*Import Main Scorecard File

gzuse "${raw}scorecard_clean_all.dta.gz", clear

*Drop MSI etc. Variables because they are null in older years

drop hbcu pbi annhi tribal aanapii hsi nanti menonly womenonly

* Do Some Cleaning and Apply Labels *

label define preddeg 0 "Not Classified" 1 "Certificate" 2 "Associates" 3 "Bachelors" 4 " Entirely Graduate"

label values preddeg preddeg

label variable preddeg "Predominant Undergrad Degree Awarded"

label define control 1 "Public" 2 "Private NonProfit" 3 "Private For-Profit"

label values control control

label variable control "Control of Institution"

label define region 0 "US Service School" 1 "New England" 2 "Mid Atlantic" 3 "Great Lakes" 4 "Plains" 5 "Southeast" 6 "Southwest" 7 "Rocky Mountains" 8 "Far West" 9 "Outlying Areas"

label values region region

label variable region "Region of institution"

label define iclevel 1 "4 year" 2 "2 year" 3 "Less-than-2yr"

label values iclevel_`x' iclevel

label variable iclevel_`x' "Level of Institution"
32.  *Drop states outside of 50 + DC
33.  drop if stabbr=="PR" | stabbr=="PW" | stabbr=="AS" | stabbr=="FM" ///
>       | stabbr=="GU" | stabbr=="MH" | stabbr=="MP" | stabbr=="VI"
(165 observations deleted)
34.  
35.  /* Drop schools that do not have predominant degree classification or
>        are exclusively grad programs */
36.  drop if preddeg==4 | preddeg==0
(931 observations deleted)
37.  
38.  *Rename existing merge variable so that next merge can take place
39.  rename _merge pre_merge
40.  
41.  *****************************************************
42.  *     Merge on IPEDS Revenue and School Info for    *
43.  *       2008-09 School Year                         *
44.  *                                                   *
45.  *    Key data points coming in with this file:      *
46.  *       -Revenue from tuition and fees              *
47.  *       (relevant accounting rules for each sector) *
48.  *       -12 Month FTE                               *
49.  *       *                                          *
50.  * Note: this file also comes in with a variable,  *
51.  *   sector_new, that is already opertionalized to   *
52.  * have the sectors we are interested (see sector  *
53.  * label for info on which schools are in each group)*
54.  *****************************************************
55.  merge 1:1 unitid using "${data_server}ipeds_clean_08_09.dta"
56.  
57.  Result                           # of obs.
58.  not matched                  2,482
59.  from master                     1,832 (_merge==1)
60.  from using                    650 (_merge==2)
61.  matched                  4,980 (_merge==3)
62.  
63.  *Drop schools in using data but not master data
64.  drop if _merge==2
(650 observations deleted)
65.  
66.  *Find duplicates in terms of opeid, generate a tag for those
67.  duplicates tag opeid6, gen(dup_tag)

Duplicates in terms of opeid6
68.  
69.  *Drop the observations of duplicate groups that were only in master
70.  drop if _merge==1 & dup_tag==1
(129 observations deleted)
71.  
72.  *Rename existing merge variable so that next merge can take place
rename _merge ipeds_merge

label define sector 1 "Public 4yr" 2 "Public 2yr or less" 3 "Non-Profit" 4 "For-Profit"

label values sector_new sector

*Operationalizing tuition per FTE variable
gen tuit_rev_per_fte = .  
(6,683 missing values generated)
replace tuit_rev_per_fte = f1tufeft if !missing(f1tufeft)  
(1,732 real changes made)
replace tuit_rev_per_fte = f2tufeft if !missing(f2tufeft)  
(1,467 real changes made)
replace tuit_rev_per_fte = f3tufeft if !missing(f3tufeft)  
(1,775 real changes made)

*Make tuition revenue decile
egen marg_tuit_5_groups = cut(tuit_rev_per_fte), group(5)  
(1709 missing values generated)
label define marg_tuit_5_groups 0 "Tuit Rev/FTE Q1" 1 "Tuit Rev/FTE Q2" 2 "Tuit Rev/FTE Q3" 3 "Tuit Rev/FTE Q4" 4 "Tuit Rev/FTE Q5"
label values marg_tuit_5_groups marg_tuit_5_groups

tab marg_tuit_5_groups, generate(TuitRevQuintile)

<table>
<thead>
<tr>
<th>marg_tuit_5_groups</th>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuit Rev/FTE Q1</td>
<td>994</td>
<td>19.98</td>
<td>19.98</td>
</tr>
<tr>
<td>Tuit Rev/FTE Q2</td>
<td>995</td>
<td>20.00</td>
<td>39.99</td>
</tr>
<tr>
<td>Tuit Rev/FTE Q3</td>
<td>995</td>
<td>20.00</td>
<td>59.99</td>
</tr>
<tr>
<td>Tuit Rev/FTE Q4</td>
<td>994</td>
<td>19.98</td>
<td>79.98</td>
</tr>
<tr>
<td>Tuit Rev/FTE Q5</td>
<td>996</td>
<td>20.02</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Total 4,974 100.00

/*Calculate the cut points for Tution Revenue Quintiles,*/
store them as locals for display on the plot */

sum tuit_rev_per_fte if marg_tuit_5_groups==0

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
</table>
tuit_rev_p-e | 994 | 1230.44| 620.1318 | 0    | 2248 |

local q1_max = r(max)
sum tuit_rev_per_fte if marg_tuit_5_groups==1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>tuit_rev_p-e</td>
<td>995</td>
<td>3408.292</td>
<td>702.5141</td>
<td>2249</td>
<td>4692</td>
</tr>
</tbody>
</table>

local q2_min = r(min)
llocal q2_max = r(max)

sum tuit_rev_per_fte if marg_tuit_5_groups==2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>tuit_rev_p-e</td>
<td>995</td>
<td>6127.643</td>
<td>914.0111</td>
<td>4694</td>
<td>7858</td>
</tr>
</tbody>
</table>

local q3_min = r(min)
llocal q3_max = r(max)

sum tuit_rev_per_fte if marg_tuit_5_groups==3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>tuit_rev_p-e</td>
<td>994</td>
<td>9962.302</td>
<td>1252.823</td>
<td>7859</td>
<td>12331</td>
</tr>
</tbody>
</table>

local q4_min = r(min)
llocal q4_max = r(max)

sum tuit_rev_per_fte if marg_tuit_5_groups==4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>tuit_rev_p-e</td>
<td>996</td>
<td>18861.7</td>
<td>13878.63</td>
<td>12338</td>
<td>330925</td>
</tr>
</tbody>
</table>

local q5_min = r(min)

*Graph share of sectors in each quintile of tuition revenue per FTE

*Export graph
graph export "${graphs}tuit_rev_per_fte_quintiles.png", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/tuit_rev_p
> er_fte_quintiles.png written in PNG format)

********************
*            Merge on MSI Data         *
* from: "Most Recent Cohorts Data Elements.csv" on *
*   http://collegescorecard.ed.gov/data/ *
* Note: Data limited to just unitid and MSI data *
********************
merge 1:1 unitid using "${data_server}msi_info.dta"

Result                           # of obs.
not matched                     3,944
   from master                  1,462 (_merge==1)
   from using                   2,482 (_merge==2)
matched                        5,221 (_merge==3)

*Drop schools in using data but not master data
drop if _merge==2
(2,482 observations deleted)

*Rename existing merge variable so that next merge can take place
rename _merge msi_merge

*Generate a Special Designation School Categorical Variable
gen spec_desig_school = 0
   replace spec_desig_school = 1 if hbcu=="1"
   (99 real changes made)
   replace spec_desig_school = 2 if pbi=="1"
   (89 real changes made)
   replace spec_desig_school = 3 if annhi=="1"
   (27 real changes made)
   replace spec_desig_school = 4 if tribal=="1"
   (33 real changes made)
   replace spec_desig_school = 5 if hsi=="1"
   (279 real changes made)
   replace spec_desig_school = 6 if nanti=="1"
   (28 real changes made)
   replace spec_desig_school = 7 if aanapii=="1"
   (116 real changes made)
label define spec_desig 0 "No special designation" 1 "HBCU" 2 "PBI" 3 "ANNHI" 4 "Tribal" 5 "HSI" 6 "NANTI" 7 "AANAPII"
label values spec_desig_school spec_desig

* Merge on Unemployment Data
  * 2009-2013
  * from: http://www.bls.gov/lau/#cntyaa
merge m:1 county_mode using "${data_server}county_employment_09_13_cohort.dt > a"

*Drop schools in using data but not master data
drop if _merge==2
(1,862 observations deleted)
rename _merge unemp_merge

*Tag the duplicates in terms of OPEID
duplicates tag opeid, gen(op_tag)

*Drop specific campuses that are duplicates and not relevant main campuses
drop if unitid==445027 | unitid==438586
(2 observations deleted)

/*Drop if observation is a duplicate and it's sector is missing & predominant degree is Bachelor's */
drop if op_tag & sector_new==. & preddeg!=3
(5 observations deleted)

*After these drops, reassess duplicates in terms of OPEID
duplicates tag opeid, gen(op_tag2)
*Destring our OPEID stub

destring opeid_stub, replace
    opeid_stub has all characters numeric; replaced as long
    (1696 missing values generated)

*Drop observation if the 6 digit opeid in the data doesn't match the stub

drop if op_tag2 & opeid6!=opeid_stub
    (4 observations deleted)

*Merge on Loan Volume keeping only the disbursement info

merge 1:1 opeid using "${data_server}direct_loan_volume_AY2014_2015_Q4.dta",
>
     keepusing(dl*disb_dollars)

