Affirmative Action and Effort Choice: An Experimental Investigation

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Motivation

- Persistent disparity in education and/or labour market outcomes between different social groups in both developed and developing countries
  - Ethnicity
  - Religion
  - Gender
- In Australia there are sizeable and systematic differences between indigenous and non-indigenous people
- Closing the gap is a national public policy priority

Motivation: Affirmative action

- Affirmative action (AA) has been used as a policy tool to address such inequalities
- Typically AA gives preferential treatment to specific social groups to compensate for their disadvantaged trajectory, influenced by socioeco background, historical discrimination and stereotypes
- The goal of AA is to sustainably attenuate inequality between different social groups and stereotypes
  - By changing beliefs of the disadvantaged groups wrt their education and labour market options, thereby, increasing investment in education
  - By changing society's beliefs wrt to relevant traits of disadvantaged groups through exposure to members of such groups

Motivation

Despite its popularity, it is still debated if AA

- Increases effort (e.g. education investment) of the disadvantaged groups attenuating the potential gap in skills and stereotypes

  Or

- By inducing lower standards, reinforces differences in skills and stereotypes (see Coate and Loury, 1993)

This study

- Lab experiment in disadvantaged high schools with a high representation of indigenous Australians (between 7% and 27% vs a national average of 7%)
- Students perform an effort-based task in a competitive setting and with monetary incentives
- AA is introduce by giving a starting advantage (positive handicap) to those in the bottom 3rd of the performance distribution
- Overall, AA
  - Increases effort at the task of those that the rule aims to favour
  - Does not discourage effort of those who are not benefited (but indirectly penalised) by the policy

Experimental literature

- Lab experiments are an important tool to study the incentive effects of AA
  - Such policies are often adopted endogenously, challenging the interpretation of its causal effects by means of observational data
  - It is very unlikely that it will be possible to conduct field experiments, with a valid counterfactual (Falk and Heckman, 2009)
- To increase external validity, a few lab studies use real-effort tasks and introduce AA based on real stereotypes/asymmetry in skills

Experimental literature

- Competitive setting
- Niederle et al. (2013) and Balafoutas and Sutter (2012) focus on the gender gap in competitive preferences
  - Use a real-effort task (simple calculations)
  - Show that AA in favour of women attenuates the gender gap in tournament entry
- Dulleck et al. (2015) base the experimental design on the real stereotype and differences in skills in math between Australia and Chinese students
  - Cross-country experiment in Australia and in China
  - Participants perform a math task in mixed ethnic groups
  - Show that AA in favour of Australian participants does not influence performance

Experimental literature

- Calsamiglia et al. (2013) manipulate participants' *experience* at solving a logic-based task (sudoku)
  - Experiment conducted in primary schools
  - Pair experienced participants with non-experienced participants
  - AA in favour of the unexperienced participants has a positive impact on performance

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  - Experiment conducted in primary schools
  - Pair experienced participants with non-experienced participants
  - AA in favour of the unexperienced participants has a positive impact on performance
- Closely related to my study **but**
  - Logic-based task vs effort task
  - Participant pool
  - Better external validity and policy implications: persistent social gradient in education is often associated with lower motivation and effort in school by socially disadvantaged students

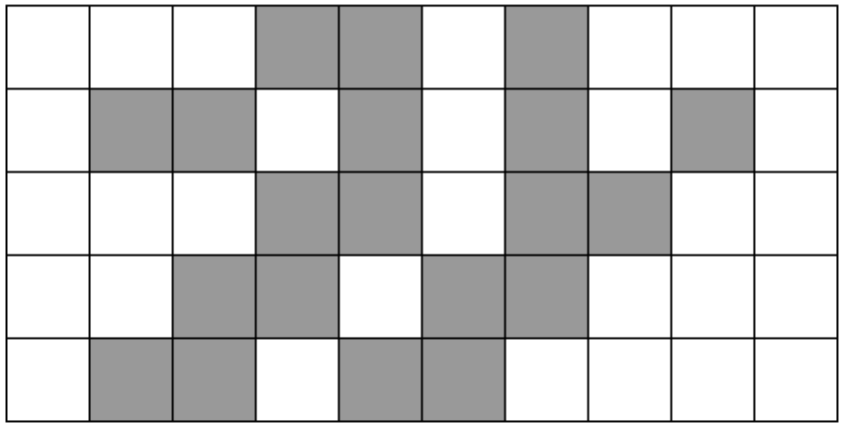
Participant pool

- 263 students enrolled in Year 8 and Year 9 (aged between 13 and 15), including 55 indigenous Australians
- 4 public schools with similar and below national average socio-educational advantage indicators and relatively large numbers of indigenous students
- Schools use AA, by partnering with an NGO that regularly provides encouragement and learning support for indigenous students

Task

- Real-effort task

  How many squares in the grid are shaded?



