Forum for American Leadership

Taiwan, Semiconductors, and the next National Defense Strategy

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What to Know:

1. Semiconductors are critical for U.S. economic prosperity and national security. Congressional action through the U.S. Competition and Innovation Act can help in the long run. But Taiwan will remain a critical industrial partner for the foreseeable future.

- As the White House completed its 100-day review of the global semiconductor supply chain, Washington is re-learning not only how fragile and geographically concentrated parts of the global value chain are, but also how ubiquitous "chips" are to the American way of life. Taiwan plays a unique role in the global industry, producing ~19% of the world's chips and nearly 92% of the most sophisticated "leading edge" technology chips.

- A recent Politico headline reads: "Industries pressure Washington to act as chip crisis worsens." The current "crisis" is the consequence of an industry operating at nearly maximum capacity confronting the unforeseen impact of COVID-19, which simultaneously increased demand for items like consumer electronics and disrupted the supply chain. Action is required now to prevent another "crisis" from emerging in the future.

- Government funding to "level the playing field" to re-shore fabrication plants is an important step to bolster American chip manufacturing and R&D, secure the supply chain, create American jobs, and protect American national security.

- However, even as the executive and legislative branches take steps to improve American competitiveness, cooperation with allies and partners will remain vital. That's why the Biden administration has been urging Japan, South Korea, and Taiwan to expand chip production.

- Taiwan will remain the linchpin of the semiconductor industry for years to come. U.S. development of critical chip suppliers will take years, if not decades, to construct and deliver with competitive efficiency. It is estimated that countries will need to spend at least $30 billion per year for AT LEAST five years to have any chance of catching up with Taiwanese production capabilities. Thus, industrial partnership with Taiwan will remain critical for U.S. economic prosperity and national security.

2. Taiwan has a central role in global semiconductor production that affects U.S. economic and national security.

- Taiwan represents ~19% of the world's semiconductor wafer manufacturing capacity. For comparison, mainland China represents ~20%; and while the U.S. leads in global chip design and intellectual property, it weighs in at only ~11% of global capacity.
- What's more, Taiwanese foundries are the world's leaders in advanced fabrication technology. Even as U.S. factories are developed, like TSMC's Arizona factory, they will produce 5-nanometer technology chips when it opens in 2024, at which point 3-nanometer chips are expected to be the norm and fully produced in Taiwan.
- As the PRC's military buildup continues, there is growing concern about Beijing's capability and intent to use force to assert control of Taiwan. Such a scenario would call into question America's commitment to regional security, its allies and partners, and the rules-based international order. It would have major implications for American economic security.
- Should the PRC gain control of the island, it would control 40% of global semiconductor manufacturing capacity and become the world's technology leader.
- Replacing Taiwan's capacity in another location would take at least a decade. That's because semiconductor wafer manufacturing is notoriously difficult – dependent on a hard-to-replicate mix of workforce skills, capital equipment, learning-curve effects, and industrial scale.
- As result, not only does Taiwan represent an important symbol of America's commitment to a rules-based international order, but it is a key enabler of American economic security as well.

3. Semiconductors are critical for national defense.

- Semiconductors are essential for defense technology – everything from ships, aircraft, missiles, command and control systems, space assets, cyber defenses, and more.
- Preserving America's military advantage over China is not possible without a reliable supply of the world's most advanced semiconductors.
- The next National Defense Strategy must recognize the foundational role of semiconductor technology for national defense. It must prioritize steps to address international supply chain dependencies and preserve American access to the best semiconductor technology.
- The executive and legislative branches should recognize that focusing DOD's defense planning, concept development, and modernization efforts on the most pressing scenarios confronting the Joint Force, including a Taiwan scenario, is a recognition of the economic—as well as security—consequences of a failure of deterrence.
- Bolstering deterrence against PRC aggression directed at Taiwan is not just critical for national security. It is imperative for protecting economic security by preventing the

United States from being cut off from a vital technological partner and allowing the PRC to seize the commanding heights of one of the world's most important industries.

What to Do:

Action Items for Congress and Executive Branch:

- Global manufacturing capacity of semiconductors is forecasted to increase by more than 50% from 2020-2030. The executive branch and Congress must view this as an opportunity to attract a higher share of the new future fabrication plants through a combination of grant programs and tax incentives. We should be ambitious and aim to increase our share of global capacity to at least 25% from 11% today.

- The United States should deepen and expand defense cooperation with Taiwan to improve its ability to defend itself. In addition to robust arms sales in keeping with Taiwan's asymmetric defense strategy, this should include consideration of a regular commitment of Foreign Military Financing (FMF) funds.

- The next National Defense Strategy should explicitly focus future defense planning, concept development, and modernization efforts on the most pressing scenarios confronting the Joint Force, including a Taiwan scenario.
