ARIZONA CHAMBER FOUNDATION

September 2018

EDUCATION

POLICY REVIEW

An Economic and Policy Examination of College Tuition Subsidy Proposals

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EDITOR'S NOTE

This paper is the first in a series exploring topics relevant to expanding Arizona's footprint as a destination state for employers, innovators, and entrepreneurs. We will detail our substantial assets as a technology and innovation hub and explore the linchpin to this success: talent. We start here with a look at the idea of free or nearly-free tuition, an idea receiving much attention around the country, but, as you will get a sense of here, light so far on Return on Investment for states, workforce needs and students. From here we will build out more refined approaches to workforce development; learn from this country's top innovators why Arizona is a top destination for tech companies and workers alike; and illuminate a path to Tier I Tech State status.

Arizona's Rise to a

TIER I TECH STATE

WHERE WE STAND AND HOW TO CLOSE THE GAP

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INTRODUCTION

The idea of expanding access to an affordable college education has become more prominent in American politics. Combined with rising costs at most institutions, there have been several national and state level initiatives for public college and university reform to reduce or eliminate tuition costs and student debt.

This paper examines the economic and public policy implications of providing subsidized community college and university tuition in Arizona beyond what our state and federal government currently provide.

It is important to note that there are two primary considerations to the eliminated or reduced tuition payment:

1. In what form is the tuition free for students - grants, forgivable loans, etc.?
2. How do institutions cover cost when tuition income does not come from students?

Student tuition, for example, can be reduced or waived for some or for all; or states could provide partial or full loan forgiveness for students who remain in the region after graduation. Then, how are higher education institutions reimbursed? After all, "free" tuition is not free. Payment could include reallocating existing tax revenue to more fully cover costs, or by raising taxes. Ideally, all of these proposals would be dependent on newly induced economic growth that offsets up-front program costs to taxpayers.

Arizona's universities receive over $2.2 billion each year from tuition and fees. Furthermore, the state's community college system collects $400 million annually in tuition. If a "free college" model was implemented in Arizona, more than $2.6 billion in additional state costs would need to be offset by an equivalent increase in taxes. This represents approximately one quarter of the state's entire General Fund budget.

"If a 'free college' model was implemented in Arizona, more than $2.6 billion in additional state costs would need to be offset by an equivalent increase in taxes."

For perspective, the state sales tax rate would need to be raised by 50 percent to produce enough revenue to offset the cost of a "free college" model being implemented in Arizona. Or, the income tax rates for both individuals and corporations would need to increase by a similar 50 percent. However, the gains from such a proposal would be limited, while the negative effects associated with the extreme tax increases would be devastating to the economy. This would include job losses and weaker overall economic growth.

Other more responsible options do exist for improving the higher education infrastructure in Arizona that are targeted and designed with measurable goals. The following research identifies what to look for when designing an efficient and responsible higher education plan.

Ultimately, the evaluation for tuition subsidies in Arizona must be grounded in the conditions specific to the state, the conditions of our workforce and the needs of our students. Arizona's tuition and debt profiles differ considerably from other institutions across the country. Nominal costs, debt, and loan default are lower for Arizona students on average, with various waiver and loan forgiveness programs already in place.

As part of this analysis, large scale tuition subsidy proposals were reviewed in the context of how the broader economy functions. Many things influence economic growth, which in turn supports individual prosperity. As such, no single variable should be considered in isolation. The review includes a current competitive assessment via interviews with economic developers and a Return on Investment calculation. This assessment concludes the following:

> Changes in public policy related to tuition costs will be more likely to produce a positive economic return if designed as part of a broader-based, higher education package. This could include changes to state versus student cost-sharing ratios and enhancement of the linkage between higher education and workforce development efforts.
>
> Tuition policies need to be focused on achieving measurable outcomes. Generic proposals simply to cover the full cost of tuition will be costly and inefficient. Any university or community college investment project should be designed and evaluated as part of a broader economic development vision for jobs and the workforce.
>
> It is clear the state's higher education infrastructure is a core component to building the economy and should be adequately supported. However, redirecting limited resources from the system's more strategic programs for use on a free tuition program will not yield economic benefits.

THE BROADER CONCEPT OF GROWING THE ECONOMY

There are basic facts to consider when reviewing how a public policy change will impact the economy and its ability to grow. The first is that many things influence economic growth, and finding the right balance will maximize productivity, profits, incomes, tax revenues, and overall quality of life.

The same rules apply when examining access to higher education and the associated costs. Higher education is indeed a key component of building an economy, but it is one of many. Tax rates need to be competitive, the regulatory environment needs to be efficient, infrastructure (roads, communications, utilities) needs to be built and maintained, economic development programs need to be managed responsibly, and government budgets need to be balanced, among many other factors.

Each of these factors competes for limited government resources. Over-subsidizing any one area, including college tuition, could result in additional economic growth if nothing else mattered. But in reality, many things matter. An additional dollar spent on tuition subsidies will result in a dollar less being spent on other important economic factors. This is the opportunity cost of public investment. The existence of limited resources means that any tuition subsidy proposal needs to be weighed against other areas of investment in the economy.

The review herein was both qualitative and quantitative. The qualitative tuition subsidy review includes research into the extent that college tuition rates have become a problem in large business recruitment and expansion, or that small business creation and entrepreneurial development have been negatively impacted. This also includes a review of student debt levels.

The quantitative review considers the concept of Return on Investment (ROI) and the extent to which a change in public policy will produce a positive return for taxpayers. This allows for a more efficient comparison of various government programs. The ROI of any investment category will vary based on the current level of competitiveness. If one of the key factors to economic well-being receives too little investment, additional expenditures will have a greater impact. If the factor is already receiving too much investment, then additional subsidies will have very limited impact.

Thus, large scale tuition subsidy proposals should be reviewed in the context of how the broader economy functions, include a current competitive assessment, and be accompanied by some form of ROI calculation. Current resources should first be analyzed and redirected, when possible, to more efficient programs before new revenues are considered. This is true of tuition subsidies, K-12 education spending, infrastructure spending, etc. The proposals should also consider the existence of limited resources since it is the government's responsibility to efficiently utilize taxpayer monies.

