Assessing the Relationship Between Pell Grant and Federal Student Loan at Louisiana Four-Year Public Institutions

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Abstract
After years of emphasizing college access in the US, lawmakers have become more concerned with college completion, this is because there has been a decline in the completion rate. Although there are other reasons, college affordability is one of the reasons why some students may start college but not complete it. Student loans are often justified on the grounds that higher education has economic benefits such as, it leads to higher salaries and improved employment prospects. Research has shown that grant aid increases the probability of enrollment in postsecondary education. Thus, grant aid is important to students’ postsecondary opportunities and success. This study uses Pearson correlation, t-test and linear regression to evaluate the data and establish the relationship between Pell grants and Federal Student Loans. It seeks to find if a statistically significant relationship exists between Pell Grant and Student Loan.

Keywords: Student Loan, Pell Grant, Four-Year Public Institutions, Louisiana, Financial Aid, Federal Student Loan

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1. Introduction
The student loan debt crisis has been a subject of concern to both researchers and the general public. In 2019 alone, the overall Amount of student loan debt was an outstanding $1.41 trillion in the United States with 54% of college attendees taking on debt to pay for their education, 14.4% of adults with a student loan and 10.8% of students with student debt that's past due for at least 90 days or in default (Matt T, 2019). There has been a 6% increase in student loan debt in the US from 2018 to 2019 with 33% rise since 2014, when the total debt was $1.06 trillion (Matt T, 2019). The increasing cost of college is certainly a big factor in growing student loan debt (Brugelle et al, 1977).

Excessive student loan debt can have an impact on students as it can affect students’ career choice, affect the quality of a student’s life, and delay progress on achieving other financial goals (Fritz et al., 2019; Nissen et al., 2019; Pisaniello et al., 2019). According to research, approximately two out of five US adults are still paying off student loans and thus are unable to save for retirement. The Federal Pell Grant, named after Democratic U.S. Senator Claiborne Pell of Rhode Island, is a subsidy provided by the U.S. federal government for students to pay for college. Federal Pell Grants are limited to students with financial need and have not earned their first bachelor's degree, through participating institutions. The Pell Grant program is administered by the United States Department of Education, which determines the student's Pell eligibility through their financial need. Unlike the student loan, the Pell grants doesn’t have to be repaid (Davidson, 2014; Baum, 2015; Mastrorilli, 2016; Rosinger and Ford, 2019).

2. Problem Statement
70% of American postsecondary students borrow to finance their education as the cost of postsecondary education has shifted to students and their families (Despard et al., 2016). During the last 11 years, student loan debts has increased 2.8 times more from 2007 to 2018 (National Student Loan Data System). Repaying these student loan debts is burdensome especially to students who do not complete their degree and are thereby less likely to get gainful employments (Perna et al., 2017; Despard et al., 2016). Thus, rise in student loan debts has become a major point of debate amongst scholars, policy makers, as well as the public (Houle & Addo, 2018). This study seeks to establish the relationship between Pell grant funding and student loans especially for low income students.

3. Literature Review
Over the past decade, there have been an increase in research and practitioners have expressed unease on the effects of student loan debt. To say that student loan debt is a crisis is an understatement. Studies have considered whether student loans are a barrier to student participation in higher education or if student debt influence students’ choice of careers (Baker and Montalto, 2019). According to research, seven out of ten college graduates leave school with loan debt. In recent years federal and state financial aid policies have aimed at improving retention through improving college affordability. Need-based aid such as the Pell grant has received substantial interest from educators, policymakers, and academics (Park and Scott-Clayton., 2018). While early researchers had difficulties separating the effects of financial aid from confounding factors, recent research has sought to use “natural experiments” such as discontinuities in aid awards to identify the causal effects of financial aid programs. Most of
the research focuses on the effects of Pell Grants on initial enrollment in and choice among colleges. Recent research emphasizes identifying causal links between need-based aid and student outcomes (Lucca, Nadauld and Shen, 2015, 2018; Ulbrich and Kirk, 2017).

4. Objective of the Study
The main objective of this study is to assess the relationship between Pell Grant and Student Loan portfolio among four-year institutions in Louisiana.

5. Research question: Does a statistically significant relationship exist between Pell Grant and Student Loan?

6. Hypothesis
H₀: There is no statistically significant relationship between Pell Grant and Student Loan
H₁: There is a statistically significant relationship between Pell Grant and Student Loan

7. Methodology
In this study, a sample of 16 recognized four-year public institutions in Louisiana were used. The 16 universities were; Louisiana State University A & M college, Southern University A & M college, University of Louisiana at Lafayette, Southeastern Louisiana University, Northwestern State University of Louisiana, Grambling State University, University of Louisiana at Monroe, Louisiana Tech University, Nicholls State University, McNeese State University, University of New Orleans, Louisiana State University at Alexandria, Louisiana State University at Shreveport, Louisiana State University Health Services Center at New Orleans and Louisiana State University Health Services Center at Shreveport. Secondary data for this study was gotten from the National Center for Education Statistics. This study used Pearson correlation to establish if a positive or a negative relationship exists between the variables (Pell Grant and Student Loan), it used the t-test to test if a statistically significant relationship exists between the variables and it used linear regression to analyze the data. Linear Regression (y = a + bx) where y = Student Loan & x = Pell Grant.

