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RANKING MEMBER

Congress of the United States

U.S. House of Representatives

Committee on Small Business

2361 Rayburn House Office Building

Washington, DC 20515-6315

MEMORANDUM

TO:	Members, Small Business Committee
FROM:	Nydia M. Velázquez, Chairwoman
DATE:	January 15, 2020
RE:	Full Committee hearing entitled, "Enhancing Patent Diversity for America's Innovators" on Wednesday, January 15, 2020 at 11:30 a.m. in Room 2360 of the Rayburn House Office Building.

The Committee on Small Business will meet for a hearing titled, "Enhancing Patent Diversity for America's Innovators." The hearing is scheduled to begin at 11:30 AM on Wednesday, January 15, 2020 in Room 2360 of the Rayburn House Office Building.

The U.S. is the world's most innovative, educated, and competitive nation. The exceptional economic performance of the United States has largely been driven by innovation, entrepreneurship, and competitiveness which has led to new business formation and improved the lives of all Americans. However, women, racial minorities, and low-income individuals are significantly underrepresented in the innovation ecosystem. The Institute for Women's Policy Research reported that in 2016, less than 20 percent of U.S. patents listed one or more women as inventors, and under 8 percent listed a woman as the primary inventor. This hearing will explore ways the federal government can invest in producing a vibrant innovation ecosystem that represents the bright and bold diversity of the American people.

Witnesses include:

- Ms. Andrea Ippolito, Program Director of W.E. Cornell, Cornell University, Ithaca, NY
- Dr. Rashawn Ray, David M. Rubenstein Fellow, The Brookings Institution, Washington, DC
- Ms. Janeya Griffin, Managing Member and Principal Consultant, The Commercializer, LLC, Lancaster, CA
- Mr. Rick C. Wade, Vice President, Strategic Alliances and Outreach, U.S. Chamber of Commerce, Washington, DC

Background

The U.S. has historically led the world in creating new industries and ways of doing business, establishing itself as the global innovation leader. Innovation and entrepreneurship has driven economic growth due in large part to public investments in Science, Technology, Engineering and Math (STEM), research and development, and robust intellectual property, patent and trademark ecosystem.

While the U.S. continues to perform at high levels for innovation and economic growth by possessing a highly skilled work force and prominent companies, America's innovative performance slipped substantially during the past decade. In 2018, the U.S. lost its place as the global leader and dropped to number six among the top innovative countries.[1] Yet, 2019 saw the U.S. regain its competitiveness by ranking third behind Switzerland and Sweden.[2] Importantly, the nation ranked first for its expenditures in both the public and private sectors for research and development, proving the need to continue federal efforts to support small innovative companies.[3]

In addition to public investment, a critical way to maximize economic growth is to ensure that *all* Americans have equal opportunity to innovate and gain patent protect for their inventions. This allows individuals from a variety of backgrounds to fully realize the rewards from entrepreneurship and commercialization while simultaneously benefitting the U.S. economy.

However, studies show that women, minorities, and economically disadvantaged individuals apply for and obtain patents at significantly lower rates than their male, white, and wealthier counterparts.[4] The USPTO's report required by the SUCCESS Act revealed that only 12% of U.S. Patents granted in 2016 listed women as investors and could not conclude how many minority inventors were issued patents because there was not enough data to develop an accurate report.[5] Additionally, children born to families with incomes below the U.S. median income receive patents at less than ten percent the rate of children born to families in the top one percent.

The hearing will allow Members of the Committee to discuss the current state of our patent system, reasons why women and minorities have been underrepresented in the innovation ecosystem, and solutions to broaden our intellectual property and patent system demographically, geographically, and economically to harness the potential of all Americans.

Lack of Diversity in the Patent System Inhibits Economic Growth

Research shows that there are far fewer women and minorities participating in the innovation economy. A study shows that out of 235 patents per million attributed to U.S. inventors, just 40 patents per million were granted to women and 6 patents per million were attributed to African American inventors.[6] Of these patents, just 7.7 percent of U.S. patents had a woman as a primary inventor.

