

“Wars without Gun Smoke”

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Global Supply Chains, Power Transitions,
and Economic Statecraft

Global supply chains are crucial battle lines in modern power transitions. Conventional wisdom holds that when a rising state threatens to displace a dominant state, the resulting fears, misapprehensions, and frustrations make a violent war highly likely, if not inevitable.¹ The empirical record bears this out. From Athens to Japan, the rise of a new power has consistently led to conflicts fought with bullets, bombs, and bayonets.² Today, great powers fight their battles through global supply chains. Over the past century, private businesses have spread the production of automobiles, computers, satellites, and ships across multiple countries, spinning dense webs of economic interdependence among otherwise autonomous states.³ The emergence of these supply chains has led states to embrace economic weapons⁴ like trade, finance, manufacturing,

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1. Graham Allison, *Destined for War: Can America and China Escape Thucydides's Trap?* (Boston: Houghton Mifflin Harcourt, 2017), 17; A. F. K. Organski, *World Politics*, 2nd ed. (New York: Alfred A. Knopf, 1968); A. F. K. Organski and Jacek Kugler, *The War Ledger* (Chicago: University of Chicago Press, 1981); Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1983); Charles F. Doran and Wes Parsons, “War and the Cycle of Relative Power,” *American Political Science Review* 74, no. 4 (1980): 947–965, <https://doi.org/10.2307/1954315>.
 2. Woosang Kim, “Power Transitions and Great Power War from Westphalia to Waterloo,” *World Politics* 45, no. 1 (1992): 153–172, <https://doi.org/10.2307/2010522>. For an opposing view, see Steve Chan, *Thucydides's Trap? Historical Interpretation, Logic of Inquiry, and the Future of Sino-American Relations* (Ann Arbor: University of Michigan Press, 2020).
 3. Stephen G. Brooks, *Producing Security: Multinational Corporations, Globalization, and the Changing Calculus of Conflict* (Princeton, NJ: Princeton University Press, 2005); Gary Gereffi, John Humphrey, and Timothy Sturgeon, “The Governance of Global Value Chains,” *Review of International Political Economy* 12, no. 1 (2005): 78–104, <https://doi.org/10.1080/09692290500049805>.
 4. Robert D. Blackwill and Jennifer M. Harris, *War by Other Means: Geoeconomics and Statecraft* (Cambridge, MA: Harvard University Press, 2016); Daniel W. Drezner, Henry Farrell, and Abra-

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and investment policies to compete for power by waging “wars without gun smoke.”⁵

Knowing how states use economic weapons is critical for understanding modern power transitions.⁶ The empirical record demonstrates that when a dominant state is in decline and perceives a threat from a rising competitor, it will often seek to cut off the latter’s access to supply chains in order to contain its economic growth.⁷ Britain disrupted Germany’s access to shipping lanes at the outset of World War I, and raised rubber prices for the United States during the interwar period. The United States, in turn, banned sales of advanced satellite technologies to Japan in the 1980s and of semiconductors to China in the late 2010s. Rising states have adopted countermeasures to fight back and sustain their growth: Germany made its industrial production more efficient, the United States switched to cheaper rubber suppliers in Liberia, and Japan and China upgraded their respective technological bases to circumvent U.S. trade restrictions.⁸

To wage these wars effectively, states need to establish policies that incentivize private businesses within their jurisdiction⁹ to act in accordance with their geopolitical goals, or what we call economic statecraft.¹⁰ When these businesses support their home state’s goals, it becomes easier for that state to sanction its adversaries or implement industrial policies. But when a business is at odds with its home state—the government of the country

ham L. Newman, eds., *The Uses and Abuses of Weaponized Interdependence* (Washington, DC: Brookings Institution Press, 2021); Henry Farrell and Abraham L. Newman, *Underground Empire: How America Weaponized the World Economy* (New York: Henry Holt, 2023).

5. Hearing on Seapower and Projection Forces in the South China Sea, Day 1, before the House Armed Services Committee, 114th Cong., 2nd sess., September 21, 2016 (prepared statement of Andrew S. Erickson, Professor of Strategy at U.S. Naval War College).

6. Gyula Csurgai, “The Increasing Importance of Geoeconomics in Power Rivalries in the Twenty-First Century,” *Geopolitics* 23, no. 1 (2018): 38–46, <https://doi.org/10.1080/14650045.2017.1359547>

7. We use the terms “declining state” and “dominant state” interchangeably throughout this article.

8. Mariya Grinberg, “Wartime Commercial Policy and Trade between Enemies,” *International Security* 46, no. 1 (Summer 2021): 9–52, https://doi.org/10.1162/isec_a_00412; Silvano A. Wueschner, “Herbert Hoover, Great Britain, and the Rubber Crisis, 1923–1926,” *Essays in Economic & Business History* 18 (2000): 211–221; Michael Mastanduno, “Do Relative Gains Matter? America’s Response to Japanese Industrial Policy,” *International Security* 16, no. 1 (Summer 1991): 73–113, <https://www.jstor.org/stable/2539052>; Christopher Miller, *Chip War: The Fight for the World’s Most Critical Technology* (New York: Simon and Schuster, 2022).

9. Henceforth, when we reference pairings of businesses and states, we are referring specifically to home states and the businesses within their jurisdiction that are integrated in global supply chains.

10. William J. Norris, *Chinese Economic Statecraft: Commercial Actors, Grand Strategy, and State Control* (Ithaca, NY: Cornell University Press, 2016), 13–14.

where the business is headquartered and legally incorporated—it undermines the home state’s agenda and raises the costs to secure business compliance. Business-state relations—the degree of cooperation between businesses in global supply chains and the home state that has jurisdiction over them—have security consequences because they shape the effectiveness of economic statecraft. Much like morale on the battlefield, cooperative relations are a force multiplier for economic statecraft and conflictual relations are a force divider.

This article provides a novel view of the determinants of business-state relations in a country and its implications for the exercise of economic statecraft during modern power transitions. Most international relations scholarship on economic statecraft treats business-state relations as a domestic-level variable that is the outcome of national economic systems and state capacity.¹¹ Instead, we theorize how the position of businesses and their home states in the global economy affects business-state relations within a country over time.

We demonstrate how those businesses that extract higher value from global supply chains often fall within the jurisdiction of the dominant states in the international system, whereas those businesses that extract lower value from global supply chains often fall within the jurisdiction of the rising states. As the two states approach parity and seek to maximize their relative power, they face structural incentives to use economic statecraft to decouple their economies by cutting off supply chains or pursuing self-sufficiency through upgrading. The resulting disruption to profits leads high-value businesses to develop more conflictual relations with the dominant state in which they are based, and low-value businesses to develop more cooperative relations with the rising state in which they are based.

Two cases illustrate the theory: the Anglo-German power transition in the early twentieth century (1890–1914) and the U.S.-China power transition since the late twentieth century. We chose these cases because they are significant. The Anglo-German rivalry is generally considered a paradigmatic power tran-

11. Norris, *Chinese Economic Statecraft*; Henry Farrell and Abraham L. Newman, “Weaponized Interdependence: How Global Economic Networks Shape State Coercion,” *International Security* 44, no. 1 (Summer 2019): 56–57, https://doi.org/10.1162/isec_a_00351; Bryan R. Early and Keith A. Preble, “Going Fishing versus Hunting Whales: Explaining Changes in How the U.S. Enforces Economic Sanctions,” *Security Studies* 29, no. 2 (2020): 231–267, <https://doi.org/10.1080/09636412.2020.1722850>; Navin A. Bapat and Bo Ram Kwon, “When Are Sanctions Effective? A Bargaining and Enforcement Framework,” *International Organization* 69, no. 1 (2015): 131–162, <https://doi.org/10.1017/S0020818314000290>; Geoffrey Gertz and Miles M. Evers, “Geoeconomic Competition: Will State Capitalism Win?,” *Washington Quarterly* 43, no. 2 (2020): 1–20, <https://doi.org/10.1080/0163660X.2020.1770962>; Blackwill and Harris, *War by Other Means*.

sition, which international relations scholars often draw on to make predictions about the trajectory of U.S.-China relations.¹² Furthermore, they exhibit important similarities. Both cases involve a dominant, declining power with military superiority (Britain and the United States) and a rising power with mostly landlocked borders (Germany and China). The rise of global supply chains in dual-use products connected the economies in both cases and contributed to the rising power’s relative economic growth, technology, and military modernization.¹³ Overall, we find support for our theory that the structural forces behind power transitions have divergent effects on business-state relations in the dominant and in the rising powers, irrespective of their national economic systems and state capacity.

Our theory and findings have implications for scholars interested in great power politics, economic statecraft, and modern power transitions. First, we underscore how economic interdependence can encourage rather than discourage competition between great powers. The asymmetrical structure of global supply chains between high- and low-value businesses creates opportunities for dominant states to coerce their rivals and encourages rising states to limit those opportunities as much as possible. Second, we explore the international determinants of business-state relations within a country to deepen the understanding of when states can effectively engage in economic statecraft. Shifting perspectives from the domestic to the international level matters because the same structural forces that incentivize states to “weaponize” private economic networks may constrain their ability to do so in practice. Finally, the theory and findings suggest that the structure of global supply chains may accelerate modern power transitions between dominant and rising powers. Structural incentives to cut off a rising power’s access to global supply chains can trigger a process that ultimately accelerates the dominant power’s decline overtime.

The article proceeds as follows. The first section discusses why business-

12. Ja Ian Chong and Todd H. Hall, “The Lessons of 1914 for East Asia Today: Missing the Trees for the Forest,” *International Security* 39, no. 1 (Summer 2014): 7–43, https://doi.org/10.1162/ISEC_a_00165; Ho-fung Hung, *Clash of Empires: From “Chimerica” to the “New Cold War”* (New York: Cambridge University Press, 2022).

13. For comparisons between the cases, see Etel Solingen, “Domestic Coalitions, Internationalization, and War: Then and Now,” *International Security* 39, no. 1 (Summer 2014): 44–70, https://doi.org/10.1162/ISEC_a_00168. Admittedly, the Anglo-German and U.S.-China power transitions differ in the depth and complexity of their respective supply chains. The supply chains were less globally diffused during the Anglo-German power transition than during the U.S.-China transition. Nonetheless, the structure of global supply chains between high- and low-value businesses is identical across the two cases, and consistent with our expectations.

state relations matter for economic statecraft during a power transition. The second section provides a theory explaining how the structure of the international system affects business-state relations within declining and rising powers over time, with implications for their ability to exercise economic statecraft. The third and fourth sections illustrate the theory in the Anglo-German and U.S.-China power transitions. The conclusion considers some policy implications for how global supply chains may be a factor in future and ongoing power transitions.

Power Transitions, Economic Statecraft, and Business-State Relations

The rise and fall of great powers is a perennial topic in international security. According to the assumptions of power transition theory, one great power—a dominant state—holds preponderant wealth in the international system, which it uses to set international economic rules that “lock in” its position over the others. But uneven rates of growth inevitably cause the dominant state to decline relative to a rising contender. As this contender grows in power, it will eventually challenge the dominant state’s rules and position at the top of the hierarchy.¹⁴ Most scholarship on power transitions focuses on the causes of wars between declining powers and rising powers and emphasizes loss aversion in the declining power and revisionism in the rising power.¹⁵

An increasing number of international relations scholars examine the importance of economic statecraft in modern power transitions. Most economic activity within the international system is carried out by private businesses, not states. These businesses make relatively autonomous decisions on where to trade and invest in response to market incentives. Many of them are multinational corporations that have fostered dense networks among states.¹⁶ Importantly, their transactions can have security externalities that affect a state’s strategic goals.¹⁷ Although some security scholars suggest that economic interdependence between states would limit the possibility of war during a power transition because states gain more from trade than military conquest,¹⁸ others

14. Organski, *World Politics*; Gilpin, *War and Change in World Politics*; G. John Ikenberry, *After Victory: Institutions, Strategic Restraint, and the Rebuilding of Order after Major Wars* (Princeton, NJ: Princeton University Press, 2001).

15. For an excellent review, see Chan, *Thucydides’s Trap?*

16. C. Fritz Foley, James R. Hines Jr., and David Wessel, *Global Goliaths: Multinational Corporations in the 21st Century Economy* (Washington, DC: Brookings Institution Press, 2021).

17. Joanne Gowa, *Allies, Adversaries, and International Trade* (Princeton, NJ: Princeton University Press, 1995).

18. G. John Ikenberry, *Liberal Leviathan: The Origins, Crisis, and Transformation of the American World*

show how states use economic interdependence to compete short of an actual war.¹⁹ Some scholars emphasize how states economically coerce rival states by raising tariffs, sanctioning transactions, and embargoing commercial activity with those states.²⁰ Others explore how states subsidize industrial development, fund research and development (R&D) of key technologies, and promote commercial activities within their territory to reduce their international dependencies.²¹

Little attention has been paid to the role of businesses in economic statecraft, despite businesses’ importance in fostering interdependence between great powers.²² For example, Albert Hirschman, Klaus Knorr, and David Baldwin exclude private actors from their analysis of economic statecraft and focus on how states leverage national-level differences in market power for coercive purposes.²³ Later research on economic coercion also excludes interactions with private actors and assumes that “states are unitary actors” that can directly impose sanctions.²⁴ Henry Farrell and Abraham Newman provide a

Order (Princeton, NJ: Princeton University Press, 2011), 341; Brian Efid, Jacek Kugler, and Gaspare Genna, “From War to Integration: Generalizing Power Transition Theory,” *International Interactions* 29, no. 4 (2003): 293–313, <https://doi.org/10.1080/714950654>. On interdependence and war, see Edward D. Mansfield and Brian M. Pollins, *Economic Interdependence and International Conflict: New Perspectives on an Enduring Debate* (Ann Arbor: University of Michigan Press, 2003).

19. Stacie E. Goddard, “The Road to Revisionism: How Interdependence Gives Revisionists Weapons for Change,” in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, 84–98.

