Arming Strategies and State Behavior

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Political Science)
in the University of Michigan
2019

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Dedication

To follow knowledge like a sinking star[*]

For Dr. Frank Stein, who drank life to the lees.

[*] From *Ulysses*, by Alfred, Lord Tennyson

Acknowledgements

I owe a great debt of gratitude to the many people who have taught, guided, and encouraged me to pursue this degree. I could not have sustained years of study nor completed this project without the relentless support of many individuals and organizations.

I wish to express my deepest appreciation to my dissertation committee. Jim Morrow taught me how to think through the logics of politics, and the logics behind the logics. What we see in the world is a product as much of what has not happened as of what has. Having studied under him as a student and having assisted his course as a Graduate Student Instructor, I have had the great pleasure of seeing the many facets of Jim's dedication to his students.

Rob Mickey has been a wonderful presence throughout my graduate studies. I first learned I had been accepted to Michigan from my mother, who called me in India to say she had had a delightful conversation with "a Professor Mickey." I had no idea at the time how much I would come to appreciate the call.

I owe a great debt to Yuri Zhukov. Yuri's insightful, precise, and rigorous instruction and comments exemplify the dedication he has to the field and to mentoring the next generation of scholars.

I also wish to thank John Ciorciari. John's work has provided a model for what I hope to achieve: serious scholarship, in conversation with policymakers, able to learn from and shed light on the pressing issues of our time.

The University of Michigan, the Rackham Graduate School, and the Department of Political Science have provided me with enormous support throughout my graduate studies. They also allowed me to meet the many friends and colleagues who enlightened and enlivened my experience at Michigan. For their support and advice on this project, I wish to thank Meredith Blank, Anita Ravishankar, Laura Seago, and Rob Sayre. For pushing me to complete it, Leanne Powner.

I could not have finished this study—nor would I have started it—without the enormous support of my family. Their love and nurturing have formed the wellspring of my curiosity.

I wish to express my endless gratitude for the endless patience of my wife, and for my daughter's earnest attempts at patience throughout the magnificent first year of her life.

Though many have contributed to this project, all its flaws are my own.

Table of Contents

List of Tables

List of Figures

Abstract

How do states strategize the acquisition of arms? Scholars of international relations have long focused on power, interests, and the wars states fight to realize their objectives. The role of arms—the machines that enable modern war—is often overlooked. Many studies presume that states that decide to fight can do so, that possessing weapons means being able to use them. And some of the most widely used proxies of state power equate the existence of industrial capabilities with the ability to produce and use arms in warfare. This study attempts to provide a counterpoint to these assumptions. States are enmeshed in a global trade network of arms and their supply chains. Because no state can entirely control its own materials, supply, or production, the ability to buy, build, maintain, and use weapons is a product of the approval—explicit or tacit—of other states.

How does an arms-buying state strategize procurement in this context? I argue that buyers face a tradeoff between their autonomy and military efficacy. Because the continued use of modern weapons depends on maintenance, munitions, parts, and upgrades that the original seller is most equipped to provide, arms relationships are long term and suppliers can veto sales if they so choose, usually over policy disagreements. Autonomy is achieved by reducing the buyer's dependence on any one supplier, typically via import diversification or by building domestically. Military efficacy, on the other hand, is driven by a highly integrated military, appropriately trained, with a high readiness rate for its advanced platforms. This is achieved by buying weapons that were made to operate together and forming long-term support relationships with suppliers. I argue that the choice to pursue autonomy and sacrifice military efficacy is a

product of the buyer's fear of abandonment in the face of threats. This theory has implications for how states arm, their subsequent behavior, and when and how they choose to develop domestic industries. It also sheds light on how states with highly diversified militaries will perform in battle, arguing that greater autonomy can allow the state to be more decisive in choosing to initiate conflict. However, reduced efficacy can mean states are most capable in low-intensity conflicts and are less capable in sustained high-end warfare.

I test this argument using both quantitative and qualitative methods. I develop a novel arms import diversification score to asses the degree to which states facing threats change their arming strategies, and find that a reasonable fear of threat increases the likelihood a state will pursue a diversified import strategy. I then posit that states that diversify do so to enable offensive use of their weapons. A case on Argentina illustrates the complex dynamics of arming in the face of threats, and a quantitative test finds evidence consistent with the hypothesis that a pro-autonomy arming strategy increases the likelihood of conflict initiation. Finally, I examine the rationales and methods for developing domestic defense industries by comparing the cases of South Korea and Israel, and find that the strength and consistency of relations with a principal supplier influence the form and capabilities of domestic industrial capabilities.

This study provides a novel perspective on the strategies of arms buyers, highlighting the role of understudied aspects of arms relationships and their impact on international relations.

Chapter 1 Introduction: Arms in International Relations

In July 2019, Turkey received its first delivery of the Russian-made S-400 surface-to-air (SAM) missile system.[1] The S-400 is a sophisticated anti-aircraft and anti-missile system with built-in radar.[2] Since the Russo-Turkish deal was announced in late 2017, the United States has strenuously opposed the delivery and integration of the Russian system into Turkey's NATO-standard military architecture. U.S. leaders have consistently warned that Turkey would not receive its anticipated F-35 Joint Strike Fighters, the most capable stealth fighter today, one that Turkish companies contributed to significantly, and the intended backbone of Turkey's air force modernization.[3] After the delivery of the S-400s, U.S. officials reiterated that Turkey could not possess both systems.[4]

Since the beginning of the Cold War, the United States has supplied most of Turkey's arms.[5] Today, nearly all of Turkey's most sophisticated weapons, such as combat aircraft, radar, and missile systems, are American-made and -licensed. The country's arsenal has been a

[1] Carlotta Gall, "Turkey Gets Shipment of Russian Missile System, Defying U.S.," *The New York Times*, July 12, 2019, sec. World, https://www.nytimes.com/2019/07/12/world/europe/turkey-russia-missiles.html.

[2] Aaron Stein, "The Clock Is Ticking: S-400 and the Future of F-35 in Turkey," Atlantic Council, July 24, 2018, https://www.atlanticcouncil.org/blogs/menasource/the-clock-is-ticking-s-400-and-the-future-of-f-35-in-turkey.

[3] Aaron Stein, "The Russian Missile That Could End the U.S.-Turkish Alliance," War on the Rocks, March 12, 2019, https://warontherocks.com/2019/03/the-russian-missile-that-could-end-the-u-s-turkish-alliance/.

[4] "Turkey Defies US over Russian Defence System," *BBC News*, July 12, 2019, sec. Europe, https://www.bbc.com/news/world-europe-48962885.

[5] Analysis of SIPRI, "SIPRI Arms Transfers Database," 2019, https://www.sipri.org/databases/armstransfers.

reflection of the closeness of U.S.-Turkey ties, a relationship not without strain, but fundamentally aligned on the core issues of each state's security. During the Cold War, Turkey was the vanguard in the American fight against communism, and the United States ensured a steady flow of arms to Turkey's military.

But the two states have also disagreed on key issues. For Turkey, regional challenges have been critical influences in both foreign and domestic policy, from its enduring rivalry with Greece and Greek Cypriot forces to its vehement opposition to the Iraq War and other U.S. policies in the Middle East. For the United States, Turkey's Cold War-era squabbles with NATO ally Greece were an unfortunate distraction from the principal challenges of the day. Later, as the Iraq War dragged on and the Syrian Civil War ignited, Turkey and the United States increasingly found themselves at odds, supporting different actors in Syria, going in opposite directions regarding Russia, and clashing over other issues. In 2017, as Turkish President Erdogan held a series of talks with Russian President Putin on Syria and the S-400, Turkish officials accused the United States and Germany of enacting a secret weapons embargo of Turkey, delaying arms deliveries and crucial spare parts.[6]

Though Turkey remains committed to acquiring both the S-400 and the F-35, it may have in effect chosen defense over offense. The Russian system is among the most advanced anti-access / area denial systems available. It can shield Turkey from aerial assault by most states in its region. It can potentially serve as a mobile strategic defense system. But, unlike the F-35, it cannot penetrate an enemy's airspace, carry out precision strikes, and exit unseen by radar.

[6] Burak Ege Bekdil, "Turkey Accuses US, Germany of Arms Embargo," *Defense News*, September 25, 2017, https://www.defensenews.com/global/europe/2017/09/25/turkey-accuses-us-germany-of-arms-embargo/.

Turkey may have hobbled its offensive capabilities for a generation, especially concerning given the regional challenges Turkey faces.

Why did Turkey pick the S-400 over the F-35, a potentially militarily suboptimal choice? Why is the United States so concerned about the Turkish acquisition? And how can this incident shed light on the role of arms in international relations more generally? Turkey's purchase of the S-400, and its historical arms deals with the United States, highlight a number of important ways that weapons, outside their role in war, contribute to the relations among states. First, the Turkish-American relationship shows that weapons supplies are often used as leverage, and the United States has tried to use that leverage to influence Turkish policy regarding issues ranging from Cyprus to human rights.[7] Second, both parties are aware of that leverage, and both make strategic decisions to maintain the relationship while limiting the autonomy or oversight of the other.

Third, arms relationships are long-term ties, not limited to the one-time sale of weapons, but continuing through the entire lifecycle of military platforms, sometimes requiring decades of sustainment, maintenance, spare parts, upgrades, and other support. As the bulk of its fighter fleet is the 1980s-era American F-16, Turkey may feel the wrath of U.S. dissatisfaction in terms of reduced support for the aircraft. Conversely, the necessary maintenance and operations support for the S-400 from Russian teams may give Russia access to NATO weapons systems—hardware and software—potentially for decades. Fourth, as the S-400 case acutely illustrates, advanced weapons add capability through integration. It is the standardization of hardware and the communication of software across a range of military platforms that enables modern

[7] John Sislin, "Arms as Influence: The Determinants of Successful Influence," *Journal of Conflict Resolution* 38, no. 4 (December 1, 1994): 665–89, https://doi.org/10.1177/0022002794038004004.

networked warfare. Weapons produced according to a standard—NATO standard, for example—are built to be integrated, while other foreign platforms may have been built to *prevent* integration.

Why did Turkey make this choice, and under what conditions might it have made a different one? More generally, what explains the state's strategy of arms acquisitions? Providing for the national defense is an essential function of the state. Theorists of state power—from the social contract theorists of the Enlightenment to contemporary historians, sociologists, and political scientists—generally agree that a core function of the state is to protect its citizens, from threats both internal and foreign.[8] A state that cannot defend itself is not long for this world. Some take it further, arguing that war-making is not just a core function of the state, but its progenitor as well. Charles Tilly's aphorism that "war made the state and the state made war" illustrates how the iterative process of centralizing administrative power, extracting resources from populations, organizing military power, fighting wars, and re-centralizing new administrative capabilities created a particular form of state that predominated Europe by the 20th century.[9] War-making requires the organization of people—how to induce or coerce a population to produce an army—and the acquisition of weapons—how to obtain the martial tools necessary to defeat an adversary. In this study, I focus on the latter.

