**(0.02)**
Training$_{t-1}$				**0.05** **										
				(0.03)										
Employment assistance$_{t-1}$				**0.21*** **										
				(0.02)										
Early childhood policies$_{t-1}$	–0.04	**–0.04**	–0.02	–0.04	–0.03	**–0.01**	–0.03	–0.01	–0.02	–0.04	–0.02	–0.07	**0.01**	**–0.03**
	(0.04)	**(0.04)**	(0.04)	(0.04)	(0.04)	**(0.07)**	(0.04)	(0.05)	(0.03)	(0.03)	(0.03)	(0.05)	**(0.05)**	**(0.04)**
Services for the elderly and frail$_{t-1}$	0.17**	**0.17** **	0.14**	0.17**	**0.17** **	0.16**	0.15**	0.16*	0.10*	0.15**	0.13**	0.11*	0.11	**0.23** **
	(0.07)	**(0.07)**	(0.07)	(0.07)	**(0.07)**	(0.07)	(0.07)	(0.08)	(0.05)	(0.06)	(0.06)	(0.06)	(0.12)	**(0.10)**
Education$_{t-1}$	–0.05	–0.05	–0.08	–0.03	–0.05	–0.06						0.02	**–0.13** **	**–0.13* **
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)						(0.05)	**(0.06)**	**(0.07)**
Primary$_{t-1}$								**–0.05**						
								(0.04)						
Secondary$_{t-1}$								**–0.04**						
								(0.03)						
Tertiary$_{t-1}$								**–0.00**						
								(0.03)						
Education (cumulative averages)$_{t-1}$							**–0.09*** **							
							(0.03)							
Educational attainment$_{t-1}$									**0.34*** **	**0.06*** **	**0.19*** **			
									(0.08)	**(0.02)**	**(0.05)**			
Maternity and parental leave$_{t-1}$	–0.03**	**–0.03** **	–0.03**	–0.03**	–0.03**	–0.03**	–0.04***	–0.03**	–0.04***	–0.03**	–0.03**		–0.05***	**–0.05*** **
	(0.01)	**(0.01)**	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)		(0.02)	**(0.01)**
Generosity of maternity and parental leave (institutional)$_{t-1}$												**–0.01**		
												(0.01)		
Labour market institutions														
Employment protection legislation$_{t-1}$	–0.05	–0.04	–0.17	–0.01	–0.10	–0.10	0.25	0.30	0.17	0.22	0.17	0.15	1.49**	1.50***
	(0.44)	(0.44)	(0.49)	(0.45)	(0.43)	(0.45)	(0.41)	(0.48)	(0.34)	(0.36)	(0.36)	(0.52)	(0.58)	(0.55)
Tax wedge$_{t-1}$	–0.12***	–0.12***	–0.11***	–0.13***	–0.12***	–0.12***	–0.11***	–0.13***	–0.11***	–0.12***	–0.11***	0.01	–0.12**	–0.11**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.03)	(0.03)	(0.05)	(0.06)	(0.05)
Unemployment benefits$_{t-1}$	–0.00	–0.00	0.01	–0.01	–0.00	–0.00	–0.04	–0.02	0.00	–0.01	–0.01	–0.02	–0.04	–0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)