<table>
<thead>
<tr>
<th>Result</th>
<th># of obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>not matched</td>
<td>3,050</td>
</tr>
<tr>
<td>from master</td>
<td>2,121</td>
</tr>
<tr>
<td>from using</td>
<td>929</td>
</tr>
<tr>
<td>matched</td>
<td>4,551</td>
</tr>
</tbody>
</table>

*Drop observations only in the loan data

drop if _merge==2
    (929 observations deleted)

*Drop the merge variable

drop _merge

*Rename variables

rename dl_unsub_grab_disb_dollars dl_unsub_grad_disb_dollars

drop dl*disb_dollars

*Generate total direct loan volume across all DL types

egen loan_volume_14_15 = rowtotal(dl*dollars)

drop dl_unsub_grad_disb_dollars dl_gplus_disb_dollars

*Generate a new total, but with no grad amounts

egen loan_volume_14_15_no_grad = rowtotal(dl*dollars)

*Drop individual disbursement variables

drop dl*disb_dollars

************************************************************************

*             Merge on *annual* Grant Volume                           *

*         Data for 2014-15 school year from:                           *

*   https://studentaid.ed.gov/sa/about/data-center/student/title-iv    *

************************************************************************
*Merge, keeping only disbursement variables for each grant program
merge 1:1 opeid using "${data_server}grant_volume_1415AY_clean.dta", ///
    keepusing(pell_disb teach_disb iasg_disb)

Result                           # of obs.
not matched                      2,091
    from master                   1,653 (_merge==1)
    from using                    438 (_merge==2)
matched                          5,019 (_merge==3)

*Sum up grant volume totals
egen grant_volume_14_15 = rowtotal(pell_disb teach_disb iasg_disb)

*Drop individual repayment variables
drop pell_disb teach_disb iasg_disb

*Drop schools only in grant data
drop if _merge==2
(438 observations deleted)

*Drop merge variable
drop _merge

*Generate Tota Aid Volume (loans + grants)
gen aid_volume_14_15 = loan_volume_14_15+grant_volume_14_15

*Operationalizing

/* Generate Ratios of Repayment Rate for Non-Completers to Overall Repayment Rate and Repayment Rate for Completers to Overall Repayment Rate
    *Note - earliest CDR we have is 2010 so this is used for all years 2010 and before
*/
gen comp_rpy_ratio_p0708 = rpy_3yr_rt_p0708/compl_rpy_3yr_rt_p0708
(4,096 missing values generated)
gen noncomp_rpy_ratio_p0708 = rpy_3yr_rt_p0708/noncom_rpy_3yr_rt_p0708
(4,096 missing values generated)
*Generate Necessary Default Amount and Withdrawal Calculations

/*
> Set Withdrawal rates to the borrower withdrawal rate for those
> where it's not missing, and to the overall withdrawal rate
> when it is missing, and to average of previous years loan withdrawal rate
> or overall rate, as appropriate, and missing when all are missing
> */

*************
***Begin with calculations for original school:
*************

*Withdrawal rate defaults to withdrawal rate for borrowers at original school

1

gen wdraw_best_orig_yr6_0708 = loan_wdraw_orig_yr6_rt_0708
(5,586 missing values generated)

*Replace with overall withdrawal rate at school when missing
replace wdraw_best_orig_yr6_0708 = wdraw_orig_yr6_rt_0708 ///
if missing(loan_wdraw_orig_yr6_rt_0708)
(2,212 real changes made)

*Calculated mean withdrawal rate for borrowers in all years of data
egen loan_wdraw_orig_mean_all_years = rowmean(loan_wdraw_orig_yr6_rt*)
(5134 missing values generated)

*Calculate same for all students
egen wdraw_orig_mean_all_years = rowmean(wdraw_orig_yr6_rt*)
(2687 missing values generated)

*Replace with borrower withdrawal rate at school across all years when missi
> ng
replace wdraw_best_orig_yr6_0708 = loan_wdraw_orig_mean_all_years ///
if missing(wdraw_best_orig_yr6_0708)
(143 real changes made)

*Replace with overall withdrawal rate at school across all years when missin
> g
replace wdraw_best_orig_yr6_0708 = wdraw_orig_mean_all_years ///
if missing(wdraw_best_orig_yr6_0708)
(544 real changes made)

*************
***Same process as above but for 2yr schools students transfer to
************
*2yr Transfer

```stata
gen wdraw_best_2yr_trans_yr6_0708 = loan_wdraw_2yr_trans_yr6_rt_0708
(5,793 missing values generated)
```

```stata
gen imp_wdraw_best_2yr_trans_1 = missing(loan_wdraw_2yr_trans_yr6_rt_0708) /
> & !missing(wdraw_2yr_trans_yr6_rt_0708)
replace wdraw_best_2yr_trans_yr6_0708 = wdraw_2yr_trans_yr6_rt_0708
> ///
> if missing(loan_wdraw_2yr_trans_yr6_rt_0708)
(1,900 real changes made)
```

*Calculate historical rates

```stata
egen loan_wdraw_2yr_trans_hist_mean = rowmean(loan_wdraw_2yr_trans_yr6_rt*)
(5533 missing values generated)
```

```stata
egen wdraw_2yr_trans_hist_mean = rowmean(wdraw_2yr_trans_yr6_rt*)
(3290 missing values generated)
```

```stata
replace wdraw_best_2yr_trans_yr6_0708 = loan_wdraw_2yr_trans_hist_mean ///
> if missing(wdraw_best_2yr_trans_yr6_0708)
(70 real changes made)
```

```stata
replace wdraw_best_2yr_trans_yr6_0708 = wdraw_2yr_trans_hist_mean ///
> if missing(wdraw_best_2yr_trans_yr6_0708)
(533 real changes made)
```

************
***Same process as above but for 4yr schools students transfer to
************
*4yr Transfer

```stata
gen wdraw_best_4yr_trans_yr6_0708 = loan_wdraw_4yr_trans_yr6_rt_0708
(5,651 missing values generated)
```

```stata
replace wdraw_best_4yr_trans_yr6_0708 = loan_wdraw_2yr_trans_yr6_rt_0708 ///
> if missing(wdraw_best_2yr_trans_yr6_0708)
(1,771 real changes made)
```

*Calculate historical rates

```stata
egen loan_wdraw_4yr_trans_hist_mean = rowmean(loan_wdraw_4yr_trans_yr6_rt*)
(5272 missing values generated)
```

```stata
egen wdraw_4yr_trans_hist_mean = rowmean(wdraw_4yr_trans_yr6_rt*)
(3393 missing values generated)
```

```stata
replace wdraw_best_4yr_trans_yr6_0708 = loan_wdraw_4yr_trans_hist_mean ///
> if missing(wdraw_best_4yr_trans_yr6_0708)
(61 real changes made)
```
replace wdraw_best_4yr_trans_yr6_0708 = wdraw_4yr_trans_hist_mean ///
>    if missing(wdraw_best_4yr_trans_yr6_0708)
(426 real changes made)

*Calculate Total Withdrawals
egen wdraw_sum_yr6_0708 = rowtotal(wdraw_best_orig_yr6_0708 ///
>    wdraw_best_2yr_trans_yr6_0708 wdraw_best_4yr_trans_yr6_0708)
replace wdraw_sum_yr6_0708 = . if wdraw_best_orig_yr6_0708==. ///
>    & wdraw_best_2yr_trans_yr6_0708==. & wdraw_best_2yr_trans_yr6_0708==.
(2,559 real changes made, 2,559 to missing)

================================================================================
Calculate N of borrowers who withdraw
================================================================================
gen loan_wdraws_n_yr6_0708 = loan_yr6_n_0708*wdraw_sum_yr6_0708
(3,858 missing values generated)

*Original
gen comp_best_orig_yr6_0708 = loan_comp_orig_yr6_rt_0708
(5,280 missing values generated)
replace comp_best_orig_yr6_0708 = comp_orig_yr6_rt_0708 ///
>    if missing(loan_comp_orig_yr6_rt_0708)
(2,481 real changes made)
egen loan_comp_orig_mean_all_years = rowmean(loan_comp_orig_yr6_rt*)
(5097 missing values generated)
egen comp_orig_mean_all_years = rowmean(comp_orig_yr6_rt*)
(2126 missing values generated)
replace comp_best_orig_yr6_0708 = loan_comp_orig_mean_all_years ///
>    if missing(comp_best_orig_yr6_0708)
(44 real changes made)
replace comp_best_orig_yr6_0708 = comp_orig_mean_all_years ///
>    if missing(comp_best_orig_yr6_0708)
(629 real changes made)

*2yr
gen comp_best_2yr_yr6_0708 = loan_comp_2yr_trans_yr6_rt_0708
(5,917 missing values generated)
replace comp_best_2yr_yr6_0708 = comp_2yr_trans_yr6_rt_0708 ///
>    if missing(loan_comp_2yr_trans_yr6_rt_0708)
(1,561 real changes made)
egen loan_comp_2yr_mean_all_years = rowmean(loan_comp_2yr_trans_yr6_rt*)
(5729 missing values generated)

generate loan_comp_trans_mean_all_years = rowmean(loan_comp_trans_yr6_rt*)
(3007 missing values generated)

replace comp_best_2yr_yr6_0708 = loan_comp_2yr_mean_all_years ///
> if missing(comp_best_2yr_yr6_0708)
(49 real changes made)

replace comp_best_2yr_yr6_0708 = comp_2yr_trans_mean_all_years ///
> if missing(comp_best_2yr_yr6_0708)
(500 real changes made)