Scholars of international relations have dedicated extensive study to states and the wars they fight. But arms, the tools they use to fight, are often overlooked. Implicit in much of the international relations literature are assumptions about arms—that arms are equivalent to military

[8] Jean-Jacques Rousseau and Donald A. Cress, *Basic Political Writings*, 2nd ed (Indianapolis, IN ; Cambridge: Hackett Pub. Co, 2011); Charles Tilly, *Coercion, Capital, and European States, AD 990-1992*, Rev. pbk. ed, Studies in Social Discontinuity (Cambridge, MA: Blackwell, 1992); Thomas Hobbes and E. M. Curley, *Leviathan: With Selected Variants from the Latin Edition of 1668* (Indianapolis: Hackett Pub. Co, 1994).

[9] Tilly, *Coercion, Capital, and European States, AD 990-1992*.

power, that the possession of arms means the ability to use them, and that states that want to deploy their arsenals can do so. This dissertation calls into question these assumptions. Rather than viewing arms as mapping directly onto state power, it argues that states acquire arms strategically to maximize their ability to generate power. The state continuously strategizes its acquisition and management of arms for a reason: Advanced weaponry is a product of a global trade network that no state can entirely control.[10] The inability of any state to totally control supply means that all states are to some degree interdependent—reliant on the permission of others, explicit or otherwise, for the functioning of their arsenals. The use of their arsenals, then, is the product of many states' input and approval.

1.1 Arming the state

This study begins with a core question: How do states strategize the acquisition of arms? To address this, it is necessary to ask a set of subsidiary questions. What explains state choices of what to buy and from whom? What are the tradeoffs of different strategies, and when, for example, would a state trade capability for autonomy? And how do those choices shape the state's subsequent decision making? The production and acquisition of advanced weapons is one of the most challenging endeavors of the modern state, and a core concern in the contemporary international system. Yet the existing literature provides only limited answers to these questions. Of the answers it does provide, few address the arming dynamic from the perspective of the middle- and lower-tier state—the modal buyer in the market for arms. Here, I summarize the existing literature, emphasizing a buyer-centric perspective of arming strategies. I begin with the motivation for arming, then discuss the context of the international arms market. I then move to

[10] Anders Akerman and Anna Larsson Seim, "The Global Arms Trade Network 1950–2007," *Journal of Comparative Economics* 42, no. 3 (August 2014): 535–51, https://doi.org/10.1016/j.jce.2014.03.001.

the strategic dynamic of arming, focusing on bilateral relations between buyers and sellers. Given that dynamic, I discuss the options available to the buyer for arming through domestic and foreign purchases, and finally discuss the behavioral impacts on the state of the aforementioned decisions.

1.1.1 The motivation: why do states arm?

Why do states choose particular levels of arming, or more broadly, of military spending? The debates in the literature examine both domestic and international rationales for state arming choices. This literature largely focuses on the choice *to* arm, rather than any particular type of arming. Domestic rationales include historical patterns of state formation, the character of domestic institutions, the political economy of defense production, and the political sociology of arming. International rationales include the state's perception of threat and the state's signaling goals within its international security context.

Domestic theories are largely in agreement that institutional structure is an important determinant of defense spending. Democracies are seen as more responsive to constituents than autocracies in multiple ways. First, democracies are more responsive to citizen preferences than autocracies: Hartley and Russett, for example, find a consistent effect of public opinion on military spending in the United States, demonstrating the influence of the electorate on state arming decisions.[11] Conversely, autocracies are more likely to purchase weapons for non-defense purposes. Eyre and Suchman argue that developing states pursue some classes of advanced weapons in the pursuit of prestige. While they may not find great use in jet fighters, the platforms nonetheless symbolize a functioning, modern state, and their social construction as

[11] Thomas Hartley and Bruce Russett, "Public Opinion and the Common Defense: Who Governs Military Spending in the United States?," *American Political Science Review* 86, no. 4 (December 1992): 905–15, https://doi.org/10.2307/1964343.

such signifies a competent military and justifies the expenditures.[12] In wartime, Goldsmith argues that political competition drives democracies' increased flexibility in their defense efforts, which allows them to out-compete opponents when needed.[13]

Spending choices can also affect state industrial capabilities, and therefore can have an important impact on the direction of economic development. Jackson and Morelli see state arming decisions as a product of the returns to increased armament in war and the cost of arms relative to consumption.[14] Broadly, governments that produce their own weapons determine what relevant production capabilities they will create and what spending they will forgo. Even where defense production is privatized, government buying shapes the size, structure, and performance of a nation's defense industrial base.[15] In states with heavily privatized production, industrial policy can be, to a non-trivial extent, what the government buys and how much it orders. This can have undesirable consequences. When public investments in military technology increase, government prioritization of military development can crowd out private sector research and technology advances.[16]

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[12] Note that the procurement of 'prestige weapons' can also have an international signaling effect. Dana P. Eyre and Mark C. Suchman, "Status, Norms, and the Proliferation of Conventional Weapons: An Institutional Theory Approach," in *The Culture of National Security: Norms and Identity in World Politics*, ed. Peter J. Katzenstein (New York: Columbia University Press, 1996), 79–113.

[13] Benjamin E. Goldsmith, "Defense Effort and Institutional Theories of Democratic Peace and Victory Why Try Harder?," *Security Studies* 16, no. 2 (June 2007): 189–222, https://doi.org/10.1080/09636410701399432.

[14] Matthew O. Jackson and Massimo Morelli, "Strategic Militarization, Deterrence and Wars," *Quarterly Journal of Political Science* 4, no. 4 (December 2009): 279–313, https://doi.org/10.1561/100.00009047.

[15] Keith Hartley, "The Arms Industry, Procurement and Industrial Policies," in *Handbook of Defense Economics*, ed. Todd Sandler and Keith Hartley, vol. 2, Handbook of Defense Economics (Elsevier, 2007), 1139–76, https://doi.org/10.1016/S1574-0013(06)02033-3.

[16] Eugene Gholz, "Eisenhower versus the Spin-off Story: Did the Rise of the Military–Industrial Complex Hurt or Help America's Commercial Aircraft Industry?," *Enterprise & Society* 12, no. 1 (March 2011): 46–95, https://doi.org/10.1017/S1467222700009733.

Domestic institutional context forms a core explanation of state spending on defense, and it extends beyond the divide between democracy and autocracy. The literature addressing the growth of defense spending in the United States provides a an institutionally-driven sociological perspective. While the material and population resources of the state matter, Brooks and Stanley argue that they only partially determine how states create military power. The political and social cultures of states are critical variables in how they prepare for conflict, allocate resources, and execute wars.[17] Most studies find common ground in a multifaceted view of U.S. defense spending, seeing it as a product of the ascent of a military-industrial socio-political elite in the United States, while making some concessions to the impetus of foreign threats.

In the United States, dramatic technological and social shifts after the First and Second World Wars created new means of developing weapons and a new consensus on buying them. Hogan examines the political sociology of the formation of the national security state—the permanent mobilization of military institutions, resulting from bitter political divides, that succeeded World War II.[18] Three camps emerged in the early Cold War: liberal internationalists generally interested in pursuing a global role for the United States, conservatives wary of the garrison state, and military elites with the relentless goal of improving defense capabilities. While the consensus position eventually moved toward the spending goals of military elites, the anti-statism rooted in American political culture prevented excesses in the Cold War garrison

[17] Risa Brooks, "Introduction: The Impact of Culture, Society, Institutions, and International Forces on Military Effectiveness," in *Creating Military Power: The Sources of Military Effectiveness*, ed. Risa Brooks and Elizabeth A. Stanley (Stanford, Calif: Stanford University Press, 2007).

[18] Michael J. Hogan, *A Cross of Iron: Harry S. Truman and the Origins of the National Security State, 1945 - 1954* (Cambridge: Cambridge Univ. Pr, 2000).

state, enabling a unique blend of enhanced military power and productive restraints on domination by the state.[19]

Functionally, this pattern was driven by the amalgam of actors that President Eisenhower famously referred to as the *military-industrial complex*. Dombrowski and Gholz examine the relations among the Congress, U.S. military leaders, and industry in developing next-generation technologies, and conclude that the mutually beneficial decisions made through these relationships are a more powerful explanation for defense spending than competing concepts, such as technological determinism.[20] Similarly, Koistinen sees the American military-industrial complex as having captured the elites of both political parties, enabling it to remain a consistent facet of government spending regardless of the international security environment. He argues that national security spending has increasingly resulted from an unquestioning support for the weapons industry, which itself acts as a distribution mechanism across the United States, rather than foreign threats, real or perceived.[21] Whitten and Williams go further in claiming that defense spending is primarily a method of distribution, and that elites intent on wealth transfer leverage the international security environment to increase defense procurement, with increasing military capabilities as an important, but not determinative, consequence.[22] Dunne, Smith, and

[19] Aaron L. Friedberg, *In the Shadow of the Garrison State: America's Anti-Statism and Its Cold War Grand Strategy*, Princeton Studies in International History and Politics (Princeton, N.J: Princeton University Press, 2000).

[20] Peter J. Dombrowski and Eugene Gholz, *Buying Military Transformation: Technological Innovation and the Defense Industry* (New York: Columbia University Press, 2006).

[21] Paul A. C. Koistinen, *State of War: The Political Economy of American Warfare, 1945-2011*, Modern War Studies (Lawrence, Kan: University Press of Kansas, 2012).

[22] Guy D. Whitten and Laron K. Williams, "Buttery Guns and Welfare Hawks: The Politics of Defense Spending in Advanced Industrial Democracies," *American Journal of Political Science* 55, no. 1 (January 2011): 117–34, https://doi.org/10.1111/j.1540-5907.2010.00479.x.

Willenbockel note, in particular, that the defense economics literature largely overestimates the positive effects of military spending on growth.[23]

But defense spending can also reflect the international security environment the state faces. Nordhaus, Oneal, and Russett dispute the entirely domestic argument for defense spending and test whether states are in fact responsive to their threat environment. They develop an *ex ante* probability of conflict based on dyadic rivalries and the character of the international system, and demonstrate that states increase military expenditures in response to external threats.[24] Similarly, Gibler and Miller see foreign threats as a driver of the state's defense capacity, arguing that regional threats specifically, and territorial threats most acutely, increase state capacity. The nature of these threats directly affects lives and livelihoods, unifying popular opinion and reducing the state's obstacles to pursuing defense capacity.[25]

Morrow argues that dyadic threats and the arms races they create are particularly relevant to understanding the impetus for defense spending. Defense spending in arms races is driven by short-term swings in the relative power balance between rivals. States locked in an arms race can only briefly gain the military advantage. They are most advantaged in attacking their rivals during these temporary moments of military superiority. Morrow argues that states that are less risk averse are more likely to take the initiative during these windows of opportunity. Thus, the

[23] J. Paul Dunne, Ron P. Smith, and Dirk Willenbockel, "Models of Military Expenditure and Growth: A Critical Review," *Defence and Peace Economics* 16, no. 6 (January 2005): 449–61, https://doi.org/10.1080/10242690500167791.

