Inequality in Internships

Omry Yoresh and Ben Dahmen

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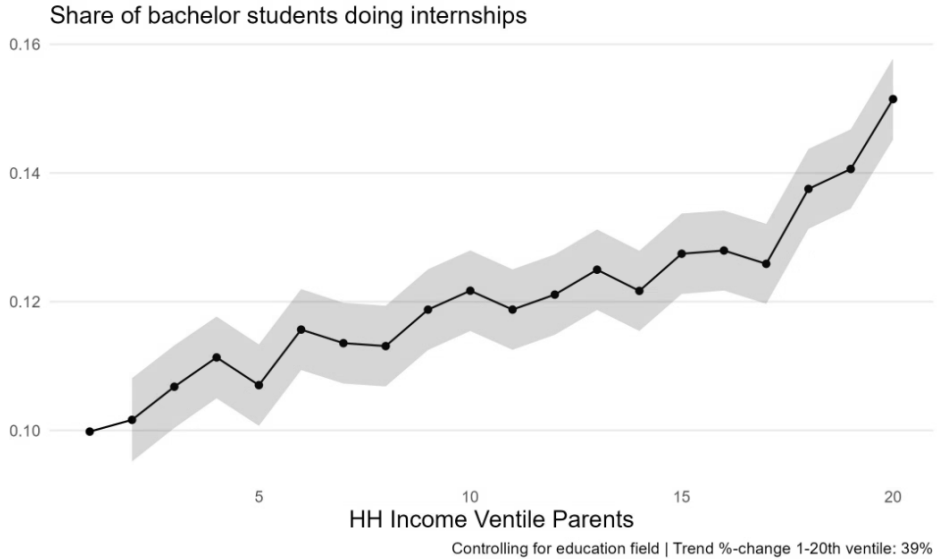
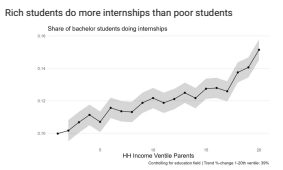
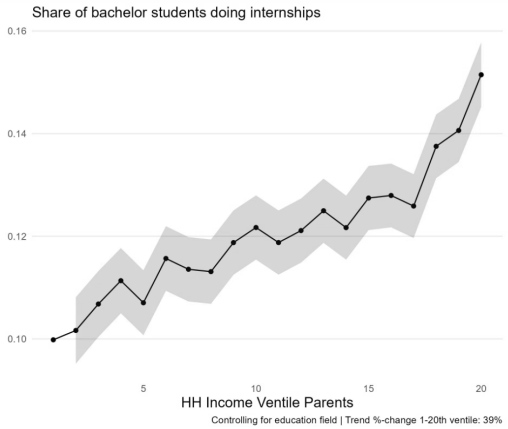
1. Project looking at which Dutch university students decide to do internships
2. And how doing internships affects inequality after graduation
3. No causal identification strategy yet -> only descriptives so far

Rich students do more internships than poor students





1. Fig shows share of bachelor students doing an internship
2. x-axis: HH Income of Parents split into 20 ventiles
3. richest ventile is 39% more likely to do an internship than poorest
4. I'm controlling for field of education, but clearly this is still a correlation
5. this project is about asking why the gradient exists, and what consequences it has

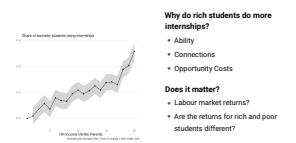


Why do rich students do more internships?

- Ability
- Connections
- Opportunity Costs

Does it matter?

- Labour market returns?
- Are the returns for rich and poor students different?



1. These are the two main questions
2. Why do rich students do more internships?
   - 2.1 HH Income is just correlated w/ ability. Firms simply hire the best students.
   - 2.2 Rich students have better connections.
   - 2.3 Rich students can afford the opportunity costs
3. Does it matter?
   - 3.1 only if internships have labour market returns
   - 3.2 seems intuitive that they are important, as usually first jobs are important for one's career
4. Will go into more detail on all this, but give some context first

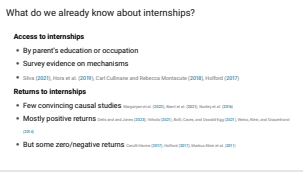
What do we already know about internships?