EXAMPLES OF RECENT TUITION-SUBSIDY PROPOSALS

National Proposals

Perhaps the most well known proposal requiring federal participation is Senator Bernie Sanders' "College for All Act." Senator Sanders advocated for eliminating undergraduate tuition at every public college and university in the United States, primarily to reduce student debt and ensure more students could enter college.[1] The Senator's staff distributed a figure of $70 billion as the cost of tuition at public colleges and universities in America. The Act would see the federal government cover $47 billion of that price tag with individual states covering the remaining $23 billion to eliminate undergraduate tuition at each respective public institution.[2] Requirements would be put in place to ensure compliance from each of the states that would receive a portion of the funding.

The proposal would be funded by a speculation tax imposed on investment houses, hedge funds, and other traders. Advocates assert the fees could raise in excess of "hundreds of billions (of dollars) a year." This plan shares many similarities with Representative Keith Ellison's (D-MN) "Inclusive Prosperity Act."[3] That measure would add an estimated $300 billion in annual revenue.

In order to implement this free tuition concept for Arizona, the state would need assistance from the federal government, stock exchanges, and other entities to ensure that tax revenues could be collected. Estimating the fiscal impact of this tax is instrumental in determining whether this policy should be pursued at the state level. A very rough baseline estimate of local collections may be possible using local economic statistics as a percentage of national values, but the margin of error would be large and would produce fund management problems that would seriously undermine the reliability of this program.

When determining feasibility, one must first look at the government agency's ability to impose a tax and to prevent evasion. This evaluation did not occur for these national proposals, nor does there appear to be any flexibility or backup plan for students or states when revenues are not sufficient. There was also no evaluation regarding management costs, or the extent to which behavior might change related to financial transactions, thus reducing estimated revenues.

State Proposals

State level examples share similar weaknesses. According to the University of Pennsylvania Graduate School of Education, there are currently 238 "College Promise" programs, state and local, in the United States that aim to offset the costs of college.[4] A proposal that originated in New York, called the "Excelsior Scholarship," applies to students with family earnings under $100,000 with that figure rising to $125,000 by 2019. The

New York Legislature funded the program with $163 million spread over a three year period. It does not appear to have a dedicated funding stream past the initial three-year introductory period.[5]

The Excelsior Scholarship, like many state-led tuition reduction initiatives, acts as a "last-dollar" scholarship that only covers what the New York State Tuition Assistance Program and Federal Pell Grants do not cover. It is important to note that it only covers tuition and does not cover the other components of a college education such as mandatory fees and housing costs, something we know also contributes to students dropping out and taking on too much debt.

The program aims to make sure that the state recoups its money in the long-term by committing recipients to live and work in the state for the same amount of time that the student received aid. For example, if the student received aid for four years of education, that student would be required to live and work in New York State for four years or else the scholarship would be converted to a loan. This provision creates a number of economic problems. No detailed process for monitoring student movement and later recovering costs (post-college) has been offered. The state did not attempt to produce a formal analysis of ROI and did not analyze the effort as a part of building their overall economy. This makes it difficult to measure the economic benefits of such a program.

Smaller scale examples also exist. Several states have implemented tuition-reduction programs over the past four years, in both traditionally Democrat and Republican regions. "Tennessee's Promise" was introduced by Republican Governor Bill Haslam in 2014.[6] The proposal called for two years of community or technical college education to be free to graduating high school seniors in the state. The program utilizes state lottery reserve funds to create an endowment to cover tuition and fees.

Like New York's Excelsior Scholarship, Tennessee's Promise is a last-dollar scholarship that covers tuition and mandatory fees not covered by the Pell Grant, the HOPE Scholarship, or the Tennessee Student Assistance Award. The program is very limited though, with a cost to the state of $12 million in the first year. The state has since increased the program to include adults, with costs increasing by $10 million per year. However, efficacy for students has been called in to question as large numbers of students still do not complete their programs.

Additional state-led programs include "Oregon Promise" for community college students at a cost of $10.9 million in the first year; the "Rhode Island Promise Scholarship" for Rhode Island community college students at a cost of $2.8 million in the first year; the City College of San Francisco's tuition-free plan to support 28,000 students via the city increasing a real estate transfer tax on luxury properties, at a cost of $5.4 million over the first two years; and programs in Arkansas, South Dakota, and Minnesota that make tuition free for students studying in high-demand fields such as computer science and welding.

Results for these programs have been mixed. Some students are not ready for the college experience and drop out or they complete their program only to be limited from having trained for one job that is later auto-

mated or obsolete. Some analysis shows two-year "promise" programs track low-income students out of four-year degree programs. Strong evaluations and diversity in preparedness must accompany the funding. Subsidies by themselves are not the answer for students or employers.

Smaller scale and targeted programs may offer the lowest levels of risk to states, and also the best opportunities for a positive ROI. However, a business case must be established before the political discussions begin. Smaller scale tuition programs can also be developed as a joint venture between the local government and private sector entities.

ARIZONA'S UNIVERSITIES AND COMMUNITY COLLEGES: TUITION AND DEBT

University Tuition and Debt Landscape

The national and state proposal concepts have begun to arise in the Arizona public policy dialogue. The argument is that rising tuition costs have made public higher education inaccessible and that college loan debt has reached an all-time high. While these challenges are somewhat true throughout the country, in considering actual data, Arizona has fared better.[10]

Something commonly overlooked is the difference between the "nominal" cost of and the "effective" cost of post-secondary education. In other words, what is the tuition rate (nominal tuition) and what is the tuition actually paid by students (effective tuition). Effective tuition is calculated by applying aid that does not need to be repaid. Availability of financial aid, changes in university strategies, and substantial enrollments in both resident and non-resident students has kept effective in-state tuition costs down for Arizona in-state students.

