

The Effects of Working while in School: Evidence from Uruguayan Lotteries

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Should students work while in school?

- Working while in school might smooth the school-to-work transition:
 - It can develop skills that cannot be obtained at school (Heckman et al. 2006, Alfonsi et al. 2020)
 - It can signal workers' productivity or motivation (Pallais, 2014)
 - It may provide funding to continue with studies
- But, it may harm academic outcomes
 - Unless youth organize better their time, it might reduce human capital accumulation (Eckstein and Wolpin, 1999)

Cross-country heterogeneity

- Heterogeneity in the share of students working while in school
- OECD countries: 14% of students aged 15-19 work (OECD, 2018)
 - 40-50%: Denmark, Netherlands, Switzerland
 - 20-40%: Australia, Austria, Canada, Germany, New Zealand, UK
 - 10-20%: Brazil, Colombia, Sweden, Turkey, US
 - 0-10%: Chile, Japan, Ireland, Italy, France, Greece, Spain, Uruguay
- Disagreement among policy makers on whether working while in school should be encouraged

This Paper

- We provide the first piece of evidence that uses controlled randomized lotteries to address selection into employment
- We leverage a large-scale program in Uruguay encouraging youth to work while in school: "Yo estudio y trabajo" (YET)
 - Students at high school or university (aged 16-20)
 - Lottery at the locality level throughout Uruguay
 - Every year since 2012 around 800 out of 40,000 applicants are offered a temporary part-time job for 9 to 12 months
 - Mainly clerical positions in large state-owned companies (electricity, banking, etc.)
 - Conditionality: enrolled at school during the program year

Summary of Findings

- **Significant effects on labor market outcomes** (4y post-program):
 - 9% increase in formal earnings
 - 3 p.p. increase in employment (over complier control mean of 70%)
 - 5% increase in wages (survives to bounding exercise)
- **Positive effects on education**
 - 12 p.p. increase in enrollment during the program year, and 2 p.p. increase over two following years
 - Decrease in the share of NEET even four years after program
 - Youth increase working time and reduce leisure and household chores
 - Small reduction in study time, but does not translate into lower grades
- **Mechanism:** 10%-30% of earnings effect due to more education → large role of work experience channel
 - Transferability of human capital acquired during program jobs
- **Youth Welfare Effects:** increase in earnings adjusted for leisure loss

Related Literature

- Working while in school
 - No consensus on labor effects among non-experimental estimates: Ruhm (1997), Hotz et al. (2002), Ashworth et al. (2018)
 - Limited crowding out of education: Eckstein and Wolpin (1999), Stinebrickner and Stinebrickner (2003), Buscha et al. (2012)
- Summer jobs: limited effects on earnings
 - Gelber et al. (2016), Davis and Heller (2017)
 - Summer jobs = 30% of youth employment; low quality jobs
- Active Labor Market Policies
 - Experimental Estimates for job training, vocational training, subsidized jobs (Card et al. 2011, Escudero et al. 2017, McKenzie 2017, Behaghel et al. 2018), on average lower effects than those we find
 - Alfonsi et al. 2017, Attanasio et al. 2011, Card et al. 2011
 - Typically target dropouts or disadvantaged youth, we find effects for both poor and non-poor youth

Plan for the rest of the talk

- Empirical Setting
- Effects on Earnings, Education, Working and Studying
- Mechanisms
 - Education vs. work experience
 - Returns to work experience: sector specificity, job tasks, and soft skills
- Youth Welfare

Empirical Setting

Selection into YET

- YET conducts lotteries to allocate vacancies in the main cities of Uruguay (total 77 localities). Every year since 2012.
- Participants aged 16-20 residing in Uruguay should satisfy two criteria to be eligible:
 - 1 Be enrolled in an educational institution
 - 2 Have not worked formally for more than 90 consecutive days
- Using the Population Census we estimate a 35% application rate to the 2012 edition among eligible youth
- Characteristics of program applicants are overall similar to those of the eligible population [table](#)

YET Lotteries

- Candidates are randomly ranked within locality
- Sequential rounds of offers made until vacancies are filled
 - Candidates may apply to more than one locality
 - In practice 2% did so
- May apply again in the following edition if not offered or not completed job
- Third edition introduced minorities quotas (disabled, transgender, African ethnicity)

Numbers edition by edition

Jobs Offered

- Clerical positions at state-owned companies (commercial bank 22%, elec company 19%, phone company 9%, etc.)
- Temporary job (9 to 12 months) that cannot be extended
- Part-time job (20 to 30 hours per week) organized according to the morning or afternoon shift in school
- Salary: USD 446 per month for 30-hour-per-week job (minimum wage is USD 372 in a full-time job)

