Return on Student Loans in Canada

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Introduction

- In 2018–19, approximately 625,000 students borrowed $3.6 billion in Canada Student Loans (excl. Quebec)
  - avg. Canada Student Loan Program (CSLP) loan amount for the year: $5,760
  - avg. total loan balance: $13,400 ($17,200 at universities)

- 3-year cohort default rates have been about 10% for last several cohorts
  - default: more than 9 months delinquent on payments

- In 2018–19, 26% of borrowers in repayment received support under CSLP's Repayment Assistance Plan (RAP)
  - RAP reduces payments (often to zero) for low earners
  - any remaining debt after 15 years is forgiven

Introduction

- Are student loan amounts becoming unsustainable for many students?

- Should the government student loan programs be re-designed?

- Best path forward depends on understanding what is really going on...

- This paper provides a purely positive analysis of student loan repayments & returns on student loans

- Measure the returns on student loans (to the CSLP)
  - characterize the distribution of returns & their predictability
  - describe heterogeneity across borrowers based on characteristics observed at time of loan issue

- A key challenge has been the lack of data on repayment over the full lifecycle of loans
  - most studies examine default rates or repayments only a few years after school (see survey by Gross, et al. 2009)
  - Lochner & Monge-Naranjo (2015) highlight the value of using a longer horizon & alternative measures

- We use new admin. data from Education and Labor Market Longitudinal Platform (ELMLP)

- Canada Student Loan Program (CSLP)
  - contains recipient-level longitudinal information from 2003 to 2015
  - student loan disbursement, repayments, and individual characteristics (demographics, major, institution)

- Postsecondary Student Information System (PSIS)
  - information on students attending Canadian public colleges & universities
  - begins in 2005–2006 for the four Atlantic provinces; 2009–2010 for all others

- Income (tax) records from T1 Family File (T1FF): 1992+. Available for PSIS (and RAIS) records.

Measuring Returns

We define the net rate of return on a loan to borrower i, R_i, as

$$R_i = \frac{\sum_{t=1}^{T}(1+d)^{-t}P_{i,t} - L_{i,0}}{L_{i,0}}$$

- T: number of years over which repayment takes place
- $\{P_{i,t}\}_{t=1}^{T}$: sequence of loan payments
- $L_{i,0}$: loan amount
- d: discount rate used to calculate returns
    - assume $d = 2.8\%$ based on 10-year Canadian treasury rate for 2005–2017
- $R_i > 0$ implies a positive net present value return on loan

Main sample restrictions:

- students ages 18–30 who received CSLP loans for full-time undergraduate studies in the 2005 loan year
- upper-year students (in third or fourth year of studies)
- exclude borrowers with sizable unexplained loan inconsistencies
    - focus on 2005 loan year due to greater inconsistencies for earlier years

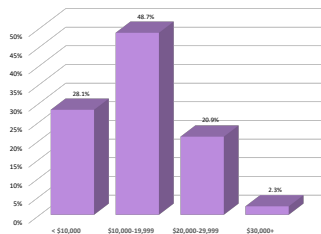Final sample contains roughly 39,000 borrowers

Borrower Characteristics

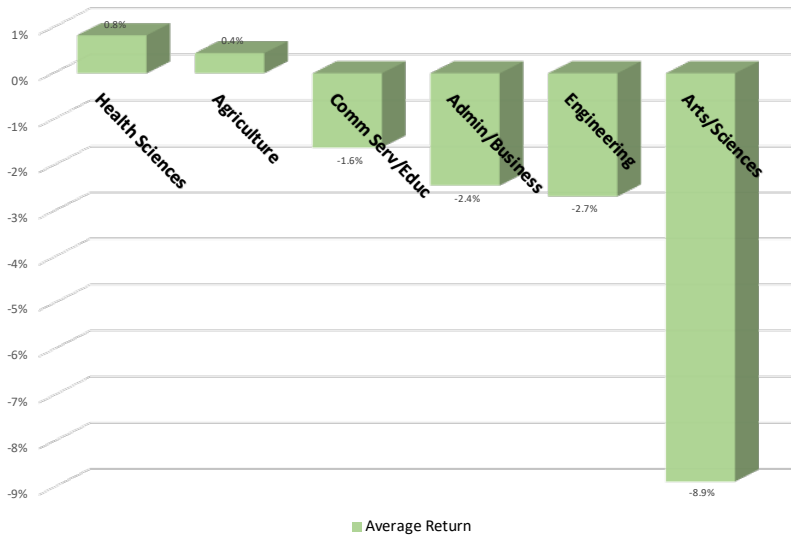|	Mean		Mean
Gender		Year in study	
Female	0.61	Year 3	0.54
Male	0.39	Year 4	0.46
Borrower type		Student loan amounts	
Dependent	0.53	Disbursed in 2005	$5,500
Single independent	0.42	Total undergraduate	$14,800
Married	0.04		
Single parent	0.02		
Age	22.5	▸ Prov ▸ Inst. Ranking	