[24] William Nordhaus, John R. Oneal, and Bruce Russett, "The Effects of the International Security Environment on National Military Expenditures: A Multicountry Study," *International Organization* 66, no. 03 (July 2012): 491–513, https://doi.org/10.1017/S0020818312000173.

[25] Douglas M Gibler and Steven V Miller, "External Territorial Threat, State Capacity, and Civil War," *Journal of Peace Research* 51, no. 5 (2014): 634–46.

dynamics of an arms race itself can force rational states to increase their defense spending.[26] This logic relies on an implicit technological imperative: Arms races are a rationale for state defense expenditures due to advances in both weapons and production methods.

Scholars of defense spending construct a logic that includes both domestic and international causes, with military production as a means of defense, but also of distribution, prestige, and the perpetuation of socio-political hierarchy. However, the domestic and international logics need not necessarily remain separate. For example, selectorate theory posits that because of their domestic institutional structure, democracies have stronger incentives to arm in a manner appropriate to the threats they face, and will therefore increase their spending sufficient to defeat potential adversaries.[27] Importantly, the selectorate explanation for democracies' relatively greater incentive to arm connects the domestic institutional structure of the state to the international context in which it exists. Many historical studies likewise find a powerful explanatory mechanism in the nexus of domestic and international forces.

The historical development of defense industries in early modern Europe highlights this interaction between domestic and international forces. For the early European state, efforts to assert domestic control and to succeed in international conflict were deeply intertwined with a growing defense economy, which provided both mercenaries and materiel.[28] The context of persistent civil and state conflict from the fourteenth to the seventeenth centuries provided fertile ground for innovation: Krause identifies this period of Military Revolution as the first wave of

[26] James D. Morrow, "A Twist of Truth: A Reexamination of the Effects of Arms Races on the Occurrence of War," *Journal of Conflict Resolution* 33, no. 3 (September 1, 1989): 500–529, https://doi.org/10.1177/0022002789033003007.

[27] Bruce Bueno de Mesquita et al., *The Logic of Political Survival*, 1. paperback ed (Cambridge, Mass.: MIT Press, 2005).

[28] David Parrott, *The Business of War: Military Enterprise and Military Revolution in Early Modern Europe* (Cambridge ; New York: Cambridge University Press, 2012).

modern military development, production, and diffusion.[29] European states that suffered these conflicts were challenged to increase the efficacy of conscription, provide a normative framework to increase the loyalty of conscripts, and develop innovative hardware and tactics to more effectively use their men.[30] Those that succeeded reinforced domestic control, achieved greater military power vis-à-vis their rivals, and continued their upward spiral of defense spending.

This literature provides compelling evidence that both domestic and international forces drive the state's levels of defense spending and arming. However, as it focuses on levels of spending without examining what states are spending on, much of this literature fails to capture the rationales for particular arming decisions, including domestic versus foreign procurement and the trading relations between states. To address this, I turn to the context of arms trade and diffusion.

1.1.2 The context: technology, patterns, and behavior in the arms trade

While the literature on defense spending centers on whether states react to domestic institutions, social structures, or foreign threats, the literature on trade and diffusion presupposes production and asks how arms spread through patterns of trade. Scholars also address how states adopt technologies, and why some states adopt more proficiently than others, as well as what the effects of the arms trade are on state behavior.

Technology development and transfer is a core process in the history of the arms trade. The technological imperative is coupled with an action-reaction process as great powers—the

[29] Keith Krause, *Arms and the State: Patterns of Military Production and Trade*, Cambridge Studies in International Relations 22 (Cambridge ; New York: Cambridge University Press, 1992).
[30] Tilly, *Coercion, Capital, and European States, AD 990-1992*.

producers at the technological frontier—attempt to maintain influence across their client states.[31] This leads to a pattern of development, trade, and diffusion that pits coalitions against each other in some respects, and buyers and sellers in others. The ability of these states to control the diffusion of technologies oscillates over time, with shifts in the profusion of technologies, their value relative to the security environment, and their domestic tradeoffs.[32]

Krause defines three eras in arms production and trade. The early modern era, characterized by gunpowder and iron, turned European artisanal production into a cottage industry. Technologies were easily replicated, so production volume and technical advances drove dominance. In the 19th century, the industrial age of coal and steam enabled a second wave of arms development and diffusion. Increasingly, the foundational technologies necessary to build defense products were out of reach of most nations, creating a greater gap between producers. After World War II came the modern era, in which a greater number of states were able to build weapons, but the technical knowledge needed to build at the frontier far surpassed the capacity of most states.

During each period, Krause describes three tiers of states: a first tier that develops the most advanced military innovations; a second tier that does not develop innovations but can produce most or all of its military needs based on foreign innovations; and the third tier, which must significantly rely on imported designs, technologies, and manufacturing tradecraft.[33] The resultant diffusion of arms, Krause argues, established a wave pattern that continues today.

[31] David Kinsella, "Rivalry, Reaction, and Weapons Proliferation: A Time-Series Analysis of Global Arms Transfers," *International Studies Quarterly* 46, no. 2 (June 2002): 209–30, https://doi.org/10.1111/1468-2478.00230.

[32] Krause, *Arms and the State*.

[33] Krause.

Military innovators develop new arms, eventually sell them, and their designs are copied by secondary and tertiary powers as they diffuse throughout the international system.

Alliances, regime type, and trade blocs are also important factors. Alliances are particularly important to the trade in arms, as trade increases ties and distributes capabilities across members, while improving interoperability of forces. Each alliance has a unique pattern, depending on the relative production capabilities of its constituent states. The Warsaw Pact, dominated by the centrally planned Soviet economy, represented a more centralized trade than the NATO alliance.[34] While the Warsaw Pact states specialized in particular technologies, with the Soviet Union as the critical controlling and distributing node, the industrial democracies of NATO long continued to support diversified domestic industries, trading prolifically across a more distributed network.

An often-overlooked factor in the diffusion of weapons technology is the state's capacity to use it. Van Creveld argues that while war and technology are inextricably bound, it is the ability to organize technology effectively and deal with uncertainty that differentiates a state in war.[35] Similarly, Parker demonstrates that military technology adoption is only successful when states are able to assimilate the weapons into their arsenals and doctrines, tailored to local climates and conditions.[36] Horowitz focuses on the technology user, arguing that successful proliferation of a weapons technology is a product of the financial and organizational capacities of the state.[37] States at the technological frontier do not always operationalize the most advanced

[34] Akerman and Seim, "The Global Arms Trade Network 1950–2007."

[35] Martin Van Creveld, *Technology and War: From 2000 B.C. to the Present*, A rev. and expanded ed., 1st Free Press ed.; 1st Free Press paperback ed (New York: Free Press, 1991).

[36] Christopher S. Parker, "New Weapons for Old Problems: Conventional Proliferation and Military Effectiveness in Developing States," *International Security* 23, no. 4 (1999): 119–47.

[37] Michael Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics* (Princeton, N.J: Princeton University Press, 2010).

technologies, and lower tier states that acquire new technologies often fail to understand their potential, integrate them into their tactics, and manage their maintenance and operations optimally.

This literature provides a useful overview of the patterns of arms diffusion, but to understand the specific logic driving state acquisition behavior, I turn to the strategic dynamics of arms sales, particularly the levers of power that buyers and sellers can use to further their interests.

1.1.3 The strategic dynamic: Patronage and hierarchy

While the arms diffusion literature examines broad patterns, the diffusion itself is the product of dyadic trade and security relationships between states. Most of these relationships are characterized by what Lake calls the security hierarchy, in which a patron dominates a subordinate client.[38] The stronger partner, patron, or supplier state, offers security in exchange for an extension of its power, often shaping the foreign policy of a weaker, client, or buyer state. The stronger state may fully incorporate the weaker into its security posture, or may keep it at a distance. The relationship can involve formal alliance commitments, arms sales, or other forms of partnership. Alliance commitments present unique forms of risk. As Morrow argues, alliances reduce the need to arm, because the state's forces are immediately augmented by the ally. However, states party to alliances face two risks: for the stronger partner, the risk of entrapment by the ally, and for the weaker partner, a reduction in autonomy.[39]

[38] David A. Lake, *Hierarchy in International Relations*, Cornell Studies in Political Economy (Ithaca, NY.: Cornell Univ. Press, 2011).

[39] James D. Morrow, "Arms Versus Allies: Trade-Offs in the Search for Security," *International Organization* 47, no. 2 (1993): 207–33.

Krause defines three forms of leverage a patron supplier maintains over a client or buyer. Bargaining leverage, when the supplier attempts to compel compliance with a specific demand, is the most acute. The patron may try to compel or coerce its client in some area of domestic or foreign policy, and the buyer may comply or resist. Structural power, on the other hand, allows the supplier to affect the material conditions of a military balance. Should the supplier want to prevent an adversary from obtaining too much power, it may arm its client. The buyer may note the supplier's questionable intent and seek to reduce its vulnerability, often in an attempt to avoid falling prey to excessive bargaining leverage. Finally, hegemonic power is about influence over the client's concept of security, its understanding of the nature of the threat, and the means of fighting it. A supplier may use hegemonic power to define an adversary (communists, terrorists), define the nature of the threat, and delineate the acceptable means of countering it, through both ideational and material means.[40]

But how should the patron navigate this relationship? Yarhi-Milo, Lanoszka, and Cooper call this the "patron's dilemma," the challenge of providing security while avoiding entrapment.[41] The stronger the commitment, the greater possibility of entrapment. However, patrons can reduce their risk by providing arms instead of engaging in a formal alliance. Two principal factors determine whether a patron offers its client arms or an alliance: their alignment of security interests and the client's self-defense capabilities. Closer alignment and greater concern for the client's survival drive alliances, whereas limited shared interests and greater faith in the client's defensive capabilities are more likely to foster arms provision.

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[40] Keith Krause, "Military Statecraft: Power and Influence in Soviet and American Arms Transfer Relationships," *International Studies Quarterly* 35, no. 3 (1991): 313–36, https://doi.org/10.2307/2600702.