This is particularly problematic considering women and minority owned small businesses are among the fast growing in the U.S. economy. In fact, black women are the fastest growing segment

[1] Sintia Radu, *The U.S. is (Again) Among the World's Top Innovators*, U.S. NEWS AND WORLD REPORT, Aug. 8, 2019.
[2] *Id.*
[3] *Id.*
[4] Lisa D. Cook, et al., The Idea Gap in Pink and Black, MICHIGAN STATE UNIVERSITY, (2010), https://msu.edu/~lisacook/pink_black_0810.pdf.
[5] U.S. PATENT AND TRADEMARK OFFICE, REPORT TO CONGRESS PURSUANT TO P.L. 115-273, THE SUCCESS ACT (2019).
[6] *Id.*

of U.S. entrepreneurs.[7] In 2012, women were the majority owners of nearly 10 million businesses, generating $1.4 trillion in sales and employing over 8.4 million individuals.[8] It is projected that, as of last year, woman own 12.3 million companies, employ more than 9.2 million people and generate $1.7 trillion in revenue.[9] Similarly, there were 8 million minority-owned small businesses in the United States, contributing $1.38 trillion in revenue and 7.2 million jobs to the economy.[10] Closing gaps in the patent system will drive economic growth with one study estimating that GDP per capita could rise up to 4.6 percent with the inclusion of more women and African Americans in the initial stages of the process of innovation. [11]

Barriers to Entry

Funding & Finances

Access to capital is one of the biggest barriers to entry for innovators of color. In 2018, women entrepreneurs in tech brought in just 2.2 percent of the $130 billion in U.S. venture capitalist investment.[12] This amount represents just 2.88 billion dollars compared to the 12.8 billion dollars that was invested into just one e-cigarette company, Juul.[13] Just one percent of venture backed founders were Black. 1.8 were Latino, and 2.8% were Middle Easterners in 2018.[14]

Lack of representation exists in the private equity and venture capital area as well. Nearly three quarters of venture capital firms have no female investors.[15] Ninety percent of venture capital firms also lack any women leaderships positions to make decisions. Women-owned venture capital firms represent just 10 percent of venture capital firms in the U.S.[16] Similarly, representation for minorities fare no better. Minorities represent just 3-4% of the venture capital workforce and 2% of senior positions in firms investing in start-ups and growing firms.[17]

Diversity & Inclusion in Tech

There has been a longstanding disparity in the number of women and minorities working in the U.S. tech industry for many years. Today women hold less than 20% of U.S. tech jobs despite

[7] Ellen K. Pao, *True Diversity is Intersectional*, MEDIUM (May 26,2016) https://medium.com/projectinclude/true-diversity-is-intersectional-2282b8da8882 (last visited Dec. 20, 2019).
[8] American Express, The 2018 State of Women Owned Business Report, https://about.americanexpress.com/files/doc_library/file/2018-state-of-women-owned-businesses-report.pdf.
[9] *Id.*
[10] SMALL BUS. ADMIN. OFF. OF ADVOC., *Minority Business Ownership: Data from the 2012 Survey of Business Owners* (Sept. 14, 2016) https://www.sba.gov/sites/default/files/advocacy/Minority-Owned-Businesses-in-the-US.pdf.
[11] *Supra* note 5.
[12] Kate Clark, Female founders have brought in just 2.2% of US VC this year (yes, again), TECHCRUNCH (Dec. 2018) https://techcrunch.com/2018/11/04/female-founders-have-brought-in-just-2-2-of-us-vc-this-year-yes-again/(last visited Dec. 20, 2019).
[13] Emma Hinchliffe, *Funding for Female Founders Stalled at 2.2% of VC Dollars in 2018*, FORTUNE (Jan. 28, 2019) https://fortune.com/2019/01/28/funding-female-founders-2018/ (last visited Dec. 20, 2019).
[14] Mary Ann Azevedo, *Untapped Opportunity: Minority Founders Still Being Overlooked*, CRUNCHBASE NEWS (Feb. 27, 2019) https://news.crunchbase.com/news/untapped-opportunity-minority-founders-still-being-overlooked/ (last visited Dec. 20, 2019).
[15] *Supra* note 18.
[16] *Id.*
[17] Andrea Hoffman, *The Minority Venture Capital Opportunity*, XCONOMY (Mar. 12, 2018) https://xconomy.com/national/2018/03/12/the-minority-venture-capital-opportunity/ (last visited Dec. 20, 2019).