20. Robert A. Pape, “Why Economic Sanctions Do Not Work,” *International Security* 22, no. 2 (Fall 1997): 90–136, <https://doi.org/10.1162/isec.22.2.90>; Kimberly Ann Elliott, “The Sanctions Glass: Half Full or Completely Empty?,” *International Security* 23, no. 1 (Summer 1998): 50–65, <https://doi.org/10.1162/isec.23.1.50>; David A. Baldwin, *Economic Statecraft* (Princeton, NJ: Princeton University Press, 1985); Daniel W. Drezner, “The Hidden Hand of Economic Coercion,” *International Organization* 57, no. 3 (2003): 643–659, <https://doi.org/10.1017/S0020818303573052>.

21. Vinod K. Aggarwal and Andrew W. Reddie, “New Economic Statecraft: Industrial Policy in an Era of Strategic Competition,” *Issues & Studies* 56, no. 2 (June 2020): 1–29, <https://doi.org/10.1142/S1013251120400068>; Mark Z. Taylor, “Toward an International Relations Theory of National Innovation Rates,” *Security Studies* 21, no. 1 (2012): 113–152, <https://doi.org/10.1080/09636412.2012.650596>.

22. For a similar criticism on the inattention to businesses in great power politics, see Miles M. Evers, “Discovering the Prize: Information, Lobbying, and the Origins of U.S.–Saudi Security Relations,” *European Journal of International Relations* 29, no. 1 (2023): 104–128, <https://doi.org/10.1177/13540661221115961>; Rawi Abdelal, “The Profits of Power: Commerce and Realpolitik in Eurasia,” *Review of International Political Economy* 20, no. 3 (2013): 421–456, <https://doi.org/10.1080/09692290.2012.666214>.

23. Klaus Knorr, *Power and Wealth: The Political Economy of International Power* (London: Palgrave Macmillan, 1973), 32; Albert O. Hirschman, *National Power and the Structure of Foreign Trade* (Berkeley: University of California Press, 1945); Baldwin, *Economic Statecraft*, 3.

24. Drezner, “The Hidden Hand”; also, see T. Clifton Morgan and Navin A. Bapat, “Imposing Sanctions: States, Firms, and Economic Coercion,” *International Studies Review* 5, no. 4 (2003): 65–79, <https://doi.org/10.1111/j.1079-1760.2003.00504007.x>; Bapat and Kwon, “When Are Sanctions Effective?”

notable example. They theorize how the topography of private economic networks “generates enduring power imbalances *among states* (emphasis added)” to spy on and coerce one another. Yet they admit that their theory does not “provide any real independent agency to businesses, treating them as the passive transmitters of state policy.”²⁵ While this is a useful theoretical assumption, recent findings show that businesses sometimes defy state policies when doing so increases their profits.²⁶

Because businesses may defy state policies, some security scholars claim that differences in domestic institutions affect business-state relations and how states exercise economic statecraft. One view draws on insights from political economy to examine how national economic systems affect states’ abilities to exercise economic statecraft. For instance, Robert Blackwill and Jennifer Harris suggest that state-led economic systems (e.g., China) can exert more control over businesses than liberal, market-driven economic systems (e.g., the United States).²⁷ Another view focuses on a state’s capacity to monitor and regulate business behavior, arguing that the state must devote substantial resources to incentivize businesses to act in accordance with its geopolitical goals.²⁸ For example, the U.S. Treasury Department only recently gained the legal authority, resources, and presidential support to regulate compliance with U.S. sanctions.²⁹ Similarly, regulators from the military, industry, and civilian communities have cooperated to shape the pace of technological development in China over the past sixty years.³⁰ These studies help explain variation of business-state relations across countries. Although our study does not rule them out as alternative explanations, we find that they are insufficient for understanding changes in business-state relations over time within the same national economic systems and when state capacity remains constant.

To understand changes in business-state relations, security scholars should

25. Farrell and Newman, “Weaponized Interdependence,” 45; Henry Farrell and Abraham L. Newman, “Weaponized Interdependence and Networked Coercion: A Research Agenda,” in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, 315. Also see Robert O. Keohane and Joseph S. Nye, *Power and Interdependence: World Politics in Transition* (Boston: Little, Brown, 1977).

26. Colin M. Barry and Katja B. Kleinberg, “Profiting from Sanctions: Economic Coercion and U.S. Foreign Direct Investment in Third-Party States,” *International Organization* 69, no. 4 (2015): 881–912, <https://doi.org/10.1017/S002081831500017X>; Michael Mastanduno, “Hegemony and Fear: The National Security Determinants of Weaponized Interdependence,” in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, 67–83.

27. Blackwill and Harris, *War by Other Means*; see also Gertz and Evers, “Goeconomic Competition.”

28. Norris, *Chinese Economic Statecraft*.

29. Early and Preble, “Going Fishing.”

30. Tai Ming Cheung, *Fortifying China: The Struggle to Build a Modern Defense Economy* (Ithaca, NY: Cornell University Press, 2013).

pay more attention to international-level processes and patterns. As Peter Gourevitch points out, dynamics at the international level can affect actors’ preferences at the country level.³¹ But security scholars have not sufficiently theorized this insight. These dynamics matter in an era when businesses are deeply embedded in global supply chains, with declining and rising states occupying different positions in those supply chains. Some studies suggest that perceptions of threat can influence both policymakers’ willingness to intervene in the economy and businesses’ preferences to comply with state policies.³² These studies focus on the preferences of businesses or states in a single country and do not examine dynamics within an international structure of power transition. This article thus proposes a theory for understanding how structural dynamics at the international level affect the degree of cooperation or conflict between businesses and the state government within a country, when the country exercises economic statecraft.

Power, Profits, and Statecraft

In this section, we develop a structural theory of business-state relations in economic statecraft. Though business-state relations may take many forms, we focus on both whether businesses comply with or resist their home state’s policy, and how resistance or compliance affects their home state’s effectiveness to pursue economic statecraft. We limit our analysis to those businesses that are integrated in global supply chains, which Terence Hopkins and Immanuel Wallerstein define as an interfirm “network of labor and production processes whose end result is a finished commodity.”³³ Throughout history, global supply chains have been “a major part of the functioning of the capitalist world-economy.”³⁴ Although relations with other states are also important,

31. Peter Gourevitch, “The Second Image Reversed: The International Sources of Domestic Politics,” *International Organization* 32, no. 4 (1978): 882, <https://doi.org/10.1017/S002081830003201X>. Also, see Thomas Oatley, “Toward a Political Economy of Complex Interdependence,” *European Journal of International Relations* 25, no. 4 (2019): 957–978, <https://doi.org/10.1177/1354066119846553>.

32. Margaret M. Pearson, Meg Rithmire, and Kellee S. Tsai, “China’s Party-State Capitalism and International Backlash: From Interdependence to Insecurity,” *International Security* 47, no. 2 (Fall 2022): 135–176, https://doi.org/10.1162/isec_a_00447; Taylor, “Toward an International Relations Theory”; Bapat and Kwon, “When Are Sanctions Effective?”

33. Terence K. Hopkins and Immanuel Wallerstein, “Commodity Chains: Construct and Research,” in Gary Gereffi and Miguel Korzeniewicz, eds., *Commodity Chains and Global Capitalism* (Westport, CT: Praeger, 1994), 17.

34. Immanuel Wallerstein, “Introduction,” *Review* 23, no. 1 (2000): 2, <https://www.jstor.org/stable/40241477>; Gereffi and Korzeniewicz, *Commodity Chains and Global Capitalism*.

we focus on home states because they have the authority to use businesses within their legal jurisdiction for economic statecraft.

ASSUMPTIONS

Our theory rests on two assumptions. First, we assume that the distribution of economic power in the international system is hierarchical at the state level and at the business level. State-level hierarchies manifest through differences in national capabilities and characteristics (e.g., population, wealth, territory, and military capabilities). Here, we follow the basic assumptions of power transition theory in assuming that one dominant state sits at the top of the hierarchy, and below it are a series of major, middle, and minor states, one of which is perceived by the dominant state to be a rising challenger. For simplicity, we focus solely on relations between the dominant state and the rising state, in part because such relationships can lead to international conflict, and because middle-power “hedging” can be erratic and uncertain.³⁵

Business-level hierarchies manifest through differences in value. High-value businesses govern the supply chain and specialize in activities that involve steep barriers to entry and larger profit margins (e.g., R&D, branding, marketing, logistics, and financing). In contrast, low-value businesses specialize in activities that involve fewer barriers to entry and thin profit margins (e.g., raw material extraction, manufacturing, and assembly). Low-value businesses may learn or acquire the resources and skills to upgrade production and move into a high-value position to compete for greater profit margins. Unless their home state offers substantial help and support, however, this will be an initially difficult and risky process given technology difficulties, barriers to learning imposed by high-value businesses, and high sunk costs.³⁶

In theory, we expect the distribution of power at the state level to reinforce the distribution of power at the business level, and vice-versa. On the one hand, the distribution of power between states should influence their businesses’ location in the global supply chain. As an economy matures over time, the most productive sector shifts from low-value activities in manufacturing and assembly to high-value activities in services and innovation.³⁷ High-value businesses should emerge within dominant states’ jurisdiction because their

35. John D. Ciorciari and Jürgen Haacke, “Hedging in International Relations: An Introduction,” *International Relations of the Asia-Pacific* 19, no. 3 (2019): 367–374, <https://doi.org/10.1093/irap/lcz017>.

36. Gereffi, Humphrey, and Sturgeon, “The Governance of Global Value Chains.”

37. Gilpin, *War and Change in World Politics*.

economies have more institutional capacity to develop such innovation-driven businesses. In contrast, low-value businesses tend to exist in rising states' jurisdiction because their economies are still industrializing.

On the other hand, global supply chains should influence the distribution of economic power among states. States whose businesses are higher on the global supply chain will have more opportunities to influence prices and product standards than states whose businesses are lower on the value chain. This suggests a "rich-get-richer" effect, whereby the dominant powers sustain their economic advantages by reaping benefits from their high-value businesses in global supply chains. As a result, rising powers will initially experience rapid growth through their businesses' participation in global supply chains. But they must eventually push their businesses to upgrade into high-value positions to challenge the dominant powers.

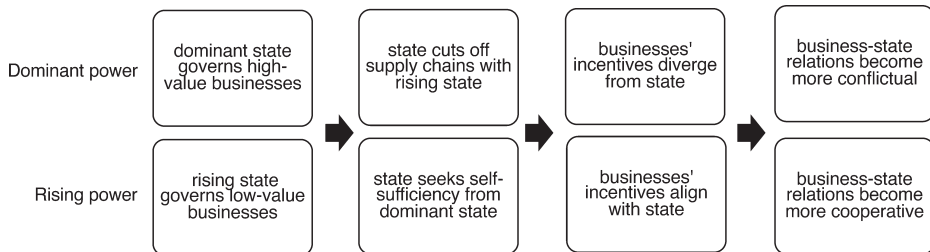
Our second assumption is that states and businesses hold different interests. The primary interest for states is to maximize their relative economic gains, and the primary interest for businesses is to maximize their absolute economic gains. In a self-help international system, a state seeks to maximize its national security relative to other states. A state must evaluate how the distribution of economic gains from supply chains affects its security, especially regarding dual-use technologies with military and political value.³⁸ We expect the dominant state to want to maintain the status quo in global supply chains in order to prevent a rising state from achieving parity, and we expect a rising power to seek to improve its position in the supply chain in order to reap greater benefits from globalization.³⁹ In a global supply chain, businesses seek to maximize their profits. Corporate directors are accountable to shareholders, and shareholders tend to prioritize the present value of their investments rather than a company's market position in the long term.⁴⁰ Consequently, we expect businesses to base their decisions to participate in global supply chains or up-

38. Mastanduno, "Do Relative Gains Matter?"; Joanne Gowa and Edward D. Mansfield, "Power Politics and International Trade," *American Political Science Review* 87, no. 2 (1993): 408–420, <https://doi.org/10.2307/2939050>.

39. Douglas Lemke and William Reed, "Power Is Not Satisfaction: A Comment on de Soysa, O'Neal, and Park," *Journal of Conflict Resolution* 42, no. 4 (1998): 512, <https://doi.org/10.1177/0022002798042004006>.

40. William Lazonick and Mary O'Sullivan, "Maximizing Shareholder Value: A New Ideology for Corporate Governance," *Economy and Society* 29, no. 1 (2000): 13–35, <https://doi.org/10.1080/030851400360541>; Philip Stiles and Bernard Taylor, *Boards at Work: How Directors View their Roles and Responsibilities* (Oxford: Oxford University Press, 2001), chap. 6.

Figure 1. How Power Transitions Affect Business-State Relations along Global Supply Chains



grade their production on whether these activities increase rather than reduce company profits, regardless of their home state's interests.

CAUSAL SEQUENCE

Figure 1 illustrates the sequence by which power transitions should affect business-state relations. First, following the previous assumptions, we begin with two countries (a dominant power and a rising power) that are economically intertwined through global supply chains. High-value businesses operate within the jurisdiction of the dominant state. Most of the manufacturing and assembly of their products are outsourced to low-value businesses that operate within the jurisdiction of the rising state. Because of their businesses' participation in these chains, the two states also experience differential growth rates that decrease the gap in their economic power over time.

Second, mutual insecurities between the dominant state and the rising state incentivize them to use economic statecraft to decouple from the global supply chains that connect their countries. As a rising state becomes more powerful, the dominant state moves to prevent it from reaching parity.⁴¹ The rising state, meanwhile, fears that the dominant state will obstruct its development and becomes determined to expand its power to reach parity.⁴² Contrary to conventional wisdom, we argue that the hierarchical structure of global supply chains heightens rather than diminishes these mutual insecurities. The rising state depends on access to global supply chains for its economic growth and techno-

41. Jack S. Levy, "Declining Power and the Preventive Motivation for War," *World Politics* 40, no. 1 (1987): 82–107, <https://doi.org/10.2307/2010195>.

