When Parents Work From Home

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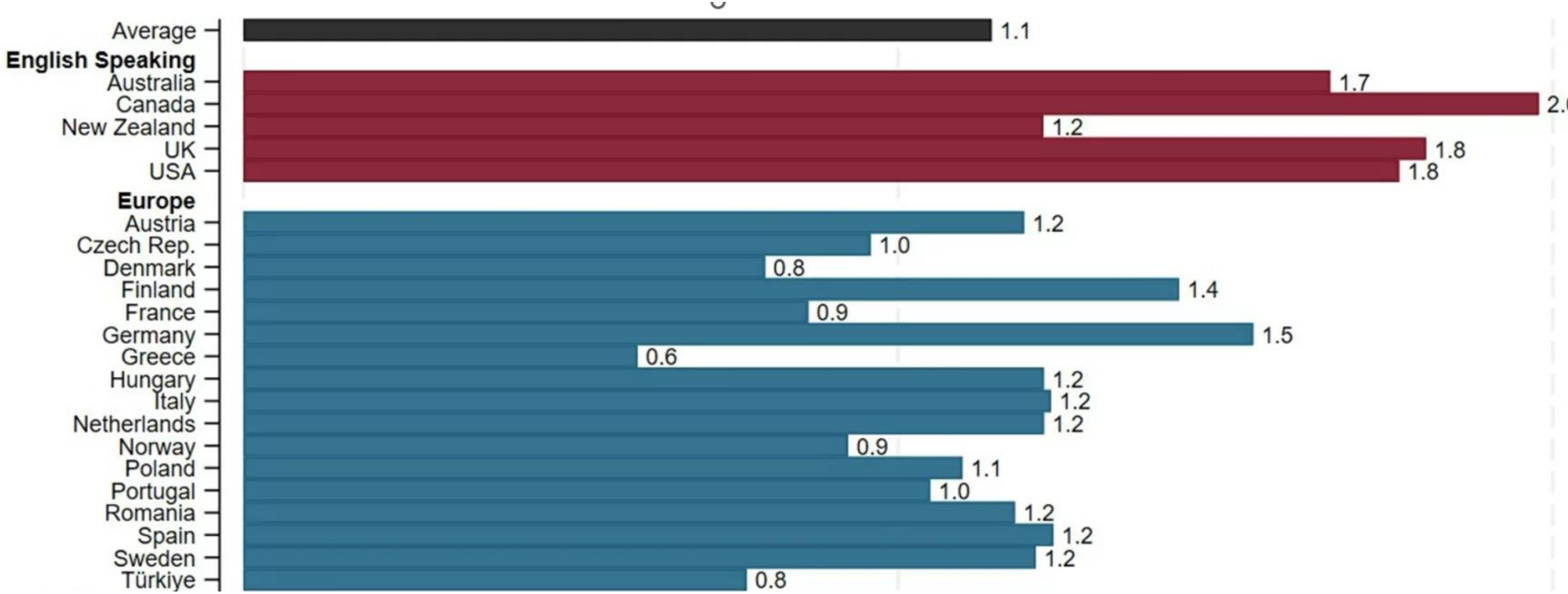
ILR School

Motivation: Prevalence of remote work



***Notes*: Responses to the question "For each day last week, did you work 6 or more hours, and if so where?". Sample of respondents with at least a college degree in the Global Survey of Working Arrangements (G-SWA) from 34 countries surveyed in April-May 2023.**

Source: Aksoy et al. (2024), Vox Column CEPR

Work From Home: A Family-friendly work policy?

Potential to improve work-life balance

- Savings on daily commute time

  Aksoy et al. 2024: Time saving: $\pm$ 1 hour/ day

- Flexibility in *when* to work

More time for childcare–related activities

Work From Home: A Family-friendly work policy?

Potential to improve work-life balance

- Savings on daily commute time

  Aksoy et al. 2024: Time saving: ± 1 hour/ day

- Flexibility in *when* to work

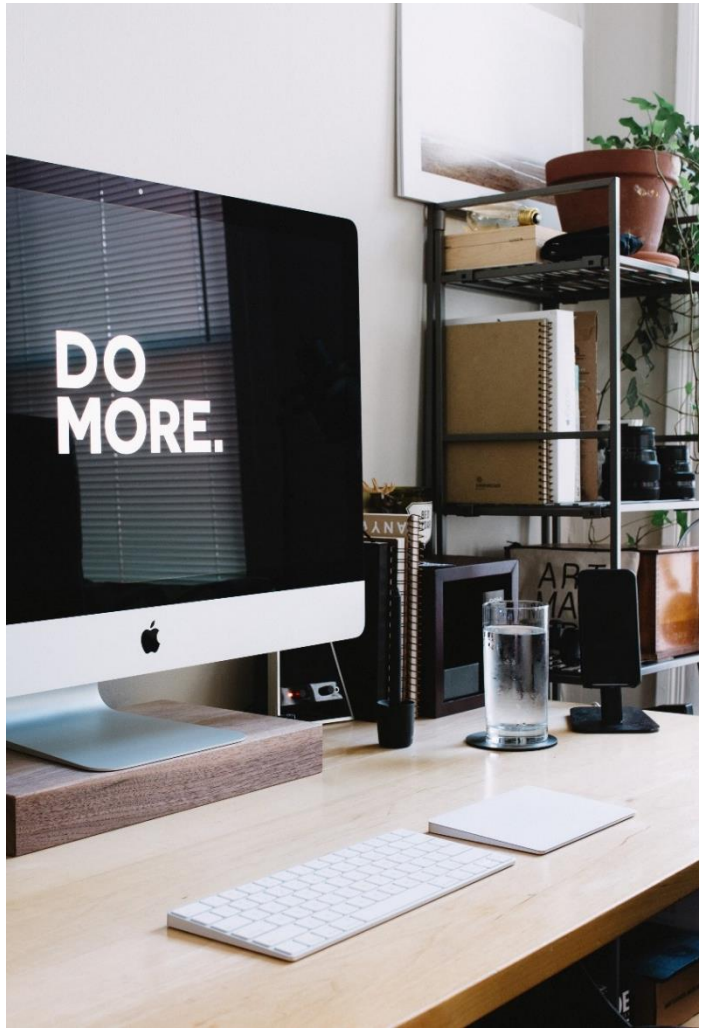
More time for childcare–related activities

Possible downsides:

- Less separation between work and personal life
- Possibly more conflicts at home

Impact of WfH arrangements

- Productivity
- Wages, career prospects
- Job satisfaction, work-life balance, quits
- Well-being and health
- Residence location, access to amenities
- Externalities on family members



Possible channels

- Direct Tutoring

- Supervision

What we do

- Impact on children's educational performance
- Identification strategy: Variation in WfH provisions in collective labor agreements in the Netherlands
- Focus on pre-pandemic period: 2006-2019

What we know

1. Ability to WFH is an amenity workers are willing to pay for

Mas and Pallais (2017), Barrero et al. (2021), Aksoy et al. (2023)

- Willingness to pay for teleworking between 5% to 8% of wage
- In the US, 30% of workers would like work fully remote (10% do)
- WTP higher for parents