Trade union density$_{t-1}$	0.07**	0.07**	0.07**	0.07**	0.06*	0.07**	0.06**	0.07*	0.02	0.05	0.04	–0.06	0.06	0.10**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.05)	(0.04)	(0.04)
Coordination of wage bargaining$_{t-1}$	0.20	0.20	0.19	0.24*	0.20	0.20	0.16	0.19	0.07	0.13	0.10	0.36***	0.54***	0.57***
	(0.14)	(0.14)	(0.13)	(0.14)	(0.14)	(0.14)	(0.14)	(0.15)	(0.11)	(0.12)	(0.11)	(0.12)	(0.17)	(0.17)
Socioeconomic factors														
Dependent population < 15$_{t-1}$	–0.71***	–0.71***	–0.78***	–0.65***	–0.71***	–0.71***	–0.61***	–0.76***	–0.34**	–0.55***	–0.41**	–0.77***	–0.30	–0.09
	(0.14)	(0.14)	(0.16)	(0.14)	(0.14)	(0.14)	(0.15)	(0.21)	(0.17)	(0.15)	(0.17)	(0.19)	(0.21)	(0.21)
Dependent population ≥ 65$_{t-1}$	0.54***	0.54***	0.41*	0.67***	0.53***	0.51***	0.43**	0.49*	0.54***	0.55***	0.52***	0.51**	0.54**	0.67***
	(0.20)	(0.20)	(0.21)	(0.22)	(0.20)	(0.20)	(0.20)	(0.26)	(0.20)	(0.19)	(0.19)	(0.24)	(0.22)	(0.21)
Capital openness$_{t-1}$	–0.00	–0.00	–0.00	–0.00	–0.00	–0.00	–0.00	–0.00	0.00	0.00	0.00	–0.00	–0.00	–0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Trade openness$_{t-1}$	0.02**	0.02**	0.01**	0.02**	0.02**	0.02**	0.01*	0.02	0.02**	0.01**	0.02**	0.05***	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Real GDP per capita$_{t-1}$	0.28***	0.28***	0.26***	0.29***	0.29***	0.28***	0.28***	0.26***	0.32***	0.31***	0.33***	0.32***	0.06	0.13**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.10)	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)
Shocks in labour demand	34.87***	34.78***	33.40***	33.90***	35.03***	34.76***	34.94***	35.47***	32.63***	34.95***	33.52***	34.83***	37.25***	42.21***
	(10.36)	(10.37)	(10.10)	(10.53)	(10.41)	(10.33)	(10.34)	(13.34)	(7.80)	(7.82)	(7.78)	(12.00)	(11.84)	(11.96)
Constant	78.53***	78.62***	82.08***	75.36***	78.74***	79.02***	81.72***	81.42***	36.84***	69.18***	53.98***	79.59***	75.76***	62.78***
	(6.06)	(6.05)	(6.10)	(6.41)	(5.96)	(5.99)	(5.48)	(8.68)	(11.33)	(6.04)	(9.09)	(7.39)	(7.20)	(6.73)
Number of observations	339	339	339	339	339	339	330	316	395	395	395	281	278	293
Adjusted *R*-squared	0.991	0.991	0.992	0.991	0.991	0.991	0.991	0.990	0.990	0.989	0.990	0.993	0.989	0.988
Rho	0.622	0.622	0.656	0.579	0.623	0.618	0.622	0.608	0.671	0.656	0.670	0.624	0.464	0.458

Notes: All regression include country and year fixed effects (not presented here); panel-corrected standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

statistically significant. This at least seems to suggest that higher quality stocks of human capital as a result of (historical) efforts on education are associated with higher employment levels. Moreover, replacing effort on education by indicators on educational attainment leaves all other coefficient estimates unaffected except for trade union density, which is no longer statistically significant.

In model 12 we use a different indicator for effort on maternity and parental leave that captures more of the institutional characteristics instead of effort in terms of expenditures per recipient corrected for GDP per capita. For this indicator, effort is operationalised as the sum of the number of weeks of maternity and parental leave, both weighted by level of cash benefits received during this period of leave as a percentage of the female average production worker wage available from Gauthier (2011). Note that these data are not available for the six Central and Eastern European countries, which entails a loss of 58 observations in comparison to the preferred model. When using this indicator we also obtain a negative coefficient for maternity and parental leave, but it is not statistically significant. Few other variables are affected.

Due to the introduction of a new international classification of education (ISCED 1997), there is a break in the series of expenditures on pre-primary education (effort on early childhood education) and primary to tertiary education (effort on education) between 1997 and 1998. When excluding observations from before 1998, entailing a loss of 61 observations, we obtain slightly different results (model 13). Only for effort on ALMPs the positive correlation is replicated, whereas the negative correlation for effort on education is now statistically significant as well. Model 14 relies exclusively on public expenditures for all social investment policies, including education. It is therefore very comparable to Model 2 but includes 46 fewer observations, because expenditures on education are distinguished by source since the introduction of ISCED 1997 only. Although we found that the use of public expenditures instead of the sum of public and mandatory private expenditures for effort on the other social investment policies did not affect our results, we could expect different outcomes when using public expenditures for effort on education. Whilst public investments in education guarantee universal access to education, large private expenditures often limit access to (higher) education to those families that can afford it, thereby increasing educational inequalities (Iversen and Stephens, 2008; Busemeyer, 2015). Weisstanner and Armingeon (2018) and Huber *et al.* (2020) for instance find that public spending on education reduces wage differentials between high and low-educated workers, whereas private spending on education increases them. The results for model 14 are highly similar to the results obtained for our preferred model presented in the first column. The only difference concerns the statistical

significance of effort on education. We now find a statistically significant negative association between *public* effort on primary to tertiary education and employment of the population of prime working age. This result could, however, also be the result of the substantially lower number of observations in this model: the observations included in model 14 are largely the same as those included in model 13 for which we obtain highly similar results.

Although the slightly different operationalisations of our main independent variables lead to slightly different outcomes, our estimates for the five social investment policies seem quite robust. The signs are always in the same direction, except when replacing effort on education by variables measuring educational attainment. When relying on these measures we obtain estimates that are in line with the theoretical expectations outlined above. When we rely on models purely capturing effort on the social investment policies the positive estimate for effort on social investment oriented ALMPs is always replicated. In addition, only in a model with substantially lower numbers of observations (model 13) we fail to find a statistically significant estimate for effort on services for the elderly and frail. Estimates for effort on early childhood policies are never statistically significant, whereas the negative estimate for effort on maternity and parental leave is also always replicated in these cases.

