

Does Federal Student Aid Raise Tuition? New Evidence on For-Profit Colleges

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Online Appendix

APPENDIX TABLE A1—SHARE OF FOR-PROFIT ENROLLMENTS AND COMPLETIONS IN NON-TITLE IV INSTITUTIONS, BY PROGRAM AND STATE

| <i>A. Share of For-Profit Enrollments in Non-Title IV Institutions, by Program and State</i> | | | | |
|--|------|------|------|------|
| Program (CIP codes) | FL | MI | TN | WI |
| Agriculture (01) | 0.66 | 1.00 | 1.00 | 1.00 |
| Business (52) | 0.02 | 0.88 | 0.18 | 0.36 |
| Communications (09, 10) | 0.05 | 0.05 | 0.03 | 0.03 |
| Computer Science (11) | 0.12 | 0.79 | 0.17 | 0.07 |
| Construction (46, 48) | 0.08 | 0.84 | 0.03 | 0.78 |
| Engineering (14, 15) | 0.08 | 0.97 | 0.00 | 0.00 |
| Health (51) | 0.13 | 0.47 | 0.25 | 0.43 |
| Security & Law Enforcement (43) | 0.01 | 0.96 | 0.02 | 0.00 |
| Mechanics (47) | 0.05 | 0.53 | 0.04 | 0.88 |
| Personal & Culinary (12) | 0.31 | 0.54 | 0.89 | 0.48 |
| Religion (39) | 0.00 | 1.00 | 0.84 | 0.00 |
| Transportation (49) | 0.80 | 1.00 | 0.90 | 0.00 |
| Arts (50) | 0.04 | 0.30 | 0.02 | 0.65 |
| Other | 0.04 | 0.30 | 0.75 | 0.08 |

| <i>B. Share of For-Profit Completions in Non-Title IV Institutions, by Program and State</i> | | | | |
|--|------|------|------|------|
| Program (CIP codes) | FL | MI | TN | WI |
| Agriculture (01) | 0.67 | 1.00 | 1.00 | 1.00 |
| Business (52) | 0.11 | 0.98 | 0.34 | 0.76 |
| Communications (09, 10) | 0.08 | 0.14 | 0.04 | 0.13 |
| Computer Science (11) | 0.45 | 0.96 | 0.46 | 0.21 |
| Construction (46, 48) | 0.20 | 0.98 | 0.14 | 0.98 |
| Engineering (14, 15) | 0.32 | 1.00 | 0.00 | 0.00 |
| Health (51) | 0.37 | 0.65 | 0.37 | 0.75 |
| Security & Law Enforcement (43) | 0.11 | 1.00 | 0.13 | 0.00 |
| Mechanics (47) | 0.11 | 0.88 | 0.03 | 0.85 |
| Personal & Culinary (12) | 0.50 | 0.69 | 0.98 | 0.37 |
| Religion (39) | 0.00 | 1.00 | 0.92 | 0.00 |
| Transportation (49) | 0.83 | 1.00 | 0.91 | 0.00 |
| Arts (50) | 0.11 | 0.77 | 0.06 | 0.34 |
| Other | 0.18 | 0.59 | 0.58 | 0.37 |

C. Share of For-Profit FTE Enrollments in Non-Title IV Institutions, by Program and State

| Program (CIP codes) | FL | MI | WI |
|---------------------------------|------|------|------|
| Agriculture (01) | 0.59 | 1.00 | 1.00 |
| Business (52) | 0.01 | 0.88 | 0.05 |
| Communications (09, 10) | 0.05 | 0.04 | 0.01 |
| Computer Science (11) | 0.03 | 0.93 | 0.07 |
| Construction (46, 48) | 0.02 | 0.74 | 0.63 |
| Engineering (14, 15) | 0.00 | 0.96 | 0.00 |
| Health (51) | 0.05 | 0.23 | 0.19 |
| Security & Law Enforcement (43) | 0.00 | 0.11 | 0.00 |
| Mechanics (47) | 0.01 | 0.70 | 0.86 |
| Personal & Culinary (12) | 0.16 | 0.34 | 0.69 |
| Religion (39) | 0.00 | 1.00 | 0.00 |
| Transportation (49) | 0.55 | 1.00 | 0.00 |
| Arts (50) | 0.02 | 0.48 | 0.82 |
| Other | 0.01 | 0.20 | 0.01 |