42. Cheng Gao, "Market Expansion and Grand Strategy of Rising Powers," *Chinese Journal of International Politics* 4, no. 4 (2011): 405–446, <https://doi.org/10.1093/cjip/por021>.

logical development, whereas the dominant state controls access to these supply chains by virtue of having jurisdiction over the high-value businesses in the chains.⁴³ This hierarchical structure enables the dominant state to use economic coercion to choke off the rising power’s access to global supply chains and forestall its growth and technological development. The rising state, meanwhile, can use its financial and technical resources to upgrade its industrial base and pursue self-sufficiency to reduce its vulnerability to economic coercion.⁴⁴ The result is that both states are incentivized to cut off economic ties to each other to maximize their relative power.

Incentives to decouple should increase over the course of a power transition. During the early stages of power transition, there is a sizable gap in economic power between the dominant state and the rising state. As a result, the rising state tends to avoid provocations that could disrupt its economic growth, and the dominant state often faces more immediate, concrete threats to its national security. As the two powers approach parity and become even more sensitive to relative gains, the rising state begins to demand concessions in international rules to continue its economic growth, and the dominant state begins to see the rising state as a more immediate threat to its national security.⁴⁵ Eventually, the prospect of parity triggers the dominant state and the rising state to use economic statecraft to decouple their economies.

Third, the resulting disruption to the global supply chain incentivizes businesses to align with or diverge from their home states. Policies and regulations that encourage decoupling disrupt the normal flow of goods and services among businesses.⁴⁶ But a business’s position in the global supply chain influences whether and how much this disruption affects its profits. Decoupling decreases the profits of high-value businesses because they already extract the most value by trading with businesses at the low end of the supply chain. They lose revenue from no longer being able to sell to suppliers in the rising power, and they incur higher costs from having to “reshore” production

43. Andrew B. Kennedy and Darren J. Lim, “The Innovation Imperative: Technology and U.S.–China Rivalry in the Twenty-First Century,” *International Affairs* 94, no. 3 (2018): 553–572, <https://doi.org/10.1093/ia/iyy044>.

44. Aggarwal and Reddie, “New Economic Statecraft.”

45. David M. Edelstein, *Over the Horizon: Time, Uncertainty, and the Rise of Great Powers* (Ithaca, NY: Cornell University Press, 2017); Mastanduno, “Do Relative Gains Matter?”

46. Daniel W. Drezner, “Conflict Expectations and the Paradox of Economic Coercion,” *International Studies Quarterly* 42, no. 4 (1998): 709–731, <https://doi.org/10.1111/0020-8833.00103>; Gary Gereffi, Hyun-Chin Lim, and JoonKoo Lee, “Trade Policies, Firm Strategies, and Adaptive Reconfigurations of Global Value Chains,” *Journal of International Business Policy* 4, no. 4 (2021): 506–522, <https://doi.org/10.1057/s42214-021-00102-z>.

or switch to alternative, more expensive suppliers to comply with sanctions.⁴⁷ In contrast, low-value businesses want to move up the global supply chain to extract more value from it. If sanctions cut off low-value businesses from transacting with high-value businesses in the dominant power, then low-value businesses may not survive unless they can upgrade their positions to extract more value from the global supply chain.

Thus, fourth, power transitions will eventually cause business-state relations to move in opposite directions in the dominant and rising powers, with observable implications for the exercise of economic statecraft. Our theory expects business-state relations to become more conflictual in the dominant power because the state's interests in sanctioning the rising power impinge on high-value businesses' profits. Accordingly, we should observe high-value businesses engaging in activities that undermine the dominant state's strategy to continue transacting with the rising power, and the dominant state adopting punitive measures to monitor and enforce businesses' compliance with its policies. Our theory also expects business-state relations to become more cooperative in the rising power as the state's interest in upgrading its industrial base aligns with the low-value businesses' interests in maximizing their profits. Evidence of this shift includes states increasing their financial and technical support for industrial upgrading and businesses capitalizing on this support to insulate themselves from the effects of economic coercion.

The next sections test the plausibility of our argument in the Anglo-German power transition and in the U.S.-China power transition. In each case, we first examine the hierarchical structure of the international system, specifically between dominant and rising states and between high- and low-value businesses in the global supply chains connecting their countries. Then, we trace how the power transition affected business-state relations in both countries, and we assess how these relations affected the states' respective abilities to exercise economic statecraft.

Anglo-German Power Transition, 1890–1914

This section explores the power transition between Britain and Germany from 1890 to 1914. Based on gross indicators, Britain was the dominant world

47. Bapat and Kwon, "When Are Sanctions Effective?"; Gereffi, Humphrey, and Sturgeon, "The Governance of Global Value Chains." The term "reshoring" refers to returning production and manufacturing from overseas back to the host country. Weifeng Zhai, Shiling Sun, and Guangxing Zhang, "Reshoring of American Manufacturing Companies from China," *Operations Management Research* 9 (December 2016): 62–74, <https://doi.org/10.1007/s12063-016-0114-z>.

power in the nineteenth century. At its peak in 1870, Britain’s share of world manufacturing was almost 25 percent, the British empire contained a quarter of the world’s population, and the Royal Navy was as powerful as the next two largest navies.⁴⁸ Germany emerged as Britain’s primary challenger in the late nineteenth century. By 1913, Germany’s population had exploded to 66 million (up from 49 million in 1890), and its share of world manufacturing grew from 8.5 percent in 1890 to 14.8 percent, eclipsing that of Britain (13.6 percent). Moreover, German officials sought to increase Germany’s power through aggressive colonization and hoped to create a navy “equally as strong as England’s.”⁴⁹

In this period, global supply chains around light manufacturing began to develop. Technological advancements reduced the costs of oceanic shipping and enabled European manufacturers to acquire bulk cargoes of raw materials, such as metals and nitrates, from North America and South America. The volume of international trade across the Atlantic surged as nations began to specialize in different stages of manufacturing.⁵⁰ We focus on the supply chains for light manufacturing, especially chemical products, electrical equipment, and machinery, because they were the leading engines of economic growth in the late nineteenth century.⁵¹ Moreover, they were fundamental to modern warfare. Chemical plants synthesized new munitions and poisonous gases, electrical generators powered military telegraphs and telephones, and industrial machinery mass-produced weapons and ammunitions.

As the dominant world power, Britain specialized in high-value segments in both shipping and financial services.⁵² Its economy grew rapidly after 1830 by virtue of it being the first country to industrialize, and it developed vibrant financial and shipping industries.⁵³ By 1914, bankers and brokers in London financed roughly 60 percent of the world’s trade, and shipowners and

48. Paul M. Kennedy, *The Rise and Fall of the Great Powers* (New York: Vintage, 1989), 151; Ronald Findlay and Kevin H. O’Rourke, *Power and Plenty: Trade, War, and the World Economy in the Second Millennium* (Princeton, NJ: Princeton University Press, 2009), 411.

49. Kennedy, *The Rise and Fall of the Great Powers*, 212.

50. Nicholas A. Lambert, *Planning Armageddon: British Economic Warfare and the First World War* (Cambridge, MA: Harvard University Press, 2012), 20.

51. Wolf-Fabian Hungerland and Nikolaus Wolf, “The Panopticon of Germany’s Foreign Trade, 1880–1913: New Facts on the First Globalization,” *European Review of Economic History* 26, no. 4 (2022): 479–507, <https://doi.org/10.1093/ereh/heac001>.

52. On the value of shipping and financial services in the early twentieth century, see Nicholas A. Lambert, *The War Lords and the Gallipoli Disaster: How Globalized Trade Led Britain to Its Worst Defeat of the First World War* (New York: Oxford University Press, 2021), 26–27; Nicholas Mulder, *The Economic Weapon: The Rise of Sanctions as a Tool of Modern War* (New Haven, CT: Yale University Press, 2022), 29–33.

53. Kennedy, *The Rise and Fall of the Great Powers*, 151.

warehousemen registered at the London Baltic Exchange oversaw the transportation and distribution of almost 55 percent of the world's trade (inbound and outbound).⁵⁴ Britain's dominance in these segments was so profitable that one statistician concluded that Britain's economy could sustain itself even "if we do not export a single pound's worth of manufactures."⁵⁵

Germany, in contrast, specialized in the low-value segments of the supply chain, manufacturing finished products from raw materials. Manufacturers represented in the Association of Industrialists flooded foreign markets with finished goods, accounting for half of worldwide electrical exports and a third of global chemical exports and machinery exports.⁵⁶ Yet, Germany's manufacturers still relied on the City of London for financial resources and mercantile technologies to bolster this trade.⁵⁷ They received roughly half of their raw imports from British shipowners, and they borrowed one-fifth of the daily credit held by London brokers to finance their trade.⁵⁸ German manufacturers had to increase their output six-fold to make a small gain in overall economic growth relative to Britain.⁵⁹ Because of their different positions in global supply chains, the power transition between Great Britain and Germany had divergent effects on the business-state relations within the two countries.

BUSINESS-STATE RELATIONS IN GREAT BRITAIN

The interests of the British state and its high-value banks and shipowners initially aligned. From 1890 to 1905, members of the British cabinet committed to a status quo foreign policy of "splendid isolation" from the European continent.⁶⁰ This strategy included committing to free trade, avoiding entangling alliances, and maintaining a "two-power standard," whereby the Royal Navy could face the next two most powerful naval powers at once.⁶¹ Cabinet mem-

54. Mulder, *The Economic Weapon*, 33–34.

55. Edgar Crammond, "The Economic Relations of the British and German Empires," *Journal of the Royal Statistical Society* 77, no. 8 (1914): 798, <https://doi.org/10.2307/2340924>.

56. Alfred D. Chandler Jr., *Scale and Scope: The Dynamics of Industrial Capitalism* (Cambridge, MA: Harvard University Press, 2009), 410.

57. Harold G. Moulton and Constantine E. McGuire, *Germany's Capacity to Pay: A Study of the Reparation Problem* (New York: McGraw-Hill, 1923), 31; N. Molodowsky, "Germany's Foreign Trade Terms in 1899–1913," *Quarterly Journal of Economics* 41, no. 4 (1927): 664–683, <https://doi.org/10.2307/1884886>.

58. Crammond, "The Economic Relations," 786, 791; Richard Roberts, *Saving the City: The Great Financial Crisis of 1914* (New York: Oxford University Press, 2013), 31.

59. David S. Landes, *The Unbound Prometheus: Technical Change and Industrial Development in Western Europe from 1750 to the Present* (Cambridge: Cambridge University Press, 1969), 329.

60. "Lord Rosebery on the Situation," *Times* (London), March 4, 1896.

61. Paul M. Kennedy, *The Rise and Fall of British Naval Mastery* (London: Penguin, 1976), chap. 7.

bers felt cautiously optimistic about Germany's rise. They doubted its plans to challenge British naval supremacy as "cheap talk" and maintained that "there was no weakening" in Britain's economic position relative to Germany's.⁶² The City of London supported splendid isolation because Germany's rise contributed "a goodly fraction of the wealth of the City of London."⁶³ The City assured Parliament that "for the larger type of war vessels and for the best class of tramp steamers and liners, there is no country in the world that can touch England at present."⁶⁴

Around 1905, the British state began to contemplate a preventive war with Germany. Cabinet members worried that the Royal Navy could no longer maintain its two-power standard against the German navy and another navy, and that the country was becoming a "weary titan" that needed to refocus its resources on maintaining its supremacy in Europe rather than defending its far-flung colonies.⁶⁵ Reports also spread that Kaiser Wilhelm II felt "an undue sensitiveness as to the recognition of the position which he considered the German Empire ought to occupy in the world" and desired "to put an end to the arrogance and encroachments of England" once its military was strong enough to do so.⁶⁶ This seemed evident when Germany refused the 1904 Anglo-French entente granting France dominion over Morocco and Britain dominion over Egypt. Cabinet members suspected that Germany intended to acquire a naval port on the Atlantic coast in Morocco, which "would be vitally detrimental to us from a naval point of view."⁶⁷ As a result, Britain offered France military support, forcing Germany to concede to the French position at

62. "Statistical Tables Relating to the Progress of the Foreign Trade of the United Kingdom, and of Other Countries, with Report to the Board of Trade," *Parliamentary Papers*, vol. 80, C7349 (1894), 3, <https://archives.parliament.uk/online-resources/parliamentary-papers/>.

63. Harold Cox, *Are We Ruined by the Germans?* (London: Cassell, 1896), 9.

64. Tariff Commission, *Report of the Tariff Commission*, vol. 4, *The Engineering Industries* (London: P. S. King & Son, 1909), para. 529. For more information on the City of London's preferences toward splendid isolation, see M. J. Daunt, "'Gentlemanly Capitalism' and British Industry 1820-1914," *Past & Present* 122, no. 1 (1989): 119-158, <https://doi.org/10.1093/past/122.1.119>.

65. "Mr. Chamberlain on Patriotism," *Times* (London), November 4, 1897.

66. "From Sir F. Lascelles, 24 May 1907, General Report on Germany for 1906," in G. P. Gooch and Harold Temperley, eds., *British Documents on the Origins of the War, 1898-1914*, vol. 3, *The Testing of the Entente 1904-6* (London: His Majesty's Stationary Office, 1928), 437-438; "Annex," notes of a conversation between L. Mattet and Delcassé, December 20, 1905, in Gooch and Temperley, *British Documents*, 3: 432-433.

