Supplement to "Life-cycle and intergenerational effects of child care reforms"

(*Quantitative Economics*, Vol. 9, No. 2, July 2018, 659–706)

Marc K. Chan
Faculty of Business and Economics, University of Melbourne

Kai Liu
Faculty of Economics, University of Cambridge, Department of Economics,
Norwegian School of Economics, and IZA

Appendix Table A.1. Cohort and age composition of analysis sample.[a]

Cohort/ Age	Calendar Year												
	1993	1994	1995	1996	1997	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
						Low-education women							
1974	19	20	21	22	23	**24**	**25**	**26**	**27**				
1975		19	20	21	22	**23**	**24**	**25**	**26**	**27**			
1976			19	20	21	**22**	**23**	**24**	**25**	**26**	**27**		
1977				19	20	**21**	**22**	**23**	**24**	**25**	**26**	**27**	
1978					19	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
						High-education women							
1970	23	24	25	26	27	**28**	**29**	**30**	**31**				
1971		23	24	25	26	**27**	**28**	**29**	**30**	**31**			
1972			23	24	25	**26**	**27**	**28**	**29**	**30**	**31**		
1973				23	24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	
1974					23	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**

[a]The number in cells indicates the age of the woman. Boldface indicates the post-cash-for-care reform environment.

Marc K. Chan: marc.chan@unimelb.edu.au
Kai Liu: kai.liu@econ.cam.ac.uk

APPENDIX TABLE A.2. Comparing characteristics across different samples.[a]

Variables	Sample 1	Sample 2 (+Unstable Family)	Sample 3 (+Unstable Family and Pre-Marital Birth)
Years of education	13.650	13.609	13.545
Work between 1 and 4 years after child birth	0.637	0.627	0.593
Mother's age at first birth	27.948	27.711	27.489
Increase in sample size (relative to previous sample)	–	1.07	1.14

[a]Sample 1 includes both low-education and high-education women. Sample 2 adds to sample 1 by including mothers who ever gave birth to a child by 2010, whose biological father is different from the father of her previous child. Sample 3 adds to sample 2 by including single mothers.

APPENDIX TABLE A.3. Simulated effective tax rate by family size, year 12.

Variable	Number of Children 0	1	2	3	All
Low-Education Women:					
Proportion of individuals (%)	21.07	35.93	37.23	5.77	100.00
PDV gross earnings (1000 NOK)[a]	724.88	673.75	659.19	605.95	675.19
	(412.97)	(357.43)	(295.99)	(236.66)	(344.34)
PDV net government benefits (1000 NOK)[a]	−198.20	−88.25	36.11	154.18	−51.13
	(117.77)	(109.47)	(101.86)	(85.41)	(147.75)
Effective tax rate (%)[a,b]	26.88	4.20	−16.65	−36.05	−1.34
	(1.34)	(27.58)	(35.92)	(35.31)	(34.15)
High-Education Women:					
Proportion of individuals (%)	12.73	23.26	50.80	13.21	100.00
PDV gross earnings (1000 NOK)[a]	990.12	969.12	955.18	884.50	953.53
	(545.97)	(476.68)	(396.74)	(310.34)	(429.33)
PDV net government benefits (1000 NOK)[a]	−286.90	−188.60	−59.57	76.96	−100.50
	(170.68)	(157.95)	(146.97)	(127.06)	(183.99)
Effective tax rate (%)[a,b]	28.23	13.72	−1.04	−14.97	4.17
	(1.81)	(19.22)	(26.46)	(24.91)	(26.11)

[a]From year 1 to year 12. Unweighted averages across individuals are reported. Standard deviations are in parentheses.

[b]An individual's effective tax rate is computed as the negative of her PDV net government benefit divided by her PDV gross earnings.

