Texas A&M University (Texas A&M) creates value in a variety of ways. The university improves higher education delivery throughout the state and helps students increase their employability and potential. The university facilitates new research and company developments and also draws visitors to the state, generating new dollars and opportunities for Texas. This analysis covers all university components in Texas, including the Galveston Branch Campus, School of Law, and all Health Science Center activities.

The value of Texas A&M influences both the lives of students and also the state economy. The university serves a range of industries in Texas, supports state businesses, and benefits society as a whole in Texas from an expanded economy and improved quality of life. The benefits created by Texas A&M extend as far as the state and local government through increased tax revenues and public sector savings.

This study investigates the economic impacts created by all university components of Texas A&M in Texas, excluding the Qatar campus, on the business community and the benefits that the university generates in return for the investments made by their key stakeholder groups—students, society, and taxpayers.

The following two analyses are presented:

- **Economic impact analysis**
- **Investment analysis**

All results reflect student and financial data for Fiscal Year (FY) 2016-17 (September 1, 2016 to August 31, 2017). Impacts on the state business community are reported under the economic impact analysis. Results are measured in terms of total income. The return on investment to students, taxpayers, and society are reported under the investment analysis. Both analyses are described more fully in the following sections. An electronic version of the executive summary and fact sheet are available at: http://ppo.tamu.edu/Services/Assessment/Economic-Impact-Studies.
ECONOMIC IMPACT ANALYSIS

Texas A&M promotes economic growth in Texas through its direct expenditures and resulting expenditures of students, visitors, and state businesses. The university serves as an employer and buyer of goods and services for its general and research operations. Numerous start-up and spin-off companies have formed through programs and knowledge at Texas A&M. The university’s reputation and activities attract students and visitors from outside Texas, whose expenditures benefit state vendors. In addition, Texas A&M is a primary source of education to Texas residents and a supplier of trained workers to state industries, increasing overall productivity in the state workforce.
**OPERATIONS SPENDING IMPACT**

Texas A&M is an important employer in Texas. In FY 2016-17, the university employed 6,958 full-time and part-time faculty and staff (less research). Of these, 98% lived in Texas. Total payroll at Texas A&M was $795.5 million, much of which was spent in the state for groceries, dining out, clothing, and other household expenses. In addition, Texas A&M is a large-scale buyer of goods and services. In FY 2016-17, the university spent $726.2 million to cover its expenses for facilities, professional services, and supplies (less research).

Texas A&M added $994.9 million in total income to the state during the analysis year as a result of its day-to-day operations (less research). This figure represents the university’s payroll, the multiplier effects generated by the spending of the university and its employees, and a downward adjustment to account for funding that the university received from state and local sources.

**RESEARCH SPENDING IMPACT**

Research activities impact the economy by employing people and requiring the purchase of equipment and other supplies and services. Over the last four years, Texas A&M received 838 invention disclosures, filed 299 new US patent applications, and produced 254 licenses. The university also generated license income over the same four-year time period, with $5 million in license income in FY 2016-17.

<table>
<thead>
<tr>
<th>Inventions</th>
<th>Patents</th>
<th>Licenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-14</td>
<td>205</td>
<td>30</td>
</tr>
<tr>
<td>2014-15</td>
<td>244</td>
<td>29</td>
</tr>
<tr>
<td>2015-16</td>
<td>223</td>
<td>108</td>
</tr>
<tr>
<td>2016-17</td>
<td>166</td>
<td>132</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>838</strong></td>
<td><strong>299</strong></td>
</tr>
</tbody>
</table>

In FY 2016-17, Texas A&M spent $393.9 million on payroll to support research activities, creating a net total of $941.6 million in total income for the state economy.

**START-UP AND SPIN-OFF COMPANY IMPACT**

Texas A&M creates an exceptional environment that fosters innovation and entrepreneurship, evidenced by the number of Texas A&M start-up and spin-off companies created in the state. Start-up companies, created specifically to license and commercialize Texas A&M technology or knowledge, have a strong and clearly defined link to Texas A&M. Spin-off companies, created and fostered through university programs or faculty and former students, have a clear but weaker link to Texas A&M. The number of companies reported by Texas A&M includes faculty whose primary residence is in the Bryan-College Station area and who have joint appointments at Texas A&M and at Texas A&M System agencies. However, the number of companies may be significantly undercounted due to limited data availability, especially regarding student spin-off companies.