Working from Home: What we know

2. Mixed evidence of impact on workers' productivity

Estimates ranging from -20% to +10%

- Randomized experiments in firms
  - \+ Bloom et al., 2015 – **call center workers**
  - \- Atkin et al., 2023 – **data entry workers**
  - \+ Angelici and Profeta, 2024 – **diverse workforce**
  - 0 Choudhury et al., 2021 - # days of work, HR employees,
- COVID-19 related natural experiments
  - \- Gibbs et al., 2023 (but + working time) – **IT professionals**
  - \- Manuel and Harrington, 2024 – **call center operators**

Impact more negative for remote work than hybrid

Working from Home: What we know

3. Impact on workers' well-being and work-life balance

Mixed evidence

- \+ in Angelici and Profeta (2024), RCT in multi-utility industry , diverse workforce
  - **one day per week,** *Italian firm*
- ≈ 0 in Bellmann and Hübler (2021); *employer–employee panel data set for Germany*
- ≈ 0 Costi et al. (2024); *natural experiment* on RTO in Italy
- \- Goux and Maurin (2024); *natural experiment collective agreements – comparison mid-level & low-skilled occupations*

Working from Home: What we know

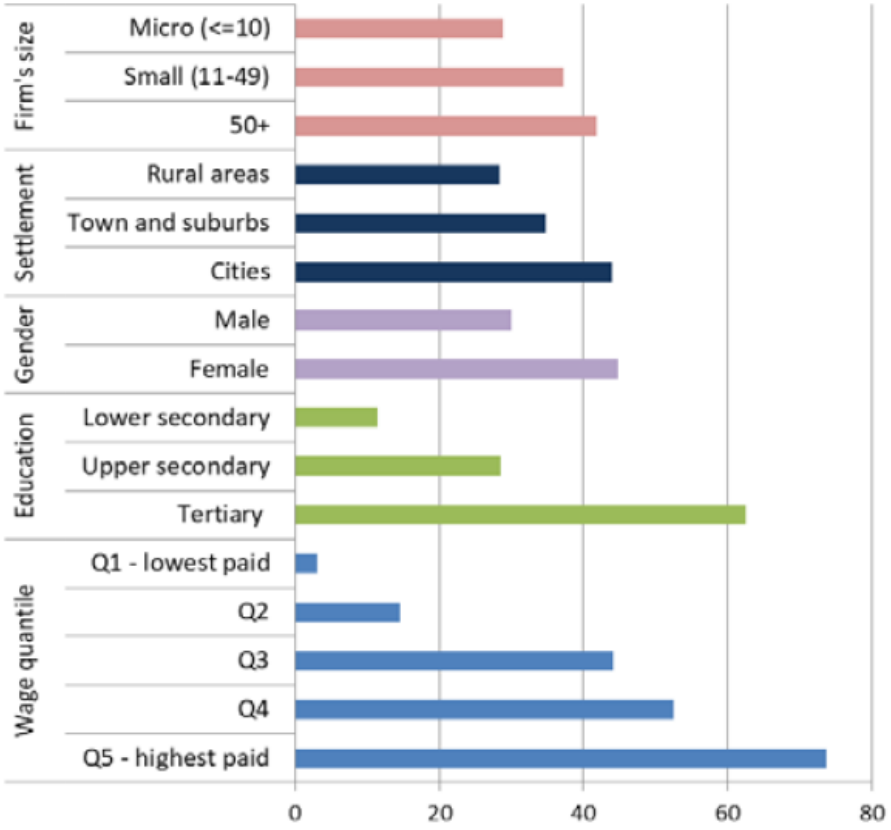


Figure 5: *Employees in teleworkable occupations, by socio-economic profile, %*

4. Unequal access to WfH

25% of occupations are teleworkable

75% of the highest paid can telework, against 3% of least paid workers

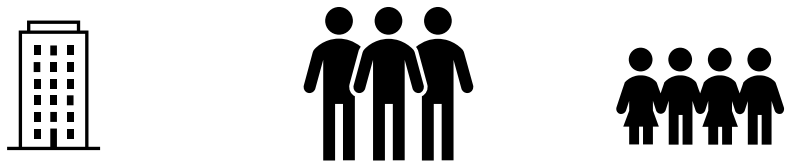
Source: Sostero et al. (2020) Teleworkability and the COVID-19 crisis: a new digital divide? JRC working papers series on labour, education and technology.
(No. 2020/05).

Context and identification strategy

- Netherlands

- Teleworking provisions in Collective Labor Agreements
  - Firm-level
  - Sector-level

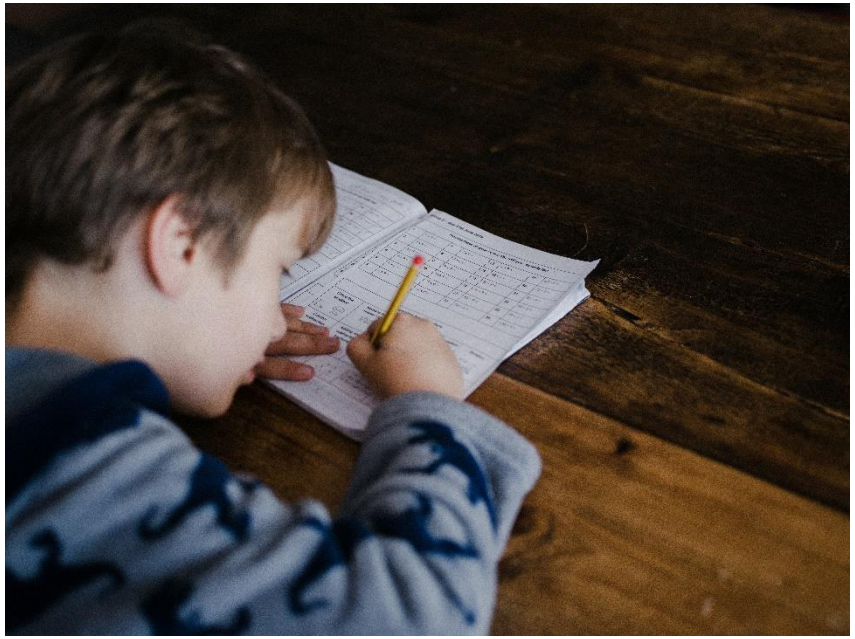
- Data linking firms to employees and their children



Context and identification strategy

- Key outcome

CITO: High-stake exam at the end of primary school (age 12)



Determines secondary school track

- Eligibility
- Teacher recommendation

Context and identification strategy

- Key outcome

CITO: High-stake exam at the end of primary school (age 12)