representing more than 50% of the workforce. These numbers are lower than women share of computer science jobs in the 1980s. Compared to overall private industry, the high tech sector employed a larger share of whites (63.5 percent to 68.5 percent) and a smaller share of African Americans (14.4 percent to 7.4 percent), Hispanics (13.9 percent to 8 percent), and Asian Americans (5.8 percent to 14 percent).[18]

There are many issues that continue to foster lack of equality in tech. One issue is lack of female and minority leadership at tech companies. Today just 5% of tech companies have women in leadership positions and minorities across all ethnicities claim just over 15%. Women and minorities are also more likely to start out in entry-level positions and make less money than white men. Women in STEM make $16,000 less on average than their male counterparts, and if you're black or Hispanic, you might be making $14,000 less than your white coworker.[19] That is why it is important to push for pay equity in tech to foster an inclusive environment and encourage women and minorities to stay in the tech industries long enough to lift other women through meaningful mentoring relationships.

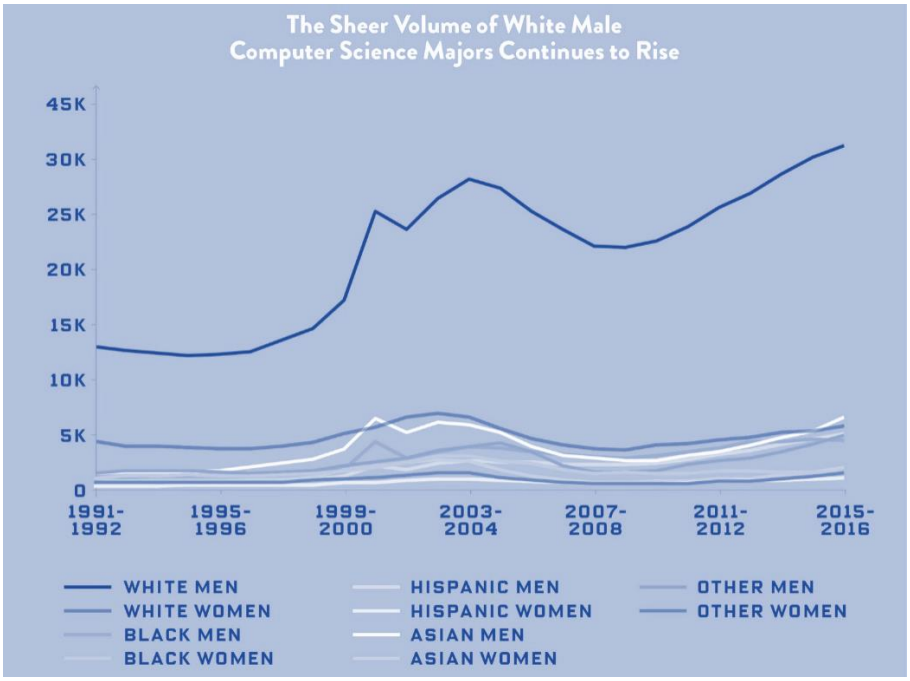
Pipeline – STEM Education & Resources for Future Founders

To forge the path to gender equality in tech, a pipeline of women and minorities trained in STEM must be fostered through the development of policies that will encourage sustained engagement in STEM and provide access to hands-on education for all. Specifically, women and minorities need access to hands-on STEM education, affordable and reliable access to digital tools, and resources for entrepreneurship.

According to a survey, more girls are becoming interested in STEM careers. Reportedly 81% of girls are interested in pursuing a STEM career and 13% report it as their first choice. However, the survey also shows that girls become interested at age 11 but quickly become disinterested at age 15. One of the key reasons is lack of hands-on experience with STEM subjects. Only 35% of STEM students in higher education are women, and there are only 3% of women being education in information and communication technologies (ICT). However, a study shows that 75% of girls who have participated in hands-on STEM activities are empowered to seek careers in STEM.