In FY 2016-17, Texas A&M start-up and spin off companies added $345.2 million in total income to the Texas economy. Of this total income, $341.7 million was due to the start-up companies, with the remainder due to spin-off companies.

**STUDENT SPENDING IMPACT**

Around 15% of credit students attending Texas A&M originated from outside the state in FY 2016-17. Some of these students relocated to Texas. These students would not have come to the state if the university did not exist. In addition, a number of in-state students would have left the state for other education opportunities if not for the existence of Texas A&M. While attending the university, these relocator and retained students spent $271.6 million to purchase groceries, rent accommodation, pay for transportation, and so on. A significant portion of these expenditures
occurred in the state, generating $324 million in total income in the state economy during the analysis year.

VISITOR SPENDING IMPACT

Thousands of visitors from outside the state were attracted to Texas A&M during the analysis year to attend commencement, sports events, conferences, meetings, and other activities sponsored by the university. These visitors stayed an average of two nights (this was not accounted for in previous studies). While in the state, visitors spent money for lodging, food, transportation, and other personal expenses. The off-campus expenditures of the university’s out-of-state visitors generated a net impact of $172.2 million in total income for the state economy in FY 2016-17.

TOTAL TEXAS A&M IMPACT ON THE TEXAS ECONOMY

The total Texas A&M impact on the Texas economy amounted to $2.8 billion in added income. This stems from the university’s spending on operations and research, its entrepreneurial activities, and the spending of its students and visitors. This $2.8 billion in added income is equivalent to supporting 32,138 jobs.

FORMER STUDENT IMPACT

The education and training Texas A&M provides for state residents results in the greatest impact. Since the university was established, students have studied at Texas A&M and entered the workforce with new skills. Today, thousands of former students are employed in Texas (Figure 1).

During the analysis year, past and present students of Texas A&M generated $6.5 billion in total income for the state. This figure represents the higher wages that students earned during the year, the increased output of the businesses that employed the students, and the multiplier effects that occurred as students and their employers spent money at other businesses.
GRAND TOTAL IMPACT ON THE TEXAS ECONOMY

The overall impact of Texas A&M on the state business community during the analysis year amounted to $9.3 billion in total income, equal to the sum of the Texas A&M impact (includes the operations spending impact, the research spending impact, the impact from start-up and spin-off companies, the student spending impact, and the visitor spending impact) and the former student impact. The $9.3 billion in total income was equal to approximately 0.6% of the GSP of Texas. By comparison, this contribution that the university provides on its own is as large as the entire Arts, Entertainment, & Recreation industry in the state.

The total impact is also expressed in terms of the jobs supported by the total income; they are calculated by jobs-to-sales ratios specific to each industry. Overall, the $9.3 billion impact supports 104,461 jobs. For perspective, this means that one out of every 159 jobs in Texas is supported by the activities of Texas A&M and its students.

A portion of the total $9.3 billion is broken out into an industry-by-industry impact ordered by total income. Table 3 outlines the top industries impacted by Texas A&M. Because industries have different jobs-to-sales ratios, the associated jobs supported by the Texas A&M impact differ by industry. Nonetheless, these are impacts that would not have been generated without the university’s presence.

Table 3: Top industries in the state impacted by Texas A&M

<table>
<thead>
<tr>
<th>Industry</th>
<th>Total income</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional &amp; Technical Services</td>
<td>$1.9 BILLION</td>
<td>19,825</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$1.1 BILLION</td>
<td>4,304</td>
</tr>
<tr>
<td>Government, Non-Education</td>
<td>$692.8 MILLION</td>
<td>7,331</td>
</tr>
<tr>
<td>Health Care &amp; Social Assistance</td>
<td>$578.1 MILLION</td>
<td>9,483</td>
</tr>
<tr>
<td>Construction</td>
<td>$468.4 MILLION</td>
<td>5,772</td>
</tr>
<tr>
<td>All other industries</td>
<td>$4.5 BILLION</td>
<td>57,746</td>
</tr>
<tr>
<td><strong>Total income</strong></td>
<td><strong>$9.3 BILLION</strong></td>
<td><strong>104,461</strong></td>
</tr>
</tbody>
</table>

*Numbers may not add due to rounding.*
INVESTMENT ANALYSIS

Investment analysis is the process of evaluating total costs and measuring these against total benefits to determine whether or not a proposed venture will be profitable. If benefits outweigh costs, then the investment is worthwhile and considered profitable.