Job matching

- Firms cannot select the applicant, and they pay for the salary
 - Reasons to participate:
 - flexible part-time contracts in a rigid environment;
 - to please central administration
- Candidates cannot select the job.
 - Matching based on distance from home to work and school hours (not based on skills)

→ No skills matching potentially lowers earnings effects

Data

- Administrative data on 3 cohorts of applications (2012-2014) to the lottery (122,195 applications)
 - Application forms (age, gender, locality)
 - Social Security: formal sector earnings (monthly from 2011 to 2017)
 - Education Records: enrollment at high school or university (yearly from 2011 to 2017)
- Face-to-face survey with representative sample (N=1,616) of 2016 cohort
 - While the treatment group is finishing the program
 - School performance, informal work, job tasks, soft skills, time use
 - Response rate 79%, attrition non-differential by treatment arm

Main Econometric Specification

$$Y_{i(a),t,e} = \alpha + \delta_t \text{Treated}_{i(a),e} + \text{Locality} * \text{EditionFE}_a + \text{QuotaFE}_{i(a)} \\ + \# \text{App}_{i(a),e} + \beta_0 X_{i(a),0,e} + \epsilon_{i(a),t,e}$$

$$\text{Treated}_{i(a),e} = \alpha_2 + \delta \text{Offered}_{i(a),e} + \text{Locality} \times \text{EditionFE}_a + \text{QuotaFE}_a \\ + \# \text{App}_{i(a),e} + \beta X_{i(a),0,e} + \epsilon_{2,i(a),e}$$

- Analysis at the application level a
- $Y_{i(a),t,e}$ individual i outcome, t periods after application in edition e
- $\text{Treated}_{i(a),e}$ dummy indicating whether individual i completed a program job offered in edition e
- $\# \text{app}_{i(a),e}$ number of applications of individual i in edition e
- $X_{i(a),0,e}$ vector of covariates measured at application (gender, age, hh poverty status, earnings, edu level)

Main Econometric Specification (2)

- IV estimates: Offered dummy (ever receiving an offer) to instrument the Treated dummy
- No always takers, thus $LATE = ToT$
- ITT has similar significance and sign patterns
- Standard errors clustered at the individual level
- Robustness:
 - applicant-level analysis
 - alternative treatment definitions Table: treatment=work and study
 - DREO estimator (de Chaisemartin and Behaghel, 2019)

Balance Check

	(1)	(2)	(3)	(4)	(5)
	Control		Offered		p-value ¹
	Mean	S.D.	Mean	S.D.	
Panel A. Demographics					
Female	0.60	0.49	0.61	0.49	0.33
Aged 16-18	0.72	0.45	0.71	0.45	0.64
Aged 19-20	0.28	0.45	0.29	0.45	0.64
Montevideo (Capital City) ²	0.49	0.50	0.53	0.50	
Panel B. Education and Social Programs Year -1					
Enrolled in Academic Secondary Education	0.49	0.50	0.48	0.50	0.32
Enrolled in Technical Secondary Education	0.22	0.41	0.22	0.42	0.49
Enrolled in University ³	0.16	0.37	0.16	0.37	0.89
Enrolled in Tertiary Non-University	0.01	0.11	0.01	0.10	0.43
Enrolled in Out-of-School Programs	0.02	0.13	0.02	0.14	0.80
Highly Vulnerable HH (Food Card Recipient)	0.09	0.29	0.09	0.29	0.93
Vulnerable Household (CCT recipient)	0.26	0.44	0.27	0.44	0.22
Panel C. Labor Outcomes Year -1					
Earnings (winsorized top 1%, USD)	163.17	578.73	151.63	571.44	0.34
Positive Earnings	0.15	0.36	0.15	0.35	0.73
Months with Positive Earnings	0.68	2.07	0.62	1.96	0.25
Panel D. Aggregate orthogonality test for panels A-C					
p-value (joint F-test) ⁴					0.80
Observations	119,366		2,829		122,195