*4yr

gen comp_best_4yr_yr6_0708 = loan_comp_4yr_trans_yr6_rt_0708
(5,717 missing values generated)

replace comp_best_4yr_yr6_0708 = comp_2yr_trans_mean_all_years ///
> if missing(loan_comp_4yr_trans_yr6_rt_0708)
(1,504 real changes made)

generate loan_comp_4yr_mean_all_years = rowmean(loan_comp_4yr_trans_yr6_rt*)
(5485 missing values generated)

generate loan_comp_4yr_trans_mean_all_years = rowmean(loan_comp_4yr_trans_yr6_rt*)
(3931 missing values generated)

replace comp_best_4yr_yr6_0708 = loan_comp_4yr_mean_all_years ///
> if missing(comp_best_4yr_yr6_0708)
(27 real changes made)

replace comp_best_4yr_yr6_0708 = comp_4yr_trans_mean_all_years ///
> if missing(comp_best_4yr_yr6_0708)
(255 real changes made)

*Calculate N of borrowers who don't withdraw

gen comp_sum_yr6_0708 = rowtotal(comp_best_orig_yr6_0708 ///
> comp_best_2yr_yr6_0708 comp_best_4yr_yr6_0708), missing
(2081 missing values generated)

replace comp_sum_yr6_0708 = . if comp_best_orig_yr6_0708==. ///
> & comp_best_2yr_yr6_0708==. & comp_best_4yr_yr6_0708==.
(0 real changes made)

gen loan_comp_n_6yr_0708 = loan_yr6_n_0708*comp_sum_yr6_0708
(3,763 missing values generated)
*Set locals for debt amounts
******************************
* Average Debt amounts come from Baccalaureate and Beyond Survey
******************************

*Drops
local pub4yr_drop_debt = 9325.33
local pub2yr_drop_debt = 5694.09
local nfp4yr_drop_debt = 10427.24
local fp_drop_debt = 7461.9

*Certs
local pub4yr_cert_debt = 11345.11
local pub2yr_cert_debt = 7436.61
local fp_cert_debt = 5068.16

*AAs
local pub4yr_aa_debt = 12798.54
local pub2yr_aa_debt = 11389.58
local nfp4yr_aa_debt = 13467.61
local fp_aa_debt = 15567.17

*BAs
local pub4yr_ba_debt = 15504.33
local pub2yr_ba_debt = 15353.53
local nfp4yr_ba_debt = 17585.63
local fp_ba_debt = 27724.3

*Calculate Debt Totals
gen wdraw_debt_totals = .
(6,672 missing values generated)
404 replace wdraw_debt_totals = noncomp_adjusted_cdr_p0708*loan_wdraws_n
> _yr6_0708*pub4yr_drop_debt' ///
> if sector_new==1
(465 real changes made)

405 replace wdraw_debt_totals = noncomp_adjusted_cdr_p0708*loan_wdraws_n
> _yr6_0708*pub2yr_drop_debt' ///
> if sector_new==2
(497 real changes made)

406 replace wdraw_debt_totals = noncomp_adjusted_cdr_p0708*loan_wdraws_n
> _yr6_0708*nfp4yr_drop_debt' ///
> if sector_new==3
(506 real changes made)

407 replace wdraw_debt_totals = noncomp_adjusted_cdr_p0708*loan_wdraws_n
> _yr6_0708*fp_drop_debt' ///
> if sector_new==4
(537 real changes made)

408 ****NOTE**** This completion data isn't great - only has 1082 observations i
> n loan_comp variable
410 gen comp_debt_totals = .
(6,672 missing values generated)

411 replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0
> 708*pub4yr_cert_debt' ///
> if sector_new==1 & preddeg==1
(1 real change made)

412 replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0
> 708*pub2yr_cert_debt' ///
> if sector_new==2 & preddeg==1
(99 real changes made)

413 replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0
> 708*fp_cert_debt' ///
> if sector_new==4 & preddeg==1
(433 real changes made)

414 replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0
> 708*pub4yr_aa_debt' ///
> if sector_new==1 & preddeg==2
(45 real changes made)

415 replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0
> 708*pub2yr_aa_debt' ///
> if sector_new==2 & preddeg==2
(402 real changes made)

416 replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0
> 708*nfp4yr_aa_debt' ///
> if sector_new==3 & preddeg==2
(43 real changes made)

417 replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0
> 708*fp_aa_debt' ///
> if sector_new==4 & preddeg==2
(92 real changes made)
replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0 > 708*`pub4yr_ba_debt' /// > if sector_new==1 & preddeg==3
(419 real changes made)
replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0 > 708*`pub2yr_ba_debt' /// > if sector_new==2 & preddeg==3
(0 real changes made)
replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0 > 708*`nfp4yr_ba_debt' /// > if sector_new==3 & preddeg==3
(448 real changes made)
replace comp_debt_totals = comp_adjusted_cdr_p0708*loan_comp_n_6yr_0 > 708*`fp_ba_debt' /// > if sector_new==4 & preddeg==3
(15 real changes made)
*Set Data Signature
datasignature set 6672:21279(70523):972536298:2088917474 (data signature set)
datasignature report (data signature set on Monday 12dec2016 16:11)

Data signature summary
1. previous data signature 6672:21279(70523):972536298:2088917474 (same as 1)
2. same data signature today (same as 1)
3. full data signature today (same as 1)

Comparison of current data with previously set data signature

<table>
<thead>
<tr>
<th>variables</th>
<th>number</th>
<th>notes</th>
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<tr>
<td>original # of variables</td>
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<td>(values unchanged)</td>
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<tr>
<td>added variables</td>
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<tr>
<td>dropped variables</td>
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<tr>
<td>resulting # of variables</td>
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*******************************************************************************
*                                                                              *
*                               Penalties                                      *
*                                                                              *
*******************************************************************************

************
*Option 1: Penalty Schedule Based on group-specific CDR as percentage of $ in default
> t
************
* 1.1 Penaltes based on occurrence of defaults

** Penalty Calculations

** Penalty Calculations

```plaintext
   gen drop_penalty = noncomp_adjusted_cdr_p0708*wdraw_debt_totals
(4,667 missing values generated)
```

```plaintext
   gen comp_penalty = comp_adjusted_cdr_p0708*comp_debt_totals
(4,675 missing values generated)
```

```plaintext
   egen total_penalty = rowtotal(drop_penalty comp_penalty)
```

```plaintext
   replace total_penalty = . if missing(drop_penalty) \
& missing(comp_penalty)
```

(4,660 real changes made, 4,660 to missing)

** Graphs

```plaintext
   *Graphs of Penalty in Thousands of dollars
```

```plaintext
   gen penalty_1k = total_penalty/1000
(4,660 missing values generated)
```

```plaintext
   graph hbox penalty_1k, nooutsides over(sector_new) \
& title("Distribution of Penalty by Sector") \
& ytitle("Penalty in Thousands of $")
```

```plaintext
   graph export "${graphs}box_penalty_by_sector.pdf", replace
```

```plaintext
   file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_penalt
> y_by_sector.pdf written in PDF format)
```

```plaintext
   graph export "${graphs}box_penalty_by_sector.png", replace
```

```plaintext
   file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_penalt
> y_by_sector.png written in PNG format)
```

** Burden Calculations & Graphs

```plaintext
   *Burden Calculations & Graphs
```

```plaintext
   gen penalty_burden_cdr_loan = total_penalty/loan_volume_14_15
(4,710 missing values generated)
```

```plaintext
   gen penalty_burden_all_aid = total_penalty/aid_volume_14_15
(4,687 missing values generated)
```

```plaintext
   graph hbox penalty_burden_cdr_loan, nooutsides over(sector_new) \
& ytitle("Ratio of Penalty to Loan Volume") \
& title("Penalty Burdens by Sector")
```

```plaintext
   graph export "${graphs}box_penalty_burden_by_sector.pdf", replace
```

```plaintext
   file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_penalt
> y_burden_by_sector.pdf written in PDF format)
```

```plaintext
   graph export "${graphs}box_penalty_burden_by_sector.png", replace
```

```plaintext
   file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_penalt
> y_burden_by_sector.png written in PNG format)
```

468
*Fix up Income variables a bit so that they are in thousands of dollars
   gen dep_inc_1k_0810 = dep_inc_avg_p0810/1000
   (2,024 missing values generated)
   gen ind_inc_1k_0810 = ind_inc_avg_p0810/1000
   (2,024 missing values generated)

*Make undergrads measure in hundreds
   gen ugds_per100_0910 = ugds_0910/100
   (1,713 missing values generated)