Texas A&M received a total of $2.8 billion in FY 2016-17. Tuition and fees comprised 22% of total revenue, student aid from government sources comprised another 28%, and all other revenue comprised the remaining 50%. This study considers Texas A&M as an investment from the perspectives of those whom provided these revenues – students, taxpayers, and society. The backdrop for the analysis is the entire Texas economy.

STUDENT PERSPECTIVE

In FY 2016-17, Texas A&M served 69,059 credit students and 35,383 non-credit students. In order to attend the university, students paid for tuition, fees, books, and supplies. They also took out loans and will incur interest on those loans. Additionally, they gave up money that they would have otherwise earned had they been working instead of attending the university. The total investment made by Texas A&M’s students in FY 2016-17 amounted to $1.7 billion, equal to $677.5 million in out-of-pocket expenses plus $1 billion in forgone time and money.

In return for their investment, Texas A&M’s students will receive a stream of higher future wages that will continue to grow through their working lives. As shown in Figure 2, earnings levels increase as people achieve higher levels of education. For example, the average bachelor’s degree completer from Texas A&M will see an increase in earnings of $32,000 each year compared to someone with a high school diploma or equivalent. Over a working lifetime, this increase in earnings amounts to an undiscounted value of approximately $1.4 million in higher earnings.

The present value of the higher future wages that Texas A&M’s students will receive over their working careers is $7.8 billion. Dividing this value by the $1.7 billion in student costs yields a benefit-cost ratio of 4.52. In other words, for every $1 students invest in Texas A&M in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative amount of $4.52 in higher future wages. The average annual rate of return for students is 15.0%. This is an impressive return, especially when compared to the 30-year average 10.1% return to the US stock market (Figure 3).

FIGURE 2: Higher earnings at career midpoint by education level for FY 2016-17 Texas A&M students

*Includes professional degrees such as MD, DDS, and PharmD.
Texas A&M generates more in tax revenue than it takes. These benefits to taxpayers consist primarily of taxes that the state and local government will collect from the added revenue created in the state. As Texas A&M students earn more, they will spend more resulting in higher tax revenues. Employers will also make higher tax payments as they increase their output and purchase more supplies and services. By the end of the FY 2016-17 students’ working careers, the state and local government will have collected a present value of $2.5 billion in added taxes.

Benefits to taxpayers consist of the savings generated by the improved lifestyles of students and the proportionally reduced government expenditures. Education is statistically correlated with a variety of lifestyle changes that generate taxpayer savings across the three main categories: (1) health, (2) crime, and (3) unemployment. Improved health habits lower the students’ demand for national health care services. Students are also less likely to commit crimes, so the demand for law enforcement and criminal justice services is reduced. Students are also more employable, so the demand for welfare and unemployment benefits, such as earnings assistance and welfare benefits, is reduced. For a list of study references to these statistical benefits, please contact Texas A&M Public Partnership and Outreach for a copy of the full technical report. All of these benefits will generate a present value of $809.7 million in savings to state and local taxpayers.

Total benefits to taxpayers equal $3.3 billion, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of $593.8 million—equal to the funding that Texas A&M received from the state and local government during the analysis year—yields a benefit-cost ratio of 5.5. This means that for every $1 of public money invested in Texas A&M, taxpayers receive a cumulative value of $5.50 over the course of the students’ working lives. The average annual rate of return is 13.2%, a solid investment that compares favorably with other long-term investments in both the private and public sectors (Figure 3).

**SOCIAL PERSPECTIVE**

Society as a whole within Texas benefits from the presence of Texas A&M in two major ways. The first and largest benefit that society receives is an increased state economic base. As discussed in the previous section, the higher student earnings and increased business output occurs across the state. This raises prosperity in Texas and expands the economic base for society as a whole.