[18] DIVERSITY IN HIGH TECH, U.S. EQUAL EMPLOYMENT OPPORTUNITY COMMISSION, https://www.eeoc.gov/eeoc/statistics/reports/hightech/ (last visited Dec. 20, 2019).

[19] Blanca Myers, *Women and Minorities in Tech, By the Numbers*, WIRED (Mar. 23, 2018) https://www.wired.com/story/computer-science-graduates-diversity/ (last visited Dec. 20, 2019).



Women and minorities also need access to digital tools to be successful in tech. The most primary resource is access to affordable broadband. There is a digital gender gap of 12% between male and female access to the Internet. This gap is also increasing. To address this gap more must be done to track and collect data and contemplate gender in crafting policies for affordable broadband. Net neutrality is also an important issue for women's access to digital resources. Maintaining a free and open Internet lowers barriers to entry for women and other marginalized groups who have used the Internet to develop online businesses, establish channels of influences outside of mainstream media, and access free tech education.

Entrepreneurship amongst women is increasing. According to a study, women-owned businesses increased by 114% in the last 20 years. Women are also slightly more likely to start businesses than men. However, women still receive less funding, support and mentorship than their male counterparts. That is why it is important to support and develop more incubators and mentorship opportunities for women. Studies show that women who receive mentorship are 5 times more likely to start a business than those who do not. Developing tech hubs outside of Silicon Valley can also foster more opportunities for women tech founders to build communities and resources around tech. Tech startups outside of Silicon Valley are developing in college towns like Boulder, Colorado, Ann Arbor, Michigan, and Chapel Hill, North Carolina. In fact, a study shows that many believe that Silicon Valley will no longer be the innovation of the world in the next four years. Leveraging existing resources at the SBA through SCORE, Women Business Centers and Small Business Development Centers can also increase opportunities for women tech founders. Developing policies and program specifically geared to tech and engagement in the SBIR program can also encourage progress.

Public Policy to Support Diverse Entrepreneurship in the Tech Sector

Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)
The Small Business Innovation Research (SBIR) program was established under the Small Business Innovation Development Act of 1982. [20] Under the program, each federal agency with an extramural Research & Development (R&D) budget greater than $100 million is required to allocate a portion of that funding to conduct a multi-phase R&D grant program for small businesses. In the Small Business Technology Transfer (STTR) program, each federal agency with extramural R&D budgets of $1 billion or more is required to allocate a portion of its R&D funding to conduct a multi-phase R&D grant program for small businesses.[21]

The objectives of the SBIR/STTR program include stimulating technological innovation; increasing the use of the small business community to meet federal R&D needs; fostering and encouraging participation in innovation and entrepreneurship by socially and economically disadvantaged individuals; and expanding private-sector commercialization of innovations resulting from federally funded R&D. However, the percentage of SBIR/STTR grants approved for women trail well below 50% and underrepresented communities are in the single digits.[22]

Growth Accelerator Fund Competition Program
In 2014, the SBA announced the implementation of the Growth Accelerator Fund Competition Program (GAFC) using $2.5 million appropriated to fund business accelerators across the country. Business accelerators are organizations, in various formats, that offer a wide range of support services and funding opportunities for early stage companies. They generally follow the model of enrolling startups in months-long programs that offer mentorship, office space, and critical supply chain resources. Most importantly, business accelerator programs offer access to capital and investment in return for startup equity which helps participating business remain viable. Instead of using existing grant authority, the SBA decided to implement the program using government-wide authority to hold competitions.