*Multiply proportion vars by 100 so 1-unit changes are percentage points
   gen first_gen_100_0810 = par_ed_pct_1stgen_p0810*100
   (2,264 missing values generated)
   gen pctpell_100_0910 = pctpell_0910*100
   (1,638 missing values generated)
   gen pct_dependent_100_0810 = dependent_p0810*100
   (2,036 missing values generated)
   gen pct_white_100_0910 = ugds_white_0910*100
   (1,714 missing values generated)
   gen pct_black_100_0910 = ugds_black_0910*100
   (1,714 missing values generated)
   gen pct_hisp_100_0910 = ugds_hisp_0910*100
   (1,714 missing values generated)
   gen pct_asian_100_0910 = ugds_asian_0910*100
   (1,714 missing values generated)
   gen pct_aian_100_0910 = ugds_aian_0910*100
   (1,714 missing values generated)
   gen pct_nhpi_100_0910 = ugds_nhpi_0910*100
   (1,714 missing values generated)
   gen pct_2mor_100_0910 = ugds_2mor_0910*100
   (1,714 missing values generated)
   gen pct_nra_100_0910 = ugds_nra_0910*100
   (1,714 missing values generated)
   gen pct_unkn_100_0910 = ugds_unkn_0910*100
   (1,714 missing values generated)
   gen pct_men_100_0910 = ugds_men_0910*100
   (1,714 missing values generated)
The Prediction Model for All Repayers

```
areg rpy_5yr_rt_p0910 first_gen_100_0810 pctpell_100_0910 i.preddeg ///
>         unemploymentrate ugds_per100_0910 dep_inc_1k_0810 ind_inc_1k_0810 //
>         i.spec_desig_school pct_dependent_100_0810 pct_*_0910 ///
>         [w=rpy_5yr_n_p0910], vce(cluster countyfipscode) absorb(stabbr)
(analytic weights assumed)
(analytic weights assumed)
(sum of wgt is 4.2145e+06)
```

Linear regression, absorbing indicators

| Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interva] |
|--------|-----------|-------|-------|---------------------|
| first_gen_100_0810 | -.0024829 | .0004148 | -5.99  | .000     | -.0033013 -.00166 |
| pctpell_100_0910 | -.0015147 | .0001878 | -8.07  | .000     | -.0018851 -.00114 |
| preddeg Associates | .0022649 | .0006775 | 0.34   | .735     | -.1090999 .01543 |
| Bachelors | .0645305 | .0098321 | 6.56   | .000     | .0451317 .08392 |
| unemploymentrate_09_13 | -.0026973 | .0017658 | -1.53  | .128     | -.0061812 .00078 |
| ugds_per100_0910 | .0000166 | .0000374 | 0.44   | .658     | -.0000572 .00009 |
| dep_inc_1k_0810 | .0012196 | .0001867 | 6.53   | .000     | .0008512 .00158 |
| ind_inc_1k_0810 | .0038468 | .0002627 | 14.64  | .000     | .0033284 .00436 |
| spec_desig_school HBCU | -.1421279 | .0141698 | -10.03 | .000     | -.1700851 -.11417 |
| PBI | -.0171177 | .0128242 | -1.33  | .184     | -.04242 .00818 |
| ANNHI | .0288158 | .0228372 | 1.26   | .209     | -.0162422 .07387 |
| Tribal | -.0810335 | .0143257 | -5.66  | .000     | -.1092982 -.05276 |
| HSI | .0452315 | .008206 | 5.51   | .000     | .029041 .0614 |
| NANTI | .0205628 | .0168893 | 1.22   | .225     | -.0127601 .05388 |
| AANAPII | .0593557 | .0108101 | 5.49   | .000     | .0380273 .08068 |
| pct_dependent_100_0810 | .0021957 | .0002158 | 10.17  | .000     | .00177 .00262 |
| pct_white_100_0910 | .0002186 | .0000582 | 3.76   | .000     | .0001038 .00033 |
| pct_black_100_0910 | -.0013101 | .0001949 | -6.72  | .000     | -.0016947 -.00092 |
pct_hisp_100_0910 | -0.0004392 0.0005163 -0.85 0.396 -0.0014578 0.00057
pct_asian_100_0910 | 0.0007254 0.0006678 1.09 0.279 -0.0005921 0.00204
pct_ain_100_0910 | -0.0020947 0.0012375 -1.69 0.092 -0.0045364 0.0003
pct_nhpi_100_0910 | -0.0016916 0.0021757 -0.78 0.438 -0.0059844 0.0260
pct_2mor_100_0910 | -0.0012631 0.0012242 -1.03 0.304 -0.0036783 0.0115
pct_nra_100_0910 | 0.0005179 0.0005829 0.89 0.376 -0.0006323 0.0016
pct_unkn_100_0910 | -0.0013468 0.002028 -6.64 0.000 -0.0017468 -0.00094
pct_men_100_0910 | -0.0004425 0.001262 -3.51 0.001 -0.0006914 -0.00019
_cons | 0.5774386 0.0290301 19.89 0.000 0.5201619 0.63471

---

stabbr | absorbed (51 categories)

*Store Estimates estimates store base

*Display Information Criterion Measures estat ic

Akaike's information criterion and Bayesian information criterion

| Model | Obs ll(null) ll(model) df AIC       BIC       |
|-------|-----------------|---------------|-------------|---------|
| base  | 3,277 1158.373 | 4527.166      | 27 -9000.331 -8835.775 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

*Generate Predicted Values predict yhat_rpy, xb

(2,714 missing values generated)

*Set buffer amounts schools need to exceed to qualify local buff_amt = .03
local buff_n = 10

gen buf_ub = yhat_rpy + `buff_amt'

(2,714 missing values generated)

*Calculate number of repayers above expectation (repayers_delta)
> gen num_repayers_0910 = round(rpy_5yr_n_p0910*rpy_5yr_rt_p0910)

(2,929 missing values generated)
gen pred_num_repayers_0910 = round(rpy_5yr_n_p0910*yhat_rpy)  
(3,313 missing values generated)

gen repayers_delta = num_repayers_0910-pred_num_repayers_0910  
(3,395 missing values generated)

gen buffer_bonus_qual = 1 if (rpy_5yr_rt_p0910 > buf_ub & !missing(rpy_5yr_rt_p0910)) & (num_repayers_0910 > buff_n & !missing(num_repayers_0910))  
(5,366 missing values generated)

replace buffer_bonus_qual = 0 if (rpy_5yr_rt_p0910 <= buf_ub | repayers_delta <= `buff_n')  
(4,871 real changes made)

**********************************************************************
The Prediction Model for Pell Repayers
**********************************************************************
areg pell_rpy_5yr_rt_p0910 first_gen_100_0810 pctpell_100_0910 i.preddeg  
/ 
unemploymentrate ugds_per100_0910 dep_inc_1k_0810 ind_inc_1k_0810 
/ 
i.spec_desig_school pct_dependent_100_0810 pct_*_0910  
[w=pell_rpy_5yr_n_p0910], vce(cluster countyfipscode) absorb(stabbr) 
(analytic weights assumed)  
(Std. Err. adjusted for 179 clusters in countyfipscod)  
(sum of wgt is 2.5183e+06)

 Linear regression, absorbing indicators

|                     | Coef.  | Robust Std. Err. | t     | P>|t|   | [95% Conf. Interva |
|----------------------|--------|------------------|-------|-------|-------------------|
| pell_rpy_5yr_rt_p0910| .0030618 | .0005075         | -6.03 | 0.00  | -.0040633 -.00202 |
| first_gen_100_0810   | -.003745 | .0069799         | -0.54 | 0.59  | -.0175191 .01091  |
| pctpell_100_0910     | -.0011781 | .0002119         | -5.56 | 0.00  | -.0015961 .00003  |
| preddeg Associates   | .069021  | .0115839         | 5.96  | 0.00  | .0461616 .09188  |
| Bachelors            | .0041471 | .0003001         | 13.82 | 0.00  | .003555 .00473   |
| unemploymentrate_09_13| -.0018377 | .0019345         | -0.95 | 0.34  | -.0056552 .00197 |
| ugds_per100_0910     | .0000414 | .000048          | 0.86  | 0.39  | -.0000534 .00013 |
| dep_inc_1k_0810      | .0011001 | .0002153         | 5.11  | 0.00  | .0006753 .00152  |
| ind_inc_1k_0810      | .0041471 | .0003001         | 13.82 | 0.00  | .003555 .00473   |
| spec_desig_school    | .1404074 | .0148864         | -9.43 | 0.00  | -.169784 .11103  |
| Variable                   | Coefficient  | Std. Error | t-Value | Pr(>|t|) | Lower 95% CI | Upper 95% CI |
|----------------------------|--------------|------------|---------|----------|--------------|--------------|
| PBI                        | -.006023     | .0127235   | -0.47   | 0.637    | -.0311312    | .01908       |
| ANNHI                      | .0331771     | .0406748   | 0.82    | 0.416    | -.0470899    | .1134        |
| Tribal                     | -.1155129    | .0095874   | -12.05  | 0.000    | -.1344324    | -.09659      |
| HSI                        | .057454      | .0090853   | 6.32    | 0.000    | .0395252     | .07538       |
| NANTI                      | .0202496     | .0154578   | 1.31    | 0.192    | -.0102545    | .05075       |
| AANAPII                    | .0701206     | .0132351   | 5.30    | 0.000    | .0440027     | .09623       |
| pct_dependent_100_0810     | .0025671     | .0002581   | 9.94    | 0.000    | .0020577     | .00307       |
| pct_white_100_0910         | .0001526     | .0000699   | 2.18    | 0.030    | .0000146     | .00029       |
| pct_black_100_0910         | -.0010817    | .0001778   | -6.08   | 0.000    | -.0014327    | -.00073      |
| pct_hisp_100_0910          | -.0001694    | .0004971   | -0.34   | 0.734    | -.0011504    | .00081       |
| pct_asian_100_0910         | .0007735     | .0008332   | 0.93    | 0.354    | -.0000870    | .00241       |
| pct_2mor_100_0910          | -.0018596    | .0010494   | -1.77   | 0.078    | -.0039305    | .00021       |
| pct_nhpi_100_0910          | -.0038624    | .0038458   | -1.00   | 0.317    | -.0011451    | .00372       |
| pct_men_100_0910           | -.0006159    | .0001453   | -4.24   | 0.000    | -.0009026    | -.00032      |
| _cons                      | .5131621     | .0357732   | 14.34   | 0.000    | .442568      | .58375       |