67. "Fisher to Lansdowne, 22 April 1905," in Arthur J. Marder, ed., *Fear God and Dreadnought: The Correspondence of Admiral of the Fleet Lord Fisher of Kilverstone*, vol. 2 (Cambridge, MA: Harvard University Press, 1956), 55. For other discussions of Germany acquiring a Moroccan port, see "No. 92: Sir F. Bertie to the Marquess of Lansdowne," Paris, April 25, 1905, in Gooch and Temperley, *British Documents*, 3: 74-75.

the Algeciras Conference of 1906. Nonetheless, the events convinced British cabinet members that “Germany was deliberately following a policy which is essentially opposed to vital British interests, and that an armed conflict cannot in the long run be averted.”⁶⁸

British war plans emphasized economic coercion. Specifically, the 1907 war plans recommended a “distant” blockade, whereby the state would prohibit British vessels from transporting goods to Germany, and the Royal Navy would blockade German ports in support of a French advance. Policymakers anticipated that this “would cripple German oversea trade at a minimum risk and difficulty to ourselves” and “might cause such a loss to the enemy that the pressure of commercial influence . . . would end the war without further measures on our part.”⁶⁹ Owing to these lofty expectations, cabinet members readied the state to blockade Germany if war erupted. They increased naval expenditures in 1909–1910 to maintain supremacy over “the vital center of English commerce,”⁷⁰ and in 1912 they granted the Royal Navy the authority to issue a royal proclamation to prohibit “British merchant ships from carrying specified articles of Warlike Store, of whatever origin and ownership to Germany” and to prevent financial dealings between the City of London and German manufacturers.⁷¹ They hoped the blockade could be “carried out without a hitch and according to plan” if war broke out.⁷²

After 1905, business-state relations began to diverge because the City of London saw Britain’s war plans as a threat to its profits. For example, London bankers testified that “a temporary cessation of German remittances” would collapse international credit markets and bring global supply chains to a standstill. Banks would stop issuing bills of exchange because they would not remain solvent, raw materials producers would refuse to supply their goods

68. “Memorandum by Mr. Eyre Crowe, 1 Jan. 1907, Present State of British Relations with France and Germany,” in Gooch and Temperley, *British Documents*, 3: 414.

69. Lambert, *Planning Armageddon*, 77.

70. Alfred Mahan, *The Influence of Sea Power upon History, 1660–1783* (Boston: Little, Brown, 1904), 541. For an overview of Mahan’s influence on British naval planning, see Paul M. Kennedy, “Mahan versus Mackinder: Two Interpretations of British Sea Power,” *Militärgeschichtliche Zeitschrift* [Military History Journal] 16, no. 2 (1974): 39–66, <https://doi.org/10.1524/mgzs.1974.16.2.39>; Nicholas A. Lambert, “Admiral Sir John Fisher and the Concept of Flotilla Defence, 1904–1909,” *Journal of Military History* 59, no. 4 (1995): 639–660, <https://doi.org/10.2307/2944496>.

71. “Schedule 8,” November 26, 1911, *Report and Proceedings of the Standing Subcommittee of the Committee of Imperial Defense on Trading with the Enemy*, 1912, Cabinet Papers (Cab.) 16/18A, British National Archives, London, United Kingdom, 40.

72. Lambert, *Planning Armageddon*, 144.

without a guarantee of payment, and shipowners would refuse to sail if they did not have full cargoes.⁷³ The result would be high prices and scarcity for everyone.⁷⁴ British shipowners shared similar concerns with the Board of Trade. They opposed the cabinet's plan to prohibit trade in aluminum, iron, manganese, and other strategically important raw materials to Germany because these materials constituted "large amounts in the statistics of export trade."⁷⁵ Restricting the City of London from financing and transporting raw materials to Germany would result in massive losses and would enable rivals to expand their market share at the expense of British shipping.⁷⁶ Consequently, "mercantile & business opinion" was "aghast at any possibility" of a war with Germany.⁷⁷

In response to British war plans, the City of London sought to improve relations with Germany to avoid a war. Bankers and shipowners formed associations (e.g., the Anglo-German section in the London Chamber of Commerce and Industry in 1905 and the Anglo-German Friendship Committee in 1906) to promote trade and "amicable relations with Germany."⁷⁸ The associations arranged meetings and dinners between British and German parliamentarians, financed editorials advocating for a rapprochement with Germany, and lobbied cabinet members to negotiate with their German counterparts. One such negotiation called for Germany to slow down its naval expansion in exchange for Britain remaining neutral in a Franco-German war.⁷⁹ Even on the precipice of war in August 1914, the City of London was "begging [the cabinet] not to intervene."⁸⁰ None of these efforts succeeded in shifting Britain's policy.

73. "Testimony of Huth Jackson," *Report and Proceedings of the Standing Subcommittee*, 91.

74. Lambert, *Planning Armageddon*, 126.

75. *Report of an Interdepartmental Conference on the Question of Restrictions on the Export of Warlike Stores in Time of War*, February 21, 1912, Cab. 17/89, British National Archives, London, United Kingdom, para. 9.

76. John McDermott, "'A Needless Sacrifice': British Businessmen and Business as Usual in the First World War," *Albion* 21, no. 2 (1989): 268–269, <https://doi.org/10.2307/4049929>.

77. Lambert, *Planning Armageddon*, 191.

78. Charles E. Musgrave, *The London Chamber of Commerce from 1881 to 1914: A Retrospective Appreciation* (London: Effingham Wilson, 1914), 43, 58.

79. Paul Kennedy, *The Rise of the Anglo-German Antagonism, 1860–1914* (London: George Allen and Unwin, 1980), 304; Paul A. Papayoanou, "Interdependence, Institutions, and the Balance of Power: Britain, Germany, and World War I," *International Security* 20, no. 4 (Spring 1996): 62–63, <https://doi.org/10.1162/isec.20.4.42>; Panikos Panayi, *Enemy in Our Midst: Germans in Britain during the First World War* (London: Bloomsbury, 2014), 40.

80. George Riddell, *Lord Riddell's War Diary 1914–1918* (London: Ivor Nicholson and Watson, 1933), 2.

Cabinet members complained that the City of London was “generally timid, and apt to follow pusillanimous counsels.”⁸¹ Britain’s national security outweighed the City’s bottom line.⁸²

Ultimately, the conflict between the British state and the City of London undermined the effectiveness of the blockade against Germany. Two days after declaring war on Germany, the government banned shipowners and bankers from trading “any article comprised in the list of contraband of war” intended for use in Germany, including aluminum, copper, and nitrates.⁸³ Bankers in London panicked; German manufacturers owed them almost £400 million, without which they faced insolvency.⁸⁴ Shipowners likewise complained about losing market share, including “the whole of the Brazilian trade if they refused to carry for such German firms.”⁸⁵ One estimate suggests that the blockade cost them £30 million in lost trade within the first six months of 1915 alone.⁸⁶

The City of London’s resistance to the blockade helped to prolong the war with Germany.⁸⁷ Bankers and shipowners decided to continue transacting with Germany by rerouting their raw materials trade through neutral countries, opening credits, and shipping cargoes to dummy consignees in Rotterdam and Copenhagen.⁸⁸ In 1915, for example, exports of war-related materials to neutral countries were 50 to 70 percent higher than in the years before the blockade.⁸⁹ The British Foreign Office understood that there was no

81. “Sir E. Crowe to Sir E. Grey, 31 July, Private Enclosing Memorandum on Position of Great Britain,” in G. P. Gooch and Harold Temperley, eds., *British Documents on the Origins of the War, 1898–1914*, vol. 11, *The Outbreak of War: Foreign Office Documents* (London: His Majesty’s Stationary Office, 1926), 228; also, see “Minutes by Mr. Eyre Crowe, Sir Eric Barrington, Sir Charles Hardinge, and Sir E. Grey, 26 June 1906, Article in *Cologne Gazette*,” in Gooch and Temperley, *British Documents*, 3: 359–360.

82. See “Final Report,” *Report and Proceedings of the Standing Subcommittee*, para. 22.

83. “A Proclamation Prohibiting, under Section 8 of the Customs and Inland Revenue Act, 1879, the Exportation from the United Kingdom of Certain Warlike Stores, Provisions, and Victual,” *London Gazette*, August 5, 1914.

84. “Testimony of Schuster,” *Report and Proceedings of the Standing Subcommittee*, Q. 574, 151; David French, *British Economic and Strategic Planning: 1905–1915* (London: Routledge, 2013), 90–95, <https://doi.org/10.4324/9781315020075>.

85. Phillip Dehne, “From ‘Business as Usual’ to a More Global War: The British Decision to Attack Germans in South America during the First World War,” *Journal of British Studies* 44, no. 3 (2005): 524, <https://doi.org/10.1086/429709>.

86. McDermott, “‘A Needless Sacrifice,’” 273.

87. The failure of the blockade to quickly end the war with Germany is detailed throughout Lambert, *Planning Armageddon*, chaps. 8–9.

88. *Ibid.*, 227–228, 353–355.

89. Eric W. Osborne, *Britain’s Economic Blockade of Germany, 1914–1919*, Cass Series: Naval Policy and History (London: Routledge, 2004), 105–106. Also see Lambert, *Planning Armageddon*, 276, 395.

other explanation for the swell in goods to neutral countries “than that of intended enemy destination.”⁹⁰ But tightening restrictions on neutral trade proved exceptionally difficult. The attorney general explained that differentiating between legitimate and illegitimate trade vis-à-vis neutral countries was particularly difficult because applications for special export licenses were so numerous, “amounting to an average of over 900 a day, [making] it . . . impossible . . . to consider every case separately.” Licenses were issued on the assumption of good faith “without full knowledge of the end user’s identity.”⁹¹ Moreover, restricting neutral trade threatened to alienate relations with neutral countries, such as Denmark and Norway.⁹² The Royal Navy released most of the ships that it detained for trading with the enemy, and formal charges were never brought against them.⁹³ By summer 1915, the British cabinet recognized that the blockade was not working.⁹⁴ Had business-state relations been more cooperative, the blockade might have produced more than a “slight inconvenience.”⁹⁵

BUSINESS-STATE RELATIONS IN IMPERIAL GERMANY

The dynamics of the business-state relationship were different in Germany. Initially, the interests of the German state and its lower-value, light manufacturers did not align. In the 1890s, Germany’s kaiser developed a revisionist foreign policy known as *Weltpolitik* to challenge Britain for world power. The strategy entailed raising tariffs on British trade, acquiring colonies for export markets and raw materials, and building battleships to protect German commerce.⁹⁶ The kaiser’s military advisers convinced him that the country needed colonies to claim “our place in the sun”⁹⁷ as a world power and a navy “to protect our growing trade,”⁹⁸ which was “helpless before the 130 British cruisers.”⁹⁹ Yet Germany’s light manufacturers considered *Weltpolitik* to be econom-

90. See McDermott, “A Needless Sacrifice,” 273.

91. Lambert, *Planning Armageddon*, 347.

92. *Ibid.*, 496.

93. Osborne, *Britain’s Economic Blockade*, 105–106; Lambert, *Planning Armageddon*, 354–355.

94. The cabinet’s dissatisfaction with the blockade is detailed throughout Lambert, *Planning Armageddon*, chaps. 8–9.

95. *Ibid.*, 479.

96. Kennedy, *The Rise of the Anglo-German Antagonism*, 223–225.

97. Chancellor von Bülow, speech on draft law concerning the German Fleet, to Reichstag, December 6, 1897, *Stenographic Reports of Reichstag Proceedings*, 9th Legislative Period, 5th session, vol. 1 (Berlin, 1898), 60.

98. “Count Hatzfeldt to the German Foreign Office,” October 25, 1895, in E. T. S. Dugdale, *German Diplomatic Documents, 1871–1914*, vol. 2, *From Bismark’s Fall to 1898* (London: Methuen, 1928), 369.

99. “Emperor William, at Postdam, to the Chancellor, Prince von Hohenlohe,” October 25, 1896, in

ically senseless. They worried that it would both raise the cost of production at home and lead to “increased political complications and then increased disturbance to German commerce.”¹⁰⁰ They also believed that markets in the colonies were less economically promising than those in Europe.¹⁰¹ As a result, light manufacturers formed the Association of Industrialists in 1895 to lobby for better relations with Britain, their largest customer.¹⁰²

Around 1905, the German state began to fear that Britain might initiate a preventive attack to stop its rise. The kaiser’s military advisers warned that the distribution of power in Europe was changing quickly and that Germany was entering a “danger zone” because the German fleet was not yet strong enough to deter the Royal Navy and might be destroyed if the “British knock at the German fleet after the fashion of Copenhagen in 1800.”¹⁰³ Others feared that the “seizure of our trade and the damaging of our export industry would throw back our economic and political development for generations and have an effect similar to the Thirty Years’ War.”¹⁰⁴

These fears were not unfounded. News of the Anglo-French entente alerted German officials that Britain was moving to cut off Germany from global trade, given that Morocco was “one of the few countries where Germany can compete freely in trade.”¹⁰⁵ Wilhelm II declared his public support for Moroccan independence in the hopes of preserving an “open door in the fullest sense,” and he threatened a war with France.¹⁰⁶ But Germany lacked the

Dugdale, *German Diplomatic Documents*, 2: 471. For the domestic politics of *Weltpolitik*, see Papayouanou, “Interdependence, Institutions, and the Balance of Power,” 67–71.

100. Pauline Safford Relyea Anderson, *The Background of Anti-English Feeling in Germany, 1800–1902* (New York: Octagon Books, 1969), 101–102.

101. Martin Kitchen, *The Political Economy of Germany, 1815–1914* (1978; repr., New York: Routledge, 2019), 198, 229–230.

102. Anderson, *The Background of Anti-English Feeling*, 155–165.

103. The quote references the Battle of Copenhagen in 1801, when the Royal Navy launched a preventive strike against the Royal Danish Navy. “Memorandum by Count von Metternich, in Berlin,” December 18, 1904, in E. T. S. Dugdale, *German Diplomatic Documents*, vol. 3, *The Growing Antagonism (1898–1910)* (London: Methuen, 1928), 184. For similar discussions of the “danger zone,” see “Admiral von Tirpitz to the Chancellor, Prince von Bülow,” January 4, 1909, in Dugdale, *German Diplomatic Documents*, 3: 335–340; “Minutes of the Discussion on the Question of an Understanding with England,” June 3, 1909, in Dugdale, *German Diplomatic Documents*, 3: 352–360.

104. Paul M. Kennedy, “Tirpitz, England and the Second Navy Law of 1900: A Strategical Critique,” *Militär-geschichtliche Zeitschrift* [Military History Journal] 8, no. 2 (1970): 35, <https://doi.org/10.1524/mgzs.1970.8.2.33>.

105. “Memorandum by Baron Von Holstein,” June 3, 1904, in Dugdale, *German Diplomatic Documents*, 3: 220–221. Also see Eugene Staley, “Mannesmann Mining Interests and the Franco-German Conflict over Morocco,” *Journal of Political Economy* 40, no. 1 (1932): 52–72, <https://doi.org/10.1086/254309>.