APPENDIX TABLE A.4. Reading score regression: children of low-education mothers, additional specifications.[a]

Dependent Variable: Ln(Reading Score)	(1)	(2)	(3)	(4)
Years of "non-maternal informal care" (age 1–3)	−0.072	−0.054	−0.056	−0.069
	(0.029)	(0.021)	(0.021)	(0.023)
Years of "maternal care" (age 1–3)	−0.047	−0.045	−0.035	−0.032
	(0.025)	(0.018)	(0.018)	(0.020)
Years of "employed and formal care use" (age 1–3)	−0.018			
	(0.035)			
Ln(mother + father total income, age 0–3)	−0.008	−0.001	−0.009	−0.016
	(0.040)	(0.039)	(0.039)	(0.043)
Control function:				
Skill endowment (log wage) (Q_w)	0.123	−0.006	0.030	0.189
	(0.152)	(0.195)	(0.151)	(0.174)
Work preference (in NOK 100,000) (Q_h)	0.132		0.095	0.159
	(0.084)		(0.083)	(0.097)
Pregnancy preference (in NOK 100,000)		−0.006		
		(0.059)		
School quality dummy variables:				
Second quintile			0.094	
			(0.039)	
Third quintile			0.115	
			(0.039)	
Fourth quintile			0.151	
			(0.041)	
Fifth quintile			0.219	
			(0.048)	
F-test of work preference and skill (p-value)	0.289		0.478	0.241
F-test of pregnancy preference and skill (p-value)		0.992		
F-test of school quality dummies (p-value)			0.000	
First child in the family only?	No	No	No	Yes
R-squared	0.129	0.127	0.148	0.138

[a] In columns 1 to 3, there are 1087 children in the regression. Column 4 includes the first child in the family only (the number of observations is 840). All regressions include the same set of other covariates as in the baseline specification. Standard errors are given in parentheses.

APPENDIX TABLE A.5. Reading score regression: children of high-education mothers, additional specifications.[a]

Dependent Variable: Ln(Reading Score)	(1)	(2)	(3)	(4)
Years of "non-maternal informal care" (age 1–3)	−0.033	−0.025	−0.021	−0.026
	(0.015)	(0.010)	(0.010)	(0.011)
Years of "maternal care" (age 1–3)	−0.004	0.001	0.004	−0.002
	(0.014)	(0.010)	(0.010)	(0.011)
Years of "employed and formal care use" (age 1–3)	−0.011			
	(0.017)			
Ln(mother + father total income, age 0–3)	0.026	0.023	0.011	0.003
	(0.026)	(0.026)	(0.026)	(0.029)
Control function:				
Skill endowment (log wage) (Q_w)	0.188	0.192	0.178	0.157
	(0.062)	(0.067)	(0.062)	(0.069)
Work preference (in NOK 100,000) (Q_h)	0.016		0.019	0.006
	(0.026)		(0.026)	(0.029)
Pregnancy preference (in NOK 100,000)		0.004		
		(0.012)		
School quality dummy variables:				
Second quintile			0.058	
			(0.029)	
Third quintile			0.077	
			(0.028)	
Fourth quintile			0.079	
			(0.028)	
Fifth quintile			0.155	
			(0.030)	
F-test of work preference and skill (p-value)	0.010		0.015	0.078
F-test of pregnancy preference and skill (p-value)		0.012		
F-test of school quality dummies (p-value)			0.000	
First child in the family only?	No	No	No	Yes
R-squared	0.194	0.194	0.205	0.210

[a] In columns 1 to 3, there are 2043 children in the regression. Column 4 includes the first child in the family only (the number of observations is 1515). All regressions include the same set of other covariates as in the baseline specification. Standard errors are given in parentheses.

APPENDIX TABLE A.6. Test score regression (math and english): children of low-education mothers.[a]