Figure: Distribution of total amount borrowed

Figure: Distribution of fields of study
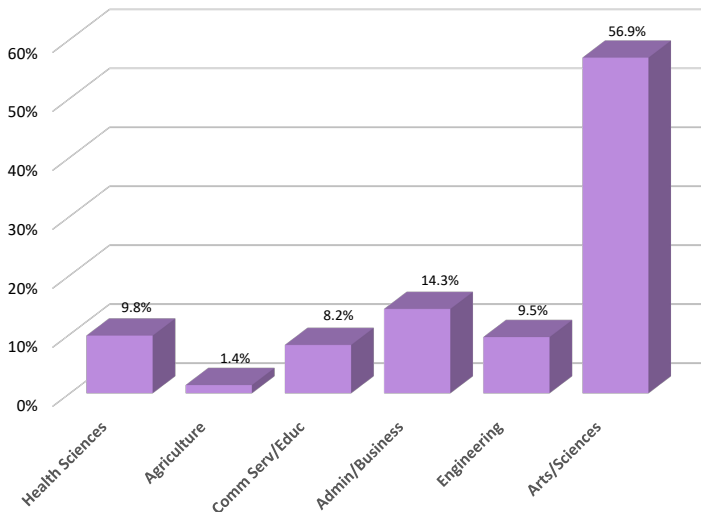
- Average individual-level rate of return $E(R)$ is -5.7% across all borrowers
  - average return is 0.8% higher for women than men

- Average loan-weighted return is -6.9%
  - on average, the CSLP lost 6.9 cents for every dollar it lent out to this cohort of students
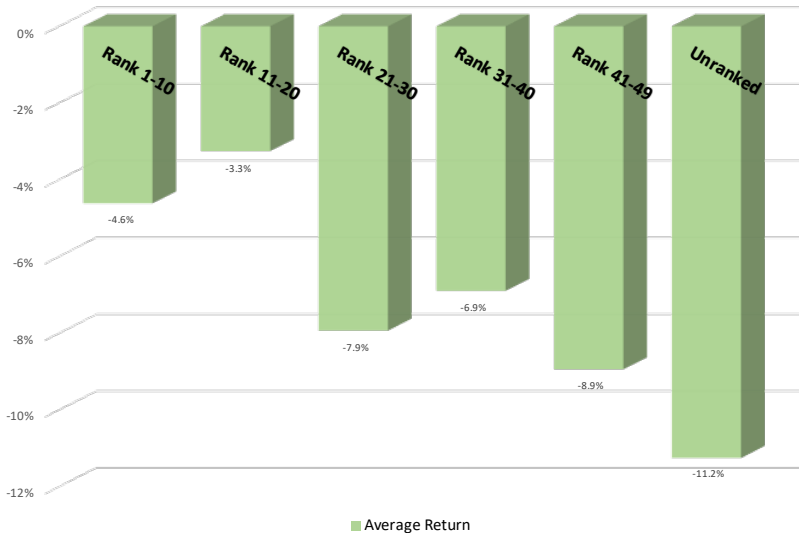 - returns tend to be lower for students who borrowed more

Average Returns by Field of Study

Field of Study	Average Return
Health Sciences	0.8%
Agriculture	0.4%
Comm Serv/Educ	-1.6%
Admin/Business	-2.4%
Engineering	-2.7%
Arts/Sciences	-8.9%

Average Return

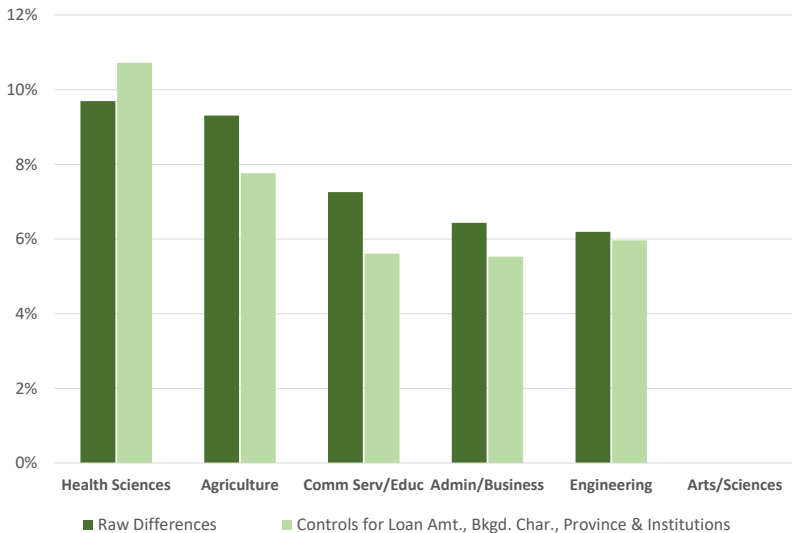Average Returns by Institution Ranking

How Well Can Returns be Predicted?