Appendix 4: Sensitivity analyses using additional independent variables

In order to check the robustness of our preferred model for omitted variable bias, we estimated the model again including additional variables. For convenience we present our preferred model in the first column of Table A7 again.

In the second, third and fourth column we present the results obtained when augmenting our preferred model with our indicators of educational attainment. We follow Nelson and Stephens (2012: 214) who include both attainment and their 'human capital investment' variables in their final model and "expect the investment variables to operate entirely through their effect on human capital stock and thus not to be significant in this equation". Our estimates for educational attainment are positive and statistically significant in all these models. This is in line with the results from Nelson and Stephens (2012). Besides, the additional inclusion of these variables does not affect the results obtained through our preferred model, except in model 2 where the negative coefficient for effort on education is just statistically significant. This might seem surprising as one might expect the effect of some of the social investment policies to run through better stocks of human capital. Nevertheless, these findings are also in line with Nelson and Stephens (2012) who attribute the fact that their investment variables remain statistically significant to the deficiencies of their stock variable. At the same time, their findings and the findings presented here could also suggest that some of the social investment policies have a direct effect on employment and additionally affect employment through their effect on the quality of human capital over the longer run.

In models 5 and 6 we augment our preferred model with policies that have sometimes been classified as social investments. Some scholars have for instance grouped family allowances under social investment (e.g. Nikolai, 2012; Kvist, 2013). Since family allowances concern a mere cash transfer, we did not include them in our preferred model, but when including effort on family allowances in model 2 our results are replicated (column 2).[5] The coefficient itself is negative and statistically significant. This negative association is likely to follow from the lump-sum character of family allowances and the income effect associated with that (Jaumotte, 2003).

Since rehabilitation services are likely to affect the productive potential of individuals they could also be considered social investment (e.g. Garritzmann *et al.*, 2017). In addition to using a more encompassing definition of services for the elderly and frail that includes

[5] Effort on family allowances has been operationalised as the sum of public and mandatory private expenditures on family allowances corrected for the number of eligible children based on age and educational attainment, relative to GDP per capita.

rehabilitation services for the incapacitated (model 5 in Table A6) we therefore also conduct an analysis in which effort on rehabilitation services is included separately. Model 3 presents the results obtained when including a separate variable for rehabilitation services targeted at the sick, disabled, injured and unemployed.[6] Again, our results are replicated. The coefficient for the variable itself is positive, but not statistically significant.

Although elements of active labour market programmes concerned with availability and job-search conditions and sanctions are generally not considered social investment (Bonoli, 2010; Garritzmann *et al*., 2017), it has been argued that such eligibility criteria and sanctions (or 'incentive reinforcement', Bonoli, 2010) are effective in activating jobseekers. Recently, a dataset on unemployment conditionality and sanctions has become available (Knotz and Nelson, 2015), which makes it possible to examine the role of activation measures in relation to employment. Despite the fact that such elements are more likely to affect unemployment rather than employment and, additionally, are not considered social investment we decided to include them in one of our models as we do not yet know of any comparative analyses using the newly available data. Currently, Knotz and Nelson (2015) only provide three average scores related to unemployment benefit conditions and sanctions (see for more details: Knotz, 2018). When using an unweighted mean of scores on availability requirements, job-search and reporting requirements, and sanctions rules, we find that stricter eligibility criteria and sanctions are associated with lower employment (not presented here). This could suggest that these criteria lead some jobseekers to prefer inactivity over unemployment, thereby leading to a lower job finding rate and hence less employment. While the positive estimate for ALMPs is replicated, several other variables are affected by the inclusion of this variable. Effort on services for the elderly and frail and maternity and parental leave are no longer statistically significant, whereas we suddenly obtain a statistically significant, negative, estimate for effort on early childhood policies.

Last, we also estimated a model augmented with the net replacement rate of minimum income benefits (Wang and Van Vliet, 2016; Van Vliet and Wang, 2019). Although these benefits clearly constitute passive, compensatory benefits, the European Commission has grouped them under social investment as benefits aimed at the prevention of social and labour

[6] We operationalise effort on rehabilitation services as follows. Expenditures on rehabilitation services consists of expenditures on incapacity-related rehabilitation services from the SOCX database and expenditures on labour market programmes concered with sheltered and supported employment and rehabilitation of the OECD Labour Market Programmes database. We correct these expenditures for the number of unemployed given a lack of adequate data for people incapacitated due to illness, disability or injury. Subsequently, the amount of expenditures per recipient are related to GDP per capita.

market exclusion (e.g. Bouget *et al*., 2015; cf. Kuitto, 2016). As with unemployment benefits, generous minimum income benefits might induce people to prefer welfare over work, thereby leading to lower employment. Nevertheless, we do not obtain a statistically significant coefficient for this variable. Except for the lack of statistical significance for effort on maternity and parental leave, all results are replicated by this model (not presented here).