Model output:

```
> stabbr absorbed (51 categories)
> s)
```

*Store estimates
estimates store pell

*Display Information Criterion
estat ic

Akaike's information criterion and Bayesian information criterion

<table>
<thead>
<tr>
<th>Model</th>
<th>Obs</th>
<th>ll(null)</th>
<th>ll(model)</th>
<th>df</th>
<th>AIC</th>
<th>BIC</th>
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<tr>
<td>pell</td>
<td>2,698</td>
<td>830.9801</td>
<td>3584.813</td>
<td>27</td>
<td>-7115.626</td>
<td>-6956.319</td>
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</table>

Note: N=Obs used in calculating BIC; see [R] BIC note.
*Generate Predictions
predict yhat_pell, xb
(2,714 missing values generated)

*Calculate unexpected number of repayers (pell_repayers_delta)
gen pell_num_repayers_0910 = round(pell_rpy_5yr_n_p0910*pell_rpy_5yr > _rt_p0910)
(3,719 missing values generated)
gen pell_pred_num_repayers_0910 = round(pell_rpy_5yr_n_p0910*yhat_pell > 11)
(3,465 missing values generated)
gen pell_repayers_delta = pell_num_repayers_0910-pell_pred_num_repayers_0910
(3,974 missing values generated)

*Set buffer amounts schools need to exceed to qualify
local buff_amt = .03
local pell_buff_n = 10

gen pell_buf_ub = yhat_pell + `buff_amt'
(2,714 missing values generated)
gen pell_buffer_bonus_qual = 1 if (pell_rpy_5yr_rt_p0910 > pell_buf_ub ///
     & !missing(pell_rpy_5yr_rt_p0910)) ///
     & (pell_repayers_delta > `pell_buff_n' ///
         & !missing(pell_repayers_delta))
(5,806 missing values generated)
replace pell_buffer_bonus_qual = 0 if (pell_rpy_5yr_rt_p0910 <= pell_buf_ub) ///
     | (pell_repayers_delta <= `pell_buff_n')
(4,546 real changes made)
gen pell_buffer_bonus_qual_or = 1 if (pell_rpy_5yr_rt_p0910 > pell_buf_ub ///
         & !missing(pell_rpy_5yr_rt_p0910)) /
         //
         > '|' (pell_repayers_delta > 'pell_buff_n')
         //
         & !missing(pell_repayers_delta))
(5,482 missing values generated)

*Export Regression Results
outreg2 [base pell] using "${spread}repayment_regression.xls", ///
     replace addstat(RMSE, e(rmse)) label ///
     /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/spreadsheets/repayment
     >_regression.xls
dir : seeout
* Calculate Bonuses

* Set Bonus Parameter here *

local per_stu_amt = 5000
local per_stu_amt2 = 2750
local per_stu_amt3 = 2000
local per_stu_amt4 = 1500
local per_stu_amt5 = 750

*Generate Bonuses*

gen bonus = round(repayers_delta*`per_stu_amt') if marg_tuit_5_groups==0 & buffer_bonus_qual
(6,474 missing values generated)

replace bonus = round(repayers_delta*`per_stu_amt2') if marg_tuit_5_groups==1 & buffer_bonus_qual
(269 real changes made)

replace bonus = round(repayers_delta*`per_stu_amt3') if marg_tuit_5_groups==2 & buffer_bonus_qual
(228 real changes made)

replace bonus = round(repayers_delta*`per_stu_amt4') if marg_tuit_5_groups==3 & buffer_bonus_qual
(234 real changes made)

replace bonus = round(repayers_delta*`per_stu_amt5') if marg_tuit_5_groups==4 & buffer_bonus_qual
(191 real changes made)

replace bonus = 0 if buffer_bonus_qual==0
(4,871 real changes made)

replace bonus = . if yhat_rpy==.
(2,714 real changes made, 2,714 to missing)

sum bonus, d

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<th>Percentiles</th>
<th>Smallest</th>
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<tr>
<td>1%</td>
<td>0</td>
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<tr>
<td>5%</td>
<td>0</td>
</tr>
<tr>
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<td>95%</td>
<td>352000</td>
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<td>99%</td>
<td>860750</td>
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<td>3,277</td>
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<tr>
<td>2948000</td>
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<td>3,277</td>
</tr>
</tbody>
</table>

Mean: 65046.31
Std. Dev.: 190833.2
Variance: 3.64e+10
Skewness: 6.577266
Kurtosis: 64.98015
*Calculate Bonus for Pell Repaypers

    local pell_per_stu_amt = `per_stu_amt'*2

    local pell_per_stu_amt2 = `per_stu_amt2'*2

    local pell_per_stu_amt3 = `per_stu_amt3'*2

    local pell_per_stu_amt4 = `per_stu_amt4'*2

    local pell_per_stu_amt5 = `per_stu_amt5'*2

    gen pell_bonus = pell_repayers_delta*`pell_per_stu_amt' if ///
        marg_tuit_5_groups==0 & pell_buffer_bonus_qual
    (6,517 missing values generated)

    replace pell_bonus = pell_repayers_delta*`pell_per_stu_amt2' ///
        if marg_tuit_5_groups==1 & pell_buffer_bonus_qual
    (242 real changes made)

    replace pell_bonus = pell_repayers_delta*`pell_per_stu_amt3' ///
        if marg_tuit_5_groups==2 & pell_buffer_bonus_qual
    (177 real changes made)

    replace pell_bonus = pell_repayers_delta*`pell_per_stu_amt4' ///
        if marg_tuit_5_groups==3 & pell_buffer_bonus_qual
    (164 real changes made)

    replace pell_bonus = pell_repayers_delta*`pell_per_stu_amt5' ///
        if marg_tuit_5_groups==4 & pell_buffer_bonus_qual
    (128 real changes made)

    replace pell_bonus = 0 if pell_buffer_bonus_qual==0
    (4,546 real changes made)

    replace bonus = . if yhat_pell==.
    (0 real changes made)

    sum pell_bonus, d

    pell_bonus

    | Percentiles | Smallest |
    |-------------|----------|
    | 1%          | 0        |
    | 5%          | 0        |
    | 10%         | 0        |
    | 25%         | 0        |
    | 50%         | 0        |
    | 75%         | 0        |
    | 90%         | 121000   |
    | 95%         | 324500   |
    | 99%         | 992000   |

    | Obs | 5,412 |

    | Largest | Std. Dev. |
    |---------|-----------|
    | 3680000 | 235890.2  |

    | Variance | Skewness | Kurtosis |
    |----------|----------|----------|
    | 5.56e+10 | 10.28214 | 162.1914 |

*Calculate Total Bonus
gen total_bonus = bonus + pell_bonus  
(3,974 missing values generated)

sum total_bonus  

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>total_bonus</td>
<td>2,698</td>
<td>181394.9</td>
<td>526470.4</td>
<td>0</td>
<td>8657000</td>
</tr>
</tbody>
</table>

gen both_bonus_qual = buffer_bonus_qual & pell_buffer_bonus_qual

gen some_bonus = total_bonus>0 & !missing(total_bonus)
replace some_bonus = . if missing(total_bonus)  
(3,974 real changes made, 3,974 to missing)

some_bonus

<table>
<thead>
<tr>
<th></th>
<th>Freq.</th>
<th>Percent</th>
<th>Valid</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1688</td>
<td>25.30</td>
<td>62.56</td>
<td>62.56</td>
</tr>
<tr>
<td>1</td>
<td>1010</td>
<td>15.14</td>
<td>37.44</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>2698</td>
<td>40.44</td>
<td>100.00</td>
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<tr>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
<td>59.56</td>
</tr>
<tr>
<td>Total</td>
<td>3974</td>
<td>59.56</td>
<td></td>
<td>100.00</td>
</tr>
</tbody>
</table>

*** Bonus Graphs

gen bonus_thous = bonus/1000  
(3,395 missing values generated)

gen pell_bonus_thous = pell_bonus/1000  
(1,260 missing values generated)

gen total_bonus_thous = total_bonus/1000  
(3,974 missing values generated)

*** Bonus Graphs (conditional on any bonus)  
gen main_bonus_context = bonus/loan_volume_14_15  
(3,456 missing values generated)

gen pell_bonus_context = pell_bonus/loan_volume_14_15  
(2,849 missing values generated)

gen bonus_context = total_bonus/loan_volume_14_15  
(4,013 missing values generated)

*Main Bonus Boxplot

graph hbox bonus_thous if bonus_thous>0, nooutsides over(sector_new) ///
> title("Distribution of Main Bonuses by Sector") ytitle("Thousands of 
> $")  ///
> note("Note: Conditional on receiving a main bonus of at least $1")
graph export "$\{\text{graphs}\}\text{box\_main\_bonus\_by\_sector.pdf}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_main_bonus_by_sector.pdf written in PDF format)

graph export "$\{\text{graphs}\}\text{box\_main\_bonus\_by\_sector.png}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_main_bonus_by_sector.png written in PNG format)

*Pell Bonus Boxplot

```plaintext
    graph hbox pell_bonus_thous if pell_bonus_thous>0, nooutsides over(sector_new) 
    > title("Distribution of Pell Bonuses by Sector") ytitle("Thousands of $") 
    > note("Note: Conditional on receiving a Pell bonus of at least $1")
```

graph export "$\{\text{graphs}\}\text{box\_pell\_bonus\_by\_sector.pdf}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_pell_bonus_by_sector.pdf written in PDF format)

graph export "$\{\text{graphs}\}\text{box\_pell\_bonus\_by\_sector.png}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_pell_bonus_by_sector.png written in PNG format)

