Survey of Consumer Finance student loan forgiveness analysis by groups–student proposals

Harold Pollack

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This markdown file analyzes student loan data 2019 Survey of Consumer Finance files. In particular, it models proposals to “forgive” the first $K owed within defined populations, defined by an indicator dselect=1. A function does the rest of the work. It provides the basis for some policies for student loan forgiveness. We only examine the first six loans held by respondent or spouse. We also follow Gale, Gelfond, Fitchtner, and Harris (2020) by multiplying SCF’s survey weight x42001 by 0.2 to produce summary statistics. <https://protectborrowers.org/new-data-show-borrowers-of-color-and-low-income-borrowers-are-missing-out-on-key-protections-raising-significant-fair-lending-concerns/> We will restrict to loans owed by respondent or spouse, given data challenges to evaluating loans by other household members

Forgiveness with distribution across groups

Now we get to the program.

## [1] "Number of observations: 28885"

## Min. 1st Qu. Median Mean 3rd Qu. Max.   
## 0.00 0.00 0.00 13.49 0.00 55000.00

## [1] "Student loan?: "

##   
## 1 5   
## 5265 23620

## [1] "Number of loans: "

##   
## 0 1 2 3 4 5 6 7   
## 23620 3680 1135 280 75 40 35 20

## [1] "Sum of weights--full sample: 643212154.824121"

## [1] "Public assistance income? "

##   
## 0 1   
## 4688 577

## [1] "Loan1 for student or spouse? "

##   
## 1 2 3 4 5 6 7  
## 0 550 185 75 10 5 0 5  
## 1 3130 950 205 65 35 35 15

## [1] "Loan2 for student or spouse? "

##   
## 1 2 3 4 5 6 7  
## 0 3680 230 75 10 5 0 5  
## 1 0 905 205 65 35 35 15

## [1] "Loan3 for student or spouse? "

##   
## 1 2 3 4 5 6 7  
## 0 3680 1135 75 15 5 0 5  
## 1 0 0 205 60 35 35 15

## [1] "Loan4 for student or spouse? "

##   
## 1 2 3 4 5 6 7  
## 0 3680 1135 280 15 10 0 5  
## 1 0 0 0 60 30 35 15

## [1] "Loan5 for student or spouse? "

##   
## 1 2 3 4 5 6 7  
## 0 3680 1135 280 75 5 0 5  
## 1 0 0 0 0 35 35 15

## [1] "Loan6 for student or spouse? "

##   
## 1 2 3 4 5 6 7  
## 0 3680 1135 280 75 40 0 5  
## 1 0 0 0 0 0 35 15

## [1] "Hispanic/Latino:"

##   
## 1 5   
## 623 4642

## [1] "race variable:"

##   
## -7 1 2 3   
## 227 3433 1130 475

## [1] "Sum of weights student loan sample: 137571750.854655"

## [1] "Black by Hispanic table"

##   
## 0 1  
## 0 3574 561  
## 1 1068 62

##   
## 0 1  
## -7 207 20  
## 1 3367 66  
## 2 1068 62  
## 3 0 475

##   
## 0 1  
## 1 264 220  
## 5 4378 403

## [1] "Other category"

##   
## 0 1   
## 5058 207

## [1] "Total loan amount--householder and spouse only"

## 0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80% 85% 90% 95% 100%   
## 0 0 0 1220 5000 8000 10000 13000 18000 21000 25000 30000 36000 40000 50000 60000 70000 90000 114000 150000 555000

## 0% 20% 25% 30% 40% 50% 60% 70% 75% 80% 85% 90% 95% 99% 100%   
## 0 6200 9200 11000 18700 25000 36000 50000 60000 70000 89000 110000 145300 279000 555000

## [1] "Mean family income--overall: 92181.2209351894"

## [1] "Family income"

## 0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80% 85% 90% 95% 100%   
## 0 0 0 1220 5000 8000 10000 13000 18000 21000 25000 30000 36000 40000 50000 60000 70000 90000 114000 150000 555000

