Formal Child Care and Later-in-Life Delinquency

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Motivation

- ▶ The cost of crime to society is large.
  - ▶ Cost of prevention, punishment and rehabilitation.
  - ▶ Over 1.4 million in the US prison population in 2019 (US Bureau of Justice Statistics, 2020) and estimated yearly cost 1.7 trillion USD (Anderson, 2012).
  - ▶ Large costs for victims (Bindler and Ketel, 2020).
- ▶ Prevention of crime: Mainly focused on direct measures e.g. police presence and higher sentences.
- ▶ Less work on early interventions and crime.
- ▶ Formal child care has proven to affect long-term outcomes, such as education, income and health.
- ▶ Does it also affect youth or adult delinquency?

This paper

- ▶ Aim to study if formal child care affects long-term criminal behavior.
- ▶ Use several reforms in Norway, to get a comprehensive understanding of the potential effects.
    - ▶ Introduction of universal child care ages 3-6.
    - ▶ Lowering school start age from 7 to 6.
    - ▶ Introduction of cash-for-care for 1- and 2-year-olds.
- ▶ All three reforms affected child care use in different ways:
    - ▶ Target age groups.
    - ▶ Enrolment.
    - ▶ Time of implementation.

Literature

- ▶ Evidence from three pre-school projects in the US:
    - ▶ Head Start: Reduction in crime among African-Americans (Garces et al. 2002)
    - ▶ Perry Preschool: Reduction in crime (e.g. Nores et al. 2005).
    - ▶ Abecedarian Project: No significant effect (e.g. Clarke and Campbell, 1998).
    - ▶ All three projects focused on low SES and with small samples.
- ▶ Baker et al. (2019): Introduction of formal child care in Quebec, increased crime.
- ▶ Brutti and Montolio (2019): Expansion of early preschool in Spain, lead to a decrease in crime.
- ▶ Literature in Criminology and Psychology has had a broader focus on conditions in early childhood and its effects on delinquency, identifying risk factors.
- ▶ Other literature in Economics:
    - ▶ Generally focused on educational attainment and income.

Data

- ▶ I link several administrative data sources including criminal charges, population panel data, tax registers and municipality level data.
- ▶ I divide the type of charges into five groups:
  - ▶ Offences for profit (includes economic offences and other offences for profit).
  - ▶ Violent or sexual offences.
  - ▶ Offences of narcotics.
  - ▶ Traffic offences.
  - ▶ Other offences (includes damage to property, environment offences, work environment offences and other offences).
- ▶ Present results for full sample and for men (include women in summary).

Expected Effects

Expect increase in child care enrolment to decrease delinquency.
Several potential mechanisms:

1. Through better non-cognitive skills.
   - Child care has positive effects on cognitive and non-cognitive skills.
     - Effects on cognitive skills is seemingly fading.
     - Persistent effects on non-cognitive skills.
     - Effects largest for low SES background.
   - Non-cognitive skills strong determinants of delinquency.
2. Through increased educational attainment.
3. Through effects on income.
4. Through improvement in mental health.
5. Through increased out-of-home contact with adults.

1975 Reform: Institutional Setting

- ▶ Reform in 1975 in Norway introducing universal child care for children ages 3-6.
- ▶ Regulated authorization, operation and supervision of formal child care institutions.
- ▶ Municipalities got the responsibility for building and operating the centers.
- ▶ Little formal child care access before the reform.
- ▶ Survey showed unmet demand of formal child care. (Norwegian Ministry of Administration and Consumer Affairs, 1972)

1975 Reform: Institutional Setting

- ▶ Havnes and Mogstad (2011a) shows that the reform did not increase maternal labor supply.
- ▶ This suggests a move from informal to formal child care.
- ▶ The previous work has shown that the reform:
  - ▶ increased educational attainment and LFP (Havnes and Mogstad, 2011b)
  - ▶ had an equalizing effect on income (Havnes and Mogstad, 2015).
  - ▶ had a positive effect on long-run health (Breivik et al. 2019).

1975 Reform: Identification

- ▶ Use empirical strategy from Havnes and Mogstad (2011).
- ▶ Roll-out rate differed across municipalities.
- ▶ Focus on expansion period 1976-1979.
- ▶ Divide municipalities into treatment (control) if above or below median increase in child care coverage.