Effective Tuition Rates

	2012-13	2016-17	ANNUAL RATE
ASU	$3,941	$3,816	-0.63%
UA	$3,495	$5,137	9.40%
NAU	$2,985	$3,091	0.71%
ALL	**$3,578**	**$4,054**	**2.66%**

Sources: Arizona Board of Regents Financial Aid Reports (FY2013[11] and FY2017[12])

Nominal Tuition Rates

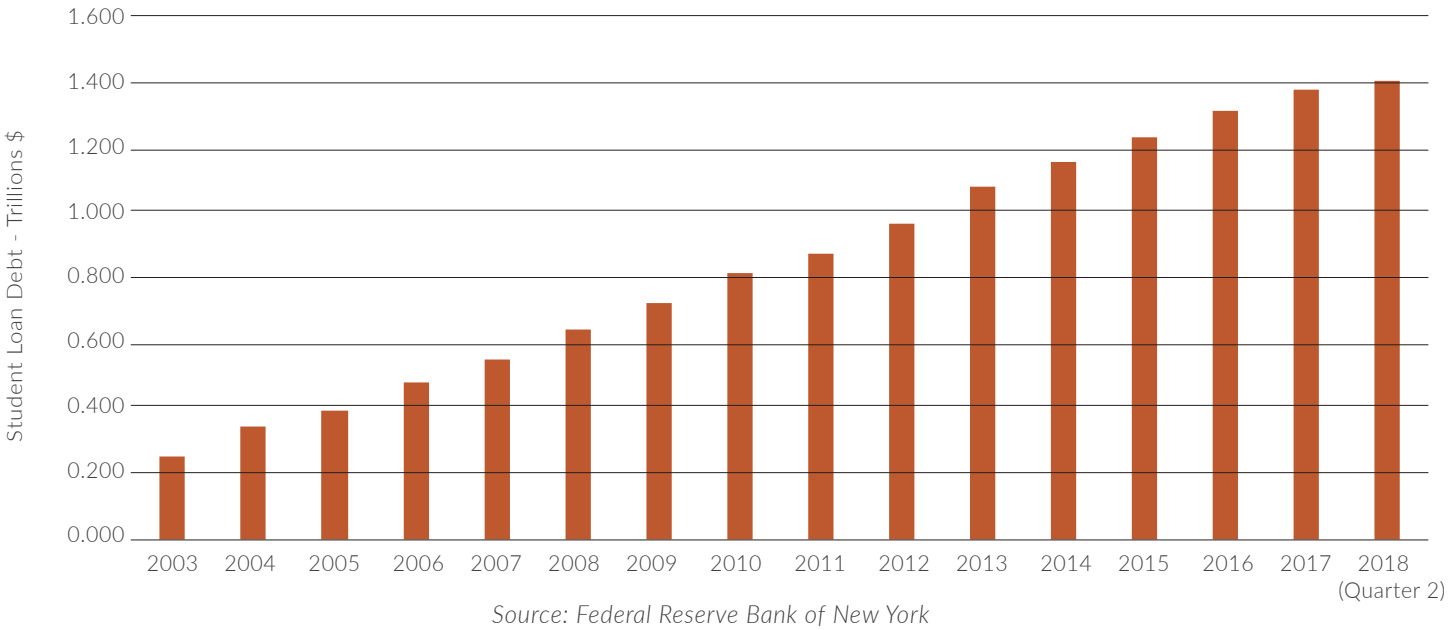
	2012-13	2016-17	ANNUAL RATE
ASU	$9,720	$10,640	1.89%
UA	$10,035	$11,769	3.46%
NAU	$9,271	$10,764	3.22%
ALL	**$9,718**	**$10,962**	**2.56%**

Sources: Arizona Board of Regents Financial Aid Reports (FY2013[13] and FY2017[14])

In FY 2015, approximately 91 percent of students enrolled at an Arizona university received some form of financial aid. Financial aid can be in the form of loans that must be repaid, or in the form of "gift aid" that does not have to be repaid. Of the 91 percent receiving some form of financial aid, nearly 100,000, or 71 percent, received gift aid.[15] Gift aid is awarded based on need or merit as scholarships or grants. In 2017, student tuition costs and average costs after gift aid for residents at Arizona's universities were at least a third of full tuition.

Despite the differences between nominal tuition and final cost, many students must still access loans. Student debt concerns are not unique to Arizona, but are a concern throughout the nation. Nationally, the debt related to student loans has reached an all-time high at $1.4 trillion.[16]

National Student Debt Balance, 2003-2018



Source: Federal Reserve Bank of New York

Future economic activity will be dampened as students use the first portion of their future paychecks to cover student debt as opposed to spending on current goods and services. On the other hand, the additional education that is the source of the debt may allows the individuals to work in more productive fields and receive larger paychecks. In reality, there needs to be a balance to achieve a positive return on investment for the individual and the taxpayer.

In Arizona, more than half of students took on debt to finance their schooling; however, the average debt load is well below the national average. Arizona is ranked third for the least amount of debt per graduate.[17] Even though Arizonans have been incurring additional student debt, more than 42 percent of Arizona's undergraduates completed their education without debt in 2017.[18]

Average Debt for Arizona Resident Undergraduate Students

	2012-13	2016-17	PERCENT CHANGE
ASU	$21,944	$23,110	5.3%
UA	$20,650	$21,781	5.5%
NAU	$22,412	$22,211	-0.009%
AZ Universities	**$21,668**	**$22,367**	**3.2%**
National Public	**$25,600**	**$27,000**	**5.5%**

Sources: Arizona Board of Regents Financial Aid Reports (FY2013[19] and FY2017[20]); College Board[21,22]

Arizona public university students also default on loans at a significantly lower rate than their peers across the country. With approximately 11.5 percent of federal student loan borrowers in default, Arizona's figures of 6.8 percent at Arizona State University, 7.3 percent at Northern Arizona University, and 6.7 percent at the University of Arizona demonstrate that the universities are excelling in this regard. The default rate of students and alumni associated with Arizona's public universities is also significantly lower than the default rate associated with federal loan borrowers at Arizona for-profit and two-year institutions.[23]

The following offers a brief summary for each university regarding tuiton and student aid:

ARIZONA STATE UNIVERSITY

- Nearly 80 percent of the university's resident undergraduate population received some form of gift aid.
- Approximately 40 percent of ASU students graduate without any student loan debt.