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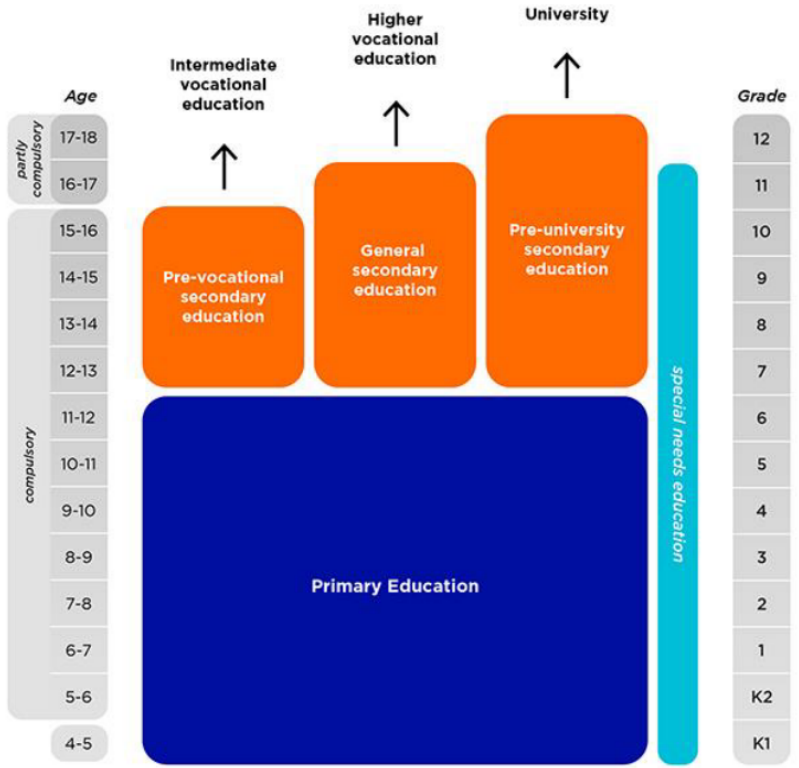
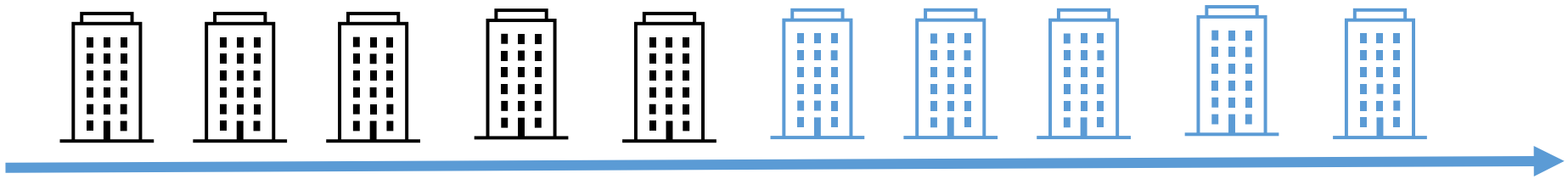


source: https://www.slo.nl/international/the-dutch-education-system/

Data

- Period: 2006-2019
- Collective Labor Agreements (XpertHR)
- Matched Employer-employee data (Admin data)
- CITO test scores (Admin data)
- Labor Force Survey (Hours, wages)

Identification strategy



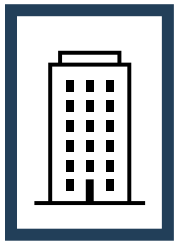
Identification strategy

Matching:

Strict matching on **sector** and **year**

By closest Mahalanobis distance on **firm size, share of highly educated workers, share of female workers, share of part-time female workers, share of part-time male workers, gender-specific mean wage**.

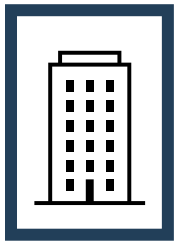
Identification strategy



Parents with at least one year of tenure

Child between 8 and 18

Identification strategy



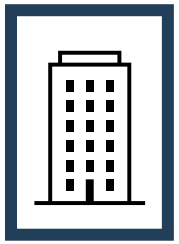
Parents with at least one year of tenure