[41] Keren Yarhi-Milo, Alexander Lanoszka, and Zack Cooper, "To Arm or to Ally? The Patron's Dilemma and the Strategic Logic of Arms Transfers and Alliances," *International Security* 41, no. 2 (October 1, 2016): 90–139, https://doi.org/10.1162/ISEC_a_00250.

Does patronage work in the patron's favor? Buyers should prefer to remain in good standing with their suppliers, whether they purchase end products or intermediary goods. Levine, Sen, and Smith model the effects of time on buyer states, finding that states with longer time horizons and the expectation of future arms purchases refrain from policy deviations from their suppliers.[42] Pierre, on the other hand, argues that the political leverage of arms sales can be overrated. The United States successfully leveraged arms sales to stop a conflict between Greece and Turkey in 1967, but failed to do so in 1974. Depending on other factors in the bilateral relationship, such as oil, basing rights, or support for human rights, arms sales may not always carry the greater weight.[43] The key may be about the relative power in the relationship: Sislin argues that American attempts to influence client states during the Cold War were more successful when they drew on a relatively stronger power imbalance between the United States and the client, rewarded policy agreement, and focused on aligning foreign, not domestic, policy.[44]

1.1.4 The options: building and buying

Given that sellers have an incentive to use their leverage over buyers to achieve policy goals, how should buyers respond? One option is to build weapons domestically. Devore identifies two primary drivers of the state's choice to build. [45] First is security of supply. States fear their ability to sustain military operations will be cut off during a conflict. However, the

[42] Paul Levine, Somnath Sen, and Ron Smith, "A Model of the International Arms Market," *Defence and Peace Economics* 5, no. 1 (January 1994): 1–18, https://doi.org/10.1080/10430719408404776.

[43] Andrew J. Pierre, *The Global Politics of Arms Sales* (Princeton, NJ: Princeton University Press, 1982).

[44] Sislin, "Arms as Influence."

[45] Marc R. DeVore, "Armaments after Autonomy: Military Adaptation and the Drive for Domestic Defence Industries," *Journal of Strategic Studies*, May 30, 2019, 1–35, https://doi.org/10.1080/01402390.2019.1612377.

complex nature and enormous industrial demands of modern weaponry means that true security of supply is unobtainable for most states. The second factor is military adaptability. Devore argues that the impetus for the defense industrial investments of middle-tier countries, despite their relative inefficiency, is in the adaptability that such investments allow.[46] Domestic defense industries are uniquely capable of adapting and customizing weapons, both indigenous and imported. As Devore writes, "Since war is unpredictable, it is often the side that adapts most rapidly to unexpected circumstances that prevails. Domestic defense industries contribute significantly to [the ability to] adapt both because of their technical capabilities and their patterns of routinized cooperation with a state's armed force."[47]

How do states develop their industries? Domestic industries are financially, technologically, and materially expensive. Brzoska argues that they have a limited economic viability—low production runs cannot achieve sufficient economies of scale.[48] To address the costs, Devore argues that states can either accept foreign investment, increasing capital but creating a supply-side dependence, or pursue unrestrained exports, obtaining capital from foreign sales but leaving domestic industry at the mercy of suppliers, with limited leverage, and potentially with excess capacity.[49]

How can smaller states then maintain their defense industrial bases? Devore posits that the state's economic institutions determines the variety of industrial policy it pursues. Liberal

[46] DeVore.

[47] Marc R. DeVore, "Commentary on The Value of Domestic Arms Industries: Security of Supply or Military Adaptation?," *Defence Studies* 17, no. 3 (July 3, 2017): 242–59, https://doi.org/10.1080/14702436.2017.1347781.

[48] Michael Brzoska, "Economic Factors Shaping Arms Production in Less Industrialized Countries," *Defence and Peace Economics* 10, no. 2 (May 1999): 139–69, https://doi.org/10.1080/10430719908404921.

[49] Marc R. Devore, "Arms Production in the Global Village: Options for Adapting to Defense-Industrial Globalization," *Security Studies* 22, no. 3 (July 1, 2013): 532–72, https://doi.org/10.1080/09636412.2013.816118.

states, such as Israel, have pursued market-driven policies, encouraging competition and international trade, and ultimately fostering competitive market niches. Social democratic states, such as Sweden, instead work with industry to select, protect, and foster certain key sectors to obtain the same goal.[50]

But building weapons is not the only answer the client's dilemma. The state can also reduce its dependence on any single source of imported arms. The literature is surprisingly limited on diversification as an explicit strategy, and provides no empirical examinations of its causes or frequency.

1.1.5 The impacts: conflict and cooperation

An important question on the strategy of arms acquisition is how the trade in arms and different arming strategies affect and enable state behavior. Both buyers and sellers act strategically to maximize their security and interests, so their predictions about future behaviors, and the actual behaviors of client states, are important to understanding their arming decisions.

The arms trade also has important effects on the behavior of states, both domestically and internationally. Domestically, arms transfers to developing countries have been shown to increase the likelihood of human rights abuses.[51] Supplier states often exhibit a disconnect between their rhetoric on human rights and their actual sales to human rights violators.[52] Conversely, Gholz argues that interdependence reduces misbehavior. The intentional decisions

[50] Marc R. Devore, "Defying Convergence: Globalisation and Varieties of Defence-Industrial Capitalism," *New Political Economy* 20, no. 4 (July 4, 2015): 569–93, https://doi.org/10.1080/13563467.2014.951612.

[51] Shannon Lindsey Blanton, "Instruments of Security or Tools of Repression? Arms Imports and Human Rights Conditions in Developing Countries," *Journal of Peace Research* 36, no. 2 (March 1999): 233–44, https://doi.org/10.1177/0022343399036002006.

[52] Richard Johnson and Spencer Willardson, "Human Rights and Democratic Arms Transfers : Rhetoric versus Reality with Different Types of Major Weapon Systems," *International Studies Quarterly*, 2017.

of firms to globalize their supply chains, in which different companies, facilities, and countries specialize in unique input products, introduces a range of constraints on potential state behaviors.[53] Beyond the firm level, Maoz also finds that broad interdependence dampens the likelihood of conflict initiation.[54]

Internationally, however, arms transfers can increase the likelihood of conflict.[55] Arms transfers always occur within a preexisting security context. Krause finds that arms transfers from major powers make buyers more likely to be involved in disputes, both as initiators and as targets. (Defense pacts have the opposite effect.) [56] Similarly, in his study of arms recipients, Kinsella argues that arms transfers lead to more conflictual behavior, while arms transfer dependence tempers it.[57] Arms sales, especially to states mired in enduring rivalries, can also exacerbate instability. In the context of the Cold War, when superpower rivals sold arms to their clients engaged in regional rivalries, this was especially dangerous. Arms transfers from the United States and the Soviet Union were destabilizing to regional dyads throughout the period, while most arms transfers from third parties had little impact on stability.[58] Rivalry is a particularly important context for arms transfers. In their study of arms transfers during war, Brzoska and Pearson find that arms sales and assistance are nearly always viewed as political

[53] Eugene Gholz, "Globalization, Systems Integration, and the Future of Great Power War," *Security Studies* 16, no. 4 (December 6, 2007): 615–36, https://doi.org/10.1080/09636410701740908.

[54] Zeev Maoz, "The Effects of Strategic and Economic Interdependence on International Conflict Across Levels of Analysis," *American Journal of Political Science* 53, no. 1 (2009): 223–40, https://doi.org/10.1111/j.1540-5907.2008.00367.x.

[55] Cassady Craft, *Weapons for Peace, Weapons for War: The Effect of Arms Transfers on War Outbreak, Involvement, and Outcomes* (New York: Routledge, 1999).

[56] Volker Krause, "Hazardous Weapons? Effects of Arms Transfers and Defense Pacts on Militarized Disputes, 1950-1995," *International Interactions* 30, no. 4 (October 2004): 349–71, https://doi.org/10.1080/03050620490884038.

[57] David Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict," *Journal of Peace Research* 35, no. 1 (1998): 7–23.

[58] Gregory S. Sanjian, "Promoting Stability or Instability? Arms Transfers and Regional Rivalries, 1950-1991," *International Studies Quarterly* 43, no. 4 (1999): 641–70.

statements during ongoing conflicts, and arms transfers sufficient to alter the military balance can both increase bloodshed and shorten the duration of conflict.[59]

While this literature is generally in agreement that arms transfers often have deleterious effects on peace, they generally omit discussion of any specific arming strategy. Empirical studies of arms transfers and state behavior are rare, and generally do not consider the particular strategies of acquisition employed by the buying states.[60]

1.2 Plan of the dissertation: toward a theory of buyer strategy and behavior

Thus far, scholarship has delved into important questions on the rationales for state arming decisions, the structure of the international arms market, the strategy of bilateral arms relationships, the potential responses of buyers, and the effects of arming decisions on subsequent behaviors. However, despite the fact that each of these facets is relevant to every arms sale and purchase, the literature lacks a framework that considers these factors holistically, from context to decisions and subsequent effects. It still lacks an understanding of the linkages among arming strategy, trade, and state power. And it is surprisingly limited in empirical studies on defense industrial strategy in international relations, particularly from the perspective of buyers' strategies.

The goal of this dissertation is to link the aforementioned factors—from the motivation for arming, given the context, to the strategies states pursue, and how it shapes their subsequent actions—into a coherent view of buyer behavior. In short, I seek to provide a first step toward a more integrated understanding of middle-tier arms buyers in international relations. In Chapter 2, I develop a theory of arms acquisition based on the tradeoffs of different arms acquisition

[59] Michael Brzoska and Frederic S. Pearson, *Arms and Warfare: Escalation, de-Escalation, and Negotiation*, Studies in International Relations (Columbia, S.C: University of South Carolina Press, 1994).

[60] Krause, "Hazardous Weapons?"

priorities, particularly the efficacy-autonomy tradeoff. I highlight the ways in which arms importers are dependent on their suppliers' approval for the continued use of their weapons.

When buyers' preferences diverge too sharply from those of their suppliers, buyers can face supply disruptions, hobbling their military readiness. States that face greater threats are incentivized to seek autonomy, though it may reduce their aggregate military capabilities. The theory I develop generates falsifiable hypotheses that are explored in subsequent chapters. Following my goal of providing a coherent view of buyer strategies, the empirical chapters begin with the state's strategy of arming in the face of threats, then examines the state's behavior after building its arsenal, then explores how buyers respond as they face military threats and the risk of arms supply disruptions over time.

In Chapter 3, I test the relationship between the state's perception of threat and its arming strategy. I argue that states that face threats are more likely to seek autonomy in their use of weapons. To achieve this autonomy, they increase the diversity of their imports, to reduce the ability of any one supplier to veto their decision to use their weapons. Chapter 3 also introduces two measures of arms import diversification that capture the degree of diversity in a state's arming strategy. I then test the relationship between a state's fear of threat and its arming strategy, and find that states that have recently experienced conflict are in fact more likely to diversify their sources of import.