Table A7 Regressions of employment and effort on social investment policies additional explanatory variables, 1990-2010

	(1)	(2)	(3)	(4)	(5)	(6)
Effort on social investment policies						
Active labour market policies$_{t-1}$	0.13***	0.12***	0.13***	0.13***	0.13***	0.12***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Rehabilitation policies$_{t-1}$						**0.02**
						(0.02)
Early childhood policies$_{t-1}$	–0.04	–0.00	–0.03	–0.01	–0.06	–0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Services for the elderly and frail$_{t-1}$	0.17**	0.13*	0.19**	0.17**	0.19**	0.18**
	(0.07)	(0.08)	(0.07)	(0.07)	(0.08)	(0.07)
Education$_{t-1}$	–0.05	–0.08*	–0.04	–0.07	–0.06	–0.05
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Educational attainment$_{t-1}$		**0.36*** **	**0.09*** **	**0.21*** **		
		(0.08)	**(0.02)**	**(0.05)**		
Family allowances$_{t-1}$					**–0.40*** **	
					(0.12)	
Maternity and parental leave$_{t-1}$	–0.03**	–0.03**	–0.03**	–0.03**	–0.03**	–0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Labour market institutions						
Employment protection legislation$_{t-1}$	–0.05	0.18	0.18	0.11	0.09	–0.11
	(0.44)	(0.46)	(0.46)	(0.46)	(0.44)	(0.47)
Tax wedge$_{t-1}$	–0.12***	–0.12***	–0.13***	–0.12***	–0.14***	–0.12***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Unemployment benefits$_{t-1}$	–0.00	0.01	–0.01	–0.01	0.00	–0.00
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
Trade union density$_{t-1}$	0.07**	0.02	0.06*	0.04	0.08**	0.07**
	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)
Coordination of wage bargaining$_{t-1}$	0.20	0.11	0.21	0.16	0.10	0.21
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Socioeconomic factors						
Dependent population < 15$_{t-1}$	–0.71***	–0.40**	–0.58***	–0.47***	–0.96***	–0.75***
	(0.14)	(0.17)	(0.16)	(0.18)	(0.15)	(0.15)
Dependent population ≥ 65$_{t-1}$	0.54***	0.51**	0.50**	0.49**	0.46**	0.50**
	(0.20)	(0.20)	(0.20)	(0.21)	(0.23)	(0.21)
Capital openess$_{t-1}$	–0.00	–0.00	–0.00	–0.00	–0.00	–0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Trade openness$_{t-1}$	0.02**	0.02**	0.02**	0.02**	0.02**	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Real GDP per capita$_{t-1}$	0.28***	0.29***	0.29***	0.31***	0.23***	0.28***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Shocks in labour demand	34.87***	31.98***	35.19***	33.30***	31.88***	34.64***
	(10.36)	(10.76)	(10.41)	(10.73)	(11.14)	(10.36)
Constant	78.53***	38.15***	69.51***	55.27***	88.26***	79.83***
	(6.06)	(11.09)	(7.01)	(9.45)	(6.71)	(6.15)
Number of observations	339	339	339	339	333	339
Adjusted *R*-squared	0.991	0.992	0.991	0.991	0.992	0.992
Rho	0.622	0.622	0.610	0.612	0.642	0.630

Notes: All regression include country and year fixed effects (not presented here); panel-corrected standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix 5: Sensitivity analyses using different analysis techniques

In order to try and focus on longer time horizons relevant for some of the social investment policies, we also estimate dynamic models. We estimate error-correction models (ECM), which are able to capture short-term transitory effects and long-term structural effects (De Boef and Keele, 2008).[7] Given their wide application following the publication by De Boef and Keele, particularly in the field of comparative political economy, ECMs have been scrutinised in recent years (e.g. Grant and Lebo, 2016; Enns *et al*., 2017), amongst others with regard to the issue of unbalanced equations and their application to stationary data and dependent variables bound between an upper and lower limit such as the employment rate studied here. According to Lebo and Grant (2016) boundedness should not lead one to conclude stationarity. Instead, they suggest decision-making should be based on testing of the data using unit root tests and estimates of the order of integration. Such tests are, however, often inconclusive as they have size distortions and low power in small samples. Moreover, results of these tests are affected by the choices analysts make with regard to the presence of deterministic trends, the number of lags to consider as well as the appropriate significance levels (e.g. Choi, 2015). Besides, testing is even more complicated for bounded time series (Cavaliere and Xu, 2014).