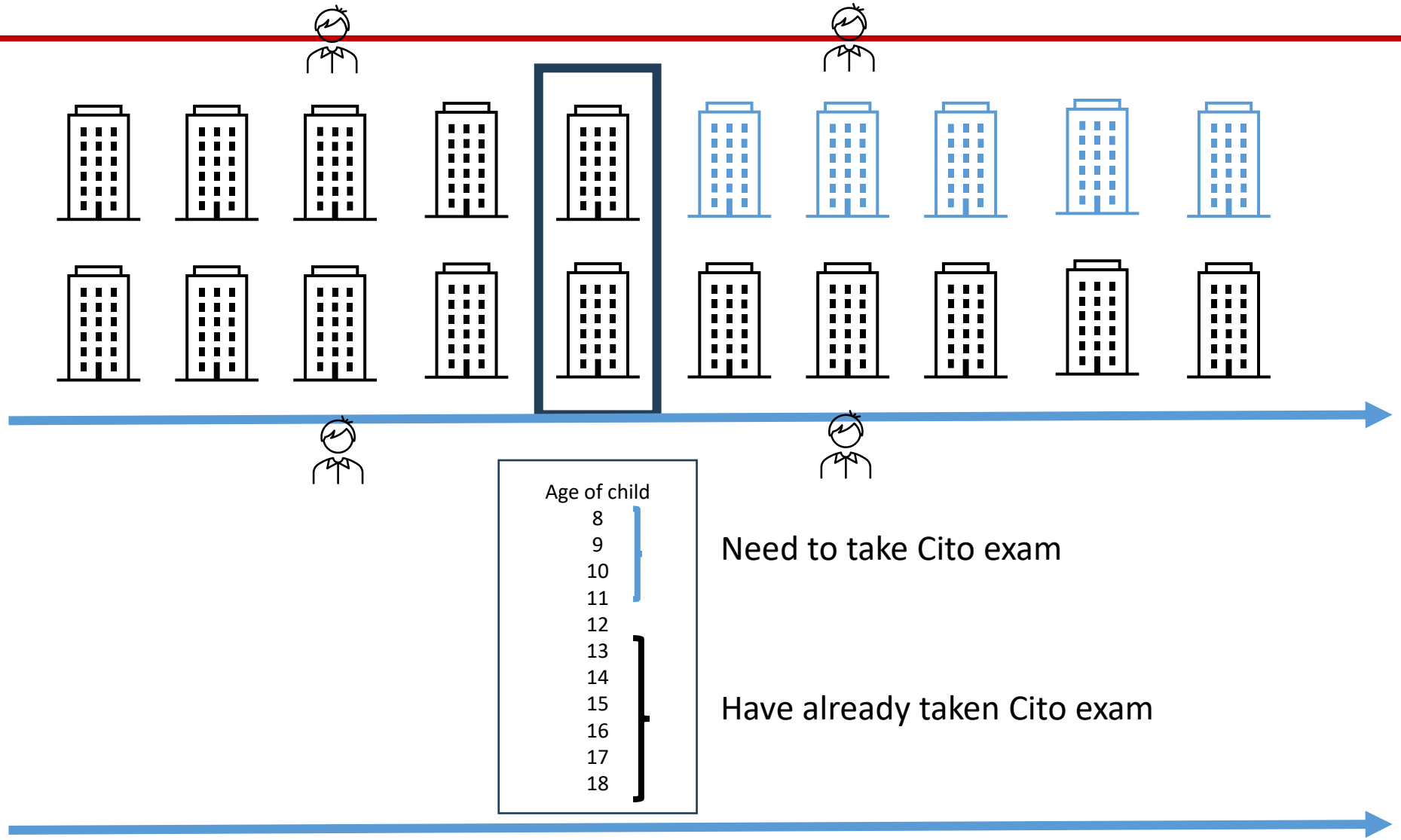
Child between 8 and 18

Repeated observations on parental outcomes

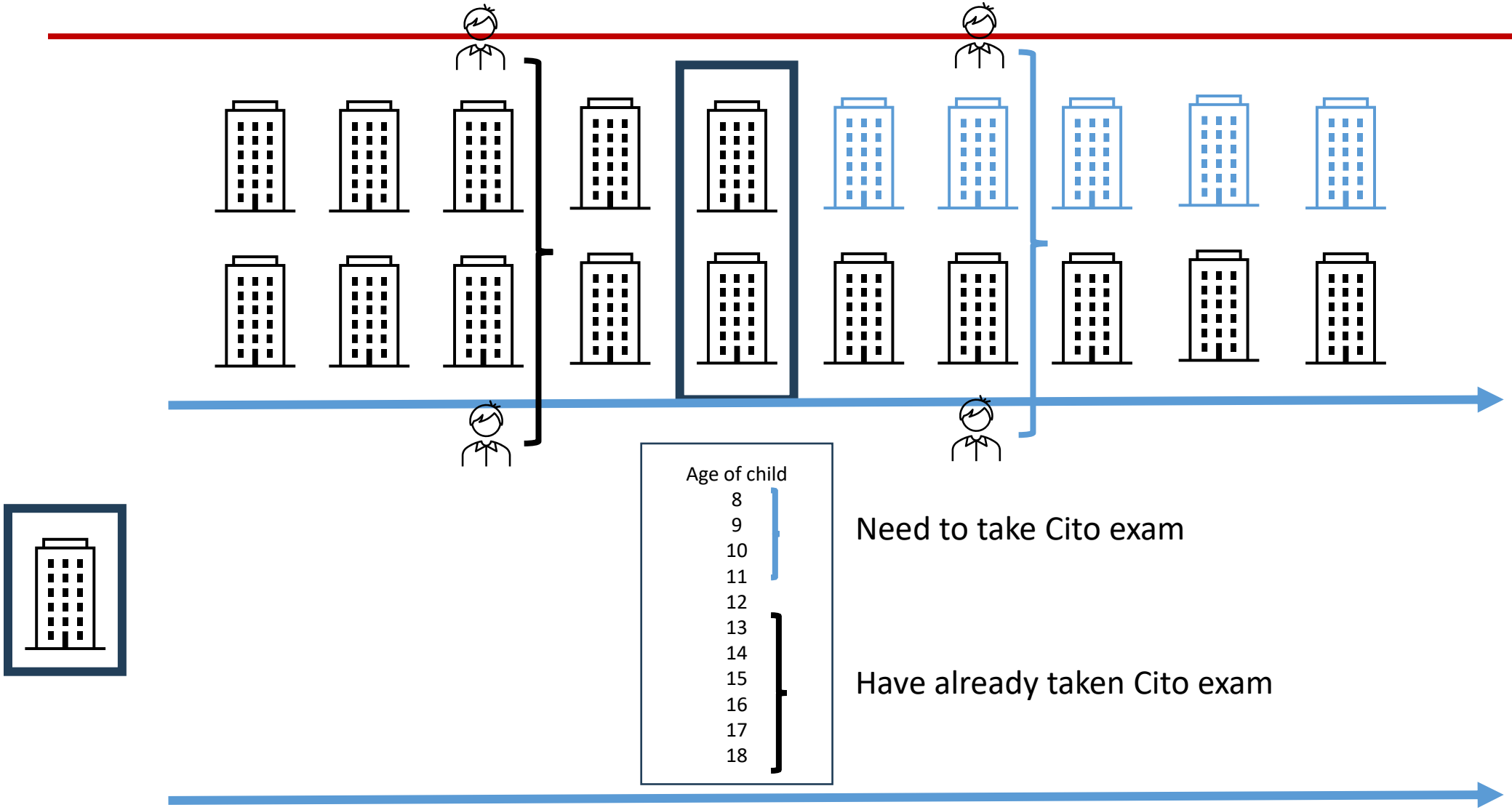
→ Dif-in-Dif

Identification strategy: Children outcomes





Identification strategy: Children outcomes



Matching treated firms and control firms

- 28 firms – 86 control firms

External validity

Table 1: External Validity

Variable	Mean Non-Expe. Firms	Difference Expe. - Non-Expe.	No. of Obs
Panel A: Firms			
% Earnings Females	0.356 (0.001)	-0.076*** (0.006)	4,184,020
% Part-Time Females	0.663 (0.000)	-0.235*** (0.001)	3,014,840
% Part-Time Males	0.294 (0.000)	-0.188*** (0.000)	3,494,043
% College Educated	0.307 (0.000)	0.066*** (0.017)	4,184,105
No. of Workers	25.510 (0.597)	757.800*** (100.300)	4,184,105
No. of Workers - Females	12.040 (0.290)	316.300*** (47.960)	4,184,105
No. of Workers - Males	13.770 (0.346)	441.400*** (61.960)	4,184,105
Average Earnings - Males	38,662.6 (54.700)	12,737.200*** (1,183.400)	3,494,043
Average Earnings - Females	19,614.1 (25.830)	15,264.300*** (976.800)	3,014,840

External validity

Table 1: External Validity

Variable	Mean Non-Expe. Firms	Difference Expe. - Non-Expe.	No. of Obs
Panel B: Parents			
Earnings - Mother	15914.1(18.87)	6569.2*** (211.0)	1,719,372
Earnings - Father	42299.4 (45.87)	8311.3*** (507.9)	1,672,342
Hours Worked - Mother	756.9 (0.51)	250.8*** (5.68)	1,719,372
Hours Worked - Father	1471.5 (0.70)	328.6*** (7.75)	1,672,342
Panel C: Children			
Z-Score Dutch	0.01 (0.001)	0.10*** (0.009)	1,623,085
Z-Score Maths	0.01 (0.001)	0.07*** (0.009)	1,623,085
Eligibility Uni	0.19 (0.001)	0.02*** (0.004)	1,720,986
Eligibility Gen. Sec. & Uni	0.50 (0.001)	0.04*** (0.005)	1,720,986

Internal Validity

Table 2: Balancing - Internal Validity

Variable	Mean Control	Difference T - C
Panel A: Firms		
% Earnings Females	0.28 (0.02)	0.005 (0.05)
% Part-Time Females	0.44 (0.02)	-0.03 (0.04)
% Part-Time Males	0.11 (0.01)	-0.003 (0.02)
% College Educated	0.37 (0.02)	0.015 (0.04)
No. of Workers	725.9 (114.1)	233.6 (241.9)
No. of Workers - Females	300.7 (51.0)	112.6 (128.6)
No. of Workers - Males	425.2 (71.91)	121.0 (144.2)
Average Earnings - Males	51005.8 (1390.9)	1604.4 (2684.7)
Average Earnings - Females	34269.0 (1166.6)	2481.0 (2109.5)
No. of Obs	114	

Table 2: Balancing - Internal Validity

Variable	Mean Control	Difference T - C
Panel B: Parents		
Male	0.63 (0.04)	0.007 (0.07)
Age	44.89 (0.28)	0.35 (0.48)
Foreign Background	0.19 (0.02)	0.022 (0.04)
Above High School	0.61 (0.05)	0.019 (0.08)
Hours Worked	1728.7 (40.39)	-3.57 (69.62)
Hourly Wage	26.17 (1.13)	-0.30 (1.90)
Earnings	47047.8 (1975.6)	1027.4 (4043.3)
No. of Obs	14,331 (except Education: 8,626)	
Panel C: Children		
Boys	0.50 (0.01)	0.004 (0.01)
Age	11.95 (0.01)	0.007 (0.02)
No. of Siblings	1.37 (0.03)	0.038 (0.06)
No. of Obs	14,331	