First Stage

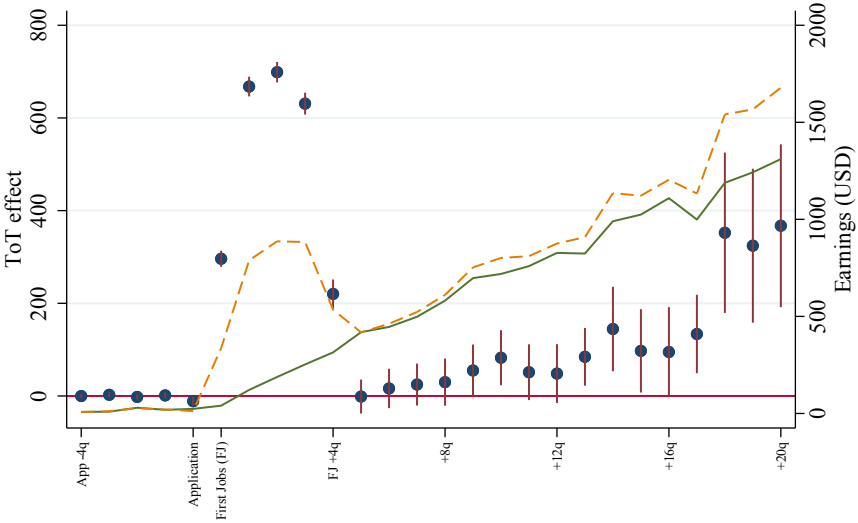
Determinants of take-up

	(1)	(2)	(3)	(4)
	All Editions	YET Participation		Edition 3
		Edition 1	Edition 2	
Offered	0.71*** (0.01)	0.73*** (0.02)	0.70*** (0.02)	0.70*** (0.02)
Fstat	6,110	2,001	2,077	2,088
Applications	122,195	46,544	43,661	31,990
Individuals	90,423	46,008	42,643	30,969

OLS regressions of YET participation in year 0 on the offer to take the YET job (winning the lottery). Controls for lottery design (lottery and quota dummies) and number of applications are included. Covariates include gender, a dummy for age below 18 at application, baseline earnings and dummies for baseline education type. Standard errors clustered at the applicant level shown in parenthesis. $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Quarterly Earnings

Edition 2012 only



Effects of YET on Labor Outcomes

year-by-year

Literature

	Total yearly earnings	Months with positive earnings	Positive earnings	Monthly wages
Program Year				
Year 0	2001.48*** (41.64) [972.36]	7.41*** (0.08) [2.57]	0.60*** (0.01) [0.40]	-24.81*** (3.09) [321.32]
Post-Program Years				
Years 1-4 (Avg.)	285.35*** (103.38) [3142.03]	0.07 (0.12) [5.56]	0.03*** (0.01) [0.67]	26.22*** (8.60) [506.65]
Individuals	90,423	90,423	90,423	48,375
Applications	122,195	122,195	122,195	58,078

Note: Control Complier Mean in [.]

Earnings Effects: Formal vs. Informal Work

- \$285 (9%) average increase in post-program formal earnings over complier control mean
- The Continuous Household Survey in Uruguay indicates that youth aged 16-20 earn around USD 200 per year in the informal sector
- Even if we assume that increase in formal earnings completely crowds-out informal earnings, the effect will still be positive

Bounds for Wage Effects

	(1) ITT effect on wages	(2) Lee bounds on wage effect	(3)	(4) Imbens and Manski 95% confidence interval
		Lower	Upper	
Year 1	3.29 (5.68) [409.15]	-23.27*** (5.04)	20.84*** (5.57)	{-31.56, 30.00}
Year 2	18.99*** (7.19) [501.88]	16.21** (7.06)	28.72*** (7.02)	{4.60, 40.27}
Year 3	31.35*** (9.74) [589.37]	30.49*** (9.71)	38.20*** (9.68)	{14.52, 54.12}
Year 4	53.91*** (17.34) [682.72]	-3.635 (14.16)	82.80*** (17.08)	{-26.93, 110.90}

Effects of YET on Enrollment in Education

year-by-year

	Any Level	Secondary Education	University	Tertiary Non-Univ.	Out-of-school Programs
Program Year					
Year 0	0.119*** (0.010) [0.756]	0.101*** (0.012) [0.521]	0.012 (0.008) [0.207]	0.005 (0.004) [0.017]	0.004 (0.005) [0.025]
Post-Program Years					
Ys 1-4 (Avg.)	0.022** (0.010) [0.483]	0.020** (0.009) [0.253]	0.001 (0.008) [0.206]	0.002 (0.003) [0.027]	0.001 (0.003) [0.009]
Individuals	90,423	90,423	90,423	90,423	90,423
Applications	122,195	122,195	122,195	122,195	122,195

Effects on Study Effort and Time Use

- Evidence that YET participation does not significantly impact schooling performance [table](#)
- Work crowds out leisure and household chores, but not so much study time [table](#)
- Returns to education are similar in treatment and control group (Mincerian regression with fixed effects)