The ambiguity associated with these tests is also reflected by our data. The Im-Pesaran-Shin unit root test for unbalanced panels suggests that the employment rate contains a unit root in all panels ($\overline{z_{\tilde{t}}}$ = 0.58; p = 0.72), even when including a linear trend ($\overline{z_{\tilde{t}}}$ = –0.90; p = 0.18). Only when using an average lag length of 0.69 in the ADF regressions following the Akaike information criterion (AIC) the null-hypothesis cannot be rejected, meaning that at least some panels are stationary ($\overline{w_t}$ = –2.19; p = 0.01). If series are non-stationary Lebo and Grant (2016) argue that analysts should closely examine equation balance in order to determine whether the estimation of an ECM is appropriate. Philips (2018) elaborates on the solutions suggested by Lebo and Grant (2016) by using the bounds testing procedure developed by Pesaran *et al*. (2001). This procedure helps analysts to test the existence of a long run relationship between the dependent variable and a set of regressors when one is certain that the dependent variable is a unit root but uncertain about the dynamic properties of the regressors. This procedure hence requires analysts to establish first whether the dependent variable is non-stationary, by using "a suite of unit root tests and account for the possibility of periodicity, drift, and deterministic trends" (Philips, 2018: 232). However, it does not describe what to do if one is uncertain

[7] De Boef and Keele (2008) show that the first-differenced model essentially concerns a restricted version of the general ECM.

whether the dependent variable is stationary or not. Given the uncertainty about the properties of our dependent variable, the framework by Philips (2018) is therefore not entirely satisfactory.

Recently, Webb *et al*. (2019) provided an alternative approach that analysts can employ to test for the existence of long run relationships between y_t and x_t when there is uncertainty about the dynamic properties of *all* variables, including the dependent variable. Their approach builds on the bounds testing procedure proposed by Pesaran *et al*. (2001) and enables one to test for cointegration between the dependent variable and weakly exogenous regressors using the long run multiplier (LRM). When implementing the procedure described in Webb *et al*. (2019) we cannot reject the null hypothesis of no long run cointegration relationship for all variables, regardless of the dynamic properties of both the dependent variable and the regressors. This leads us to conclude that the ECM is suited for our analysis. We estimate our error correction model according to the following equation:

$$\Delta y_{i,t} = \alpha_0 + \alpha_1 y_{i,t-1} + \sum_j \beta_0 \Delta x_{j,i,t} + \sum_j \beta_1 x_{j,i,t-1} + \varepsilon_{i,t} \quad (3)$$

Unlike in our time-series cross-section regressions we do not include country and year fixed effects because of the Nickell (1981) bias this would introduce in our model due to the inclusion of the lagged dependent variable and our relatively short time series ($T = 20$) vis-à-vis the cross-sectional dimension ($N = 26$). Nevertheless, we do apply PCSE and incorporate an AR(1) component for the error term. We impose some restrictions by estimating only long-term effects for variables that rarely change (EPL and the coordination of wage bargaining). We estimate our preferred model with and without shocks in labour demand, because we believe that the way in which this variable was calculated, amongst others by regressing current employment levels on its own lags, might interfere with the model specification chosen here.[8] We present our results in a similar manner as Webb *et al.* (2019), whereby the first column of Table A8 presents the coefficients obtained for the lagged independent variables, column two the coefficients for the short-term transitory effects, column three the long-run multiplier $\left(\frac{\beta_1}{-\alpha_1}\right)$ and hence long-term structural effects, and column four the *t*-statistics for the LRM used to

[8] Note that estimating the regression in error-correction form entails a substantial loss of observations. This is mainly because for several countries the time series are characterised by gaps in the (early) 1990s due to a lack of expenditure data on education. Whilst such gaps involve a loss of just a single observation in the time-series cross-section regressions, they entail a loss of two observations given the specification of variables in differences (instead of levels) in the error-correction model.

determine whether there is a long run relationship between the regressor and our dependent variable.

The results obtained using error-correction models are quite similar to those obtained from our time-series cross-section regressions. There are minor differences between the first model and the second model, which includes our variable capturing shocks in labour demand. Effort on ALMPs is positively associated with employment, both in the short and long term. In line with previous results we also obtain positive signs for the association between effort on services for the elderly and frail and employment in the short run. However, when controlling for shocks in labour demand the corresponding coefficient is not statistically significant. Despite the positive short-term association, the effort on this policy seems to be negatively correlated to employment rates in the long run.

For effort on early childhood policies we obtain positive coefficient estimates as well, although these are statistically not distinguishable from zero in the short run. While short run labour market effects associated with effort on this policy are likely to follow from parents' ability to reconcile work and family, positive long run effects might reflect the benefits that follow from early childhood development. Scholars have for instance found that children participating in early childhood education and care programmes develop cognitive skills that result in better outcomes during adolescence and adulthood in terms of educational attainment and labour market participation (e.g. Heckman, 2000; Havnes and Mogstad, 2011).