1975 Reform: Identification

1975 Reform: Identification
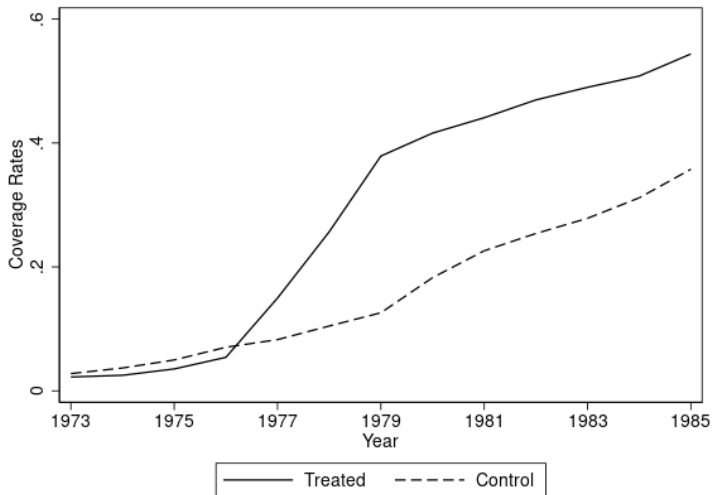
- ▶ Children treated based on birth cohort:
  - ▶ Pre (not treated): 1967-1969.
  - ▶ Phase-in (partly treated): 1970-1972.
  - ▶ Post (fully treated): 1973-1976.
- ▶ Difference-in-differences strategy:

$$Y_{ijt} = \beta_1 + \beta_2(Phase - in_t \times Treat_j)$$
$$+ \beta_3(Post_t \times Treat_j) + \beta_4 X_i + \theta_j + \gamma_t + \epsilon_i jt$$

  - ▶ Y_{ijt}: Outcome for individual i in municipality j born in year t.
  - ▶ Present results for *Post* cohorts: coefficient β_3.
- ▶ Coefficients should be interpreted as intention to treat (ITT).
- ▶ Standard errors clustered on the municipality level.

1975 Reform: Results

Table: Effects of Child Care Coverage on Criminal Charges, ITT

	Charged		Number of charges	
	(1)	(2)	(3)	(4)
DiD	-0.0085	-0.0075*	-0.0482	-0.0382
	(0.0052)	(0.0045)	(0.0747)	(0.0698)
Controls	No	Yes	No	Yes
Pre-ref. mean, control	0.18	0.18	0.96	0.96
Observations	561039	561039	561039	561039

Standard errors are clustered on the municipality level and reported in parentheses.

$^*p < 0.10$ $^{**}p < 0.05$ $^{***}p < 0.01$

1975 Reform: Results, men

Table: Effects of Child Care Coverage on Criminal Charges, ITT, Males

	Charged		Number of charges	
	(1)	(2)	(3)	(4)
DiD	-0.0167**	-0.0148*	-0.0982	-0.0855
	(0.0083)	(0.0076)	(0.1450)	(0.1430)
Controls	No	Yes	No	Yes
Pre-ref. mean, control	0.28	0.28	1.65	1.65
Observations	285694	285694	285694	285694

Standard errors are clustered on the municipality level and reported in parentheses.

$^*p < 0.10$ $^{**}p < 0.05$ $^{***}p < 0.01$

Introduction of universal child care:

- Decrease in share charged with any offence, driven by men (no effects for women).
- No significant effect on the number of charges.
- Potential decrease in share being charged with traffic offences or other offences.
- No effect on charges for offences for profit, violent or sexual offences, or offences of narcotics.

Compulsory Child Care: Institutional Setting

- ▶ Reform implemented in 1997.
- ▶ Lowered the school start age from 7 to 6.
- ▶ Before:
  - ▶ Access to high quality subsidized child care.
  - ▶ Social gradient in participation (Drange et al. 2016).
- ▶ New program was child care like, preparing children for school.
- ▶ Drange et al. (2016) found no effect on schooling outcomes.