Access to internships

- By parent's education or occupation
- Survey evidence on mechanisms
- Silva (2021), Hora et al. (2019), Carl Cullinane and Rebecca Montacute (2018), Holford (2017)

Returns to internships

- Few convincing causal studies Margaryan et al. (2022), Baert et al. (2021), Nunley et al. (2016)
- Mostly positive returns Delis and and Jones (2023), Virkola (2021), Bolli, Caves, and Oswald-Egg (2021), Weiss, Klein, and Grauenhorst (2014)
- But some zero/negative returns Cerulli-Harms (2017), Holford (2017), Markus Klein et al. (2011)



1. Only small literature on internships
2. Very little on access to internships. Mostly correlational and only qualitative research on mechanisms.
3. There are some papers on the causal internship returns, but not many and clear opportunities for contributions
   - 3.1 Resume audit studies -> will only estimate signalling value of an internship. but nothing about the value of the experience itself or the value of screening
   - 3.2 IV studies using mandatory internships as instrument -> compliers are students who only do internships when forced to. they likely have very different returns to voluntary internships

Dutch Admin Data

- All bachelor's and master's degrees started between 2006-2020
  → 800k students studying 450k bachelor's and 625k master's degrees
- Labour market and income histories
- Academic histories
- Personal networks

1. universe of dutch students
2. detailed employer-employee info
3. parent-child links
4. data on networks of colleagues, class mates, family, neighbours, and flat mates

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What is an internship in the Netherlands?

- Strict rules for what an internship is
  → No minimum wage in exchange for learning
- Only students can be interns
  → Students pay tuition to be interns
- Extensive financial student support in NL
  → A poor student in 2014 could get approx. 650€/month + loans

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1. Internships defined strictly in NL
2. firm can pay less than MW if they agree to 'teach student on the job'
3. in practice teaching aspect seen as formality
4. students need to be enrolled -> pay tuition fees for extra 6 months to complete a full-time internship

How common are internships?

	Bachelor	Master
Internship Share Overall	11%	20%
During 1st year	1.4%	12.4%
2nd year	4.2%	15.5%
3rd year	7.1%	—
Extra years	8.1%	14.1%
Monthly Pay	413€	462€
Monthly Hours	138	149
Hourly Pay	3.25€	3.35€
Observations	468,383	624,272

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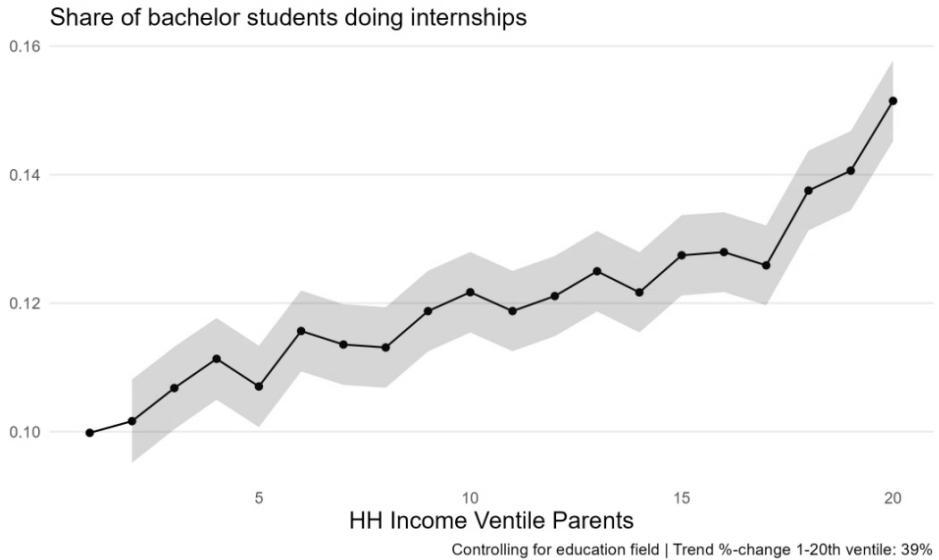
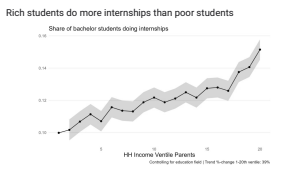
1. internships are fairly common
2. become more common over the course of academic career
3. usually full-time and paid very little