Persistent Effects on Enrollment

- Related to the income shock due to program wages?
 - We would expect this effect to be stronger for poor households (more likely to be credit constrained)
 - However, no heterogeneity by poverty status of the household [table](#)
- Related to expectations about returns to education?
 - Positive treatment effect on the reported probability of finding a job after graduating from high school [table](#)

Effects on Working and Studying

year-by-year

	(1) Work and Study	(2) Work No Study	(3) No Work and Study	(4) No Work No Study
Program Year				
Year 0	0.60*** (0.01) [0.27]	-0.01 (0.01) [0.13]	-0.48*** (0.01) [0.48]	-0.11*** (0.01) [0.11]
Post-Program Years				
Ys 1-4 (Avg.)	0.03*** (0.01) [0.30]	-0.00 (0.01) [0.36]	-0.01 (0.01) [0.18]	-0.02** (0.01) [0.15]
Individuals	90,423	90,423	90,423	90,423
Applications	122,195	122,195	122,195	122,195

Mechanisms

The education channel: Mincerian returns to education (between 3.6% and 10%)

	(1) 2017 labor earnings (in dollars)	(2) Education (in years)	(3)	(4) 2017 labor earnings (in dollars)	(5)
Offered	284.6*** (93.94)	0.186*** (0.0279)			255.2*** (93.56)
Education attainment (in years)			152.8*** (11.27)	465.2*** (11.47)	158.1*** (11.14)
Outcome mean	4,258	15.99	4,258	4,258	4,258
Work experience				Y	
Indiv. controls	Y	Y	Y	Y	Y
Lottery controls	Y	Y	Y	Y	Y
Sample	All	All	Control	Control	All
Observations	90,426	90,424	87,734	87,734	90,424

The education channel: small contributor

- Mincerian returns to education between 3.6% and 10%
- 0.2 increase in years of education explains between 10% and 30% of earnings effect
- Same result in mediation analysis
- Large role for the work experience channel

The work experience channel

- Transferability of human capital acquired in program jobs
 - Less than 5% of participants hired again in program firms over 4 post-program years
 - Earnings effects are not concentrated in program-firms sectors [table](#)
 - No heterogeneous earnings effects by program-firms sectors [table](#)
- Program job tasks spur learning of cognitive skills on the job:
 - Youth read, write and use computers more often in program jobs [tasks](#)
- Weakness in terms of soft skills
 - Less frequent meetings with colleagues
 - No effects on soft skills, no accumulation in program jobs [details](#)

Youth Welfare details

- We use reservation wage questions from our survey to give a monetary value to leisure time
- One hour of leisure yields utility equivalent to \$3.7 of consumption
- During the program, monthly reduction in leisure of 21 hours
- Then, the monthly loss of utility due to the decrease in leisure is \$77.7 ($=3.7*21$)
- The net effect on welfare is \$69 per month: \$147 (monthly earnings effect during the program) minus \$78.
- This amounts to \$836 over the program year
- Under some additional assumptions, we estimate that effect on welfare after the program is \$267 per year

Conclusion

- Uruguayan work-study program improves labor market outcomes
- It does not crowd-out education. On the contrary, it crowds it in, even when the program conditionality does not bind any more
- Accumulation of extra education explains between 10% to 30% of the earnings effect
- Accumulation of work experience seems to be a strong channel with transferability of skills acquired on the program jobs (excl. soft skills though)
- Future research: external validity to jobs in different occupations and without the conditionality requirement

Appendix

One third of the eligible population applies [back](#)

VARIABLES	(1) Census All 2011	(2) Census Studying 2011	(3) YET First Ed. 2012	(4) YET Ed. 1-3 2012-2014
Female	0.49	0.55	0.58	0.60
Age 16-18	0.62	0.72	0.70	0.72
Age 19-20	0.38	0.28	0.30	0.28
Montevideo	0.38	0.42	0.52	0.49
Enrolled	0.54	1.00	1.00	1.00
Highly Vulnerable Household	0.12	0.08	0.09	0.09
Worked formally last month	0.14	0.07	0.06	0.07
Individuals	255,338	132,968	46,008	90,423
Applications			46,544	122,195

YET: edition by edition [back](#)

Edition	1	2	3	4	5
Application Date	May 2012	May 2013	May 2014	Sep 2015	Sep 2016
Applications	46,544	43,661	31,990	21,159	27,143
Applicants	46,008	42,643	30,969	20,537	26,137
Job Offers Made	754	981	955	722	843
Jobs Completed	549	686	660	541	632
Sector: Civil	0.81	0.73	0.71	0.64	0.64
Sector: Industry/Trade	0.03	0.05	0.04	0.05	0.05
Sector: Banking	0.16	0.23	0.25	0.31	0.31
Localities	51	64	67	65	63

