How Domestic Institutions Shape the Global Tech War

Anu Bradford,[*] Eileen Li[**] & Matthew C. Waxman[***]

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Abstract

The United States, China, and the European Union (EU) are engaged in a national security-driven economic competition over advanced technology. Many scholars and commentators focus on the external dimension of this geopolitical contest; that is, they describe the strategic choices by each actor in terms of geopolitical realities, threat perceptions, and relative power. However, this Article brings to the fore the internal dimension of the global tech war. We argue that each player's strategy in the tech war is a function of their internal features, including basic constitutional powers, domestic legal institutions, and the relationships between the government and private industry. We show how these internal features enable the United States, China, and the EU to deploy certain strategies while constraining them with respect to other strategies. Comparing key U.S., Chinese, and EU domestic features reveals important insights about their respective strengths and weaknesses in waging the global tech war, and it offers predictive insights about the tech war's likely future

Introduction

In October 2022, the United States dropped an economic bomb on China. The U.S. government issued far-reaching export controls designed to restrict China's access to leading-edge semiconductors (or "chips").[1] According to U.S. officials, the new controls were intended to choke off China's access to the sophisticated computer chips that power China's military modernization and intelligence surveillance systems, as well as its broader economy.[2] The scope of the export controls was sweeping. The U.S. restrictions would apply to any U.S.-made chip equipment worldwide, shattering the global semiconductor industry and leaving China with few options to

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[*] Henry L. Moses Professor of Law and International Organization, Columbia Law School.
[**] J.D., Columbia Law School, 2023.
[***] Liviu Librescu Professor of Law, Columbia Law School; Adjunct Senior Fellow, Council on Foreign Relations.
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[1] Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List Modification, 87 Fed. Reg. 62186 (Oct. 13, 2022) (to be codified at 15 C.F.R. pts. 734, 736, 740, 742, 744, 762, 772, 774).
[2] John D. McKinnon & Asa Fitch, *U.S. Restricts Semiconductor Exports in Bid to Slow China's Military Advance*, WALL ST. J. (Oct. 7, 2022), https://www.wsj.com/articles/u-s-restricts-semiconductor-exports-in-bid-to-slow-chinas-military-advance-11665155702.

source advanced chips from abroad. It was another salvo in an "chip war"—a fierce battle to control supply chains for these critical components of modern computing systems. The Trump Administration appears primed to escalate the contest, especially if his pledge to raise tariffs on Chinese goods sparks a broader trade war.[3]

The chip war forms the front line in a broader battle for tech supremacy, one of the most consequential strategic contests of this era. Although many commentators use the rhetoric of "war" to describe that contest—a reflection of the perceived stakes and intensity—we show that much of this rivalry is about law. The major players' most important tools for waging this conflict include legal regulation and new legal authorities. Furthermore, we contend that different domestic legal frameworks, including constitutions, are among the most significant enablers of, and constraints on, the strategies each player pursues.

While a range of technologies are part of this global contest, we focus on advanced semiconductors. Because semiconductor chips are the backbone of modern computing and enable artificial intelligence (AI) and other key technologies, regulatory conflicts over the chip supply chain are particularly high stakes. However, our analysis of the chip war offers insights into the broader technological contest that is unfolding worldwide. Our analysis centers on the legal strategies adopted by the three largest players—the United States, China, and the EU—in this contest. Much of the public conversation around the chip war focuses on the United States and China. However, Europe is not a powerless bystander in this contest. Besides the sheer size of the European market, it holds a key technology—the world's most advanced lithography machines produced by the Dutch company ASML—giving Europe great leverage in semiconductor supply chains.

Most existing accounts explain the tech war—including the use of economic instruments for national security—in terms of threats and power. The United States seeks to preserve its technological edge over China by restricting its access to critical components and knowledge, with the goal of blunting China's regional hegemonic ambitions, efforts to reshape the global order, and expansion of military capability. China views U.S. measures as an attempt to contain its inexorable economic and military growth, and seeks to counter those efforts by boosting its technological self-sufficiency. The EU seeks to avoid being the casualty of the U.S.-China geostrategic competition by focusing on retaining or regaining its "strategic autonomy" in the midst of intensifying U.S.-China rivalry. These accounts focus on external factors—threat perceptions, security interests, and power relations—to explain how the United States, China, and the EU behave in a dynamic strategic competition.[4]

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[3] Simina Mistreanu, *China Is Bracing for Fresh Tensions with Trump over Trade, Tech, and Taiwan*, AP NEWS (Nov. 7, 2024), https://apnews.com/article/trump-china-tariffs-taiwan-foreign-policy-7351ce1069654f1c1aefb560b36dcc17; Britney Nguyen, *Trump's Election Win Could Take the U.S.-China Chip War to a New Level*, QUARTZ (Nov. 6, 2024), https://qz.com/trump-win-election-us-china-chip-war-tsmc-huawei-ai-1851690892. On the trade war and tech war, see David Meyer, *Trump 2.0 Will Have a Massive Impact on Big Tech, AI, Chips and More—in Silicon Valley and Beyond*, FORTUNE (Nov. 6, 2024), https://fortune.com/2024/11/06/trump-2-0-will-have-a-massive-impact-on-big-tech-ai-chips-and-more-in-silicon-valley-and-beyond/.

[4] *See, e.g.*, Fareed Zakaria, *The Rest of the World Doesn't See China the Way We Do*, WASH. POST (June 9, 2023, 6:15 AM), https://www.washingtonpost.com/opinions/2023/06/09/europe-asia-china-policy-trade/; Niall Ferguson, *America Still Leads the World, But Its Allies Are Uneasy*, BLOOMBERG (June 18, 2023, 11:29 AM),

This Article does not dispute the importance of this analysis but supplements that external story with an internal one. It adds, in political scientist Aaron Friedberg's terms, the "*interior dimension of grand strategy*."[5] In the U.S.-Soviet Cold War context, Friedberg explained that "the inward-directed, power-creating policies of states are not simply the product of high-level strategic choice; they are also shaped by forces that originate within society itself and by the character of the institutions that link state and society together."[6] Today, we argue, the United States, China, and the EU are not just choosing different power-creating policies in the global chip war based on strategic calculations. Instead, their actions are also a result of contrasting internal features of their respective political and legal systems.

To analyze this internal story of the global tech war, we focus on how the three players wield a set of economic tools to control advanced chip supply chains. Those tools include industrial subsidies to promote domestic chip industries, export controls to limit the outflow of chips and related technologies, and regimes restricting foreign investment in the chip sector. With such tools, the ordinary business of tech companies—engaging in investment, research, and product sales—is now scrutinized by these governments under the lens of strategic imperatives.

At first sight, the United States, China, and the EU all appear to resort to similar measures in their pursuit of technological self-sufficiency and economic security. Each is focused on restricting rivals' access to key strategic technologies while at the same time shoring up their domestic capabilities and supply-chain resilience in those same fields. Scott Malcomson goes as far as characterizing the "mission for self-sufficiency" as "the most striking geopolitical feature" of the current era, as major economies are retreating from globalization and ushering in "The New Age of Autarky."[7] In that global pursuit of self-sufficiency, each of the key players seems to wield the same basic tools for the same basic reasons.

However, a closer look at U.S., China, and EU chip war strategies reveals significant variation behind those seemingly uniform approaches. Examining the interior dimension of tech war strategy adds to the external story in explaining how and why the three players' reorientation of economic policy toward national security imperatives differ significantly in practice. Specifically, our internal account shows why each player has used certain means while refraining from others in its response to growing international tensions. The United States will continue to favor executive-led export controls over large-scale industrial policy—*i.e.*, government intervention in a specific industry to encourage firms to make decisions that boost domestic industrial capacity in a manner not supported by profit motives—while China will continue to emphasize state-led investment. The EU, on the other hand, will seek to replace fragmented, national-level solutions with a unified, bloc-wide policy.

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https://www.bloomberg.com/opinion/articles/2023-06-18/us-can-t-depend-on-ukraine-coalition-to-stop-china-niall-ferguson.

[5] Aaron L. Friedberg, *Why Didn't the United States Become a Garrison State?*, 16 INT'L SECURITY 109, 115 (1992) (emphasis added). Friedberg develops this concept and argument further in AARON L. FRIEDBERG, IN THE SHADOW OF THE GARRISON STATE: AMERICA'S ANTI-STATISM AND ITS COLD WAR GRAND STRATEGY (2000).

[6] *Id.*

[7] Scott Malcomson, *The New Age of Autarky: Why Globalization's Biggest Winners Are Now on a Mission for Self-Sufficiency*, FOREIGN AFFS. (Apr. 26, 2021), https://www.foreignaffairs.com/articles/united-states/2021-04-26/new-age-autarky.

Our analytical lens reveals new insights into how the tech war has unfolded to date—including alternating moments of escalation and de-escalation—and how it is likely to evolve going forward. Among other things, recasting the tech war in light of domestic features reveals that each player is more constrained than the external account suggests. These constraints act as braking forces against the intensifying "arms race" for technology, as national security-driven escalatory pressures of the chip war are counterbalanced by domestic political and commercial pressures. This, we argue, offers a more optimistic—even if not altogether a reassuring—picture of how the global tech war could unfold.

The Article proceeds as follows. Part I briefly describes the significance of chip supply chains in the global tech war, and outlines the basic strategies that the United States, China, and the EU are using to wage that segment of the tech war. It also shows how scholars and analysts often explain these strategies in terms of the *external* relations among the players, especially the threats they perceive from each other and the types of power they wield in addressing those threats. Part II moves from the external analysis to the *internal* one. It views American, Chinese, and European approaches to the chip competition though an internal lens, particularly focusing on domestic legal institutions. It argues that distinct political-legal systems enable each to pursue certain strategies while constraining its pursuit of other strategies. Part III then draws implications from that analysis.

Part I: The Battle to Control Chips: External and Internal Accounts

Advanced chips are a key front in the global tech war. Chips are foundational to other critical technology areas, including AI applications and a range of military technologies. The chip industry is therefore the sector for which the United States, China, and the EU are wielding economic statecraft tools most aggressively. Studying this industry is important in its own right but also opens a window into understanding the broader tech competition.

This Part offers an overview of the global chips supply chain and its strategic importance. It then summarizes the common analytical frame—the external narrative—that is often used to examine the geopolitical contest over chips. While this external narrative remains important, we argue that it provides an incomplete account of important dynamics driving the wider tech war.

A. The Chip Supply Chain

Semiconductors are everywhere. They are often referred to as "Brains of Modern Electronics," given that they are "an essential component of electronic devices, enabling advances in communications, computing, healthcare, military systems, transportation, clean energy, and countless other applications."[8] These chips infuse every aspect of modern life and only stand to expand to more devices and applications. Any disruptions in the production of these chips—or any country's access to them—risk impacting vast segments of the global economy and elevating geopolitical tensions.

[8] *What Is a Semiconductor?*, SEMICONDUCTOR INDUS. ASS'N, https://www.semiconductors.org/semiconductors-101/what-is-a-semiconductor/ (last visited July 24, 2024).

In concrete terms, semiconductor chips are little wafers often made of silicon, with complex patterns etched onto their surfaces.[9] These patterns direct the flow of electrical currents, forming the backbone of modern computing devices.[10] Modern chips are immensely sophisticated. For example, just one chip in the iPhone 13 contains 15 billion transistors.[11] Lithography machines, composed of increasingly precise lasers and mirrors, are used to create billions of etchings on the surface of the ever-thinner silicon wafers. The entire process must be repeated billions of times to successfully mass manufacture the chips.

As of 2023, chips that are less than 8 nanometers (nm) thick are deemed "advanced chips." For comparison's sake, a human blood cell is 7,000 nm.[12] In October 2023, Huawei unveiled China's breakthrough production of a 7 nm chip—a major development in the chip contest. But 7 nm is not on the leading edge of chip production—Apple and the Taiwan Semiconductor Manufacturing Company (TSMC) are in discussions to produce a 3 nm chip.[13] Previous-generation chips are often referred to as "legacy chips."

Countries rely on chips to fuel their pursuit of AI—the technology widely considered to be the driver of our next transformative economic revolution.[14] ChatGPT was reportedly trained on "10,000 of the most advanced chips currently available," produced by Nvidia.[15] Critically, the United States and China both view chips as a military lynchpin. In a twist from many previous technologies, the chips currently required for civilian use are more advanced than those for producing military equipment.[16] The latest iPhone might use 3 nm chips, while the latest U.S. stealth fighter jet still uses a 90 nm chip dating from twenty years ago.[17] For national security purposes, policymakers must simultaneously monitor the production of less sophisticated, older-generation chips—to power missiles, jets, and older military equipment—while also securing access to AI chips, which could be the foundation of future military computing power. China, for example, has been using advanced U.S. chip technology to build its capabilities in cyber and disinformation operations, hypersonic missiles, cryptography, and surveillance systems.[18]

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[9] Mike Murphy, *What are Semiconductors?*, IBM (Sep. 15, 2023), https://research.ibm.com/blog/what-are-semiconductors.
[10] *Id*.
[11] Stephen Shankland, *Apple's A15 Bionic Chip Powers iPhone 13 With 15 Billion Transistors, New Graphics and AI*, CNET (Sep. 14, 2021), https://www.cnet.com/tech/mobile/apples-a15-bionic-chip-powers-iphone-13-with-15-billion-transistors-new-graphics-and-ai/.
[12] Alex W. Palmer, '*An Act of War': Inside America's Silicon Blockade Against China*, N.Y. TIMES (July 12, 2023), https://www.nytimes.com/2023/07/12/magazine/semiconductor-chips-us-china.html.
[13] Andrew Cunningham, *Report: Apple Buys 3 nm Chip that TSMC Can Make for Next-Gen iPhones and Macs*, ARS TECHNICA (Aug. 7, 2023), https://arstechnica.com/gadgets/2023/08/report-apple-is-saving-billions-on-chips-thanks-to-unique-deal-with-tsmc/.
[14] *PwC's Global Artificial Intelligence Study: Sizing the Prize*, PWC 1, 3 (2021), https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html.
[15] Palmer, *supra* note_.
[16] Liu Zhen, *Tech War: US Ban on Chip Exports to Have Little Effect on Chinese Military for Now, Analysts Say*, S. CHINA MORNING POST (Oct. 29, 2022), https://www.scmp.com/news/china/military/article/3197720/tech-war-us-ban-chip-exports-have-little-effect-chinese-military-now-analysts-say.
[17] *Id*.
[18] Anna Swanson & Claire Fu, *With Smugglers and Front Companies, China Is American A.I. Bans*, N.Y. TIMES, Aug. 4, 2024.

The supply chain behind these tiny wafers is quintessentially a global process. China possesses a significant concentration of the critical raw materials used in chip manufacturing, including rare-earth minerals.[19] At the other end of the supply chain, American companies, led by Nvidia, Intel, and Qualcomm, use special software to produce chip designs.[20] These designs are then used by TSMC, a Taiwanese company, to produce the chips in mass quantities in their fabrication plants, known as "fabs." TSMC's fabs, in turn, rely on ASML, a Dutch company, that builds the world's most advanced lithography machines. ASML lithography machines are assembled in the Netherlands from subsystems manufactured in California and Connecticut.[21] Just one laser in an ASML machine contains over 450,000 parts.[22] A corporate executive at ASML once stated, "I truly believe our machine is the most complex thing mankind has ever produced."[23] Japan and South Korea have significant semiconductor industries that supply key technology, too.[24]

The chip industry relies on components from across the globe, but it is concentrated in a single bottleneck: Taiwan. TSMC, the world's top chip manufacturer, resides on an island that is a fault line in one of the world's most volatile geopolitical disputes. By one estimate, TSMC makes 70% of the chips used in China, as well as 92% of the most advanced chips designed by U.S. companies.[25] Chris Miller, a leading economic historian writing on the chip industry, described the potential impact of knocking out TSMC alone as an economic crisis akin to the Great Depression, noting that we would "struggle to build a cell phone anywhere in the world for the next year or so."[26]

Every country that possesses specialized knowledge, raw materials, or manufacturing access can become a chokepoint in this global supply chain. Today, the United States controls the leading-edge design of chips, Europe the most sophisticated manufacturing equipment, and China aspires to supplant both. Such chokepoints can be weaponized (or indirectly disrupted during conflicts or crises) to hold up the availability of chips to geopolitical rivals. Protecting or rerouting around such supply-chain vulnerabilities is especially critical to building and sustaining military and security-related technologies. Supply-chain disruptions for older, legacy chips can wreck modern economies, too, and they therefore entail major geostrategic risk—including deterrent and

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[19] Ryan C. Berg, Henry Ziemer, and Emiliano Polo Anaya, *Mineral Demands for Resilient Semiconductor Supply Chains*, CSIS (May 15, 2024), https://www.csis.org/analysis/mineral-demands-resilient-semiconductor-supply-chains; Hyong-Min Kim and Deep Jariwala, *The Not-So Rare Earth Elements: A Question of Supply and Demand*, KLEINMAN CTR. FOR ENERGY POL'Y (Sept. 23, 2021), https://kleinmanenergy.upenn.edu/research/publications/the-not-so-rare-earth-elements-a-question-of-supply-and-demand/

[20] Jane Lee, *Report Warns U.S. Chip Design Market to Plunge Without Government Support*, REUTERS (Nov. 30, 2022), https://www.reuters.com/technology/report-warns-us-chip-design-market-share-plunge-without-government-support-2022-11-30/.

[21] Brittney Wolff Zatezalo, *Inside the Insanely Clean, Precise World of High-Tech Manufacturing*, ASML (Oct. 23, 2020), https://www.asml.com/en/news/stories/2020/inside-high-tech-manufacturing.

[22] *Id.*

[23] Palmer, *supra* note _.

[24] Akhil Thadani & Gregory C. Allen, *Mapping the Semiconductor Supply Chain: The Critical Role of the Indo-Pacific Region*, Center for Strategic & International Studies (CSIS) (May 30, 2023), https://www.csis.org/analysis/mapping-semiconductor-supply-chain-critical-role-indo-pacific-region.

[25] Richard Cronin, *Semiconductors and Taiwan's "Silicon Shield*," STIMSON CTR. (Aug. 16, 2022), https://www.stimson.org/2022/semiconductors-and-taiwans-silicon-shield/.

[26] The Ezra Klein Show, *Ezra Klein Interviews Chris Miller*, N.Y. TIMES, at 27:16–28:00 (Apr. 4, 2023), https://www.nytimes.com/2023/04/04/podcasts/transcript-ezra-klein-interviews-chris-miller.html.

coercive threats—as well. For example, were China to hold a dominant position in producing legacy chips, it would gain significant leverage over the United States.[27] Managing these supply chains—to defend against their distruption and to deny rivals access to key links in them—drives the legal strategies that are the focus of this Article.

B. The External Narrative of the Tech War

Export controls, subsidies, and other instruments of economic statecraft are among the most important means by which the United States, China, and the EU wage the global tech war. The most common account among scholars and policy commentators focuses on the "external dimension" of this rivalry: that is, the United States, China, and the EU are crafting their grand strategies based on their own national interests, threat perceptions, and relative power vis-à-vis each other. Power relations between these actors, in this external account, thus drive their statecraft agendas.

This narrative often tracks the realist tradition for understanding international politics.[28] As international relations scholar Paul Poast writes, "the machinations of power politics provide the best explanation" for "efforts by Washington to counter and confront Beijing's growing international prominence" through regulations that restrict China's access to cutting-edge technologies.[29] Similarly, Beijing's national security-driven economic and technology policy can be easily understood as a response to rising U.S.-China military tensions.[30] The EU, in contrast, is geopolitically weaker and economically more dependent on China, which has led it to pursue a less hawkish China policy than the United States, at least until recently.[31] However, the United States is pressuring the EU to align its China strategy with that of the United States in an effort to fend off a common geopolitical threat. Leading realist scholar Stephen Walt argues that power and

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[27] *Who is winning the chip wars? With Chris Miller*, FIN. TIMES (Aug. 26, 2024), https://www.ft.com/content/f5c091b3-d9b8-435a-a8b8-23b1cd1dc1e6.

[28] *Cf.* KENNETH WALTZ, THEORY OF INTERNATIONAL POLITICS (1979).

