

The effects of credit rationing on re-enrollment rates at the University of Cape Town (UCT)

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A change in the policy for renewed funding at UCT in 2015

2014 Undergraduate Students

Students currently receiving financial assistance are **no longer required to re-apply for financial assistance**. In considering the renewal of financial assistance Student Financial Aid will apply the following criteria;

Students must have met academic eligibility which is set at a minimum pass of 50% of registered courses including any winter and/or summer term courses in the academic year

Students that are academically excluded are automatically ineligible for funding renewal

Students must not have exceeded years of study which is the minimum duration of the programme plus 2 years (N+2)

Relevance

- Taps into discussions:
 - Public finance
 - Targeting of resources
 - Educational attainment
 - Student debt
- Findings to inform the discussion about how best to allocate scarce NSFAS resources

Motivation

- Full cost of university study is high and has increased sharply.
- Limited access to credit market among learners from poor socioeconomic backgrounds.
- National Student Financial Aid Scheme (NSFAS) resources are limited and the NSFAS cap has not kept pace with fees.
 - 31% of eligible NSFAS applicants did not receive funds in 2015 (Performance and Expenditure Review)
 - NSFAS cap in 2014 was R67 200, average traditional uni fees >R80 000
- Student dropout rates are high, especially among students on financial aid.
- Debt burden of not qualifying large.
- Therefore targeting of funds to those who will graduate is an important consideration.

Research questions

- What is the impact of losing financial aid due to poor academic performance on re-enrollment at the University of Cape Town?
- Are there difference for those students funded through the National Student Financial Aid Scheme (NSFAS)?

UCT institutional data

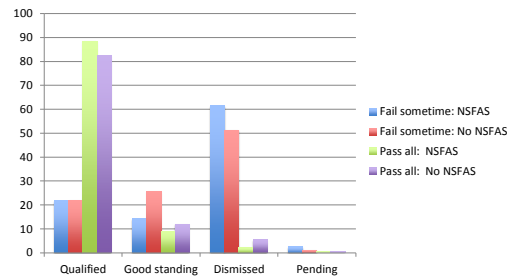
- Yearly individual level data
- 2010 to 2014 entry cohorts in all programs
- Year-on-year information on:
 - enrolment, academic standing, number of courses taken and number of courses completed.
- Our key variable of interest is re-enrolment.
- Analysis is restricted to respondents who have
 - completed at least first year and enrol in calendar years 2011 to 2015
 - In academic years 2-4 only
- Financial aid includes students on NSFAS and GAP funding

Percentage and number of students who fail 50% at UCT

	NSFAS		No NSFAS	
	%	#	%	#
2011	14%	160	8%	427
2012	14%	250	7%	599
2013	15%	255	7%	677
2014	12%	264	6%	674
2015	13%	204	6%	507

- About 14% of students funded via NSFAS and 7% of student not funded by NSFAS fail 50% of their courses.
 - Primarily in the first 2 years - drops to 5% in year 3 and 1% in year 4 (2.5% and 0.5% for non NSFAS)
- Good academic standing \neq passing 50%
 - 61% of students who fail 50% of their courses are in good academic standing

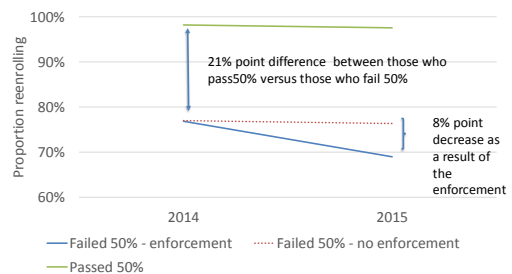
Academic Standing of those who pass 50% all the way compared to those who fail at least once – UCT 2009 cohort by end of 2014



Empirical Strategy

- Differences-in-differences and difference-in-difference-in-differences strategy
 - Pre-post the rule enforcement
 - Financial aid status
 - Academic trajectories
 - School characteristics, entrance characteristics, individual characteristics
 - Conditionally random decrease in financial aid access in 2015
- Identification Assumptions:
 - Enrolment trends would have been the same, conditional on covariates, if the policy rule had not been enforced.
 - The enforcement of the rule did not change the composition of the group passing 50% versus failing 50%

