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The Role of Research Universities in Securing America's Future Prosperity: Challenges and Expectations

Witnesses:

Charles Holliday

Chair, Committee on Research Universities, National Research Council

John Mason

Associate Provost and Vice President for Research, Auburn University

Jeffrey Seemann

Vice President for Research, Texas A&M University

Chief Research Officer, The Texas A&M University System

Leslie Tolbert

Senior Vice President for Research, The University of Arizona

James Siedow

Vice Provost for Research, Duke University

Subcommittee Members Present:

Mo Brooks (R-AL), Chair

Daniel Lipinski (D-IL), Ranking Member

Steven Palazzo (R-MS)

Randy Hultgren (R-IL)

Full Committee Members Present:

Ralph Hall (R-TX), Full Committee Chair

On June 27 the House Committee on Science, Space and Technology Subcommittee on Research and Science Education held a hearing on the state of research universities and their role in industry innovation. This hearing was prompted by a National Academy of Sciences (NAS) report entitled "Research Universities and the Future of America: Ten Breakthrough Actions Vital to Our Nation's Prosperity and Security" or the "Prosperity Report." The NAS report compared U.S. research universities to those in other countries, identified challenges and needs of research universities and provided broad recommendations to address these challenges and needs.

Chairman Mo Brooks (R-AL) opened the hearing by thanking those involved for their work on the Prosperity Report at the request of Ralph Hall (R-TX), chairman of the full committee. Brooks acknowledged the "vital role" of public research universities in maintaining global economic competitiveness.

He explained that the Morrill Act (P.L. 37-108) allowed for the creation of publicly funded land-grant universities during President Abraham Lincoln's administration. It was passed in 1862 and is celebrating its 150th Anniversary this year. Brooks gave credit to research done at public universities for the innovations which drive the U.S. economy today. According to Brooks, supporting this research will improve the faltering economy and create jobs. The chairman pointed out certain challenges identified by the report such as "unstable revenue streams," outdated policies and competition from foreign research universities.

Ranking Member Daniel Lipinski (D-IL) agreed that research is paramount to job creation saying, "jobs... are going to come from innovation... [which] comes from our research universities." In his testimony he explained, "A lot of people don't understand the role of federal funding" in the support of public research universities. He relayed an anecdote about how federal government grants to Stanford University researchers led to the development of Silicon Valley. Lipinski discussed how U.S. patent laws "expedite innovation" by quickly turning research findings into technology ready for the marketplace.

Lipinski said he was disappointed in the support from state governments for public research schools. He said he hopes this can be rectified, but stressed that universities must “find new, innovative ways to operate” in light of a constrained budget.

The ranking member said he hoped to learn how Congress can help bring research to the marketplace by crafting patent policy to aid technology transfer. He said he wanted to know how universities work with industry to give their students the necessary skills to get a job and how universities facilitate networking between students and industry. Lipinski said he hoped a strong emphasis can be placed on science, technology, engineering, and mathematics (STEM) education and diversity.

Charles Holliday, the chair of the committee which wrote the Prosperity Report, testified that universities, industry and the government must work together to protect the “commanding lead” U.S. universities enjoy over international schools. He said public universities are “on thin ice” because of decreasing funding from the federal and state governments and increasing efficiency of foreign research. A slip in the prowess of U.S. public universities would be detrimental to its economy, according to Holliday. The report found that 60 percent of all publically funded research in the U.S. is done at public universities and they provide 70 percent of Ph.D. degrees in the country.

Holliday said that the research which provides innovation for the U.S. economy starts at public universities with studies on broad topics. Industry focuses on that research which leads to innovative technology. He claimed that the partnership between universities and industry is “too much of a buyer and seller relationship.” He emphasized a more collaborative partnership where universities provide basic research and students while industry provides training, direction on what basic research should be done and funding. Holliday echoed the report’s recommendation that a research and development (R&D) tax credit can be provided for companies that form this type of partnership.