Rich students do more internships than poor students





1. now focus on inequality in who does internships
2. for bachelor students, the richest ventile 39% more likely to do an internship

Inequality increases at the end of studies

	Overall	1st year	2nd year	3rd year	Extra years
Panel A: Bachelor					
Income Coefficient	0.0021	0.00005	0.00038	0.0018	0.0026
%-increase 1st–20th ventile	39.3%	5.8%	19.8%	64.2%	79.6%
Observations	403,512	435,706	438,883	273,174	101,354
Panel B: Master					
Income Coefficient	0.0031	0.0026	0.0020	—	0.0020
%-increase 1st–20th ventile	37.7%	38.1%	43.1%	—	35.1%
Observations	477,734	469,384	354,754	—	201,205

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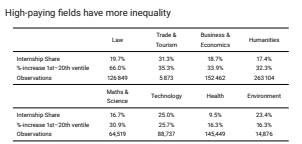
%-increase 1st–20th ventile 37.7% 38.1% 43.1% – 35.1%
Observations 477,734 469,384 354,754 – 201,205

1. Coefficient read: being in a higher ventile means a 0.21 percentage point higher likelihood of doing an internship
2. inequality particularly high at end of bachelor degree (when internships are more common)

High-paying fields have more inequality

	Law	Trade & Tourism	Business & Economics	Humanities
Internship Share	19.7%	31.3%	18.7%	17.4%
%-increase 1st–20th ventile	66.0%	35.3%	33.9%	32.3%
Observations	126 849	5 873	152 462	263 104
	Maths & Science	Technology	Health	Environment
Internship Share	16.7%	25.0%	9.5%	23.4%
%-increase 1st–20th ventile	30.9%	25.7%	16.3%	16.3%
Observations	64,519	88,737	145,449	14,876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1. inequality differs across fields of study
2. the 3 most unequal fields have the highest wages after graduation

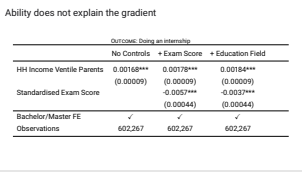
Why do rich students do more internships?

1. 3 explanations: ability, opportunity costs, and connections
2. start with ability
3. nothing yet on connections

Ability does not explain the gradient

	Outcome: Doing an internship		
	No Controls	+ Exam Score	+ Education Field
HH Income Ventile Parents	0.00168***	0.00178***	0.00184***
	(0.00009)	(0.00009)	(0.00009)
Standardised Exam Score		-0.0057***	-0.0037***
		(0.00044)	(0.00044)
Bachelor/Master FE	✓	✓	✓
Observations	602,267	602,267	602,267

Ability does not explain the gradient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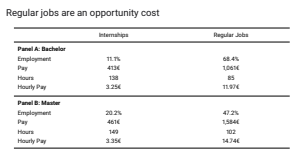
1. regression estimates slope of parental HH income gradient
2. HS centralised exam score as proxy for ability
3. does not reduce the gradient at all
4. negative coefficient seems to hide some selection into education fields
5. maybe: students who do worse in high-school are more likely to study practical degrees that feature more internships
6. but bottom line: ability unlikely to explain entire gradient