	Ln(Math Score)			Ln(English Score)		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Years of "non-maternal informal care" (age 1–3)	−0.010	−0.017	−0.011	−0.015	−0.010	−0.005
	(0.019)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
Years of "maternal care" (age 1–3)	−0.004	0.007	0.011	−0.011	−0.009	−0.006
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Ln(mother + father total income, age 0–3)	0.036	0.013	0.018	−0.026	−0.035	−0.033
	(0.037)	(0.038)	(0.037)	(0.036)	(0.038)	(0.037)
Control function:						
Skill endowment (log wage) (Q_w)		0.342	0.232		0.198	0.110
		(0.145)	(0.143)		(0.142)	(0.141)
Work preference (in NOK 100,000) (Q_h)		0.162	0.122		−0.041	−0.069
		(0.079)	(0.078)		(0.077)	(0.077)
School quality dummy variables:						
Second quintile			0.137			0.076
			(0.037)			(0.036)
Third quintile			0.168			0.095
			(0.037)			(0.036)
Fourth quintile			0.218			0.138
			(0.039)			(0.038)
Fifth quintile			0.301			0.233
			(0.045)			(0.045)
Socioeconomic covariates:						
High education father	0.086	0.086	0.082	0.048	0.052	0.051
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Child's gender (male = 1)	0.049	0.043	0.049	−0.022	−0.024	−0.020
	(0.025)	(0.025)	(0.024)	(0.024)	(0.024)	(0.024)
Ln(birth weight)	0.204	0.210	0.190	0.017	0.027	0.013
	(0.068)	(0.068)	(0.067)	(0.066)	(0.066)	(0.065)
Grandparent lives close	−0.055	−0.056	−0.055	0.002	0.003	0.003
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Mother under age 21 at birth	−0.003	−0.020	−0.006	−0.054	−0.055	−0.042
	(0.049)	(0.049)	(0.048)	(0.047)	(0.048)	(0.047)
Young sibling born within 4 years of first child's birth	0.001	0.008	0.017	−0.041	−0.034	−0.028
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Not the first child in the family	−0.074	−0.061	−0.060	0.006	0.006	0.008
	(0.031)	(0.032)	(0.031)	(0.031)	(0.031)	(0.031)
F-test of work preference and skill (p-value)		0.037	0.181		0.148	0.256
F-test of school quality dummies (p-value)			0.000			0.000
R-squared	0.050	0.056	0.101	0.011	0.015	0.041

[a]There are 1109 children in the regression. Standard errors are given in parentheses. Grade scores are normalized.

APPENDIX TABLE A.7. Test score regression (math and english): children of high-education mothers.[a]

	Ln(Math Score)			Ln(English Score)		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Years of "non-maternal informal care" (age 1–3)	−0.008	−0.008	−0.001	−0.024	−0.024	−0.019
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Years of "maternal care" (age 1–3)	−0.012	0.002	0.005	−0.020	−0.008	−0.006
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Ln(mother + father total income, age 0–3)	0.019	−0.001	−0.014	0.004	−0.013	−0.025
	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)	(0.025)
Control function:						
Skill endowment (log wage) (Q_w)		0.213	0.206		0.179	0.166
		(0.062)	(0.061)		(0.062)	(0.062)
Work preference (in NOK 100,000) (Q_h)		0.042	0.049		0.041	0.048
		(0.025)	(0.025)		(0.025)	(0.025)
School quality dummy variables:						
Second quintile			0.054			0.056
			(0.028)			(0.029)
Third quintile			0.124			0.063
			(0.027)			(0.028)
Fourth quintile			0.119			0.093
			(0.028)			(0.028)
Fifth quintile			0.192			0.165
			(0.029)			(0.029)
Socioeconomic covariates:						
High education father	0.090	0.088	0.091	0.068	0.066	0.068
	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.021)
Child's gender (male = 1)	0.042	0.042	0.042	−0.015	−0.015	−0.017
	(0.016)	(0.016)	(0.015)	(0.016)	(0.016)	(0.016)
Ln(birth weight)	0.106	0.115	0.124	0.087	0.094	0.103
	(0.045)	(0.045)	(0.044)	(0.045)	(0.045)	(0.045)
Grandparent lives close	−0.020	−0.016	−0.012	−0.043	−0.040	−0.035
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Young sibling born within 4 years of first child's birth	0.076	0.078	0.084	0.018	0.019	0.024
	(0.021)	(0.022)	(0.021)	(0.021)	(0.022)	(0.022)
Not the first child in the family	−0.075	−0.069	−0.069	−0.009	−0.003	−0.005
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
F-test of work preference and skill (p-value)		0.001	0.001		0.006	0.006
F-test of school quality dummies (p-value)			0.000			0.000
R-squared	0.059	0.066	0.090	0.018	0.023	0.041

[a]There are 2081 children in the regression. Standard errors are given in parentheses. Grade scores are normalized.