Event study - parents

CLA changed at t=0

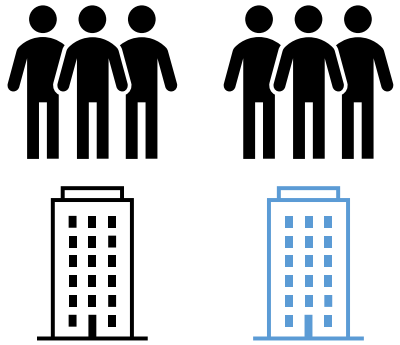
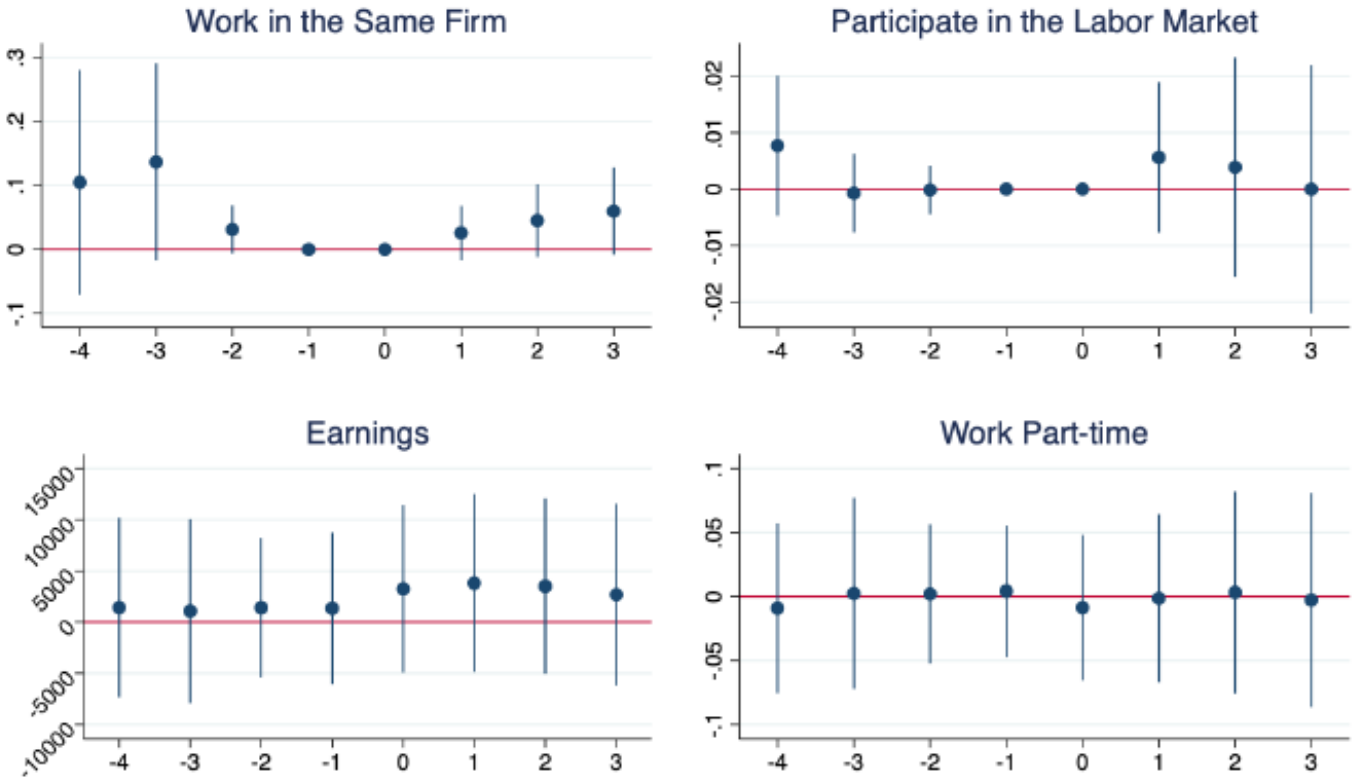


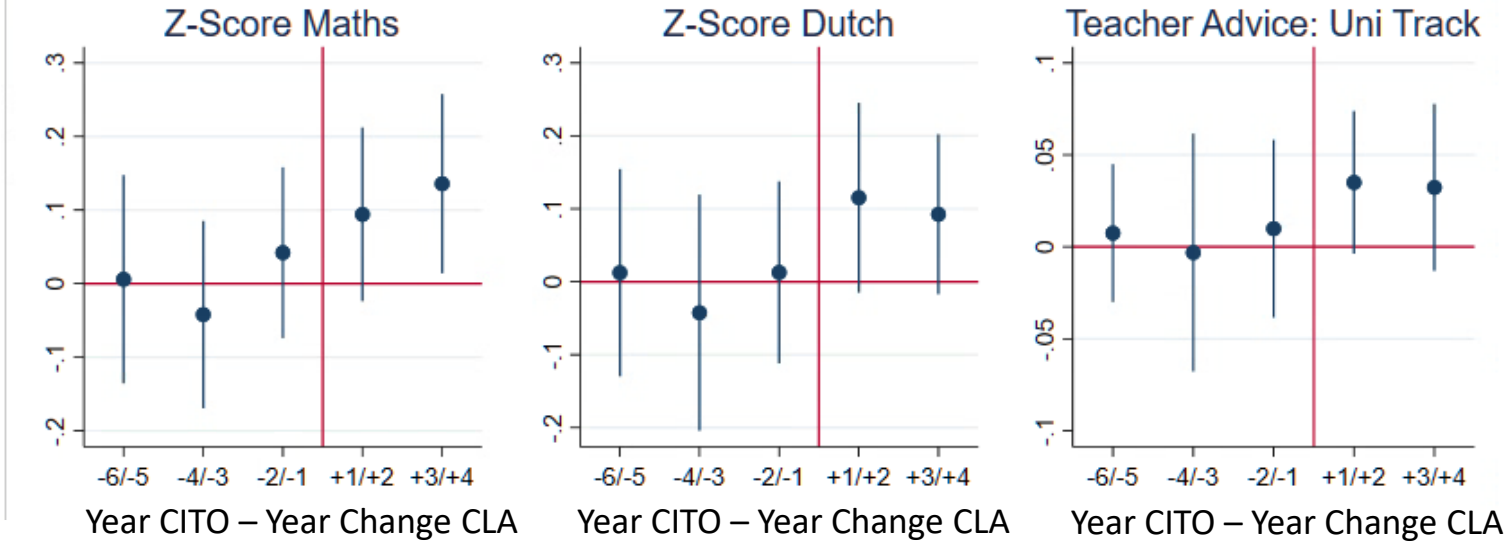
Figure 1: Pre-trend in Labour Market Outcomes