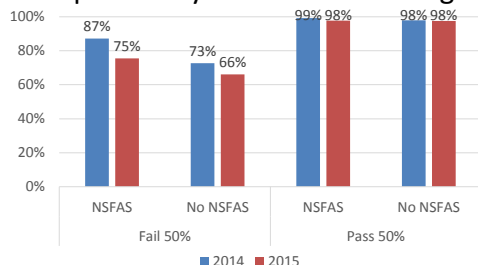
Proportion re-enrolling by whether passed 50% of courses



	Dependent Variable: Re-enrolment		
Failed 50%	-0.215*** (0.011)	-0.081*** (0.011)	-0.077*** (0.010)
Post	-0.007*** (0.002)	-0.007*** (0.002)	-0.008*** (0.002)
Post x Failed 50% previous year	-0.074*** (0.023)	-0.076*** (0.021)	-0.077*** (0.020)
Constant	0.982*** (0.001)	0.672*** (0.034)	0.640*** (0.035)
N	39,151	39,151	39,151
R-squared	0.091	0.200	0.204
Entry Cohort	No	Yes	Yes
On NSFAS previous year	No	Yes	Yes
On GAP previous year	No	Yes	Yes
Cumulative GPA from previous year	No	Yes	Yes
Courses taken in previous year	No	Yes	Yes
Female, population group indicator	No	No	Yes
School's authority under apartheid	No	No	Yes

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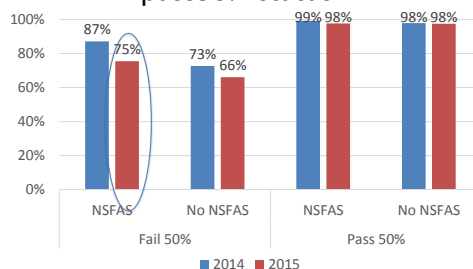
Re-enrolment by whether passed 50% and previous year's NSFAS funding



	Dependent Variable: Re-enrolment		
Failed50%	-0.263*** (0.014)	-0.113*** (0.013)	-0.109*** (0.013)
Post	-0.006*** (0.002)	-0.006*** (0.002)	-0.008*** (0.002)
OnInaidInpreviousYear	0.008*** (0.002)	0.023*** (0.002)	0.012*** (0.002)
PostOnInaidInpreviousYear	-0.003 (0.004)	-0.004 (0.004)	-0.002 (0.004)
PostFailed50InpreviousYear	-0.051* (0.028)	-0.050** (0.025)	-0.051** (0.025)
PostOnInaidInpreviousYear	0.163*** (0.021)	0.102*** (0.019)	0.102*** (0.019)
PostFailed50OnInaidInpreviousYear	-0.082* (0.046)	-0.088** (0.043)	-0.086** (0.043)
Constant	0.981*** (0.001)	0.684*** (0.034)	0.650*** (0.035)
N	39,151	39,151	39,151
R-squared	0.099	0.202	0.207
Entry Cohort	No	Yes	Yes
Cumulative GPA from previous year	No	Yes	Yes
Courses taken in previous year	No	Yes	Yes
Female population group indicator	No	No	Yes
School's authority under apartheid	No	No	Yes

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Re-enrolment by prior NSFAS and pass50% status



The impact of credit rationing on re-enrollment rates at UCT

- Those students not on NSFAS experienced a 5.5 point decrease in re-enrollment as a result of the policy change.
- Those students on NSFAS experienced an additional 7% point decrease in re-enrollment.
 - In total a 13 % decrease in re-enrollment among NSFAS funded students.
- Yet, the majority of affected students continued to re-enroll without financial aid.
- Suggests that credit constraints are binding on the decision to re-enroll, but only for a relatively small proportion of the students who were affected by the change in the policy.

Conclusions, further work and limitations

- Several important and complex policy issues:
 - National budget to NSFAS, which students to fund given budgetary constraints, educational attainment, student debt.
 - Sustainability of Higher Ed. Institutions (Austerity)
 - Unpacking why students are not passing and what part financial aid is playing in this
 - Political constraints (Disruptions)
- We need to unpack how those student who lost financial aid, continued to study and their likelihood of graduation.
- Limitation – behaviour of UCT students are probably not representative of the SA student population at large.