To bolster the performance of public universities, Holliday suggested state and federal funding regulations be “streamlined” and redundancies and inconsistencies be removed. He stressed the need to retain foreign students who come to the U.S. for an education. The report estimated that 25 percent of engineering Ph.D. students only have temporary visas and will return to their home countries after earning their degree. Keeping these students will strengthen U.S. research and innovation.

John Mason, Vice President for Research at Auburn University, said industry productivity “started with discovery of new knowledge” in his testimony. He echoed the report’s “insightful and forward-looking recommendation” to remove some of the “burdening” regulations placed on public universities. He said he appreciates the need for oversight and transparency but said the regulations currently “focus on process rather than results.” Consolidating redundant and sometimes conflicting regulations will simplify oversight and strengthen public research according to Mason.

Mason cited the “short-term shifting of national priorities” to debt reduction as a major reason for the decline in federal and state funding of research universities. This decline has affected the character of studies and has caused a “perverse incentive to chase funding rather than the next discovery” according to Mason. He suggested tuition waivers for students studying advanced science as “an inexpensive way to accomplish needed research on a national need.”

Hall introduced the testimony of his constituent Jeffrey Seemann, a major research official in the Texas A&M University System. Seemann attributed A&M’s rise to the top-tier of research universities to support from state and federal government.

He highlighted several areas which can be improved for “immediate gains” to the status of public research. Seemann agreed with the NAS report that the U.S. and universities must identify key research areas to national interests and financially support scientists in those fields, especially young researchers. He suggested universities distribute research dollars more effectively than in the past, noting this would be much simpler if federal and state regulations were streamlined. Seemann cautioned the U.S. to take steps to keep public research from “reaching a plateau.”

Leslie Tolbert, Vice President for Research at the University of Arizona (AU), testified that state funding for AU has “fallen very steeply”- \$180 million over the last five years. This decrease resulted in the loss of 60 faculty members from the university. AU has had to divert funds from other programs to pay the overhead on research projects. She stressed industry partnerships formed with AU through the Lowell Institute for Mineral Resources as a step to increasing university effectiveness.

James Siedow, Vice Provost for Research at Duke University, testified the need to “maintain primacy [of the U.S.] ...in the face of steep competition.” He noted the void left by corporate research has not been filled by the “business relationship” between research universities and industry. Siedow felt the federal government is “best positioned to broker” a partnership which could fill that void.

Lipinski asked the witnesses representing public universities how much of their budget came from their state governments. Tolbert provided this number at about 20 percent in her testimony. Mason did not know the specific percentage but reported state funding had been reduced by \$120 million since 2008 and Seemann said when he worked at the University of Rhode Island state funding

accounted for less than 10 percent of the university's budget. Brooks referenced the strategic investment program introduced by the NAS report, which calls for \$7 billion from federal funds for initiatives to support research at public universities. When asked where this money would come from, Holliday stressed that Congress needs to "take time to fully fund" public research and that the money should be looked at as an investment rather than a cost.

Congressman Randy Hultgren (R-IL) said he was frustrated by Congress's "very little vision as far as science policy." He asked for the research community's help to guide Congress when it is drafting policy related to scientific research. Hultgren asked what specific regulations the panel felt were redundant and hurtful to their work. Tolbert and Siedow agreed that effort reporting, conflict of interest and export control rules need to be reformed. Brooks asked that the witnesses send the committee the list of Code of Federal Regulations (CFR) numbers of regulation rules which impede public research. Siedow replied that the Office of Management and Budget (OMB) made a similar request last year, so finding the regulations again would not be difficult.

Congressman Steven Palazzo (R-MS) asked about entrepreneurship programs and technology transfer offices at universities. Holliday explained that the National Academies has sent industry consultants to technology transfer offices at universities to show them more efficient ways to turn research into innovation. He explained that multiple projects are required before most research can be marketed. The witnesses from research universities described entrepreneurship programs which link students, professors and industry.

Lipinski asked if universities encourage commercialization of their research. Seemann explained innovation is central to any university's mission. He discussed how research and education are "inextricably linked" and if universities hope to educate their students they must form a cooperative partnership with industry.

Opening statements, witness testimony and a web-cast of this hearing can be found on the committee's web site.