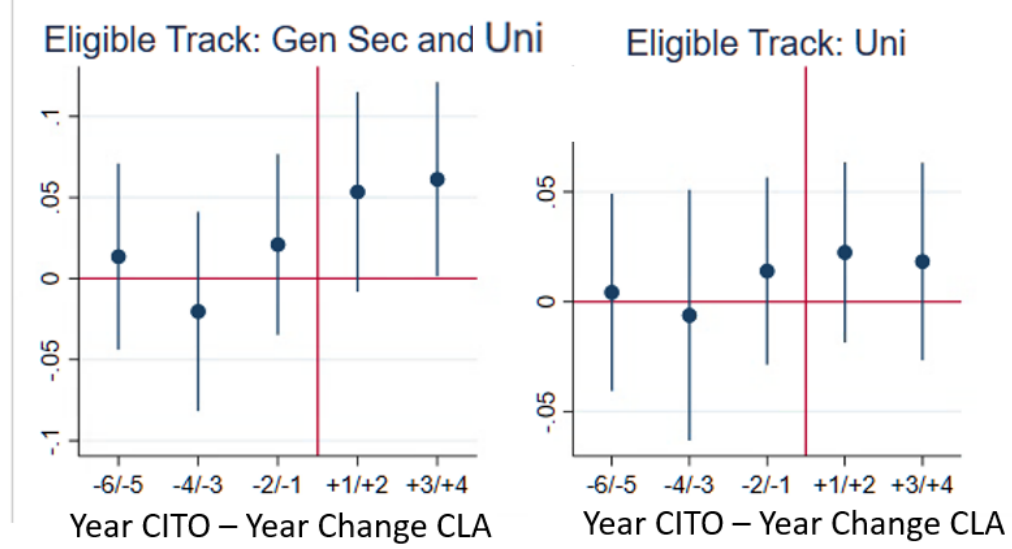


Year – Year Change CLA

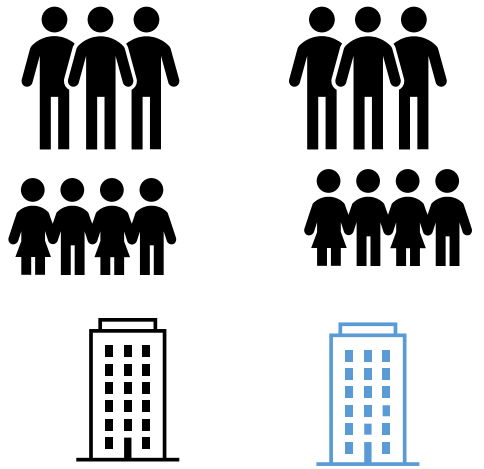
Year – Year Change CLA

Event study children





CLA changed at t=0



Main analysis

$$y_{i(f,k),t} = \alpha + \lambda_t + \gamma X_i + \eta \text{Young}_i + \rho \text{Treated}_f + \beta \text{Young}_i \text{ x } \text{Treated}_f + \epsilon_{i(f)} \qquad (1)$$

i individual (child) i
t year of Cito test
f,k parent in firm f in sector k

Main results

Table 3: Regression Results

	(1)	(2)	(3)	(4)	(5)
	Z-Score		Teacher Rec.	Eligible Track	
	Maths	Dutch	Uni Track	Uni	General Sec. & Uni
Panel A: No Controls					
β	0.109***	0.124***			
	(0.035)	(0.035)			
Panel B: With Controls					
β	0.102***	0.113***			
	(0.033)	(0.030)			
Panel C: Sector FE					
β	0.098***	0.105***			
	(0.035)	(0.030)			
Panel D: Matching FE					
β	0.086**	0.089***			
	(0.033)	(0.033)			
No. of Obs	14,331	14,331			
Mean	0.050	0.100			

Main results

Table 3: Regression Results

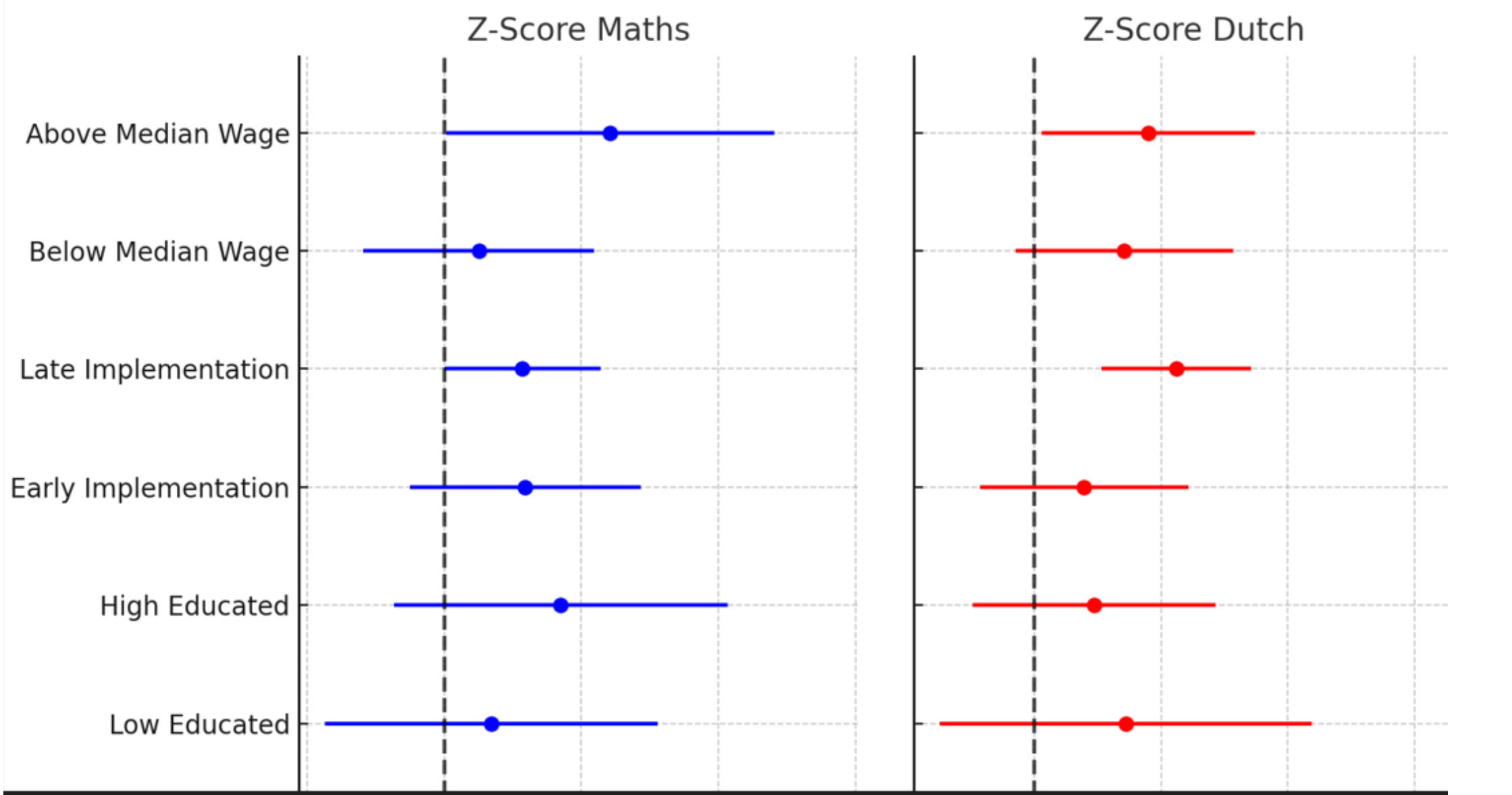
	(1)	(2)	(3)	(4)	(5)
	Z-Score		Teacher Rec.	Eligible Track	
	Maths	Dutch	Uni Track	Uni	General Sec. & Uni
Panel A: No Controls					
β	0.109***	0.124***	0.030		
	(0.035)	(0.035)	(0.018)		
Panel B: With Controls					
β	0.102***	0.113***	0.028*		
	(0.033)	(0.030)	(0.016)		
Panel C: Sector FE					
β	0.098***	0.105***	0.023		
	(0.035)	(0.030)	(0.014)		
Panel D: Matching FE					
β	0.086**	0.089***	0.017		
	(0.033)	(0.033)	(0.013)		
No. of Obs	14,331	14,331	10,520		
Mean	0.050	0.100	0.170		