*Total Bonus Boxplot

```plaintext
    graph hbox total_bonus_thous if total_bonus_thous>0, /// 
    > title("Distribution of Total Bonuses by Sector") /// 
    > ytitle("Thousands of $") /// 
    > note("Note: Conditional on receiving a total bonus of at least $1")
```

graph export "$\{\text{graphs}\}\text{box\_total\_bonus\_by\_sector.pdf}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_total_bonus_by_sector.pdf written in PDF format)

graph export "$\{\text{graphs}\}\text{box\_total\_bonus\_by\_sector.png}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_total_bonus_by_sector.png written in PNG format)

*Burden Boxplots

*Main

```plaintext
    graph hbox main_bonus_context if main_bonus_context>0, nooutsides over(sector_new) 
    > title("Ratio of Main Bonus to Loan Volume") 
    > ytitle("Ratio of Bonus to Loan Volume")
```

graph export "$\{\text{graphs}\}\text{box\_main\_bonus\_burden\_by\_sector.pdf}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_main_bonus_burden_by_sector.pdf written in PDF format)

graph export "$\{\text{graphs}\}\text{box\_main\_bonus\_burden\_by\_sector.png}\$", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_main_bonus_burden_by_sector.png written in PNG format)
*Pell*

```
graph hbox pell_bonus_context if pell_bonus_context>0, nooutsides ///
>     over(sector_new) ///
>     title("Ratio of Pell Bonus to Loan Volume") ///
>     ytitle("Ratio of Bonus to Loan Volume")
```

graph export "${graphs}box_pell_bonus_burden_by_sector.pdf", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_pell_bonus_burden_by_sector.pdf written in PDF format)

```
graph hbox pell_bonus_context if pell_bonus_context>0, nooutsides ///
>     over(sector_new) ///
>     title("Ratio of Pell Bonus to Loan Volume") ///
>     ytitle("Ratio of Bonus to Loan Volume")
```

graph export "${graphs}box_pell_bonus_burden_by_sector.png", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_pell_bonus_burden_by_sector.png written in PNG format)

```
*Total*

```
graph hbox bonus_context if bonus_context>0, nooutsides over(sector_new) ///
>     title("Ratio of Total Bonus to Loan Volume") ///
>     ytitle("Ratio of Bonus to Loan Volume")
```

graph export "${graphs}box_bonus_burden_by_sector.pdf", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_bonus_burden_by_sector.pdf written in PDF format)

```
graph hbox bonus_context if bonus_context>0, nooutsides over(sector_new) ///
>     title("Ratio of Total Bonus to Loan Volume") ///
>     ytitle("Ratio of Bonus to Loan Volume")
```

graph export "${graphs}box_bonus_burden_by_sector.png", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_bonus_burden_by_sector.png written in PNG format)

```
bys sector_new: sum total_bonus_thous if total_bonus_thous>0, d
```

```
-> sector_new = Public 4yr

```

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>65</td>
</tr>
<tr>
<td>5%</td>
<td>116</td>
</tr>
<tr>
<td>10%</td>
<td>177</td>
</tr>
<tr>
<td>25%</td>
<td>352</td>
</tr>
<tr>
<td>50%</td>
<td>650</td>
</tr>
<tr>
<td>75%</td>
<td>1141</td>
</tr>
<tr>
<td>90%</td>
<td>2230.25</td>
</tr>
<tr>
<td>95%</td>
<td>3133.5</td>
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<tr>
<td>99%</td>
<td>4237.75</td>
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</table>

<table>
<thead>
<tr>
<th>Largest</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>983.104</td>
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<tr>
<td>Variance</td>
<td>1059609</td>
</tr>
<tr>
<td>Skewness</td>
<td>2.60052</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>12.7394</td>
</tr>
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</table>

```
-> sector_new = Public 2yr or less

```

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>30.25</td>
</tr>
<tr>
<td>5%</td>
<td>66</td>
</tr>
<tr>
<td>10%</td>
<td>115.5</td>
</tr>
<tr>
<td>25%</td>
<td>210</td>
</tr>
<tr>
<td>50%</td>
<td>380</td>
</tr>
<tr>
<td>75%</td>
<td>720</td>
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<tr>
<td>90%</td>
<td>1078</td>
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<tr>
<td>95%</td>
<td>1380.5</td>
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<tr>
<td>99%</td>
<td>3810</td>
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</table>

<table>
<thead>
<tr>
<th>Largest</th>
<th>Std. Dev.</th>
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<tbody>
<tr>
<td>Mean</td>
<td>561.5254</td>
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<tr>
<td>Variance</td>
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<td>4.967843</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>36.71394</td>
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</table>
-> sector_new = Non-Profit

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>9    8.25</td>
</tr>
<tr>
<td>5%</td>
<td>16.5  8.25</td>
</tr>
<tr>
<td>10%</td>
<td>23.25  9  Obs 272</td>
</tr>
<tr>
<td>25%</td>
<td>40.875 9.75  Sum of Wgt. 272</td>
</tr>
<tr>
<td>50%</td>
<td>87  Mean 237.9798</td>
</tr>
<tr>
<td>75%</td>
<td>185.625 2724</td>
</tr>
<tr>
<td>90%</td>
<td>438  3098  Variance 480641.3</td>
</tr>
<tr>
<td>95%</td>
<td>741  5532  Skewness 8.88738</td>
</tr>
<tr>
<td>99%</td>
<td>3098 8657  Kurtosis 95.03782</td>
</tr>
</tbody>
</table>

-> sector_new = For-Profit

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>9   8.25</td>
</tr>
<tr>
<td>5%</td>
<td>16.5</td>
</tr>
<tr>
<td>10%</td>
<td>22.5  9  Obs 201</td>
</tr>
<tr>
<td>25%</td>
<td>54  11.25  Sum of Wgt. 201</td>
</tr>
<tr>
<td>50%</td>
<td>106.5  Mean 188.9303</td>
</tr>
<tr>
<td>75%</td>
<td>202   1345</td>
</tr>
<tr>
<td>90%</td>
<td>368  1935  Variance 87386.49</td>
</tr>
<tr>
<td>95%</td>
<td>573  2886  Skewness 4.575288</td>
</tr>
<tr>
<td>99%</td>
<td>1935 2228  Kurtosis 27.89014</td>
</tr>
</tbody>
</table>

-> sector_new = .

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>0.001412</td>
</tr>
<tr>
<td>5%</td>
<td>0.003177</td>
</tr>
<tr>
<td>10%</td>
<td>0.0038447</td>
</tr>
<tr>
<td>25%</td>
<td>0.0083745</td>
</tr>
<tr>
<td>50%</td>
<td>0.0177246  Mean 0.0273148</td>
</tr>
<tr>
<td>75%</td>
<td>0.035112  0.1178501  Std. Dev. 0.0327154</td>
</tr>
<tr>
<td>90%</td>
<td>0.0595172  0.1206515  Variance 0.0010703</td>
</tr>
<tr>
<td>95%</td>
<td>0.0906899  0.133921  Skewness 4.495875</td>
</tr>
<tr>
<td>99%</td>
<td>0.1206515  0.3236723  Kurtosis 36.04661</td>
</tr>
</tbody>
</table>

-> sector_new = Public 4yr

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>0.001412</td>
</tr>
<tr>
<td>5%</td>
<td>0.003177</td>
</tr>
<tr>
<td>10%</td>
<td>0.0038447</td>
</tr>
<tr>
<td>25%</td>
<td>0.0083745</td>
</tr>
<tr>
<td>50%</td>
<td>0.0177246  Mean 0.0273148</td>
</tr>
<tr>
<td>75%</td>
<td>0.035112  0.1178501  Std. Dev. 0.0327154</td>
</tr>
<tr>
<td>90%</td>
<td>0.0595172  0.1206515  Variance 0.0010703</td>
</tr>
<tr>
<td>95%</td>
<td>0.0906899  0.133921  Skewness 4.495875</td>
</tr>
<tr>
<td>99%</td>
<td>0.1206515  0.3236723  Kurtosis 36.04661</td>
</tr>
</tbody>
</table>

-> sector_new = Public 2yr or less
Percentiles  Smallest
1%  .0107665  .0078522  
5%  .0201188  .0087176  
10%  .0287615  .0103986  Obs  319  
25%  .0497927  .0107665  Sum of Wgt.  319  
50%  .0945807  Largest  Mean  .1339827  
75%  .1700791  .6517436  Std. Dev.  .1247583  
90%  .2860869  .6699904  Variance  .0155646  
95%  .3968059  .6986545  Skewness  2.162715  
99%  .6517436  .7290413  Kurtosis  8.561652  
Obs  271  Sum of Wgt.  271  
Mean  .0202963  
Std. Dev.  .0425083  
Variance  .001807  
Skewness  5.630351  
Kurtosis  44.71538  
Obs  199  Sum of Wgt.  199  
Mean  .1434287  
Std. Dev.  .6737484  
Variance  .4539369  
Skewness  9.705099  
Kurtosis  98.27105  
no observations
** Netted Amounts
*Simply add together bonuses and penalties