Benefits to society also consist of the savings generated by the improved lifestyles of students. Similar to the taxpayer section above, education is statistically correlated with a variety of lifestyle changes that generate social savings. Note that these costs are avoided by the consumers, and are distinct from the costs avoided by taxpayers outlined above. Health savings include avoided medical costs associated with smoking, alcoholism, obesity, drug abuse, and mental disorders. Crime savings include reduced security expenditures and insurance administration, lower victim costs, and reduced criminal justice system expenditures. Unemployment savings include the reduced employer contributions towards unemployment claims. The model quantifies social savings by calculating the probability at each education level that individuals will have poor health, commit crimes, or claim welfare and unemployment benefits. Deriving the probabilities involves assembling data from a variety of studies and surveys analyzing the correlation between education and health, crime, welfare, and unemployment at the national and state level. This includes sources such as the Centers for Disease Control and Prevention and U.S. Department of Health and Human Services. For a list of study references to these statistical benefits, please contact Texas A&M Public Partnership and Outreach for a copy of the full technical report. All of these benefits will generate a present value of $809.7 million in savings to state and local taxpayers.
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Figure 4 shows the present value of the higher earnings and social savings that will occur in Texas over the working lifetime of the FY 2016-17 student population at Texas A&M. Higher earnings amounts to a present value of $37.4 billion due to the increased lifetime earnings of students and associated increases in business output. Social savings amount to $4.6 billion, the sum of health, crime, and unemployment savings in Texas. Altogether, total benefits to society equal $42 billion (in present value terms).

Society invested $3.6 billion in educations obtained at Texas A&M during the analysis year. This includes all expenditures by Texas A&M, all student expenditures, and all student opportunity costs. For every dollar of this investment, society as a whole in Texas will receive a cumulative value of $11.69 in benefits, equal to the $42 billion in benefits divided by the $3.6 billion in costs. These benefits will occur for as long as Texas A&M’s FY 2016-17 students remain employed in the state workforce.

The results of this study demonstrate that Texas A&M creates value from multiple perspectives. The university benefits state businesses by increasing consumer spending in the state and supplying a steady flow of qualified, trained workers into the workforce. It enriches the lives of students by raising their lifetime earnings and helping them achieve their individual potential. It benefits state and local taxpayers through increased tax receipts across the state and a reduced demand for government-supported social services. Finally, it benefits society as a whole in Texas by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students.

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Table 4 presents the results of the investment analysis for all three of Texas A&M’s major stakeholder groups—students, taxpayers, and society. As shown, students receive great value for their educational investment. At the same time, the investment made by state and local taxpayers to the university creates a wide range of benefits to society and returns more to government budgets than it costs.

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**SUMMARY OF INVESTMENT ANALYSIS RESULTS**

Table 4 presents the results of the investment analysis for all three of Texas A&M’s major stakeholder groups—students, taxpayers, and society. As shown, students receive great value for their educational investment. At the same time, the investment made by state and local taxpayers to the university creates a wide range of benefits to society and returns more to government budgets than it costs.

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CONCLUSION

ABOUT THE STUDY

Data and assumptions used in the study are based on several sources, including the FY 2016-17 academic and financial reports from Texas A&M, industry and employment data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau, outputs of Emsi’s Mutli-Regional Social Accounting Matrix (MR-SAM) model, and a variety of studies and surveys relating education to social behavior. Emsi’s methodology for this study adheres to the Association of American Universities (AAU) and the Association of Public and Land-grant Universities (APLU) guidelines, published in December 2014. The study applies a conservative methodology and follows standard practice using only the most recognized indicators of investment effectiveness and economic impact. For a full description of the data and approach used in the study, please contact Texas A&M Public Partnership and Outreach (Dr. Suzanne Droleskey) for a copy of the full technical report.

ABOUT EMSI

Emsi, a CareerBuilder company, is a leading provider of economic impact studies and labor market data to educational institutions, workforce planners, and regional developers in the U.S. and internationally. Since 2000, Emsi has completed over 1,800 economic impact studies for educational institutions in four countries. Visit www.economicmodeling.com for more information about Emsi’s products and services.