D. Share of For-Profit FTE Completions in Non-Title IV Institutions, by Program and State

| Program (CIP codes) | FL | MI | WI |
|---------------------------------|------|------|------|
| Agriculture (01) | 0.58 | 1.00 | 1.00 |
| Business (52) | 0.02 | 0.92 | 0.21 |
| Communications (09, 10) | 0.07 | 0.05 | 0.06 |
| Computer Science (11) | 0.13 | 0.97 | 0.22 |
| Construction (46, 48) | 0.05 | 0.95 | 0.95 |
| Engineering (14, 15) | 0.02 | 1.00 | 0.00 |
| Health (51) | 0.17 | 0.33 | 0.31 |
| Security & Law Enforcement (43) | 0.03 | 1.00 | 0.00 |
| Mechanics (47) | 0.03 | 0.84 | 0.87 |
| Personal & Culinary (12) | 0.29 | 0.46 | 0.63 |
| Religion (39) | 0.00 | 1.00 | 0.00 |
| Transportation (49) | 0.59 | 1.00 | 0.00 |
| Arts (50) | 0.05 | 0.64 | 0.67 |
| Other | 0.03 | 0.28 | 0.06 |

Notes: Years vary slightly for each state. See Table 1 for the precise years. Title IV institutions include only non-degree (diploma/certificate) programs.

Source: State regulatory agencies. See Data Appendix.

APPENDIX TABLE A2—DISTRIBUTION OF NON-TITLE IV AND TITLE IV ENROLLMENT ACROSS PROGRAMS, BY STATE

Program's Share of Enrollment among Title IV and Non-Title IV Institutions, by State (columns sum to 1)

| Program (CIP codes) | FL | | MI | | TN | | WI | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | NT4 | T4 | NT4 | T4 | NT4 | T4 | NT4 | T4 |
| Agriculture (01) | 0.007 | 0.001 | 0.002 | 0.000 | 0.001 | 0.000 | 0.014 | 0.018 |
| Business (52) | 0.030 | 0.002 | 0.255 | 0.019 | 0.124 | 0.062 | 0.227 | 0.012 |
| Communications (09, 10) | 0.010 | 0.000 | 0.002 | 0.030 | 0.002 | 0.025 | 0.001 | 0.001 |
| Computer Science (11) | 0.089 | 0.047 | 0.230 | 0.028 | 0.056 | 0.118 | 0.020 | 0.013 |
| Construction (46, 48) | 0.006 | 0.021 | 0.001 | 0.012 | 0.010 | 0.016 | 0.037 | 0.039 |
| Engineering (14, 15) | 0.011 | 0.004 | 0.080 | 0.006 | 0.000 | 0.003 | 0.000 | 0.000 |
| Health (51) | 0.389 | 0.532 | 0.169 | 0.513 | 0.244 | 0.363 | 0.301 | 0.590 |
| Security & Law Enforcement (43) | 0.008 | 0.001 | 0.032 | 0.004 | 0.003 | 0.056 | 0.000 | 0.001 |
| Mechanics (47) | 0.015 | 0.114 | 0.027 | 0.021 | 0.007 | 0.105 | 0.042 | 0.049 |
| Personal & Culinary (12) | 0.295 | 0.243 | 0.117 | 0.340 | 0.205 | 0.159 | 0.138 | 0.160 |
| Religion (39) | 0.000 | 0.000 | 0.038 | 0.000 | 0.086 | 0.008 | 0.000 | 0.000 |
| Transportation (49) | 0.119 | 0.012 | 0.005 | 0.000 | 0.214 | 0.011 | 0.000 | 0.045 |
| Arts (50) | 0.009 | 0.003 | 0.011 | 0.012 | 0.002 | 0.040 | 0.053 | 0.045 |
| Other | 0.023 | 0.019 | 0.002 | 0.012 | 0.141 | 0.035 | 0.009 | 0.027 |

Notes: Years vary slightly for each state. See Table 1 for the precise years.