Thank you

Additional slides

Financial Aid

- Students reenrolled without funding in 2015
- If passed 75% of courses at the end of the year their debt was relieved via the VC's appeal process
- 23% (18 of the 78 students) managed to meet this criteria

	Entering without financial aid				
	2010	2011	2012	2013	2014
# Entering	3033	3019	3336	3134	3184
Dropout in year:					
2	7%	7%	8%	7%	7%
3	4%	4%	4%	5%	
4	4%	4%	5%		
5	3%	2%			
6	1%				
Total	19%	17%	17%	12%	7%
Graduate in year:					
1	0%	0%	0%	0%	0%
2	0%	0%	0%	1%	0%
3	27%	25%	24%	25%	
4	32%	35%	32%		
5	13%	12%			
Total	73%	72%	57%	25%	0%

	Entering with financial aid				
	2010	2011	2012	2013	2014
# Entering	643	595	593	603	598
Dropout in year:					
2	7%	10%	8%	6%	10%
3	7%	7%	8%	7%	
4	9%	7%	9%		
5	6%	5%			
6	3%				
Total	32%	29%	25%	13%	10%
Graduate in year:					
1	0%	0%	0%	0%	0%
2	0%	0%	0%	0%	0%
3	13%	15%	12%	14%	
4	23%	26%	25%		
5	20%	16%			
Total	55%	56%	38%	14%	0%

	All		Entering with financial aid				Entering without financial aid			
			Passed 50% or more		Didn't pass 50%		Passed 50% or more		Didn't pass 50%	
	Mean	#	Mean	#	Mean	#	Mean	#	Mean	#
Individual characteristics:										
Female	0.539	18651	0.553	2625	0.475	360	0.545	14570	0.454	1051
English home language	0.405	18761	0.197	2669	0.182	363	0.446	14625	0.432	1051
SA written	0.860	18761	0.979	2669	0.989	363	0.840	14625	0.796	1051
SA born	0.519	18761	0.562	2669	0.672	363	0.507	14625	0.509	1051
African	0.312	18671	0.627	2632	0.701	361	0.245	14581	0.318	1051
Coloured	0.143	18671	0.214	2632	0.208	361	0.126	14581	0.169	1051
Indian	0.089	18671	0.052	2632	0.036	361	0.096	14581	0.107	1051
White	0.338	18671	0.086	2632	0.033	361	0.396	14581	0.260	1051
Other	0.118	18671	0.021	2632	0.022	361	0.136	14581	0.147	1051
Matriculation characteristics:										
Matriculated prior to 2008	0.021	18173	0.035	2659	0.069	361	0.015	14090	0.043	1051
Old school authority (under apartheid)										
Capetown Dept	0.479	13016	0.324	2123	0.235	285	0.519	9912	0.476	1051
HoA	0.004	13016	0.002	2123	0.000	285	0.004	9912	0.020	1050
HoD	0.006	13016	0.008	2123	0.007	285	0.006	9912	0.005	1058
HoR	0.052	13016	0.122	2123	0.116	285	0.036	9912	0.048	1058
DET	0.124	13016	0.327	2123	0.474	285	0.069	9912	0.137	1058
Joint Matric Board	0.000	13016	0.000	2123	0.000	285	0.001	9912	0.000	1020
Natal Edu Dept	0.165	13016	0.077	2123	0.074	285	0.187	9912	0.162	274
OFSEdu Dept	0.012	13016	0.008	2123	0.007	285	0.013	9912	0.008	274
Transkei Edu Dept	0.010	13016	0.024	2123	0.021	285	0.007	9912	0.011	274
Transvaal Edu Dept	0.118	13016	0.062	2123	0.035	285	0.134	9912	0.102	274
International	0.028	13016	0.046	2123	0.032	285	0.024	9912	0.033	274
Matric score	138.326	10946	144.403	1500	119.280	244	139.745	8521	110.451	274
Matric maths %	78.092	9989	72.780	1602	73.066	182	79.553	7681	74.615	666
Matric English %	74.700	9754	70.515	1472	69.352	236	75.867	7500	72.129	666
Entrance marks:										
Amittance score	422.653	9983	426.41	1549	374.94	175	424.83	7749	396.85	484
NBT score	69.951	14812	60.765	2214	58.583	278	72.089	11497	68.425	666
NBT Q1 score	63.993	14814	62.135	2214	48.217	277	66.840	11501	61.043	666
NBT math score	57.316	11849	48.010	1634	46.092	196	59.484	9422	51.871	666

The data

	Sample		Finally year imputed		
	#Students	#Obs	#Obs Financial Aid	#Students	%Students
All	18761	47575	6454	8089	43.1%
Entry cohort:					
2010	3680	13392	1710	3199	86.9%
2011	3623	12268	1601	2591	71.5%
2012	3934	10929	1414	1522	38.7%
2013	3742	7188	1090	491	13.1%
2014	3782	3798	639	286	7.6%
Year of re-enrolment:					
2011		3645	578	250	
2012		7001	1063	442	
2013		10388	1459	1488	
2014		12509	1477	2557	
2015		14032	1877	3352	