[29] Paul Poast, *Biden's Tech Restrictions on China Aren't Just About Economics*, WORLD POL. REV. (April 18, 2023) https://www.worldpoliticsreview.com/us-china-trade-war-restrictions-semiconductors-tech-biden/; *accord* JON BATEMAN, U.S.-CHINA TECHNOLOGICAL "DECOUPLING*"* 2 (2022); Jasper Hansen, *Techno-Nationalism: An Industrial Policy for the Twenty-First Century*, NAT'L INT. (Feb. 20, 2023), https://nationalinterest.org/feature/techno-nationalism-industrial-policy-twenty-first-century-206230

[30] Edward White & Sun Yu, *Xi Jinping's Dream of a Chinese Military-Industrial Complex*, FIN. TIMES (June 19, 2023), https://www.ft.com/content/6f388e4b-9c4e-4ca3-8040-49962f1e155d. International affairs scholar Dale Copeland argues that to understand how global commerce in semiconductors "might increase, not reduce, the chance of military conflict [with China], we need to bring in realist insights." *China Is More Concerned About Microchips Than About Pelosi*, NIKEEI ASIA (Aug. 2, 2022), https://asia.nikkei.com/Opinion/China-is-more-concerned-about-microchips-than-about-Pelosi; *see also* Dale C. Copeland, *When Trade Leads to War: China, Russia, and the Limits of Interdependence*, FOR. AFF. (Aug. 23, 2022), https://www.foreignaffairs.com/china/when-trade-leads-war-china-russia.

[31] *See, e.g.,* Aaron L. Friedberg, *A World of Blocs*, CTR. FOR STRATEGIC & INT'L STUD. (April 6, 2023), https://www.csis.org/analysis/world-blocs; Ferguson, supra note _; Suzanne Lynch & Stuart Lau, *Same Trip, Different Plans: EU's von der Leyen Dances Around Macron in China*, POLITICO (April 4, 2023), https://www.politico.eu/article/xi-jinping-emmanuel-macron-ursula-von-der-leyen-different-plans-eu-in-china/; Zakaria, supra note _.

threat perceptions best explain why "the United States will continue to insist that Europe work hard to keep sensitive technology with military applications out of Beijing's hands."[32]

This external account also tracks the recent turn in scholarly literature to "geo-economics." This term refers to states wielding economic instruments to advance and defend national interests and geopolitical aims in response to other states doing likewise.[33] The U.S. foreign policy elite now increasingly argue that America must project its economic power more assertively through new methods of economic statecraft.[34] Such views are heavily motivated by the perception that rivals are driven by strategic competition in critical-technology sectors, rather than the expansion of free trade for mutual benefit.[35] Several leading scholars in this area explain that, as the United States and China wield new instruments against each other in the tech war, "offensive and defensive actions by the incumbent might spur further offensive and defensive moves by the challenger, and both may increase levels of independence."[36] What is common to these analyses is their tendency to explain U.S., China, and EU tech-war actions in terms of geopolitical rivals vying for and protecting their power, in an era when critical technologies are a key ingredient of that very power.

That external analysis of the global tech war is generally correct. The United States and China, especially, are indeed competing for technological supremacy driven by national security concerns. Their governments believe that the country who controls technology—from AI to semiconductors to 5G infrastructure—will also control geopolitical power. The United States perceives a rising China as menacing its security interests in the Indo-Pacific region and beyond. China, on the other hand, views the United States as seeking to maintain its military and economic dominance, containing China's foreign policy interests and endangering its internal stability. The EU is caught in the middle; its member states (many of which are part of the North Atlantic Treaty alliance with the United States) generally align closely with U.S. security and political interests, but the EU lacks the military power of the United States or China and its economy is heavily reliant on trade with China.

But this external account only goes so far in illuminating strategic behavior in the tech war. It explains why, in general, the United States and China are escalating their various strategies to build up their domestic tech industry while restricting the other side's ability to do so. It also broadly explains why the EU is not completely aligned with the United States. But it offers only limited insight into what mix of economic weapons players will deploy, and why they might hold back on using certain ones.[37] The external account focuses on some features that are important to

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[32] Stephen M. Walt, *Will Europe Ever Really Confront China?* FOREIGN POL'Y (Oct. 15, 2021), https://foreignpolicy.com/2021/10/15/will-europe-ever-really-confront-china/.
[33] ROBERT D. BLACKWILL & JENNIFER M. HARRIS, WAR BY OTHER MEANS: GEOECONOMICS AND STATECRAFT 9 (2017).
[34] Id. at 7.
[35] MIKAEL WIGELL ET AL., NAVIGATING GEOECONOMIC RISKS, FINNISH INSTITUTION OF INTERNATIONAL AFFAIRS, Rep No. 71 (2022), at 12.
[36] Anthea Roberts, Henrique Choer Moraes & Victor Ferguson, *Toward a Geoeconomic Order in International Trade and Investment*, 22 J. INT'L ECON. L. 655, 668 (2019).
[37] *See*, e.g, BLACKWILL & HARRIS, supra note _. For a critique of that literature, see Ling S. Chen & Miles M. Evers, "*Wars Without Gun Smoke": Global Supply Chains, Power Transitions, and Economic Statecraft*, 48 *INT'L SEC.* 164, 170 (2023).

success—like a state's geopolitical interests, its military capabilities, or its position in the global trading and financial systems[38]—but neglects others.

This Article supplements the external account of the tech war with an internal one, focusing on the distinct legal, political, and ideological features of each actor. In developing this internal account, we examine the domestic institutions that shape and constrain each player's tech war strategies—that is, in Friedberg's terms, "the interior dimension of [their] grand strategy."[39] Our approach draws on insights from the liberal international relations theory, which challenges realism and its core assumptions of unitary state-actors vying for power. Realism can be criticized for being inattentive to the different ways states are organized and governed internally.[40] Realists may be right that states wield power to advance their interests, but many liberal theorists argue that those interests are not fixed; they derive from domestic and transnational actors *within* states, whose views and interests are mediated by domestic institutions that vary widely between states.[41] Internal governance, under that latter view, shapes external behavior.

We generally agree with realists that the major state actors are waging the tech war in ways that reflect their geopolitical interests and power. But we believe that features within each state help define that state's interests. Like liberal international relations theory, our analytical approach sees features in each country's domestic political, legal, and economic order as imposing constraints on their actions, while also enabling them to implement strategies that may not be available to their competitors. It is important to stress that we do not claim that our internal account should replace an external one. Instead, we show that it should supplement the external account in order to provide a richer and more accurate understanding on how the tech war has evolved to date, and will likely continue to evolve in the coming years.

Part II: Interior Strategy in the Global Chip War

The United States, China, and the EU each wage the tech war through a set of economic and legal tools like subsidies, export controls, and investment screening measures. At first sight, the three players appear to be adopting very similar approaches in their respective efforts to gain greater control over the global chip supply chain. However, a closer look at the internal legal, economic, and political dynamics within each jurisdiction reveals crucial differences in their pursuit of technological self-sufficiency. The discussion below shows how varying domestic instutions shape each player's chip war strategy. Focusing on the United States, China, and the EU in turn, we illustrate how their domestic features either *enable* or *constrain* the use of legal instruments in ways that help explain how we see the tech war playing out.

A. The United States

[38] BLACKWILL & HARRIS, *supra* note _, at 11.
[39] *See* Friedberg, *supra* note _, and accompanying text.
[40] *See generally* Anne-Marie Slaughter, *Liberal International Relations Theory and International Economic Law*, 10 *AM. U. INT'L L. REV.* 717 (1995).
[41] *See* Andrew M. Moravesik, *Liberalism and International Relations Theory*, Center for International Affairs Working Paper, Harvard University (1992).

A defining feature of the U.S. system is a strong default tendency toward free-market politics and economics, sustaining a system in which capitalist competition and private transactions are largely unobstructed by government control. Rooted in a libertarian ideology reaching back through American history, the United States has traditionally been more resistant to regulation than the EU or China. Throughout that history, however, this free-market course has episodically collided with political demands for stronger government intervention in markets, usually driven by crises, whether they be economic (*e.g.*, the Great Depression, the 2008 financial crisis) or security-related (*e.g.*, major wars or threats of war). Those counter-pressures create a new and temporary settlement between a free-market and an interventionist state, often lasting until the crisis ends or the deeply engrained free-market default rebounds again.

Several features of the American political and legal system enhance the U.S. government's ability to wage the chip war effectively. The country's reliance on free markets, balanced over time with targeted security-driven economic intervention, enables the U.S. government to craft policies around promoting domestic high-tech innovation and promoting domestic manufacturing while slowing those of its rivals. The United States' development of chip war strategy is also aided by its constitutional structure, with broad national-security powers often delegated to the executive branch, and the potential for flexible recalibration between free-market and state-interventionist policy. However, several internal constraints counter-act or moderate these enabling features. The atrophied and dispersed nature of executive branch powers limit the government's ability to employ some tech war instruments effectively. And, high levels of interest group lobbying—a feature emblematic of the U.S. political system—constrains the government's ability to pursue policies that run contrary to the country's powerful business interests.

1. A Free-Market Orientation—Moderated by Security Interests

The U.S. political system has historically been averse to heavy-handed economic regulation and industrial policy, and that has been especially true of its approach to digital technology. Since the onset of the internet revolution in the 1990s, U.S. tech policy has emphasized soft regulation as a way of protecting technological innovation.[42] Its reliance on free markets was illustrated by loose antitrust enforcement and lack of strict federal data privacy laws.[43] As one of us has recently written:

> The US has traditionally followed a *market-driven* regulatory model, which has provided the foundation for the global digital economy as it exists today. … The American market-driven model exhibits uncompromising faith in markets and embraces a limited role for government. … From this perspective, the government is only expected to step in to protect national security.[44]

That last note about national security is now key. Today, we are in one of those periods in which national security politics—specifically vis-a-vis China—are pushing against free-market politics, and a new equilibrium on that continuum has yet to settle. From both the right and the

[42] Bradford L. Smith, *The Third Industrial Revolution: Policymaking for the Internet*, 3 COLUM. SCI. & TECH. L. REV. 1, 19–20 (2002).
[43] ANU BRADFORD, DIGITAL EMPIRES: THE GLOBAL BATTLE TO REGULATE TECHNOLOGY 45 (2023).
[44] *Id.*

left, American political leaders are calling for stronger government action to combat perceived Chinese national security threats and counter its economic predation.[45] A hawkish policy towards China has become one of the rare bipartisan issues in a deeply divided U.S. Congress. This rising support for government intervention also comes at a time when economic liberalism is under political assault. A policy of free markets and free trade is widely seen, justifiably, as delivering neither the promised political openness in China nor economic benefits across the board domestically. [46] But domestic political pressures toward more government intervention in the economy often hit strong resistance in the form of American anti-statist ideology and institutions.

So far, the political designation of advanced chips as a national security issue has opened the door to more extensive industrial subsidies and government regulation.[47] National Security Advisor Jake Sullivan announced in 2022: "Given the foundational nature of certain technologies, such as advanced logic and memory chips, we must maintain as large of a lead as possible."[48] Shortly afterward, Commerce Secretary Gina Raimondo stated that "China today poses a set of growing challenges to our national security[;]" therefore, "[t]ogether with the private sector, we are going to bolster our system of export controls, enhance our investment screening regimes, strengthen our supply chain resiliency, and develop innovative solutions."[49] A 2024 White House strategy directive on AI emphasized the securing U.S. chip supply chains and technology against competitors.[50] These statements illustrate how the China challenge has created a powerful counter-force to the American default commitment to markets, mitigating the country's discomfort with economic intervention.

In the modern era, there have been other periods of security-driven government intervention to spur domestic industries, including chips.[51] In the 1960s, the U.S. government, especially the military, invested in the chip market as part of the U.S.-Soviet arms and space race.[52] In the 1980s, the government supported the American chip industry, among other industries, in its economic competition with Japan. But, as Aaron Friedberg notes, even during the Cold War, "[i]deology was the primary source of . . . executive branch aversion to extended preferential treatment to particular firms and sectors." At the height of U.S.-Soviet tensions, "top officials from the president on down were convinced of the virtues of freely functioning markets and were

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[45] Joan E. Greve & Lauren Gambino*, Capitol Hill Finds Rare Bipartisan Cause in China—But It Could Pose Problems*, GUARDIAN (Feb. 26, 2023).
[46] *The American Left and Right Loathe Each Other and Agree on a Lot*, ECONOMIST (July 15, 2023).
[47] David E. Sanger, et al, *Senate Poised to Pass Huge Industrial Policy Bill to Counter China*, N.Y. TIMES (June 7, 2021), https://www.nytimes.com/2021/06/07/us/politics/senate-china-semiconductors.html; Kristen E. Eichensehr & Cathy Hwang, *National Security Creep in Corporate Transactions*, 123 Colum. L. Rev. 556, 556-59 (2023).
[48] Jake Sullivan, U.S. Nat'l Sec. Advisor, Remarks at the Special Competitive Studies Project Global Emerging Technologies Summit (Sept. 16, 2022), https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/09/16/remarks-by-national-security-advisor-jake-sullivan-at-the-special-competitive-studies-project-global-emerging-technologies-summit/.
[49] Gina M. Raimondo, U.S. Sec'y of Com., Remarks on the U.S. Competitiveness and the China Challenge (Nov. 30, 2022), https://www.commerce.gov/news/speeches/2022/11/remarks-us-secretary-commerce-gina-raimondo-us-competitiveness-and-china.
[50] Mohar Chatterjee & Joseph Gedeon, *New Biden Policy Takes a Big Swing at AI — and Sets Political Traps*, POLITICO (Oct. 24, 2024), https://www.politico.com/news/2024/10/24/biden-ai-policy-national-security-00185407.
[51] *See generally* Mariana Mazzucato, *The Entrepreneurial State: Debunking Public vs. Private Sector Myths* 75-88 (2013).
[52] CHRIS MILLER, CHIP WAR 29 (2022).

reluctant to intervene, regardless of possible short-term political gains and despite appeals to the needs of national security."[53]

Today, the United States is again engaged in security-driven intervention to support the high-tech sectors deemed most essential to countering China—though the U.S. government is still figuring out where to draw lines between economic interests and national security interests.[54] After the Cold War, U.S. policymakers placed much of their faith in free-market liberalism to grow the economy at home and forge peaceful relations abroad. "In the past decade," however, Henry Farrell and Abraham Newman note that "economics and national security have collided, turning government inside out and upside down."[55] This collision is now propelling the United States's tech war with China. In this contest, the U.S. government's strategies reflect a new political settlement between, at one end, the tenacious American default toward free markets and, at the other end, heavy-handed government intervention in critical sectors. It is impossible to predict where this line will ultimately settle and how stable it will be—but recent trends indicate a clear shift towards the latter.

2. Internal Features as Enablers

Whereas external accounts emphasize the United States's position as a geopolitical powerhouse to explain its assertive use of economic tools, we show how two internal features of the U.S. government are critical in enabling the use of those tools: its constitutional structure and its constant recalibration between free-market policy and security-driven intervention.

At the most basic level, the United States benefits from a strong executive that is vested with vast powers to wage the tech war. Constitutionally, the national government has almost complete powers over foreign policy, and its law is supreme over state law when they conflict.[56] We say "almost complete powers," because states and even local governments occasionally enact policies to address foreign policy issues (even if sometimes as political posturing), including some recent state-level efforts to bar the Chinese app TikTok and to restrict certain Chinese tech investments.[57] In contrast to the EU, the United States' relevant economic statecraft powers—including many statutory authorities that date to the Cold War—are largely centralized in the executive branch, to which Congress delegates significant discretion.

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[53] FRIEDBERG, *supra* note 4.
[54] Jake Sullivan, *Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership at the Brookings Institution*, White House (Apr. 27, 2023), https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/04/27/remarks-by-national-security-advisor-jake-sullivan-on-renewing-american-economic-leadership-at-the-brookings-institution/.
[55] Henry Farrell & Abraham Newman, *The New Economic Security State; How De-risking will Remake Geopolitics*, FOREIGN AFF. (Oct. 2023), https://www.foreignaffairs.com/united-states/economic-security-state-farrell-newman
[56] However, recently some individual states have been adopting their own restrictions aimed at Chinese technology. Alan Rappeport, *Spreading State Restrictions on China Show Depths of Distrust in the U.S.*, N.Y. TIMES (Aug. 21, 2023). For additional discussion of U.S. states' authorities in regulating Chinese entities, *see* Matthew S. Erie, *Property as National Security*, WIS. L. REV. (forthcoming).
[57] *See* Sapna Maheshwari, et al, *Bans on TikTok Gain Momentum in Washington and States*, N.Y. TIMES (Dec. 20, 2022) (TikTok); Kyle A. Jaros & Sara A. Newland, *Paradiplomacy in Hard Times: Cooperation and Confrontation in Subnational U.S-China Relations*, 54 PUBLIUS: THE JOURNAL OF FEDERALISM 599, 602 (2024) (investment).

The President can deploy many instruments that are central to the chip war either alone or with minimal congressional oversight. To the extent that their preferences align, Congress could grant the executive branch even broader powers, too. In that respect, political checks are ultimately more restraining than legal ones. Many of the United States's recent tech war salvos have drawn from the International Emergency Economic Powers Act (IEEPA),[58] which grants the President sweeping power to regulate economic transactions following the declaration of a broadly-defined national emergency.[59] IEEPA has been used in pivotal moments of the tech war. For example, in 2019, the Trump administration declared an emergency under IEEPA to institute a Huawei ban,[60] and in 2020 it declared another emergency to combat "Investments that Finance Chinese Military Companies."[61]

Export controls have emerged as perhaps the United States' most influential front-line legal tool in the chip war, though some experts question their long-term effectiveness.[62] Here, again, the executive branch has very broad statutory authority to set policy—when it has the political will and Congress does not push back. Relying on that authority, recent administrations have gradually escalated export controls to cut off China's access to leading-edge chips, their component parts, and some ingredients essential to manufacturing them.

The Department of Commerce's Bureau of Industry and Security (BIS) maintains lists of advanced technologies that require a license before being exported.[63] In 2018, Congress strengthened the U.S. export control regime through the Export Control Reform Act (ECRA) which, among other things, delegated "nonemergency authority for the President to control dual-use exports for national security."[64] Controlled technologies can still be sold to Chinese buyers if the BIS issues a license, but under current regulations, the BIS "presumes denial for license applications of … items that would make a direct and significant contribution to China's military."[65] In addition to regulating types of technologies, the Commerce regulations also contain a list of foreign people, businesses, government entities, and research institutions that cannot receive certain sensitive items.[66]

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[58] 50 U.S.C. § 1701, *et seq*.
[59] Christopher A. Casey et al., CONG. RSCH. SERV., R45618, *The International Emergency Economic Powers Act: Origins, Evolution, and Use* at 2 (2019), https://crsreports.congress.gov/product/pdf/R/R45618/1.
[60] *Id*. at 61.
[61] *Id.* at 62.
[62] *See* Gregory C. Allen, *The True Impact of Allied Export Controls on the U.S. and Chinese Semiconductor Manufacturing Equipment Industries,* Ctr. for Strategic & Int'l Stud., Nov. 2024; Scott Kennedy, *How America's War on Chinese Tech Backfired*, FOR. AFF., Nov. 26, 2024.
[63] Int'l. Trade Admin., *U.S. Export Regulations,* https://www.trade.gov/us-export-regulations-0 (last visited February 7, 2024); Bureau of Indus. and Sec., U.S. Dep't of Com., *Control List Classification*, https://www.bis.doc.gov/index.php/licensing/commerce-control-list-classification (last visited February 7, 2024).
[64] Karen M. Sutter & Christopher A. Casey, CONG. RSCH. SERV., IF11627, *U.S. Export Controls and China* (2022).
[65] *Id.*
[66] Bureau of Indus. and Sec., U.S. Dep't of Com., *Entity List*, https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern/entity-list (last visited February 7, 2024); Bureau of Indus. and Sec., U.S. Dep't of Com., *Commerce Adds Six to Entity List for Supporting PRC Military Modernization, Intelligence, and Reconnaissance Activities*, https://www.bis.doc.gov/index.php/documents/about-bis/newsroom/press-releases/3220-2023-02-10-bis-press-release-six-prc-entities-final-3/file (last visited February 7, 2024); Bureau of Indus. and Sec., U.S. Dep't of Com., *Frequently Asked Questions to Export Licensing Requirements* at 8, https://www.bis.doc.gov/index.php/documents/pdfs/286-licensing-faq/file (last visited February 7, 2024).