106. “Chancellor von Bülow, to the Emperor,” April 4, 1905, in Dugdale, *German Diplomatic Documents*, 3: 224–225.

naval power to challenge Britain and France, and Wilhelm II was forced to concede to the French position at the international conference in Algeiras in 1906.¹⁰⁷ This embarrassment convinced his advisers that Germany’s economy was “dangling on a thread, which at any moment might be cut by a swift, ruthless stroke from Britain.”¹⁰⁸

After the Moroccan crisis, Germany prepared for a war with Britain. The kaiser’s advisers anticipated a three-front war, in which the Royal Navy would interdict Germany’s supply lines, allowing French and Russian troops to quickly overrun a weakened German Army.¹⁰⁹ On the basis of these projections, the kaiser submitted supplementary naval bills in 1906, 1908, and 1911 to modernize and expand Germany’s navy for “protecting our commerce”¹¹⁰ if not “keeping England from attacking us.”¹¹¹ He also approved plans for fighting France and Russia on land. The 1905 Schlieffen memorandum advocated a decisive offensive attack on France via Belgium before concentrating Germany’s troops and resources on Russia.¹¹² Later strategic modifications to the plan suggested that the Netherlands “would be a great value” because its “neutrality allows us to have imports and supplies” if a British blockade materialized.¹¹³ Wilhelm II reviewed the plans in a 1912 war council meeting and agreed to implement them once the army and navy were prepared.¹¹⁴

Germany’s low-value manufacturers also began to view Britain as a threat to their profits. Panic spread that Britain was conspiring with its allies to cut them out of world markets. Prominent members of the Association

107. Lamar Cecil, *Wilhelm II: Emperor and Exile, 1900–1941* (Chapel Hill: University of North Carolina Press, 1989), 104.

108. Jonathan Steinberg, “The Copenhagen Complex,” *Journal of Contemporary History* 1, no. 3 (1966): 23, <https://doi.org/10.1177/002200946600100302>.

109. Terence Zuber, *The Real German War Plan, 1904–14* (Cheltenham, UK: History Press, 2011), 100–115.

110. Alfred von Schlieffen was the chief of the German general staff from 1891 to 1906. “Memorandum by Prince von Bülow,” February 11, 1909, in Dugdale, *German Diplomatic Documents*, 3: 343–344.

111. “Chancellor von Bülow, to Admiral von Tirpitz,” December 25, 1908, in Dugdale, *German Diplomatic Documents*, 3: 331–332.

112. “Memorandum of 1905: The Schlieffen Plan c. 1911,” in Robert Foley, trans. and ed., *Alfred von Schlieffen’s Military Writings* (London: Routledge, 2003), 163–174. For historiographical debates on the Schlieffen Plan, see Keir A. Lieber, “The New History of World War I and What It Means for International Relations Theory,” *International Security* 32, no. 2 (Fall 2007): 155–191, <https://doi.org/10.1162/isec.2007.32.2.155>.

113. “Comments by Moltke on the Memorandum c. 1911,” in Foley, *Alfred Von Schlieffen’s Military Writings*, 163–174, 178–180.

114. John C. G. Röhl, “Goodbye to All That (Again)? The Fischer Thesis, the New Revisionism and the Meaning of the First World War,” *International Affairs* 91, no. 1 (2015): 153–166, <https://doi.org/10.1111/1468-2346.12191>.

of Industrialists worried that Germany was becoming “surrounded by enemies”¹¹⁵ that began “turning the screw of high protective tariffs” to make “the development of German exports increasingly difficult and less profitable.”¹¹⁶

The most notable of these voices was Walter Rathenau of the German conglomerate AEG (Allgemeine-Elektrizitäts-Gesellschaft), the country’s largest manufacturer of electrical goods. His articles and memoranda were distributed across government and business circles, and they warned that Britain would soon “break the great English tradition of free trade and lead the country to protective tariffs”¹¹⁷ or “have to wage a preventive war” to cripple Germany’s ascent.¹¹⁸ Rathenau believed that economic encirclement posed “more serious dangers than any weapon threat” because German manufacturers depended on “the mercy of the world markets.” Even subtle price increases in imported raw materials would make the manufacturers less competitive, which would destroy Germany’s economy. Therefore, manufacturers needed to switch their supply lines because raw materials were quickly becoming “hotly disputed preferential goods.”¹¹⁹

In response to Rathenau’s warnings, German manufacturers felt that they needed to upgrade to a more resilient position along the global supply chain. One of Rathenau’s ideas was for Germany to form a “fourth world empire” on the European continent, encompassing Austria-Hungary, the Balkans, Belgium, Holland, Italy, Switzerland, and the ore-rich parts of France. “Mitteleuropa,”¹²⁰ as it was called, would be a self-sufficient empire that would be independent of British financial and shipping services and that would use land routes “to make sure of our raw material requirements and to protect our exports.”¹²¹ In a 1914 memorandum to the German emperor,

115. Fritz Fischer, *War of Illusions: German Policies from 1911 to 1914* (New York: W. W. Norton, 1975), 234.

116. Hans-Peter Ullmann, *Der Bund der Industriellen* [The Association of Industrialists] (Göttingen, Germany: Vandenhoeck and Ruprecht, 1976), 222–223, <https://doi.org/10.13109/9783666359729>.

117. Walther Rathenau, “Englands Industrie (1906)” [England’s industry (1906)], in *Gesammelte Schriften* [Collected writings], vol. 4 (Berlin: S. Fischer, 1918), 143–152.

118. Walther Rathenau, “England and Us (1912),” in *Gesammelte Schriften*, vol. 1 (Berlin: S. Fischer, 1918), 209–219.

119. Walther Rathenau, “Deutsche Gefahren und Neue Ziele (1913)” [German dangers and new goals (1913)], *Gesammelte Schriften*, vol. 1, 265–278.

120. The idea of *Mitteleuropa* originated from Friedrich Naumann, *Central Europe*, trans. Christabel M. Meredith (London: P. S. King, 1916). For information on the history of *Mitteleuropa*, see Henry Cord Meyer, *Mitteleuropa: In German Thought and Action 1815–1945* (The Hague: Martinus Nijhoff, 1955), 159–167, <https://doi.org/10.1007/978-94-015-2469-8>; Meyer, *Mitteleuropa*, 145–152.

121. Fischer, *War of Illusions*, 234. Similar ideas on the economic necessity for *Mitteleuropa* are expressed in Fischer, *War of Illusions*, 140, 236–238.

Rathenau proposed establishing a European Customs Union “united under German leadership, politically and economically consolidated against England and America on one hand, and against Russia on the other hand.” The peripheral countries “would operate as a unified industrial economy,” supplying raw materials to the German core in exchange for finished products.¹²² Rathenau’s memorandum was integrated into the “September Program,” which outlined German war plans in August 1914 to “create a central European economic association through common customs treaties . . . under German leadership.”¹²³

Cooperative relations between businesses and the state enabled Germany to fight a long war against Britain. Initially, the German state failed to prepare its raw material basis for a war longer than six months. Shortages of copper, lead, and nitrates threatened to cripple the electrical, munition, and shipbuilding industries once Britain declared war and instituted its blockade. Recognizing this, Rathenau approached the government to form the War Raw Materials Department (KRA).¹²⁴ The KRA consisted of the country’s leading industrialists in chemical, electrical, and machinery products and was tasked with requisitioning and distributing “raw materials necessary for military purposes, both at home and in the (newly) occupied enemy areas, as well as possibly in allied Austria.”¹²⁵

Almost immediately, the KRA began to supply the military with weapons, ammunition, and electricity for a prolonged war. It redistributed stocks of war-related material, such as metals and nitrates, from nonessential to essential manufacturers, and it established front companies to purchase additional supplies from neutral territories. These measures were so successful that “the original severe shortage was more or less solved” within two months.¹²⁶ They also provided the KRA with time to help its manufacturing base upgrade its supply chains and become relatively self-sufficient. For example, it subsidized zinc mining and processing to encourage electrical manufacturers to switch from imported copper, it financed chemical plants for synthetic nitrates to reduce

122. “Rathenau to Reich Chancellor Bethmann Hollweg,” September 7, 1914, in Walther Rathenau, *Politische Briefe* [Political letters] (Dresden, Germany: Carl Reissner, 1929), 9–16. Rathenau also discussed his ideas earlier in Rathenau, “Deutsche Gefahren und Neue Ziele (1913);” Walther Rathenau, *Walther Rathenau, Industrialist, Banker, Intellectual, and Politician: Notes and Diaries, 1907–1922*, ed. Hartmut Pogge von Strandmann (Oxford: Clarendon Press, 1985), 183–186. On Rathenau’s meetings, see Rathenau, *Walther Rathenau, Industrialist, Banker*, 153, 160–164.

123. Fritz Fischer, *Germany’s Aims in the First World War* (New York: W. W. Norton, 1967), 104.

124. Rathenau, *Walther Rathenau, Industrialist, Banker*, 186–189.

125. D. G. Williamson, “Walther Rathenau: A Study of His Political, Industrial and Cultural Activities and of His Reputation on Contemporary Germany, 1893–June 1921” (PhD diss. University of London, 1971), 154.

126. *Ibid.*, 160.

chemical producers' dependence on Chilean nitrates, and it established warehouse and transportation networks in occupied territories to divert requisitioned aluminum to machinery manufacturers in Germany.¹²⁷ Once completed, these measures enabled the German military to fight for four more years under a blockade. Had business-state relations not been as cooperative as they were, Britain's blockade could have "led to the stoppage of a great part of German industry" and rendered a quick victory.¹²⁸

U.S.-China Power Transition since 1990

This section explores the power transition between the United States and China since 1990. The United States has occupied the dominant position in the international system since the end of the Cold War. At its peak (about 2005), it generated a third of the world's gross domestic product, spent two times more on defense than all other major military powers combined, and maintained a network of military bases to project its power globally.¹²⁹ By 2010, however, China had emerged as the United States' primary challenger. Its economy vaulted from 12 percent of that of the United States in 2000 to almost 60 percent in 2014.¹³⁰ Chinese officials also invested in developing the second-largest military budget in the world to rejuvenate the country's status as a "world-class" military power. Such trends have prompted numerous scholars and practitioners to warn that China's ambitions to become "a global leader by 2050" are leading the world into a "danger zone," with real prospects of war, as in the years before World War I.¹³¹

Global supply chains in information and communications technologies (ICT) also emerged during this period. The 1997 Information Technology Agreement eliminated import duties on ICT products and enabled cross-border trade of finished and intermediate products, such as computers and semiconductor chips.¹³² Consequently, various stages of ICT production were

127. *Ibid.*, 158–166; also see Werner Abelshauser et al., *German Industry and Global Enterprise: BASF; the History of a Company* (Cambridge: Cambridge University Press, 2003), 162–163.

128. A. E. Zimmern, *The Economic Weapon in the War against Germany* (New York: George H. Doran, 1918).

129. Stephen G. Brooks and William C. Wohlforth, *World Out of Balance: International Relations and the Challenge of American Primacy* (Princeton, NJ: Princeton University Press, 2008), 29–31.

130. Keun Lee, *China's Technological Leapfrogging and Economic Catch-Up: A Schumpeterian Perspective* (Oxford: Oxford University Press, 2022), 222.

131. James McGregor, *China's Drive for "Indigenous Innovation": A Web of Industrial Policies* (Washington, DC: U.S. Chamber of Commerce, 2010); Michael Beckley and Hal Brands, *Danger Zone: The Coming Conflict with China* (New York: W. W. Norton, 2022).

132. The Information Technology Agreement was concluded at the WTO Ministerial Conference

spread across Asia, Europe, and North America. ICT supply chains undergird the technologies of the modern digital economy.¹³³ Moreover, semiconductors are a determining factor in great power competition in the twenty-first century.¹³⁴ They matter tremendously for a country’s military power because many modern weapons, from armored vehicles to precision-guided missiles, use semiconductors.

As we expect, the global supply chain for ICT reinforces the power positions of China and the United States in the international system. The United States dominates the high-value segments in semiconductor design and sales. It underwent rapid economic growth because of its innovations in ICT throughout the Cold War. Later, it shifted to “fabless” manufacturing, in which U.S. companies concentrate on designing and selling semiconductors while outsourcing chip fabrication to overseas manufacturers, known as foundries.¹³⁵ By 2020, fabless designers represented in the U.S. Semiconductor Industry Association sold almost 50 percent of the world’s semiconductors, and its engineers devised 85 percent of the equipment and the software tools (Electronic Design Automation, or EDA) essential to design semiconductors.¹³⁶ The United States’ dominance over these sectors was enormously profitable. U.S. semiconductor designers and engineers captured 54 percent of the value added, enabling them to continue investing in R&D to maintain their competitive advantage.¹³⁷

China, in contrast, dominated the low-value segments of packaging and assembly. Its manufacturers focused on exporting finished products to consumers in foreign markets, accounting for over two-thirds of worldwide mo-

in Singapore in 1996 and went into effect in 1997 with twenty-nine World Trade Organization member countries. As of 2023, eighty-two member countries have signed the agreement, and their economies constitute 97 percent of world trade in information and communications technologies. Michael Anderson and Jacob Mohs, “The Information Technology Agreement: An Assessment of World Trade in Information Technology Products,” *Journal of International Commerce and Economics* 3, no. 1 (2011): 109, https://www.usitc.gov/staff_publications/jice/information_technology_agreement_assessment_world.

133. John Zysman and Abraham Newman, *How Revolutionary Was the Digital Revolution? National Responses, Market Transitions, and Global Technology* (Stanford, CA: Stanford University Press, 2006); Klaus Schwab, *The Fourth Industrial Revolution* (New York: Crown Business, 2017).

134. Miller, *Chip War*, xix.

135. The “fabless/foundry” business model is discussed in Miller, *Chip War*, chap. 36. For the business logic of outsourcing, see James Brian Quinn and Frederick G. Hilmer, “Strategic Outsourcing,” *MIT Sloan Management Review* 35, no. 4 (Summer 1994): 43.

136. Antonio Varas et al., *Strengthening the Global Semiconductor Supply Chain in an Uncertain Era* (Washington, DC: Semiconductor Industry Association, 2021), 37–41, <https://www.semiconductors.org/strengthening-the-global-semiconductor-supply-chain-in-an-uncertain-era/>.