```stata
gen net_risk_share = total_bonus + (-1)*total_penalty
```

(4,937 missing values generated)

*Put total transfer in thousands of dollars
```stata
gen transfer1 = net_risk_share/1000
```

(4,937 missing values generated)

*Graph total transfer
```stata
graph hbox transfer1, nooutsides over(sector_new) ///
   title("Net Risk Sharing Payments by Sector") ///
   ytitle("Thousands of $") note("Outliers not pictured") ///
>
graph export "${graphs}box_transfer1_bonus_`per_stu_amt'_by_sector.pdf", replace
(file /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/box_transfer1_bonus_5000_by_sector.pdf written in PDF format)
```

*Calculate Distribution of Net Payment
```stata
bys sector_new: sum transfer1, d
```

---

```stata
-> sector_new = Public 4yr
```

```stata
transfer1
```

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
<th>Obs</th>
<th>Sum of Wgt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>-838.932</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>-476.968</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td>-375.166</td>
<td>-937.6476</td>
<td>451</td>
</tr>
<tr>
<td>25%</td>
<td>-168.641</td>
<td>-855.8657</td>
<td>451</td>
</tr>
<tr>
<td>50%</td>
<td>-55.2579</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75%</td>
<td>357.0549</td>
<td>4101.83</td>
<td>416.2402</td>
</tr>
<tr>
<td>90%</td>
<td>1016.346</td>
<td>3620.212</td>
<td>702400.2</td>
</tr>
<tr>
<td>95%</td>
<td>1695.302</td>
<td>4313.608</td>
<td>3.385127</td>
</tr>
<tr>
<td>99%</td>
<td>3731.503</td>
<td>7694.588</td>
<td>21.22681</td>
</tr>
</tbody>
</table>

```stata
-> sector_new = Public 2yr or less
```

```stata
transfer1
```

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
<th>Obs</th>
<th>Sum of Wgt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>-821.7444</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>-529.4042</td>
<td>-1880.007</td>
<td>485</td>
</tr>
<tr>
<td>10%</td>
<td>-374.2634</td>
<td>-880.1326</td>
<td>485</td>
</tr>
<tr>
<td>25%</td>
<td>-188.7326</td>
<td>-840.0622</td>
<td>485</td>
</tr>
<tr>
<td>50%</td>
<td>-39.82358</td>
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<td></td>
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<tr>
<td>75%</td>
<td>347.9274</td>
<td>3620.212</td>
<td>650.8344</td>
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<tr>
<td>90%</td>
<td>747.2576</td>
<td>4280.009</td>
<td>423585.5</td>
</tr>
<tr>
<td>95%</td>
<td>977.9044</td>
<td>5406.369</td>
<td>3.816607</td>
</tr>
<tr>
<td>99%</td>
<td>3586.398</td>
<td>5798.852</td>
<td>28.86798</td>
</tr>
</tbody>
</table>

