America’s $52 billion bet on the chips race can’t succeed without small-business innovation

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The CHIPS Act earmarks $52 billion to support the U.S. semiconductor industry.
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America is about to unleash $52 billion in upfront funding to accelerate the development of a domestic supply chain for semiconductors. It’s an uncharacteristic move for the U.S. government, which historically has favored issuing tax credits for research and innovation over distributing money upfront. And as the U.S. ramps up its efforts in the global race for chip sovereignty, there’s a lot riding on the outcome.

As reliant as we’ve become on our smart devices, the global supply chain required to produce

them is extremely fragile. According to the Semiconductor Industry Association, 80% of the world's semiconductors are produced in Asia.

In the wake of geopolitical tensions and supply chain disruptions, our reliance on Asia to produce components leaves us incredibly vulnerable to security and economic threats.

There are likely many paths to successfully achieving chip sovereignty in the U.S., but there is one sure way for the CHIPS Act to fail: by not stipulating that SMBs should be a part of solving the problem.

Biden recently announced who would sit on the President's Export Council–a committee on international trade that will undoubtedly have influence over how the CHIPS Act is implemented. Alongside the esteemed national security experts and executives like the CEO of Qualcomm, there wasn't a single SMB representative named.

Small businesses account for 64% of new jobs in the U.S. each year and make up 99.9% of all businesses in America. Most successful businesses in our country started small before they had a chance to grow.

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The complex challenge of continuously innovating to reach chip sovereignty will require intellectual

agility and the ability to nimbly test and reiterate–capabilities SMBs (unburdened by hierarchical systems and bureaucracy) are proven to excel at.

It's no secret, the majority of the CHIPS funding will go to some of the world's largest companies. The government should, however, stipulate a percentage of the awarded funds be spent engaging SMBs to accelerate innovation in materials science, packaging, mechanical design, and the plethora of ancillary industries needed to create a downstream supply of business.

When the Department of Commerce recently launched its first application for CHIPS funding, Gina Raimondo, the U.S. Secretary of Commerce, put a call out to the private sector to unite behind a shared objective and think boldly. Without a framework that is intentionally designed to include small businesses, however, it's unlikely America will succeed at this.

The government has stressed the importance of private-public mobilization in this endeavor, but it's also crucial we have strategic cooperation between SMBs and large corporations. For example, the government could mandate the creation of an SMB consortium, to engage with larger players who are awarded funds.

I can attest that operating as a startup in a globally competitive industry takes grit. A few years ago my startup was competing against one of the world's largest technology companies for a contract with one of the biggest telecommunications companies on the planet.

Our competitive advantage was that we were close to the customer and able to design a solution that addressed all their pain points. The multinational company we were competing against was accustomed to building products that appeal to mass markets. They weren't as adept at solving problems for niche markets or agile enough to seamlessly integrate new ideas into their existing protocols.

In the absence of being able to compete on product innovation, most large competitors attempt to win on price. This specific tech giant heavily subsidized their product in an effort to lock us out.

Luckily, our grit and value proposition were enough to ultimately win the business. Without incentives for cross-collaboration, however, these kinds of moves from larger corporations can kill a small business and the innovation that comes with it.

The semiconductor industry is even more competitive and isn't built for small businesses to succeed without structured support.

As America races towards a domestic supply chain of semiconductors, it's important not to forget how it all started. The semiconductor was born on U.S. soil, but today we produce about 10% of the world's supply–and none of the most advanced chips.

This is due in part to a lack of investment in research and development and the absence of a process to recruit and retain the brightest minds from the global talent pool.

Erdal Arikan, a Turkish-born academic who studied at MIT, was recently awarded a prestigious medal from the founder of Huawei for his discovery of polar code–a coding theory that helped the Chinese telecommunications giant develop its 5G technology.

Arikan, who accredits his mentors and teachers from the U.S. for inspiring his breakthrough, had originally pitched polar codes to U.S.-based multinationals Qualcomm and Seagate, but was turned down. His innovation later proved to be game-changing when embraced by Huawei in China.

Many SMBs are started by the brightest minds fostered in and outside of the world's top universities. Take Nantero for instance–a startup you've likely never heard of. Founded out of Harvard in 2001, the company created a new material for the fabrication of microchips. For perspective, DRAM, the incumbent material, was invented in 1966 and has yet to progress. Nantero has the potential to work as efficiently as DRAM, with one key difference: it saves a whole lot of power.

Without the funds to accelerate research and development, it's not uncommon for a startup like Nantero to operate for 22 years without ever going to market. If smartly structured, the CHIPS Act could incentivize America's large corporations to invest in the country's most promising SMBs while creating a sustainable pipeline for recruiting and retaining top talent from around the world.

There will be differing opinions on how the billions in CHIPS funding should be dispersed, but we can all agree when it comes to creating a domestic supply of smart products, failure is not an option. If implemented correctly, the CHIPS Act has the potential to align the best minds at both small and big businesses on a common goal–but only if SMBs have a seat at the table.

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