Source: State regulatory agencies. See Data Appendix.

APPENDIX TABLE A3—LOG TUITION DIFFERENCES BETWEEN TITLE IV AND NON-TITLE IV INSTITUTIONS, USING INDICATORS FOR PROGRAM LENGTH: FLORIDA, 2005-2009

| | <i>All Sub-Baccalaureate Institutions and Programs</i> | | | |
|-----------------------|--|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Title IV | 0.427*** (0.066) | 0.422*** (0.065) | 0.403*** (0.068) | 0.343*** (0.071) |
| 0.25 ≥ Length < 0.5 | 0.872*** (0.160) | 0.869*** (0.162) | 0.866*** (0.163) | 0.869*** (0.161) |
| 0.5 ≥ Length < 0.75 | 1.431*** (0.148) | 1.431*** (0.149) | 1.428*** (0.150) | 1.430*** (0.146) |
| 0.75 ≥ Length < 1 | 1.658*** (0.131) | 1.657*** (0.132) | 1.656*** (0.133) | 1.676*** (0.132) |
| 1 ≥ Length < 1.5 | 1.964*** (0.140) | 1.962*** (0.141) | 1.962*** (0.142) | 1.985*** (0.139) |
| Length ≥ 1.5 | 2.498*** (0.144) | 2.493*** (0.147) | 2.485*** (0.149) | 2.467*** (0.144) |
| Ln (enrollment) | | 0.006 (0.013) | 0.003 (0.013) | -0.002 (0.013) |
| Years open | | | 0.004 (0.003) | 0.004 (0.003) |
| Chain | | | | 0.236*** (0.072) |
| Six-digit CIP code FE | Yes | Yes | Yes | Yes |
| County FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Year × Title IV FE | Yes | Yes | Yes | Yes |
| No. observations | 8,613 | 8,613 | 8,613 | 8,613 |
| R-squared | 0.841 | 0.841 | 0.842 | 0.845 |

Notes: Standard errors in brackets, clustered by institution. Sample includes all associate's degree and non-degree (diploma/certificate) programs in Florida for-profit institutions. Dependent variable is the natural log of tuition. Length is measured as a proportion of full-time enrollment, based on clock or credit hours. Omitted group is length < 0.25. Years open are the number of years since the institution was first licensed. Chains are defined to be institutions operating in more than one state or with more than five campus branches in a single state. Programs with zero enrollment, tuition, or length are dropped.

Source: State regulatory agencies. See Data Appendix.

*** p < 0.01

** p < 0.05

* p < 0.1

APPENDIX TABLE A4—LOG TUITION DIFFERENCES BETWEEN TITLE IV AND NON-TITLE IV INSTITUTIONS, ADDING COMPLETIONS: FLORIDA, 2005-2009

| | <i>All Sub-Baccalaureate Institutions and Programs</i> | | | |
|-----------------------|--|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| Title IV | 0.377*** (0.065) | 0.354*** (0.063) | 0.330*** (0.066) | 0.287*** (0.069) |
| Ln (program length) | 0.823*** (0.028) | 0.817*** (0.028) | 0.816*** (0.029) | 0.810*** (0.028) |
| Ln (enrollment) | | 0.027** (0.013) | 0.021 (0.015) | 0.016 (0.015) |
| Years open | | | 0.006** (0.003) | 0.005* (0.003) |
| Chain | | | | 0.200*** (0.068) |
| Completions | -0.001** (0.000) | -0.001*** (0.000) | -0.001*** (0.000) | -0.001*** (0.000) |
| Six-digit CIP code FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| County FE | Yes | Yes | Yes | Yes |
| Year × Title IV FE | Yes | Yes | Yes | Yes |
| No. observations | 8,613 | 8,613 | 8,613 | 8,613 |
| R-squared | 0.872 | 0.873 | 0.874 | 0.876 |

