THE WEAKEST LINK: A SUPPLY CHAIN MADE OUT OF SAND.

A COMMENT ON THE CHIPS ACT

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[*] The author thanks the Houston Business and Tax Law Journal Board 23 for this opportunity and those who helped edit for publication. He would like to thank his parents, who are always proud and believe in him, his siblings that care and support him, and the friends he made during his adventure in Houston these past three years. It has not been an easy journey, but he cherished every moment along the way. He will be attending the University of Florida Graduate Tax Program after graduation and the bar.

I. INTRODUCTION

The Creating Helpful Incentives to Produce Semiconductors and Science Act (CHIPS Act) will provide a significant step towards strengthening supply chains in the United States during the aftermath of the COVID-19 Pandemic, create thousands of well-paying jobs, and help solidify this country as a major manufacturer of semiconductors. Without adequate production, our economy bottlenecks and becomes less efficient.[1] This was the mentality Congress had when they created and approved the CHIPS Act in an effort of bipartisanship. Congress passed the CHIPS Act on July 27, 2022.[2] President Joe Biden swiftly signed the Act into law on August 9, 2022.[3]

This Act provides significant funding over five years for loans and loan guarantees to support investments in semiconductor manufacturing within the United States.[4] These incentives give a new investment tax credit equal to 25% of the qualified investment within the taxable year, among other benefits.[5] Additionally, over $52 billion in funding has been allocated for the success of this plan over the next five years.[6] If this plan is successful, these subsidies will significantly strengthen the U.S. supply chain and economy by incentivizing manufacturing facilities to build on U.S. soil rather than in other parts of the world, such as Asia.[7] Keeping manufacturing facilities on U.S. soil is important because it will insulate our economy from outside conflicts and potential pandemics that may arise.[8] For example, if China were to abruptly invade Taiwan (which produces over 60% of the world's semiconductors and 90% of the world's advanced microchips[9]), the U.S. economy would be severely damaged and left without adequate

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1. Heekyong Yang & Makiko Yamazaki, *Home Work Triggers Demand Jump for Chips, Laptops and Network Goods*, REUTERS (Mar. 23, 2020), https://www.reuters.com/article/us-health-coronavirus-tech-demand-idCAKBN21A0Y9.

2. *Fact Sheet: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China*, THE WHITE HOUSE STATEMENTS AND RELEASES (Aug. 9, 2022), https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china/.

3. *Id.*; *see also* CHIPS and Science Act Of 2022, Pub. L. No. 117-167, 136 Stat. 1366.

4. Evershed Sutherland, *All In: CHIPS Act Provides Incentives for Semiconductor Investment*, JDSUPRA (Aug. 12, 2022), https://www.jdsupra.com/legalnews/all-in-chips-act-provides-incentives-4458781/; *see also* CHIPS and Science Act Of 2022, Pub. L. No. 117-167, 136 Stat. 1366 (containing the CHIPS Act provisions and statutory funding allocation information).

5. *Id*.

6. *Id*.

7. Matt Mazewski & Christian Flores, *Economic Impacts of the CHIPS for America Act*, DATA FOR PROGRESS (May 2022), https://www.filesforprogress.org/memos/USICA_Semiconductors.pdf.

8. Dieter Ernst, *Supply Chain Regulation in the Service of Geopolitics: What's Happening in Semiconductors?* CTR. FOR INTL. GOVERNANCE INNOVATION (Aug. 23, 2021), https://www.cigionline.org/static/documents/no.256.pdf.

9. Yimou Lee, et al, *Taiwan Chip Industry Emerges as Battlefront in U.S.-China Showdown*, REUTERS (Dec. 27, 2021, 12:00PM GMT), https://www.reuters.com/investigates/special-report/taiwan-china-chips/.

production of semiconductors needed to keep vital manufacturing industries running smoothly.[10]

However, some have questioned the effectiveness of the CHIPS Act and whether it provides enough incentive for major manufacturers, such as TSMC and Intel, to begin producing enough semiconductor fabrication plants (fabs) to help the U.S. solidify itself as a major manufacturer.[11] For the past few decades, microchip manufacturing in the U.S. has severely decreased to the point where the country only accounts for a small percentage of the world's microchip production.[12]