NORTHERN ARIZONA UNIVERSITY

- Nearly 90 percent of NAU students received financial aid in 2017, equaling 65 percent of the total financial need.
- Since 2011, the percentage of NAU students taking out loans has declined 3.7 percentage points while the amount of gift aid that NAU has provided to those students increased by 6.3 percentage points.

UNIVERSITY OF ARIZONA

- Nearly 61 percent of resident freshmen received need- or merit-based aid.
- Approximately 58.3 percent of resident undergraduates took on loans to pay for their education, and the average debt at graduation was $22,547.
- In FY 2017, 55 percent of undergraduate resident students paid less than $5,000.[24]

Community College Tuition and Debt Landscape

Arizona's community colleges remain affordable for most residents, with the weighted average cost per credit hour at $85 and a weighted average annual cost of $2,547.[25] This base rate is well below national averages. Additionally, most of the systems offer various support to help students get through school such as Head Start child care, dental clinics, and small class sizes.[26]

Adding to the affordability and completion benefits of the Arizona system is a strong community college-to-university matriculation agreement. This makes it possible to complete two years of a four-year degree at the more affordable community colleges.

The typical student at a community college is older than a traditional student at a four-year university and is generally from a lower socioeconomic background with more responsibilities, thus making it more difficult to respond to life's challenges.[27]

Although the annual cost is not excessive, many community college students still struggle with debt and the non-tuition related costs that lead to more borrowing. Exacerbating this scenario are the large number of students who drop out before completing the degree or training that would help them afford their loan payments.

The community college system in Arizona is a vital component of the state's workforce development. With the ability to implement new programs quickly, the state has provided aid to these insitutions to assist with Science, Technology, Engineering, and Mathematics programs; as well as Workforce Programs. With Maricopa and Pima excluded, Arizona community colleges are expected to receive $48.3 million in state aid. Helping to offset the lack of state aid, Arizona's Joint Legislative Budget Committee estimated that Maricopa County Community Colleges would receive more than $539 million from property taxes and that Pima County Community Colleges would receive more than $112 million from property taxes.[28] The colleges also have several sources of funding for career and technical education as well as partnerships with private employers who subsidize industry trainings. Ultimately, tuiton is roughly 20 percent of the income stream for these public colleges.

To reconcile the affordability and job training value of community colleges with default and drop out rates requires an approach more sophisticated than free tuition. While the state should ensure that colleges are appropriately funded, the data hints at a need for colleges and workforce experts to help students explore a more in-depth analysis of the affordability of training for high paying jobs that can outlive automation and artificial intelligence. In this way we can manage costs at the public universities, avoid debt while maintaining personal investment in education, and provide students the income needed for their tuition ROI. This would occur while developing the workforce that drives prosperity for states.

The relevant policy issue related to community colleges and universities does not yet appear to be tuition levels, but how other support mechanisms are implemented. For instance, if the state views community colleges and universities as being on the frontlines of workforce training, then adequate resources must be calculated and allocated.

MONETIZING THE ROI OF A SUBSIDY PROPOSAL

Economic modeling can be used to provide perspective into the extent to which programs might yield a positive return on investment for taxpayers. Policymakers should evaluate how potential policy changes will impact the economy. New state programs will cost a certain amount each year. Economic modeling can calculate how many new jobs will ultimately need to be created, over time, for the investment to break even.

Based on economic modeling,[29] each $100 million in annual costs related to reducing college tuition would need to generate about 22,000 new jobs by year ten to achieve break-even. Thus, approximately one tenth of this amount, or 2,200 jobs, would need to be added to the state's economic base each year from just $100 million in new tuition subsidies. The calculations assume an annual wage of $63,500.

The ability to achieve a positive ROI on any economic development project is a function of the project being properly blended with other efforts. A large-scale tuition subsidy program that is designed in isolation is unlikely to produce enough of a positive economic impact to cover the cost.

Qualitative analysis also provides value in anticipating impacts that may not yet appear in the data. For this portion of the analysis, interviews with economic development professionals and site selectors confirmed that local tuition costs have yet to be a reported factor in business expansion or relocation projects in the state. The primary outcome of these discussions was related to the importance of the quality of states' post-secondary institutions.

Other programs may exist options to advance higher education achievement than blanket tuition subsidies to yield a positive ROI and protect taxpayers. Individual programs that address specific deficiencies are the most likely to yield a positive return for the state. These programs can be developed as joint ventures with private sector interests and other state and local economic development organizations and developed as part of a larger education package.

Summary of Findings

Our economic analysis of tuition subsidy programs yielded a number of findings:

1. The support of the concept of tuition subsidies appears to be a response to a national trend of students graduating with historically higher levels of debt. However, this is not solely based on tuition costs being too high. The debt levels were significantly impacted by the Great Recession. This negatively affected employment and incomes which resulted in above average amounts of debt being incurred. A costly change in tuition assistance going forward will neither address the debt issues from the last decade nor non-tuition costs.

2. In Arizona, debt per student is well below the national average and students across the state's three public universities default on student debt at a much lower percentage than the national average.

3. The analysis of college tuition needs to focus on "effective costs" (i.e. nominal cost less gift aid that does not need to be repaid). When student aid is factored in, the effective cost of tuition at Arizona's public universities has been modest. For the entire Arizona university system, full-time resident students paid, on average, $4,054 in effective tuition.[30] This is less than half of full tuition.

4. The refinement of higher education programs and workforce support likely has increased the value of the higher education product as a whole. However, additional analysis will be required for full validation. This would include a preview of economic development competitiveness and the extent Arizona graduates are filling the high paying jobs.

5. Arizona ranks 37th overall in the country for state-funded financial aid and 40th for state fiscal support of higher education as a percentage of total state expenditures.[31] While the management of the broader system has been efficient to date, the lower levels of local support could place upward pressure on student debt moving forward. When monies are being used for debt payments, less current spending within the broader economy occurs and economic growth is dampened. However, this is a prospective problem that can be managed with less drastic fiscal measures than full tuition subsidies.

6. Interviews with economic development professionals and site selectors confirmed that local tuition costs have yet to be a reported factor in business expansion or relocation projects in the state. However, higher education quality arises in the majority of discussions. This further supports the idea of examining effective costs and value as opposed to just nominal tuition rates. This does not eliminate the possibility of tuition costs being of greater economic importance going forward. The policy debate about future tuition levels still has merit.