The SBA held the first competition in order to provide fifty $50,000 awards with an emphasis on serving underserved groups, geographic areas with less access to capital, and organizations focused on manufacturing. As a result of the SBA's efforts, the first competition reached prize winners in 31 states, most of which were in areas that typically had less access to venture capital.[23] A recent report on the program also indicates that the GAFC awardees have also focused on benefitting small businesses with diverse backgrounds. Eighty percent of the GAFC winners serve

[20] Pub. L. No. 97-219.
[21] Currently, 11 federal agencies participate in the SBIR program outside of the Small Business Administration (SBA): the Departments of Agriculture (USDA), Commerce (DOC), Defense (DOD), Education (ED), Energy (DOE), Health and Human Services (HHS), Homeland Security (DHS), and Transportation (DOT); the Environmental Protection Agency (EPA); the National Aeronautics and Space Administration (NASA); and the National Science Foundation (NSF). These agencies must allocate at least 3.2% of extramural R&D funds to this program, though agencies may opt to exceed these minimum percentages. Each participating agency operates its own SBIR program under the provisions of the law and regulations, as well as with the policy directive issued by the SBA in its *Small Business Innovation Research Program Policy Directive*.
[22] U.S. SMALL BUSINESS ADMINISTRATION, SMALL BUSINESS INNOVATION RESEARCH, SMALL BUSINESS TECHNOLOGY TRANSFER ANNUAL REPORT FY 2017 (2019) [hereinafter FY 2017 Report].
[23] U.S. SMALL BUSINESS ADMINISTRATION, 2015 GROWTH ACCELERATOR COMPETITION, QUARTERLY METRICS AND RESULTS AS OF DECEMBER 31, 2015 (2016).

start-ups that are owned by racial minorities, 42% have start-ups that are owned by women, and 61% served startups located in disadvantaged areas.[24]

SBIC Program

An SBIC is a private equity fund that is licensed and regulated by the SBA.[25] The SBA develops public private partnerships to offer access to capital for small business by matching funds raised by private equity firms with government back debentures. Some famed early Silicon Valley venture capital firms were started through the SBIC program. The SBIC program can increase its support of impact funds which focuses on underrepresented demographics and communities.

Better Public Data

More concerning is the lack of research and reporting regarding which Americans are receiving patents. A report produced by the USPTO as required by the SUCCESS Act, found that there was a lack of data and reporting on demographic information of patent holders and a stark disparity of patents held by women.[26] The report found that only 21% of U.S. patents list a woman as an inventor and that women make up only 12% of all inventors.[27] Another report by the Institute for Women's Policy Research found that African American and Hispanic college graduates hold patents at approximately half the rate of their white counterparts.[28]

The IDEA Act,[29] co-sponsored by Chairwoman Velázquez, seeks to collect demographic data at the patent filing and direct the USPTO to issue reports. It requires the PTO to collect the following demographic data from patent applicants on a voluntary basis: gender, race, ethnicity, national origin, sexual orientation, age, military or veteran status, disability, education level attained, and income level[30]. This reporting will give the federal government valuable data that will allow Congress to direct resources to close the patent gap, prevent implicit bias, and lower barriers to entry in innovation.

Conclusion

For more than 200 years, the U.S. patent system has served America's inventors and helped to foster innovation and technological advancement. The award of strong, enforceable patents, based on an effective patent system, provides a critical incentive to innovation. Granting inventors certain exclusive rights helps spur research and development efforts which, in turn, help drive American technological leadership. In this way, patents are an important linchpin with respect to continuing America's economic growth and global competitiveness. An effective Patent & Trademark Office and sound intellectual property laws are particularly significant to small companies. Women and minority inventors are small business owners that can positively impact our nation's economy and advance our lead in innovation if given equal access to the U.S. patent

[24] *Id.*
[25] INVESTMENT CAPITAL, U.S. SMALL BUS. ADMIN., https://www.sba.gov/funding-programs/investment-capital (last visited Dec. 20, 2019).
[26] U.S. PATENT AND TRADEMARK OFFICE, REPORT TO CONGRESS PURSUANT TO P.L. 115-273, THE SUCCESS ACT (2019).
[27] *Id.*
[28] Jessica Milli, Ph.D., *et al*., The Gender Patenting Gap, INSTITUTE FOR WOMEN'S POLICY RESEARCH, (2016), https://iwpr.org/wp-content/uploads/2016/07/C441_Gender-Patenting-Gap_BP-1.pdf (last visited Dec. 20, 2019).
[29] IDEA Act, H.R. 4075, 116th Cong. (2019).
[30] *Id.*

system. This hearing will allow Members to hear how best to create an inclusive innovation ecosystem to spur economic growth.