Compulsory Child Care: Identification

- ▶ Difference-in-Regression-Discontinuity (DiRD).
- ▶ Baseline:
  - ▶ Children being born 1 January 1991 starts the year they turn 6, children born on 31 December 1990 starts the year they turn 7.
  - ▶ Compare this discontinuity with the year before.
  - ▶ Assume common trend on each side of the cutoff.
  - ▶ 180 days bandwidth.
  - ▶ Triangular weights.
- ▶ Standard errors clustered on municipality level in tables.

Compulsory Child Care: Results, all

Figure: Likelihood of being charged
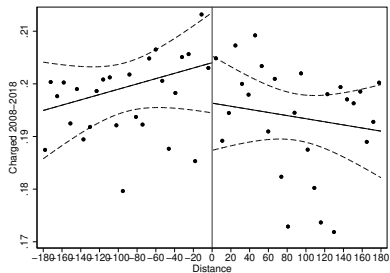
(a) Cutoff: 1 January 1991
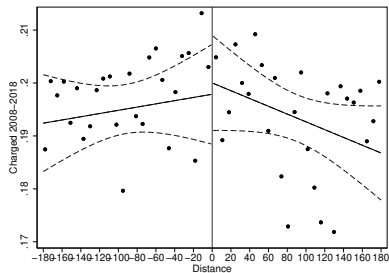
(b) Cutoff: 1 January 1990

Compulsory Child Care: Results, all

Table: Effects of Compulsory Child Care for Six-Year-Olds on Criminal Charges

	Charged		Number of charges	
	(1)	(2)	(3)	(4)
DiRD	-0.0059	-0.0053	-0.1233**	-0.1140*
	(0.0055)	(0.0052)	(0.0625)	(0.0606)
Controls	No	Yes	No	Yes
Pre-ref. mean, control	0.19	0.19	0.89	0.89
Observations	117152	117152	117152	117152

Standard errors are clustered on the municipality level and reported in parentheses.

$^{*}p < 0.10$ $^{**}p < 0.05$ $^{***}p < 0.01$

Compulsory Child Care: Results, men

Table: Effects of Compulsory Child Care for Six-Year-Olds on Criminal Charges

	Charged		Number of charges	
	(1)	(2)	(3)	(4)
DiRD	-0.0138	-0.0110	-0.2886**	-0.2561**
	(0.0089)	(0.0086)	(0.1150)	(0.1129)
Controls	No	Yes	No	Yes
Pre-ref. mean, control	0.30	0.30	1.49	1.49
Observations	60152	60152	60152	60152

Standard errors are clustered on the municipality level and reported in parentheses.

$^{*}p < 0.10$ $^{**}p < 0.05$ $^{***}p < 0.01$

Compulsory Child Care: Summary

- ▶ Lowering the school start age decreases the number of charges significantly.
- ▶ The decrease is driven by men.
- ▶ Offences of narcotics and other offences decreases significantly.
- ▶ For men, the estimates on offences for profit and violent or sexual offences are also significant.

Cash-for-Care: Institutional setting

- ▶ In August 1999, the cash-for-care benefit was introduced for 1-year-olds, and in January 1999 for 2-year-olds.
- ▶ It gives parents of 1- and 2-year-olds a tax-free benefit, given that they do not use subsidized full-time child care (more than 32 h per week).
- ▶ It was equivalent to a state subsidy for a place in formal child care at when it was introduced (Rønsen 2009).
- ▶ It is also possible to receive part of the benefit if your child is in part-time subsidized child care.
- ▶ In the first years after introduction, around 80 percent of parents of 1- to 2-year-olds received the benefit (Statistics Norway, 2019).

Cash-for-Care: Institutional setting

- ▶ The cash-for-care benefit gives incentive to substitute formal child care for either parental care or informal child care.
- ▶ If the parent would always choose parental care, the benefit should only serve as an increase in income.
- ▶ Rønsen (2001): the reform lead to increases in both parental care (i.e. a decrease in maternal labor supply) and informal care.
- ▶ Rønsen (2009): maternal labor supply decreases in the longer run.
- ▶ Drange and Rege (2013): maternal labor supply deacreses, driven by mothers with low education or low pre-reform earnings. Effects fade out by age 6.
- ▶ Bettinger et al. (2013): older siblings' 10th grade GPA increases as a result of the reform (driven by the decrease in maternal labor supply.