Main results

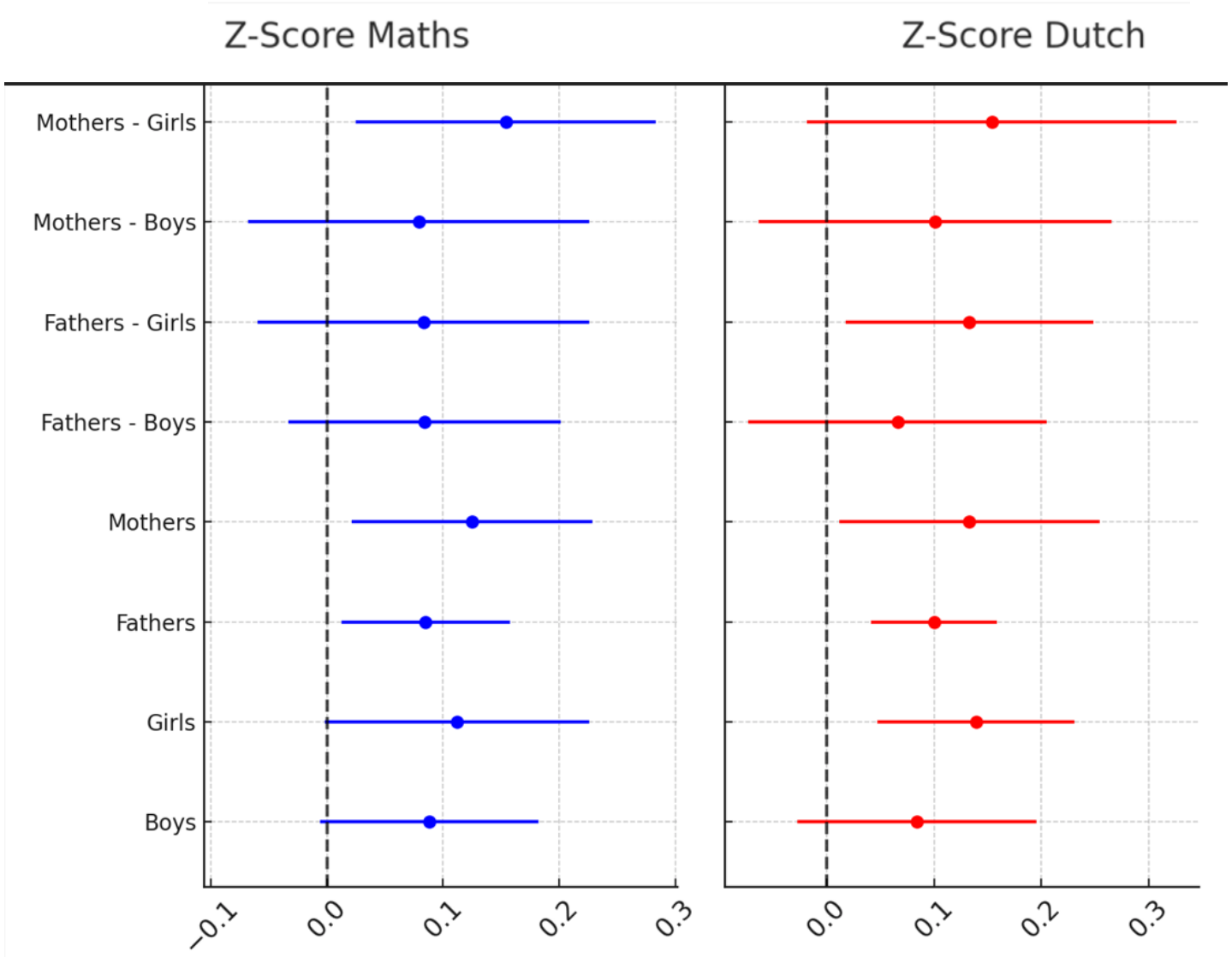
Table 3: Regression Results

	(1)	(2)	(3)	(4)	(5)
	Z-Score		Teacher Rec.	Eligible Track	
	Maths	Dutch	Uni Track	Uni	General Sec. & Uni
Panel A: No Controls					
β	0.109***	0.124***	0.030	0.017	0.053***
	(0.035)	(0.035)	(0.018)	(0.018)	(0.018)
Panel B: With Controls					
β	0.102***	0.113***	0.028*	0.015	0.049***
	(0.033)	(0.030)	(0.016)	(0.017)	(0.017)
Panel C: Sector FE					
β	0.098***	0.105***	0.023	0.013	0.047***
	(0.035)	(0.030)	(0.014)	(0.017)	(0.017)
Panel D: Matching FE					
β	0.086**	0.089***	0.017	0.008	0.041**
	(0.033)	(0.033)	(0.013)	(0.017)	(0.018)
No. of Obs	14,331	14,331	10,520	14,331	14,331
Mean	0.050	0.100	0.170	0.200	0.530

Heterogeneity



Heterogeneity



Placebo analysis

Table 5: Robustness - Placebos

	(1)	(2)	(3)	(4)	(5)
	Z-Score		Teacher Rec.	Eligible Track	
	Maths	Dutch	Uni Track	Uni	General Sec. & Uni
Panel A: With Controls - Informal Care					
β	-0.001	-0.027	-0.003	-0.010	0.006
	(0.052)	(0.049)	(0.027)	(0.020)	(0.027)
No. of Obs	19,818	19,818	14,508	19,818	19,818
Mean	0.17	0.20	0.19	0.23	0.58
Panel B: With Controls - Shortcare Leave					
β	0.010	-0.037	0.002	-0.004	-0.015
	(0.050)	(0.054)	(0.023)	(0.023)	(0.025)
No. of Obs	6,892	6,892	5,118	6,892	6,892
Mean	0.10	0.14	0.16	0.23	0.56
Panel C: With Controls - Split Leave					
β	-0.003	0.032	0.003	0.017	0.005
	(0.035)	(0.034)	(0.018)	(0.013)	(0.016)
No. of Obs	16,579	16,579	12,250	16,579	16,579
Mean	0.21	0.28	0.25	0.26	0.61
Panel D: Robustness - Placebos					
β	-0.009	-0.023	-0.001	0.000	-0.014
	(0.045)	(0.046)	(0.022)	(0.020)	(0.019)
No. of Obs	9,946	9,946	7,222	9,946	9,946
Mean	0.11	0.15	0.17	0.21	0.56

First stage: Impact on teleworking

Table 6: LFS - Double Difference

	(1) Teleworking	(2) Hours Worked
Treated Firms	-0.078	-2.50***
	(0.049)	(0.55)
Post-CLA	0.0086	-0.42
	(0.030)	(0.33)
Treated*Post-CLA	0.15***	1.71***
	(0.051)	(0.57)
R-Squared	0.09	0.32
No. of Obs	3,793	9,950
Mean	0.17	33.43