```stata
-> sector_new = Non-Profit
```
transfer1

Percentiles      Smallest
1%    -501.9086      -1030.887
5%    -219.113      -874.5502
10%   -129.8109      -598.8781
25%   -61.63248      -528.077
50%   -24.76996

Obs       Mean       Std. Dev.
482       35.60839     533.9239

Largest       Std. Dev.
50%   2193.388
75%   2841.773
90%   5528.826
95%   8640.521

Variance     Skewness     Kurtosis
285074.7    11.52217     166.4659

-> sector_new = For-Profit

Percentiles      Smallest
1%    -3758.178      -10615.7
5%    -1682.275      -7371.553
10%   -767.6182      -4008.637
25%   -219.6848      -3758.178
50%   -73.68062

Obs       Mean       Std. Dev.
317       -259.5665     974.2093

Largest       Std. Dev.
75%   1328.739
90%   1974.619
95%   2075.86

Variance     Skewness     Kurtosis
949083.7    -5.775377     52.66195

-> sector_new = .

no observations

gen net_bonus_amt = transfer1>0 & !missing(transfer1)
replace net_bonus = . if missing(transfer1)
(4,937 real changes made, 4,937 to missing)
gen net_payout = transfer1<0
replace net_payout = . if missing(transfer1)
(4,937 real changes made, 4,937 to missing)

*Sources for statistics we cite in paper*

*Calculate adjacent values in our box plot*
adjacent transfer1, by(sector_new)

<table>
<thead>
<tr>
<th>sector_new</th>
<th>lower adjacent</th>
<th>upper adjacent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public 4yr</td>
<td>-937.6476</td>
<td>1126.862</td>
</tr>
<tr>
<td>Public 2yr or less</td>
<td>-880.1326</td>
<td>1151.043</td>
</tr>
<tr>
<td>Non-Profit</td>
<td>-150.617</td>
<td>81.43599</td>
</tr>
<tr>
<td>For-Profit</td>
<td>-537.2115</td>
<td>333.7693</td>
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</tbody>
</table>

*Correlation between default and repayment rates we use

corr rpy_3yr_rt_p0708 cdr3_10
(obs=3,621)

<table>
<thead>
<tr>
<th></th>
<th>rpy_3yr_rt-8</th>
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<tbody>
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<td>1.0000</td>
</tr>
<tr>
<td>rpy_3yr_rt</td>
<td>-0.7436</td>
<td>1.0000</td>
</tr>
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</table>

*Gen total net burden on both loan volume and aid volume

gen transfer_burden_1 = abs(net_risk_share)/loan_volume_14_15
(4,959 missing values generated)

gen transfer_burden_2 = abs(net_risk_share)/aid_volume_14_15
(4,947 missing values generated)

gen bonus_value1 = net_risk_share/loan_volume_14_15 if net_risk_share > 0
(6,095 missing values generated)

gen bonus_value2 = net_risk_share/aid_volume_14_15 if net_risk_share > 0
(6,089 missing values generated)

gen negative_burden1 = abs(net_risk_share)/loan_volume_14_15 ///
> if net_risk_share<0
(5,536 missing values generated)

gen negative_burden2 = abs(net_risk_share)/aid_volume_14_15 ///
> if net_risk_share<0
(5,530 missing values generated)

bys sector_new: sum penalty_burden_cdr_loan, d

-> sector_new = Public 4yr

penalty_burden_cdr_loan

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
<th>Largest</th>
<th>Mean</th>
<th>Std. Dev.</th>
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<td>.0000255</td>
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<td>.003707</td>
<td>.000631</td>
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<tr>
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<td></td>
<td>Mean .0054393</td>
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<td>.0623953</td>
<td>Skewness 4.458635</td>
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<tr>
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<td>.0227156</td>
<td>.0642889</td>
<td>Kurtosis 30.79531</td>
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<td>.0963144</td>
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<td></td>
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**Obs:** 483

**Mean:** .0246802

**Std. Dev.:** .0264092

**Variance:** .0006974

**Skewness:** 5.062736

**Kurtosis:** 48.08541

--> sector_new = Non-Profit

<table>
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<th>Sum of Wgt.</th>
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<td>.0000151</td>
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<td>.0000157</td>
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**Obs:** 504

**Mean:** .0052248

**Std. Dev.:** .0100575

**Variance:** .0001012

**Skewness:** 3.438088

**Kurtosis:** 16.1624

--> sector_new = For-Profit

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<td>.0000733</td>
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<td>.0039197</td>
<td>.0002512</td>
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<td>90.7852</td>
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<td>22.84958</td>
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**Obs:** 512

**Mean:** 1.131097

**Std. Dev.:** 10.05638

**Variance:** 101.1308

**Skewness:** 10.87676

**Kurtosis:** 126.2853

--> sector_new = .

**no observations**

715

bys sector_new: sum bonus_context if bonus_context>0, d

--> sector_new = Public 4yr

<table>
<thead>
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<th>Percentiles</th>
<th>Smallest</th>
<th>Obs</th>
<th>Sum of Wgt.</th>
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<td>5%</td>
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<td>.0038447</td>
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<tr>
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<td>.0015682</td>
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**Obs:** 201

**Sum of Wgt.:** 201

**Mean:** 105.3038

**Std. Dev.:** 104.4586

**Variance:** 104.4586

**Skewness:** 10.87676

**Kurtosis:** 126.2853
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<tr>
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<td>5%</td>
<td>.0201188</td>
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<td>50%</td>
<td>.0945807</td>
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<tr>
<td>75%</td>
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Mean: .1339827
Largest: .1247583
Std. Dev.: .1247583
Variance: .0155646
Skewness: 2.162715
Kurtosis: 8.561652

-> sector_new = Non-Profit

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
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<td>.001356</td>
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<td>.0025458</td>
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<td>.0074931</td>
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<td>Obs</td>
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Mean: .0202963
Largest: .0425083
Std. Dev.: .0425083
Variance: .001807
Skewness: 5.630351
Kurtosis: 44.71538

-> sector_new = For-Profit

<table>
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<tr>
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<td>.0396233</td>
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<tr>
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</table>

Mean: .1434287
Largest: .6737484
Std. Dev.: .6737484
Variance: .4539369
Skewness: 9.705099
Kurtosis: 98.27105

-> sector_new = .

no observations
bys sector_new: sum bonus_value1, d

-> sector_new = Public 4yr

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
<th>Obs</th>
<th>Sum of Wgt.</th>
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<td>Mean</td>
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<tr>
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<td>Mean</td>
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-> sector_new = Public 2yr or less

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-> sector_new = Non-Profit

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<th>Obs</th>
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-> sector_new = For-Profit

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<td>Largest</td>
<td>Mean</td>
<td>Std. Dev.</td>
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<td>---------</td>
<td>-----------</td>
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<tr>
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<td>1.695771</td>
<td>1.695771</td>
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-> sector_new = .

bonus_value1

no observations

717

bys sector_new: sum negative_burden1, d

-> sector_new = Public 4yr

negative_burden1

<table>
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<tr>
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<th>Mean</th>
<th>Std. Dev.</th>
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<tr>
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<td>0.0000255</td>
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<td>0.0000631</td>
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<td>0.0150257</td>
<td>0.0623953</td>
<td>0.0623953</td>
<td>0.0109965</td>
</tr>
<tr>
<td>95%</td>
<td>0.0252608</td>
<td>0.0642889</td>
<td>0.0642889</td>
<td>0.0109965</td>
</tr>
<tr>
<td>99%</td>
<td>0.0623953</td>
<td>0.0963144</td>
<td>0.0963144</td>
<td>25.15613</td>
</tr>
</tbody>
</table>

-> sector_new = Public 2yr or less

negative_burden1

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Smallest</th>
<th>Largest</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>0.0031312</td>
<td>0.005285</td>
<td>0.005285</td>
<td>0.0289296</td>
</tr>
<tr>
<td>5%</td>
<td>0.0065936</td>
<td>0.0026135</td>
<td>0.0026135</td>
<td>0.0289296</td>
</tr>
<tr>
<td>10%</td>
<td>0.0081978</td>
<td>0.0031312</td>
<td>0.0031312</td>
<td>257</td>
</tr>
<tr>
<td>25%</td>
<td>0.0126897</td>
<td>0.0032409</td>
<td>0.0032409</td>
<td>257</td>
</tr>
<tr>
<td>50%</td>
<td>0.0220442</td>
<td>0.0282933</td>
<td>0.0282933</td>
<td>0.0289296</td>
</tr>
<tr>
<td>75%</td>
<td>0.0339501</td>
<td>0.1164067</td>
<td>0.1164067</td>
<td>0.0289296</td>
</tr>
<tr>
<td>90%</td>
<td>0.0523362</td>
<td>0.1274197</td>
<td>0.1274197</td>
<td>0.0289296</td>
</tr>
<tr>
<td>95%</td>
<td>0.0725742</td>
<td>0.1408864</td>
<td>0.1408864</td>
<td>0.0289296</td>
</tr>
<tr>
<td>99%</td>
<td>0.1274197</td>
<td>0.3380282</td>
<td>0.3380282</td>
<td>54.32349</td>
</tr>
</tbody>
</table>

-> sector_new = Non-Profit

negative_burden1

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Smallest</th>
<th>Largest</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>0.000157</td>
<td>1.33e-07</td>
<td>1.33e-07</td>
<td>0.0106771</td>
</tr>
<tr>
<td>5%</td>
<td>0.0000666</td>
<td>0.000126</td>
<td>0.000126</td>
<td>0.0106771</td>
</tr>
<tr>
<td>10%</td>
<td>0.001494</td>
<td>0.000151</td>
<td>0.000151</td>
<td>364</td>
</tr>
<tr>
<td>25%</td>
<td>0.000475</td>
<td>0.000157</td>
<td>0.000157</td>
<td>364</td>
</tr>
<tr>
<td>50%</td>
<td>0.0014386</td>
<td>0.0055453</td>
<td>0.0055453</td>
<td>0.0106771</td>
</tr>
<tr>
<td>75%</td>
<td>0.0043257</td>
<td>0.0535073</td>
<td>0.0535073</td>
<td>0.0106771</td>
</tr>
<tr>
<td>90%</td>
<td>0.0162663</td>
<td>0.0555551</td>
<td>0.0555551</td>
<td>0.0106771</td>
</tr>
<tr>
<td>95%</td>
<td>0.0289939</td>
<td>0.0627699</td>
<td>0.0627699</td>
<td>3.293658</td>
</tr>
<tr>
<td>99%</td>
<td>0.0535073</td>
<td>0.0741419</td>
<td>0.0741419</td>
<td>15.06515</td>
</tr>
</tbody>
</table>
- sector_new = For-Profit

negative_burden1

<table>
<thead>
<tr>
<th>Percentiles</th>
<th>Smallest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>.003078</td>
</tr>
<tr>
<td>5%</td>
<td>.0027515</td>
</tr>
<tr>
<td>10%</td>
<td>.0047082</td>
</tr>
<tr>
<td>25%</td>
<td>.0125335</td>
</tr>
<tr>
<td>50%</td>
<td>.0287848</td>
</tr>
<tr>
<td>75%</td>
<td>.0624581</td>
</tr>
<tr>
<td>90%</td>
<td>.1360649</td>
</tr>
<tr>
<td>95%</td>
<td>.249643</td>
</tr>
<tr>
<td>99%</td>
<td>7.490433</td>
</tr>
</tbody>
</table>

Frequency Distribution:

- 1% Smallest: .0003078
- 5% Smallest: .0002512
- 10% Smallest: .0003078
- 25% Smallest: .000549
- 50% Smallest: .0287848
- 75% Smallest: .0624581
- 90% Smallest: .1360649
- 95% Smallest: .249643
- 99% Smallest: 7.490433

Obs: 228

Mean: .2605973

no observations

*Calculate percentage earning penalty and bonus

gen net_bonus = 1 if net_risk_share>0 & !missing(net_risk_share)
(6,084 missing values generated)

replace net_bonus = 0 if net_risk_share<=0 & !missing(net_risk_share)
(1,147 real changes made)

bys sector_new: tab net_bonus

- sector_new = Public 4yr

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>288</td>
<td>63.86</td>
<td>63.86</td>
</tr>
<tr>
<td>1</td>
<td>163</td>
<td>36.14</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Total: 451 100.00

- sector_new = Public 2yr or less

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>265</td>
<td>54.64</td>
<td>54.64</td>
</tr>
<tr>
<td>1</td>
<td>220</td>
<td>45.36</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Total: 485 100.00

- sector_new = Non-Profit

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>364</td>
<td>75.52</td>
<td>75.52</td>
</tr>
<tr>
<td>1</td>
<td>118</td>
<td>24.48</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Total: 482 100.00

- sector_new = For-Profit
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>230</td>
<td>72.56</td>
<td>72.56</td>
</tr>
<tr>
<td>1</td>
<td>87</td>
<td>27.44</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>317</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

-> sector_new = .
no observations

724
725  gen net_penalty = 1 if net_risk_share<0
(5,525 missing values generated)
726  replace net_penalty = 0 if net_risk_share>=0 & !missing(net_risk_share)
(588 real changes made)
727  bys sector_new: tab net_penalty

-> sector_new = Public 4yr
<table>
<thead>
<tr>
<th>net_penalty</th>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>163</td>
<td>36.14</td>
<td>36.14</td>
</tr>
<tr>
<td>1</td>
<td>288</td>
<td>63.86</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>451</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

-> sector_new = Public 2yr or less
<table>
<thead>
<tr>
<th>net_penalty</th>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>220</td>
<td>45.36</td>
<td>45.36</td>
</tr>
<tr>
<td>1</td>
<td>265</td>
<td>54.64</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>485</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

-> sector_new = Non-Profit
<table>
<thead>
<tr>
<th>net_penalty</th>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>118</td>
<td>24.48</td>
<td>24.48</td>
</tr>
<tr>
<td>1</td>
<td>364</td>
<td>75.52</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>482</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

-> sector_new = For-Profit
<table>
<thead>
<tr>
<th>net_penalty</th>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>87</td>
<td>27.44</td>
<td>27.44</td>
</tr>
<tr>
<td>1</td>
<td>230</td>
<td>72.56</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>317</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

-> sector_new = .
no observations
* Calculate Repayment Rate Across Years for Completers and Non Completers

```
gen rpy_comp_hist_weighted = compl_rpy_3yr_rt_p0607*comp_year_weight_p0607 + compl_rpy_3yr_rt_p0708*comp_year_weight_p0708 + compl_rpy_3yr_rt_p0809*comp_year_weight_p0809 + compl_rpy_3yr_rt_p0910*comp_year_weight_p0910 + compl_rpy_3yr_rt_p1011*comp_year_weight_p1011 + compl_rpy_3yr_rt_p1112*comp_year_weight_p1112
```

```
gen rpy_noncom_hist_weighted = noncom_rpy_3yr_rt_p0607*noncom_year_weight_p0607 + noncom_rpy_3yr_rt_p0708*noncom_year_weight_p0708 + noncom_rpy_3yr_rt_p0809*noncom_year_weight_p0809 + noncom_rpy_3yr_rt_p0910*noncom_year_weight_p0910 + noncom_rpy_3yr_rt_p1011*noncom_year_weight_p1011 + noncom_rpy_3yr_rt_p1112*noncom_year_weight_p1112
```
```plaintext
    sum rpy_comp_hist_weighted [w=historical_completers]  
    (analytic weights assumed)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Weight</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>rpy_comp_h-d</td>
<td>1,955</td>
<td>9323658</td>
<td>.7940256</td>
<td>.1842489</td>
<td>.1495513</td>
<td>.987677</td>
</tr>
</tbody>
</table>

    sum rpy_noncom_hist_weighted [w=historical_noncomp]  
    (analytic weights assumed)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Weight</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>rpy_noncom-d</td>
<td>1,955</td>
<td>14227621</td>
<td>.5973033</td>
<td>.1834803</td>
<td>.0914581</td>
<td>.9420722</td>
</tr>
</tbody>
</table>

*Close log, create a PDF
```

```plaintext
    log close
    name: <unnamed>
    log: /afs/umich.edu/user/l/i/libassi/Private/CAP/risk_sharing/output/graph/cap
    > _risk_sharing_replication_log.smcl
    log type: smcl
    closed on: 12 Dec 2016, 16:12:54
```