II. ANALYSIS OF THE CHIPS ACT SECTIONS

The CHIPS Act allocates and creates an incentive-based program of approximately $52.7 billion over the next five years for programs defined and offered within Section 9902.[13]

A. CHIPS for America Fund – Section 102

The Act also prescribes that $39 billion of the $52.7 billion fund is to be used over a period of five years as authorized under Section 9902.[14] Two billion dollars is also explicitly provided for a focus on microchips to protect economic and national security interests.[15] These interests include chip production that is essential to the military, critical industry, and automotive industry.[16] Eleven billion dollars is allocated under Section 9906 for programs such as the National Semiconductor Technology Center (NTSC), National Advanced Packaging Manufacturing Program, and other programs mentioned in Section 9906.[17]

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10. Rick Newman, *Here's What Would Happen to Markets and the Economy if China Attacked Taiwan*, YAHOO FIN. (Aug. 8, 2022), https://finance.yahoo.com/news/heres-what-would-happen-if-china-attacked-taiwan-214917571.html.

11. Julia Wood, *Is the CHIPS Act the Answer to the US Microchip Crisis?*, CHI. POL'Y REV. (Nov. 3, 2021), http://search.proquest.com.ezproxy.lib.uh.edu/scholarly-journals/is-chips-act-answer-us-microchip-crisis/docview/2636751092/se-2.

12. *Study Finds Federal Incentives for Domestic Semiconductor Manufacturing Would Strengthen America's Chip Production, Economy, National Security, Supply Chains*, SEMICONDUCTOR INDUS. ASSOC. (Sept. 16, 2020, 8:00 AM), https://www.semiconductors.org/study-finds-federal-incentives-for-domestic-semiconductor-manufacturing-would-strengthen-americas-chip-production-economy-national-security-supply-chains/.

13. *See* CHIPS and Science Act Of 2022, Pub. L. No. 117-167, § 102, 136 Stat. 1372; *see also* § 102(a)(2)(A)(i), 136 Stat. 1372 (stating $24 million remaining to be allocated of which $19 million is available for public use where such funds are stored with the Department of Commerce).

14. *See generally* 5 U.S.C. § 9902; *see also* § 102(a)(2)(A)(i-v), 136 Stat. 1372 (providing $39 billion in funding through fiscal years 2022-2026 by adding the public amounts for subsections i-v).

15. 5 U.S.C. § 9902; § 102(a)(2)(A)(i-v), 136 Stat. 1372.

16. § 102(a)(2)(A)(i-v), 136 Stat. 1372.

17. CHIPS and Science Act Of 2022, Pub. L. No. 117-167, § 10318(a)(8), 136 Stat. 1534; 42 U.S.C. § 18997; 42 U.S.C. § 9906 (paying of allotments to the states).

Two billion dollars is allocated for the America Defense fund.[18] This funding goes to university-based prototyping where "lab-to-fab" semiconductor technologies are developed for the Department of Defense.[19] Additionally, semiconductor workforce training is included in the $2 billion allotment.[20] Five hundred million dollars is devoted to an International Technology Security and Information fund.[21] This half-billion is allocated over five years through the Department of State along with the U.S. Agency for International Development for the purpose of cooperating with foreign partners to develop and adopt more secure and trustworthy telecom technologies.[22]

B. Advanced Manufacturing Investment Credit – Section 107.

Undoubtedly, the most important and relevant tax provision of the CHIPS Act of 2022 is the manufacturing investment tax credit.[23] Section 48D of the Internal Revenue Code offers a whopping 25% investment tax credit to a "qualifying investment" in the manufacturing facility of an "eligible taxpayer."[24] A "qualified investment" is defined within Section 48D as the basis of "qualified property" that a taxpayer puts in service within the taxable year.[25] Section 48D then defines "qualified property" as essentially any property owned by the taxpayer that is part of an advanced manufacturing facility.[26]

This vague definition has posed problems. As commentators for Bloomberg Tax on the Talking Tax podcast note: "As of now, under IRS proposed rules, companies that manufacture materials or chemicals supplied to the manufacturing of semiconductor equipment don't qualify for the 25% tax credit from the 2022 CHIPS Act."[27] It is yet unclear exactly who is eligible for such a credit, and we will have to wait and see what happens in the following year as this is a slow process to determine funding and what credits are going to be allowed.[28]

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18. § 102(b)(1), 136 Stat. 1374; 15 U.S.C. 4653(b) (stating the provision the DoD has for the "National network for microelectronics research and development").