- Each time that the participant enters an answer, a new grid appears on the computer screen
- Participants perform 2 stages of the same task, each lasting 8 minutes

TREATMENTS

	Baseline	Affirmative action
Stage 1	Participants whose number of correct answers is in the top 3rd of the distribution get the high piece-rate payment ($0.15). All the others get the low piece-rate payment ($0.05)	
Stage 2	As in S1	Participants whose number of correct answers is below the bottom 3rd in S1 receive 15 extra points in S2. Participants whose score (number of correct answers + extra points) is in the top 3rd, receive the high piece-rate payment **for each correct answer**. All the others receive the low piece-rate payment

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- Info before Stage 1:
  - There will be 2 stages of the same task
  - In Stage 2, 1/3 of the participants in the session may receive 15 extra points
  - Before Stage 2, they will be informed whether some participants are receiving the extra points and if they are one of them

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- Info before Stage 2:
  - If they were in the top 3rd in Stage 1 and their no. of correct answers
  - If 1/3 of the students in the room receives 15 extra points in Stage 2, and if so, if they are one of them

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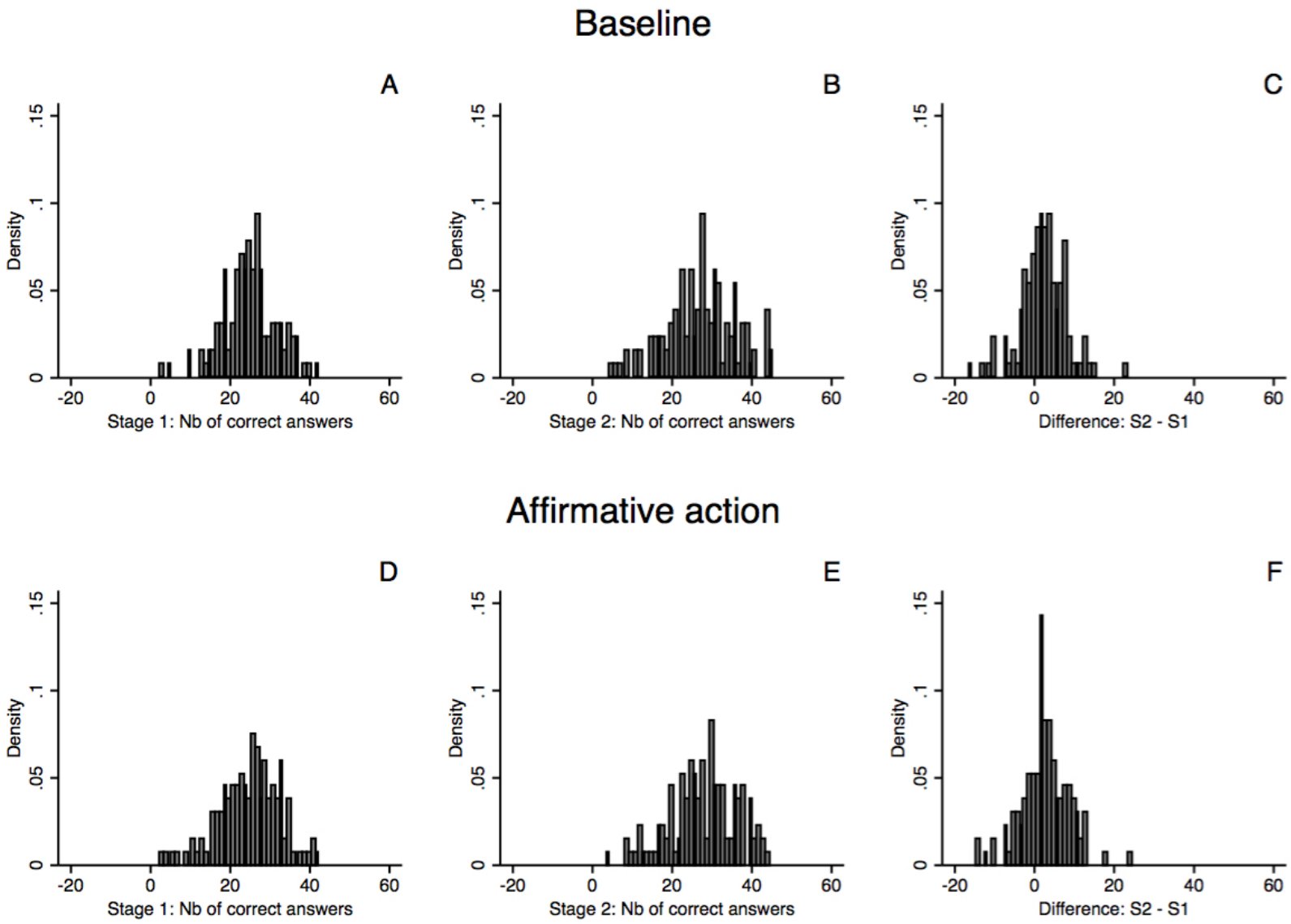
- After performing in each stage, participants are asked to guess their rank (non-incentivized)

RESEARCH QUESTIONS

- Does AA influence effort of the lowest performers?
- Does AA impact the effort of participants who are not targeted by AA, but are indirectly penalised when the lowest performers are given a starting advantage?
- Are there efficiency gains/losses from AA?