Historical success rate of students by 50% pass criteria

- At the end of each year a student receives an academic standing code – this determines whether they are eligible to continue or graduate
 - We also know whether they have passed or failed 50% of their courses
- The following year (before the policy change) they could:
 - Enrol on financial aid
 - Enrol without financial aid
 - Dropout
- Therefore by the end of year 3, there are 52 different pathways a student starting on NSFAS may have taken

Which pathways were most prevalent?

- Using pre-2014 cohorts who start year 1 on NSFAS, at the end of year 3:
- Pass 50% all the way through (67%):
 - 50% have remained on NSFAS
 - 8% were only on NSFAS for the first year
 - 7% were on NSFAS in years 1 and 2 only
 - 2% were on NSFAS in years 1 and 3 only
- Dropped out (having been on NSFAS) (10%):
 - 6% dropped out after failing 50% in year 1
 - 3% dropped out after failing 50% in year 2
 - 1% dropped out after failing 50% in years 1 and 2

Which pathways were most prevalent?

- Remaining enrolled on NSFAS but fail 50% along the way (13%):
 - 6% Pass Pass Fail
 - 2% Pass Fail Pass
 - 2% Pass Pass Fail
 - 2% Fail Pass Pass
 - 1% Fail Pass Fail
 - 0% (3 students) Fail Fail Pass
- Remaining 10% spread over other pathways, 1% or less per pathway.

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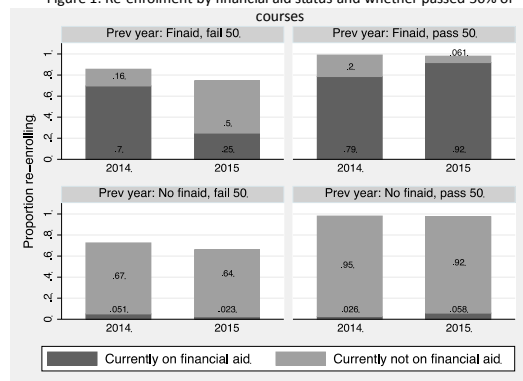
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Students that are academically excluded are automatically ineligible for funding renewal

Students must not have exceeded years of study which is the minimum duration of the programme plus 2 years (N+2)

Figure 1: Re-enrolment by financial aid status and whether passed 50% of courses



A brief overview of NSFAS

- NSFAS is primarily a loan but up to 40% of the award may be converted into a bursary depending on results
 - Pass 100% - 40% to bursary
 - Pass 75% - 30% to bursary
 - Pass 50% - 20% to bursary
- N+2 maximum years of funding
- Final year program converts full loan amount in final year of study to a bursary
- Repayment and interest (at inflation) begins once student is employed and earning above R30 000
 - Repayment rate of 3% (R900 per year)
 - Up to a max of 8% once earn more than R63 100.
- Repayment levels have, to date, been low.

The decision to enrol

- Our models implicitly assume that students are dynamically rational, and decide to re-enrol if it is both feasible and makes economic sense.
- Feasibility:
 - The availability of alternative funding sources if they are no longer eligible for NSFAS/GAP (Family loans, scholarships)
- Dynamic rationality:
 - This requires an understanding of the cost of re-enrolment
 - The likely probability of subsequently graduating
 - The payoffs to being a graduate as compared to not finishing college

Empirical strategy – DD and DDD

$$Y_i = \alpha_0 + \beta_1(\text{fail50}) + \beta_2(\text{post}) + \beta_3(\text{post*fail50}) + \delta X_i + \epsilon_i$$

- The key parameter that we are interested in is β_3

$$Y_i = \alpha_0 + \beta_1(\text{fail50}) + \beta_2(\text{finaid}) + \beta_3(\text{finaid*fail50}) + \beta_4(\text{post}) + \beta_5(\text{post*fail50}) + \beta_6(\text{post*finaid}) + \beta_7(\text{post*finaid*fail50}) + \delta X_i + \epsilon_i$$

- The key parameter that we are interested in is β_7
- It reflects the additional change in re-enrolment rates in the 'post' period (i.e. 2015) relative to the previous periods (i.e. before the rule change), amongst the subset of students who were already on financial aid and who had failed more than 50% of their courses in the preceding year.

