The high-tech industry, what is it and why it matters to our economic future

By Michael Wolf and Dalton Terrell

High-tech industries are an important part of the U.S. economy, employing nearly 17 million workers in 2014. While this accounted for about 12 percent of total employment, the high-tech sector contributed almost 23 percent of output. According to a study funded by the Workforce Information Council, the high-tech sector can be defined as industries having high concentrations of workers in STEM (Science, Technology, Engineering, and Mathematics) occupations.[1] Although the term high-tech has been notoriously difficult to define, as technology changes all the time, this analysis provides an approach to defining jobs that are in in this sector.

This issue of Beyond the Numbers applies the approach used by WIC to Bureau of Labor Statistics (BLS) data on industry employment and output. It provides an overview of which industries make up the high-tech sector and analyzes historical and projected industry employment and output data from the BLS Employment Projections program. This article offers insights on the performance and composition of the high-tech sector and its significance to the U.S. economy.

Identifying high-tech industries

Although the North American Industry Classification System (NAICS), the government's official industry classification, does not define high-tech industries, the 2010 Standard Occupational Classification (SOC) system defines certain occupations as STEM occupations. To identify high-tech industries, we use data from the Occupational Employment Statistics survey and the Current Population Survey to determine the share of jobs in each industry that were held by STEM workers.[2] These include various types of engineers, IT workers, scientists, postsecondary teachers, and managers of these workers.

STEM occupations account for 5.8 percent of all jobs in the U.S. economy. To begin this analysis, we identify the industries that had a share that was two and a half times the national average (industries in which at least 14.5 percent of jobs were in STEM occupations) as high-tech industries.[3] Then, we separate the industries into two groups: high-tech manufacturing industries, a subset of the goods-producing industry, and high-tech service industries. (This analysis focuses on manufacturing and services even though there are other high-tech industry groups under goods producing.) Once we can identify which industries are high-tech, we can explore characteristics of the high-tech industry, such as the number of wage and salary jobs, and the dollar value of output that the high-tech sector contributes to the U.S. economy. For those characteristics, we use employment data to measure the amount of high-tech wage-and-salary jobs and output data to measure the dollar value of goods and services produced by an industry.

This analysis uses the industry sectors for which BLS produces projections of industry output and employment. Using this set of industries allows for analysis of both historical and projected employment and output data. All output figures are measured in nominal dollars to allow for accurate comparisons of output shares.

High tech in manufacturing and services

BLS produces employment and output data for 206 industry sectors. Table 1 contains a list of the 33 industries identified as high-tech industries for this analysis. Sixteen are manufacturing industries, which are classified as high-tech because of the large concentration of engineers working in them. Twelve are services industries, which tend to have higher concentrations of scientists and computer and mathematical occupations. The first analysis section focuses on the group of all high-tech industries, the second section focuses on the differences in performance of high-tech manufacturing industries compared with high-tech services industries.