137. *Ibid.*, 31.

bile phone and laptop computer exports in 2004.¹³⁸ Yet their profits were thin. China lacked the knowledge and technologies to design and fabricate semiconductors on its own. Chinese manufacturers imported most of their semiconductors, often from the United States. In 2015 alone, Chinese manufacturers bought 60 percent of the global supply of semiconductors, which constituted one-fourth of U.S. fabless producers' revenue.¹³⁹ In any given year, the revenues for Chinese manufacturers were only one-fifth those of U.S. producers.¹⁴⁰

BUSINESS-STATE RELATIONS IN THE UNITED STATES

In the United States, business-state relations have become more conflictual during the power transition. The interests of the state and its high-value fabless producers and programmers initially aligned. Throughout the 1990s and the first decade of the 2000s, key members of the National Security Council (NSC) advocated a strategy of "primacy" to prevent China from rising to become a peer competitor.¹⁴¹ This meant liberalizing trade, strengthening international institutions, and maintaining a "two-war standard," whereby the U.S. military could prevail in two concurrent regional wars.¹⁴² The NSC believed that the United States could keep "running faster" than China in developing ICTs, which would deter China from initiating a military competition in the Asian Pacific.¹⁴³ The U.S. semiconductor industry agreed. Its members wanted to liberalize export controls with China because it was "the world's second-largest market for semiconductors," and they testified that "the positive correlation between technological leadership and broad absorption of ICT in China . . . will lead to major political, economic and ultimately, security benefits for the United States."¹⁴⁴

138. Wang Zixian, "Progressive Advancement of China's Opening Up," in Yiming Yuan, ed., *Studies on China's Special Economic Zones*, Research Series on the Chinese Dream and China's Development Path (Singapore: Springer, 2017), 42.

139. Michaela D. Platzer, John F. Sargent Jr., and Karen M. Sutter, *Semiconductors: U.S. Industry, Global Competition, and Federal Policy*, R46581 (Washington, DC: Congressional Research Service, 2020), 25–26; Varas et al., *Strengthening the Global Semiconductor Supply Chain*, 12. Also see Miller, *Chip War*, 250.

140. Varas et al., *Strengthening the Global Semiconductor Supply Chain*, 31.

141. Stephen G. Brooks, G. John Ikenberry, and William C. Wohlforth. "Don't Come Home, America: The Case against Retrenchment." *International Security* 37, no. 3 (Fall 2012): 7–51, https://doi.org/10.1162/ISEC_a_00107.

142. Patrick Porter, "Why America's Grand Strategy Has Not Changed: Power, Habit, and the U.S. Foreign Policy Establishment," *International Security* 42, no. 4 (Spring 2018): 26, https://doi.org/10.1162/isec_a_00311.

143. Hugo Meijer, *Trading with the Enemy: The Making of US Export Control Policy toward the People's Republic of China* (New York: Oxford University Press, 2016), 157.

144. Hearings on China's High Technology Development, Day 1, before the U.S.-China Economic

After 2010, the U.S. government considered using economic statecraft preventively to slow China’s rise. Policymakers felt that the “speed of convergence in [the] high-tech industry had been much quicker than originally expected” and feared that China was modernizing its military with ICT obtained through commercial channels.¹⁴⁵ Intelligence reports also alleged that China was inserting back doors on its electronics exports to spy on the United States for economic and military purposes.¹⁴⁶ In 2015, Chinese leaders announced their plans to spend \$150 billion to upgrade China’s technological base in order to develop a Chinese semiconductor industry. The announcement stirred members of the NSC. U.S. Secretary of Commerce Penny Pritzker, for example, called China’s plans a flagrant violation of trade rules under the World Trade Organization. She urged the United States not to “take our [its] leadership in this industry for granted.”¹⁴⁷ Shortly after China’s announcement, the Commerce Department and the President’s Council of Advisors on Science and Technology began to investigate the global supply chain for semiconductors. The investigation sought to “enhance the federal government’s understanding of the challenges facing the semiconductor industry,” recommend “ways to strengthen the industry’s long-term competitiveness,” and more importantly, “make clear to China’s leaders at every opportunity that we will not accept a \$150 billion industrial policy designed to appropriate this industry.”¹⁴⁸

The U.S. government’s strategy focused on cutting off China from the global supply of semiconductors. The NSC concluded that the future of the U.S.-China power transition rested on “the cornerstone of semiconductor mastery.”

and Security Review Commission, 109th Cong., 1st sess., April 21, 2005 (statement of George Scalise, President of the Semiconductor Industry Association). Also see Meijer, *Trading with the Enemy*, 161–163.

145. Author interview with a former U.S. government official, Washington, DC, October 2021.

146. Mike Rogers, *Investigative Report on the U.S. National Security Issues Posed by Chinese Telecommunications Companies Huawei and ZTE* (Washington, DC: House Select Committee on Intelligence, U.S. Congress, 2012), 3.

147. Penny Pritzker, address of U.S. Secretary of Commerce on semiconductors and the future of the tech economy, delivered at the Center for Strategic and International Studies, Washington, DC, November 2, 2016, <https://2014-2017.commerce.gov/news/secretary-speeches/2016/11/us-secretary-commerce-penny-pritzker-delivers-major-policy-address.html>. In 2018, the Office of the United States Trade Representative also investigated Chinese commercial practices and reported that the Chinese state used unfair trade practices, such as cyber theft and forced technology transfers, to acquire U.S. technologies in pursuit of its goals. See Office of the United States Trade Representative, *Findings of the Investigation into China’s Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation under Section 301 of the Trade Act of 1974* (Washington, DC: Executive Office of the President, 2018), 10, <https://Ustr.Gov/Issue-Areas/Enforcement/Section-301-Investigations/Section-301-China/Investigation>.

148. Pritzker, address of U.S. Secretary of Commerce on semiconductors.

Consequently, the United States needed to tighten its export controls to prevent China from strengthening its position relative to the United States.¹⁴⁹ It sought to cripple China's two largest electronics manufacturers, ZTE Corporation and Huawei. In late 2016, the U.S. Department of Commerce's Bureau of Industry and Security added ZTE to its "Entity List" of companies barred from purchasing U.S. hardware and software without government approval, alleging that the company had violated U.S. sanctions.¹⁵⁰ Three years later, the Commerce Department added Huawei and 114 of its subsidiaries to the Entity List. Furthermore, it prohibited U.S. companies from exporting any hardware or software to Huawei—including products manufactured outside the United States—that consisted of parts from the United States that made up over 25 percent of the product's value.¹⁵¹

The U.S. semiconductor industry (chip designers, engineers, and programmers) viewed economic statecraft toward China as a threat to its profits. According to one national survey, most of the manufacturing sector and almost all the technology sector opposed the U.S.-China trade war because it weakened a wide range of business functions, such as R&D, finance, and sales and marketing.¹⁵² U.S. chip designers like Flex Logix, Broadcom Inc., Qualcomm, and NeoPhotonics earned about \$11 billion from Huawei in 2018 alone.¹⁵³ Without this revenue, these companies would be forced to cut R&D and struggle to "compete against foreign rivals that did not face the same restrictions."¹⁵⁴

149. Miller, *Chip War*, 300.

150. *Ibid.*, 299–300; Bob Davis and Lingling Wei, *Superpower Showdown: How the Battle between Trump and Xi Threatens a New Cold War* (New York: HarperCollins, 2020), 216–221.

151. Bureau of Industry and Security, Department of Commerce, Export Administration Regulations: Amendments to General Prohibition Three (Foreign-Produced Direct Product Rule) and the Entity List, Fed. Reg. 29849, vol. 84, no. 97, May 19, 2020, <https://www.govinfo.gov/content/pkg/FR-2020-05-19/pdf/2020-10856.pdf>.

152. Bonny Lin et al., *Bridging the Gap: Assessing U.S. Business Community Support for U.S.-China Competition* (Santa Monica, CA: RAND Corporation, 2022), <https://doi.org/10.7249/RR1417-1>.

153. NeoPhotonics was acquired by Lumentum in 2022. Sijia Jiang and Michael Martina, "Huawei's \$105 Billion Business at Stake after U.S. Broadside," Reuters, May 1, 2019, <https://www.reuters.com/article/us-usa-trade-china-huawei-analysis/huaweis-105-billion-business-at-stake-after-u-s-broadside-idUSKCN1SM123>.

154. Jenny Leonard and Ian King, "U.S. Semiconductor Companies Urge Trump to Hurry Huawei Licenses," *Bloomberg*, September 12, 2019, <https://www.bloomberg.com/news/articles/2019-09-12/u-s-semiconductor-companies-urge-trump-to-hurry-huawei-licenses#xj4y7vzkg>. For further details on chipmakers' opinions about the ban on Huawei, see Reed Albergotti, "Huawei Ban Threatens U.S. National Security, Tech Companies Warn Trump Administration," *Washington Post*, June 7, 2019, <https://www.washingtonpost.com/technology/2019/06/07/huawei-ban-threatens-us-national-security-tech-companies-warn-trump-administration>.

Several U.S. chipmakers (e.g., Intel Corporation, Xilinx, and Qualcomm) lobbied against the tech war and continued selling to Chinese businesses.¹⁵⁵ Synopsys shared similar concerns. Restricting sales to Huawei encouraged the company to pirate rather than purchase software from Synopsys, which was forced to pause its contracts with Huawei.¹⁵⁶ Interviews¹⁵⁷ with industrial associations and government officials also confirmed this dilemma: businesses’ underlying pursuit of profits and interest in maintaining global supply chains seemed to run counter to the state’s concern for protecting technology competitiveness and security.¹⁵⁸

The U.S. semiconductor industry sought to assuage Washington’s fear of China. Representatives from the Semiconductor Industry Association and the U.S.-China Business Council arranged consultations with members of the NSC throughout 2019 to discuss Huawei, assuring them that “we can compete with [Huawei] if we have the right policies.”¹⁵⁹ U.S. businesses faced fewer technological and capital barriers to chipmaking than Chinese businesses.¹⁶⁰ But sanctioning Huawei would prompt China to try to overcome these barriers. The U.S.-China Business Council argued that “smart competition and engagement”—whereby both sides would adhere to a common set of rules across the global supply chain—better served U.S. interests than decoupling because of national security concerns.¹⁶¹ Executives of Intel and Qualcomm likewise urged the U.S. government to approve sales of nonsensitive components such as mobile phones and smart watches, which posed far less risk to

155. Xilinx was acquired by AMD (Advanced Micro Devices) in 2020. Luke Stangel, “Report: Intel and Xilinx Are Lobbying Regulators to Continue Selling to Huawei,” *Silicon Valley Business Journal*, June 17, 2019, <https://www.bizjournals.com/sanjose/news/2019/06/17/huawei-ban-us-chipmakers-intc-avgo-qcom-xlnx-aapl.html>.

156. Cheng Ting-Fang and Lauly Li, “Huawei Loses Access to Vital Chip Design Updates from Synopsys,” *Nikkei Asia*, May 31, 2019, <https://asia.nikkei.com/Spotlight/Huawei-crackdown/Huawei-loses-access-to-vital-chip-design-updates-from-Synopsys>.

157. The interviews were approved through the Homewood Institutional Review Board at Johns Hopkins University (HIRB00012274). The interviews were conducted in China and the United States with government officials, business managers, and staff. Oral consent following the standard consent script was acquired before each interview. Measures such as passwords for notes were taken to protect the confidentiality of anonymous interviewees.

158. Author interview with a former U.S. government official, Washington, DC, November 2022; author interview with a former industrial association member, Washington, DC, October 2021.

159. Davis and Wei, *Superpower Showdown*, 343–344.

160. Douglas B. Fuller, “China’s Counter-Strategy to American Export Controls in Integrated Circuits,” *China Leadership Monitor* 67 (Spring 2021), <http://dx.doi.org/10.2139/ssrn.3798291>.

161. Zhao Huanxin, “Business Council: Huawei Ban Has Costs,” *China Daily*, May 29, 2019, <http://www.chinadaily.com.cn/a/201905/29/WS5cedf144a3104842260be706.html>.

national security.¹⁶² The Department of Commerce pushed back. U.S. companies had ninety days “to wean themselves off” Huawei.¹⁶³

The conflicting interests of the U.S. government and the U.S. semiconductor industry ultimately reduced the effectiveness of sanctions against Chinese businesses. Shortly after the Huawei ban went into effect in 2019, the Department of Commerce was flooded with applications from U.S. companies for licenses to continue doing business with the Chinese companies on the Entity List, “more than [it] would’ve thought.” The department warned that “the safe thing for these companies would be to assume denial [of their application]” rather than wait for approval.¹⁶⁴ But just weeks after sanctions were imposed, many U.S. companies bypassed the ban by using third parties in Taiwan and Japan to export their chip designs, software, and equipment. This loophole enables companies like Micron Technology and Intel to “lawfully resume” hundreds of millions of dollars in sales to Huawei.¹⁶⁵ The Department of Commerce moved swiftly to close the loophole by expanding the sanctions to cover foreign products that are “the direct product of certain U.S. technology or software.”¹⁶⁶ Tightening the sanctions has proved difficult.¹⁶⁷ Software, equipment, and designs continue to flow into China through dummy companies and subsidiaries that are not included on the Entity List.¹⁶⁸ Key EDA companies, such as Synopsys and Cadence Design Systems, continue sales to China. For example, Cadence’s sales to non-Huawei Chinese companies in-

162. Stephen Nellis and Alexandra Alper, “U.S. Chipmakers Quietly Lobby to Ease Huawei Ban,” Reuters, June 16, 2019, <https://www.reuters.com/article/us-huawei-tech-usa-lobbying/u-s-chipmakers-quietly-lobby-to-ease-huawei-ban-idUSKCN1TH0VA#>.

163. Zak Doffman, “Trump Gives Huawei 90 Day Reprieve, but Customers Warned to Ditch the Brand,” *Forbes*, August 19, 2019, <https://www.forbes.com/sites/zakdoffman/2019/08/19/trump-issues-huawei-new-death-penalty-reprieve-despite-national-security-threat/?sh=43d332954478>.