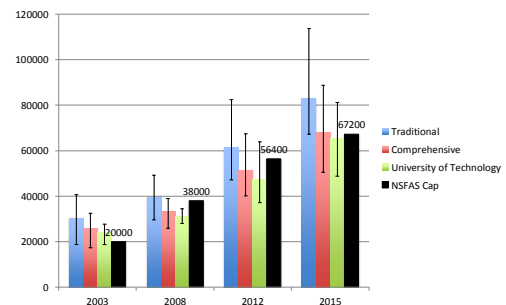
Non NSFAS

	Passed $\geq 50\%$				Failed $\geq 50\%$			
	Re-enrolling		On Financial Aid		Re-enrolling		On Financial Aid	
	%	#	%	#	%	#	%	#
2011	0.975	2773	0.024	2703	0.647	136	0.057	88
2012	0.983	5343	0.026	5252	0.721	258	0.081	186
2013	0.981	7307	0.026	7167	0.756	352	0.079	266
2014	0.980	7694	0.019	7543	0.729	373	0.051	272
2015	0.975	8287	0.043	8082	0.666	407	0.030	271

Re-enrolment and re-enrolment on financial aid by year - NSFAS funded

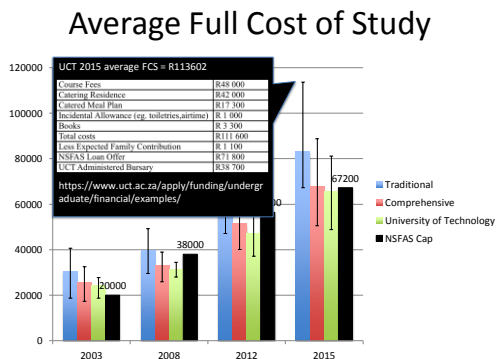
	Passed $\geq 50\%$				Failed $\geq 50\%$			
	Re-enrolling		On Financial Aid		Re-enrolling		On Financial Aid	
	%	#	%	#	%	#	%	#
2011	0.988	552	0.863	548	0.900	50	0.711	45
2012	0.993	992	0.839	984	0.894	85	0.934	76
2013	0.992	1292	0.879	1280	0.931	130	0.876	121
2014	0.991	1512	0.790	1499	0.871	124	0.852	108
2015	0.991	1519	0.943	1485	0.755	151	0.351	114

Average Full Cost of Study

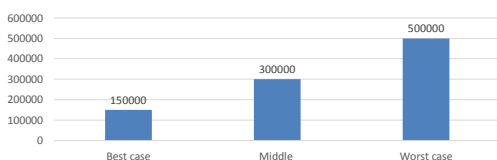


The National Student Financial Aid Scheme (NSFAS)

- Demand > Supply
 - Government's contribution increased over ten fold between 2005 and 2015 to 8.8 billion
 - In 2014 – around 200 000 university students were funded, about 25% of total HEI enrolments.
 - Increasing fees have resulted in rapidly increasing FCS
 - 31% of eligible students do not receive funds and many others do not receive FCS



Performance and accumulating debt: Simulated example, 4 year degree starting 2016



Best case: Student who passes 100% of courses all the way

Middle case: Student fails a few courses along the way but manages to complete in N+2 years

Worst case: Student who passes <50% of courses in each year and does not qualify in N+2 years

Financial aid at UCT

- Commitment to cover all students in need of financial support who are academically eligible at FCS
 - combination of NSFAS and GAP cover loans and institutional bursaries
- Individuals with family incomes up to about R230 000 were eligible for NSFAS
 - Much higher threshold than many other institutions e.g. around R120 000 at Walter Sisulu University
- Up to R550 000 eligible for Gap cover

UCT full cost of study example – NSFAS example

Course Fees	R48 000
Catering Residence	R42 000
Catered Meal Plan	R17 300
Incidental Allowance (eg. toiletries,airtime)	R 1 000
Books	R 3 300
Total costs	R111 600
Less Expected Family Contribution	R 1 100
NSFAS Loan Offer	R71 800
UCT Administered Bursary	R38 700

Performance and accumulating debt: NSFAS rules incentivize completion

- Time to repay debt – assume get a job within a year at 200 000 per annum that increases at 8%
 - Best case : 8 years starting out with take home pay of R16 000 per month
 - Middle case: 16 years starting out take home pay of R15 500 per month
- Other cases without qualifying – employment? Life time debt burden?