

Testimony of Lisa D. Cook  
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At least three factors currently make or could make the innovation economy in the United States competitive domestically and internationally.

First, the innovation economy is vast, porous, and encompasses a wide array of good-paying jobs. By several measures, the innovation workforce generates positive spillovers for the entire economy and better pay and job security for those in the innovation economy. In 2017, the National Science Foundation calculated that the innovation economy comprised roughly 7 to 25 million workers. These innovation workers earn substantially more than the median income for all workers. In 2017, the median innovation worker earned \$85,390, compared to \$37,690 for all workers. Innovation economy jobs also are growing faster than in other sectors, and unemployment rates are lower. During and following the Great Recession, the U.S. workforce contracted, while the innovation workforce was less affected by the overall economic contraction. At that time, the income gap between innovation workers and the general labor force also widened. In 2012, innovation economy earnings were double those of other workers; by 2014, the median innovation worker earned an additional 25 percent more than the general labor force.<sup>1</sup>

Despite the popular conception of the innovation economy, one does not need a PhD in engineering to participate in the innovation economy. In fact, during the pandemic, there are many opportunities for worker retraining that could move unemployed workers from jobs disrupted by COVID-19 to jobs in the innovation economy. For example, digital tools are being developed and refined to augment traditional contact tracing.<sup>2</sup> This includes case management and proximity tracing and exposure notification. In some states, as little education as a high school diploma is required, and online training is both free and available. In general, if workers are able, getting additional training is desirable during periods of weak labor markets such that skills are not lost or are enhanced, something we observed during the Great Recession.

Second, another feature that makes the U.S. competitive internationally is the protection of intellectual property rights. This is a feature of the American innovation system that is the envy of other countries and that is used by firms that plan to sell their products and processes

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<sup>1</sup> Cook (2020) and National Science Foundation (2019).

<sup>2</sup> CDC (2020).

internationally. This is particularly true, my coauthor and I find, for emerging markets (Cook and Kongcharoen, 2010b). Specifically, we find that countries that are export-intensive and that move up the value chain of production ultimately start protecting intellectual property rights related to exports after exports begin. Their own intellectual property is at stake and countries need to be able to take violators to court. The evidence suggests this is true on average.

However, firms in some emerging markets like China, decide to do what Soviet inventors did during the Cold War, and take advantage of the U.S. patent system to protect their intellectual property.<sup>3</sup> Chinese interest in protection of intellectual property rights has been increasing in recent years. How do we know this? It can be measured by the number of U.S. patents obtained by inventors who are Chinese residents and the share of patents granted to Chinese residents relative to all foreign patents.

Between 1963 and the year 2000, Chinese residents were granted 917 patents from the US Patent and Trademark Office (USPTO). At that time, it ranked #30, between Singapore and India. Chinese residents obtained approximately 0 percent of foreign patents issued by the USPTO during that period. By 2014, Chinese inventors residing in China had dramatically increased their holdings of US patents to 7,236, which was eight times as many as were obtained for the 38 years between 1963 and 2000, ranked #8 among foreign countries, and represented 4.6 percent of foreign patents obtained in the US. By 2019, Chinese inventors in China were granted 22,294 patents, which was more than 24 times the number in the period 1963 to 2000, ranked #3 behind Japan and South Korea, and represented 10.9 percent of patents issued to foreign residents in 2019.<sup>4</sup>

From a recent visit to China that included visits with Chinese businesses, it is clear that the U.S. patent system is offering something the Government of China will not or cannot offer its inventors and entrepreneurs: determination of originality (or first to patent) and defense of intellectual property.<sup>5</sup> U.S. patents are and will be critical to Chinese innovation being able to compete abroad, not just in the U.S. They also serve to encourage innovation and, therefore, to promote long-term economic growth.

A third factor that could make the U.S. system of innovation competitive internationally is more diversity and inclusion at every stage of the innovation process. Cook and Kongcharoen (2010a) calculates that, between 1970 and 2006, patent output for all U.S. inventors is 235 patents per million; for women, 40 patents per million; and for African Americans, 6 patents per million. It also finds that mixed-gender patent teams are more productive than single-sex patent teams. Like Hunt, Garant, Herman, and Munroe (2013), Cook and Yang (2018) finds that GDP per capita would be 0.6 percent to 4.4 percent higher if the process of innovation included more women and African Americans. In several places, I propose a number of policy interventions which might

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<sup>3</sup> Cook (2012) shows that there was substantial patent activity by Soviet inventors (and institutions) obtaining US patents during the period of the Cold War, although they were largely not awarded patents in the Soviet Union.

<sup>4</sup> USPTO (2015, 2020) and author's calculations.

<sup>5</sup> Cook (2015).

broaden participation in the innovation economy: Cook (2019), Cook and Gerson (2019), and Cook (2020). Among these are increasing the participation of women and minoritized groups in STEM education and in the Small Business Administration's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs and addressing racial and gender workplace climate issues at tech firms and at other institutions where invention and innovation occur. In addition, in order to broaden participation in patenting and innovation, accurate demographic data related to patenting must be available. The SUCCESS Act, which this body passed in 2018, and the IDEA Act, which is currently being considered by this body, are based on my previous research and create the foundation for careful collection of and reporting on such data. I urge passage of the IDEA Act in order to measure and encourage progress in patenting, innovation, competitiveness, growth, and higher living standards in the United States and for all Americans.

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