7. The various tuition subsidy proposals across the country do not appear to be based on reasonable levels of economic analysis. Significant costs will be realized in many scenarios and the proposals are also lacking details regarding implementation, sustainability, and accountability. Complex taxing schemes to pay for the programs will have high administrative costs and low rates of tax code compliance. Formally tracking student movement after graduation for financial aid reimbursement purposes can be done based on employment records, but some privacy issues may arise.

8. Economic impact analysis provides perspective into the extent such programs might yield a positive ROI for Arizona taxpayers. Tuition payments represented 21.7 percent of revenue in the community college budgets in FY2017, and 39.4 percent of the spending authority at the universities.[32] If all (or a portion) of tuition payments are to be subsidized, the benefits must translate into enough new economic activity and tax revenue to at least fiscally break-even. These break-even points should be a component of any new program design for both tuition amounts and design of loan and gift aid programs.

9. Higher education is considered a form of intellectual infrastructure and the recommended break-even analysis period is 10 years. Based on economic impact modeling, each $100 million in annual costs related to reducing college tuition would need to generate 22,000 new high wage jobs by year ten to achieve break-even. Thus, approximately 2,200 jobs, would need to be added to the state's economic base each year for each $100 million in new tuition subsidies.

10. The ability to achieve a positive ROI on any economic development project is a function of the project being properly blended with other efforts. For example, a large-scale tuition subsidy program that is designed in isolation will not likely produce enough of a positive economic impact to cover the cost. Smaller-scale and targeted tuition programs, combined with efforts to advance workforce quality and the state's overall level of competitiveness, will be more likely to return a positive ROI.

CONCLUSION

Larger scale college tuition subsidies that are not properly focused and analyzed are not recommended. Such a proposal would result in fiscal losses with limited economic benefits. The losses would be compounded by the fact that there will be opportunity costs for the use of the limited financial resources. The concept of college affordability is valid to study, but new programs focus on achieving a goal and integrated into other related efforts.

APPENDIX A

SELECT LEGISLATIVE TUITION AND FEE TABLES, JOINT LEGISLATIVE BUDGET COMMITTEE 2018

TABLE 1[33]

Use of FY 2018 Tuition/Fees by University [1/]

	ASU	NAU	UA	Total
Appropriated				
Operating Budget [2/]	$ 681,632,600	$157,431,100	$453,143,700	$1,292,207,400
Non-Appropriated				
Operating Budget [3/]	$ 549,235,800	$ 81,430,500	$202,272,100	$ 832,938,400
Financial Aid [4/]	373,845,100	120,141,400	199,285,500	693,272,000
Plant Fund	20,000,000	1,000,000	4,000,000	25,000,000
Debt Service	46,425,400	14,500,000	28,152,400	89,077,800
Subtotal	$ 989,506,300	$217,071,900	$ 433,710,000	$1,640,288,200
Total Gross Tuition [5/ 6/]	**$1,671,138,900**	**$374,503,000**	**$886,853,700**	**$2,932,495,600**
Net Tuition [5/]	**$1,297,293,800**	**$254,361,600**	**$687,568,200**	**$2,239,223,600**

1/ As reported in FY 2018 Tuition Revenue Report submitted by ABOR in August 2017.
2/ Excludes miscellaneous revenues such as federal agriculture payments and land grant monies, which are included in the universities' collections accounts but do not constitute tuition revenues. These other revenues total an estimated $6.7 million in FY 2018. Appropriated tuition includes $10.2 million adjustment made by ABOR to the amounts originally included as part of the FY 2018 state budget to reflect estimated revenue increases resulting from the tuition setting process in spring 2017.
3/ Includes non-appropriated tuition revenues to be expended on instruction, organized research, public service, student services, auxiliary enterprises, and institutional support.
4/ Financial aid represents scholarship allowances provided by the universities (excluding federal loans, private grants, etc.) to offset the cost of tuition. Amounts include scholarship awards and tuition waivers except employee tuition reductions, which are recorded as employee benefit expenses.
5/ The reported gross tuition revenues reflect the amounts the universities would receive if all students paid full published tuition and fee rates. The actual amounts paid by students after accounting for tuition waivers and other gift aid awarded by the universities constitutes net tuition.
6/ ABOR estimates total gross tuition revenues of $3.0 billion in FY 2019, excluding revenue increases resulting from increased tuition rates.

Table 2[34]

Arizona University System
FY 2018 Undergraduate and Graduate Tuition 1/

	Resident Undergraduate		Resident Graduate		Non-Resident Undergraduate		Non-Resident Graduate	
	Tuition	Increase	Tuition	Increase	Tuition	Increase	Tuition	Increase
ASU	$10,792 2/	1.4%	$11,918	1.4%	$27,372 3/	3.4%	$29,854	3.4%
NAU	$11,059	2.7%	$10,261	2.7%	$24,841	2.9%	$22,609	2.9%
UA	$12,228	3.9%	$12,748	2.9%	$35,658	2.0%	$32,698	1.0%

1/ Reflects tuition rates for new students at NAU and UA and all classes at ASU. NAU and UA provide a guaranteed tuition rate for each incoming class, whereas ASU does not.
2/ Includes temporary surcharge first levied in FY 2016 at $320, which was reduced to $270 in FY 2017 and is continued at that level in FY 2018. Overall tuition and fee increase of 1.4% for ASU undergraduate resident students.
3/ ABOR approved a rate of $29,512 for international undergraduate students at ASU.

Table 3[35]

Arizona University System
FY 2017 Undergraduate and Graduate Tuition 1/

	Resident Undergraduate		Resident Graduate		Non-Resident Undergraduate		Non-Resident Graduate	
	Tuition	Increase	Tuition	Increase	Tuition	Increase	Tuition	Increase
ASU	$10,640 2/	1.5%	$11,756	1.3%	$26,470 3/	4.0%	$28,862	4.0%
NAU	$10,764	3.9%	$9,989	4.0%	$24,144	3.4%	$21,976	3.4%
UA	$11,769	3.2%	$12,383	2.8%	$34,967	7.2%	$32,135	5.8%

1/ Reflects tuition rates for new students at NAU and UA and all classes at ASU. NAU and UA provide a guaranteed tuition rate for each incoming class, whereas ASU does not.
2/ FY 2016 one-year $320 surcharge reduced to $270 in FY 2017. Overall tuition and fee increase of 1.5% for ASU undergraduate resident students.
3/ ABOR approved a rate of $28,270 for international undergraduate students at ASU.