In 2018-2019, the United States began to impose such export restrictions on China in earnest, but a sweeping hike took place in October 2022. At that time, as noted earlier, the BIS dramatically revised export controls to cut off China's access to advanced chips, parts, manufacturing equipment, and industry know-how.[67] Since then, the Commerce Department—with varying levels of cooperation from allies—has further tightened the controls, including enacting measures to plug loopholes.[68] These measures reflect the government's declared "small-yard, high-fence" policy: the idea that the United States will keep the universe of restricted technologies limited, but the curbs will be severe. In line with this policy, the United States has sought to implement more extensive controls over the most essential technology, like chips. In October 2023, for example, Commerce expanded the list of controlled chip equipment and imposed other new requirements on chip technology exports, and it did so again in March 2024,[69] and then again that December.[70] Policymakers are suggesting that the United States will continue to turn these screws.[71]

Export controls are an attractive weapon for the U.S. government because of the interconnectedness of U.S. exports in global supply chains, as well as the breadth of the congressional delegation to the executive. In a marked contrast to China and the EU, U.S. export controls also benefit from their vast extraterritorial reach. The Foreign Direct Product Rule—which allows the U.S. government to stop sales of products made and sold in a foreign country if they contain American technology—is the clearest example of that legal reach.[72] As one former BIS official describes, the Rule "subjected all semiconductors on the planet to American law, because every foundry on the planet uses U.S. tools at least in part . . . . If you have one U.S. tool and 100 non-American tools in your fab, that taints any wafer moving across the line."[73] In other words, the BIS can set rules governing third-country companies' chips, thereby cutting off China's ability to skirt export controls by simply turning to another foreign supplier.[74]

Investment screening is a less potent, but still agile, U.S. government tool. Specifically, a long-standing legal authority—again with significant discretion delegated to the President—created the Committee on Foreign Investment in the United States (CFIUS). CFIUS is an interagency committee that reviews inbound foreign investments—money that foreign investors

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[67] *See* Sujai Shivakumar et al, *Balancing the Ledge: Export Controls on U.S. Chip Technology to China*, CSIS (Feb 21, 2014), https://www.csis.org/analysis/balancing-ledger-export-controls-us-chip-technology-china.
[68] *Are America's Allies the Holes in Its Export-Control Fence*, ECONOMIST, updated Oct. 17, 2023, https://www.economist.com/business/2023/10/16/are-americas-allies-the-holes-in-its-export-control-fence
[69] *U.S. Updates Export Curbs on AI Chips and Tools to China*, Reuters, March 29, 2024, https://www.reuters.com/technology/us-commerce-updates-export-curbs-ai-chips-china-2024-03-29/.
[70] Ana Swanson, *Biden Targets China's Chip Industry With Wider Trade Bans*, N.Y. TIMES, Dec. 2, 2024, https://www.nytimes.com/2024/12/02/business/economy/biden-china-chips-exports.html.
[71] Jim Gomez, *US Is Constantly Assessing Expansion of Export Controls on Chips that Could Boost China's Military*, AP, March 11, 2024, https://apnews.com/article/us-china-military-export-controls-11971be177fcee42e2ec8fd5a575a66e. Some analysts criticize this policy on the grounds that the size of the yard keeps expanding and that it inadequately considers tradeoffs. *See*, *e.g.*, Kennedy, supra note _.
[72] Foreign-Direct Product (FDP) Rules, 15 C.F.R. § 734.9 (2020).
[73] Palmer, *supra* note 11.
[74] Damely Perez & Kimberly Shi, *Back to the Future: The Committee on Foreign Investment in the United States (CFIUS) Scuppers Another Semiconductor Transaction*, Clifford Chance (Jan. 11, 2022), https://www.cliffordchance.com/insights/resources/blogs/antitrust-fdi-insights/2022/01/cfius-scuppers-another-semiconductor-transaction.html.

pour into U.S. companies—that pose national security risks.[75] Although the committee is chaired by the Treasury Department, the national security bureaucracy also plays an important role in the review process.[76] The institutionalized process has existed since the 1990s, but it had only formally blocked five investment transactions before 2018. That year, CFIUS was bolstered by the Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA), which made it easier for the government to block foreign investments in U.S. businesses involving critical technologies. Such actions can be taken without further congressional approval. As a result, it is now all but impossible for Chinese companies to invest in semiconductor technology in the United States.[77]

The United States has recently turned its attention to outbound investment review. As one expert testified to Congress, addressing only inbound investment left gaping holes in the American regulatory regime: A Chinese entity "can freely solicit American money to develop the technology in [China]. There's no barrier to this at all…. And it's actually the worst outcome, since we are helping China become more self-sufficient."[78] For example, at the same time that U.S. chipmaker Intel is receiving government support, its venture capital arm is reportedly investing in AI start-ups in China, directly undermining U.S. government efforts to limit China's technological capabilities.[79] Congress has not yet been able to agree on a bill to address this issue,[80] but President Biden—drawing on the vast delegated authority under IEEPA—implemented outbound investment review controls in August 2023 through an Executive Order.[81] Recognizing that "certain United States investments may accelerate and increase the success of the development of sensitive technologies" in rival countries, the order applied to advancement in "semiconductors and microelectronics, quantum information technologies, and artificial intelligence capabilities" by "countries of concern."[82] In October 2024, the Treasury Department issued final regulations implementing that order.[83]

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[75] Defense Production Act of 1950, § 721.

[76] CONG. RSCH. SERV., IF10177, *The Committee on Foreign Investment in the United States* (2023), https://crsreports.congress.gov/product/pdf/IF/IF10177/23.https://crsreports.congress.gov/product/pdf/IF/IF10177/23.

[77]Perez & Shi, *supra* note 66; J. Tyler McGaughey, *What Dealmakers Need to Know About CFIUS and Semiconductors*, Winston & Strawn (July 21, 2021), https://www.winston.com/en/blogs-and-podcasts/global-trade-and-foreign-policy-insights/what-dealmakers-need-to-know-about-cfius-and-semiconductors.

[78] Derek Scissors, *Written Statement for the House Select Committee on the Chinese Communist Party on Ensuring U.S. Leadership in the Critical and Emerging Technologies of the 21st Century,* Am, Enterprise Inst. (July 26, 2023), https://selectcommitteeontheccp.house.gov/sites/evo-subsites/selectcommitteeontheccp.house.gov/files/evo-media-document/scc-expert-written-testimony_20230726_derek-scissors.pdf.

[79] *See* Tabby Kinder, et al, *Intel Venture Arm's China Tech Stakes Raise Alarm in Washington*, FIN. TIMES, July 16, 2024.

[80] *U.S. Launches Outbound Investment Screening Targeting China with Further Developments Forthcoming*, Covington & Burling, https://www.cov.com/en/news-and-insights/insights/2023/08/us-launches-outbound-investment-screening-targeting-china-with-further-developments-forthcoming (last visited February 7, 2024); Act of Dec. 12, 2023, Pub. L. No. 118-31 Stat.

[81] Exec. Order No. 14105, *Addressing United States Investments in Certain National Security Technologies and Products*, 88 Fed. Reg. 54867 (Aug. 9, 2023), https://www.federalregister.gov/documents/2023/08/11/2023-17449/addressing-united-states-investments-in-certain-national-security-technologies-and-products-in.

[82] *Id.*

[83] Josh Boak, *Biden Moves to Restrict Investments in China to Protect National Security*, AP NEWS (Aug. 9, 2023), https://apnews.com/article/biden-china-investment-ai-national-security-dd6a5b138e6c7cba31468dc89f776e8d; Press Release, U.S. Dep't of the Treasury, Additional Information on Final

Even though strong executive branch legal powers have been a key enabler of U.S. export controls and investment restrictions, the U.S. government's deployment on another critical tool—industrial subsidies—requires significant congressional action. However, the disbursement of subsidies benefits from another enabling feature of the U.S. system, namely the United States' ability to flexibly shift, as needed, from free-market, anti-statist economic regulation toward more aggressive, national security-based intervention. This rebalancing helps the government design and implement subsidy policies in ways that reflect both ambition and restraint.

Having relied for decades on the power of free markets to govern global chip supply chains, the United States adopted a major policy shift with the CHIPS Act in August 2022.[84] That law aims to incentivize re-shoring key supply chain nodes to the United States and promote domestic industry investments, including manufacturing of both legacy and leading-edge chips. The CHIPS Act provides for $280 billion in funding, of which $53 billion is earmarked for semiconductor research and $39 billion for manufacturing incentives.[85] The Department of Commerce has latitude in deciding which projects will receive funds,[86] and it has tried to use them in ways that also draw in large private investment.[87] CHIPS Act subsidies are, however, doled out with tight strings—often referred to as "guardrails"—to ensure that they are used only in ways that advantage U.S. industry without also aiding China or other states of concern.[88] Despite campaign rhetoric promising to roll back subsidy programs, the Trump Administration is likely to continue them.[89] This turn toward industrial policy holds promise for boosting American production of both older legacy chips and the newest advanced chips, but much of its success for the latter will depend on how effectively it can incentivize the expensive and risky research and long-term investments needed to push forward the leading edge of the sector.[90]

The CHIPS Act is not the first time the U.S. government stepped in to support the advancement of chips. Indeed, federal subsidies were critical to the origination of chips in the 1960s. In that era, Fairchild Semiconductor and Texas Instruments grew and developed their semiconductor business because they had reliable government customers like the Air Force and

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Regulations Implementing Outbound Investment Executive Order (E.O. 14105), (Oct. 28, 2024), https://home.treasury.gov/news/press-releases/jy2690.

[84] Sen. Michael Bennet, *CHIPS and Science Act of 2022 Section-by-Section Summary*, https://www.bennet.senate.gov/public/cache/files/4/0/40919cb4-ff63-4434-8ae2-897a4a026b30/7BCDD84F555A6B85BEC800514F1D3AFD.chips-and-science-act-of-2022-section-by-section.pdf.

[85] The White House, *Fact Sheet: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China*, 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/.

[86] Michael Herrera & Tyler Robbins, *CHIPS Act Allocates $52 Billion in Subsidies to Revitalize Semiconductor Manufacturing*, JD SUPRA (Sep. 2, 2022).

[87] *See* Yuka Hayashi*, Why Washington Went to Wall Street to Revive the U.S. Chips Industry*, Wall St. J., Aug. 25, 2023.

[88] Ana Swanson, *Congress Is Giving Billions to the Chip Industry. Strings Are Attached,* N.Y. TIMES (Aug. 3, 2022).

[89] Dylan Butts, *Trump Likely to Uphold CHIPS Act Despite His Campaign Rhetoric, Policy Experts Say*, CNBC (Nov. 7, 2024), https://www.cnbc.com/2024/11/07/trump-likely-to-uphold-chips-act-despite-his-campaign-rhetoric-experts-say.html; Mackenzie Hawkins, *Trump's Win Sets Off Race to Complete Chip Subsidy Deals*, BLOOMBERG (Nov. 7, 2024), https://www.bloomberg.com/news/articles/2024-11-08/trump-s-win-sets-off-race-to-complete-chips-act-subsidy-deals.

[90] Chris Miller, et al, *To Win the Chip War, the U.S. Must Prioritize Revolutionary Research*, WASH. POST (May 30, 2024).

NASA.[91] In the 1980s, Defense Department initiatives gave government contracts and R&D support to Silicon Valley semiconductor companies.[92] The early use of chips in the military production market allowed for economies of scale that then made semiconductors affordable in the consumer market.[93] Government support then waned in ensuing decades. In later years, the United States lost much of its global market share in semiconductor manufacturing, as market forces pushed U.S. firms to globalize their supply chains and outsource production overseas for greater efficiency.

At first sight, the recent CHIPS Act or the chips subsidies of past decades appear to conflict with the United States' long-standing ideological commitments to free markets, allowing national security intetests to dominate. However, the U.S. government's implemention of the subsidies is still moderated by market-driven instincts. Instead of picking winners or supporting national-champion firms, the U.S. government channels public funding in ways that encourage competition and entrepreneurship.[94] Seen this way, interventionist subsidies take place within an American political system in which free market anti-statism is moderated by security imperatives.

In theory, then, an advantage of the U.S. system is its flexibility to combine varying levels of market-driven innovation with security-driven government intervention, often when the latter is needed to fill market gaps. Although it is impossible to predict exactly where the balance between these pressures will settle, the U.S. system has the potential to combine the virtues of a free-market tech innovation ecosystem with targeted government interventions. As explained below in Part III, this adjustable system proved strategically adaptive in the Cold War and it has the potential to do so again in the ongoing tech war against China.

3. Internal Features as Constraints

The preceding examples show how the American legal system—featuring broad executive branch authority and capacity for flexible rebalancing between free markets and industrial support—endows the United States with potent tools to wage the tech war. However, two main internal features of the U.S. system constrain the use of its tools. The first stems from how legal powers are distributed within the national government: although Congress delegates to the President control of many relevant policy tools, Congress retains significant control over others, including subsidies; and even where Congress has delegated discretion to the President, power within the executive branch is often dispersed. Second, potent industry lobbying frequently compromises policy implementation. Both constraints limit the effectiveness of tech war tools over time.

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[91] Chris Miller, *supra* note 47, at 20-22; Phil Goldstein, *How the Government Helped Spur the Microchip Industry,* FEDTECH MAGAZINE (Sep. 11, 2018), https://fedtechmagazine.com/article/2018/09/how-government-helped-spur-microchip-industry.

[92] Stephen Mihm, *How the Department of Defense Bankrolled Silicon Valley*, Stanford Engineering (reprint of THE CODE) (Jul. 9, 2019), https://systemx.stanford.edu/news/2019-07-09-000000/how-department-defense-bankrolled-silicon-valley; Norman J. Asher & Leland D. Stram, *The Role of the Department of Defense in the Development of Integrated Circuits* (May 1977), https://apps.dtic.mil/sti/tr/pdf/ADA048610.pdf.

[93] *Id.*

[94] *See* BRADFORD*, supra* note _, at 59.

The structural dispersal of power within the U.S. government limits its ability to rely heavily on industrial subsidies. For starters, funding for such programs must come from Congress, meaning that the executive branch has considerably less autonomy and agility than it does in deploying other tools, such as export controls. Industrial policy generally aims to depoliticize economic administration in favor of managerial efficiency, but Congress's electoral orientation toward partisan and local interests means that industrial policy inevitably gets politicized.[95] The CHIPS Act was nearly derailed in Congress by disputes over other government spending, as congressional Republicans attempted to condition industrial subsidies on other spending priorities or cuts.[96] Likewise, Democrats attached progressive agenda items as preconditions for receiving subsidies, including workforce diversity efforts[97] and employer child-care.[98] In return for supporting the Act, legislators also sought to direct subsidies to their home districts, further politicizing the allocation of the funds.[99]

In addition, partisan swings in executive and congressional control make it difficult to reliably maintain subsidy programs.[100] This stands in stark contrast to China which, in the words of former Google CEO Eric Schmidt, "has a CHIPS Act every year."[101] Together, these structural features of the U.S. legal and political system will undermine any U.S. tech war strategy that relies heavily on subsidies over the long term—whether for on-shoring manufacturing of legacy chips or for spurring domestic development of leading-edge ones.

Another structural feature of the U.S. national government constrains its deployment of subsidies and export controls: the dispersed allocation of powers across the executive branch. Key government departments and agencies often lack the resources and clout to aggressively wield the authorities they are delegated.

Due to strong American anti-statist traditions, the executive branch is largely organized to advance free markets; some of the departments central to the tech war have over years been built and staffed around deeply-entrenched commitments to economic globalization. For example, the executive branch lacks any single department devoted to domestic industry; because the United States has resisted top-down industrial policy, it has never, like China, developed agencies

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[95] *See* Robert W. Russell, *Congress and the Proposed Industrial Policy Structures*, THE POLITICS OF INDUSTRIAL POLICY 318, 322-31 (Claude E. Barfield & William A. Schambra, eds., 1986).
[96] Gavin Bade, *In Victory for Democrats, Congress Sends Chip Subsidy Bill to Biden*, POLITICO (July 28, 2022), https://www.politico.com/news/2022/07/28/in-victory-for-democrats-congress-sends-chip-subsidy-bill-to-biden-00048539 [https://perma.cc/JHT6-JEPZ].
[97] Annelies Goger & Banu Ozkazanc-Pan, *The CHIPS and Science Act Won't Build Inclusive Innovation Ecosystems on Its Own*, BROOKINGS INST. (May 3, 2023), https://www.brookings.edu/articles/the-chips-and-science-act-wont-build-inclusive-innovation-ecosystems-on-its-own/.
[98] Katie Lobosco, *America Funded Nationwide child care during WWII. Here's how Biden is trying to revive that effort*, CNN (Apr. 9, 2023, 6:05 AM), https://www.cnn.com/2023/04/09/politics/biden-child-care-chips-law/index.html [https://perma.cc/3PBQ-HXFF].
[99] Ana Swanson, *Schumer Wields Political Heft in Bid for New York Chips Funds*, N.Y. TIMES (Aug. 6, 2023); Cecilia Kang, *How Arizona Is Positioning Itself for $52 Billion to the Chips Industry*, N.Y. TIMES (Feb. 22, 2023); Zolan Kanno-Youngs, Madeleine Ngo & Don Clark, *Intel Receives $8.5 Billion in Grants to Build Chip Plants*, N.Y. TIMES (Mar. 20, 2024).
[100] Christopher A. Thomas, *A Semiconductor Strategy for the United States*, BROOKINGS INST. (2002), https:/www.brookings.edu/wp-content/uploads/2022/11/FP_20221103_semiconductor_strategy.pdf.
[101] David Ignatius, *What if the United States loses the AI race against China?*, WASH. POST (Sep. 13, 2022).

dedicated to government-sponsored managerial efficiency.[102] The CHIPS Act puts the Commerce Department in charge of managing chip subsidies, but for decades, it has instead been focused on promoting American commercial interests through open global trade and investment.[103] True, it has in recent years quickly recruited outside experts to help design and implement chip policies,[104] but it still lags the requisite know-how to carefully target industrial policy to key nodes in rapidly evolving tech supply chains.[105] The department is also responsible for administering export controls—and it has very broad legal authorities to do so—but the relevant bureau lacks the staff to match its increased role in conducting U.S. national security policy.[106] Cumbersome interagency processes also slow deployment of successive rounds of export controls, while also opening many doors for the types of lobbying discussed below.[107] Meanwhile, the Treasury Department is the lead agency for inbound and outbound national security investment restrictions. But, in recent decades, its foreign policy role and expertise has prioritized sustaining the global financial system and promoting the free flow of capital—a mission contrary to strategies heavily reliant on government intervention in markets.[108]

Finally, powerful corporate lobbying also constrains the United States's options for tech war strategy. The role of lobbying is much more powerful in the United States than in China or the EU, as corporate contributions to political campaigns enhance the private sector's control over policymaking. Because for so long U.S. economic policy has been grounded in free-market and pro-globalization thinking, government decisionmakers and advisers are accustomed to deferring heavily to industry views, too. In the tech war, corporate interest groups have multiple arguments, including that related regulation undermines competitiveness and that it undermines American tech innovation.[109] In contrast to the United States, as discussed below, Chinese corporations ultimately remain beholden to the government, and corporate lobbying in the EU is prevalent but less effective due to the limited role of money in elections.

To illustrate the policy implications of corporate influence in the United States, first consider chip subsidies. The vast array of semiconductor companies and their trade associations

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[102] *Cf.* Hugh Heclo, *Industrial Policy and the Executive Capacities of Government,* THE POLITICS OF INDUSTRIAL POLICY 292, 302-10 (Claude E. Barfield & William A. Schambra eds., 1986).

[103] *See* Secretary Penny Pritzker, Exit Memo: A Record of Past Progress and a Roadmap for the Future, Obama White House (Jan. 5, 2017), https://obamawhitehouse.archives.gov/administration/cabinet/exit-memos/department-commerce

[104] *See* Hayashi, *supra* note _; Mackenzie Hawkins, et al, *Ex-Wall Streeters Help Washington Divvy Up $100 Billion to Win the Global Chip Race*, BLOOMBERG, Sept. 25, 2023.

[105] *See* Farrell & Newman, *supra* note _.

[106] *See* Gregory C. Allen, Emily Benson, & William Alan Reinsch, *Improved Export Controls Enforcement Technology Needed for U.S. National Security*, CSIS (Nov. 30, 2022), https://www.csis.org/analysis/improved-export-controls-enforcement-technology-needed-us-national-security; Sujai Shivakumar, Charles Wessner, & Thomas Howell, *Balancing the Ledger: Export Controls on U.S. Chip Technology to China*, CSIS (Feb. 21, 2024), https://www.csis.org/analysis/balancing-ledger-export-controls-us-chip-technology-china.

[107] *Biden's Final Export Controls Misfire?***,** CHINATALK, Dec. 3, 2024, https://podcasts.apple.com/us/podcast/chinatalk/id1289062927?i=1000679067280.