DESCRIPTION OF PARTICIPANTS' PERFORMANCE



DESCRIPTION OF PARTICIPANTS' PERFORMANCE

	Stage 1		Stage 2		Difference	
	mean	sd	mean	sd	mean	sd
Sample: All						
Baseline	25.09	6.84	27.50	8.89	2.42***	5.71
Affirmative action	25.10	7.57	28.03	8.39	2.93***	5.94
Difference	0.01		0.53		0.51	
Sample: Bottom 3rd in Stage 1						
Baseline	18.33	4.75	20.00	7.43	1.67	7.12
Affirmative action	17.09	5.12	21.26	7.80	4.17***	7.09
Difference	-1.24		1.26		2.5*	
Sample: Above the bottom 3rd in Stage 1						
Baseline	28.70	4.71	31.52	6.75	2.82***	4.80
Affirmative action	29.30	4.72	31.57	6.26	2.27***	5.17
Difference	0.60		0.05		-0.55	

OLS REGRESSIONS ON PERFORMANCE

	Stage 1		Stage 2		Difference	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
Treatment **AA**	0.593	-0.033	0.044	-0.837	-0.549	-0.804
	(0.901)	(0.706)	(1.130)	(1.044)	(0.530)	(0.534)
Bottom 3rd	-10.369***	-10.180***	-11.524***	-10.925***	-1.155	-0.745
	(0.898)	(0.918)	(1.328)	(1.291)	(0.913)	(0.950)
AA x Bottom 3rd	-1.839	-1.650	1.216	1.433	3.056**	3.083**
	(1.279)	(1.336)	(1.643)	(1.568)	(1.389)	(1.289)
Male		0.497		-0.450		-0.947*
		(0.729)		(0.864)		(0.540)
Year 9		1.611*		2.177***		0.566
		(0.763)		(0.732)		(0.771)
Indigenous		-0.452		-0.226		0.225
		(0.756)		(0.963)		(0.625)
Math		0.679*		0.566		-0.113
		(0.347)		(0.478)		(0.288)
Checkbonus		-0.305		0.719		1.024**
		(0.838)		(0.740)		(0.478)
Constant	28.702***	13.091*	31.524***	11.117	2.821***	-1.975
	(0.797)	(6.988)	(0.941)	(6.618)	(0.378)	(6.295)
N	263	259	263	259	263	259

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OLS REGRESSIONS ON EXPECTED RANK

	Stage 1		Stage 2		Difference	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
Treatment **AA**	-0.031	-0.028	-0.010	-0.015	0.023	0.016
	(0.030)	(0.036)	(0.031)	(0.032)	(0.018)	(0.020)
Bottom 3rd	-0.010	-0.017	0.023	0.012	0.039	0.036
	(0.044)	(0.048)	(0.038)	(0.041)	(0.033)	(0.040)
AA x Bottom 3rd	-0.019	0.000	0.026	0.045	0.035	0.034
	(0.056)	(0.060)	(0.041)	(0.045)	(0.045)	(0.048)
Male		-0.020		-0.034		-0.011
		(0.022)		(0.020)		(0.024)
Year 9		-0.019		-0.007		0.012
		(0.032)		(0.022)		(0.025)
Math		0.020		0.009		-0.013
		(0.016)		(0.011)		(0.012)
Indigenous		0.084***		0.087***		-0.006
		(0.025)		(0.020)		(0.020)
Checkbonus		0.057		0.048		-0.013
		(0.043)		(0.038)		(0.023)
Rank in stage 1	0.145*	0.143*				
	(0.070)	(0.070)				
Rank in stage 2			0.205***	0.213***		
			(0.068)	(0.067)		
Constant	0.279***	0.309	0.279***	0.262	0.032**	-0.001
	(0.036)	(0.304)	(0.038)	(0.217)	(0.014)	(0.238)
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Efficiency effect: Average performance in Stage 2

	Baseline	Affirmative action	Diff.
Whole sample	27.50	28.03	0.53
Top 3rd	37.15	33.66	- 3.49***
Below top 3rd	23.32	25.28	1.96*

Summary

- Investigated how AA impacts performance in a simple effort-based task, with a competitive setting and monetary incentives
- Findings indicate that participants who benefit from AA increase their effort in the task
  - AA increases the gap in performance between the two stages, by approx. 150% relative to the baseline
- Any potential discouraging effects on those who are indirectly penalised by affirmative action are small

Discussion

- First study that tests the effect of AA with participants who have very disadvantaged socioeconomic backgrounds
- Unlike other studies, the task is a pure effort task
- Findings suggest that AA is an effective policy tool to encourage effort of students who in the absence of the policy would provide lower effort
- Thereby it may have the potential to reduce patterns of inequality in education, where achievement is highly linked to effort
- Even a very strong AA policy in favour of low performing students does not seem to discourage those above the eligibility threshold

Thank you for your attention!

Questions? Comments?