

SMALL BUSINESS FACTS

SMALL BUSINESS INNOVATION MEASURED BY PATENTING ACTIVITY

September 2022, by Tyler Richards, Regulatory Economist



The Smallest R&D Businesses Engage in More Patenting Activity per Employee

Experts often use patenting activity to measure innovation. In 2016, small businesses (fewer than 500 employees) that performed R&D received 2.7 patents per thousand employees. Large businesses that performed R&D received 3 patents per thousand employees. Small businesses received a total of 8,165 patents. Although the smallest R&D-performing businesses are less likely to receive patents they apply for, those businesses generate more patents per employee. The smallest businesses in the dataset (5-9 employees) received over 50% more patents per employee than did any category of large businesses (Table 1).

While patents-received data for even smaller businesses (1-4 employees) are not available, patent application data are. R&D-performing businesses with 1-4 employees applied for roughly 270 patents per thousand employees—nearly 25 times as many as any other size category and over 50 times as many as any large business size category. Businesses with 1-4 employees applied for a total of 13,021 patents in 2016. These businesses accounted for nearly a tenth of all patent applications in the dataset (148,723) and applied for almost as many patents as did all other small businesses combined (15,700).

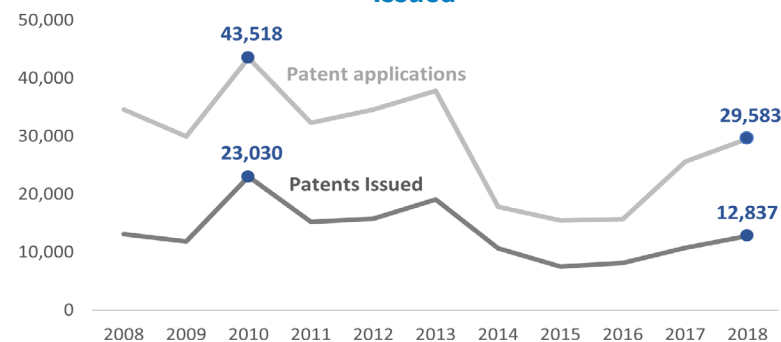
Small Business Patenting Partially Recovered After a Recent Fall

Annual small business patent applications and patents received declined by about two-thirds from 2010 to 2015. By 2018, small businesses recovered to about two-thirds of 2010 patent application levels and to a little over half of 2010 patents-received levels (Figure 1). At the same time, large businesses steadily increased patenting activity. From 2008 to 2018, small businesses' share of patent applications fell from 25.3% to 18.1%, and their share of patents received fell from 20% to 12.1%. Yet small businesses rated every type of intellectual property, including patents, as more important in 2018 than they did in 2011, when the first data are available by business size. Small businesses also make nearly \$2.5 billion in patent licensing revenue a year (12% of total).

Table 1: Patents per Thousand Employees by Employment Size of Business

Employees	Applications	Patents Received	Success Rate
1-4	271.3		
5-9	11.1	5.0	45.2%
10-19	8.8	4.4	49.8%
20-49	7.7	3.1	41.1%
50-99	5.3	2.6	49.0%
100-249	4.6	2.2	47.6%
250-499	4.5	3.0	66.6%
500-1k	5.1	3.0	58.4%
1k-4k	4.3	2.9	65.8%
5k-10k	3.8	2.6	67.9%
10k-25k	5.4	3.3	61.4%
25k+	4.0	3.1	77.3%

Figure 1: Small Business Patent Applications and Patents Issued



Sources: National Science Foundation, Business Enterprise Research and Development Survey (BERD), 2022 release, <https://www.nsf.gov/statistics/srvyberd/> (accessed August 19, 2022). National Science Foundation, Business R&D, and Innovation Survey – Microbusiness (BRDI-M), 2019, <https://www.nsf.gov/statistics/srvymicrobus/> (accessed August 19, 2022).