Regular jobs are an opportunity cost

	Internships	Regular Jobs
Panel A: Bachelor		
Employment	11.1%	68.4%
Pay	413€	1,061€
Hours	138	85
Hourly Pay	3.25€	11.97€
Panel B: Master		
Employment	20.2%	47.2%
Pay	461€	1,584€
Hours	149	102
Hourly Pay	3.35€	14.74€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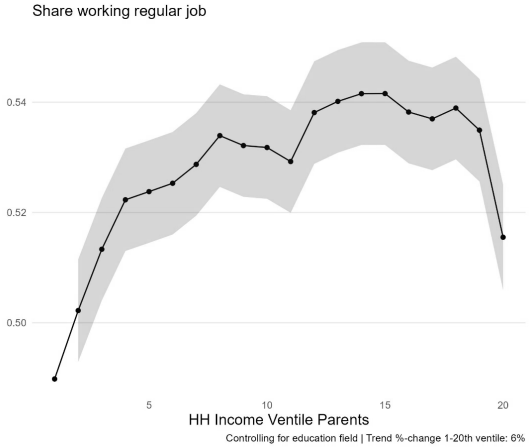
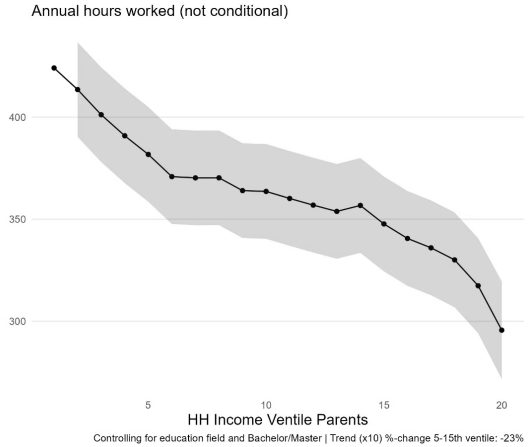
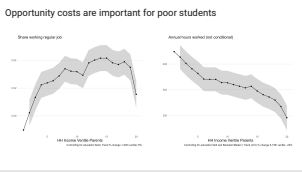
1. regular jobs: any job during university that is not an internship
2. i want to argue that they are an opportunity cost because they are (1) common and (2) pay much more

Opportunity costs are important for poor students







1. regular jobs are relatively more relvant to poor students
2. left: extensive margin of doing a job, right: intensive margin (hours)
3. extensive margin still upward sloping but much flatter (6% increase from poorest to richest compared to 39% for internships)
4. looking at hours makes it clear that poor students work more (hours here are not conditional on working)

Career vs survival jobs

Industry	Share	Monthly Pay
Temping	12.3%	€1,146
Health	10.8%	€1,147
Education & Research	9.7%	€1,289
Hospitality	8.5%	€961
Consulting	7.9%	€1,432
Finance	7.2%	€1,401
Retail	6.8%	€1,033
Law & Accounting	6.1%	€2,054
Department Stores	5.4%	€1,059
Cultural	5.0%	€1,195

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1. what is a 'regular job'? here i list 10 most common industries
2. can clearly divide into survival jobs (temping, hospitality, retail, department store) and career jobs (consulting, education, health, finance, law)
3. career jobs pay more than survival jobs

During a degree: Survival jobs ↓ – Career jobs ↑

	Survival jobs		Career jobs	
Industry	Share	Monthly Pay	Share	Average Pay
Bachelor 1st Year	14.0%	€333	11.5%	€475
2nd Year	12.0%	€423	13.2%	€581
3rd Year	11.8%	€533	13.6%	€746
Extra Years	15.3%	€874	17.6%	€1,311
Master 1st Year	7.5%	€516	12.2%	€958
2nd Year	6.9%	€617	14.3%	€1,183
Extra Years	8.8%	€961	18.9%	€1,951

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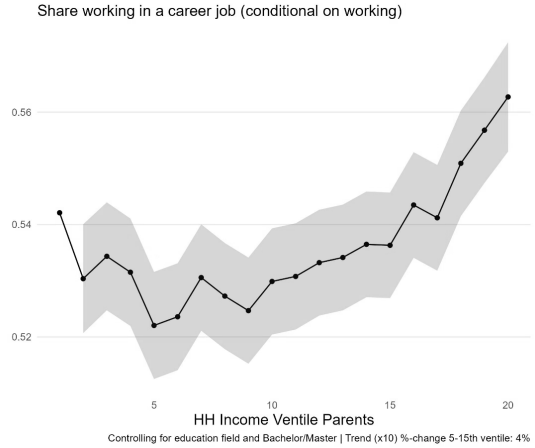
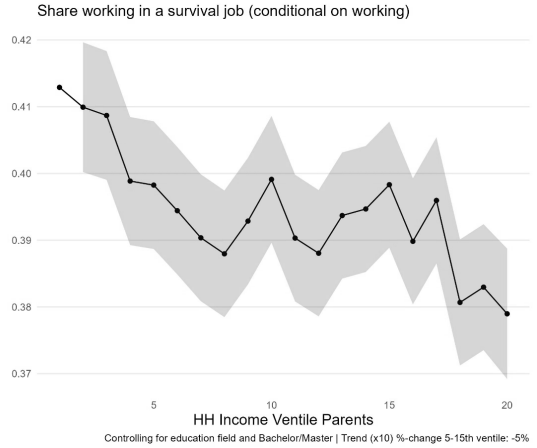
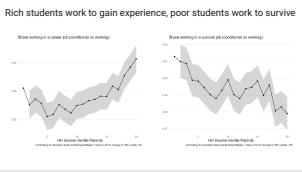
1. as expected: survival jobs common at beginning and become less common over academic career
2. opposite for career jobs