For effort on education we obtain negative coefficient estimates, both in the short and long run. The negative short term association is, however, not statistically significant when we do not control for shocks in labour demand. Still, this negative long-run effect is surprising. It might be related to the kind of education that governments invest in. Hanushek *et al*. (2017) for instance find that while investments in vocational (as opposed to general) education have a positive effect on school-to-work transitions and thereby stimulate youth employment, they entail trade-offs. They show that these benefits in terms of increased youth employment are offset by decreased adaptability and hence lower levels of employment following technological change. Unfortunately our data do not enable us to test whether this mechanism might apply, because expenditures cannot be distinguished between general and vocational education. Further, the negative estimates could follow from the use of effort on education as well. As has been argued above, educational attainment might constitute a better indicator. When we replace effort on education by the share of people aged 25-54 that attained at least primary education we obtain positive long-term effects for effort on ALMPs as well as services for the elderly and frail, early childhood policies and educational attainment itself, but we obtain no statistically

significant estimates with regard to short-term effects of policies related to education (not presented here).

As for effort on education, we obtain negative coefficients for effort on maternity and parental leave. Note that the negative short-term association is not statistically significant when we do not control for shocks in labour demand. This negative long-term effect probably relates to the negative effects associated with long leave policies discussed above.

Table A8 Regressions of changes in employment and effort on social investment policies, 1990-2010

	(1)				(2)			
	$x_{i,t-1}$	$\Delta x_{i,t}$	LRM $x_{i,t}$	LRM t-statistic	$x_{i,t-1}$	$\Delta x_{i,t}$	LRM $x_{i,t}$	LRM t-statistic
Employment rate (prime working age)	–0.06**				–0.07***			
	(0.03)				(0.02)			
Effort on social investment policies								
Active labour market policies	0.01*	0.11***	0.14	20.18	0.01	0.07***	0.11	20.24
	(0.01)	(0.02)	(0.01)	(Beyond)	(0.01)	(0.01)	(0.01)	(Beyond)
Services for the elderly and frail	–0.01	0.17*	–0.11	–4.25	–0.01	0.08	–0.08	–4.55
	(0.02)	(0.10)	(0.03)	(Beyond)	(0.02)	(0.08)	(0.02)	(Beyond)
Early childhood policies	0.03	0.03	0.39	13.18	0.01	0.05	0.23	12.28
	(0.03)	(0.05)	(0.03)	(Beyond)	(0.02)	(0.03)	(0.02)	(Beyond)
Education	–0.04*	–0.02	–0.65	–16.97	–0.06***	–0.05**	–0.86	–27.31
	(0.02)	(0.04)	(0.04)	(Beyond)	(0.02)	(0.02)	(0.03)	(Beyond)
Maternity and parental leave	–0.02***	–0.01	–0.24	–23.58	–0.01**	–0.02**	–0.15	–24.30
	(0.01)	(0.01)	(0.01)	(Beyond)	(0.00)	(0.01)	(0.01)	(Beyond)
Labour market institutions								
Employment protection legislation	0.10		1.60	14.59	0.02		0.32	4.93
	(0.09)		(0.11)	(Beyond)	(0.06)		(0.06)	(Beyond)
Tax wedge	0.02	0.01	0.28	11.36	0.02*	0.02	0.33	20.20
	(0.02)	(0.04)	(0.02)	(Beyond)	(0.01)	(0.02)	(0.02)	(Beyond)
Unemployment benefits	0.01	–0.01	0.14	16.40	0.01*	0.01	0.13	30.49
	(0.01)	(0.03)	(0.01)	(Beyond)	(0.00)	(0.02)	(0.00)	(Beyond)
Trade union density	0.01	–0.03	0.11	20.27	0.01	–0.02	0.09	20.72
	(0.01)	(0.09)	(0.01)	(Beyond)	(0.00)	(0.05)	(0.00)	(Beyond)
Coordination of wage bargaining	–0.20**		–3.05	–35.11	–0.18**		–2.69	–43.18
	(0.08)		(0.09)	(Beyond)	(0.07)		(0.06)	(Beyond)
Socioeconomic factors								
Dependent population < 15	–0.06	–0.25	–0.90	–14.65	–0.04	0.10	–0.61	–16.70
	(0.05)	(1.04)	(0.06)	(Beyond)	(0.03)	(0.61)	(0.04)	(Beyond)
Dependent population ≥ 65	0.02	0.21	0.38	9.47	0.03	0.80*	0.39	9.71
	(0.04)	(0.87)	(0.04)	(Beyond)	(0.04)	(0.47)	(0.04)	(Beyond)
Capital openess	–0.00	–0.00	–0.06	–12.60	–0.00	–0.00	–0.03	–10.69
	(0.00)	(0.01)	(0.00)	(Beyond)	(0.00)	(0.00)	(0.00)	(Beyond)
Trade openness	0.00**	0.02**	0.08	24.76	0.00***	0.02***	0.07	41.72
	(0.00)	(0.01)	(0.00)	(Beyond)	(0.00)	(0.01)	(0.00)	(Beyond)