## [1] "Student loan weight: "

## Min. 1st Qu. Median Mean 3rd Qu. Max.   
## 373.8 19955.7 26422.7 26129.5 32558.3 60759.6

## [1] "Mean family income--loans: 92181.2209351894"

Now amount still owed

## [1] "Total loan amount still owed"

## Min. 1st Qu. Median Mean 3rd Qu. Max.   
## 0 4000 16000 34992 44800 419000

## 0% 20% 25% 30% 40% 50% 60% 70% 75% 80% 85% 90% 95% 99% 100%   
## 0 3000 5000 7000 11000 17200 27000 37000 45000 58000 70620 93000 140000 256000 419000

##   
## 1   
## 5265

## [1] "Mean family income--overall: 92181.2209351894"

## [1] "Mean family income--loans owed: 92181.2209351894"

## [1] "Mean loan amount owed: 43923.9688675118"

Looping through forgiveness outcomes, with calls to forgive\_descript\_groups given different selected groups and levels of forgiveness

## [1] "All loans less than $1 million"

## [1] "forgiveness threshold 1e+06"

## [1] " "  
## [1] "forgiveness threshold-- 1e+06"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 1e+06 36,118.28"  
## [1] "Mean loan amount forgiven in the group with threshold 1e+06 36,118.28"  
## [1] "Estimated total loan amount forgiven $ 9.93771e+11"  
## [1] "Estimated total loan amount forgiven--Black group $ 244,019,947,249"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 99,498,337,759"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 158,935,490,760"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 67,322,291,315"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 335,770,503,027"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 37,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 65,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 105,000"  
## [1] "Mean proportion Black--forgiven debt below $ 1e+06 0.233675733812443"  
## [1] "Mean proportion Hisp--forgiven debt below $ 1e+06 0.115646227921679"  
## [1] "Mean proportion Public aid--forgiven debt below $ 1e+06 0.109714904478682"

## [1] 0.2336757 0.1156462 0.1097149

## [1] "Black or Hispanic"

## [1] "forgiveness threshold 1e+06"

## [1] " "  
## [1] "forgiveness threshold-- 1e+06"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 1e+06 37,466.59"  
## [1] "Mean loan amount forgiven in the group with threshold 1e+06 37,466.59"  
## [1] "Estimated total loan amount forgiven $ 337,005,555,975"  
## [1] "Estimated total loan amount forgiven--Black group $ 244,019,947,249"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 99,498,337,759"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 54,858,294,331"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 21,922,396,685"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 92,186,587,415"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 35,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 53,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 85,000"  
## [1] "Mean proportion Black--forgiven debt below $ 1e+06 0.695469965519261"  
## [1] "Mean proportion Hisp--forgiven debt below $ 1e+06 0.344188405158395"  
## [1] "Mean proportion Public aid--forgiven debt below $ 1e+06 0.125045078584723"

## [1] 0.6954700 0.3441884 0.1250451

## [1] "Public aid"

## [1] "forgiveness threshold 1e+06"

## [1] " "  
## [1] "forgiveness threshold-- 1e+06"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 1e+06 23,824.57"  
## [1] "Mean loan amount forgiven in the group with threshold 1e+06 23,824.57"  
## [1] "Estimated total loan amount forgiven $ 67,322,291,315"  
## [1] "Estimated total loan amount forgiven--Black group $ 14,321,031,652"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 8,116,025,228"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 38,103,596,961"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 67,322,291,315"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 501,404,559"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 17,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 28,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+06 -- 45,000"  
## [1] "Mean proportion Black--forgiven debt below $ 1e+06 0.25768318522444"  
## [1] "Mean proportion Hisp--forgiven debt below $ 1e+06 0.136899088938219"  
## [1] "Mean proportion Public aid--forgiven debt below $ 1e+06 1"

