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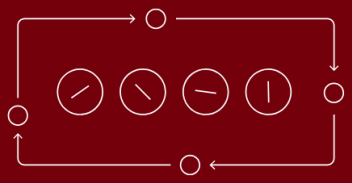

The CHIPS and Science Act Policy Recommendations

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Abstract

Legislation with the support of both parties is rare in this polarized time. Yet, despite this polarization the two parties have acknowledged the need for increasing semiconductor production within the United States (Wince-Smith, 2022). Asia makes up 4/5th of the world's semiconductor production, much of which being dominated by Taiwan and China who are increasingly moving towards armed conflict (Sprunt, 2022). Due to this possibility of conflict in the largest producers, as well as the necessity of having semiconductors to operate technologies such as smartphones, vehicles, advanced medical care equipment and defensive systems, the two parties have united behind the need to return The United States to being a leader in semiconductor production as a matter of national security. A historic level of investment, totaling nearly $280 billion (about $860 per person in the US), was authorized by Congress to end these national security and supply chain concerns (Badlam et al., 2022). Despite this majority approval for The CHIPS and Science Act, there are voices that have expressed concerns about the policy and as such these concerns must be taken into consideration to improve the policy outcomes.

Congressional Opposition

While The CHIPS and Science Act passed with a 64-33 margin in The United States Senate and a 243-187 majority in The United States House of Representatives, those that voted against the legislation may have insights that can be useful for the implementation of the policy after its passing (*Breaking down the chips*..., 2022). From across the aisles, both left-wing Bernie Sanders and those in the Republican Party agreed upon the optics of passing the legislation to give billions to corporations at a time when the average American is facing increased costs at the grocery store and most other goods and services (Freking, 2022). Senator Sanders, an Independent who caucuses with the Democratic Party, gave numerous speeches against the bill, quoted in one speech saying, "The question we should be asking is this: should American taxpayers provide the microchip industry with a blank check of over $76bn at a time when semiconductor companies are making tens of billions of dollars in profits and paying their executives exorbitant compensation packages?" (Johnson, 2022; Stein, 2022). Meanwhile, Republican Senator Mike Lee chastised the legislation for similar reasons, "The poorer you are, the more you suffer. Even people well-entrenched in the middle class get gouged considerably. Why we would want to take money away from them and give it to the wealthy is beyond my ability to fathom.", with the broad consensus from those in opposition calling the legislation "corporate welfare." (Freking, 2022).

"Corporate Welfare"

With The CHIPS and Science Act being the single largest federal investment into one industry in the history of The United States, it is crucial to be cognizant of the funding and whether it is well-utilized or if it fits the description of "corporate welfare" that the opposition has coined (Swanson, 2023). Similar to how China has supported their industries with federal money, so too has the United States entered a new phase of industrial policy (Kannan & Feldgoise, 2022). The fear with federal subsidies, or corporate welfare, to spur manufacturing as well as research and development is that as more federal money is awarded, the return on investment for each dollar invested will decrease. As seen with China, for every $1 of federal investment there may have been an output of $3 of investment growth, but as investment

continued to increase so too would the growth decrease until it was eventually a negative return (French, 2023).

Another concern when it comes to federal subsidies is ensuring that the money awarded to companies is distributed effectively (Abbott, 2022). There are two different routes that the awarding of federal contracts could go, either sending much of the funding to companies that may have innovative strategies for both manufacturing and design, or instead shoring up declining companies to keep them operational. Already there is a concern that while funding may be granted to dominate countries such as the TSMC (Taiwan Semiconductor Manufacturing Company) and Samsung, they may continue to hold key operations such as chip testing or assembling in other countries (French, 2023).

Supply Chain Neglect

Despite best efforts to rebuild the semiconductor manufacturing industry within The United States, manufacturing is only one portion of the supply chain. Experts have raised the concern that even with the increase in manufacturing funding, supply chain disruptions can cause these manufacturing facilities to be considered null if they are unable to secure the required to manufacture the semiconductors in the first place (Kannan & Feldgoise, 2022). Not only will securing the resources for manufacturing the semiconductors be a concern, but so too will having the resources to create these new manufacturing hubs in The United States, which can take years from the beginning of construction to the point of being able to produce on their own (*US CHIPS and Science Act: Creating New...,* 2022). Being aware of the need for accounting for short-term and long-term shortages in the semiconductor supply is necessary as while the legislation may have very beneficial long-term industrial growth, there is still the crucial need for short-term solutions to the supply chain disruptions that have begun under the Coronavirus pandemic.

Due to these supply chain disruptions, inflation within The United States and globally has been a concern for many, including Congress. As stated earlier with the opposition from Senators Sanders and Lee, spending over a quarter of a trillion dollars into one industry at a time when prices for groceries and services across the country can lead to a greater inflationary effect (Freking, 2022). While the hope of reigniting the American manufacturing sector will offset some of these negative effects in inflation, the onshoring of American workers could also lead to an increase in semiconductor prices as the hiring of higher priced American labor can be offset from companies by raising their prices (*US CHIPS and Science Act: Creating New...,* 2022; Black, 2022).

Solutions

Even with the criticisms of The CHIPS and Science Act, most of our legislators have come together to vote on this historic amount of funding. Rather than having our Congress turn away from future investments into industry as a matter of national security, the criticisms of “corporate welfare” can be considered to improve future legislation. Already within the first round of funding contracts being awarded to companies, criticism has been taken into with regards to ensuring the funding is given to responsible companies (Brown et al., 2023). The Biden Administration’s Commerce Department has declared that for the first round of contracts, companies forgo the ability to engage in stock buybacks for five years will receive preferential treatment in funding selection (Cox, 2023). This ensures that with this funding from the federal government, companies are not able to increase their profits through the stock market rather than focus funding on manufacturing and research and development (Brown et al., 2023).

Given the Biden Administration's willingness to field feedback and implement solutions with the feedback in mind, those in Congress and business leaders must call upon the administration to continue to improve the awarding of funding from The CHIPS and Science Act to ensure it achieves its goals.

1. A database specifically on the supply chain regarding the resources necessary to produce semiconductors should be created by the Commerce Department to see bottlenecks in trade and potential shortages before they occur.
2. The Biden Administration must secure trade deals with countries possessing the rare earth minerals and other resources necessary for domestic manufacturing.
3. Once manufacturing is established within The United States, price controls on semiconductors should be considered so that the need to hire more expensive domestic labor does not lead to a price increase that consumers will then have to suffer the results of.
4. Full transparency must be demanded from companies that are awarded funds from the legislation to ensure that concerns of "blank checks" or "corporate welfare" are not valid, and the American public is aware of where the funding from their tax dollars is used by the selected companies.

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