Real GDP per capita	0.01**	0.51***	0.23	23.72	0.02	0.36***	0.25	25.50
	(0.01)	(0.07)	(0.01)	(Beyond)	(0.01)	(0.05)	(0.01)	(Beyond)
Shocks in labour demand					69.48***			
					(5.13)			
Constant	4.72*				5.00***			
	(2.42)				(1.75)			
Number of observations	285				285			
Adjusted *R*-squared	0.554				0.751			
Rho	0.249				0.450			

Notes: The long-run multiplier (LRM), LRM standard errors and LRM *t*-statistics are all estimated using the delta method and Bewley instrumental variables regressions. The *t*-statistics are reported as "Below" when $|t| < 1.00$, "Between" when $1.00 < |t| < 3.55$, and "Beyond" when $|t| > 3.55$ based on the critical values presented in Table 6 of Webb *et al*. (2019: 14). Panel-corrected standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix 6: Expanding the dependent variables in terms of gender, age and type of labour market participation

Hitherto we have exclusively focused on employment outcomes for the entire population of prime working age. There is however a vast literature that describes that labour supply elasticities of men and women are different (see for an overview and meta-analysis: Evers *et al*., 2008). Besides, social investment might yield different effects with regard to male and female employment as well. In columns 2 and 3 of Table A9 we have therefore estimated our preferred model again using the male and female population of prime working age as dependent variables. In comparison to the model for the entire population this shows that the positive correlation between employment and effort on services for the elderly and frail holds for the female population of prime working age whereas male employment rates are not associated with effort on this policy. This makes sense given that women are usually the ones providing care to elderly and frail relatives. We obtain statistically significant, negative coefficient estimates for effort on education and maternity and parental leave in relation to male employment only. These results are puzzling. There seems to be no reason to believe that any effects with regard to education differ between men and women. Besides, maternity and parental leave predominantly affect the female population, which makes it surprising to find a statistically significant coefficient for the male population only, unless cash benefits received by the mother are so generous that they allow male spouses to remain at home as well.

With regard to the control variables, the results obtained for female employment are similar to those obtained for the overall employment rate. With regard to male employment the tax wedge, aged and young dependent population, trade openness and real GDP per capita are no longer statistically significant. This is probably the result of lower variation in male employment rates over time. Moreover, since men tend to be the main breadwinners of the household and not the main providers of care, they can be expected to be less sensitive in changes in the tax wedge and the size of the aged and young population.

In addition to replicating our preferred model we also examined the policy complementarity of all possible interactions using employment rates for the male and female population of prime working age. Our results, summarised in Table A10 below, are very comparable to the results obtained for the entire population of prime working age, summarised in Table 3.

Table A9 Regressions of employment and effort on social investment policies, 1990-2010

	Prime working age (25-54)			*Working age (15-64)*		
	(1)	(2) ♂	(3) ♀	(4)	(5) ♂	(6) ♀
Effort on social investment policies						
Active labour market policies$_{t-1}$	0.13***	0.10***	0.17***	0.15***	0.13***	0.17***
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Services for the elderly and frail$_{t-1}$	0.17**	0.09	0.23**	0.21***	0.18*	0.19**
	(0.07)	(0.11)	(0.09)	(0.07)	(0.10)	(0.08)
Early childhood policies$_{t-1}$	–0.04	–0.05	–0.01	–0.07	–0.07	–0.04
	(0.04)	(0.05)	(0.07)	(0.05)	(0.05)	(0.06)
Education$_{t-1}$	–0.05	–0.17**	0.05	–0.06	–0.14**	0.02
	(0.05)	(0.07)	(0.06)	(0.05)	(0.07)	(0.06)
Maternity and parental leave$_{t-1}$	–0.03**	–0.05**	–0.02	–0.02*	–0.03**	–0.01
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)
Labour market institutions						
Employment protection legislation$_{t-1}$	–0.05	0.58	–0.55	–0.38	0.01	–0.66
	(0.44)	(0.47)	(0.62)	(0.41)	(0.43)	(0.53)
Tax wedge$_{t-1}$	–0.12***	–0.06	–0.17***	–0.11***	–0.07	–0.13***
	(0.04)	(0.06)	(0.04)	(0.03)	(0.06)	(0.03)
Unemployment benefits$_{t-1}$	–0.00	–0.02	0.01	0.01	0.01	0.01
	(0.02)	(0.04)	(0.03)	(0.02)	(0.03)	(0.03)
Trade union density$_{t-1}$	0.07**	–0.12**	0.24***	0.06*	–0.08*	0.18***
	(0.03)	(0.05)	(0.06)	(0.03)	(0.04)	(0.05)
Coordination of wage bargaining$_{t-1}$	0.20	0.23	0.12	0.19	0.21	0.03
	(0.14)	(0.27)	(0.26)	(0.15)	(0.26)	(0.21)
Socioeconomic factors						
Dependent population < 15$_{t-1}$	–0.71***	–0.35	–1.00***	–0.52***	–0.41	–0.57**
	(0.14)	(0.29)	(0.23)	(0.14)	(0.27)	(0.22)
Dependent population ≥ 65$_{t-1}$	0.54***	0.01	0.99***	1.04***	0.71***	1.31***
	(0.20)	(0.25)	(0.28)	(0.22)	(0.26)	(0.28)
Capital openess$_{t-1}$	–0.00	0.00	–0.00	–0.00	0.00	–0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Trade openness$_{t-1}$	0.02**	0.01	0.03*	0.02**	0.01	0.02
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Real GDP per capita$_{t-1}$	0.28***	0.10	0.44***	0.37***	0.24**	0.48***
	(0.07)	(0.12)	(0.08)	(0.07)	(0.11)	(0.08)
Shocks in labour demand	34.87***	33.54**	35.11***	26.68***	29.16***	23.27***
	(10.36)	(15.93)	(9.14)	(8.28)	(10.46)	(7.63)
Constant	78.53***	100.17***	57.79***	60.36***	78.84***	41.89***
	(6.06)	(9.83)	(8.21)	(6.22)	(9.53)	(7.37)
Number of observations	339	339	339	339	339	339
Adjusted *R*-squared	0.991	0.992	0.982	0.988	0.990	0.982
Rho	0.622	0.590	0.675	0.579	0.610	0.656