19. CHIPS and Science Act Of 2022, Pub. L. No. 117-167, § 102(b)(1), 136 Stat. 1374.

20. *Id.*

21. § 102(c)(1), 136 Stat. 1375.

22. *Id.*

23. *New Tax Credit Provides Benefits for Semiconductor Manufacturing*, PWC (Aug. 2022), https://www.pwc.com/us/en/services/tax/library/new-tax-credit-provides-benefits-for-semiconductor-manufacturing.html.

24. I.R.C. § 48D(a) (West 2022) (establishing advanced manufacturing credit).

25. *See* PWC, *supra* note 23; *see also* I.R.C. § 48D(b)(1) (West 2022).

26. *See* I.R.C. § 48D(b)(2)(A) (West 2022) ("Tangible property… which depreciation is allowed… constructed by the taxpayer… or acquired by the taxpayer… which is integral to the operation of the advanced manufacturing facility.").

27. Talking Tax Podcast, *US Chip Industry Win Hinges on Lucrative Tax Credit*, BLOOMBERG TAX (Dec. 12, 2023), https://pro.bloombergtax.com/talking-tax-podcast/.

28. *Id.*

Next, an "eligible taxpayer" is defined within the Act under Section 48D as any taxpayer that is either: (1) not a foreign entity of concern (as defined in Section 9901(6) of the William M. (Mac) Thornberry National Defense Authorization Act for the year of 2021[29]); and (2) has not made an applicable transaction (as defined within I.R.C. Section 50(a))[30] during the taxable year.[31] Section 50(a) of the Revenue Code is interesting for this scenario because it is essentially a claw-back provision in the event the credit property is disposed of at marginal time percentages.[32] If the eligible corporate taxpayer declines to use the investment credit property within one full year of being placed into service, the applicable taxable recapture percentage of the credit is 100%.[33] This recapture claw-back continues for up to five taxable years and reduces by 20% each year to a floor of 20%.[34]

III. CRITICISM FROM SKEPTICS AND OPPONENTS

While semiconductors are clearly essential to the U.S. domestic economy, some outlets and economists have expressed concern over the CHIPS Act and question whether the subsidies will actually push the U.S. on top as a producer.[35] For example, U.S. Trade Representative Katherine Tai has said that "President Joe Biden's administration should be 'replicating' the CHIPS Act for other industries 'as the key to American competitiveness.'"[36]

One specific area of concern in the Act is that it will not be able to achieve its stated goals.[37] For example, subsidies that allegedly support research and development (R&D) are only a small portion of the entire budget of planned expenditures.[38] The majority of the other

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29. William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283, § 9901, 134 Stat 3388; 15 U.S.C. § 4651 ("[A]ny foreign entity that is-designated as a foreign terrorist organization . . . included on a list of specially designated nationals . . . by the Department of the Treasury . . . owned or controlled by the direction of a foreign government . . . or alleged by the Attorney General to have been involved in convictions of [various espionage].").

30. *See* I.R.C. § 48D(c)(2) (West 2022).

31. *See* I.R.C. § 48D (West 2022).

32. *See* I.R.C. § 50(a)(1)(A) (West 2022) ("[I]f . . . the investment [manufacturing] credit is disposed of or otherwise ceases to be used in the investment credit property . . . before the close of the recapture period, then the tax under this chapter . . . shall be increased by the recapture percentage of the aggregate decrease in the credits allowed.").

33. *See* I.R.C. § 50(a)(1)(B) (West 2022).

34. *Id.*

35. *See* Anne O. Krueger, *The False Promise of America's CHIPS Act*, PROJECT SYNDICATE (Nov. 21, 2022), https://www.project-syndicate.org/commentary/chips-act-will-not-keep-us-semiconductor-industry-on-top-by-anne-o-krueger-2022-11.