[108] Treasury Deputy Secretary Robert M. Kimmit, *Remarks,* European Inst. (Oct. 27, 2006) https://home.treasury.gov/news/press-releases/hp155, Jacob J. Lew, *America and the Global Economy: The Case for U.S. Leadership*, Foreign Aff. (May/June 2016).

[109] Semiconductor Industry Association, *SIA Comments: Export Controls Should Protect National Security Without Undermining Innovation* (Jan. 26, 2023), https://www.semiconductors.org/sia-comments-export-controls-should-protect-national-security-without-undermining-innovation/.

have lobbied Congress to obtain large pieces of the subsidy pie.[110] Some companies have also pushed to relax conditions that restrict subsidy recipients from expanding their lucrative operations and facilities in China.[111] Here, industry lobbying serves as a double-edged sword for U.S. strategy. On one hand, it can serve as a check on commercially inefficient conditions attached to subsidies—like tight limits on recipients' investments in China. Such restrictions may hurt the U.S. domestic chip industry and thereby directly undermine a key aspect of the U.S. chip war strategy. On the other hand, that same lobbying could undercut legitimate national security efforts aimed at preventing U.S. investment in China's chip industry—undermining another key aspect of U.S. strategy.

Industry lobbying has constrained semiconductor export controls as well as investment restrictions. Major U.S. chip manufacturers like Intel, Qualcomm, and Nvidia have spent many years selling to China, which accounts for significant percentages of their revenue.[112] Nvidia, a U.S. company known for its high-end AI chips, had a 90% share of China's AI chip market prior to the imposition of U.S. export controls.[113] Nvidia's CEO Jensen Huang has stated that, "If we are deprived of the Chinese market, we don't have a contingency for that. There is no other China, there is only one China."[114] Qualcomm, another California-based semiconductor company, is even more dependent on China; the Chinese market comprises 64% of Qualcomm's overall sales. In its annual report to the SEC, Qualcomm notified regulators and investors of its geopolitical risks, writing that "[a] significant portion of our business is concentrated in China, and the risks of such concentration are exacerbated by U.S./China trade and national security tensions."[115]

Industry lobbying, in conjunction with the institutional challenges of congressional law-making mentioned above, has limited efforts to enact new statutory authorities in the area of investment controls. Despite strong support among its members for outbound investment

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[110] Bob Davis et al., *Semiconductor Industry to Lobby for Billions to Boost U.S. Manufacturing*, WALL ST. J. (May 31, 2020) [https://perma.cc/2FZ7-T6YV]; Mackenzie Hawkins, *Biden Issues China Restrictions on Companies Getting Chip Funds*, BROOMBERG (Sep. 22, 2023), https://www.bloomberg.com/news/articles/2023-09-22/biden-issues-china-restrictions-on-companies-getting-chip-funds [https://perma.cc/H7FA-3FAU]; Ana Swanson & Don Clark, Chip Makers Turn Cutthroat in Fight for Share of Federal Money, N.Y. TIMES (Feb. 23, 2023); Brendan Bordelon & Caitlin Oprysko, Everybody in Washington wants a byte of the CHIPS law, POLITICO (Mar. 17, 2023), https://www.politico.com/news/2023/03/17/chips-law-companies-washington-lobbying-00086687.

[111] Zach Schonfeld, *Intel Hiked Lobbying Spending by 65 Percent Amid Chip Subsidies Push*, THE HILL (July 21, 2022), https://thehill.com/lobbying/3568079-intel-hiked-lobbying-spending-by-65-percent-amid-chip-subsidies-push/; Doug Palmer, *Intel, Others Seek Weaker China Rules in Chips Bill*, POLITICO, (July 18, 2022), https://www.politico.com/newsletters/weekly-trade/2022/07/18/intel-others-seek-weaker-china-rules-in-chips-bill-00046278; Semiconductor Indus. Ass'n, *SIA Urges Balanced Approach to Implementation of CHIPS Act Guardrails,* (Mar. 10, 2023), https://www.semiconductors.org/sia-urges-balanced-approach-to-implementation-of-chips-act-guardrails/.

[112] Jenny Leonard & Ian King, *Chip Leaders Head to Washington to Lobby for China Rules Relief*, BLOOMBERG (July 14, 2023), https://www.bloomberg.com/news/articles/2023-07-15/chip-leaders-head-to-washington-to-lobby-for-china-rules-relief?embedded-checkout=true.

[113] *Nvidia is Developing New Chips for China to Comply with US Export Curbs*, CNN (Dec. 6, 2023), https://www.cnn.com/2023/12/06/tech/nvidia-china-chip-development-us-curbs/index.html.

[114]Madhumita Murgia, Tim Bradshaw, & Richard Waters, *Chip Wars With China Risk 'Enormous Damage' to US Tech, Says Nvidia Chief*, FIN. TIMES (May 24, 2023).

[115] Iain Morris, U*.S. Chip Exposure to China Grew Even More Last Year*, LIGHTREADING (Mar. 24, 2023), https://www.lightreading.com/semiconductors/us-chip-exposure-to-china-grew-even-more-last-year.

screening,[116] for example, Congress has been unable to pass a bill. As the *New York Times* explained, "[a] broader proposal in Congress last year to review outbound investments in critical sectors including infrastructure and medicine prompted pushback from groups like the U.S. Chamber of Commerce and the U.S.-China Business Council."[117] The result was the very modest executive order described above, which will likely be watered down further in response to lobbying.[118] Here, again, the open U.S. political system has afforded companies a large role for pushing back against and thereby weakening tech war policies.[119]

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The U.S. system's flexible balance between free-market anti-statism and security-driven market intervention can be a strategic asset in the tech war. Softer-touch regulation than that of its rivals can spur American innovation, and the government can intervene where necessary to boost domestic industry and correct security-related market failures. But although the United States has vast power to deploy subsidies and control trade and investment, its ability to use those tools is restrained by the way its legal powers are dispersed across the national government and curbed by corporate lobbying.

B. China

The Chinese government has pursued a decade-long quest to drive forward science and technological innovation, with Chinese President Xi Jinping calling upon Chinese scientists to "realize high-level scientific and technological self-sufficiency and strength" (*shixian gaoshuiping keji zili ziqiang*).[120] In its efforts to do so, the political leadership of the Chinese Communist Party (CCP) has sought to bring greater swaths of technological development under its direct control.

China's chip policy is strengthened by its centralized political coordination and integrated control over private-sector actors. While the United States also exercises centralized regulatory power, China's authorities operate with nearly unconstrained discretion, lacking the statutory and constitutional bounds embedded in the U.S. legal system. And whereas the United States only intermittently engages in targeted industrial intervention, China extensively practices it. But the Chinese system's focus on party-state control creates opportunities for capture and graft, and inefficient transmittal of information up the government command chain renders the system less responsive to the negative side-effects of its policies.

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[116] *U.S. Launches Outbound Investment Screening Targeting China with Further Developments Forthcoming*, COVINGTON AND BURLING (Aug. 11, 2023), https://www.cov.com/en/news-and-insights/insights/2023/08/us-launches-outbound-investment-screening-targeting-china-with-further-developments-forthcoming; Act of Dec. 12, 2023, Pub. L. No. 118-31.

[117] Ana Swanson & Lauren Hirsch, *U.S. Aims to Curtail Technology Investment in China*, N.Y. TIMES (Feb. 9, 2023), https://www.nytimes.com/2023/02/09/business/us-china-investing-tech-biden.html.

[118] *Id.*

[119] Tripp Mickle et al., *How the Big Chip Makers Are Pushing Back on Biden's China Agenda*, N.Y. TIMES (Oct. 5, 2023)

[120] Xi Jinping, General Secretary, China, Speech Delivered the Third Collective Study Session of the 20th Central Political Bureau: Strengthen Basic Research to Achieve High-Level Scientific and Technological Self-Reliance (Feb. 21, 2023).

Crafted within this state-centered system, Chinese chip strategy focuses on subsidies and state investment as key tools for building the domestic supply chain. The Chinese government also seeks to tighten its grasp over raw materials in the chip supply chain, using export controls and investment review to limit foreign access to minerals essential to semiconductor speed and performance. In short, the Chinese government pursues a strategy unique to its economic structure: the creation of a market comprised of actors within the party-state ecosystem. The government oversees the firms that produce chips and the firms that are their customers, betting on the scale of the Chinese domestic market to compensate for the loss of foreign technology and trade.

1. Top-Down Control and Party-State Capitalism

China's defining internal features are its top-down political structure and its unique form of "party-state capitalism."[121] In the Chinese hierarchical political system, power flows from the top down, creating an "upward accountability" system.[122] At the top of the political system sits the CCP leadership, the Politburo Standing Committee.[123] This central leadership sets policy priorities, which are then transmitted downward through a bureaucratic system of ministries, who in turn exercise oversight over the companies and firms under their purview.[124] All local governments at the province and city levels sit within the Communist Party's chain of hierarchy as well.[125]

The CCP's top-down control not only extends horizontally and vertically through the government, but also into the Chinese economy, in stark contrast to the United States' free-market system. The term "party-state capitalism" refers to the CCP's ability to exert control over private economic activity.[126] The party-state's political survival is posited as the ultimate aim of the economic system, leading to policy choices based on the regime's political strengths and fears.[127] Within this system, the lines between public and private are blurred and often not enforced.[128] Chinese companies must often show fealty to CCP policy priorities in order to survive and have no meaningful capacity to reject government directives, as there is no independent judicial review or other forms of check on the government's regulatory authority. Successful corporations often depend on extensive ties to the state to flourish. These two distinctive features—top-down political control and party-state capitalism—have resulted in a chip-war strategy that centers the state as a provider of subsidies and other forms of state investment.

But the Chinese system does not operate in isolation—China's national chip strategy is also molded by the need to respond to U.S. legal measures. In recent years, Chinese chip firms have shifted away from investing in tech companies abroad and focused instead on domestic supply

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[121] Margaret Pearson, Meg Rithmire, and Kellee S. Tsai, *Party-State Capitalism in China*, CURRENT HISTORY 207 (2021).
[122] ANGELA HUYUE ZHANG, HIGH WIRE: HOW CHINA REGULATES BIG TECH AND GOVERNS ITS ECONOMY 10 (2024).
[123] *Id.* at 9.
[124] *Id.* at 10.
[125] *Id*.
[126] Pearson, *supra* note 114, at 209 (noting that three key developments in creating this system included further encroachment by the party-state on the economy, the blurring of state and private sectors, and demands for political fealty from firms).
[127] *Id.*
[128] *Id.* ("[S]tate versus capital, public versus private—party-state capitalism displays a novel blending of state power and firm organization, funding, and activities, a mixture that renders such dyads increasingly irrelevant.").

chains and markets. A decade ago, China's strategy centered around state-driven investment in *foreign* markets: Chinese investment into U.S. tech companies peaked at $9.9 billion in 2015.[129] During that time, Chinese state-backed investment firms successfully acquired multiple American chip-related companies and poured money into Silicon Valley.[130] In 2016, AMD, one of America's biggest semiconductor companies, entered into a joint venture agreement to help a Chinese partner firm develop key chip technologies.[131] Chinese chip strategy thus aimed to buy from and collaborate with Western companies.

After a few years, however, foreign perception caught up to the fact that there is often not much meaningful separation between the Chinese state and a private tech company. Starting around 2018, the Trump administration stepped up CFIUS enforcement against Chinese-U.S. tech deals, blocking transactions related to semiconductors.[132] Shortly thereafter, the U.S. Commerce Department restricted exports to Huawei.[133] U.S. and EU policymakers' concern over Chinese state involvement in tech acquisitions became a major source of tensions in the global tech war. As discussed *supra* in Part II(A) and *infra* in Part II(C), these concerns triggered major policy changes in the United States and Europe to respond to the perceived national security threat posed by Chinese foreign investment.

These new restrictions spurred China's development of the "domestic-international dual circulation" strategy (*guonei guoji shuang xunhuan*).[134] In April 2020, President Xi first mentioned the idea that the Chinese economy will expand its reliance on "internal circulation"—*i.e.*, domestic consumption and production—in a shift away from international supply chains and export-led growth.[135] The strategy still aims to keep "external circulation" open, but sought to minimize China's vulnerability to future U.S.-led trade disruptions.[136] Additionally, as the tech war heated

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[129] Cory Bennett and Bryan Bender, *How China Acquires the Crown Jewels of U.S. Technology*, Politico (May 22, 2018), https://www.politico.com/story/2018/05/22/china-us-tech-companies-cfius-572413.

[130] Yangpeng Zheng, *China's State-Backed Private Equity Starts a Fund to Buy Out Distressed Debt, Take Advantage of Nation's Delveraging Campaign*, South China Morning Post (May 9, 2019), https://www.scmp.com/business/companies/article/3009531/chinas-state-backed-private-equity-starts-fund-buy-out.

[131] Kate O'Keefe and Brian Spegele, *How a Big U.S. Chip Maker Gave China the 'Keys to the Kingdom*,' Wall St. J. (June 27, 2019), https://www.wsj.com/articles/u-s-tried-to-stop-china-acquiring-world-class-chips-china-got-them-anyway-11561646798.

[132] *See, e.g.*, *CFIUS Prepares to Block Semiconductor Sale to Chinese Entity*, Morrison Foerster (Sept. 3, 2021), https://www.mofo.com/resources/insights/210903-cfius-semiconductor-chinese-entity;

[133] Press Release, Commerce Addresses. Huawei's Efforts to Undermine Entity List, Restricts Products Designed and Produced with U.S. Technologies, Dept. of Com. (May 15, 2020), https://2017-2021.commerce.gov/news/press-releases/2020/05/commerce-addresses-huaweis-efforts-undermine-entity-list-restricts.html.

[134] Speech by President Xi Jinping, Certain Major Issues for Our National Medium- to Long-Term Economic and Social Development Strategy[国家中长期经济社会发展战略若干重大问题] (Guojia zhongchangqi jingji shehui fazhan zhanlue ruogan zhongda wenti), translated by the Center for Security and Emerging Technology, published Nov.1, 2020, speech given April 10, 2020, https://cset.georgetown.edu/wp-content/uploads/t0235_Qiushi_Xi_economy_EN-1.pdf.

[135] *Id.*; Kevin Yao, *Explainer: What We Know About China's 'Dual Circulation' Economic Strategy*, WORLD ECON. FORUM (Sept. 14, 2020), https://www.weforum.org/agenda/2020/09/chinas-dual-circulation-economic-strategy/.

[136] Yu Yongding, *Dual Circulation Strategy, a Necessary Adjustment*, CHINA DAILY (Nov. 16, 2023), https://www.chinadaily.com.cn/a/202311/16/WS65558fffa31090682a5ee85a.html ("The rapid deterioration of the Sino-US relationship and the US' sudden instigation of a trade war against China in 2017 have significantly added to the urgency for China to adjust its development strategy and trade policies.").

up, Chinese policymakers began to refer to the "new whole-nation system" (*xinxing juguo tizhi*).[137] This is a whole-of-society, mass mobilization approach to technology development under an authoritarian system. The concept is a rhetorical callback to the 1950s-1970s planned-economy innovation system associated with the development of China's nuclear and satellite technologies, with "the central state … extract[ing] resources from all sectors" to spearhead scientific breakthroughs.[138] The new system adapts this idea of socialist innovation to China's contemporary, more-market-focused economy and to the priorities of the tech war.[139]

Further escalations of U.S. export controls in October 2022 led President Xi to issue a call to action: "We will focus on national strategic needs, gather strength to carry out indigenous and leading scientific and technological research, and resolutely win the battle in key core technologies."[140] Now in the battle for chip self-sufficiency, Chinese policymakers wield the tools of party-state capitalism to support Chinese corporations. By operating in the government-favored chip industry and advancing the government's pursuit of self-sufficiency, Chinese chip companies benefit from access to capital and fast-tracked regulatory approval. In addition to direct subsidies, the Chinese state has provided other forms of state aid to companies, including low-interest loans, tax breaks, discounted real estate, and more.[141] In contrast to the U.S. system's tug-of-war between state and market, the Chinese state-and-market relationship operates more as a hierarchy: the state instructs the market on its priorities and the market complies. The following sections address the benefits and drawbacks of such an approach.

2. Internal Features as Enablers

The Chinese government's chip policy takes advantage of two key enablers in its governing structure: centralized coordination of its industrial policy strategy and nearly unfettered regulatory power over the private sector.

First, the consolidation of power in the CCP allows the central government to direct key actors in executing industrial policy plans: government ministries, local governments, and both state-owned and private enterprises. These layers of control come together to empower the scale, longevity, and reach of China's chip subsidies.

In 2014, the State Council published the Outline for Advancing the National Integrated Circuit Industry, laying out a plan to "accelerate the development of the integrated circuit industry

[137] Xiao Tan and Yao Song, *China's 'Whole Nation' Effort to Advance the Tech Industry*, THE DIPLOMAT (Apr. 21, 2022), https://thediplomat.com/2022/04/chinas-whole-nation-effort-to-advance-the-tech-industry/.
[138] Lin Zhang & Tu Lan, *The New Whole State System: Reinventing the Chinese State to Promote Innovation*, 55 ENVIRON. PLAN A. 201, 204-05 (2023).
[139] Barry Naughton et al., *Reorganization of China's Science and Technology System* 1–40 (UC Inst. of Conflict and Coop., Working Paper, 2023).
[140] John Liu & Gao Yuan, *China's Xi Pledges Victory in Tech Battle After US Chip Curbs*, Bloomberg (Oct. 16, 2022, 1:24 AM), https://www.bloomberg.com/news/articles/2022-10-16/china-s-xi-pledges-victory-in-tech-battle-after-us-chip-curbs; Eduardo Baptista, *Key Xi quotes at China's 20th Communist Party Congress*, Reuters (Oct. 16, 2022, 3:14 AM), https://www.reuters.com/world/china/key-xi-quotes-chinas-20th-communist-party-congress-2022-10-16/.
[141] *Taking Stock of China's Semiconductor Industry,* SEMICONDUCTOR INDUS. ASS' (Jul. 13, 2021), https://www.semiconductors.org/taking-stock-of-chinas-semiconductor-industry/.

in China."[142] The Outline notes that "[t]here is still a relatively large gap in the development of the industry compared with that of advanced countries."[143] Two of the Outline's key to-do items depict core features of the Chinese political structure that have been central to the country's chip war strategy.

First, the Outline states that China should form "a national integrated circuit industry development leading group" that will be "responsible for top-level coordination, top-level planning, [and] top-level resource allocation."[144] The emphasis on "top-level planning" foreshadowed the creation of the Central Science and Technology Commission (CSTC). Launched in 2023, the CSTC functions as a "super-agency," overseeing all science and technology policy and centralizing the implemention of the new whole-nation system.[145] While government ministries like the Ministry of Science and Technology operate under the State Council within defined jurisdictions, the CSTC, in contrast, has overarching authority as a Party body and can supervise decisions across ministries, agencies, and local governments.[146] The creation of the CSTC reflects a broader trend in the Party's history of turning to centralization when facing "acute external security threats." The Party previously created high-level technology advancement committees when under international sanctions, including in the wake of the 1989 Tiananmen Square crackdown.[147] The revival of the idea demonstrates the high political priority the Party sets on developing domestic self-sufficiency as a counter to U.S. sanctions.