APPENDIX TABLE A.8. Effects of counterfactual policies, year 6.

Variable	Baseline (no Cash-for-Care) (1)	Difference From Baseline: Full Cash-for-Care (2)	Partial Cash-for-Care (3)	Leave Maternity Leave (4)	Tax Deduction for Children (5)
Low-education women:					
Work (%)	62.7	−1.9	−1.9	−0.4	−0.6
Part-time work (%)	18.4	+0.2	−0.5	−0.0	+0.3
Full-time work (%)	44.3	−2.0	−1.4	−0.4	−0.9
Overall formal care (%)	3.2	+0.4	+0.1	+0.5	+1.2
Formal care among mothers (%)[b]	21.5	−4.5	−2.8	+0.4	+1.6
Maternal care among mothers (%)[b]	42.5	+1.1	+8.9	−1.1	−4.4
Non-maternal informal care among mothers (%)[b]	36.0	+3.5	−6.1	+0.7	+2.8
Pregnancy (%)	10.2	+3.1	+1.3	+1.1	+2.0
Has a child aged 0 to 3 (%)	22.3	+8.5	+3.9	+2.9	+5.5
Number of children	0.29	+0.10	+0.04	+0.03	+0.06
PDV earnings (1000 NOK)[a]	366.90	−2.70	−4.22	+0.08	−1.18
PDV net government benefits (1000 NOK)[a]	−71.53	+19.91	+10.72	+8.02	+8.26
PDV utility[a]	400.92	+5.84	+4.13	+3.39	+0.14
High-education women:					
Work (%)	66.7	−1.4	−1.3	−0.5	−1.2
Part-time work (%)	13.6	−0.0	−0.3	−0.1	−0.1
Full-time work (%)	53.1	−1.4	−1.0	−0.4	−1.0
Overall formal care (%)	12.4	+0.1	+0.0	+1.0	+2.7
Formal care among mothers (%)[b]	44.7	−5.7	−2.1	+0.2	+1.0
Maternal care among mothers (%)[b]	24.6	+2.0	+4.2	−0.4	−1.5
Non-maternal informal care among mothers (%)[b]	30.7	+3.6	−2.1	+0.2	+0.5
Pregnancy (%)	16.1	+1.6	+0.5	+0.9	+2.0
Has a child aged 0 to 3 (%)	38.4	+5.0	+1.8	+2.5	+6.4
Number of children	0.53	+0.06	+0.02	+0.03	+0.08
PDV earnings (1000 NOK)[a]	533.38	−5.25	−5.30	−2.27	−5.91
PDV net government benefits (1000 NOK)[a]	−98.28	+20.08	+8.85	+13.13	+13.82
PDV utility[a]	792.38	+10.28	+4.33	+7.48	+1.67

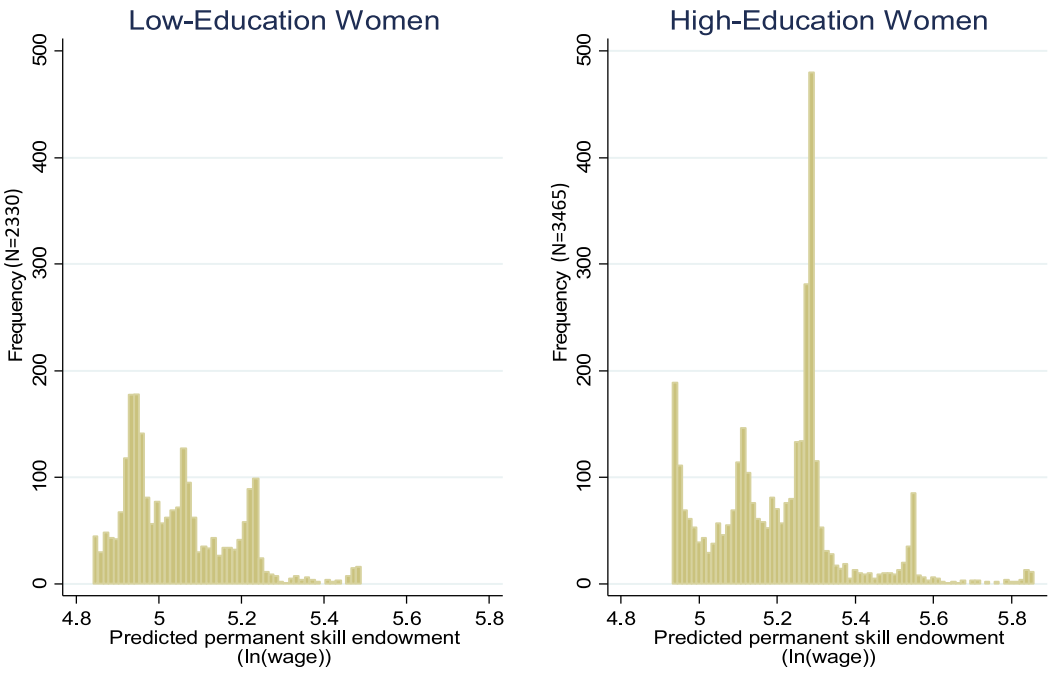
[a] From year 1 to year 6.