Regression includes all employees

Estimate if only parents included: 0.2***

Teleworking = a least >1 day working from home

CLA changed at t=0

Table 8: LFS - Mechanisms - Working from Home

	(1) Baseline	(2) Educated	(3) Female	(4) Children	(5) Control firms
Post-CLA	0.220***	0.180**	0.201***	0.155**	0.001
	(0.054)	(0.077)	(0.063)	(0.065)	(0.028)
Post-CLA*Educated		0.030			
		(0.084)			
Post-CLA*Female			0.053		
			(0.086)		
Post-CLA*Children				0.133	
				(0.082)	
Intercept - Heterogeneity		0.142*	-0.064	-0.033	
		(0.081)	(0.084)	(0.079)	
R-Squared	0.10	0.13	0.10	0.11	0.08
No. of Obs	1,761	1,720	1,761	1,761	2,031
Mean	0.28	0.28	0.28	0.28	0.16

Table 9: LFS - Mechanisms - Hours worked

	(1) Baseline	(2) Educated	(3) Female	(4) Children	(5) Control firms
Post-CLA	0.799	-1.331**	0.147	0.868	-0.306
	(0.497)	(0.669)	(0.578)	(0.581)	(0.377)
Post-CLA*Educated		3.042***			
		(0.761)			
Post-CLA*Female			1.746**		
			(0.789)		
Post-CLA*Children				0.177	
				(0.758)	
Intercept - Heterogeneity		-0.898	-7.550***	-2.004***	
		(0.735)	(0.764)	(0.739)	
R-Squared	0.29	0.31	0.29	0.29	0.35
No. of Obs	4,618	4,504	4,618	4,618	5,332
Mean	34.61	34.57	34.61	34.61	32.59

Conclusion

- Evidence of positive impact of WfH provisions on children
- No strong evidence of heterogeneous effects
- Labor market outcomes (hours, earnings) unchanged

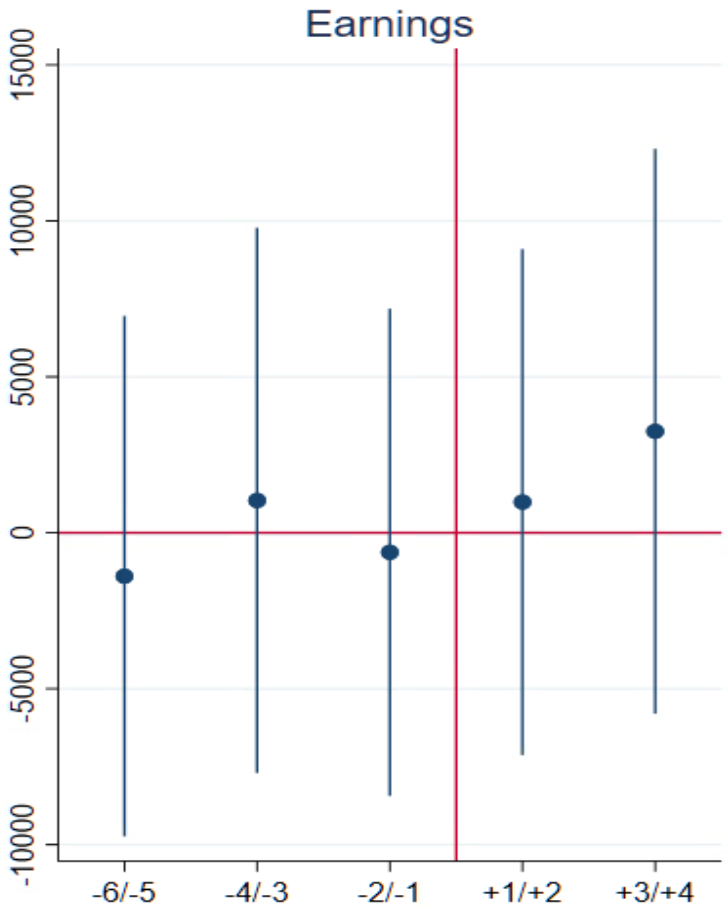
Impact of WFH on workers: What we know

Study	Methodology	Workforce	Nature of WFH	Impact on productivity	Impact on well-being and work-life balance
Bloom et al (2015)	RCT (China)	Call Center workers	Full remote	+	
Atkin et al. (2023)	RCT (India)	Data entry workers	Fully remote	-	
Angelici, Profeta (2024)	RCT (Italy)	Diverse workforce (Multi-utility secotor)	One day a week	+	
Bloom et al. (2024)	RCT (China)	High-skilled workers	Hybrid	0	

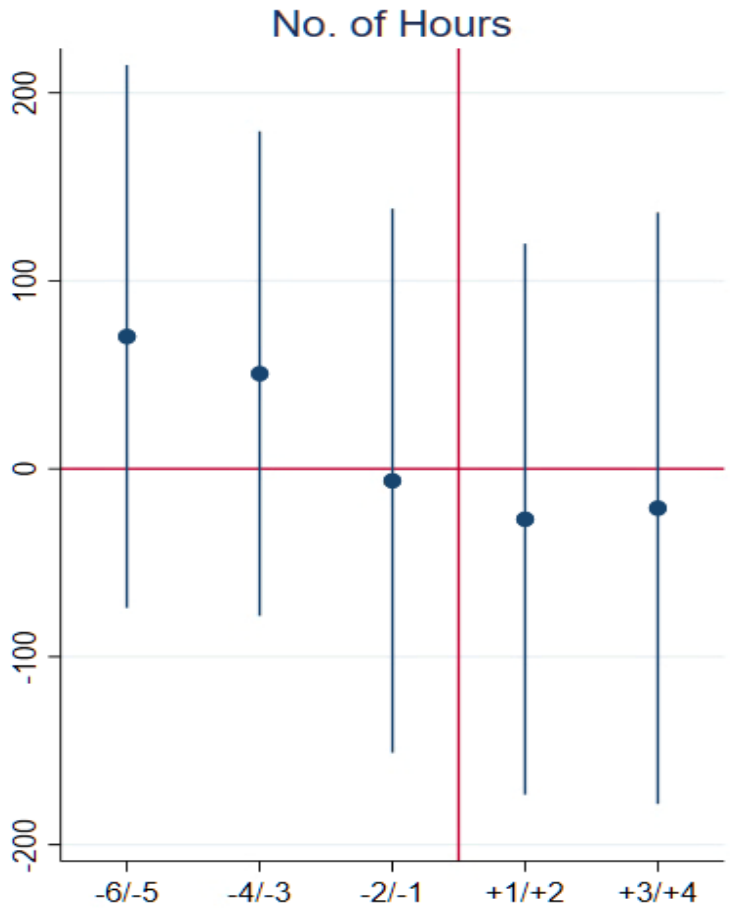
Table 7: LFS - Baseline Effect - Heterogeneity Teleworkable

	(1)	(2)	(3)	(4)	(5)
	Z-Score		Teacher Rec.	Eligible Track	
	Maths	Dutch	Uni Track	Uni	General Sec. & Uni
β	0.0370	0.0959	-0.0170	-0.0731	0.0918
	(0.199)	(0.177)	(0.0913)	(0.0988)	(0.0978)
Teleworkable	0.284***	0.279***	0.145***	0.118***	0.141**
	(0.0857)	(0.0867)	(0.0475)	(0.0433)	(0.0594)
β*Teleworkable	0.154	0.176	0.0944	0.171	0.0750
	(0.303)	(0.263)	(0.168)	(0.157)	(0.149)
R-Squared	0.05	0.05	0.06	0.04	0.06
No. of Obs	791	791	564	791	791
Mean	0.21	0.24	0.21	0.25	0.59

Event study parents



Year CITO – Year Change CLA



Year CITO – Year Change CLA