Second, the 2014 Outline directed the government to set up a national chip industry investment fund.[148] That year, the Chinese government established the first phase of the "Big Fund," the colloquial name for its chip investment reservoir.[149] The Big Fund invests in companies along the semiconductor supply chain, with most of the spending going towards the building of

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[142] Guójiā jíchéng diànlù chǎnyè fāzhǎn tuījìn gāngyào (**国家集成电路产业发展推进纲要**)[Outline for Advancing National Integrated Circuit Industry](promulgated by the State Council, June 6, 2014, effective June 6, 2014) ST. COUNCIL GAZ. June 6, 2014, https://www.lawinfochina.com/display.aspx?id=26681&lib=law.
[143] *Id.* at Article I.
[144]World Trade Organization, *Guideline for the Promotion of the Development of the National Integrated Circuit Industry*, (2014).
[145] Barry Naughton, Tai Ming Cheung, Siwen Xiao, Yaosheng Xu, and Yujing Yang, *Reorgnization of China's Science and Technology System*, UC Institute on Global Conflict and Cooperation (Working Paper No. 10), July 2023; Wang Xueying, *China Reshuffles its Research and Development*, EAST ASIA FORUM (Aug. 16, 2023), https://eastasiaforum.org/2023/08/16/china-reshuffles-its-research-and-development/; Charles Mok, *The Party Rules: China's New Central Science and Technology Commission*, THE DIPLOMAT (Aug. 23, 2023), https://thediplomat.com/2023/08/the-party-rules-chinas-new-central-science-and-technology-commission/.
[146] Naughton, *supra* note __, at 12.
[147] Naughton, *supra* note __, at 7.
[148] WTO, *supra* note 123.
[149] Laure He, *China is pumping another $47.5 billion into its chip industry*, CNN (May 28, 2014, 1:19 AM), https://www.cnn.com/2024/05/27/tech/china-semiconductor-investment-fund-intl-hnk/index.html. *Taking Stock of China's Semiconductor Industry,* SEMICONDUCTOR INDUS. ASS' (July 13, 2021), https://www.semiconductors.org/taking-stock-of-chinas-semiconductor-industry/; Julie Zhu, Kevin Huang, Yelin Mo & Roxanne Liu, *Exclusive: China to launch $40 billion state fund to boost chip industry,* REUTERS (Sept. 5, 2023, 6:31 AM EDThttps://www.reuters.com/technology/china-launch-new-40-bln-state-fund-boost-chip-industry-sources-say-2023-09-05/

fabs and the purchasing of domestic semiconductor equipment.[150] In May 2024, China set up the latest iteration of the Fund, allocating a $47.5 billion boost to the semiconductor industry.

The Fund draws heavily from and is largely controlled by three major constituencies: government ministries, municipal governments, and state-owned banks. The Ministry of Finance is the biggest shareholder in the Fund.[151] The Shenzhen, Beijing and Shanghai governments each contributed through their investment firms,[152] alongside capital committed by five state-owned banks.[153] The State Council commented on the investment in a press release, stating: "This investment represents a strategic deployment that is in line with the nation's key policies for the development of the integrated circuit industry."[154] These entities function as the state's levers over capital in the Chinese economy.

The government's industrial interventions also extend to the recipients of the subsidies. China's chip subsidies frequently go to firms like Huawei and the Semiconductor Manufacturing International Corporation. These are well-known "national champion" firms, a title that sharply contrast with the U.S. aversion to designating specific firms as instruments of the state. As one news account described, "Huawei's assignment to lead the national team in chip manufacturing was a direct order from top central government officials."[155] As discussed *infra*, the state also has other non-monetary ways of encouraging Huawei's economic success, such as by requesting that other Chinese tech conglomerates buy and use Huawei chips.

Finally, the Chinese government focuses on an invest-and-subsidize strategy because it is well-practiced in executing such policies. Whereas the U.S. CHIPS Act seeks to revive dormant systems in the United States—or construct new ones—China has a legal system in place that has facilitated similar projects for decades. Perhaps the most famous example is the Made in China 2025 plan, which utilizies "government industrial guidance funds" (*zhengfu chanye yindaoji*) to spur investment in "core and critical technologies" (*hexin guanjian jishu*). The program has experimented with professionally-managed private equity funds making investments on behalf of the state.[156] Such investments are described as "market driven, government guided."[157] A former head of the Big Fund described its strategy as essentially investing in key enterprises at each step in the industrial chain, focusing on the top three companies in that sector.[158] Furthermore, China can provide indirect forms of monetary support that are not practically available in the United

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[150] Julie Zhu, *Exclusive: China readying $143 billion package for its chip firms in face of U.S. curbs*, REUTERS (Dec. 14, 2022, 3:28 AM GMT), https://www.reuters.com/technology/china-plans-over-143-bln-push-boost-domestic-chips-compete-with-us-sources-2022-12-13/.

[151] *China sets up third fund with $47.5 bln to boost semiconductor sector*, REUTERS (May 27, 2024, 9:12 AM GMT), https://www.reuters.com/technology/china-sets-up-475-bln-state-fund-boost-semiconductor-industry-2024-05-27/.

[152] Yuan Gao, *China creates $47.5 billion chip fund to fuel self-resilience*, THE JAPAN TIMES (May 28, 2024), https://www.japantimes.co.jp/business/2024/05/28/china-chip-fund-self-resilience/; Shunsuke Tabeta, *China launches $47bn chip fund to counter U.S. restrictions*, NIKKEI ASIA (May 27, 2024, 6:23 PM JST), https://asia.nikkei.com/Spotlight/Supply-Chain/China-launches-47bn-chip-fund-to-counter-U.S.-restrictions.

[153] China sets up third fund with $47.5 bln to boost semiconductor sector, *supra* note 131.

[154] *Six banks to invest in big way in IC fund*, THE STATE COUNCIL: THE PEOPLE'S REPUBLIC OF CHINA (May 29, 2024, 10:47 AM), https://english.www.gov.cn/news/202405/29/content_WS66569746c6d0868f4e8e7987.html.

[155] Antonia Hmaidi, *Huawei is quietly dominating China's semiconductor supply chain*, MERICS (Apr. 9, 2024), https://merics.org/en/report/huawei-quietly-dominating-chinas-semiconductor-supply-chain.

States or the EU. For example, the Chinese government owns all the land in its economy and parcels can be sold at preferential prices to favored firms, like those pursuing chip projects.[159]

Chinese chip strategy is also enabled by the government's rule-by-decree relationship with the private sector and its control over access to the Chinese market, as evidenced by its foreign investment structure. Since 1995, China has issued catalogues of regulations governing foreign investment, encouraging some projects while prohibiting others. In 2013, for example, the government listed 190 economic sectors as "restricted" or "prohibited" for purposes of foreign investment.[160] While the list of restricted sectors has generally winnowed over time, rare-earth minerals—which are crucial to improving semiconductor speed and performance—remain off-limits.[161] China identified rare-earth minerals as a "strategic resource" in 1990 and foreign investment in the sector is still prohibited under China's current list of investment restrictions.[162]

Going even further, the State Council published a new set of Rare Earth Management Regulations in June 2024. Those rules state: "Rare earth resources belong to the state. No organization or individual may encroach upon or destroy rare earth resources."[163] The Regulations place the nationwide management of the rare-earth industry under the supervision of the State Council and note that the "import and export of rare earth products and related technologies, processes and equipment" must comply with relevant export controls.[164] Such actions are consistent with China's dual circulation strategy, which emphasizes domestic control over both raw materials and the processing capability needed to support high-value domestic production.[165]

While the United States began the chip war from a free-market default—previously allowing foreign private investment nearly across the board—China started the chip war with extensive limits on private sector activity already in place and has only continued to expand them.[166] In retaliation against U.S. export controls, the Chinese government has imposed export restrictions on critical minerals for chip production. In 2023, China began requiring exporters to obtain a license to ship some gallium and germanium compounds and, at the end of 2024, escalated these restrictions by banning exports of gallium, germanium, and antimony to the United States.[167]

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[159] ORIANA SKYLAR MASTRO, UPSTART 166 (2024).
[160] Amigo L. Xie, Frank Voon, and Carrie Yijia Luo, *China's 'New' Foreign Investment Law*, K&L GATES HUB (Mar. 16, 2020), https://www.klgates.com/The-New-Foreign-Investment-Law-of-China-03-16-2020.
[161] Mining the Future: How China is Set to Dominate the Next Industrial Revolution, FP Analytics Special Report (May 2019), at 10, https://www.congress.gov/116/meeting/house/109423/documents/HMTG-116-II06-20190509-SD002.pdf.
[162] *Id.* at 7;
[163] Xitu Guali Tiaojian [稀土管理条例] [Rare Earth Mineral Regulations], June 22, 2024, Art 4, https://www.gov.cn/zhengce/content/202406/content_6960152.htm.
[164] *Id.* at Art. 7, Art. 15.
[165] Kristin Vekasi, *Green Technology, National Security, and Raw Materials: Economic Security and Critical Rare Earth Minerals*, Harvard Program on U.S.-Japan Relations Occassional Paper Series, at 22 (2022), https://us-japan.wcfia.harvard.edu/sites/projects.iq.harvard.edu/files/us-japan/files/22-vk_vekasi_kristin.pdf.
[166] Doing Business in a Reopened China, Junhe Legal Updates (April 4, 2023), https://www.junhe.com/legal-updates/2113?locale=en.
[167] Shangwu Bu: Haiguan Zong Shu Gonggao 2023 Nian Di 23 Hao Guanyu Dui Jia, Zhe Xiangguan Wu Xiang Shishi Chukou Guanzhi de Gonggao (商务部 海关总署公告 2023 年第 23 号 关于对镓、锗相关物项实施出口管制的公告]), [Ministry of Commerce and General Administration of Customs Announcement No. 23 of 2023, Announcement on the Implementation of Export Controls on Items Related to Gallium and Germanium] (released by the Ministry of Commerce of P.R.C., July 3, 2023)

China has also used other legal tools to retaliate against U.S. firms, including antitrust investigation and cybersecurity review. The Chinese government banned Micron chips from being used in Chinese critical information infrastructure due to alleged cybersecurity risks and opened an antitrust probe into Nvidia, accusing the company of violating a prior commitment to sell chips in the Chinese market.[168] These actions collectively signal the Chinese government's use of a wide range of legal authorities to open and close the Chinese market at will.

In sum, the Chinese government utilizes the systems of party-state capitalism to direct the flow of goods in the global chip supply chain. China's state-centric system enables its chip strategy focused on domestic investment because the government is ready to reshape its economy from day one. While the United States and EU face fresh questions about the scale and scope of subsidies, China has experimented with forms of allocating state capital to the chip sector for over a decade. The Chinese government can also select its choice of legal instrument—ranging from foreign investment to antitrust law—to restrict and control access to the Chinese market. The government's high degree of baseline regulatory power over the private sector facilitates its efforts to retain control over critical minerals and retaliate against U.S. firms.

3. Internal Features as Constraints

Centralized control, however, does not mean effective control. Over the past decade, China's chip industrial policy has been littered with examples of failures. The extraordinary power wielded by those who run the Big Fund has attracted graft and corruption. City-level initiatives

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http://www.mofcom.gov.cn/article/zwgk/gkzcfb/202307/20230703419666.shtml (last visited Jan. 11, 2025); Clement Tan, *China slaps export curbs on chipmaking metals in tech war warning to U.S., Europe,* CNBC (Jul. 7, 2023, 11:22 PM), https://www.cnbc.com/2023/07/04/china-imposes-export-curbs-on-chipmaking-metals-in-tech-war-with-the-us.html; Shangwu Bu Gonggao 2024 Nian Di 46 Hao Guanyu Jiaqiang Xiangguan Liangyong Wu Xiang Dui Meiguo Chukou Guanzhi de Gonggao (商务部公告 2024 年第 46 号 关于加强相关两用物项对美国出口管制的公告) [Ministry of Commerce Announcement No. 46 of 2024, Announcement on Strengthening Export Control of Relevant Dual-use Items to the United States] (released by the Ministry of Commerce of P.R.C., December 3, 2024) https://aqygzj.mofcom.gov.cn/flzc/gzjgfxwj/art/2024/art_daaa02c05d8946179dcf5d1ba499ac46.html; James Temple, *What China's Critical Mineral Ban Means for the US*, MIT TECH. REV. (Dec. 6, 2024), https://www.technologyreview.com/2024/12/06/1108020/what-chinas-critical-mineral-ban-means-for-the-us/

[168] Meiguang Gongsi Zai Hua Xiaoshou Di Chanpin Wei Tongguo Wangluo Anquan Shencha (美光公司在华销售的产品未通过网络安全审查) [Micron Products Sold in China Failed to Pass Cybersecurity Review] (published by the Cyberspace Administration of China, May 21, 2023), https://www.cac.gov.cn/2023-05/21/c_1686348043518073.htm; Loudong Pinfa, Guzhanglu Gao Ying Xitong Paicha Yingte'er Chanpin Wangluo Anquan Fengxian (漏洞频发、故障率高 应系统排查英特尔产品网络安全风险) [Frequent Vulnerabilities and High Failure Rates: There Must be Systemic Investigation of Intel Products' Network Security Risks] (posted by the Cybersecurity Ass'n of China, Oct. 16, 2024), https://mp.weixin.qq.com/s/rgRmOfoPr7x1TZhyb-1ifg; Dylan Butts, *Intel Faces Headwinds in China as Trade Body Calls for Security Probe*, CNBC (Oct. 17, 2024), https://www.cnbc.com/2024/10/17/intel-faces-headwinds-in-china-as-trade-body-calls-for-security-probe.html#:~:text=Intel%20products%20sold%20in%20China,serious%20risks%22%20to%20national%20security.; Liam Mo and Brenda Goh, *China Targets Nvidia with Antitrust Probe, Escalates US Chip Tensions*, REUTERS (Dec. 10, 2024), https://www.reuters.com/technology/china-investigates-nvidia-over-suspected-violation-antimonopoly-law-2024-12-09/; Lester Ross, Kenneth Zhou, and Neena Shenai, *China Imposes Series of Measures to Counter US Export Restrictions*, WILMERHALE (Dec. 26, 2024), https://www.wilmerhale.com/en/insights/client-alerts/20241223-china-imposes-series-of-measures-to-counter-us-export-restrictions

have ground to a halt due to underfunding and government-backed corporations have gone bankrupt. Regulatory capture, faulty information flows, and overly rigid directives will likely continue to undermine China's chosen chip strategy.

Curtis Milhaupt and Wentong Zheng have identified "the degree of state intervention and porousness of its institutions" as two reasons why the Chinese state is vulnerable to capture in ways that weaken its state-investment strategy.[169] First, they argue, the sheer size of China's economy increases the opportunities and payoffs from capture. Second, the Chinese state lacks procedural checks on the allocation of state largesse.[170] Under party-state capitalism, firms are incentivized to remain close to the party to receive its protection and its potential benefits.[171] Being in the good graces of the party leads to gaining economic benefits, like cheap capital; being out of favor leads to regulatory penalties. These interconnections—and the lack of procedural checks on government policymaking—create opportunities for graft and kickbacks.

Take, for example, Tsinghua Unigroup—a Chinese state-owned enterprise that offered to buy the U.S. chip firm Micron in 2015.[172] Tsinghua Unigroup received financial backing from the state as it pursued the buying of semiconductor expertise from abroad. But in 2021, the company went bankrupt and, the following year, three of its executives were placed under investigation for corruption.[173] The prosecution charged the company's head with using his power to buy services from favored firms at prices significantly above market, resulting in hundreds of millions of yuan in economic losses to the state.[174] Three other major chip executives—including the former head of the Big Fund—were also publicly removed from their posts for corruption in 2022.[175]

The Tsinghua Unigroup bankruptcy and the Big Fund corruption scandal illustrate how corruption and capture cause setbacks for China's chip industrial policy. Although large sums of capital were raised in both endeavors, it became apparent that significant portions of the funds were not efficiently directed towards the pursuit of chip technology. The influx of capital and incentives in the sector may also lead to inefficient over-investment. In 2020, more than 50,000 new Chinese companies in the semiconductor industry were registered, triple the number in 2015.[176] Government funding may be incentivizing some sub-par companies to flood the market, rather than fostering innovation.

China's system of centralized control also falters because those who are at the top lack the requisite information to make up-to-date and nimble choices. This complicates China's ability to wage the chip war through command-and-control policies. Angela Zhang has analyzed the Chinese government's inefficient information-transmission system. In order for key government actors to make decisions on tech strategy, they must first receive timely and accurate information about the

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[169] Curtis J. Milhaupt and Wentong Zheng, *Beyond Ownership* (Geo. L. J. Working Paper, Paper No. 251/2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2413019 at 689.
[170] *Id.* at 691.
[171] *Id.* at 691-92.
[172] Simon Sharwood, *Beijing Bails Out Bankrupty Chinese Chipmaker Tsinghua Unigroup*, THE REGISTER (Apr. 5, 2022), https://www.theregister.com/2022/04/05/beijing_bails_out_tsinghua_unigroup/.
[173] Zeyi Yang, *Corruption is sending shock waves through China's chipmaking industry,* MIT TECHNOLOGY REVIEW (Aug. 5, 2022), https://www.technologyreview.com/2022/08/05/1056975/corruption-chinas-chipmaking-industry/.
[174] *Id.*
[175] *Id.*
[176] *China's Tech Giants have Chip Ambitions, Too*, WSJ, Jacky Wong, Mar. 30, 2021.

effects of their policy decisions.[177] But the CSTC sits at the top of the government's hierarchical pyramid—close to the central Politburo and far from the local officials who might see a policy's effects first. Those actually implementing chip policies may be hesitant to transmit bad news upwards, creating an information lag where the central government's decision-making is divorced from realities on the ground.[178]

This information lag can be especially problematic when China's chip policies play out in ways that are unforeseen by the central government—an issue most salient in areas, like chips, where technology develops rapidly. The government's initial call to action in the Big Fund illustrates this. The central government encouraged localities to get involved in the semiconductor sector. In 2014, after the publishing of the Outline and the announcement of the Big Fund, a rush of Chinese cities unveiled initiatives to support the chip sector.[179] But the political leadership failed to foresee that city governments may over-implement the directive.[180] Cities rapidly invested in chip projects that were not well-developed, and which fell apart shortly thereafter. For example, projects in Wuhan, Chengdu, and Nanjing faltered and stalled as they ran out of funds or went bankrupt.[181] After years of costly failures, the central government appears to have finally revised its policy. In the latest round of the Big Fund, only three megacities—Shenzhen, Beijing, and Shanghai—were included.[182]

But even as the government has "fixed" one aspect of its chip policy, the over-investment pattern continues to repeated itself. After a government mandate to boost AI computing power as a "new economic catalyst," China is now seeing a glut of data centers. As of 2024, hundreds of newly built data centers now sit idle in provincial areas. [183]The centers remain unused in part because they were ordered to prioritize the use of Chinese-made chips, which can be difficult to configure and are only compatible with certain AI models.[184] These repeat failures indicate a structural issue within the Chinese system—the difficulty of translating government mandates into effective technologies, rather than short-term booms and busts.

The government has now embraced a "Delete A" policy that asks Chinese firms to delete American-made technology from their supply chains. This national effort to minimize vulnerability to U.S. sanctions may be difficult to implement in practice. [185] In September 2022, Chinese government officials issued a government directive requiring state-owned companies to

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[177] Milhaupt & Zheng, *supra* note 154, at 13.
[178] *Id.* at 14.
[179] *Beijing Push to Support Rapid Growth in Chip Industry*, SCMP, Bien Perez, Dec. 30, 2014.
[180]Milhaupt & Zheng, *supra* note 154, at 13.
[181] *Wuhan Push on Chips Stalls as Funding Dries Up*, SCMP, Sidney Leng and Orange Wang, Aug. 28, 2020.
[182] Yuan Gao, *China's Betting Nearly $48 Billion on Renewed Chip Tech Plan*, BLOOMBERG (May 28, 2024, 1:04 PM GMT), https://www.bloomberg.com/news/newsletters/2024-05-28/is-a-48-billion-chip-fund-enough-for-china-to-withstand-us-sanctions.
[183] Che Pan, *Tech War: China Sees Glut of AI Data Centres as GPU Mismatches Exacerbate Weak Demand*, S. CHINA MORNING POST (Oct. 11, 2024), https://www.scmp.com/tech/article/3281894/tech-war-china-sees-glut-ai-data-centres-gpu-mismatches-exacerbate-weak-demand?module=perpetual_scroll_1_RM&pgtype=article; *China Beefs Up Computing Power as New Economic Catalyst*, XINHUA (July 7, 2024), https://english.www.gov.cn/news/202407/07/content_WS668a8075c6d0868f4e8e8f76.html
[184] Pan, *supra* note __.
[185] Ma Si and Yang Cheng, *AI Data Training Center Supported by Domestic Chips, Supercomputers*, CHINA DAILY (April 30, 2024), https://www.chinadaily.com.cn/a/202404/30/WS6630274ba31082fc043c4bb6.html.

replace foreign software in their IT systems by 2027.[186] In the aftermath of the December 2024 U.S. export controls, four Chinese industry associations urged Chinese companies to stop using U.S. chip products because they are "no longer reliable or safe."[187] The China Association of Automobile Manufacturers, for example, stated that U.S. export controls have shaken the Chinese car industry's "trust and confidence" in U.S. chips.[188] The Ministry of Industry and Information Technology has separately requested that major Chinese carmakers like SAIC Motor and BYD increase their procurement of Chinese-made auto chips to 20-25%.[189]

While still in its early stages, the difficulties inherent in "Delete A" illustrate the internal contradictions of China's tech development strategy. The Chinese government's industrial plans aim to aggressively push forward "new quality productive forces" (*xinzhi shengchanli*) in "future industries" (*weilai chanye*).[190] The future industries highlighted—including EVs and AI—are some of the most chip-intensive and currently rely on China's continued access to American chip suppliers.[191] The trade associations representing those industries have coordinated to voice support for the "Delete A" initiative—but such enthusiasm could once again lead to reluctance to describe the true difficulties posed by the policy and hinder a timely assessment of the policy's positive and negative effects.