[b] Mothers with at least one child aged between 1 and 3.

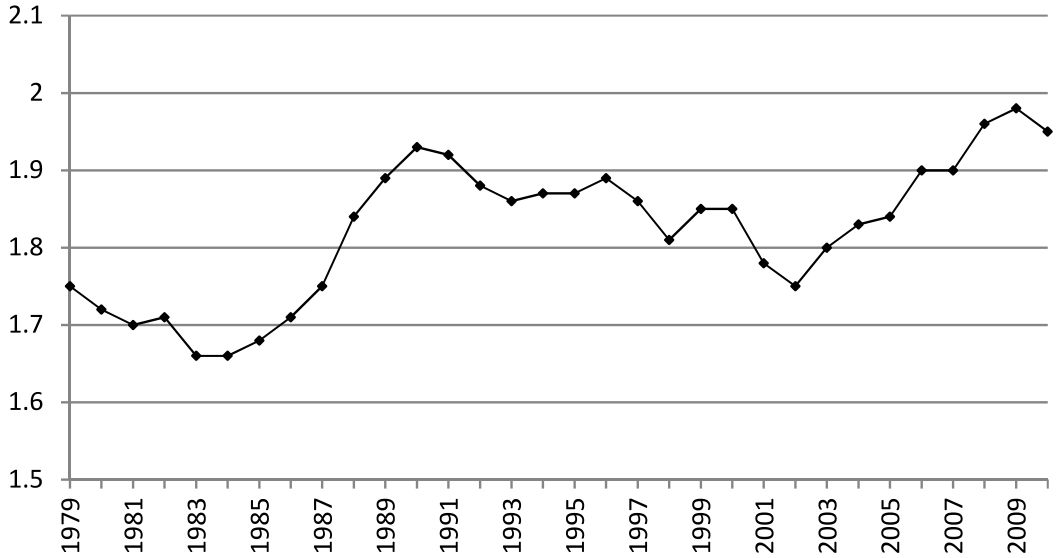
APPENDIX TABLE A.9. Completed fertility and timing effects.

Variable	Baseline (no Cash-for-Care) (1)	Difference From Baseline: Full Cash-for-Care (2)	Partial Cash-for-Care (3)	Expand Maternity Leave (4)	Tax Deduction for Children (5)
Low-education women:					
Number of children in the last year of model	1.80	+0.23	+0.11	+0.11	+0.13
Mother's age at birth of the first child[a]	27.42	−0.99	−0.49	−0.32	−0.63
High-education women:					
Number of children in the last year of model	2.30	+0.11	+0.04	+0.07	+0.12
Mother's age at birth of the first child[a]	29.26	−0.32	−0.11	−0.14	−0.45

[a]Among women who give birth to a child within the full time horizon of the model.



APPENDIX FIGURE A.1. Distribution of the woman's predicted skill endowment conditional on her observed behavior.



Source: Statistics Norway.

Appendix Figure A.2. Total fertility rate in Norway.

Co-editor Petra E. Todd handled this manuscript.

Manuscript received 18 September, 2015; final version accepted 15 August, 2017; available online 22 September, 2017.