Chapter 4 continues to the next step, on how states behave after they pursue an autonomy-enabling arms acquisition strategy. It argues that the underlying logic of arms diversification is driven by the goal of using weapons offensively, and that a diversified arsenal enables more aggressive state behavior. To explore this logic, I examine the case of Argentina, which faced a variety of threats, pursued a diversified arms strategy, and subsequently engaged

in conflict behavior. I then provide a quantitative test of the theory, leveraging data on diversification and conflict initiation. I find that increased diversification is associated with subsequent conflict initiation, consistent with the theory. Importantly, I focus on arms diversification as an enabling behavior—allowing the use of weapons—but not a cause of the state's drive toward conflict.

In Chapter 4, I highlight one of the weaknesses of a diversification strategy—the difficulty of sustaining military operations. Chapter 5 examines in greater detail how states address this problem through the use of domestic industry. It compares the development of the domestic defense industrial bases of two states—Israel and South Korea—to assess the degree to which the state's security environment, its arming strategy, and its relationship with arms suppliers shapes the state's drive to build arms domestically, and how it builds those arms. In each case, I find that a greater security commitment by a patron state reduces the impetus for developing a domestic arms industry, while a weaker commitment, often evidenced by disruptions to supply, spurred the states toward indigenous development. Further, the pattern of conflict, patronage, and threat shaped the form the domestic defense industries took. I conclude that the perception of threat, moderated by the security guarantee from a patron, drove Israel more than South Korea toward an industrial structure meant to compensate for insecurity of supply.

Together, this dissertation is an attempt at describing the arc of a buyer state's arms acquisitions. In the next chapter, I provide a framework that generates testable hypotheses and forms the foundation for the empirical chapters that follow.

Chapter 2 A Theory of Arms Acquisition Strategy

Acquiring usable, advanced arms—developing, building, buying, and sustaining them—is a central policy goal for a growing number of states. Yet the strategies that states employ to acquire their arms vary widely. Some states prioritize building their arms domestically, relying on a constellation of industries that comprise a defense industrial base. The largest defense industrial capability lies with the NATO alliance.[61] The United States, the United Kingdom, and France—NATO's three largest militaries—spend about a quarter of their defense budgets on equipment, primarily weapons and ammunition, amounting to hundreds of billions of dollars annually.[62] To ensure they can continue to produce arms, each country has also devoted extensive efforts to sustaining its defense industrial capabilities.

The United States studies its critical production capabilities and funds them directly.[63] It blocks foreign acquisitions of certain technologies and facilities and spends billions of dollars to support innovation in the private sector.[64] France has fostered liberal arms export relationships

[61] According to *Defense News*' annual rankings of the largest defense companies, 20 of the top 30 companies were in NATO countries. "Top 100 Defense Companies for 2019" (Defense News, July 22, 2019), https://people.defensenews.com/top-100/.

[62] "Defence Expenditures of NATO Countries (2009-2016)," Press Release (Brussels: NATO, March 13, 2017), https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2017_03/20170313_170313-pr2017-045.pdf.

[63] The Defense Production Act (DPA) of 1950 (amended 2014) provides the legal framework for funding critical defense capabilities.

[64] The Foreign Investment and National Security Act (FINSA) of 2007 provides the legal framework for today's Committee on Foreign Investment in the United States (CFIUS), which can block foreign investment deemed detrimental to national security.

around the world to ensure its state-owned production capabilities remain afloat.[65] In 2017, out of concern for future weapons access, French President Emmanuel Macron threatened to nationalize France's shipyards to prevent their takeover by Italy, despite the fact that Italy was a close ally.[66] And the United Kingdom, concerned about maintaining the second largest aerospace and defense industry in the world, has placed special emphasis on continuing defense collaboration with European partners during Brexit negotiations.[67] To reduce inefficiencies while sustaining their key capabilities, these countries are also internationalizing their supply chains: In 2016, Congress mandated that the United States consider its defense industrial base to include Canada, Australia, and the United Kingdom.[68]

Outside the developed economies of NATO, many states are grappling with the challenges of producing or procuring a steady flow of advanced military systems. Sometimes they import weapons, sometimes they develop them domestically, and often they try both. China has pursued a multi-pronged approach to obtaining weapons, including setting national-level technology goals, leveraging both commercial industry and state-owned enterprises, and funding advanced research. The Chinese government has also spent billions funding a cyber-espionage campaign to acquire intellectual property necessary to produce cutting-edge technologies, with a

[65] "Going Great Guns," *The Economist*, May 12, 2016, https://www.economist.com/news/business/21698662-booming-exports-lift-spirits-gallic-defence-firms-going-great-guns.

[66] Gwyn Topham, "France Nationalises Strategic Shipyard to Thwart Italian Ownership," *The Guardian*, July 27, 2017, sec. World news, https://www.theguardian.com/business/2017/jul/27/france-nationalises-strategic-shipyard-emmanuel-macron.

[67] "Brexit: The Impact on the Defence Industry," *MOD-DCO*, January 23, 2017, https://www.contracts.mod.uk/do-features-and-articles/brexit-the-impact-on-the-defence-industry/.

[68] FY17 National Defense Authorization Act

major emphasis on defense capabilities.[69] These efforts have helped China to domesticate increasing amounts of its defense production.

Some states domesticate arms production with the help of their suppliers. In India, which relies heavily on imported arms, Prime Minister Narendra Modi has promoted his Make in India campaign to require arms manufacturers to produce at least part of their products in India if they want to profit from the world's largest emerging defense buyer.[70] The country's state-owned enterprises have also faced increasing pressure to build indigenous military platforms and to partner with the private sector.[71]

The barriers to weapons development are not insignificant. Even the largest defense producers—including those that have developed strategic weapons domestically—face technical challenges. Despite its advanced capabilities in some realms, only in 2017 did China produce an engine for its fighter jet aircraft domestically.[72] The barriers to weapons use, modification, and sustainment are similarly difficult to overcome, often due to causes both technical and political. For example, Russia has refused to provide the keys to modify software on Sukhoi jet fighters it sold to India, which in turn refused to purchase more of them.[73] And Philippine President

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[69] Office of the Secretary of Defense, "Military and Security Developments Involving the People's Republic of China 2017," Annual Report to Congress (Washington, D.C.: Department of Defense, 2017), https://www.defense.gov/Portals/1/Documents/pubs/2017_China_Military_Power_Report.PDF.

[70] Mirren Gidda, "Why India Is Building Up Its Arms Industry," *Newsweek*, March 6, 2017, https://www.newsweek.com/india-defense-arms-trade-narendra-modi-pakistan-china-modi-f-35-564542.

[71] "India Pitches to Private Companies for Help in Defence Drive," *Reuters*, May 11, 2017, https://in.reuters.com/article/india-defence/india-pitches-to-private-companies-for-help-in-defence-drive-idINKBN18720R.

[72] Larkins Dsouza, "Aeroengine Corporation of China Plans to Compete with the Likes of Pratt & Whitney, Rolls-Royce and General Electric," *Defence Aviation* (blog), September 26, 2016, https://www.defenceaviation.com/2016/09/aeroengine-corporation-of-china-plans-to-compete-with-the-likes-of-pratt-whitney-rolls-royce-and-general-electric.html.

[73] Franz-Stefan Gady, "India Wants Out of 5th Generation Fighter Jet Program With Russia," *The Diplomat*, October 23, 2017, https://thediplomat.com/2017/10/india-wants-out-of-5th-generation-fighter-jet-program-with-russia/.

Rodrigo Duterte claimed he would no longer purchase U.S. or Canadian weapons systems due to their burdensome conditions of sale.[74] These states, and many others, are concerned with how to build weapons, how to procure them, how to maintain them, how to profitably export their excess weapons production capacity, and how to ensure their self-defense efficiently but securely.

Nor is this a new concern for states. Ensuring their armies were equipped with the latest technology was a major occupation of ancient empires. In ancient Egypt, centralized workshops in Memphis produced chariots, armor, and arms, vital to the empire's power projection and technological superiority.[75] During the third century AD, Roman Emperor Diocletian established dozens of imperial arms factories, *fabricae*, in cities with access to raw materials and communication channels, and near each major military front. These state-backed facilities were likely operated by both the state and by private artisans, in an arrangement reminiscent of today's government-owned contractor-operated (GOCO) facilities in the United States.

In contrast with the Roman emphasis on producing near the front lines, the Venetians achieved their production security by establishing a defensible, centralized facility. In the Middle Ages, Venice began constructing a self-contained shipyard and armory facility, the Arsenal, which by the 14th century had become a state-run mass production facility, manufacturing by assembly line the masses of ships, rope, cannon, and armaments that allowed Venice to dominate

[74] Clarissa Batino and Andreo Calonzo, "Trudeau Holds Firm After Duterte Vows End to Canadian, U.S. Arms Deals," *Bloomberg*, February 9, 2018, https://www.bloomberg.com/news/articles/2018-02-10/duterte-wants-end-to-conditional-arms-deals-from-canada-and-u-s.

[75] The inscriptions in the tombs of Saqqara, the necropolis near the ancient capital of Memphis, shed light on the relative importance of arms manufacture, and include Kairy, "chief of chariot-makers" and "overseer of a workshop in the armory." Geoffrey Thorndike Martin, *Hidden Tombs of Memphis: New Discoveries from the Time of Tutankhamun and Ramesses the Great* (London: Thames and Hudson, 1993).

the Mediterranean and establish its network of colonies.[76] By the early modern period, the great powers of Europe had established their own military production capabilities, including arms and cannon, munitions, and ships.[77]

2.1 Assumptions about arms and war

Why discuss the various state efforts to build weapons throughout history? Because acquiring and using weapons is difficult, and states have struggled and devised different ways to do so. And though literatures exist on the arms trade, arming choices, and arms and behavior, these are largely disconnected from each other, and from the literature on state behavior in international relations. Many scholars who study power, interests, and war often neglect the role of arms. The machines that enable modern warfare are a fundamental precondition to fighting, and one that can be hard to achieve. This leaves a critical component of the state's effort to generate military power undertheorized.

This is important to note because the literatures on state behavior—covering war, bargaining and signaling, alliances, offense-defense, rivalry, and other topics—all make underlying assumptions about weapons that are critical to their arguments. There are three core assumptions that underpin most of these literatures. First is that possessing weapons means being able to use them, and therefore that states that decide to fight can do so. While nearly all states can generate *some* degree of military capability if needed, there are serious challenges to ensuring that a state's arsenal is actually usable in war. These include obtaining parts, providing ongoing maintenance and operations support, and achieving overall readiness.

[76] John Julius Norwich, *A History of Venice*, 1st Vintage Books ed (New York: Vintage Books, 1989).