## [1] 0.2576832 0.1368991 1.0000000

## [1] "Forgive first $50,000 for all families with incomes less than $34,000"

## [1] "forgiveness threshold 50,000"

## [1] " "  
## [1] "forgiveness threshold-- 50,000"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 50,000 27,654.67"  
## [1] "Mean loan amount forgiven in the group with threshold 50,000 21,353.61"  
## [1] "Estimated total loan amount forgiven $ 122,722,404,090"  
## [1] "Estimated total loan amount forgiven--Black group $ 38,976,835,851"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 9,476,457,176"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 122,722,404,090"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 33,055,659,864"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 0"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 50,000 -- 14,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 50,000 -- 21,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 50,000 -- 29,000"  
## [1] "Mean proportion Black--forgiven debt below $ 50,000 0.287059069589026"  
## [1] "Mean proportion Hisp--forgiven debt below $ 50,000 0.102295654177651"  
## [1] "Mean proportion Public aid--forgiven debt below $ 50,000 0.318255977154308"

## [1] 0.2870591 0.1022957 0.3182560

## [1] "Forgive first $100,000 when family income is less than $25,000 and there is public assistance income, "

## [1] "forgiveness threshold 1e+05"

## [1] " "  
## [1] "forgiveness threshold-- 1e+05"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 1e+05 19,328.64"  
## [1] "Mean loan amount forgiven in the group with threshold 1e+05 19,272.72"  
## [1] "Estimated total loan amount forgiven $ 25,233,877,983"  
## [1] "Estimated total loan amount forgiven--Black group $ 6,354,897,275"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 2,115,014,047"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 25,233,877,983"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 25,233,877,983"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 0"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+05 -- 13,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+05 -- 17,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+05 -- 21,000"  
## [1] "Mean proportion Black--forgiven debt below $ 1e+05 0.267176440557161"  
## [1] "Mean proportion Hisp--forgiven debt below $ 1e+05 0.133321754846169"  
## [1] "Mean proportion Public aid--forgiven debt below $ 1e+05 1"

## [1] 0.2671764 0.1333218 1.0000000

## [1] "Forgive first $10,000 for all families, "

## [1] "forgiveness threshold 10,000"

## [1] " "  
## [1] "forgiveness threshold-- 10,000"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 10,000 36,118.28"  
## [1] "Mean loan amount forgiven in the group with threshold 10,000 7,493.994"  
## [1] "Estimated total loan amount forgiven $ 206,192,374,572"  
## [1] "Estimated total loan amount forgiven--Black group $ 49,135,690,786"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 23,277,309,071"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 45,464,300,412"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 20,888,504,161"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 58,269,535,412"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 10,000 -- 37,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 10,000 -- 65,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 10,000 -- 105,000"  
## [1] "Mean proportion Black--forgiven debt below $ 10,000 0.233675733812443"  
## [1] "Mean proportion Hisp--forgiven debt below $ 10,000 0.115646227921679"  
## [1] "Mean proportion Public aid--forgiven debt below $ 10,000 0.109714904478682"

## [1] 0.2336757 0.1156462 0.1097149

## [1] "Forgive first $25,000 for all families, "

## [1] "forgiveness threshold 25,000"

## [1] " "  
## [1] "forgiveness threshold-- 25,000"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 25,000 36,118.28"  
## [1] "Mean loan amount forgiven in the group with threshold 25,000 15,038.52"  
## [1] "Estimated total loan amount forgiven $ 413,775,098,132"  
## [1] "Estimated total loan amount forgiven--Black group $ 100,318,938,485"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 44,276,123,628"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 88,725,187,331"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 39,261,928,661"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 118,989,619,186"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 25,000 -- 37,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 25,000 -- 65,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 25,000 -- 105,000"  
## [1] "Mean proportion Black--forgiven debt below $ 25,000 0.233675733812443"  
## [1] "Mean proportion Hisp--forgiven debt below $ 25,000 0.115646227921679"  
## [1] "Mean proportion Public aid--forgiven debt below $ 25,000 0.109714904478682"