164. Justin Coleman, “Ross: Huawei Licenses Coming ‘Very Shortly,’” *Hill*, November 3, 2019, <https://thehill.com/policy/international/china/468753-ross-huawei-licenses-coming-very-shortly/>.

165. Paul Mozur and Cecilia Kang, “U.S. Tech Companies Sidestep a Trump Ban, to Keep Selling to Huawei,” *New York Times*, June 25, 2019, <https://www.nytimes.com/2019/06/25/technology/huawei-trump-ban-technology.html>.

166. Bureau of Industry and Security, Department of Commerce, Export Administration Regulations.

167. Ling Chen, *Changing State-Business Relations under the US-China Tech War* (Washington, DC: Wilson Center, 2022).

168. Debby Wu et al., “Secretive Chip Startup May Help Huawei Circumvent U.S. Sanctions,” *Bloomberg*, October 5, 2022, <https://www.bloomberg.com/news/articles/2022-10-05/secretive-chip-startup-may-help-huawei-circumvent-us-sanctions>; Ellen Nakashima and Jeanne Whalen, “Key Security Agencies Split over Whether to Blacklist Former Huawei Smartphone Unit,” *Washington Post*, September 19, 2021, https://www.washingtonpost.com/national-security/huawei-honor-security-export/2021/09/19/6d49d27c-17ef-11ec-b976-f4a43b740aeb_story.html#.

creased 80 percent in 2020.¹⁶⁹ By the end of 2020, policymakers in Washington had recognized that the U.S. strategy toward Huawei was like a game of “whack-a-mole on individual Chinese companies.”¹⁷⁰

A similar pattern emerged in 2022, following the U.S. government’s ban on exports of chipmaking equipment, supercomputer components, and supporting materials used to fabricate highly advanced semiconductors.¹⁷¹ U.S. businesses complained that they were losing market share relative to their competitors in South Korea and Japan because of the ban.¹⁷² Major equipment companies like KLA Corporation applied for exemptions and developed contingency plans to “de-Americanize” (i.e., moving more of their production to Southeast Asia) if the United State were to enact stronger sanctions.¹⁷³ One chipmaker, Nvidia, moved quickly to develop a new advanced chip for China that meets the export control rules.¹⁷⁴ In November 2022, the U.S. Chamber of Commerce, together with telecommunications and defense industry groups, successfully lobbied against the Senate’s proposal to prohibit the use of the Chinese chips from Semiconductor Manufacturing International Corporation (SMIC), Yangtze Memory Technologies Corp (YMTC), and ChangXin Memory Technologies (CXMT) because such a prohibition would substantially raise production costs for U.S. companies.¹⁷⁵ As of October 2023, it is clear that U.S. sanctions have failed to disrupt China’s tech industry as many policymakers

169. Shuhei Yamada, “U.S. Chip Software Makers Thrive in China with Non-Huawei Clients,” *Nikkei Asia*, June 10, 2020, <https://asia.nikkei.com/Business/China-tech/US-chip-software-makers-thrive-in-China-with-non-Huawei-clients>.

170. Andrew Grotto, “The Biden Administration Needs a Fresh Approach to Huawei and 5G,” *Foreign Policy*, November 13, 2020, <https://foreignpolicy.com/2020/11/13/biden-huawei-china-5g-risk/>.

171. Semiconductor chips are comprised of transistors, and the unit of measurement for each transistor is the nanometer. The smaller the transistor, the more advanced the chip. As of 2023, the most advanced chips are 3–7 nanometers. Bureau of Industry and Security, Department of Commerce, Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List Modification; Updates to the Controls to Add Macau, Fed. Reg. 2821, vol. 88, no. 11, October 7, 2022, <https://www.govinfo.gov/content/pkg/FR-2023-01-18/pdf/2023-00888.pdf>.

172. Rintaro Tobita, “U.S. Pushes Japan and Other Allies to Join China Chip Curbs,” *Nikkei Asia*, November 1, 2022, <https://asia.nikkei.com/Politics/International-relations/U.S.-pushes-Japan-and-other-allies-to-join-China-chip-curbs>.

173. Fuller, “China’s Counter-Strategy,” 11.

174. Jane Lee, “Exclusive: Nvidia Offers New Advanced Chip for China That Meets U.S. Export Controls,” Reuters, November 7, 2022, <https://www.reuters.com/technology/exclusive-nvidia-offers-new-advanced-chip-china-that-meets-us-export-controls-2022-11-08/>.

175. Alexandra Alper, “U.S. Lawmakers Ease Planned Curbs on Chinese Chips amid Corporate Pushback,” Reuters, December 6, 2022, <https://www.reuters.com/world/us/us-lawmakers-ease-proposed-curbs-chinese-chips-amid-corporate-pushback-2022-12-06/>.

had hoped. Had U.S. businesses not been as resistant as they were to U.S. sanctions, the sanctions' impact on China's technological progress would likely have been more severe and long-lasting.

BUSINESS-STATE RELATIONS IN CHINA

In China, the interests of the state and of businesses are often assumed to be unitary because businesses are usually perceived as the tools of the state ruled by the Chinese Communist Party. We argue, however, that business-state relations were far more dynamic throughout the 1990s and the first decade of the 2000s. State and business interests did not completely align. Although the state ambitiously pursued technology development to increase its geopolitical clout, it did not succeed in pushing most Chinese businesses toward upgrading and innovating technologies. There were three major stages of development, each with its own source of misalignment.

In the first stage, the joint venture stage in the 1980s and early 1990s, the Chinese state's rationale was to "*yi shichang huan jishu* [exchange market for technology],"¹⁷⁶ which it did by encouraging Chinese and foreign businesses to form joint ventures. The state wanted to increase technology transfer from foreign to domestic businesses by luring foreign businesses to access the lucrative Chinese markets and set up joint ventures with Chinese businesses, especially with state-owned enterprises.¹⁷⁷ The joint ventures, however, turned out to be difficult unions. Foreign businesses complained about technology transfer and sought to focus on assembly. Chinese state-owned enterprises also lacked incentives to learn new technologies. Most of them cared more about the amount of production and employee welfare than technological progress.¹⁷⁸ They were also found to be inefficient and accustomed to the state providing them with government funding and soft budget constraints.¹⁷⁹

China entered the second stage as it became further integrated into the

176. Ling Chen, *Manipulating Globalization: The Influence of Bureaucrats on Business in China* (Stanford, CA: Stanford University Press, 2018), 25.

177. Joint ventures included the auto industry (e.g., Shanghai GM), the electronics industry (e.g., Beijing Panasonic, Shenzhen Seg Samsung, and Shanghai Philips), and the semiconductor industry (e.g., Huajing and Huahong). In the 1990s, the State Council of China funded two multi-billion-renminbi semiconductor projects—the 908 Project and the 909 Project. The 908 Project created Huajing, and the 909 Project created Huahong.

178. Margaret M. Pearson, *Joint Ventures in the People's Republic of China: The Control of Foreign Direct Investment under Socialism* (Princeton, NJ: Princeton University Press, 1991), 182.

179. Soft budget constraints refer to the fact that state-owned enterprises can spend excessively without worrying about performance and earnings given the support from state banks. Qili Hu, *Xinlu licheng: 909 chao da guimo jicheng dianlu gongcheng jishi* [The history of integrated circuits industry: The super large integrated circuits project report] (Beijing: China Electronics Industry

global supply chains in the late 1990s and the first decade of the 2000s. During this global supply chain stage, China became the world’s largest manufacturer and exporter and one of the largest foreign direct investment recipients worldwide. Although many large businesses (e.g., Apple, Intel, Foxconn [Hon Hai Technology Group], Nokia Corporation, Samsung, and Philips) outsourced or offshored their production to China, most of these activities entailed low-value-added manufacturing and assembly. And despite the state encouraging Chinese firms to upgrade their positions in the global supply chain during this period, many Chinese businesses preferred to expand their current, low-tech, low-profit production because of substantial barriers to and risks from competing with high-value businesses in developed countries. Interviews suggest that, within corporations, higher management’s tendency to expand horizontally (i.e., to increase the volume of production at the same position of the supply chain) often won out over the technicians in the R&D department, who favored moving up vertically to a higher-value-added position in the supply chain.¹⁸⁰ Chinese bureaucrats, too, often found it hard to force businesses into this ambitious undertaking. Businesses took advantage of various funding sources to innovate and upgrade technologies, but they did not conduct R&D, and they applied for patents only to achieve their local evaluation targets. Start-up businesses intended to develop cutting-edge technologies, but they struggled to scale up without industrial buyers.¹⁸¹

Given the structure of global supply chains and power asymmetry, Chinese businesses competed fiercely with one another at the bottom segments of the supply chains. Even successful businesses, such as Huawei and ZTE, fought aggressively with each other for market share in both China and developing regions (e.g., South Asia, Southeast Asia, and Africa). Several interviewees described Huawei’s “wolf culture,” or aggressive tactics that it used against its competitors, especially ZTE.¹⁸²

By around 2005, however, the Chinese state was dissatisfied with China’s position on the technology ladder. Likewise, national newspapers expressed concern that China’s reliance on foreign technology would cause it to fall prey

Press, 2006); Nicholas Lardy, *The State Strikes Back: The End of Economic Reform in China?* (Washington, DC: Peterson Institute for International Economics, 2019), 75–76.

180. Author interview with business managers, Shanghai, January 2021.

181. Some Chinese firms made progress in technological upgrading in the 1990s and the first few years of the 2000s, but at a much slower pace than state leaders expected. Chen, *Manipulating Globalization*.

182. Author interviews with business manager and staff, via telephone, August 2021. Interviewees mentioned that before the mid-2000s, if ZTE were to lose a market to Huawei, then ZTE’s regional market manager would be fired.

to Western countries. Of course, China used technology imports to modernize both economically and militarily, as some observed.¹⁸³ But Chinese businesses failed to innovate technologically. Relegated to the bottom segments of the supply chains (i.e., processing and assembly), Chinese businesses generated razor-thin profits and relied on sweatshops. The state funded two initiatives to improve China's position in the value chain—the “indigenous innovation” campaign in 2006,¹⁸⁴ and the “Made in China 2025” plan¹⁸⁵ in 2015—which included tax breaks, talent policies, utility and factory discounts, R&D cost rebates, and rewards for patent applications.

The beginning of the tech war in 2018 pushed China to urgently pursue *hexin guanjian jishu* (core and crucial technology), which signifies the beginning of the third stage of development.¹⁸⁶ Being cut off from supply chains has also fueled China's rising techno-nationalism. The state and society view the success of China's semiconductor businesses as a matter of national survival. Although the state has long recognized the importance of upgrading its technologies, it prioritized investing in advanced manufacturing industries rather than technological innovation, because the latter was difficult to implement at the business level. But in various speeches after the tech war began, President Xi Jinping urged the country to prioritize “self-reliance in science and technology,” emphasizing that innovation in core technologies was the key to surviving “intense international competition.”¹⁸⁷ In late 2020, the Politburo conducted a collective study of quantum technology and stressed the importance of having a breakthrough.¹⁸⁸ The state provided support for businesses to make a faster technology leap in chipmaking; Guangzhou City alone invested \$30 billion in initial funding, and the state issued an additional \$143 billion in subsidies and tax credits for the semiconductor industry in 2022.¹⁸⁹

Because of technology's crucial role in China's geopolitical competition with

183. Meijer, *Trading with the Enemy*.

184. “Quanmian zengqiang zizhu chuangxin nengli” [Comprehensively enhance the indigenous innovation ability], *People's Daily*, December 8, 2005, https://www.gov.cn/ztl/2005-12/08/content_120871.htm.

185. Keith Bradsher and Paul Mozur, “China's Plan to Build Its Own High-Tech Industries Worries Western Businesses,” *New York Times*, March 7, 2017, <https://www.nytimes.com/2017/03/07/business/china-trade-manufacturing-europe.html>.

186. Ling Chen, “How This Trade War Could Backfire—in China's Favor,” *Washington Post*, June 25, 2018, <https://www.washingtonpost.com/news/monkey-cage/wp/2018/06/25/how-this-trade-war-could-backfire-in-chinas-favor/>.

187. Jinping Xi, *Lun Keji Zili Ziqiang* [On self-reliance and strength in science and technology] (Beijing: Zhongyong wenxian chubanshe, 2023).

188. Zhang Zhihao, “Xi Highlights Crucial Role of Quantum Tech,” *China Daily*, October 19, 2020, <https://www.chinadaily.com.cn/a/202010/19/WS5f8cc996a31024ad0ba7f62e.html>.

189. Yoko Kubota, “China Sets Up New \$29 Billion Semiconductor Fund,” *Wall Street Journal*, October 25, 2019, <https://www.wsj.com/articles/china-sets-up-new-29-billion-semiconductor-fund->

the United States, the only reference to a nationwide system (*juguo tizhi*) in the 14th Five-Year Plan is for one that supports science and technology development. In such a system, China’s local governments (at the provincial, city, and district levels) would provide capital investments for major projects, offer funding or rebates for R&D costs, implement tax breaks, and attract highly educated talent. The plan also indicates that businesses should participate in research and innovation, and that the nationwide system should connect businesses to numerous other entities, including high-tech development zones, high-tech parks, incubators, research institutions, and universities.¹⁹⁰ In some cities, the leaders of high-tech development zones are almost as powerful as leaders of city governments.¹⁹¹

As U.S.-China competition has intensified and with the start of the tech war, the interests of businesses and the state have become more aligned. It is worth emphasizing that not every Chinese firm follows the state’s agenda. But compared with the joint venture stage and the global supply chain stage, our research suggests that Chinese businesses are now more likely to respond to state initiatives and prioritize hardware tech development or “chokepoint” technologies.¹⁹² Instead of competing against one another as they did before the tech war, large businesses like Huawei and ZTE have prioritized joining forces to overcome the technology barriers put in place by the United States. For example, Huawei frontloaded chip orders with Taiwan Semiconductor Manufacturing Company (TSMC) and started fabricating chips using Chinese equipment vendors (such as the Shanghai IC R&D center). Huawei sought to strengthen one of its companies, HiSilicon, and it invested in domestic EDA start-ups to meet the technology pressure for chip design.¹⁹³ In 2022, Huawei increased its R&D funding by 13 percent and its R&D personnel by 6 percent, even though it cut personnel in other departments.¹⁹⁴ In 2023, both SMIC and

11572034480; Julie Zhu, “China Ready to Push \$143 Bln Package for Its Chip Firms in Face of U.S. Curbs,” Reuters, December 13, 2022, <https://www.reuters.com/technology/china-plans-over-143-bln-push-boost-domestic-chips-compete-with-us-sources-2022-12-13>.