Rich students work to gain experience, poor students work to survive







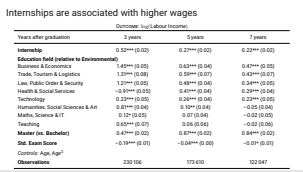
1. now show extensive margin gradients again, but split by job type and conditional on working
2. gradient reversal between career and survival jobs, survival jobs are more relevant for poor students
3. intuitively, survival jobs are what i'd consider opportunity costs for poor students

Labour market returns

1. the inequality only matters if there are labour market returns
2. no causal identification but only correlations, still useful to get a sense of either the causal return or selection connected to internships

Internships are associated with higher wages

Outcome: log(Labour Income)			
Years after graduation	3 years	5 years	7 years
Internship	0.52*** (0.02)	0.27*** (0.02)	0.22*** (0.02)
Education field (relative to Environmental)			
Business & Economics	1.45*** (0.05)	0.63*** (0.04)	0.47*** (0.05)
Trade, Tourism & Logistics	1.31*** (0.08)	0.59*** (0.07)	0.43*** (0.07)
Law, Public Order & Security	1.21*** (0.05)	0.48*** (0.04)	0.34*** (0.05)
Health & Social Services	−0.91*** (0.05)	0.41*** (0.04)	0.29*** (0.04)
Technology	0.23*** (0.05)	0.26*** (0.04)	0.23*** (0.05)
Humanities, Social Sciences & Art	0.81*** (0.04)	0.10** (0.04)	−0.05 (0.04)
Maths, Science & IT	0.12* (0.05)	0.07 (0.04)	−0.02 (0.05)
Teaching	0.65*** (0.07)	0.06 (0.06)	−0.02 (0.06)
Master (vs. Bachelor)	0.47*** (0.02)	0.87*** (0.02)	0.84*** (0.02)
Std. Exam Score	−0.19*** (0.01)	−0.04*** (0.00)	−0.01* (0.01)
Controls: Age, Age^2			
Observations	230 106	173 610	122 047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1. internships are associated with much higher wages, still above 20% after 7 years
2. reg of log(labour income) on internships plus bunch of controls
3. internships important but not as important as field of study or doing a master
4. confusing that Math & science have low returns

Internships are associated with income inequality

DEPENDENT VARIABLE: $\log$(Labour Income)			
Years after graduation	3 years	5 years	7 years
Income gradient			
W/o controlling for internship	0.0055***	0.0179***	0.0194***
W/ controlling for internship	0.0042***	0.0161***	0.0170***
Percentage change	24.2%	10.1%	12.6%

Internships are associated with income inequality
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Years after graduation | 3 years | 5 years | 7 years
Income gradient
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W/ controlling for internship | 0.0042*** | 0.0161*** | 0.0170***
Percentage change | 24.2% | 10.1% | 12.6%

1. similar to before, estimate slope of Parental income gradient in own labour income
2. check how much the gradient reduces if controlling for internship
3. how much of the income inequality is associated with whether you did an internship
4. significant part of the gradient is associated with internships, more than 10% even after 7 years
5. relevance depends on what are the causal reasons for difference in access

Next Steps

- Find a great identification strategy
- Explore the role of personal networks
- Understand the connection between career jobs and internships

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- Find a great identification strategy
- Explore the role of personal networks
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1. identification strategy:
   - 1.1 Dutch institutional details: mandatory internships, policies that made it easier to find internships
   - 1.2 but: didn't find something absolutely convincing yet
   - 1.3 potential to use personal network data: having a colleague of relative working in relevant industry, having relative living in a big city (reduces cost of doing internship)
2. understand much better what career jobs are. are they an alternative to internships, or is it the promotion after an internship?
3. why would you do an internship if you could do a better paid job in a similar firm? maybe internships are more competitive/useful