[77] Parrott, *The Business of War*.

In the United States, which produces the vast majority of its weapons platforms domestically and spends more on defense equipment than any other country, even the highest profile and newest platforms are plagued with parts and readiness issues. In a 2018 report, the Government Accountability Office found that the most important U.S. Air Force and Navy aircraft have woefully low readiness rates—the percentage of the fleet that is able to fly, or by some metrics, the percentage able to carry out combat missions.[78] Then-Secretary of Defense Jim Mattis set a goal of achieving readiness of 80% for the Air Force and Navy's fighter aircraft, and especially for the F-35, some variants of which had readiness rates as low as 50%.[79] As of writing, the goal has not been met, and Secretary of Defense Mark Esper has stated it will not be met due to parts shortages.[80] In the case of the F-35, these are challenges facing the latest generation aircraft, one that is still being produced, with more than one trillion dollars expected to continue flowing into the program over the coming decades.

The problem of sustaining weapons is harder for older aircraft, especially those no longer in production, and for countries with smaller budgets. The United States, for example, faces no arms embargoes. In addition, it has a highly professionalized military with extensive maintenance capabilities. In contrast, Saudi Arabia, a major buyer of arms with a professionalized military, is almost completely reliant on American support to maintain and

[78] "Weapon System Sustainment," Report to Congressional Committees (Washington, D.C.: Government Accountability Office, September 2018), https://www.gao.gov/assets/700/694408.pdf.

[79] Aaron Mehta, "Mattis Orders Fighter Jet Readiness to Jump to 80 Percent — in One Year," *Defense News*, October 9, 2018, https://www.defensenews.com/air/2018/10/09/mattis-orders-fighter-jet-readiness-to-jump-to-80-percent-in-one-year/.

[80] Colin Clark, "Esper: F-35 Won't Hit 80% Readiness, Cites Stealth Parts," *Breaking Defense*, July 16, 2019, https://breakingdefense.com/2019/07/esper-f-35-wont-hit-80-readiness-cites-stealth-parts/.

operate its weapons.[81] Likewise, Germany, despite its advanced industries, foreign weapons sales, and wealth, faces readiness levels of less than 50% for nearly every platform, land, sea, and air.[82] In short, readiness levels are a significant industrial and organizational challenge for even the wealthiest states, and the assumption that possessing weapons means being able to use them, and therefore that states that decide to fight can do so, is tenuous.

The second assumption underlying studies of state behavior is that the sum of military capability can be derived from the parts, in this case weapons. Many scholars measure state power in weapons, presenting tables of aircraft, or aggregating capabilities into scores. While the size and technology generation of a nation's arsenal are important, they fail to reflect an important variable in state military capability: integration. Integration is the networking of weapons through doctrine, training, and technology, so that they can operate more cohesively.

The United States demonstrated an unprecedented degree of integration during the 1991 Gulf War—so much so that China's People's Liberation Army spent decades studying and mimicking the integration strategies of the U.S. military. Chinese observers of the American military noted, for example, that despite Iraq's relatively advanced tanks and aircraft (which were more capable than China's at the time), the Americans achieved total dominance through the integration of their weapons and communication systems, reinforced by battle plans that capitalized on the advantage.[83] Weapons systems can be very difficult to integrate, involving

[81] Declan Walsh and Eric Schmitt, "Arms Sales to Saudis Leave American Fingerprints on Yemen's Carnage," *The New York Times*, December 25, 2018, sec. World, https://www.nytimes.com/2018/12/25/world/middleeast/yemen-us-saudi-civilian-war.html.

[82] "Germany's Lack of Military Readiness 'dramatic,' Says Bundeswehr Commissioner," *Deutsche Welle*, February 20, 2018, https://www.dw.com/en/germanys-lack-of-military-readiness-dramatic-says-bundeswehr-commissioner/a-42663215.

[83] James C. Mulvenon, ed., *Chinese Responses to U.S. Military Transformation and Implications for the Department of Defense* (Santa Monica, CA: Rand, 2006); Andrew Scobell et al., eds., *Chinese Lessons from Other Peoples' Wars* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2011).

information technology, advanced software, and custom hardware meant to remain undetectable and indecipherable to unfriendly communication systems. Weapons that are built to be integrated have an advantage against similarly capable but unintegrated weapons. As will be discussed later, capabilities cannot be assumed based on the aggregate count of weapons without understanding the degree to which they have been customized to work in concert.

The third assumption widespread in the literature is that the existence of industrial capabilities means the ability to produce advanced arms. There are two flaws in this assumption. First, as discussed above, most states cannot and do not have the capabilities necessary to produce their own weapons. This is especially true for the weapons that enable modern military dominance: aircraft, rockets and missiles, sensors, and command and control systems. Partly this is because building advanced products is challenging. As of writing, only four American and European companies dominate the global market for aircraft engines, and only a handful of states can come even close to building a jet fighter independently. The second flaw is that this assumption neglects the role of international supply chains in modern industrial products. The internationalization of supply chains over recent decades means that, despite efficiency gains, more states are able to produce *some* military components, but most states are *less* able to produce complete military products.[84] This had led to increasing interdependence and more opportunities for states somewhere in the supply chain to cause shortages in a weapons program.

2.2 Building a theory of acquisitions

Why is it important to highlight these assumptions? Most contemporary literature on conflict in the international system relies on one or more of them, but the field addresses them inadequately and largely ignores the linkages between the effort *to* arm and the effort *to use*

[84] Gholz, "Globalization, Systems Integration, and the Future of Great Power War."

arms. I argue that examining these assumptions allows us to study not just states' conflict and deterrence behavior, but the choices states make to enable such behavior. I aim to develop a theory that accounts for the basis of these decisions—a connection between the acquisition of arms and the state's subsequent behavior, and how these questions interact over time. I focus this theory on the period since 1945, what Krause terms the third wave of the arms trade, in which weapons are highly complicated machines that incorporate inputs from many advanced industries.[85] To begin, I lay out the key assumptions and dynamics that underpin this effort.

First, states are security maximizing actors.[86] The fundamental objective of the state in the international system is its security. States can increase their security in two ways: by becoming relatively more powerful themselves or by becoming relatively more powerful through alliance or partnership.[87] The former path includes material changes to the state's capacity, via growth of the state's military, economy, population, resources, or territory. The latter includes security-enhancing partnerships, formal or informal, bilateral or multilateral, with patrons, peers, or clients. These augment the state's security posture by increasing the military power immediately available to it via alliances and partnerships, the power accessible to it through arms agreements, and the geographic reach of the state.

Second, it is important to note that though security partnerships can directly increase the state's military capacity, they do not need to. The state can obtain defensive capability through

[85] Krause, *Arms and the State*.

[86] Morgenthau, Hans J., *Politics among Nations: The Struggle for Power and Peace* (New York: Alfred A. Knopf, 1948).

[87] By emphasizing *relative* power, these two paths to security include the state's attempts to increase its own power and its attempts to reduce the power of its adversaries. The former encompasses arming, economic growth, territorial conquest, etc, and the latter includes concepts such as balancing. The role of institutions in this schema, such as international law, and of organizations meant to reduce insecurity, such as the United Nations, is to moderate, but not fundamentally alter the dynamics, of security maximization.

its ally without itself arming, usually in exchange for becoming closer and more reliant on its partner.[88] Alternatively, it can arm without achieving a close and reliable partnership. This caveat will become critical for understanding the state's strategy of acquisitions later.

2.2.1 The dynamic of arms production and trade

The next set of assumptions relies on the dynamics of arms production and trade. All states are enmeshed in a global trade network that moves goods—from raw materials to advanced electronics to complete ships—and services—from manufacturing processes to maintenance to research and development—across borders. Because modern weapons are highly complicated machines that incorporate many rare products and components and draw from many different industries, no state can entirely control its materials, supply, or production.

Counterintuitively, the more capable the state is at designing, building, and maintaining quality weapons, the harder it is to entirely control or sustain the inputs needed for such weapons. This is because more advanced weapons draw on an increasing number of industries and materials.[89] Most states do not have all the necessary capabilities, and moreover, the diversity of specialized industries means that states often gain from trading for at least some of the inputs. In addition, states that are good at maintaining weapons, such as the United States, rely on dwindling industrial capabilities still able to produce antiquated technology. The U.S. Air Force still flies B-52s, an aircraft produced in the 1950s, using technology not produced commercially for decades.[90] Even technologies incorporated into the F-22, built until 2011, and

[88] Lake, *Hierarchy in International Relations*.

[89] C. Rose Anderssen et al., "The Evolution of Commercial Aerospace Supply Chains and the Facilitation of Innovation," *International Journal of Electronic Customer Relationship Management* 2, no. 1 (2008): 63, https://doi.org/10.1504/IJECRM.2008.019569; "Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States" (Washington, D.C.: Department of Defense, September 2018).

[90] "Weapon System Sustainment."

the F-35, still in the early phases of production, are already facing obsolescence and parts availability challenges.[91]

In addition, states have relatively secure—though certainly not total—control over the transfer of such products across borders. Advanced weapons producers maintain close oversight of the export of military and dual-use products, and even the machine tools needed to manufacture them. Though the volume of international trade throughout the period of study has been immense and unprecedented, and the movement of illicit goods rampant, the movement of large quantities of advanced military products sufficient to arm a country remains a challenge.

2.2.2 The leverage of bilateral sales

Combined, the dynamics of trade and production, and the capacity of states to control the flow of military products, lead to a logical conclusion: The ability to *acquire* weapons requires the approval of other states. Suppliers can choose not to sell. Should an upstream producer state decide to prevent the sale of some product or service from a domestic producer to a foreign buyer, it is generally able to, and the buyer will have to look elsewhere. Suppliers can use this fact to pressure their buyers over policy discrepancies, enabling or preventing their actions, by restricting product flow. Depending on the product and the availability of alternatives, buyers may be able to subvert this leverage, but generally, the process of arming, building arms industries, and using arms is ultimately a collective decision.

Thus far, I have discussed the sale of weapons. Supplier states clearly control the sale of complete jet fighters. But the role of input products can be just as important. In 2018, Germany imposed a weapons embargo on Saudi Arabia. The German government, however, may not have

[91] "F-35 Joint Strike Fighter," Report to Congressional Committees (Washington, D.C.: Government Accountability Office, April 2019), https://www.gao.gov/assets/700/698748.pdf; "Weapon System Sustainment."

realized how effective the ban would be—because of the advanced supply chain integration of European defense firms, German parts are found in nearly every significant military export from Europe. As a result, the German ban halted sales from Britain and France, among others, to Saudi Arabia. I therefore add to the above: The ability to *use* weapons requires the approval of other states.