TABLE 4[36]

Total Estimated Community College Revenues – FY 2018

District	State Aid	Tuition/Fees	Property Taxes	Grants	Other [1/]	FY 2018 Total [2/]	FY 2017 Total [3/]	% Change from FY 2017
Cochise	$10,786,200	$8,821,400	$21,670,100	$13,683,000	$1,162,900	$56,123,600	$51,698,500	8.6%
Coconino	2,140,100	7,988,800	10,124,300	6,713,800	1,001,300	27,968,300	25,636,800	9.1%
Gila [4/]	434,900	-	4,511,900	130,000	375,000	5,451,800	5,353,500	1.8%
Graham	17,925,900	8,249,600	6,044,000	9,391,000	9,835,500	51,446,000	45,581,800	12.9%
Maricopa	-	254,264,900	539,211,600	229,517,300	28,444,600	1,051,438,400	999,793,000	5.2%
Mohave	1,658,000	7,958,300	23,364,900	8,314,300	845,000	42,140,500	41,554,300	1.4%
Navajo	8,690,200	4,800,000	14,835,000	6,030,900	2,559,100	36,915,200	35,504,600	4.0%
Pima	-	48,178,000	112,161,200	52,684,000	5,308,800	218,332,000	198,668,400	9.9%
Pinal	1,717,900	13,545,000	56,937,000	25,700,000	1,780,000	99,679,900	91,367,300	9.1%
Santa Cruz [4/]	163,800	900	1,583,000	24,900	17,500	1,790,100	1,812,300	(1.2)%
Yavapai	1,356,400	10,746,500	48,614,300	13,098,500	4,185,800	78,001,500	76,388,600	2.1%
Yuma/La Paz	3,467,600	14,062,900	35,611,800	19,154,500	5,567,200	77,864,000	79,787,000	(2.4)%
Total	**$48,341,000**	**$378,616,300**	**$874,669,100**	**$384,442,200**	**$61,082,700**	**$1,747,151,300**	**$1,653,146,100**	**5.7 %**

1/ Includes auxiliary programs, interest income, workforce development funds, and transfers.
2/ Total revenues do not include bond proceeds or district fund balances. Including these amounts total revenues are estimated to be $2,150,583,100 for FY 2018.
3/ Total revenues do not include bond proceeds or district fund balances. Including these amounts total revenues are $1,729,783,600 for FY 2017.
4/ Gila Provisional Community College contracts with Graham County's Eastern Arizona College in order to provide degree programs. Therefore, Gila's tuition and fee revenues are collected by Graham according to their contract agreement. Santa Cruz Provisional Community College contracts with Cochise County's Community College in order to provide degree programs. Therefore, Santa Cruz's tuition and fee revenues are collected by Cochise according to their contract agreement.

TABLE 5[37]

FY 2019 Summary of Spending Authority

	Appropriated Funds			Non-Appropriated Funds		
	General Fund	Collections Fund [1/]	Tech & Research Fund (TRIF)	Federal Funds	Other Funds [2/]	Total [3/]
ABOR	$ 6,887,200	$ 0	$ 0	$ 0	$ 6,527,900	$ 13,415,100
ASU	322,036,700	681,632,600	3,600,000	412,303,800	1,572,986,000	2,992,559,100
NAU	109,873,700	157,431,100	0	94,302,400	339,089,200	700,696,400
UA-Main	204,472,400	410,094,700	0	226,449,200	1,118,581,200	1,959,597,500
UA-Health Sciences	68,859,800	49,749,000	0	108,404,100	418,424,100	645,437,000
Total	**$712,129,800**	**$1,298,907,400**	**$3,600,000**	**$841,459,500**	**$3,455,608,400**	**$6,311,705,100**

1/ Appropriated share of tuition and mandatory registration fees comprise $1,292,207,400 of the total Collections Fund spending authority. The remaining authority is derived from miscellaneous revenues. This amount excludes FY 2019 tuition rate changes.
2/ Expenditures of non-appropriated funds include transfers of funds to non-operating accounts for capital and debt service expenses, which were excluded in prior years' analyses. The total expenditures of gross non-appropriated tuition are estimated to be $1,640,288,200 based on FY 2018 amounts, as reflected in *Table 4*. This amount excludes FY 2019 tuition rate changes.
3/ Total universitywide funding includes gross tuition revenues.

Table 6[38]

Total Estimated Community College Revenues – FY 2017

District	State Aid	Tuition/Fees	Property Taxes	Grants	Other [1/]	FY 2017 Total [2/]	FY 2016 Total [3/]	% Change from FY 2016
Cochise	$10,556,600	$8,615,300	$20,754,900	$14,481,800	$1,142,900	$55,551,500	$51,614,100	7.6%
Coconino	2,174,400	8,170,700	9,755,000	6,683,700	946,300	27,730,100	26,129,900	6.1%
Gila [4/]	457,700	1,400,000	4,335,100	130,300	375,000	6,698,100	5,276,100	27.0%
Graham	17,540,700	7,963,800	5,941,300	9,350,800	9,205,100	50,001,700	43,935,000	13.8%
Maricopa	-	274,647,700	529,423,900	272,524,400	47,135,700	1,123,731,700	976,335,900	15.1%
Mohave	1,820,000	7,958,300	22,539,100	8,592,500	896,100	41,807,100	41,216,500	1.4%
Navajo	8,041,200	4,700,000	14,362,000	6,046,300	2,943,700	36,093,200	36,098,500	0.0%
Pima	-	48,183,000	107,347,000	58,012,000	5,494,000	219,036,000	201,169,000	8.9%
Pinal	1,821,200	14,000,000	50,672,000	25,600,000	1,845,000	93,938,200	90,158,400	4.2%
Santa Cruz [4/]	142,600	0	1,530,000	25,000	11,200	1,708,800	1,627,700	5.0%
Yavapai	1,574,600	10,751,000	47,978,300	13,474,000	4,288,700	78,066,600	76,703,100	1.8%
Yuma/La Paz	3,554,100	14,233,000	34,576,400	19,905,100	4,396,000	76,664,600	83,404,000	(8.1)%
Total	**$47,683,300**	**$400,622,800**	**$849,215,000**	**$434,825,900**	**$78,679,700**	**$1,811,026,700**	**$1,633,668,200**	**10.9 %**