8. Delimitation
- Focus is on Louisiana and only four-year public institutions
- Data includes just undergraduate students

9. Findings

| Names of Louisiana Four-Year Public Institutions | Federal Student Loan | Pell Grant |
|--------------------------------------------------|----------------------|-----------|
| Amount $ | No of Awards | Amount $ | No of Awards |
|--------------------------------------------------|----------------------|-----------|
| Louisiana State University and Agricultural & Mechanical College | 71365608 | 10261 | 22952943 | 5304 |
| University of Louisiana at Lafayette | 50852362 | 7510 | 22246544 | 5298 |
| Southeastern Louisiana University | 33196180 | 5698 | 19327207 | 4527 |
| Northwestern State University of Louisiana | 32219310 | 4466 | 14839523 | 3544 |
| Southern University and A & M College | 30493918 | 4230 | 17498885 | 3686 |
| Grambling State University | 27003740 | 3330 | 14619200 | 3032 |
| University of Louisiana at Monroe | 25298428 | 3900 | 13776253 | 3173 |
| Louisiana Tech University | 23243051 | 3568 | 10216749 | 2452 |
| Nicholls State University | 19585482 | 3050 | 9030124 | 2129 |
| McNeese State University | 16789116 | 2676 | 9353033 | 2199 |
| University of New Orleans | 14455920 | 2323 | 9202924 | 2172 |
| Southern University at New Orleans | 10713349 | 1337 | 5115309 | 1189 |
| Louisiana State University-Alexandria | 9046168 | 1361 | 4837260 | 1227 |
| Louisiana State University-Shreveport | 7683128 | 1041 | 4068997 | 980 |
| Louisiana State University Health Sciences Center-New Orleans | 3893070 | 449 | 803067 | 202 |
| Louisiana State University Health Sciences Center-Shreveport | 200629 | 23 | 25248 | 7 |

Source: Adapted from National Center for Education Statistics
According to Pearson correlation, there is a near perfect positive linear correlation (0.931) between Pell Grant and Federal Student loan. Which denotes that, a positive relationship exists between Pell Grant and Federal Student loan.

T-Test: Two-Sample Assuming Unequal Variances

Findings from t-Test: Two-Sample Assuming Unequal Variances show that p-value<0.05 and the t Stat>t Critical two-tail. Thus, we reject the null hypothesis. This implies that, a statistically significant relationship exists between Pell Grant and Federal Student Loan.
Linear Regression

### Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | R Square Change | F Change | df1 | df2 | Sig. F Change |
|-------|---|----------|-------------------|---------------------------|------------------|----------------|----------|-----|-----|-------------|
| 1     | .931* | .866 | .857 | .051 | | | | | | .000 |

*a Predictors: (Constant), Pell Grant

### ANOVA

| Model | Sum of Squares | df | Mean Square | F | Sig |
|-------|----------------|----|-------------|---|-----|
| Regression | 4.301E+15 | 1 | 4.301E+15 | 90.563 | 000|
| Residual | 6.649E+14 | 14 | 4.746E+13 | | |
| Total | 4.960E+15 | 15 | | | |

*a Dependent Variable: Federal Loan
*b Predictors: (Constant), Pell Grant

### Coefficients

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig | 95% Confidence Interval for B |
|-------|-----------------------------|---------------------------|---|-----|-------------------------------|
| (Constant) | -2.747E-09, 288 | .352 | -.845 | .412 | [-7.27E-09, 2.28E-09] |
| Pell Grant | 2.361 | .248 | .931 | 600 | [1.829, 2.893] |

*a Dependent Variable: Federal Loan

**Source:** Authors Calculation Adapted from National Center for Education Statistics

From the Linear regression results, the p-value<0.05 (.000), confirming the rejection of the null hypothesis. The R is 0.931, meaning: 93% of the variation in the dependent variable (federal student loan) is accounted for (or predicted) by the independent variables (Pell grant).

### 10. Conclusion

From the above results, it is evident that changes in Pell grant has a significant influence on the amount of federal student loan taken by students to finance higher education in Louisiana, since there is a positive correlation between the two variables. According to Seung et al (2017) on their research titled “The Impact of Pell Grant Eligibility on Community College Students’ Financial Aid Packages, Labor Supply, and Academic Outcomes”, receiving a modest Pell Grant instead of additional loans leads students to reduce labor supply and increase enrollment intensity. They also state that students’ initial enrollment choices are influenced by an offer of Pell Grants versus loans.

### 11. Limitation

One limitation of the data is that it only includes students attending four-year public institutions in Louisiana. Students in other states that attend four-year public institutions are excluded in the study. Students that attend four-year private institutions in Louisiana as well as students in other states that attend four-year private institutions are excluded. Students that attend other Public institutions in Louisiana that are not four-year institutions are also excluded from the sample.

### 12. Recommendation

- Increase Pell Grant for low income students
- Expand more scholarship schemes for meriting students and low-income students
- Increase pre-college counseling for high school students
- Develop and expand parental counseling sessions for the guardians of first generational students
- Invest in financial literacy seminars at high schools and colleges.

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