Cash-for-Care: Identification

- ▶ Different cohorts were affected differently by the reform:
  - ▶ Not treated: Born 1996 or earlier
  - ▶ Partly treated: Born in 1996-1997
  - ▶ Fully treated: Born in 1998 or later.
- ▶ In 2010-2018, we have 18-year-olds in born in all three "types" of cohorts, while 23-year-olds and older in the same period were only born in the pre-reform cohorts.
- ▶ Main sample: 18-year-olds (treated) and 23-27-year-olds (control).
- ▶ I use this in a difference-in-differences framework with the following specification:

$$Y_it = \beta_1 + \beta_2(Partly_t \times Treat_i) + \beta_2(Fully_t \times Treat_i) + \beta_4 X_i + \theta_t + \epsilon_{it}$$

  - ▶ where $Partly_t$ is 1 for years 2014-2015, $Fully_t$ is 1 for years 2016-2018. $Treat_i$ is equal to one for observations with 18-year-olds.
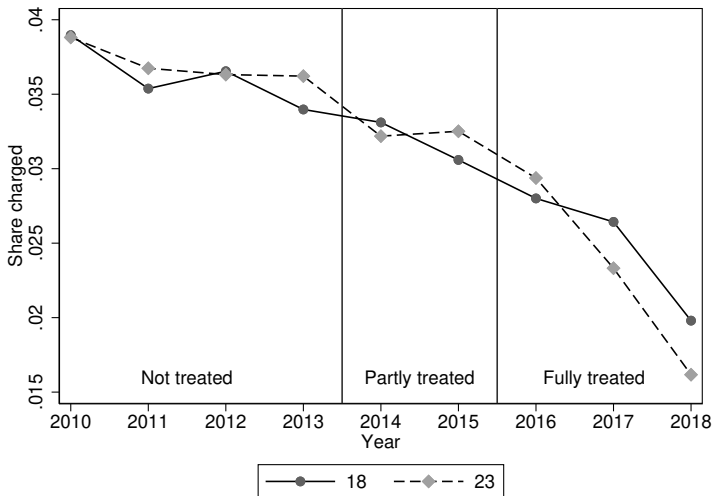
Cash-for-Care: Identification

Table: Effects of Cash-for-Care on Criminal Charges, ITT

	Charged		Number of charges	
	(1)	(2)	(3)	(4)
DiD	0.0010*	0.0042***	0.0082***	0.0205***
	(0.0006)	(0.0006)	(0.0018)	(0.0020)
Controls	No	Yes	No	Yes
Pre-ref. mean,				
18-year-olds	0.04	0.04	0.07	0.07
Observations	2943581	2943581	2943581	2943581

Standard errors are robust and reported in parentheses.

$^{*}p < 0.10$ $^{**}p < 0.05$ $^{***}p < 0.01$

Cash-for-Care: Results, men

Table: Effects of Cash-for-Care on Criminal Charges, ITT, Males

	Charged		Number of charges	
	(1)	(2)	(3)	(4)
DiD	0.0049***	0.0100***	0.0172***	0.0388***
	(0.0010)	(0.0011)	(0.0032)	(0.0036)
Controls	No	Yes	No	Yes
Pre-ref. mean,				
18-year-olds	0.06	0.06	0.11	0.11
Observations	1514156	1514156	1514156	1514156

Standard errors are robust and reported in parentheses.

$^{*}p < 0.10$ $^{**}p < 0.05$ $^{***}p < 0.01$

Cash-for-Care: Summary

- ► Cash-for-care increases both the share being charged and the number of charges.
- ► The increase is driven by men.
- ► For women, cash-for-care seems to slightly decrease the likelihood of being charged.
- ► Cash-for-care increases the likelihood of being charged with all types of offences.

Discussion

- ▶ The results suggest that formal child care might decrease delinquency, driven by men.
- ▶ All three reforms seems to have similar effect despite:
  - ▶ Different target age groups.
  - ▶ Different compliers.
  - ▶ Different incentives.
  - ▶ Different times of implementation.
- ▶ No clear pattern for type of crime.
- ▶ Potentially larger effects for children from low SES families.

Thanks for listening!