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Despite its heavy emphasis on state investment, China continues to lag behind the world's leading edge in chip technology and fall short of its own self-sufficiency goals.[192] In its Made in China 2025 blueprint, China aimed to produce 40% of its own chips by 2020 and 70% by 2025. As of 2023, China produced less than 20% of its own chips.[193] When faced with the tradeoff between order and innovation, the Chinese leadership has repeatedly chosen order—and continues to do so under its current chip agenda. The state's chosen policies highlight the "inherent tensions … between the state's extra-economic responsibilities and [the] market's profit-maximization

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[186] Lisa Lin, *China Intensifies Push to Delete American Tech*, WALL ST. J., (Mar. 8, 2024).

[187] Eduardo Baptista and Brenda Goh, *US Chips are 'No Longer Safe,' Chinese Industry Bodies Say in Latest Trade Salvo*, REUTERS (Dec. 4, 2024), https://www.reuters.com/technology/chinese-firms-should-diversify-chip-sources-internet-society-china-says-2024-12-03/; Shengming (声明) [Statement] (published by the China Ass'n of Comm. Enters., Dec. 3, 2024), https://www.cace.org.cn/NEWS/COUNT?a=5992; Shengming (声明) [Statement] (published by the Internet Soc'y of China, Dec. 3, 2024), https://www.isc.org.cn/article/23033267061780480.html; Shengming (声明) [Statement] (published by the China Semiconductor Industry Ass'n, Dec. 3, 2024), https://web.csia.net.cn/newsinfo/7815648.html

[188] Shengming (声明) [Statement] (published by the China Ass'n of Automobile Manufacturers, Dec. 3, 2024), http://www.caam.org.cn/chn/1/cate_148/con_5236592.html

[189] Cheng Ting-Fang et al., *China asks carmakers to use up to 25% local chips by 2025*, FINANCIAL TIMES (May 23, 2024), https://www.ft.com/content/98a50ed8-1265-4f31-986f-6c874bc815f0.

[190] Arthur R. Kroeber, *Unleasing "New Quality Productive Forces": China's Strategy for Technology-Led Growth*, Brookings Inst. (June 4, 2024), https://www.brookings.edu/articles/unleashing-new-quality-productive-forces-chinas-strategy-for-technology-led-growth/.

[191] Liza Lin and Raffaele Huang, *Beijing Pushes to Use China-Made Chips in Its EVs*, WALL ST. J. (Dec. 31, 2024), https://www.wsj.com/tech/beijing-pushes-to-use-china-made-chips-in-its-evs-d89212de.

[192] *See supra* Part I.A.

[193] Eve Register, *Can China Leapfrog ASML in Its Quest for Semiconductor Self-Reliance?,* THE DIPLOMAT (Oct. 12, 2023), https://thediplomat.com/2023/10/can-china-leapfrog-asml-in-its-quest-for-semiconductor-self-reliance/.

logic." [194] China's system seeks to harness market-based innovation—through government investment and national-champion firms—in service of the state's self-sufficiency agenda. But its stringent control over economic decisionmaking—with extensive restrictions on inbound investment, exports, and more—could box in economic actors and leave them with limited room to pursue their own growth.

C. The European Union

The EU most notably differs from the United States and China in its constitutional structure. The EU is not a federal state but a political construction of twenty-seven sovereign states. Its constitutional structure delineates the authority between the EU and its member states and, importantly, vests the bloc with only limited legal authority to wage the tech war. This explains why the EU is often severely constrained in its ability to wield geoeconomic instruments, including export controls and investment screening measures, or hand out EU-level industrial subsidies.

While the EU's constitutional structure can be a major constraint on some strategies in the battle over chips, the EU's ideological commitments enable others. The Europeans are not as vested in promoting free markets as Americans are, and many member states are comfortable with state involvement in the economy. This paves the way for ambitious industrial policy, at least in principle. In practice, however, the EU has limited common funds to pursue industrial policy and any subsidy program remains reliant on member state budgets. This limits the size and impact of any European subsidy program. The EU also struggles ideologically and politically to reconcile its chip war tools and the broader strategic autonomy agenda with its long-standing commitment to free trade and multilateral cooperation.

1. Divided Constitutional Powers and Conflicted Ideological Commitments

The EU treaties allocate the authority between the EU and its member states. The powers that the member states have not conferred to the EU in the treaties remain the prerogatives of those member states.[195] While the EU enjoys extensive powers over economic policy—including the authority to negotiate international trade agreements on behalf of the member states—national security remains a national-level competence.[196] As a result, when economic policy moves closer to national security, the EU risks losing its authority to act. This explains why the EU is often severely constrained in its ability to deploy geoeconomic instruments, including export controls and investment screening measures. This constitutional limitation elevates the role of individual member states in the tech war, which has led to a fragmented European response and created internal divisions that both the United States and China can strategically exploit.

Operating within that constitutional structure, the Europeans are not as ideologically committed to free markets as the Americans are, and many member states are accustomed to state involvement in the economy. Compared to the United States, the state enjoys greater public trust

[194] Lin Zhang & Tu Lan, *The New Whole State System: Reinventing the Chinese State to Promote Innovation*, 55 ENVIRON. PLAN A. 201, 213 (2023).
[195] *See generally* Principles of Conferral, The Consolidated Version of the Treaty on European Union, art. 5(1), 5(2), 4(1), 2012 O.J. (C 326).
[196] The Consolidated Version of the Treaty on European Union, art. 4(2), 2012 O.J. (C 326) [hereafter TEU].

in the EU.[197] For this reason, there is less opposition to active industrial policy. In terms of the influential literature on "varieties of capitalism," most European countries exhibit features of a "coordinated market economy" as opposed to a "liberal market economy," meaning that they generally reserve a greater role for government regulation and non-market institutions.[198] In principle, Europeans can therefore more easily accept the idea that the state shapes the market economy by handing out subsidies or restricting the ability of companies to export certain goods or invest in critical assets.

Some member states—like France, in particular—are more practiced in industrial policy than others.[199]At the same time, however, several other member states have strong reservations about heavy-handed industrial intervention, including the Nordic countries, the Baltics, the Netherlands, and Ireland, which are traditionally more committed to free markets and open trade. That latter group used to benefit from the support of the free market-oriented United Kingdom (UK), but the UK's departure from the EU has paved the way for the EU's shift towards even more aggressive industrial policy.

Even if the EU is able to draw on some of its member states' relative comfort with industrial policy in pursuing the tech war, its strategic autonomy agenda, including export controls and other unilateral trade restrictions, is difficult to reconcile with the EU's long-standing ideological commitment to an open international order and multilateral cooperation. The EU and its key member states were among the main architects of the existing liberal international order and its key institutions. As such, the EU is politically invested in the maintenance of that order. Being itself a construct of multilateralism, the EU has an identity-driven, even existential interest in preserving multilateralism as a foundation for international relations. The global battle over chips is therefore fundamentally at odds with the EU mindset and its governing philosophy about itself and the world. Waging this war thus requires a major political reversal of the EU's orientation toward free trade and multilateralism, calling into question the EU's role as the champion of an open and global economic order.

2. Internal Features as Enablers

The absence of a formal legal authority to fight the tech war—especially when it comes to leading-edge chips—has not prevented the EU from seeking to coordinate EU member states' policy measures, including on export controls, investment screening, and the granting of subsidies. To drive a common European policy, EU institutions often use deliberately ambiguous rhetorical devices to harness broad coalitions behind a malleable policy goal.[200] For example, the EU has

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[197] *See id.* at art. 3.

[198] *See* Peter A. Hall & David Soskice, VARIETIES OF CAPITALISM: THE INSTITUTIONAL FOUNDATIONS OF COMPARATIVE ADVANTAGE, Oxford University Press (2001).

[199] Ben Clift, *Comparative Capitalism, Ideational Political Economy and French Post-Dirigiste Responses to the Global Financial Crisis,* 17 J. NEW POL. ECON. 565 (2012); Salih I. Bora, *'A Sovereign Europe'? Strategic Use of Discourse at the Service of French Economic Interests in EU Politics (2017–2022)*, 61 J. COMMON MKT. STUD. 1281 (2023), available at https://onlinelibrary.wiley.com/doi/full/10.1111/jcms.13463; *Emmanuel Macron appeals directly to Europe's Voters*, ECONOMIST (May 7. 2019).

[200] Luuk Schmitz and Timo Seidl, As Open as Possible, as Autonomous as Necessary: Understanding the Rise of Open Strategic Autonomy in EU Trade Policy, 61 J. of Common Market Studies 834 (2023), https://onlinelibrary.wiley.com/doi/full/10.1111/jcms.13428.

successfully promoted a number of policies around the vague term "competitiveness," allowing it to push a neoliberal economic policy agenda when needed.

More recently, the EU institutions have adopted a new political rhetoric around "strategic autonomy" and "technological sovereignty" to justify the need for a more coordinated European response to the chip war. This shift in language has enabled EU institutions to reorient political support for the EU's strategies in that competition. The intentional vagueness of the term has further allowed a diverse set of actors "to project their hopes and fears into the term." The term strategic autonomy has also effectively tapped into a common European fear that—absent common European response—the EU will fall behind the United States and China and lose its ability to defend its interests and values.[201]

Today, the strategic autonomy agenda is increasingly embraced by all key EU institutions, including the Commission (representing the EU interest), the Council (representing the member states) and the European Parliament (representing European citizens). This political narrative has helped these actors use their limited legal authority to the fullest and ensure that individual member states coordinate their national strategies in ways that advance the common European interest. This framing is designed to offset the EU's tendencies to promote open trade and multilateral engagement, recasting the EU's core interests in the age of geopolitical conflict.

The European Commission, which is vested with the power to initiate and enforce EU legislation, has repeatedly endorsed the need for greater European-level coordination of advanced chip strategies.[202] Among the EU institutions, the Commission is generally viewed as the greatest proponent of closer European integration and hence inclined to endorse measures aimed at greater European unity. For the Commission, the tech war provides the opportunity to pursue deeper European integration with the gradual transfer of additional powers from the member states to the EU, elevating the role of the Commission itself in the process.[203] However, the two other key EU institutions—the Council and the European Parliament—need to approve any legislative measure that the Commission proposes. The Commission therefore needs to get the member states behind its agenda.

Among the member states, France has played a key role as an enabler of the EU's industrial policy agenda, being the most enthusiastic proponent of European digital sovereignty. Given its affinity with a dirigiste economic policy and heavy state intervention in economic governance,[204] it is not surprising that France has assumed a leading role in pushing the EU to embrace industrial policy.[205] President Macron himself has advocated for assertive European industrial policy, emphasizing that "[i]f we don't build our own champions in all new areas…our choices … will be dictated by others."[206] But France is not alone in advocating for policy

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[201] *See generally id.*
[202] *See* discussion on several proposed EU policy measures *supra*.
[203] *See, e.g.,* European Commission, "EU-China - A Strategic Outlook", 12 March 2019, https://ec.europa.eu/commission/sites/betapolitical/files/communication-eu-china-a-strategic-outlook.pdf.
[204] Ben Clift, *Comparative Capitalism, Ideational Political Economy and French Post-Dirigiste Responses to the Global Financial Crisis,* 17 J. NEW POL. ECON. 565 (2012).
[205] Cite macron manifesto: https://www.economist.com/europe/2019/03/07/emmanuel-macron-appeals-directly-to-europes-voters; https://onlinelibrary.wiley.com/doi/full/10.1111/jcms.13463
[206] Le Grand Continent, 'Interview du Président Emmanuel Macron à la Revue le Grand Continent', https://legrandcontinent.eu/fr/2020/11/16/macron/.

instruments that enhance European economic security and technological sovereignty. Germany, another powerful member state, is increasingly siding with France in favoring state intervention,[207] whereas the traditional free-market coalition has weakened with the UK's departure from the EU.[208] Even the member states that have traditionally resisted industrial policy are viewing economic security as an increasingly salient priority, paving the way for greater EU-level policies aimed at coordinating investment restrictions, export controls, and subsidies.

The strategic autonomy agenda has recently resulted in a number of legislative measures designed to facilitate this EU-level coordination in the chip war. In March 2019, the EU adopted a Regulation to establish an EU-wide framework to coordinate member states' foreign investment screening, [209] identifying dual-use items, including semiconductors, as sensitive assets. [210] Momentum is now building to further strengthen foreign investment screening. In January 2024, the Commission proposed to reform the Regulation, with the goal of mandating all EU member states to adopt a national foreign direct investment-screening regime.[211] The revised regulation is expected to enter into force in 2026,[212] suggesting that the Commission is prepared to gradually push for greater European level coordination in this policy domain.

The EU is also joining the intensifying subsidy race in an effort to bolster its home-grown capabilities and reduce its foreign dependencies on key technologies. Europe's concern over its supply-chain dependencies is well-founded and reflects a fear of Europe being left behind and dependent on foreign suppliers. According to Commissioner Thierry Breton, Europe was "naïve" to outsource much of its semiconductor capabilities abroad and now needs to "redress the balance."[213] In 2021, the Commission announced that the EU's goal was to produce 20% of world

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[207] Press Release, French Ministry of Economics and Finance and German Ministry of Business and Energy, A Franco-German Manifesto for a European industrial policy fit for the 21st Century (Feb. 19, 2019) (on file with author); Daniel Hojnacki, *Robert Habeck on Germany's new approach to 'economic security' and 'selective multilateralism'* ATLANTIC COUNCIL (Sept. 22, 2023), https://www.atlanticcouncil.org/blogs/new-atlanticist/robert-habeck-on-germanys-new-approach-to-economic-security-and-selective-multilateralism/; Martin Greenacre , *France, Germany, Italy call for single EU industrial strategy* SCIENCE BUSINESS (Apr. 9, 2024), https://sciencebusiness.net/news/industry/france-germany-italy-call-single-eu-industrial-strategy.

[208] Helene Von Bismarck, *Margaret Thatcher: the critical architect of European integration,* UK IN A CHANGING EUROPE (May 4, 2016), https://ukandeu.ac.uk/margaret-thatcher-the-critical-architect-of-european-integration/..

[209] Regulation (EU) 2019/452 of the European Parliament and of the Council of Mar. 19, 2019, Establishing a Framework for the Screening of Foreign Direct Investments into the Union, 2019 O.J. (L 791), 1–14. See European Commission Press Release, Strengthened EU Export Control Rules Kick In, (Sept. 9, 2021), available at https://perma.cc/VQY7-NDDS.

[210] Regulation (EU) 2019/452 of the European Parliament and of the Council of 19 March 2019, *Establishing a Framework for the Screening of Foreign Direct Investments into the Union*, art. 4, 2019 O.J. (L 79I) 1, 13-14.

[211] Proposal for a New Regulation on the Screening of Foreign Investments, Draft (Jan. 23, 2024), https://circabc.europa.eu/ui/group/aac710a0-4eb3-493e-a12a-e988b442a72a/library/f5091d46-475f-45d0-9813-7d2a7537bc1f/details?download=true

[212] Reform of the EU Foreign Direct Investment Screening Regulation – How Might M&A Transactions be Impacted?, Mayer Brown (March 26, 2024), https://www.mayerbrown.com/en/insights/publications/2024/03/reform-of-the-eu-foreign-direct-investment-screening-regulation-how-might-m-and-a-transactions-be-impacted#_edn1.

[213] Natalia Drozdiak, *EU's Breton Says Time to Fix 'Naïve' Approach to Chip Supply*, BLOOMBERG (May 5, 2021), https://www.bloomberg.com/news/articles/2021-05-05/europe-looks-to-secure-chip-supply-after-naive-past-approach.

semiconductors by 2030. To deliver on this goal, the EU institutions reached a political compromise on a European Chips Act in April 2023.[214] The EU Chips Act allocates a combined €43 billion to revitalize its semiconductor industry, from research and development to building manufacturing capacity.[215]

Although these policies may sound similar, the disbursement of subsidies under the EU Chips Act will differ markedly from the way subsidies are allocated in the United States and China. Whereas the U.S. CHIPS Act has triggered extensive lobbying and Chinese chip subsidy allocation remains opaque, the EU administers its Chips Act in a way that stresses transparency and fairness in the subsidy allocation.[216] For example, any subsidy decisions can be appealed to the European Ombudsman and challenged before the General Court of the EU.[217] This is widely believed to shore up support for the policy.

As acknowledged earlier, the concern over Europe's dwindling technological sovereignty has been the primary driver behind the EU's chip war strategies. But in some instances, the EU's restrictive measures have been further supported by key European values such as its commitment to human rights. For example, the EU's 2009 export control regime was revised in 2021 to prohibit the export of products to end-users who would be likely to use the products for internal repression or the violation of human rights.[218] Under this regulation, the EU has limited the exports of certain technologies to China, including advanced computing and AI.[219] This appeal to the human rights as a rationale for restricting exports to repressive regimes thus gives the EU an additional, principled rationale to act in ways that are consistent with its values.

These examples show that the constitutional constraints have not altogether prevented the EU from coordinating its chip war strategy. The member states have remained key actors but have accepted the need for EU-level coordination of national strategies, as the EU institutions and powerful member states such as France have successfully steered policymaking around concepts such as strategic autonomy. Other factors, including the Europeans' lower commitment to free market orthodoxy, have enabled the EU to use its limited authority to the fullest and obtain buy-in for measures such as export controls, investment screening, and subsidies. However, internal constrains remain significant, as will be shown below, explaining the relative weakness in the European response to date.

3. Internal Features as Constraints

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[214] Pieter Haeck, *EU Legislators Strike Deal on €43B Chips Plan*, POLITICO (Apr. 18, 2023), https://www.politico.eu/article/eu-legislator-strike-deal-e43-billion-plan-boost-chips-production/

[215] Samuel Stolton, *Europe Subsidy Green Deal Industrial Plan State Aid,* POLITICO (Feb. 1, 2023), https://www.politico.eu/article/europe-subsidy-green-deal-industrial-plan-state-aid/.

[216] *Governance,* Chips-JU, https://www.chips-ju.europa.eu/Governance/ (last visited July 28, 2024); *EU Chips Act: Risks and Opportunities for Businesses*, Norton Rose Fulbright (Sept. 2023), https://www.nortonrosefulbright.com/en/knowledge/publications/f176610c/eu-chips-act-risks-and-opportunities-for-businesses.

[217] Norton Rose Fullbright, *supra* note 196.

[218] BEATRIX IMMENKAMP, EUR. PAR. RSCH. SER., PE 589.832, REVIEW OF DUAL-USE EXP. CONTROLS (2021).

[219] Council of the European Union (EU) Regulation 2021/821 of May 20, 2021, art. 2(1), https://ec.europa.eu/commission/presscorner/detail/en/IP_21_4601 [https://perma.cc/YGV8-9CBP?view-mode=server-side].

The EU faces a number of internal constraints in implementing its strategic autonomy agenda. Without a doubt, the most significant limitation to the EU's ability to wage the tech war stems from its constitutional structure: the split between EU-level powers and individual member-state powers hampers the EU's ability to devise a unified EU-level response to the geopolitical challenges it faces.

While the EU has amassed significant powers over trade policy, its competence in the national security domain remains limited as the individual EU member states have retained their authority over national security policy. In the tech war, control of advanced chips and other critical technologies falls in between those policy competences. The EU would have full legal authority to negotiate treaties to open trade on semiconductors with China, but when it attempts to close that trade on national security grounds, that authority remains vested in the member states. The EU's subsequent inability to aggressively deploy export controls, implement investment restrictions, or to directly grant chips subsidies has therefore led to a fragmented response, further weakening the EU's ability pursue meaningful strategic autonomy in the midst of escalating U.S.-China tensions.

The design of any EU tech war instruments reflect this constitutional constraint. Even though there is an EU-level export control regime and the EU has the power to mandate licensing for certain restricted exports under its Dual-Use Regulation, as noted above, its powers are limited by the member states' ability to concurrently exercise their own powers. Member States play key policy roles in two respects. First, they are in charge of the implementation of the Regulation. There is no EU licensing authority and the exporter must obtain the license from the individual Member State authority in which it is established. [220] Second, member states can add to any EU-level export restrictions their own national restrictions on additional items for "reasons of public security." [221] This gives individual member states broad discretion to undertake measures that are deemed to serve their national security interests, undermining European unity.