Heterogeneity by Poverty Level [back](#)

	(1)	(2)
	Enrolled Any Level	Total Earnings
	Avg Ys 1-4	
Treated (T)	0.019*	258.253**
	(0.012)	(124.534)
T * Vulnerable	0.028	-2.524
	(0.027)	(248.277)
T * H. Vulnerable	-0.069	320.331
	(0.044)	(376.595)
Vulnerable	-0.067***	-140.664***
	(0.003)	(28.209)
Highly Vuln.	-0.057***	-349.300***
	(0.005)	(38.463)
CCM	0.506	3308.204
Observations	381,139	381,139
Individuals	90,423	90,423

Effects of YET on Study Effort during Program Year [back](#)

	(1) High school enrolled	(2) Absent last week	(3) Class hs per week	(4) Study time outside school (hs per week)	(5) GPA current
treated	0.10*** (0.04)	0.01 (0.05)	-1.85** (0.86)	-2.51*** (1.04)	-0.20 (0.16)
CCM	0.45	0.25	26.90	6.46	7.88
Applications	1,366	649	649	649	649
Applicants	1,272	604	604	604	604

Note: GPA ranges from 1 to 12, sd=1.6

Expected returns to education [back](#)

	(1)	(2)	(3)	(4)
	Expected probability (in%) of finding a job when one finishes...			
	3 years of high school	6 years of high school	tertiary education	university
Treated	-2.156 (1.478)	2.864* (1.515)	0.753 (1.250)	-0.497 (0.934)
CCM	42.22	70.60	85.33	94.30
Applications	1,366	1,366	1,366	1,366
Applicants	1272	1272	1272	1272

Effects on Working and Studying [back](#)

	(1) Work and Study	(2) Work No Study	(3) No Work and Study	(4) No Work No Study
Program Year				
Year 0	0.60*** (0.01) [0.27]	-0.01 (0.01) [0.13]	-0.48*** (0.01) [0.48]	-0.11*** (0.01) [0.11]
Post-Program Years				
Year 1	0.04*** (0.01) [0.37]	-0.00 (0.01) [0.24]	-0.03** (0.01) [0.28]	-0.02* (0.01) [0.12]
Year 2	0.04*** (0.01) [0.30]	-0.02 (0.01) [0.37]	-0.01 (0.01) [0.17]	-0.01 (0.01) [0.16]
Year 3	0.01 (0.02) [0.26]	-0.00 (0.02) [0.46]	0.01 (0.01) [0.10]	-0.02 (0.01) [0.18]
Year 4	-0.01 (0.02) [0.18]	0.06*** (0.02) [0.57]	-0.00 (0.01) [0.05]	-0.05*** (0.02) [0.20]
Ys 1-4 (Avg.)	0.03*** (0.01) [0.30]	-0.00 (0.01) [0.36]	-0.01 (0.01) [0.18]	-0.02** (0.01) [0.15]
Individuals	90,423	90,423	90,423	90,423
Applications	122,195	122,195	122,195	122,195

Effect of YET on Earnings by Sector [back](#)

	(1) Total earnings Industry	(2) Total earnings Civil	(3) Total earnings Banking	(4) Total earnings Low Qual.
Program Year				
Year 0	-589.23*** (36.83) [871.81]	1985.05*** (37.19) [37.13]	646.73*** (30.53) [9.30]	-41.01*** (5.97) [52.68]
Post-Program Years				
Year 1	34.79 (72.59) [1675.14]	-6.50 (35.67) [202.07]	60.08** (26.47) [39.03]	-38.18*** (12.80) [95.01]
Year 2	273.20** (122.45) [2486.52]	45.85 (70.04) [299.96]	95.68* (51.93) [62.48]	16.08 (26.71) [92.03]
Year 3	300.29** (152.12) [3331.32]	36.94 (86.63) [440.62]	116.24* (65.13) [80.35]	-1.46 (29.63) [130.49]
Year 4	409.21 (256.05) [4105.23]	578.59*** (211.47) [594.97]	43.96 (86.92) [87.36]	26.58 (61.25) [129.02]

Program-firm sector effects on Earnings [back](#)