1/ Includes auxiliary programs, interest income, workforce development funds, and transfers.
2/ Total revenues do not include bond proceeds or district fund balances. Including these amounts total revenues are estimated to be $2,210,678,500 for FY 2017.
3/ Total revenues do not include bond proceeds or district fund balances. Including these amounts total revenues are $1,735,253,100 for FY 2016.
4/ Gila Provisional Community College contracts with Graham County's Eastern Arizona College in order to provide degree programs. Therefore, Gila's tuition and fee revenues are collected by Graham according to their contract agreement. Santa Cruz Provisional Community College contracts with Cochise County's Community College in order to provide degree programs. Therefore, Santa Cruz's tuition and fee revenues are collected by Cochise according to their contract agreement.

Table 7[39]

FY 2018 Summary of Spending Authority

	Appropriated Funds			Non-Appropriated Funds		
	General Fund	Collections Fund [1/]	Tech & Research Fund (TRIF)	Federal Funds	Other Funds [2/]	Total [3/]
ABOR	$ 21,928,400	$ 0	$ 0	$ 56,700	$ 6,039,200	$ 28,024,300
ASU-Tempe/DPC	248,942,600	593,126,200	0	339,838,100	1,301,471,700	2,483,378,600
ASU-East	22,523,100	42,303,300	2,000,000	10,151,400	57,211,500	134,189,300
ASU-West	29,222,600	44,190,500	1,600,000	13,685,700	123,179,800	211,878,600
NAU	102,876,700	147,283,300	0	89,980,200	301,915,000	642,055,200
UA-Main	189,330,500	405,141,100	0	227,529,600	1,118,100,000	1,940,101,200
UA-Health Sciences	68,859,800	47,491,400	0	122,122,900	428,965,100	667,439,200
Total	**$683,683,700**	**$1,279,535,800**	**$3,600,000**	**$803,364,600**	**$3,336,882,300**	**$6,107,066,400**

1/ Appropriated share of tuition and mandatory registration fees comprise $1,275,076,700 of the total Collections Fund spending authority. The remaining authority is derived from miscellaneous fees. This amount excludes FY 2017 tuition rate changes.
2/ Expenditures of non-appropriated funds include transfers of funds to non-operating accounts for capital and debt service expenses, which were excluded in prior years' analyses. The total expenditures of gross non-appropriated tuition are estimated to be $1,131,520,000 in FY 2018 and are reflected in *Table 4*. This amount excludes FY 2018 tuition rate changes. This amount also excludes tuition and fee revenue derived from course fees, most summer session revenues, non-degree, extended education, personalized learning, mandatory fees and other miscellaneous student fees. These amounts equal approximately 15% of tuition revenues and were approximately $430 M as of FY 2015. The excluded tuition and fee monies are included among the other non-appropriated funds total.
3/ Total universitywide funding includes gross tuition revenues. The net tuition amount received by the universities after accounting for tuition waivers and other scholarships they provided was $622 M less as of FY 2016.

APPENDIX B

ECONOMIC IMPACT MODELING

Economic Impact Model Methodology

An economic impact model provides a quantifiable method to estimate the economic activity of a particular project, policy, business, development or activity in a given area. Impacts can be used to measure existing activity, and measure potential expansions/contractions of an area's economy resulting from changes in economic activity. Typically, the level of economic effects resulting from the activity are estimated in terms of output, earnings and employment. These are defined as:

- *Output* captures the broader level of economic activity, or the total value of goods and services produced, in the region similar to how statistics like GDP capture economic volume in individual states and across the country.
- *Earnings*, a component of output, represents income to employees. The earnings component is used to measure the total change in income throughout the economy due to the economic or business activity.
- *Employment* is the total net new jobs created in the economy on an annualized basis.

The economic effects occurring as a direct consequence from the initial activity create additional activity in the regional economy. This relationship is known as the "multiplier" effect. The basis for multiplier effects is the interdependencies between industries, how one industry impacts other sectors, and the cycle of spending and responding within the regional economy.

An input-output model is used to generate these multipliers. These multipliers quantify relationships among industries and estimate the extent that the area being analyzed can capture sales, earnings, and job impacts within the region.

Input-output models measure impacts based on their source. Direct effects are the result of the initial activity being analyzed. The multiplier effects, or secondary effects, are measured as either indirect or induced. These are defined as:

- *Direct effects*, or impacts, measure business activity at an individual site or the initial change in the economy attributed to the development under consideration. For example, if a manufacturing facility is under construction this would include the workers that construct the facility and the manufacturing employees that later occupy the building on a regular basis.
- *Indirect impacts* capture additional output, earnings, and employment changes generated as a result of increased demand in the industries which supply services or products to the direct business or development under consideration. For example, when the direct manufacturing facility purchases goods for the production of its products, the supplier must respond to the increased demand by hiring new employees to support its operations.
- *Induced impacts* capture additional output, earnings, and employment changes generated as a result of increased spending in the local economy made by the households of both the direct and indirect employees. These induced companies respond by hiring, increasing payroll hours, and increasing wages. For example, the additional wages received by the direct manufacturing employees and the indirect supplier employees induce spending at grocery stores, gas stations, clothing stores, etc.

A commonly used input-output model used to generate economic multipliers is IMPLAN (short for "impact analysis for planning). Originally developed by the United States Forest Service in the 1970's, the responsibility for developing IMPLAN data sets shifted to the University of Minnesota as demand grew for regional models. Now, IMPLAN runs as its own private organization and is the leading provider of nationwide economic impact data and analytical software.