The EU's limited competence was on full display in March 2023 when the Netherlands announced that it would ban certain semiconductor exports to China following an agreement with the United States and Japan. [222] The Netherlands is home to ASML, the world's leading manufacturer of lithography machines that are critical in advanced semiconductor production. In justifying the decision, the Dutch government cited its national security concerns,[223] though it had previously also expressed concerns around China's forced tech transfer and intellectual property theft practices.[224] Since 2019, ASML had not been allowed to sell the most cutting-edge machines

[220] Regulation 2021/821 of the European Parliament and of the Council of 20 May 2021 on The Control of Exports, Brokering, Technical Assistance, Transit, and Transfer of Dual-Use Items, O.J. (L 206) 1, Art. 9 (2021), available at EUR-Lex - 32021R0821 - EN - EUR-Lex.

[221] Semiconductor Industry Association, *Comment on U.S.-EU Export Control Cooperation*, (Jan. 20, 2022), https://www.semiconductors.org/sia-encourages-the-united-states-and-europe-to-collaborate-on-export-control-policy/

[222] *Announcement of upcoming export control measures for advanced semiconductor production equipment,* TWEEDE KAMER (HOUSE OF REPRESENTATIVES OF THE NETHERLANDS), https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2023Z04037&did=2023D09406 last visited February 7, 2024) (Netherlands).

[223] *Id.*

[224] Pieter Haeck, *How the Dutch turned on Chinese Tech*, POLITICO, (Mar. 9, 2023), available at https://www.politico.eu/article/chips-netherlands-mark-rutte-china/.

to China.[225] The new restrictions announced last year extended these earlier controls by banning exports of ASML's second-most advanced machines, too, which are available only from the Netherlands, United States, and Japan.[226]

Even though the EU was effectively sidelined from the decision-making, it has not disputed that these actions fall within the Netherlands' national authority because they pertain to national security. In announcing the decision, the Dutch government invited other EU member states to adopt similar legislation to show European unity as a geopolitical actor, even while no other company in Europe can currently replicate ASML's technology.[227] But, Dutch leaders were also adamant in defending their national competence over national security matters, insisting that the decision was adopted at the right level.[228]

Although it may seem at first glance that national-level export control measures only bolster EU-level controls, those domestic measures pose a number of challenges for the EU that limit the practical utility of the tool. First, if some member states go it alone, other member states can always undercut them by allowing those restricted exports to be shipped from their territory to a third country.[229] Export controls also have ripple effects on other member states, including those that supply components to ASML.[230] In addition, if China were to sue the Netherlands before the World Trade Organization (WTO) over its export controls, the European Commission would need to defend the Dutch measure because it falls within the EU authority to represent the member states in all WTO negotiations and litigation.[231] The CEO of ASML, Peter Wennink, has himself pointed out the resulting strategic limitations of this constitutional structure, noting how: "European governments will have to hand over control of parts of their foreign affairs, defense and trade powers if the bloc wants to protect itself from Chinese competition and American pressure."[232]

The EU's ability to restrict foreign investment is similarly hampered by its constitutional structure. Investment screening would at first sight seem to fall within the EU's authority under the EU Treaties, because investment can be seen as part of common commercial policy.[233] However, the EU Treaties contain national security exceptions, which limit the EU's competence at the intersection of security and investment.[234] The 2019 EU-wide framework for foreign

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[225] *Id.*; Ana Swanson, *Netherlands and Japan Said to Join U.S.in Curbing Chip Technology Sent to China*, N.Y. TIMES, (Jan. 28, 2023), available at https://www.nytimes.com/2023/01/28/business/economy/netherlands-japan-china-chips.html.
[226] *Id.*
[227] Andy Bounds, *Netherlands puts servicing of chipmaking tools in China under review,* FINANCIAL TIMES, (Mar. 9, 2023), available at https://www.ft.com/content/2454c019-3b53-4679-b70f-ad1ac929bdd7.
[228] *Id.*
[229] *Id.*
[230] Pieter Haeck, *EU Sidelined in US-Dutch Deal to Block Chips Exports to China*, POLITICO, (Jan. 31, 2023), https://www.politico.eu/article/eu-sidelined-in-us-dutch-deal-to-block-chips-exports-to-china/.
[231] Tobias Gehrke and Julian Ringhof, *The Power of Control: How the EU Can Shape the New Era of Strategic Export Restrictions*, Eur. Council on Foreign Relations (May 2023), at 16, https://ecfr.eu/wp-content/uploads/2023/05/The-Power-of-Control-How-the-EU-can-shape-the-new-era-of-strategic-export-restrictions.pdf.
[232] Pietar Hieck, *Top tech boss tells EU: Tool up for global trade fight*, POLITICO (Jan. 25, 2024), https://www.politico.eu/article/eu-common-trade-defense-dutch-tech-ceo-asml-peter-wennink/.
[233] *See* Consolidated Version of the Treaty on the Functioning of the European Union, art. 206, 2012 O.J. (C 326) 47. [hereafter TFEU]; *See* TFEU. art. 207.
[234] *See* TFEU art. 65; TEFU art. 346.

investment screening accordingly does not vest the EU with the power conduct the reviews at the EU level. Instead, it encourages EU member states to establish their own screening mechanisms and sets common criteria for any such mechanism that is put in place. The EU also coordinates foreign investment reviews across the member states and issues non-binding opinions on member states' reviews, to which the reviewing member state must give "due consideration."[235] Ultimately, however, the member state has the final say on whether the foreign investment is allowed. This risks creating fragmentation akin to what we observed with varying member state policies towards the Chinese vendor Huawei as a provider of 5G networks in Europe, with some states embracing Huawei contracts while others adopted Huawei bans.[236]

The constitutional structure also hampers the EU's ability to disburse extensive subsidies. Despite the bloc's aggregate wealth, the EU itself has a limited budget, which restricts its ability to conduct effective industrial policy at the European level. As a result, any large-scale subsidies inevitably rely on contributions by individual member states. For example, of the €43 billion envisioned by the European Chips Act, a mere €3.3 billion comes from the EU's budget while the rest will be covered by national governments and private funding. Any subsidies granted by individual member states are also likely to remain modest compared to the alternative of a large-scale, EU-wide subsidy regime, making it difficult for the EU to keep up with the United States and China in the subsidy race.

Yet perhaps the greatest constraint on EU chip war strategy stems from the threats that the strategic autonomy agenda poses to the integrity of the European single market. This is particularly true with respect to the escalating subsidy contest. If Europe wants to compete with the United States and China, it cannot opt out of that race. However, given its limited budget, the EU is not in a position to dole out subsidies by itself. Instead, any subsidies would need to disbursed by member state governments—a practice that is generally prohibited in EU Treaties to guarantee a level playing field and fair competition across the EU.[237] The EU is now gradually loosening its reins over state aid control, allowing member states to better support the research, production, and commercialization of semiconductors.[238] But this is proving to be controversial as not all member states are in a position to subsidize their industries. As a result, the biggest member states like France and Germany are likely to benefit disproportionally, dispensing sizable state funds that allow their companies to outpace their rivals from smaller member states.[239] This causes resentment among the smaller member states and deepens divisions within the EU, raising the costs for the EU to deploy this strategy.

For this reason, several EU member states have opposed relaxing the EU rules on subsidies, stressing that increased state aid will cause "significant negative effects including the

[235] Regulation No. 452/2019 of the European Parliament and of the Council of 19 March 2019 Establishing a Framework for the Screening of Foreign Direct Investments into the Union, OJ (L 79I), at 1, art. 8 (2019).
[236] Bradford, supra note 39, at 301-02.
[237] *See* TFEU Art. 107 and 108.
[238] "Remarks by Executive Vice-President Vestager on the Communication on a Competition Policy Fit for New Challenges," November 18, 2021; *see also* "Competition: Commission Outlines Contribution of Competition Policy and Its Review to Green and Digital Transition, and to a Resilient Single Market," November 18, 2021, and Communication on a Competition Policy Fit for New Challenges COM(2021) 713 final, November 18, 2021, p. 18.
[239] Foo Yun Chee and Sabine Siebold, *EU Eases State Aid Rules in Multi-Billion Euro Boost for Chip Sector*, REUTERS (Feb. 8, 2022), https://www.reuters.com/technology/eu-lays-out-billion-euro-plan-boost-chip-production-2022-02-08/

fragmentation of the internal market." [240] This reflects a broader concern that the EU now faces a trade-off between the EU's global competitiveness and the attempts to preserve a level playing field in Europe, with one diplomat noting how "[t]he whole state aid debate is a double-edged sword. If we relax subsidy restrictions too much, then we compromise the integrity of the single market … But if we do nothing, we concede failure. That isn't an option."[241] The chip war therefore presents the EU with a difficult dilemma: how to advance European strategic autonomy and enhance its external competitiveness without compromising the EU's internal coherence and its foundational commitment to European integration?

The chip war raises other fundamental questions for the EU that can act as a constraint on its strategy. These include the EU's longstanding commitment to fostering international cooperation and multilateral rulemaking. To pursue greater strategic autonomy, the EU is forced to rethink its commitment to multilateralism and international institutions as cornerstones of its engagement with the world. It is not surprising that some European leaders continue to urge the EU to defend economic openness and international cooperation, despite geopolitical shifts vis-à-vis China, arguing that there is otherwise little hope for reversing the zero-sum mentality that is governing the ongoing tech race.[242] Other leaders reject this view, arguing that the EU would be naïve in letting others take advantage of Europe's openness while not extending that same openness to Europeans, thus calling for the EU to reverse its traditional views.[243]

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The above discussion focusing on the internal account of the EU reveals that the EU's weakness in deploying some tech war strategies—especially those based on heavy export controls and subsidies—lies less in its lack of technological and geopolitical prowess and more in its lack of legal authority to concentrate that prowess. In other words, what marginalizes the EU in the chip war and broader technological competition is first and foremost its constitutional structure. Despite some enabling internal features, including Europe's lesser ideological resistance to industrial policy, the EU has struggled to consolidate the power of individual EU member states into a cohesive, pan-European industrial strategy that could shore up EU strategic autonomy in the tech war.

Part III: Implications of the Internal Analysis

Part II examined the internal features that are shaping the strategies pursued by the United States, China, and the EU respectively. While our analysis has focused mostly on advanced chips, our insights inform our understanding of the broader tech war, including competition over quantum

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[240] Samuel Stolton and Pieter Haeck, *Europe Embarks on Subsidy Race It Can't Win*, POLITICO EU (Feb. 1, 2023), https://www.politico.eu/article/europe-subsidy-green-deal-industrial-plan-state-aid/.

[241] *Id.*

[242] *See e.g.,* S Weyland, Comments on TRADE TALKS PODCASTS, [*WTO Ministerials-Now and Then*], (17 Jan 2021), https://podcasts.apple.com/us/podcast/17-wto-ministerials-now-and-then/id1270804213?i=1000554103739; *See* Tobias Gehrke, EU Open Strategic Autonomy and the Trappings of Geoeconomics, 27 EUR. FOREIGN AFF. REV. 61,68 (2022).

[243] Emmanuel Macron, Interview du Président Emmanuel Macron à la Revue le Grand Continent, Le Grand Continent, (Nov. 16, 2000); Charles Michel, President, Speech at the Brussels Economic Forum: Recovery Plan: Powering Europe's Strategic Autonomy (Sept. 8, 2020), https://perma.cc/6MBW-V9ZW

computing, artificial intelligence, and biotechnology. All of these other technologies are dual-use, capable of serving commercial and defense or national security applications alike, and all of them are built on advanced chips. No doubt, supply chains for such chips have unique traits. Those supply chains were arranged to maximize efficiency during the decades when faith in economic globalization was strong, whereas very nascent technologies like quantum computing are being developed now, when the tech war is heating up, with greater attention to self-sufficiency at the outset. Still, for the United States, China, and EU, the same internal enablers and constraints that shape chip competition strategies will in many cases exert similar pushes and pulls on policy regarding other technologies that are also important to national security.

We now turn to discussing the key implications that flow from the discussion in Part II. Our internal analysis augments conventional, external analyses of the tech war in three important—and in some cases counter-intuitive—ways.

First, although the three powers all pursue the same general goal of greater technological self-sufficiency and use superficially similar tools to do so (a mix of export controls, investment restrictions, and subsidies), their internal features lead them to deploy these tools differently. Our internal story sheds light on the relative strengths and weaknesses that the three players have in exercising these policies.

Second, our internal focus better explains why tough chip competition has to date neither pushed countries toward all-out economic war nor paved the way for a meaningful detente. Predictively, a deeper understanding of the internal features of each jurisdiction suggests that pressures to escalate continue to be moderated by counter-pressures for de-escalation.

Third, our analysis invites a question of whether the internal features remain fixed or are capable of changing over time, as the tech war itself evolves. If internal features influence tech war strategies, might those strategies also influence internal structures and even change nations from within? Here, too, our analysis offers new analytical payoffs: We conclude that the tech war may shift the players' internal features by degrees, but it will not transform their basic internal attributes.

A. Diverging Strategies and Respective Strengths and Weaknesses

Our internal account helps explain how the parties are waging the chip war—the "interior dimension of strategy"—including what mix of tools they are best positioned to deploy and which distinct advantages or disadvantages they hold vis-à-vis their rivals. This approach also offers insights as to how the other players can adjust their strategies in light of the internal features that constrain or enable their rivals. After all, the essence of strategy is not a set of unilateral and independent moves; it is a dynamic process of responding to or anticipating moves by others.

To start with the United States, our internal account shows that U.S. moves toward government intervention to build up domestic chip research and production will be tempered by the gravitational pull of free-market ideology. Attempts to cut off China from the fruits of those efforts will also be tempered by strong corporate lobbying. Subsidies and export controls appear to be among its most potent tools and are currently backed by significant bipartisan political support. But whereas the United States has a lot of economic capacity for subsidies, they will be hard to maintain and tailor over time; by contrast, the government will be able to maintain export controls for the long haul but has limited capacity to enforce them in practice.

Comparison of the U.S.-China tech war to the U.S.-Soviet Cold War bolsters these conclusions. Friedberg argues that strong U.S. commitment to free markets, moderated by security needs, helped the United States win that extended struggle against a rigidly and centrally-planned foe. He describes how the United States helped build Silicon Valley with industrial subsidies to defense-related firms and created research and development arms of the Defense Department.[244] But, those government-interventionist impulses were always restrained by market ideology. The result was a balance well suited to out-innovating the Soviets in producing military power, without bankrupting the United States or corrupting its democratic institutions.

A challenge for the United States today is finding again a strategically-effective balance between state intervention and market-driven innovation in the tech war against China. Two big differences between the Cold War and the tech war give some reasons for both pessimism and optimism.

First, whereas the U.S. and Soviet economies were very isolated from each other—by design on both sides—the U.S. and Chinese economies are deeply entangled. For decades, the United States enjoyed economic benefits from Chinese markets and expected that economic openness would lead to Chinese political openness. China, meanwhile, gained economic power, as well as access to American technology.[245] An external account of the tech war would suggest that this entanglement gives both sides opportunities to leverage this interdependence—to cut off imports and exports, for example—but that doing so also risks damaging their own economic strength, especially if trade restrictions escalate. Our internal account enriches this analysis by looking to the role of corporate lobbying—an internal element that is prevalent in the United States but far more muted in China, highlighting an asymmetry that is missing from the exernal analysis. Despite the overt power of U.S. sanctions, the U.S. strategy could be undermined by lobbying that aims to defang U.S. efforts to cut China off from U.S. technology—an internal constraint not potent within the Chinese government's tech war strategy.

But, on the positive side of the ledger, free-market checks within the U.S. system—which protect private innovation from overly-intrusive government intervention—may be even better suited to the current tech war than the Cold War. Today, commercial and military technology development, including chip technology, are deeply interwoven, and much of the technology critical to national security originates from private-sector innovation. During the early Cold War—the last moment of major national security-driven industrial policy—it was often government-supported R&D in the defense sector that produced technological innovations that, in turn, flowed to commercial sectors. Today that directionality runs in the opposite direction.[246] From a national security standpoint, especially vis-à-vis China, the U.S. government is therefore looking for balanced policy formulas that avoid heavy-handedly stifling the very innovation that is critical to its defense.[247]

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[244] *See* FRIEDBERG, *supra* note 4, at 199-244, 296-339.
[245] *See* Oren Cass & Gabriela Rodriguez, *The Case for a Hard Break With China*, FOREIGN AFFAIRS (July 25, 2023).
[246] *See* Ina Fried, *Pentagon's Bridge to Tech's Private Sector*, AXIOS, Aug. 9, 2022; *see also* FRIEDBERG, *supra* note 4.
[247] *See* Jim Garamone, *Hicks Makes Case that Effective Defense Innovation Is Moving Forward*, U.S. Dep't Defense, Jan. 30, 2024, https://www.defense.gov/News/News-Stories/Article/Article/3661297/hicks-makes-case-that-effective-defense-innovation-is-moving-forward/

In many ways, China's strengths and weaknesses are inverted compared to those of the United States. China's tech war strategy relies on extensive state control over public and private actors to take actions that are unavailable for the U.S. government or EU institutions. Its chip-focused Big Fund and Made in 2025 plans are large-scale government initiatives aiming to reorganize sectors of China's economy. In contrast to the U.S. system, once the Chinese government sets a course, its firms largely fall in line—Huawei and other chip suppliers operate today as champions of the national interest. All three players can provide subsidy support to their firms and implement regulations governing critical sectors. But Chinese forms of state support and prohibition are far more varied and powerful. For example, the government has declared that all rare-earth minerals are the property of the state and created a mega-firm to manage the sector.[248] In contrast, the United States and EU rely on comparatively "light-touch" subsidies to firms like financing and tax benefits but cannot (except in extreme circumstances) unilaterally rearrange resources or firms in the global tech competition.

But China's state-led economy poses its own disadvantages. Because its government directives are not subject to formal checks, China's system fails to counterbalance and adjust when the central authorities pursue a path littered with negative side effects. Its system is thus exposed to government mistakes without mitigating constraints. The government's desire to keep control over all actors in the system can also impede rapid innovation: "from the Party's perspective[,] any marginal benefits in terms of innovation would not be worth the marginal loss in control."[249] In further allocating planning power over technology development to a newly-created political commission, China risks magnifying the features dragging down its chip-war strategy—creating new opportunities for graft and aggravating information-transmission problems up its political hierarchy. While the U.S. system can calibrate between free-market and industrial-intervention policies, the Chinese political turn towards even tighter CCP control over the past decade renders any free-market shift in Chinese policies unlikely, locking China into a government-heavy strategy for the foreseeable future.

For the EU, we identify its constitutional structure as its greatest comparative constraint in the tech war, hampering each of the policies the EU seeks to deploy. The EU has sought to overcome these restraints, rallying the individual member states behind the carefully articulated policy designed to further its "strategic autonomy." Yet today, strategic autonomy remains a distant goal for the EU. The EU's constitutional constraints can also be exploited by other parties. For example, the EU's rivals can engage in a "divide and conquer" strategy that pits one member state against another, weakening the EU's ability to coordinate divergent member-state positions. The United States and China can both benefit from these divisions. For example, the U.S. government only had to get the Netherlands onboard to implement tight export controls without having to negotiate with the entire EU, ensuring that Europe aligned closely with the U.S. interests.[250] China can exploit the intra-EU divisions by strategically retaliating against some member states, to get them to exert pressure on others from within the EU. In 2022, China sought to sanction Lithuania for its pro-Taiwan diplomacy by placing threats against major German businesses—leading those German firms to pressure Lithuania to change course. If the Netherlands

[248] *See* Gabriel Gavin, *Precious Rare Earth Metals Belong to the State, China Declares*, Politico.eu (June 30, 2024), https://www.politico.eu/article/precious-rare-earth-metals-belong-to-the-state-china-declares/.
[249] *Id.* at 176
[250] *See supra* Part II(C).

cooperates with further U.S.-led export controls, other EU nations may experience negative impacts on their own economic relationships with China.[251]

Overall, our analysis helps explain why some of the EU's key tech-war battles will remain internal. Whether the EU becomes more autonomous geopolitical actor can be measured in part by how the EU fares against the United States and China in terms of military, economic, technological, and other forms of power. But ultimately, an essential question is whether the pro-EU coalitions within the bloc can offset the resistance of anti-EU coalitions towards deepening European integration, and transfer more authority to the Union itself. Should the EU be able to undertake such constitutional reform internally, the bloc will gain greater leverage vis-à-vis the other powers. Whether and how the EU re-allocates its economic statecraft powers internally—an issue taken up below—is thus one of the key determinants on the future of the tech war and the EU's position in that war.