36. *U.S. Must 'Keep Replicating' CHIPS Act Efforts for other Industries*, WORLD TRADE ONLINE (Aug. 8, 2022), https://insidetrade.com/daily-news/tai-us-must-%E2%80%98keep-replicating%E2%80%99-chips-act-efforts-other-industries.

37. *See* Krueger, *supra* note 35.

38. *See* Krueger, *supra* note 35 (noting 21% R&D expenditure); *see also The CHIPS Act of 2022 Section-by-Section Summary*, SENATE.GOV, https://www.commerce.senate.gov/services/files/

expenditures will instead support physical plant construction. Where the U.S. has the most advantage, and where it currently excels the most, is unquestionably in R&D.[39]

What potentially makes this a problem is that building manufacturing facilities will not accelerate CHIP development, but a small portion of CHIP production.[40] Moore's Law states that the number of transistors on a semiconductor circuit doubles roughly every two years.[41] In the past decade or so, this has not always been the case, but many tech enthusiasts still cling to it as a useful mantra for the chip industry.

Regardless, microchip fabs are so extremely complex, and each new generation of semiconductors needs their own new fabs to ultimately produce them.[42] A facility to fabricate the most advanced microchips costs twice as much as an aircraft carrier but will only be cutting-edge for a couple of years.[43] Furthermore, some industry experts estimate that plants that would have produced chips in 2019 would require at least $1.2 trillion in startup costs, with a continual $125 billion annually to stay bleeding-edge.[44]

Those experts reason that it would be unrealistic for the U.S. to achieve self-sufficiency in the production of new chips heading to domestic markets.[45] Especially since these costs do not even include R&D, innovation, and the founding of new fabs.[46] Alternative solutions could entail merely sticking to what the U.S. has done in the past. For example, supporting friendly countries, encouraging competition, increasing the skill ceiling of workers and immigrants through the creation of qualified training facilities, and allocating more funding towards R&D but not fab construction.[47]

IV. COUNTERARGUMENT AND CONCLUSION

The CHIPS Act was never intended to be the end-all solution to microchip production, nor was it intended to make the U.S. completely

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592E23A5-B56F-48AE-B4C1-493822686BCB (stating that only $11 billion of the $54.2 billion is for Department of Commerce research and development, hence where the above mentioned 21% expenditure estimate comes from).

39. *See* Gary Clyde, et al., *CHIPS Act Will Spur U.S. Production But Not Foreclose China*, PETERSON INST. FOR INT'L ECON. (Oct. 2022), https://www.piie.com/publications/policy-briefs/chips-act-will-spur-us-production-not-foreclose-china.

40. *See* Krueger, *supra* note 35.

41. *See* Carla Tardi, *What is Moore's Law and is it Still True?*, INVESTOPEDIA (Jul. 17, 2022), https://www.investopedia.com/terms/m/mooreslaw.asp.

42. *See* Krueger, *supra* note 35.

43. *Id.*

44. *See* The Editorial Board, *America's Chip Controls On China Will Carry a Heavy Cost*, FIN. TIMES (Nov. 7, 2022), https://www.ft.com/content/499b444f-74db-4596-8d89-4520ec3369b8.

45. *Id.*

46. *See Krueger, supra* note 35.

47. *Id.*

self-sufficient. The Act was created as a first-step response to the supply shortages and bottlenecks that occurred as a result of COVID-19 manufacturing restrictions.[48] The focal point of the legislation is strengthening supply chains domestically so that the U.S. can hinder an economic downturn if such an event were to happen again.[49] While incentives that focus more on R&D may be more beneficial, this would leave the U.S. roughly in the same spot it was when the COVID-19 Pandemic resulted in domestic electronics shortages for multiple years. More measures will need to be taken, and the scope of eligibility for those who can receive a Section 48D credit may need to be expanded to enable the U.S. to stay competitive within manufacturing.

48. *See Fact Sheet: President Biden Signs Executive Order to Implement the CHIPS and Science Act of 2022*, THE WHITE HOUSE (Aug. 25, 2022), https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/25/fact-sheet-president-biden-signs-executive-order-to-implement-the-chips-and-science-act-of-2022/#:~.

49. *Id.*