Notes: Standard errors in brackets, clustered by institution. Sample includes all associate's degree and non-degree (diploma/certificate) programs in Florida for-profit institutions. Dependent variable is the natural log of tuition. Length is measured as a proportion of full-time enrollment, based on clock or credit hours. Years open are the number of years since the institution was first licensed. Chains are defined to be institutions operating in more than one state or with more than five campus branches in a single state. Programs with zero enrollment, tuition, or length are dropped.

Source: State regulatory agencies. See Data Appendix.

*** $p < 0.01$

** $p < 0.05$

* $p < 0.1$

APPENDIX TABLE A5—LOG TUITION DIFFERENCES BETWEEN TITLE IV AND NON-TITLE IV INSTITUTIONS, OMITTING ENROLLMENT: FLORIDA, 2005-2009

| | <i>All Sub-Baccalaureate Institutions and Programs</i> | | |
|-----------------------|--|---------------------|---------------------|
| | (1) | (2) | (3) |
| Title IV | 0.376*** (0.065) | 0.346*** (0.069) | 0.300*** (0.072) |
| Ln (program length) | 0.824*** (0.028) | 0.822*** (0.029) | 0.816*** (0.028) |
| Years open | | 0.006** (0.003) | 0.005* (0.003) |
| Chain | | | 0.199*** (0.067) |
| Six-digit CIP code FE | Yes | Yes | Yes |
| County FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| Year × Title IV FE | Yes | Yes | Yes |
| No. observations | 8,613 | 8,613 | 8,613 |
| R-squared | 0.872 | 0.873 | 0.875 |

Notes: Standard errors in brackets, clustered by institution. Sample includes all associate's degree and non-degree (diploma/certificate) programs in Florida for-profit institutions. Dependent variable is the natural log of tuition. Length is measured as a proportion of full-time enrollment, based on clock or credit hours. Years open are the number of years since the institution was first licensed. Chains are defined to be institutions operating in more than one state or with more than five campus branches in a single state. Programs with zero enrollment, tuition, or length are dropped.

Source: State regulatory agencies. See Data Appendix.

*** $p < 0.01$

** $p < 0.05$

* $p < 0.1$

APPENDIX TABLE A6—LOG TUITION DIFFERENCES BETWEEN TITLE IV AND NON-TITLE IV INSTITUTIONS, USING CITY FIXED EFFECTS: FLORIDA, 2005-2009

| | <i>All Sub-Baccalaureate Institutions and Programs</i> | | | |
|-----------------------|--|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Title IV | 0.413*** (0.073) | 0.413*** (0.072) | 0.387*** (0.076) | 0.336*** (0.080) |
| Ln (program length) | 0.827*** (0.028) | 0.827*** (0.027) | 0.826*** (0.028) | 0.822*** (0.027) |
| Ln (enrollment) | | 0.000 (0.012) | -0.004 (0.013) | -0.010 (0.013) |
| Years open | | | 0.005* (0.003) | 0.004 (0.003) |
| Chain | | | | 0.224*** (0.074) |
| Six-digit CIP code FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| City FE | Yes | Yes | Yes | Yes |
| Year × Title IV FE | Yes | Yes | Yes | Yes |
| No. observations | 8,613 | 8,613 | 8,613 | 8,613 |
| R-squared | 0.883 | 0.883 | 0.884 | 0.887 |

Notes: Standard errors in brackets, clustered by institution. Sample includes all associate's degree and non-degree (diploma/certificate) programs in Florida for-profit institutions. Dependent variable is the natural log of tuition. Length is measured as a proportion of full-time enrollment, based on clock or credit hours. Years open are the number of years since the institution was first licensed. Chains are defined to be institutions operating in more than one state or with more than five campus branches in a single state. Programs with zero enrollment, tuition, or length are dropped.

