The Biopharmaceutical Industry's Role in Fueling the U.S. Economy and Global Competitiveness

The United States is recognized as the global leader of biopharmaceutical innovation. This global leadership is built upon a robust research and development (R&D) and manufacturing ecosystem where biopharmaceutical companies support high-wage jobs nationwide and the R&D, manufacturing and distribution of new medicines and vaccines in the United States.

The U.S. R&D and Manufacturing Ecosystem Fuels the Economy

Beyond the value that medicines deliver to patients, the biopharmaceutical sector has a profound impact on our local, state and national economies. The economic impact of the research-based biopharmaceutical companies and their resilient supply chains translate into high-wage jobs, substantial tax revenue and sustained economic output across the economy. In fact, the combined effects of biopharmaceutical direct jobs, supply chain, wages and benefits resulted in more than $1 trillion in economic output and more than 4 million jobs supported in 2017.[i] Every direct job in the biopharmaceutical industry supported a total of five jobs across the economy, as a result from the broader impacts of its supply chain and the personal spending of its workforce.[ii]

One reason for the broad geographic reach of the industry's economic impact is the sheer number of clinical trials sponsored by the industry. In 2017, biopharmaceutical companies sponsored about 4,500 clinical trials in the United States alone, with trials in all 50 states, the District of Columbia and Puerto Rico. These trials involved close to 1 million participants and accounted for nearly $43 billion in economic activity.[iii]

The industry's manufacturing footprint in the U.S. is also extensive, with more than 1,500 facilities across 47 states and Puerto Rico currently manufacturing FDA-approved medicines and related products[vi] and employing nearly 120,000 manufacturing workers in high-wage jobs. The share of manufacturing-related jobs to total jobs in the biopharmaceutical sector is double that of the private sector overall.[v]

The industry's advanced manufacturing presence is key to maintaining U.S. leadership in innovation. As the complexity of drug development evolves, manufacturing process innovations have become just as important as product innovations themselves. Biopharmaceutical companies are constantly researching, developing and adopting new technologies and processes that create efficiencies in the R&D, manufacturing and distribution systems. Some, such as high-volume cell processing and advanced purification, preservation, and new distribution modes, will be essential for manufacturing the next generation of treatments like cell and gene therapies.[vi]

The COVID-19 pandemic has further demonstrated the unique expertise of the biopharmaceutical industry and its technological capacity and globally resilient supply chains. The industry demonstrated during the pandemic its ability to not only develop safe and effective vaccines and treatments in record time, but also support the ramp up of manufacturing on a global scale. Over the course of the pandemic, biopharmaceutical manufacturers and suppliers have done this on unprecedented levels. In fact, even prior to knowing the efficacy of particular vaccine candidates, companies were already proactively seeking to increase their own manufacturing capabilities as well as collaborating with other manufacturers who shared available capacity to support efforts to increase production. Already, more than 3 billion doses of vaccines have been administered globally and it is estimated that vaccine manufacturers could produce up to 11 billion doses by the end of 2021.

America's Biopharmaceutical Industry is the Most Research Intensive

America's biopharmaceutical research companies' tremendous investment in the research and development of new medicines drive significant economic impact. The biopharmaceutical industry is the global leader in R&D, and its research intensity is unparalleled in the U.S. economy.[vii] Relative to other manufacturing industries, the biopharmaceutical industry invests 13 times more in R&D per employee and employs the largest share of all manufacturing R&D workers in the United States.[viii,ix] The industry also invests more in R&D relative to sales than all but one other manufacturing industry—over 20% more, which is more than six times the average for the manufacturing sector as a whole.[x]

As a result, PhRMA member companies invested $91.1 billion in R&D in 2020[xi] and approximately one out of every five dollars of revenue went to R&D – among the highest R&D intensity ratios of all industries. In fact, according to the National Science Foundation, the sector accounts for the single largest share of all U.S. business R&D, representing one out of every six dollars (18%) spent on domestic R&D by U.S. businesses.[xii]

The U.S. Biopharmaceutical Industry is the Global Leader in Biomedical Innovation

America's robust R&D enterprise is the envy of the world. Not only does the United States lead in both overall clinical trial activity and early-stage clinical research, but it also claims the intellectual property (IP) of nearly 60% of all new medicines.[xiii] Likewise, it is not surprising that almost three-quarters of worldwide venture capital investments in biopharmaceutical startups are made in the United States, where the biopharmaceutical R&D enterprise thrives.[xiv]

Thanks to the system in place in the United States, biopharmaceutical innovators had a head start on potential solutions when the COVID-19 pandemic hit. Much of the work underway has been built upon extensive knowledge of infectious diseases and research and manufacturing expertise developed over many years, made possible with the support of robust intellectual property protections and a strong science-based regulatory system.

Continued U.S. global leadership and investment in new treatments and cures for all patients will depend on having the right public policies in place to support biopharmaceutical R&D and manufacturing. In particular, the pandemic has demonstrated the critical importance of globally diverse biopharmaceutical manufacturing supply chains in responding to crises, as well as reinforced the need to ensure preparedness for the next public health emergency. The pandemic has also underscored the urgency of addressing key infrastructure gaps and the need to consider tax and other targeted incentives to foster continued investment in innovation in advanced manufacturing technologies and platforms in the United States. Additionally, there remains an urgent need to address the long-term gaps in America's science, technology, engineering, and math (STEM) programs to grow the 21st century workforce. Addressing these gaps is critical to meet current and future biopharmaceutical R&D and manufacturing needs and to continue to strengthen America's innovation economy.

i TEConomy Partners; for PhRMA. The Economic Impact of the US Biopharmaceutical Industry 2017: National and State Estimates.
ii Ibid.
iii TEConomy Partners; for PhRMA. Biopharmaceutical Industry-Sponsored Clinical Trials. April 2019.
iv NDP Analytics; for PhRMA. Analysis of the US FDA's Drug Establishments Current Registration Site. January 2020.
v TEConomy Partners; for PhRMA. The Economic Impact of the US Biopharmaceutical Industry 2017: National and State Estimates.
vi TEConomy Partners; for PhRMA. Biopharmaceutical Manufacturing in the U.S.: Making Cutting-Edge Medicines Today and Leading the Way on Medicines of Tomorrow. March 2019.
vii M Muro et al. America's advances industries: New trends. Brookings Institute. August 2016.
viii NDP Analytics. IP-intensive manufacturing industries: driving US economic growth. September 2017. Updated April 2020.
ix National Science Foundation Business R&D and Innovation Survey (BRDIS). TABLE 53. Worldwide, domestic, and foreign total and R&D employment, by industry and company size: 2017,. February 20, 2020. Accessed April 2019.
x NDP Analytics. IP-Intensive Manufacturing Industries: Driving US Economic Growth. Washington, DC: NDP Analytics. September 2017.
xi Research!America, U.S. Investments in Medical and Health Research and Development, 2013-2018, 2019.
xii Wolfe RM; National Science Foundation, National Center for Science and Engineering Statistics. Businesses spent $375 billion on R&D performance in the United States in 2016. InfoBriefs. NSF 18-312. September 2018.
xiii NSF, National Science Board. Science and Engineering Indicators 2018. Chapter 8 Appendix Table 8-13: USPTO patents granted in pharmaceuticals, by region, country, or economy: 2000–16.
xiv TEConomy; for PhRMA. Analysis of Pitchbook data. April 2019.