B. Are Internal Features Driving the Tech War Toward De-Escalation?

A closer analysis of their internal features suggests that each player is, on balance, more constrained in its conduct of the chip war than an external account alone suggests. This finding helps explain the current state of the conflict but also has predictive implications for how the tech war will likely unfold in the coming years.

Many external accounts foresee a treacherous spiral in which each actor—the United States and China, especially—continues to escalate offensive moves against the other.[252] Some analysts see an intensifying tech war accelerating a broader economic decoupling.[253] More grimly, Farrell and Newman predict that aggressive tech-war policies make it "more likely that Cold War reflexes could hijack the new economic security agenda, pushing the country down a risky path of tit-for-tat escalation between the major powers."[254] American security policy scholar Graham Allison offers one of the most dire projections, going so far as to call eventual military conflict "more likely than not."[255] Such warnings about dangerous escalation often point to Taiwan's prominent role in the semiconductor supply chain, which some allege could even provide China with the

[251] Matthew Reynolds and Matthew P. Goodman, *China's Economic Coercion: Lessons from Lithuania*, CSIS (May 6, 2022), https://www.csis.org/analysis/chinas-economic-coercion-lessons-lithuania

[252] *See* Farrell & Newman, *supra* note 50.

[253] *See*, *e.g.,* Jon Bateman, *The Fevered Anti-China Attitude in Washington Is Going to Backfire*, Politico, Dec. 15, 2022; Edward Luce, *The risks of US-China Decoupling*, FINANCIAL TIMES, Feb. 9, 2024; Vivek Mishra, *The Great US-China Tech Decoupling: Perils Of Techno-Nationalism*, Eurasia Review, March 5, 2023, https://www.eurasiareview.com/05032023-the-great-us-china-tech-decoupling-perils-of-techno-nationalism-analysis/; Don Weinland, *The Tech War Between America and China Is Just Getting Started*, ECONOMIST, Nov. 18, 2022.

[254] *See*, *e.g.*, Dale Copeland, *U.S. Must Avoid Turning China Chip War into Hot War*, NIKKEI ASIA, Nov. 18, 2022, https://asia.nikkei.com/Opinion/U.S.-must-avoid-turning-China-chip-war-into-hot-war.

[255] *See, e.g.,* GRAHAM ALLISON, DESTINED FOR WAR: CAN AMERICA AND CHINA ESCAPE THUCYDIDES' TRAP? (2018)

impetus to invade the island—triggering a U.S. military response and potentially drawing in the EU.[256]

Compared to these alarming projections, our internal account offers grounds for cautious optimism. To be clear, an external account—emphasizing states' power and interests—could explain why aggressive policy moves and counter-moves will not continue to escalate higher and higher. Perhaps the parties will deter each other or reach some sort of equilibrium, whether tacit or negotiated. After all, the threat of escalation can be stabilizing, a sort of mutually-assured economic destruction. Or, perhaps one side will decisively dominate the other. Like in the Cold War, that is, one side might "win." But we have also identified several internal features within each actor that act as brakes on escalating moves—pushing each player towards de-escalation instead. A closer look into those features suggest that each player remains severely constrained in its capacity or propensity to escalate the tech war.

Given the commercial benefits of continuing economic interdependence discussed in Part II(A), American tech companies could use their political influence to push the U.S. government towards restraint. Those companies profit immensely from access to the Chinese market, just as Chinese tech companies are eager to continue to benefit from U.S. suppliers, consumers, and investors.[257] None of the major players—whether democratic or authoritarian—can disregard the interests of their tech companies, which are their greatest asset in the tech rivalry. But this restraining corporate influence will likely be stronger in the United States, where lobbying is so pervasive.[258] As long as China keeps its market open to American firms like Intel, AMD, and Nvidia—or even in its threats to close it—it can indirectly harness corporate lobbying in the United States for its own benefit.

In addition to the restraining effects of tech industry lobbying, hard-wired American ideological commitments are a barrier to more aggressive subsidies and industrial policy. True, the U.S. government has increasingly intervened in the markets over the past years. It is therefore not surprising that some commentators have worried that the United States will "become like China"[259] in its effort to "out-China China."[260] However, our analysis suggests that such fears are overblown.

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[256] John Lee & Jan-Peter Kleinhans, *Would China Invade Taiwan for TSMC?,* DIPLOMAT (Dec. 15, 2020), https://thediplomat.com/2020/12/would-china-invade-taiwan-for-tsmc/ [https://perma.cc/9678-XBF9]; Thomas J. Shattuck, Believe Biden When He Says America Will Defend Taiwan, FOREIGN POL'Y RSCH. INST. (May 25, 2022), https://www.fpri.org/article/2022/05/believe-biden-when-he-says-america-will-defend-taiwan/ [https://perma.cc/R8RD-8MMJ]; *See* Henry Boyd, et al, *Taiwan, Cross-strait Stability and European Security: Implications and Response Options*, Int'l Inst. Strategic Stud., March 2022, at 25-31, https://www.iiss.org/globalassets/media-library---content--migration/files/research-papers/2022/03/taiwan-cross-strait-stability.pdf.

[257] Tripp Mickle, David McCabe, and Ana Swanson, *How The Big Chip Makers Are Pushing Back on Biden's China Agenda*, N.Y. TIMES (Oct. 5, 2023).

[258] *See* Yuka Hayashi & Asa Fitch, *U.S. Tightens Curbs on AI Chip Exports to China, Widening Rift with Nvidia and Intel*, WALL ST. J. (Oct 17, 2023).

[259] James Pethokoukis, et al, *Cold War II: Should the US Embrace High-tech Industrial Policy to Counter China?* AEI, May 24, 2018, https://www.aei.org/economics/competing-with-china-an-aeideas-online-symposium/; Scott Kennedy, *China Is the Wrong Model for the United States*, CSIS, Aug. 9, 2022, https://www.csis.org/analysis/china-wrong-industrial-policy-model-united-states

[260] *See*, *e.g.*, Kaiser Kuo, *The Myths and Realities of China's Civil-Military Fusion Project*, THE CHINA PROJECT, July 6, 2023, https://thechinaproject.com/2023/07/06/the-myths-and-realities-of-chinas-military-civil-fusion-program/

The ideological beliefs of U.S. policymakers are likely to act as brakes on such a slide, with Congress ultimately limiting the extent of subsidies that will be disbursed. Many lawmakers in the United States remain deeply skeptical of the government's ability to pick winners and supplant the tendency of free markets to allocate resources in an efficient way. They also view the ongoing tech war as an ideological contest in which the United States has a strategic interest—like during the U.S.-Soviet Cold War—in showcasing globally that the U.S. economic system is superior to China's.[261]

China similarly faces de-escalatory pressures that place brakes on its chip strategy. China has thus far not retaliated significantly against U.S. and EU export controls, despite occasional rhetoric. In fact, China appears to select retaliatory measures in part for their lack of negative domestic effects; investigating Nvidia, for example, may not impose many costs when Nvidia already cannot sell many of its advanced chips in China.[262] These measures can be viewed as exerting pressure towards *de-escalation* by operating as "warning shots"—showing future avenues by which China can inflict economic pain and incentivizing companies to exert pressure against additional U.S.-led measures. [263] A further escalation of the chip war may be detrimental to the Chinese government's other industrial plans for its economy—including the development of critical technology sectors and its overarching pursuit of economic growth.[264] The government's legitimacy derives in part from its continued ability to provide growth in these sectors. China's top-down form of economic management, then, relies on successfully developing specific technologies deemed important by the state—and a rapidly-escalating tech war would derail these initiatives. [265]

Alongside these internal U.S. and Chinese pressures toward de-escalation, the EU's abilities to further tighten its export controls, implement investment restrictions, or hand out extensive subsidies also remain limited by its persistent internal divisions. While the EU has made strides in pursuing more assertive economic statecraft in recent years, member states have guarded their national security powers and remain hesitant to grant the EU full authority to fight the tech war on their behalf. Thus, the more the tech war escalates and evolves into a geopolitical conflict with national security (as opposed to just economic) ramifications, the fewer tools the EU has to respond to threats and actions from China. Absent a transfer of new powers to the EU over national

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[261] *See* Jeffrey Cimmono & Matthew Kroenig, *The China Challenge*, Atlantic Council, Dec. 16, 2020, https://www.atlanticcouncil.org/content-series/atlantic-council-strategy-paper-series/the-china-challenge/; Bonnie Gerard, *Is There Really a 'Chinese Model,'* THE DIPLOMAT, July 13, 2018, https://thediplomat.com/2018/07/is-there-really-a-china-model/.

[262] Liam Mo and Brenda Goh, *China Targets Nvidia with Antitrust Probe, Escalates US Chip Tensions*, REUTERS (Dec. 10, 2024), https://www.reuters.com/technology/china-investigates-nvidia-over-suspected-violation-antimonopoly-law-2024-12-09/.

[263] Rao, supra note _, at 34; Andy Home, *China Fires Latest Warning Signal with Antimony Controls*, REUTERS (Aug. 28, 2024), https://www.reuters.com/markets/commodities/china-fires-latest-warning-signal-with-antimony-controls-2024-08-28/#:~:text=LONDON%2C%20Aug%2028%20(Reuters),known%20metal%20with%20multiple%20applications.

[264] https://www.brookings.edu/articles/unleashing-new-quality-productive-forces-chinas-strategy-for-technology-led-growth/

[265] Weijia Rao, *Signaling Through National Security Lawmaking*, at *4. ("Lawmaking allows China to communicate its resolve to both foreign and domestic audiences without incurring the significant economic costs of actually employing these actions, a particularly pressing concern given the current economic challenges China faces.").

security, the EU continues to wage the tech war as a fragmented entity of twenty-seven sovereign states. This limits its escalatory policy options in its quest for strategic sovereignty.

These and other internal constraints we have identified offer some cautious optimism about risks of escalation. At the same time, our internal account still suggests that the costly chip war will not wane any time soon. There is likely no ceasefire—not to mention permanent peace—in sight.[266] As mentioned in Part II, anti-China hawkishness is one of the few areas of bipartisan agreement in Washington these days. Even if there remains intense disagreement over what to do about it, "Republican and Democratic members of Congress alike agree that Beijing is Washington's foremost geopolitical competitor."[267] At a time when any U.S. administration will face political pressure to look and act tough on China, the availability of delegated authority from Congress affords presidents many ready options to ramp up trade or investment restrictions. Such actions may be tempered by lobbying and limitations on enforcement resources, but they will still be readily exercisable—and presidents of both parties have in the recent years only been ratcheting them up, not down.

The Chinese government has also shown its propensity for prolonging the tech war, including leaning into state intervention even when such intervention is costly. The Chinese commitment to chip self-sufficiency has endured for over a decade and the government has shown its propensity to keep experimenting with new approaches for combining state and private power to invest in the industry. China is also unlikely to relinquish the keys to its rare-earth sector, keeping foreign investment at bay and seeking to guard its processing technology through export controls. As for the EU, despite its constitutional constraints, the bloc has still managed to use its limited authority to coordinate member state policies and muster an increasingly—if only incrementally—hawkish approach toward Chinese technology. This trend will likely continue as the Europeans' attitudes towards China are hardening, in particular after the Russian invasion of Ukraine and China's refusal to condemn that invasion. [268]

Our analysis suggests that each of the three actors will sustain a difficult balancing act between commercial and geopolitical interests, prolonging the tech war while keeping both extremes—a truce or an escalatory spiral—at bay. Such an outcome may be discouraging to those who wish to see continuing economic decoupling of Chinese and Western economies, regarding interdependence as a long-term security threat. But for those who fear ever-widening and intensifying rifts, our analysis offers a more encouraging, even if not entirely reassuring, assessment of the global tech war's future course.

C. Will the Tech War Remake Internal Features?

Even if key actors' internal features have had restraining influences in the tech war to date, it is important to ask whether these features may change in response to external developments.

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[266] Sujai Shivakumar, Charles Wessner & Thomas Howell, *Balancing the Ledger: Export Controls on U.S. Chip Technology to China*, CSIS (Feb. 21, 2024).
[267] Ali Wyne & Ryan Hass, *Questioning the Presumption of a US "Consensus" on China Policy*, Brookings Inst. (July 15, 2024), https://www.brookings.edu/articles/questioning-the-presumption-of-a-us-consensus-on-china-policy/
[268] Luke Johnson, *What Europe Thinks… about China*, INTERNATIONALE POLITIK QUARTERLY (Mar. 24, 2023), https://ip-quarterly.com/en/what-europe-thinks-about-china

That is, while internal features affect the tech war, might the tech war itself also alter these features? If so, some constraints on the use of these tools could loosen over time, potentially paving the way to escalation.

One might expect that the constraints imposed by the United States' internal features—the wide dispersal of power throughout the government and the effectiveness of lobbying—could weaken as the tech war heats up. Bipartisan support for hardline geoeconomic policy toward China, for example, may lead to revamping of the federal bureaucracy, or it might simply overwhelm interest group lobbying. The structure and operation of the executive branch is not fixed. It could evolve, and may ultimately need to do so to effectively battle for tech supremacy. Some experts have already called for government overhauls, including creating a new economic intelligence apparatus on par with military intelligence, new agencies dedicated to developing advanced technologies, and new bodies to coordinate policy across the departments and agencies responsible for pieces of the tech war.[269]

But if such evolution does occur, it will take time—and because the battle for tech supremacy in large part a race, time is key. Security-driven reorganization of the U.S. government has usually occurred in moments of emergency, like the creation of a unified Defense Department after World War II or the creation of the Department of Homeland Security after the September 11, 2001 terrorist attacks. Despite wide political support for related policies, the current tech war has not engendered any comparable mobilizing urgency in the United States. Current challenges around China's rise do not pose a sudden crisis but are more like a slow-burning challenge. It is often noted that recent U.S. efforts to cut off China from American technology has sparked a "Sputnik" moment for China, *i.e.*, a sudden and dramatic threat that impels the nation to immediate action.[270] The United States is in the opposite position: there is no vivid "Sputnik" provocation, even if there is strong bipartisan consensus that China poses a threat. That political reality makes it difficult to overcome the internal constraints described in Part II.

The EU's ability to wield any collective leverage is severely compromised as long as national security—including most measures designed to enhance economic security—remain an EU member-state prerogative. As a result, political pressures are now building within the EU to reconsider its existing constitutional settlement so as to become a more forceful geopolitical actor. For example, in the wake of the Dutch announcement implementing national-level controls on ASML's exports to China, European Commission Vice President Valdis Dombrovskis indicated that he supports an EU-wide approach to chip export controls and other strategic technologies to "ensure coherence in our policy on security, trade and technology."[271] It is therefore possible that the EU is now approaching a "constitutional moment" that leads member states to transfer powers to the EU over economic security.

Such constitutional revision in the EU is unlikely, but not impossible. It would require altering the foundational Treaties that allocate the powers between the EU and the member states. Amending the Treaties is never easy yet also far from unprecedented. The foundational

[269] *See* Farrell Newman, *supra* note 50.
[270] Dan Wang, *China's Sputnik Moment?,* FOREIGN AFF. (July 29, 2021), https://www.foreignaffairs.com/united-states/chinas-sputnik-moment; *China faces its "Sputnik" moment as US export curbs deal a blow to its chip ambitions*, Reuters (Oct 13, 2022), https://www.reuters.com/technology/china-faces-its-sputnik-moment-us-export-curbs-deal-blow-its-chip-ambitions-2022-10-13/.

EU Treaties have been revised multiple times in the past and the trend has consistently been towards greater, not lesser, EU integration.[272] In addition, the European courts have over the decades interpreted the Treaties in ways that have vested EU institutions with more powers, judicially moving the EU towards greater integration one judgment at the time.[273] At the same time, such a development would be politically contentious, especially among the various anti-EU parties within the EU whose influence is growing. Just exploring possibilities for loosing these constraints would risk turning the tech war into a heated intra-EU political battle between European federalists (advocating strong EU powers) and sovereigntists (advocating strong member state powers), touching on some of the most existential questions about the nature of the European political project.

In comparison to the United States and the EU, the internal features in China appear relatively stable: we do not expect the tech war to significantly alter the composition of China's internal features for two reasons. First, the Chinese government launched its chip industrial policy as early as 2014—in contrast to more recent U.S. and EU conversations—and its actions have roots in China's state-planned economy going back to the original whole-nation system, as well as long-held foreign investment bans. China's chip policies are thus embedded in foundational political features within its party-state system. Second, Chinese responses to the chip war operate in alignment with the broader Chinese political shift over the past decade that emphasizes the power of the Communist Party over the power of government ministries. Any dramatic Chinese shift would likely require the state to embrace a greater role for other autonomous actors, including the private sector, which remains unlikely given its recent moves towards deepening government control.

In sum, even while we recognize that some constraints may be loosening in the United States and the EU, any radical remaking of the ideological or political identity of the United States is unlikely, at least in the near future. The same goes for the constitutional identity of the EU. Instead, we are more likely to see all players shift within the continuum of the policy space that their existing domestic constraints already allow for. Within that continuum, we observe a shift that is common to all players: a greater move towards centralization. The United States is facing pressure to centralize authority in the Executive Branch, while China is placing even greater policy discretion directly in the hands of top-level Communist-Party entities. The chip war is also pressing the EU to become more centralized in its attempt to better coordinate policy measures across the EU. Thus, the chip war is now amplifying the domestic forces that favor centralization as opposed to diffusion of authority as each country is adjusting to the new era of strategic competition. However, any such shifts towards centralization are likely to fall short of dramatic governmental overhaul. While we view the domestic features as dynamic, at least in principle, we also recognize

[272] *See*, *e.g.*, SEA: Single European Act, 17 February 1986, 1987 O.J. (L 169) 1, 25 I.L.M. 506; Maastricht Treaty, TEU or Union Treaty: Treaty on European Union, 7 February 1992, 1992 O.J. (C191) 1, 31 I.L.M. 253, Treaty of Lisbon Amending the Treaty on European Union and the Treaty Establishing the European Community, 13 December 2007, 2007 O.J. (C306) 1; Jo Shaw, *European Integration*, OXFORD PUBLIC INTERNATIONAL LAW (June, 2022), https://opil.ouplaw.com/display/10.1093/law-oeeul/law-oeeul-e102; Stefan Lehne, *Does the EU Need Treaty Change?*, CARNEGIE EUROPE (June 16, 2022), https://carnegieendowment.org/research/2022/06/does-the-eu-need-treaty-change?lang=en&center=europe

[273] RENAUD DEHOUSSE, THE POLITICS OF JUDICIAL INTEGRATION (Neil Nugent et al. 1998); Arjen Boin & Susanne K. Schmidt, *The European Court of Justice: Guardian of European Integration* in GUARDIANS OF PUBLIC VALUE141–154 (Arjen Boin et al. 2021).

that a radical re-orientation of the tech war is unlikely—precisely because those features currently shaping the tech war are foundational, entrenched into existing legal frameworks, and deeply rooted in the ethos of these societies.

Conclusion

This Article has focused on the "interior dimension" of the global tech war, showing how the distinct internal features of the United States, China, and the EU influence their strategies in the chip war. As Aaron Friedberg concludes in his Cold War study, "[a]pproaches to providing for the national defense that might seem desirable on strategic grounds … can be rejected if they have internal requirements that run counter to the dominant ideology or to the interests of influential societal groups."[274] We agree and would add domestic laws and legal institutions to that list. Few of the many recent books about the U.S.-China rivalry have much to say about law at all, and much of that discussion focuses on *international* law. We have shown how key tools of economic statecraft, including sanctions, export controls, investment restrictions, and other restrictive trade measures, require harnessing *domestic* legal systems for geostrategic ends. Our analysis illuminates how these domestic laws and institutions have moderated—and will likely continue to moderate—strong strategic impulses toward escalation, even as the tech war continues on.

While our primary goal has been to advance the scholarly conversation on the global tech war, our analysis is also relevant for policymakers crafting strategies for waging it. Similarly, tech companies that have become frequent casualties—or occasional beneficiaries—of the tech war, have much to learn from examining the internal features of the relevant actors. This analysis can help them better appreciate the drivers that shape the tech war they are forced to navigate. Finally, we have shown how the study of economic statecraft today is methodologically incomplete without paying close attention to the domestic legal orders that—alongside power relations among states—are shaping modern geopolitical contests. We hope this will open up new avenues to advance scholarly conversations and enhance understanding of emergent international conflicts.

[274] Friedberg, *supra* note 4, at 116.