A supplier can exert multiple forms of leverage at multiple stages in the product lifecycle. Weapons are designed and built to certain specifications and can be customized, a process that can take years or even decades. They are sold in an initial sale, often at low-rate production, but for many weapons built on-demand, the initial sale precedes a long period of full-rate production, as a state, for example, replaces an old jet fighter with a new model, ten aircraft at a time. To operate the weapons properly, the supplier often provides training and integration support to the buyer, potentially for years. The supplier often controls software keys and anti-tampering devices to prevent unauthorized modifications. The supplier is often the gateway for munitions, maintenance services, spare parts, operations support, hardware upgrades, and software upgrades and support. For advanced weapons, from aircraft to missile defense to integrated ground systems, this can mean a relationship lasting for decades.

At any stage in this process, the supplier can use carrots and sticks to influence the buyer. In general, carrots are preferential access, customization, support, or financing. Carrots may enhance military capability or reduce cost. Sticks, however, restrict access, and can have a range of effects. The refusal to upgrade a system may leave the buyer a generation behind the latest technology, but still able to use its weapons. The refusal to supply spare parts, however, could mean the weapon only has a usable life of weeks or months before it will sit idle. The refusal to provide operations support when it is needed may prevent any use of the weapon, immediately.

2.2.3 Leverage as a policy tool

When do suppliers use leverage? In general, suppliers restrict the flow of arms and support when they have a policy disagreement with the buyer. They may seek to influence foreign policy, usually to deter the buyer from some action, or domestic policy, to align the buyer with the interests or values of the supplier. In an influence attempt, the supplier may try multiple paths to communicate its displeasure with a buyer, eventually choosing to threaten a restriction on arms sales and support.

In the 1973 Yom Kippur War, for example, the United States used both carrots and sticks to influence Israel. Seeking to prevent the war from becoming a broader conflict, both American and Soviet leaders advocated for a ceasefire to their clients, Israel and Egypt. American leaders viewed parity between Israel and Egypt as a stabilizing influence in the region. In the final days of the war, as Israel was preparing to defeat the Egyptian Army, U.S. leaders feared this essential parity would be lost. They began to pressure Israeli leaders to accept and abide by the ceasefire, offering both military support and threatening an arms embargo should Israel fully crush Egypt's forces. Israel demurred and accepted the ceasefire.[92]

This incident highlights two important facets of influence attempts. First, the supplier may seek to forward its interests at the expense of the buyer. In this case, Israel wanted to achieve complete military superiority over its principal adversary. Had it continued to encircle the Egyptian army, it could reasonably have wiped out its enemy's armored forces and bought itself years of security. The U.S. interest, on the other hand, was that Israel *not* achieve total dominance, as parity enabled an uneasy peace that allowed both superpowers to avoid asserting their interests directly.

[92] Sislin, "Arms as Influence."

Second, this incident emphasizes that suppliers have some, but not total, control over their buyers. In this case, Israel could have continued to fight, but saw its long-term interest better preserved via a strong relationship with the United States more than a weak Egyptian ground force. Thus, though the United States did not have total control, Israel knew it would ultimately benefit from developing its relationship with the United States, and it desired to remain firmly in an American-led security hierarchy.

2.3 Diversification and the efficacy–autonomy tradeoff

Why is it important to understand these dynamics? The structure of the international arms market and the logic of bilateral arms sales create risk for buyers, principally the degree to which a supplier can veto military action. When buyers' and sellers' preferences diverge, sellers can use their leverage to coerce buyers. However, buyers facing potential supply disruptions—and in particular, buyers wary of facing supply disruptions in the future—are not without recourse. They can choose arming strategies that increase their autonomy by reducing their dependence and thus reducing the ability of any one supplier to veto or seriously compromise military action.

States can pursue autonomy in multiple ways, but principally, they reduce over-dependence by building arms domestically or through diversifying their sources of import. Building arms domestically seems like a more secure path—the state, or state-backed industries, control the levers of production. However, for most states, domestic production still involves a large degree of foreign dependence. Buyers usually rely on imported intellectual property via technology transfer agreements and joint ventures with foreign producers. They rely on foreign inputs, even more than large producers with well-developed industries. Because no state

possesses a complete domestic supply chain for modern military systems, states must source at least some—and for most states, most—of their military capabilities from abroad.[93]

Therefore, whether states buy complete military products or incorporate foreign inputs into their own platforms, diversification is a critical strategy for all states seeking to reduce the power of suppliers to veto their military action. The greater the dominance of a single supplier over its arsenal, the greater the risk that critical military capabilities may be curtailed should the state and its supplier ever disagree over a military action. However, a state that diversifies its supply base increases the likelihood that at least some of its arsenal will remain usable in any situation. As the number of suppliers increases, the potential for policy preference overlap increases. For a unidimensional policy space, diversification of suppliers with different preference sets reduces the distance between the state's ideal policy and the nearest supplier for any given situation.

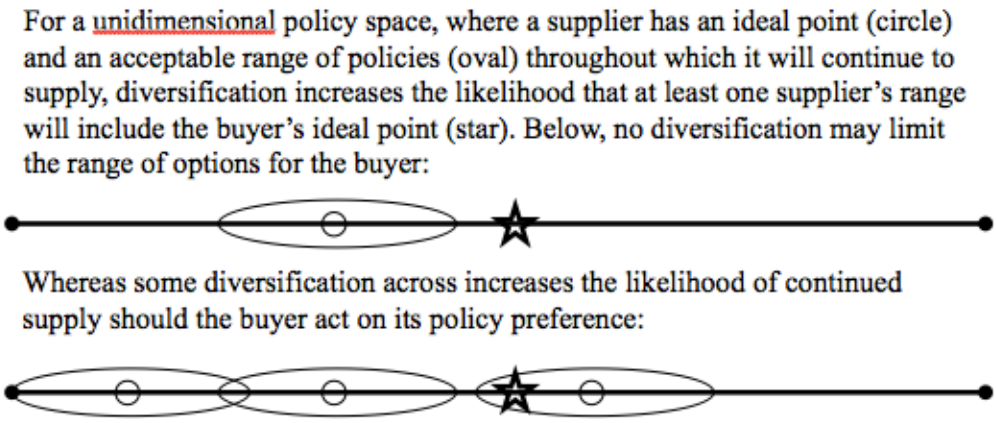

Figure 1 Supplier preferences in unidimensional space

[93] Devore, "Arms Production in the Global Village"; Richard A. Bitzinger, "Defense Industries in Asia and the Technonationalist Impulse," *Contemporary Security Policy* 36, no. 3 (September 2, 2015): 453–72, https://doi.org/10.1080/13523260.2015.1111649.

However, states face a tradeoff in arming between autonomy and military efficacy. As efforts to diversify the sourcing of arms increases, the state increases its autonomy but reduces its military efficacy. Below, I discuss the dynamics of autonomy and efficacy.

2.3.1 Autonomy

When would states prioritize autonomy? In short, when they fear abandonment, either due to weak relationships with suppliers, or because of a heightened sense of fear. As previously discussed, states can increase autonomy by executing a greater proportion of their arming themselves, through domestic production, or by increasing the diversification of their imports. Either way, import diversity will play a role, via inputs or final products. If the state chooses to build domestically, it must invest heavily to develop its industry, and it has no guarantee of successfully producing viable military products. It must choose carefully which products to build—typically the highest embargo-risk products—as its goal is to overcome the potential for a policy veto by a supplier. In other products it will remain dependent. States that attempt to build their own aircraft, for example, but are unable to supply key subsystems, such as engines, remain dependent on their suppliers.[94]

Alternatively, the state can pursue import diversification. As I discuss below, regarding efficacy, import diversity is militarily inefficient. It fails to take advantage of economies of scale in acquisitions, it does not allow states to maximally integrate their forces, and it presents maintenance and sustainment challenges. However, it facilitates action. When would states accept these tradeoffs, making seemingly suboptimal military procurement choices?

[94] These states may pursue domestic production for other reasons, such as economic development, redistribution, or prestige.

One driver of autonomy-maximizing policies is international rivalry. Greater threats at the international level prompt states to reduce vulnerabilities, with arms production vulnerabilities as a primary concern. As with India's dispute with Russia over access to the software in Sukhoi aircraft, arms imports can create dependencies that states may want to hedge against in the face of intense international competition. If supplier states are unwilling to support their buyers' conflicts, or can be pressured by others to deny operations and maintenance support, the buyer state may find itself lacking the capabilities to sustain its arms for the duration of a conflict. Further, states may not wish to test the support they will receive from supplier states: If they do find they lack the ongoing support from their suppliers, they likely end up revealing that information publicly, which further increases their vulnerability in a rivalry.

Other conditions can exacerbate a state's need to maximize autonomy of its military capabilities. A lack of strong alliances, which itself may be the result of preexisting policy differences, can reduce a state's willingness to rely on an unsecured international supply chain. Outside the structure of alliances, countries have lower incentives to foster interdependence, because they lack the levers of reciprocity and formal commitment, increasing the need to control their supply to achieve policy autonomy. In sum, states that have a greater need to use their weapons—possibly offensively, possibly unilaterally—have a corresponding greater urge to obtain autonomy through arms acquisition strategies.

2.3.2 Efficacy

The problem with achieving autonomy is that it is usually at the expense of military efficacy, the ability of the state to win in battle at the highest level of conflict possible. States optimize military efficacy by maximizing their fleet sizes, integrating the latest technologies and systems, and developing efficient maintenance and support architectures. They must acquire and

maintain as cheaply as possible as many well-integrated weapons as possible. This is easiest to do when the state acquires weapons that were designed to work together—from software to hardware to munitions to operational concepts.

The first element of maximizing efficacy is minimizing the necessary operations and maintenance (O&M) architecture sufficient to achieve a functioning military. Modern weapons require O&M support throughout their useful life. Each platform from each producer requires specialized support, which can lock buyer states into long-term dependency on their suppliers. Large weapons systems in particular—aircraft, ground vehicles, and ships—need dedicated maintenance architectures that include tools, trained personnel, reserves of parts, specialized facilities, etc. Certain skills are universal: A ship welder can likely work on any class of steel-hulled ship. Others are more specialized. For example, while some aircraft maintenance capabilities overlap, fighters from different builder states and producers rely on unique maintenance training and tools—fixing an American F-35 is different than fixing a Russian Su-35.

Operations and maintenance architectures have fixed costs, and therefore greater import diversity can have the direct effect of reducing the purchasing power of the state. As the number of unique maintenance architectures increases, the proportion of any given military budget available for troops, platforms, or munitions decreases. Alternatively, the state can neglect to maintain its fleet, or craft originating from particular suppliers, but this again has the effect of reducing the state's aggregate military power.