Notes: All regression include country and year fixed effects (not presented here); panel-corrected standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In columns 4-6 we have estimated similar models that refer to the population of working age (15-64) instead of prime working age (24-54). The models are identical to those in columns 1-3, except that shocks in labour demand relate to shocks in demand for the population of working age specifically. The coefficient estimates obtained for these models very closely resemble the estimates obtained for the population of prime working age. For the male population we now obtain statistically significant, positive estimates for effort on services for the elderly, the aged population and real GDP per capita. It could be that men do provide care to frail relatives (e.g. their spouses) at higher ages (55-64) as a result of which the coefficient turns statistically significant when focusing on the population of working age. For the female population of working age we fail to obtain a statistically significant estimate for trade openness.

Instead of focusing on employment rates, we also ran regressions using labour market participation rates. The numerator used to calculate labour market participation rates is different from the numerator used to calculate employment rates as it includes both those people that are employed and those officially unemployed but looking for a job.[9] Labour market participation is hence broader then employment. We consider this distinction relevant because social investment policies might stimulate labour market participation, but do not necessarily have to result in employment increases if the increased supply of labour is not matched with higher levels of demand. When estimating regression models of labour market participation rates for the total, male and female population of prime working age and working age (not presented here), we find that social investment oriented ALMPs are the only social investment correlated with higher participation rates. Put differently, higher effort on ALMPs is associated with higher labour market participation, but for the other policies we fail to find statistically significant effects.

[9] The denominator is in both cases the population of (prime) working age.

Table A10 Interaction effects for effort on social investment policies

Statistically significant interaction effects	Interaction effects that are not statistically significant because the marginal effect …	
	… does not change significantly	… is never distinguishable from zero
Male population of prime working age		
ALMPs × early childhood policies	ALMPs × education	Early childhood policies × maternity and parental leave
ALMPs × services for the elderly and frail	ALMPs × maternity and parental leave	Services for the elderly and frail × education
Early childhood policies × services for the elderly and frail	Early childhood policies × education	Services for the elderly and frail × maternity and parental leave
	Education × maternity and parental leave	
Female population of prime working age		
ALMPs × services for the elderly and frail	ALMPs × early childhood policies	Early childhood policies × education
Early childhood policies × services for the elderly and frail	ALMPs × education	Early childhood policies × maternity and parental leave
	ALMPs × maternity and parental leave	Education × maternity and parental leave
	Services for the elderly and frail × education	
	Services for the elderly and frail × maternity and parental leave	

Notes: All marginal effects plots are computed using 95% confidence intervals;
Interaction effects are considered statistically significant if the marginal effect is distinguishable from zero for at least some values of the moderating policy *and* if the change in marginal effect over the range of the moderating variable is statistically significant;
For several interactions we find that the marginal effect is distinguishable from zero for all or some values of the moderating policy, but they do not meet the latter condition and are therefore not statistically significant because the upper (lower) confidence interval of the marginal effect at low values of the moderating variable overlaps with the lower (upper) confidence interval at high values of the moderating variable.

Additional references only listed in the appendices

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