	(1) Total earnings Year 0	(2) Total earnings Avg. Ys 1-4	(3) Enrolled Any level Year 0	(4) Enrolled Any level Avg. Ys 1-4
Program job in Banking	350.71*** (51.98)	333.04 (210.37)	-0.01 (0.02)	-0.00 (0.02)
Program job in Industry	198.87 (169.80)	-11.44 (501.54)	0.01 (0.03)	0.02 (0.04)
Control Mean (Civil Sec.)	2908.48	3354.19	0.88	0.50
Observations	1,994	5,838	1,994	5,838
Individuals	1,895	1,895	1,895	1,895

Effects on Soft Skills at End of Program [back](#)

(1) (2) (3) (4) (5) (6)

Panel A. Big 5 and grit

	Open	Conscientious	Extrav Scale 1-5	Agreeable	Neurotic	Grit
Treated	-0.041 (0.036)	0.046 (0.040)	0.007 (0.057)	-0.026 (0.041)	0.046 (0.068)	-0.049 (0.043)
CCM	4.041	3.792	3.611	3.695	3.419	3.736
Control sd	0.493	0.565	0.734	0.533	0.835	0.579

Panel B. Soft Skills Related to Labor Market

	Finish on time	Adapts fast	Teamwork important Scale 1-5	Punctual	Index (1-4)	Unpunctual Interview
Treated	0.071 (0.050)	0.067 (0.051)	0.050 (0.050)	-0.002 (0.061)	0.047 (0.038)	-0.010 (0.010)
CCM	4.047	4.006	4.246	4.169	4.117	0.0241
Control sd	0.679	0.650	0.677	0.811	0.494	0.149
Applications Individuals	1,366 1,272	1,366 1,272	1,366 1,272	1,366 1,272	1,366 1,272	1,366 1,272

During Program: Time Use [back](#)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Time (hours per week)						
	Work	Study in or out of school	Commute	Household chores	Leisure	Sleep	Eat
Treated	10.90*** (1.509)	-1.990 (1.811)	2.143** (0.984)	-3.170*** (0.780)	-4.936*** (1.885)	-0.784 (1.402)	-1.443* (0.769)
CCM	8.759	20.08	5.974	6.404	34.80	58.81	10.72
Applications	1,366	1,366	1,366	1,366	1,366	1,366	1,366
Individuals	1,272	1,272	1,272	1,272	1,272	1,272	1,272

During Program: Occupations and Tasks [back](#)

VARIABLES	(1) Reading	(2) Writing	(3) Computers every day	(4) Measuring weights,dist.	(5) Physically demand. (scale 1-10)	(6) Freq. meeting colleagues
Treated	0.275*** (0.056)	0.184*** (0.056)	0.470*** (0.054)	-0.137*** (0.048)	-1.509*** (0.294)	-0.195*** (0.056)
CCM	0.562	0.542	0.381	0.252	4.367	0.392
Applications	641	641	641	641	641	641
Applicants	587	587	587	587	587	587

Effect of working and studying on main outcomes [back](#)

	(1) Total Earns.	(2) Pos. Earns.	(3) Wages	(4) Enrolled Any Level
	Avg Ys 1-4			
Work and Study	477.79*** (172.49)	0.05*** (0.02)	51.62*** (16.97)	0.04** (0.02)
CCM	2338.30	0.56	473.65	0.51
Observations	381,139	381,139	253,957	381,139
Individuals	90,423	90,423	73,681	90,423

Yearly Effects of YET on Labor Outcomes back

	(1) Total earnings	(2) Months with positive earnings	(3) Positive earnings	(4) Wages
Program Year				
Year 0	2001.48*** (41.64) [972.36]	7.41*** (0.08) [2.57]	0.60*** (0.01) [0.40]	-24.81*** (3.09) [321.32]
Post-Program Years				
Year 1	51.75 (79.92) [2026.38]	-0.06 (0.13) [4.54]	0.04*** (0.01) [0.60]	4.59 (7.92) [398.50]
Year 2	206.56* (110.24) [3083.94]	-0.02 (0.14) [5.60]	0.02 (0.01) [0.67]	26.39*** (9.97) [498.05]
Year 3	432.84*** (165.44) [4107.04]	0.18 (0.18) [6.40]	0.01 (0.02) [0.72]	43.08*** (13.35) [583.19]
Year 4	1113.19*** (285.81) [5046.11]	0.57** (0.25) [7.07]	0.05** (0.02) [0.75]	71.86*** (23.08) [661.82]
Ys 1-4 (Avg.)	285.35*** (103.38) [3142.03]	0.07 (0.12) [5.56]	0.03*** (0.01) [0.67]	26.22*** (8.60) [506.65]
Individuals	90,423	90,423	90,423	48,375
Applications	122,195	122,195	122,195	58,078