The ounds Consulting Group (RCG) custom economic impact models employ this input-output model methodology and use area specific IMPLAN multipliers. While economic modeling can provide reliable indications of potential impacts, actual outcomes may vary. Economic models cannot capture all external factors, unanticipated events or changing environments; however, these complex factors are considered and extensive efforts to confirm accuracy and timeliness of information are taken for each analysis.

Fiscal Impact Model Methodology

Fiscal impact models provide estimates for the government revenues that are generated by a particular project, policy, business, development or activity in a given area. Impacts can be used to estimate tax revenue impacts, for return on investment evaluations, and for cost-benefit calculations, among others. A model was designed to produce revenue information for the State of Arizona and convert public investments into breakeven thresholds.

Typically, fiscal impacts examine revenues that are likely to result from a proposed project or activity, and are determined by the study area's tax structure. In general, the types of government taxes analyzed include: sales taxes, excise taxes, hotel taxes, income taxes, and property taxes. The type of activities sub-

ject to these taxes include retail and restaurant sales, hotel lodging, leases, and construction, to name a few.

Fiscal impacts are categorized similar to economic impact studies and are broken down at the direct, indirect and induced levels in which they are created. These revenues are expressed as either primary or secondary based on their source. In general, primary revenues can be estimated by definable sources such as sales taxes calculated by construction expenditures or sales taxes from on-site retail sales; whereas secondary revenues are generated by the wages, residency and spending of those direct, indirect and induced employees who are supported by the business or economic activity.

The RCG custom fiscal impact models employ this methodology. Fiscal impacts are based on estimates and assumptions developed in connection to each project or activity being analyzed. As a result, impacts are based on current available information and tax structures. Such information is subject to uncertainty and variation. Therefore, actual results may vary, and some impacts may not materialize due to unanticipated events and changing circumstances. However, extensive efforts are taken to confirm accuracy.

REFERENCES

1. https://berniesanders.com/issues/its-time-to-make-college-tuition-free-and-debt-free/
2. https://www.sanders.senate.gov/download/collegeforallsummary/?inline=file
3. https://ellison.house.gov/the-inclusive-prosperity-act
4. https://ahead-penn.org/creating-knowledge/college-promise; http://www.whimsymaps.com/view/collegepromise (238 as of 28 August 2018)
5. https://www.insidehighered.com/news/2017/04/10/new-york-state-reaches-deal-provide-free-tuition-suny-and-cuny-students; https://www.insidehighered.com/news/2017/04/17/new-yorks-tuition-free-college-program-sparks-debates-and-defenses
6. http://tnpromise.gov/about.shtml
7. https://www.tennessean.com/story/opinion/contributors/2014/12/14/tennessee-promise-intentioned-doomed-fail/20270861/
8. http://money.cnn.com/2017/05/16/pf/college/states-tuition-free-college/index.html?iid=EL
9. https://www.tennessean.com/story/opinion/2017/07/28/tennessee-needs-start-over-tennessee-promise/103991974/
10. See Appendix A Table 1
11. https://public.azregents.edu/Shared%20Documents/2013-11-20-Item-3-Appendix-A-2013-Complete-Financial-Aid-Report.pdf, p. 65-68
12. http://fa2017.azregents.edu/#page=1, p. 42, 72, 102, 142
13. https://public.azregents.edu/Shared%20Documents/2013-11-20-Item-3-Appendix-A-2013-Complete-Financial-Aid-Report.pdf, p. 13, 50-52
14. http://fa2017.azregents.edu/#page=1, p. 138, 154, 176, 196
15. https://www.azregents.edu/sites/default/files/public/FY%202015%20Student%20Annual%20Financial%20Aid%20Report_0.pdf
16. https://www.newyorkfed.org/microeconomics/hhdc.html
17. https://studentloans.net/debt-per-graduate-statistics-2017/
18. http://fa2017.azregents.edu/#page=33
19. https://public.azregents.edu/Shared%20Documents/2013-11-20-Item-3-Appendix-A-2013-Complete-Financial-Aid-Report.pdf, p. 53-56

REFERENCES

20. http://fa2016.azregents.edu, p. 81, 97, 119, 138
21. https://trends.collegeboard.org/sites/default/files/2014-trends-student-aid-final-web.pdf
22. https://trends.collegeboard.org/sites/default/files/2017-trends-student-aid_0.pdf
23. http://fa2017.azregents.edu/#page=37
24. http://fa2017.azregents.edu/#page=118
25. https://www.azleg.gov/jlbc/19baseline/acc.pdf, p. 113
26. https://www.schools.com
27. https://trends.collegeboard.org/sites/default/files/trends-in-community-colleges-research-brief.pdf; https://www.bizjournals.com/phoenix/news/2016/10/11/why-arizona-community-colleges-have-high-student.html; http://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2016/05/10/the-student-debt-crisis-at-state-community-colleges
28. https://www.azleg.gov/jlbc/19baseline/acc.pdf, p. 112
29. Additional detail on the methodology is included in Appendix B
30. http://fa2017.azregents.edu/#page=142
31. http://fa2017.azregents.edu/#page=13
32. See Appendix A, Table 4 and Table 7
33. https://www.azleg.gov/jlbc/19baseline/unibor.pdf; p. 452
34. https://www.azleg.gov/jlbc/19baseline/unibor.pdf, p. 452
35. https://www.azleg.gov/jlbc/18baseline/unibor.pdf, p. 448
36. https://www.azleg.gov/jlbc/19baseline/acc.pdf, p. 112
37. https://www.azleg.gov/jlbc/19baseline/unibor.pdf, p. 451
38. https://www.azleg.gov/jlbc/18baseline/acc.pdf, p. 118
39. https://www.azleg.gov/jlbc/18baseline/unibor.pdf, p. 447

ACKNOWLEDGMENTS

An Economic and Policy Examination of College Tuition Subsidy Proposals

Prepared by the Rounds Consulting Group, Inc.
Edited by Arizona Chamber Foundation staff

ARIZONA CHAMBER FOUNDATION

The Arizona Chamber Foundation is a non-profit, objective educational and research foundation. We are committed to a non-partisan, research-driven approach that analyzes the issues impacting Arizona's economy.