190. “Translation: 14th Five-Year Plan for National Informatization,” *DigiChina*, December 2021, <https://digichina.stanford.edu/work/translation-14th-five-year-plan-for-national-informatization-dec-2021/>.

191. The party secretaries governing the high-tech development zones in these cities are usually only a half-level below the political rank of mayor and party secretary of a prefecture-level city. Author interview of high-tech development zone staff, Zhejiang, January 2020.

192. Emily S. Weinstein, “Testimony before the U.S.-China Economic and Security Review Commission on ‘U.S. Investment in China’s Capital Markets and Military-Industrial Complex,’” 117th Cong., 1st sess., March 19, 2021, 3, <https://cset.georgetown.edu/publication/emily-weinsteins-testimony-before-the-u-s-china-economic-and-security-review-commission/>.

193. Fuller, “China’s Counter-Strategy.”

194. Juan Pedro Tomás, “Huawei Increases Investment in R&D, Expands R&D Staff,” *RCR*

Huawei made a breakthrough by making 7-nanometer semiconductors using machines for making 14- and 28-nanometer chips.¹⁹⁵

Smaller start-up businesses in the chip industry, which previously struggled to gain market share because of the availability of U.S. chips, have also started to gain industrial customers. These start-ups used their revenues for technology development.¹⁹⁶ As China enhanced support for chipmaker start-ups, these businesses also recruited talent from U.S. and Taiwan businesses, such as TSMC. The development of the chip industry does not prevent Chinese businesses from diversifying into other sectors at the same time, but the imperative to develop chips has significantly increased compared to the pre-tech war period.

Chinese businesses also turned to the state for support in upgrading their technologies, in addition to their own efforts. Regional governments developed a tiered ranking system to categorize large high-tech businesses, such as Huawei, as well as “gazelles” (those that had passed the initial risky periods and entered high-growth periods) and “unicorns” (those that were valued at over \$1 billion).¹⁹⁷ In exchange, the state solicited help from businesses to achieve other governance goals; for example, it used tech firms for surveillance to minimize social protests that may cause instability.¹⁹⁸

The U.S.-China tech war strengthened state and business relations compared with previous decades when the state’s ambitious plans to upgrade technologies were incompatible with businesses’ preferences. The tech war brought business-state relations into alignment because it elevated the state’s emphasis on having businesses develop core, independent technologies that would improve their position in the global supply chains. As businesses

Wireless News, March 31, 2023, <https://www.rcrwireless.com/20230331/network-infrastructure/huawei-increases-investments-rd-expands-staff>.

195. Eva Dou, “New Phone Sparks Worry China Has Found a Way around U.S. Tech Limits,” *Washington Post*, September 2, 2023, <https://www.washingtonpost.com/technology/2023/09/02/huawei-raimondo-phone-chip-sanctions/>; Debby Wu and Jenny Leonard, “China’s Top Chipmaker Achieves Breakthrough Despite U.S. Curbs,” *Bloomberg*, July 21, 2022, <https://www.bloomberg.com/news/articles/2022-07-21/china-s-top-chipmaker-makes-big-tech-advances-despite-us-curbs>.

196. Author interview with a tech firm board member, Hangzhou, January 2021; Zhang Eechi et al., “China’s Drive to Kick the Foreign IT Habit,” *Caixin*, December 23, 2022, <https://www.caixinglobal.com/2022-12-19/cover-story-chinas-drive-to-kick-the-foreign-it-habit-101979376.html>.

197. Higher-stakes projects involve evaluation by multiple government departments. Author interview with high-tech district staff, Sichuan, January 2021.

198. Pearson, Rithmire, and Tsai, “China’s Party-State Capitalism,” 135–176.

became more vulnerable, the state increased its ability to impose control whenever it needed businesses to cooperate in economic warfare.¹⁹⁹

This compatibility of interests does *not* imply that China will succeed in developing semiconductor chip technology, especially given the difficulties associated with the industry. If there had not been heightened competition, however, the state and businesses would not have accelerated their pursuit of core technologies. Furthermore, a closer business-state relationship allows the Chinese state to wield economic statecraft more effectively in areas such as industrial policies, outward investment, and bans on critical minerals.

Conclusion

Over the past century, global supply chains have emerged as a crucial battlefield for modern power politics, and the businesses that constitute these chains are on the front lines. On this battlefield, cooperative relations between a home state and its businesses bolster a state’s ability to exercise economic statecraft, whereas conflictual relations thwart it. This article argues that business-state relations are, in part, structurally determined. Concerns over relative gains produce incentives for both dominant and rising states to decouple their economies using economic coercion and industrial upgrading, respectively. The resulting disruption to profits reshapes businesses’ incentives. Comparative evidence and within-case variation during the Anglo-German and U.S.-China power transitions suggest that high-value businesses develop more conflictual relations with their dominant home state, and low-value businesses develop more cooperative relations with their rising home state over the course of the power transition, regardless of the state’s regime type and national economic systems.

Our theory and findings generate important insights for economic interdependence, economic statecraft, and great power politics. First, we encourage scholars to recognize how interdependence can intensify rather than reduce competition during a power transition. Conventional wisdom holds that interdependence decreases the chance that states go to war because economic exchange raises the cost of conquest.²⁰⁰ We suggest, however, that states may simply wage “wars without gun smoke.”²⁰¹ The dominant state can preven-

199. *Ibid.*

200. Ikenberry, *Liberal Leviathan*, 341; Efind, Kugler, and Genna, “From War to Integration.”

201. Hearing on Seapower and Projection Forces in the South China Sea, (prepared statement of Andrew S. Erickson).

tively choke off the rising state's access to global supply chains to cripple its ascendance, and in turn, the rising state may pursue industrial policies to mitigate economic coercion. We do not argue that an intensified economic competition necessarily escalates to a military conflict, although some research shows that trade disputes make such scenarios more likely.²⁰² One way to connect the dynamics discussed here to that research would be to compare the Anglo-U.S. power transition (1890–1945), which remained at the level of economic competition, to the Anglo-German power transition, which escalated to a war.²⁰³

Second, we push scholars of international security to explore the role of businesses in economic statecraft. Most scholars focus on interactions among states or treat business preferences as products of domestic institutions. Our framework demonstrates that a business's position (high-value or low-value) in a global supply chain shapes the degree to which it prefers to cooperate with the state's foreign policy. This insight contributes to recent scholarship on "weaponized interdependence" because it shows that the same global economic networks enabling states to exercise "panopticon" and "chokepoint" effects also constrain their ability to do so in practice.²⁰⁴ States with jurisdiction over high-value businesses (e.g., Britain, the United States) are the most suited to weaponize global supply chains against states with jurisdiction over low-value businesses (e.g., Germany, China), but their businesses are also most likely to resist such policies.

Our analysis provides several policy implications regarding the future of U.S.-China relations. First, the analysis demonstrates that power politics along global supply chains are self-defeating: structural incentives can drive a dominant state to use economic coercion against a rising state, but in doing so, the dominant state can launch a process that ultimately undermines its own agenda. The dominant state's economic statecraft may motivate the rising state to upgrade its economy over time and accelerate its rise. This vicious cycle may reach a tipping point when the rising power has reached parity with the dominant power, and the two countries compete for similar positions on

202. Dale C. Copeland, *Economic Interdependence and War* (Princeton, NJ: Princeton University Press, 2015); Gowa, *Allies, Adversaries, and International Trade*.

203. Peter J. Hugill, *Transition in Power: Technological "Warfare" and the Shift from British to American Hegemony since 1919* (Lanham, MD: Lexington Books, 2018).

204. Henry Farrell and Abraham Newman define panopticon effects as states' "ability to glean critical knowledge from information flows" and "chokepoint effects" as states' "capacity to limit or penalize use of hubs [nodes in global economic networks that have more connections to others] by third parties (e.g., other states or private actors)." Farrell and Newman, "Weaponized Interdependence," 55–56.

the global supply chain. As businesses in the rising power directly compete for profits with those in the dominant power, such a situation might push businesses in the dominant power to align with their own state. By that point, however, the dominant state may be unable to weaponize global supply chains, as it would have lost its structural advantages. For instance, our analysis suggests that the U.S.-China tech war is accelerating rather than slowing China’s rise. Since the most recent U.S. ban on exports of high-performance semiconductors to China in 2022, China has been making considerable progress in developing its own advanced semiconductors for artificial intelligence.²⁰⁵

A second policy implication concerns how U.S.-China decoupling is dividing the world into competing blocs rather than consolidating U.S. power. Although the diplomatic scramble for allies is one observable indication of this division, our analysis calls attention to how businesses shape these blocs. Each state has invested billions of dollars in programs to attract foreign investment to its own semiconductor industry.²⁰⁶ The success of these competing programs depends on whether each state can attract investments for its weakest segments of the global supply chain. Our theory suggests that China is likely to have an edge in that regard, given businesses’ desire to maximize profits. For example, TSMC has questioned the profitability of developing foundries in the United States for the Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022, or the CHIPS and Science Act, and the shortage of tech workers significantly delayed the company’s fab opening.²⁰⁷ Meanwhile, SMIC and various semiconductor start-ups in China have successfully recruited engineers and designers from Synopsys, Cadence Design Systems, Samsung, and TSMC to develop an indigenous semiconductor industry.²⁰⁸

205. Sheila Chiang, “Don’t Underestimate China’s Ability to Build Its Own Advanced Chips Despite U.S. Curbs, Tech Analysts Say,” *CNBC*, June 5, 2023, <https://www.cnn.com/2023/06/06/dont-underestimate-chinas-ability-to-build-advanced-chips-analysts-say.html>.

206. Stanley Chao, “U.S. Sanctions Will Not Halt Rise of China’s Chip Industry,” *Nikkei Asia*, April 20, 2023, <https://asia.nikkei.com/Opinion/U.S.-sanctions-will-not-halt-rise-of-china-s-chip-industry>.

207. John Liu and Paul Mozur, “Inside Taiwanese Chip Giant, a U.S. Expansion Stokes Tensions,” *New York Times*, February 22, 2023, <https://www.nytimes.com/2023/02/22/technology/tsmc-arizona-factory-tensions.html>; Ashley Belanger, “TSMC Delays U.S. Chip Fab Opening, Says U.S. Talent Is Insufficient,” *Ars Technica*, July 20, 2023, <https://arstechnica.com/tech-policy/2023/07/tsmc-delays-us-chip-fab-opening-says-us-talent-is-insufficient>.

208. Daniel Smoot, “China Recruits U.S. Talent to Build Out Semiconductor Technologies,” *Stansberry NewsWire*, November 25, 2022, <https://stansberryresearch.com/articles/china-recruits->

A third policy implication that stems from our findings is that tightening sanctions against China could ignite a military confrontation over Taiwan. U.S. commitments to defend Taiwan have thus far deterred Beijing from seizing the island that it has long claimed as its own territory. Although we do not argue that a U.S.-China power transition will lead to war, some members of the Chinese economic planning agency recommend that “China must recover Taiwan” and “seize TSMC” if the United States exacts stronger sanctions against China’s semiconductor industry.²⁰⁹ In turn, the U.S. government has threatened to destroy TSMC if China were to occupy Taiwan.²¹⁰ Two worrisome scenarios might emerge. In one scenario, business-state cooperation in mainland China might encourage the leadership to gamble on taking Taiwan for economic and military security, especially if Chinese businesses find that they need TSMC to survive. In another scenario, business-state resistance in the United States might reduce the credibility of U.S. threats to defend Taiwan, especially if Chinese leaders expect that U.S. businesses that depend on TSMC would force U.S. decision-makers to exercise restraint. The NSC estimates that China could cost the world economy over \$1 trillion if it were to seize or destroy TSMC.²¹¹ Hopefully, these scenarios never happen.

u-s-talent-to-build-out-semiconductor-technologies-2; Jiyoung Sohn, “Leaking Chip Secrets to China Results in Jail Terms for Ex-Samsung Employees,” *Wall Street Journal*, February 21, 2023, <https://www.wsj.com/articles/samsung-units-ex-employees-who-leaked-chip-secrets-to-china-get-jail-terms-d5d8efeb#>; Cheng Ting-Fang, “China Hires over 100 TSMC Engineers in Push for Chip Leadership,” *Nikkei Asia*, August 12, 2020, <https://asia.nikkei.com/Business/China-tech/China-hires-over-100-TSMC-engineers-in-push-for-chip-leadership>.

209. “Top Economist Urges China to Seize TSMC If US Ramps Up Sanctions,” *Bloomberg*, June 7, 2022, <https://www.bloomberg.com/news/articles/2022-06-07/top-economist-urges-china-to-seize-tsmc-if-us-ramps-up-sanctions>.

210. Jenny Leonard, Debby Wu, and Katrina Manson, “Taiwan Tensions Spark New Round of U.S. War-Gaming on Risk to TSMC,” *Bloomberg*, October 7, 2022, <https://www.bloomberg.com/news/articles/2022-10-07/taiwan-tensions-spark-new-round-of-us-war-gaming-on-risk-to-tsmc>.

211. Sarah Zheng and Cindy Wang, “No Need to Blow Up TSMC in China War, Taiwan Security Chief Says,” *Bloomberg*, October 12, 2022, <https://www.bloomberg.com/news/articles/2022-10-12/no-need-to-blow-up-tsmc-in-china-war-taiwan-security-chief-says>; Stanley Chao, “The US Needs Taiwan’s Chips More Than China Does,” *Messenger*, June 5, 2023, <https://themessenger.com/opinion/the-us-needs-taiwans-chips-more-than-china-does>.