Effects of work-study program on Enrollment in Education

	Any Level	Secondary Education	University	Tertiary Non-Univ.	Out-of-school Programs
Program Year					
Year 0	0.119*** (0.010) [0.756]	0.101*** (0.012) [0.521]	0.012 (0.008) [0.207]	0.005 (0.004) [0.017]	0.004 (0.005) [0.025]
Post-Program Years					
Year 1	0.016 (0.014) [0.646]	0.024* (0.013) [0.344]	-0.000 (0.011) [0.279]	0.003 (0.005) [0.025]	-0.006* (0.003) [0.016]
Year 2	0.031** (0.014) [0.472]	0.021* (0.012) [0.236]	0.005 (0.011) [0.213]	0.004 (0.005) [0.028]	0.003 (0.004) [0.007]
Year 3	0.019 (0.017) [0.366]	0.023* (0.013) [0.181]	-0.011 (0.011) [0.161]	0.003 (0.005) [0.028]	0.005 (0.004) [0.005]
Year 4	-0.007 (0.020) [0.231]	0.001 (0.017) [0.156]	-0.006 (0.009) [0.044]	-0.008 (0.007) [0.030]	0.008 (0.005) [0.004]
Ys 1-4 (Avg.)	0.022** (0.010) [0.483]	0.020** (0.009) [0.253]	0.001 (0.008) [0.206]	0.002 (0.003) [0.027]	0.001 (0.003) [0.009]
Individuals	90,423	90,423	90,423	90,423	90,423
Applications	122,195	122,195	122,195	122,195	122,195

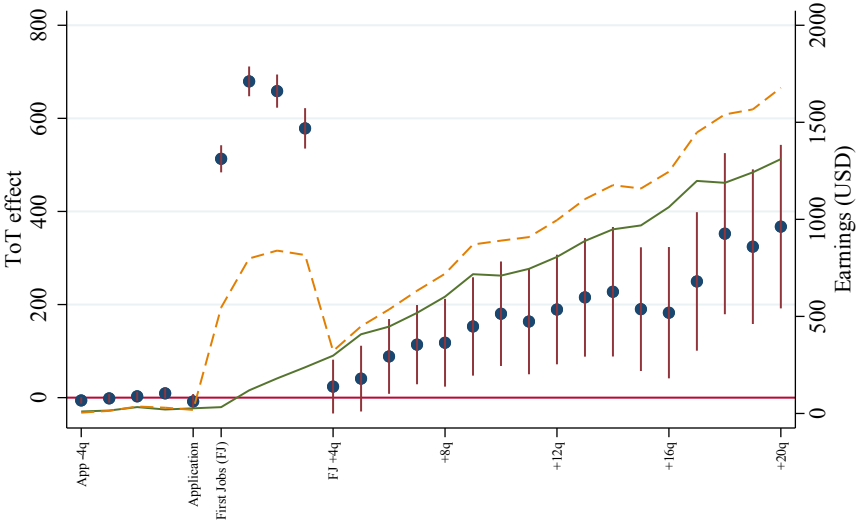
Welfare Effects [back](#)

- During the program, we assume that disutility of working, studying and commuting is the same, and that treated youth do not decrease home consumption
- After the program, we assume that utility is separable and linear in earnings and jobs are full-time
- We show that welfare effects are ITT effects minus the opportunity cost of working for youth induced to work because of the program (their share times their reservation wage)

Comparison with previous estimates [back](#)

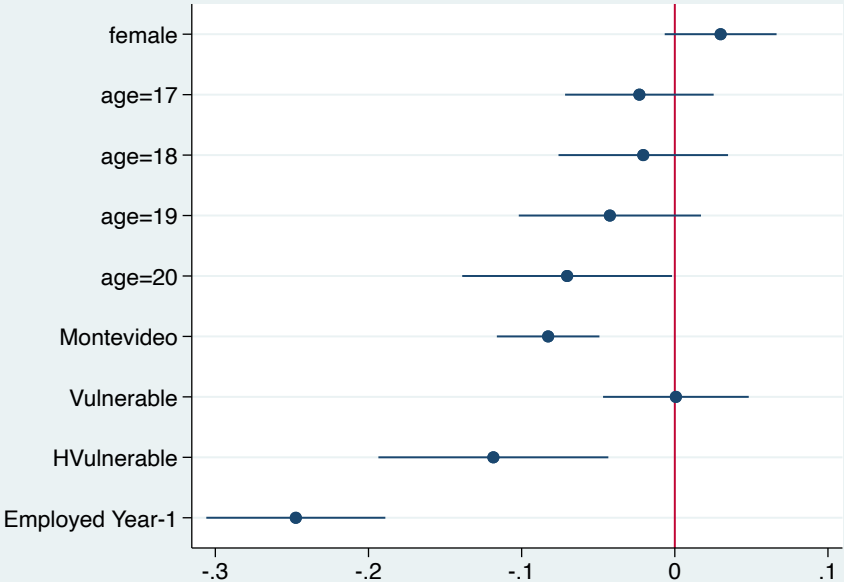
- YET effects: 9% increase in earnings, 5% in wages over 4 post-program years
- NLSY effects: twice as large in Ruhm (1997), same order in Ashworth et al (2017), and half smaller in Hotz et al (2002)
- We extend estimates to women (no heterogeneity)
- Relatively short-run effects in our study:
 - effects at 25 and 29 years old are similar in Ruhm (1997),
 - extrapolating our estimate with education channel as a lower bound yields 2% increase in earnings in the long-run