## [1] 0.2336757 0.1156462 0.1097149

## [1] "Forgive first $50,000 for all families, "

## [1] "forgiveness threshold 50,000"

## [1] " "  
## [1] "forgiveness threshold-- 50,000"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 50,000 36,118.28"  
## [1] "Mean loan amount forgiven in the group with threshold 50,000 22,676.51"  
## [1] "Estimated total loan amount forgiven $ 623,929,409,834"  
## [1] "Estimated total loan amount forgiven--Black group $ 156,807,514,247"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 61,936,753,960"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 122,722,404,090"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 53,840,367,840"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 1.85423e+11"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 50,000 -- 37,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 50,000 -- 65,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 50,000 -- 105,000"  
## [1] "Mean proportion Black--forgiven debt below $ 50,000 0.233675733812443"  
## [1] "Mean proportion Hisp--forgiven debt below $ 50,000 0.115646227921679"  
## [1] "Mean proportion Public aid--forgiven debt below $ 50,000 0.109714904478682"

## [1] 0.2336757 0.1156462 0.1097149

## [1] "Forgive first $75,000 for all families, "

## [1] "forgiveness threshold 75,000"

## [1] " "  
## [1] "forgiveness threshold-- 75,000"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 75,000 36,118.28"  
## [1] "Mean loan amount forgiven in the group with threshold 75,000 27,152.5"  
## [1] "Estimated total loan amount forgiven $ 747,083,389,500"  
## [1] "Estimated total loan amount forgiven--Black group $ 188,236,585,482"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 71,408,571,722"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 138,519,416,725"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 60,075,282,358"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 230,660,210,673"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 75,000 -- 37,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 75,000 -- 65,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 75,000 -- 105,000"  
## [1] "Mean proportion Black--forgiven debt below $ 75,000 0.233675733812443"  
## [1] "Mean proportion Hisp--forgiven debt below $ 75,000 0.115646227921679"  
## [1] "Mean proportion Public aid--forgiven debt below $ 75,000 0.109714904478682"

## [1] 0.2336757 0.1156462 0.1097149

## [1] "Forgive first $100,000 for all families, "

## [1] "forgiveness threshold 1e+05"

## [1] " "  
## [1] "forgiveness threshold-- 1e+05"  
## [1] " "  
## [1] "Mean loan amount borrowed in the group with threshold 1e+05 36,118.28"  
## [1] "Mean loan amount forgiven in the group with threshold 1e+05 29,951.19"  
## [1] "Estimated total loan amount forgiven $ 824,087,600,262"  
## [1] "Estimated total loan amount forgiven--Black group $ 204,203,052,433"  
## [1] "Estimated total loan amount forgiven--Hispanic group $ 78,918,267,847"  
## [1] "Estimated total loan amount forgiven--Family income less than $34,000 $ 145,501,863,573"  
## [1] "Estimated total loan amount forgiven--Families receiving public aid income (e.g. SSI/TANF/SNAP) $ 63,218,715,749"  
## [1] "Estimated total loan amount forgiven--Family income greater than $100,000 $ 263,844,641,098"  
## [1] "25th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+05 -- 37,000"  
## [1] "50th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+05 -- 65,000"  
## [1] "75th percentile of Family income distribution in this forgiven group when amount owed below $ 1e+05 -- 105,000"  
## [1] "Mean proportion Black--forgiven debt below $ 1e+05 0.233675733812443"  
## [1] "Mean proportion Hisp--forgiven debt below $ 1e+05 0.115646227921679"  
## [1] "Mean proportion Public aid--forgiven debt below $ 1e+05 0.109714904478682"

## [1] 0.2336757 0.1156462 0.1097149