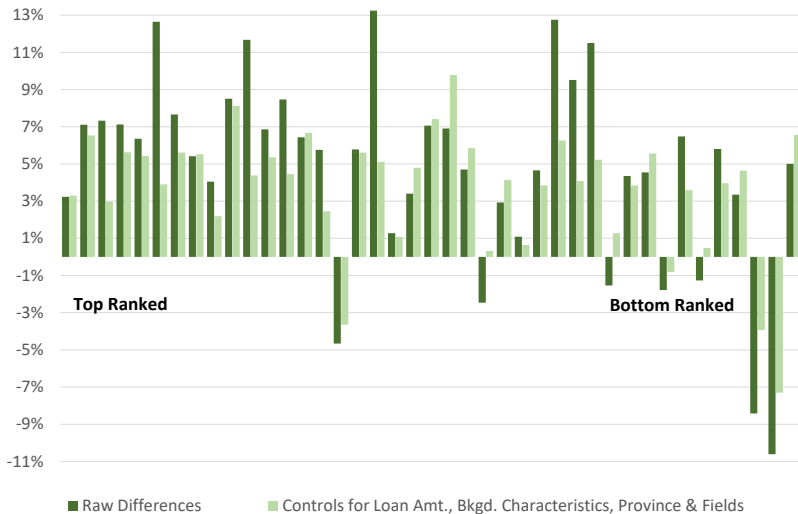We use OLS to estimate expected returns conditional on information available to CSLP in 2005:

- total amount borrowed, allow for nonlinearities
- individual characteristics: gender, family/dependency status, age, year in undergraduate study & home province
- field of study indicators
- institutional indicators for all ranked universities (also include unranked universities)
- interactions of de-meaned loan amounts with
  - field of study indicators
  - institution indicators

Our richest specification explains about 12% of variation in individual returns

Heterogeneity in Predicted Returns by Major

Raw Differences ■ Controls for Loan Amt., Bkgd. Char., Province & Institutions

Heterogeneity in Predicted Returns by Inst. Rank

Top Ranked

Bottom Ranked

■ Raw Differences   ■ Controls for Loan Amt., Bkgd. Characteristics, Province & Fields

- To what extent do differences across fields of study & institutions explain the estimated total variance in predicted returns?
  - differences across fields explain 22% of the variance
  - differences across institutions explain 9% of the variance

Cross-Subsidization

Our results suggest substantial *predictable* losses from some borrowers and *predictable* gains from others.

Expected returns on $15,000 loan to 21 year-old borrowers

- 3rd year student attending lowest return school in NS majoring in Arts/Sciences: -20%
- 4th year student attending highest return school in Saskatchewan majoring in Health Sciences: 15%

High-return borrower helps cover the losses from the low-return borrower

Cream-Skimming

- Private lenders have strong incentives to cream-skim borrowers with high predicted returns

- The extent to which they can do this has important implications for average returns of remaining CSLP portfolio & viability of the program

	% of Borrowers	Avg. Weighted Return
All borrowers	100%	-6.9%
Exclude predicted returns > 10%	99%	-7.0%
Exclude predicted returns > 5%	93%	-7.7%
Exclude predicted returns > 3%	87%	-8.4%
Exclude predicted returns > 0%	74%	-9.9%

- CSLP lost about 7 cents for every loan dollar disbursed to upper-year undergraduates in 2005.

- Heterogeneity across borrowers enrolled in different fields of study is substantial.

- If private lenders were to poach high-return students, the losses by the CSLP would be exacerbated by 1 to 3 percentage points.

- Explore the extend of insurance provided by the current student loan system (e.g., RAP, default).
  - link to tax file.

- Explore more sophisticated prediction models using 'big data' approaches

- Explore effects of changes to CSLP lending & repayment policies
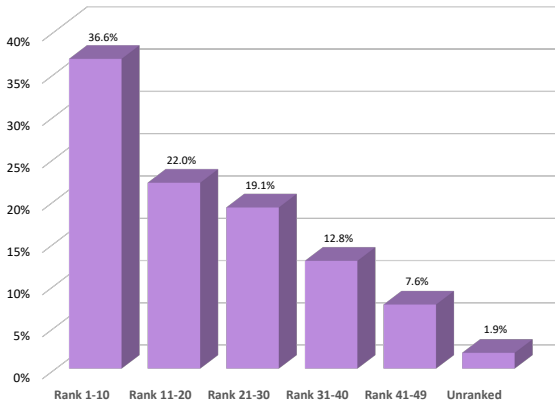 - Can we improve the design of student loan programs?

Figure: Distribution of fields of provinces
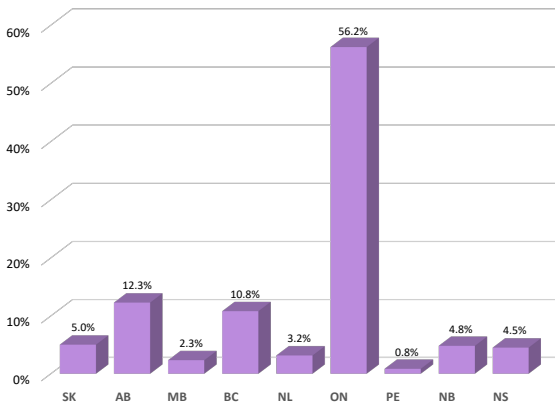
Figure: Distribution of fields of institution ranks