Quarterly Earnings - Edition 2012 only Back



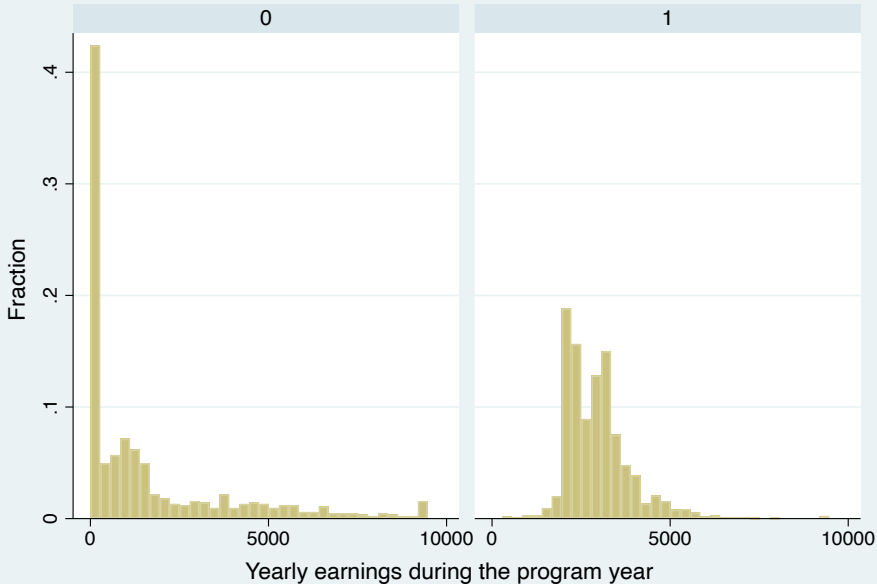
Determinants of take-up within offer group

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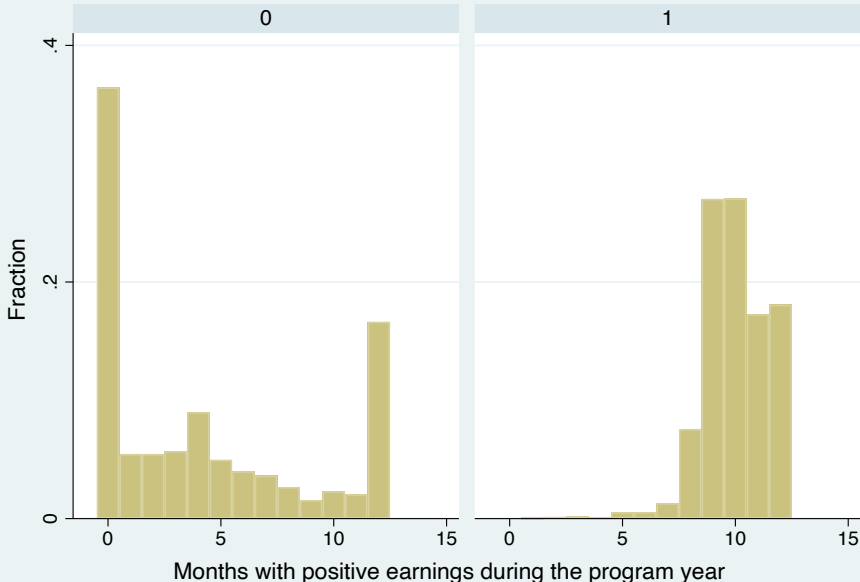
Take-up mean=71%. Extra controls: edition year dummies

Determinants of take-up within offer group [Back](#)



Determinants of take-up within offer group

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Determinants of take-up within offer group and employed

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