Source: State regulatory agencies. See Data Appendix.

*** $p < 0.01$

** $p < 0.05$

* $p < 0.1$

APPENDIX TABLE A7—LOG TUITION DIFFERENCES BETWEEN TITLE IV AND NON-TITLE IV INSTITUTIONS, USING ZIP CODE FIXED EFFECTS: FLORIDA, 2005-2009

| | <i>All Sub-Baccalaureate Institutions and Programs</i> | | | |
|-----------------------|--|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Title IV | 0.410*** (0.078) | 0.418*** (0.079) | 0.392*** (0.082) | 0.348*** (0.083) |
| Ln (program length) | 0.835*** (0.031) | 0.836*** (0.031) | 0.835*** (0.031) | 0.837*** (0.031) |
| Ln (enrollment) | | -0.007 (0.010) | -0.011 (0.010) | -0.015 (0.010) |
| Years open | | | 0.005 (0.003) | 0.003 (0.004) |
| Chain | | | | 0.221*** (0.076) |
| Six-digit CIP code FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Zip Code FE | Yes | Yes | Yes | Yes |
| Year × Title IV FE | Yes | Yes | Yes | Yes |
| No. observations | 8,613 | 8,613 | 8,613 | 8,613 |
| R-squared | 0.909 | 0.909 | 0.910 | 0.911 |

Notes: Standard errors in brackets, clustered by institution. Sample includes all associate's degree and non-degree (diploma/certificate) programs in Florida for-profit institutions. Dependent variable is the natural log of tuition. Length is measured as a proportion of full-time enrollment, based on clock or credit hours. Years open are the number of years since the institution was first licensed. Chains are defined to be institutions operating in more than one state or with more than five campus branches in a single state. Programs with zero enrollment, tuition, or length are dropped.

Source: State regulatory agencies. See Data Appendix.

*** $p < 0.01$

** $p < 0.05$

* $p < 0.1$

APPENDIX TABLE A8—LOG TUITION DIFFERENCES BETWEEN TITLE IV AND NON-TITLE IV INSTITUTIONS, OMITTING YEAR × TITLE IV EFFECTS: FLORIDA, 2005-2009

| | <i>All Sub-Baccalaureate Institutions and Programs</i> | | | |
|-----------------------|--|----------------------|-----------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Title IV | 0.387*** (0.0645) | 0.383*** (0.0648) | 0.358*** (0.0665) | 0.318*** (0.070) |
| Ln (program length) | 0.824*** (0.0281) | 0.823*** (0.0280) | 0.822*** (0.0285) | 0.817*** (0.028) |
| Ln (enrollment) | | 0.0048 (0.0117) | -0.0005 (0.0126) | -0.005 (0.013) |
| Years open | | | 0.0062** (0.00277) | 0.005* (0.003) |
| Chain | | | | 0.201*** (0.068) |
| Six-digit CIP code FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| County FE | Yes | Yes | Yes | Yes |
| Year × Title IV FE | No | No | No | No |
| No. observations | 8,613 | 8,613 | 8,613 | 8,613 |
| R-squared | 0.872 | 0.872 | 0.873 | 0.878 |

Notes: Standard errors in brackets, clustered by institution. Sample includes all associate's degree and non-degree (diploma/certificate) programs in Florida for-profit institutions. Dependent variable is the natural log of tuition. Length is measured as a proportion of full-time enrollment, based on clock or credit hours. Years open are the number of years since the institution was first licensed. Chains are defined to be institutions operating in more than one state or with more than five campus branches in a single state. Programs with zero enrollment, tuition, or length are dropped.

Source: State regulatory agencies. See Data Appendix.

*** $p < 0.01$

** $p < 0.05$

* $p < 0.1$