Buyer states must either obtain O&M support from their suppliers or buy the ability to develop indigenous maintenance capabilities.[95] Saudi Arabia, for example, contracts with the United States to service its advanced weaponry, while Israel largely services its own. Developing indigenous O&M capabilities requires devoting resources to highly specialized support teams. Though this can increase the independence of the buyer, a dedicated indigenous support infrastructure for a platform is inefficient relative to purchasing expert support from the seller.[96] Again, that dependency decreases freedom of action: If a supplier state refuses to support the O&M needs of their systems, the buyer's military choices may be limited.

The second element of maximizing military efficacy is integration. Modern weapons require the integration of complicated hardware and software systems. Militaries are most capable when their systems are well-integrated. Militarily, states are strictly worse off with a greater proportion of systems that are, at best, imperfectly integrated. Weapons systems from different countries are built to prevent interoperability: They operate on different frequencies to prevent being detected and understood by adversaries.[97] The software of command and control systems, radar, and aircraft must be highly integrated to reap the benefits of advanced weaponry. For example, the F-35 is noted for its ability to integrate the information feeds generated by sensors across a battlespace, giving the pilot total awareness of friendly and enemy forces.[98]

[95] "The Military Balance 2018" (London: International Institute of Strategic Studies, February 14, 2018), https://www.iiss.org/en/publications/military%20balance/issues/the-military-balance-2018-545f.

[96] For an overview of costs, see: Michael Boito et al., "Managing U.S. Air Force Aircraft Operating and Support Costs" (Santa Monica, CA: RAND, 2016), https://www.rand.org/pubs/research_reports/RR1077.html.

[97] For examples, see: Eric V. Larson et al., "Interoperability of U.S. and NATO Allied Air Forces: Supporting Data and Case Studies" (Santa Monica, CA: RAND, 2003).

[98] John Venable, "The F-35A Fighter Is the Most Dominant and Lethal Multi-Role Weapons System in the World: Now Is the Time to Ramp Up Production," Backgrounder (Heritage Foundation, May 14, 2019).

The challenge extends to people as well: States operating weapons from multiple sources must also train their military personnel to use different systems, sometimes with great hesitation from their supplier states.[99] To illustrate just how difficult it is, systems integration can be a major challenge even for weapons designed to communicate with each other. Though NATO states have agreed upon a NATO standard for weapons systems, the platforms produced by the United States, the United Kingdom, France, Italy, and Germany still need extensive work to ensure they are properly integrated, enabling their users to operate with a complete picture of the battlespace.[100] Weapons designed to avoid communication are simply exacerbate these problems.

The multiple architectures necessary to build technologically sophisticated hardware, operate it effectively, and integrate it within a broader military capability means that states maximize efficacy when they buy from just one producer, or a small set of allied producers. This allows the state to buy at scale and negotiate better deals, both in terms of unit cost and in linking acquisitions. For example, a buyer might commit to a single supplier for large runs of an aircraft, reducing the unit cost, and commit to ships as well, reducing the costs for both products. This has the added benefit of aligning training requirements for personnel. The buyer's maintenance personnel are trained by the same supplier. Its operators train at the same military schools—learning a doctrine designed for the weapons they've purchased. Plus, the supplier is capable of assisting in the integration of its products in one command and control system.

When would the state choose efficacy—and potentially dependence—over autonomy? States may choose these measures when they face greater domestic pressure over either military effectiveness or budgetary expenditure. Democracies face greater pressure in both realms than

[99] Colin Clark, "Saudis Rock US Alliance, Say They'll Buy Russia's Top Plane Killer, S-400," *Breaking Defense*, October 5, 2017, https://breakingdefense.com/2017/10/saudis-rock-us-alliance-say-theyll-buy-russias-top-plane-killer-s-400/.

[100] Boito et al., "Managing U.S. Air Force Aircraft Operating and Support Costs."

autocracies due to the greater role that citizens and legislatures play in determining rates of taxes and budgets and in demanding security.[101] Democracies can choose to rely on international supply chains to increase efficiency, may buy foreign where cheaper capabilities exist, and may rely on privatized or semi-privatized arms suppliers to decrease direct state obligations.[102] To compensate for the risks they face because of these choices, democracies may work to build defense industrial policy into their alliances to create a highly integrated and secured network of buyers and sellers who are mutually reliant in the pursuit of long-term security.[103] These measures reduce the relative cost of weapons while increasing available technologies, maximizing military effectiveness for any given budget.

2.4 Implications of the theory

Thus far, I have discussed the context of the international arms trade, the logic of arms sales, and the tradeoffs states face in determining their acquisition strategies. The empirical chapters of this dissertation examine when and why states make particular choices, how those choices enable different behaviors, and how they develop alternative strategies to compensate for the problems described here. A primary implication is that diversification allows the buyer greater policy freedom, which is especially important for offensive action, where suppliers might have an interest in vetoing the use of force. However, the strict decrease in military capabilities means that policy freedom is most pronounced at the low end of the conflict spectrum: A diversified buyer can always use enough military capability to dominate low-intensity conflicts but may struggle to use its entire force for a high-end conflict.

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[101] Bruce Bueno de Mesquita et al., "An Institutional Explanation of the Democratic Peace," *American Political Science Review* 93, no. 4 (December 1999): 791–807, https://doi.org/10.2307/2586113.

[102] Democracies are more likely to have privatized defense industries, which are even more likely to prioritize profit and efficient supply chains over domestic distribution.

[103] See the National Technology Industrial Base in NDAA FY2017.

For low-end conflicts, the state merely needs one supplier that is willing to support operations. For a high-end conflict, where the state must use its entire force, the likelihood its suppliers share the same policy preferences is low, especially because the strategy is predicated upon buying from suppliers with diverse preferences. In the pursuit of policy freedom, which it views as necessary for its security, the buyer state reduces its security when it really matters—large-scale conflict. Some states face this challenge and may not realize it, as will be discussed in Chapter 4, and some states quickly realize the problem, via conflict experience, and compensate for it, as Chapter 5 shows.

This theory of how states strategize arms purchases generates several testable hypotheses that will be explored in greater detail in the forthcoming chapters. To preview the next chapter, I argue that under certain circumstances, suppliers are willing to suffer a reduction in aggregate military power or face higher costs to buy more policy freedom. Their primary rationale for buying policy freedom is for the offensive use of their arsenals. Though one could imagine a scenario in which a supplier sells arms to a buyer, and then refuses to support their defensive use, such an action would be viewed as perfidious and have lasting reputational damage for the supplier in the international arms market. A more common scenario is the question of whether to support the offensive use of weapons, one that supplier states face nearly every time their buyers engage in conflict. A buyer diversifying suppliers therefore signals the intent to use weapons offensively, and buyers with high degrees of diversification should be more likely to initiate conflicts.

I test this and other hypotheses using a data set combining conflict data from the Correlates of War and Militarized Interstate Disputes projects with metrics of supplier diversification developed via the SIPRI arms transfer data set.[104]

2.5 Scope Conditions

When does this framework for state weapons procurement decision making apply? While the examples of ancient and medieval states demonstrate that governments have always grappled with the challenge of arming securely, specific conditions make the full set of implications relevant. First, this framework presupposes that weapons production is complicated along multiple dimensions. It requires that producers pursue technical capabilities in multiple industrial sectors, derive raw materials from a variety of sources, and develop the engineering prowess to integrate multiple systems. It also requires that maintaining, operating, and repairing weapons are complicated endeavors. Prior to the 19th century, the most advanced weapons technologies—such as ships of the line, complete with cannon—could be built using widely available wood and iron, and repaired by able seamen while underway. The weapons of the 20th century, in contrast, increasingly required advanced industrial and engineering capabilities for their maintenance and repair.

Second, this framework requires the availability of certain types of information. States must have visibility into where their arms and inputs are produced, they must be able to compare potential arms suppliers, and they must have relative awareness of how the arms they produce are used by buyers. These conditions are necessary for states to strategize their arms

[104] Douglas M. Stinnett et al., "The Correlates of War (Cow) Project Direct Contiguity Data, Version 3.0," *Conflict Management and Peace Science* 19, no. 2 (September 2002): 59–67, https://doi.org/10.1177/073889420201900203; SIPRI, "SIPRI Arms Transfers Database"; Daniel M. Jones, Stuart A. Bremer, and J. David Singer, "Militarized Interstate Disputes, 1816–1992: Rationale, Coding Rules, and Empirical Patterns," *Conflict Management and Peace Science* 15, no. 2 (September 1996): 163–213, https://doi.org/10.1177/073889429601500203.

development fluidly and for supplier states to make decisions about their ongoing support for buyer states. Such conditions were initiated by 20th century communications technologies. I therefore scope this framework to advanced weapons-buying states in the post-World War II period, during which both weapons and communications technologies enabled states to make ongoing strategic choices in arms buying, building, and selling. These conditions apply to both new and secondary weapons sales. Finally, because I focus on the relatively advanced weaponry that meets these conditions, my scope excludes the small arms market.

I now turn to the first examination of the theory and its implications in Chapter 3.

Chapter 3 Who Diversifies? Past conflict as a driver of autonomy

"The Emiratis were always telling me they had to buy from other countries too, you know, 'to protect our sovereignty.'"

—Former Director of Security Assistance, US Embassy Abu Dhabi[105]

Chapter 2 provided a theoretical overview of the tradeoffs states weigh in developing arming strategies. States that import arms—complete platforms, munitions, critical parts, and operational support—may be dependent on their suppliers' approval for military action.[106] When suppliers oppose their buyers' actions, they may reduce arms transfers and operational support, curtailing military capability when it is needed most.[107] States can pursue autonomy of military action, potentially at the expense of the integration of their military hardware. Accepting this tradeoff can lead to a greater autonomy to pursue offensive conflict at the low end, but it may reduce aggregate capability, increasing risk during high-end conflicts. This chapter explores an important first question: under what conditions would a state embrace such a tradeoff?

I argue that the primary motivation for such a decision is perception of threat, which I operationalize as recent conflict experience. In sum, states with recent conflict experience are more likely to seek autonomy in their use of weapons, and therefore increase the diversity of

[105] Interview with Director for Defense Policy and Strategy, National Security Council, and former Director of Security Assistance, US Embassy Abu Dhabi, October 15, 2018.

[106] Pierre, *The Global Politics of Arms Sales*; Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict."

[107] Sislin, "Arms as Influence."

their imports to reduce the obstacles to weapons use. The more intense the dispute level a state has experienced, the more the state will seek to diversify. This is especially true for democracies that value foreign policy autonomy.

I also expect that other factors affect import choices. Greater trade dependence may increase diversification, through a logic of arms deals accompanying trade deals more generally, rather than a specific perception of threat. I also argue that alliances encourage arms standardization to increase interoperability, and in some cases this should mean an increase in diversification, again not directly related to threat perception. Alliances based on mutual interest, that encourage economic growth as a means of stability, and that comprise democracies are more likely to feature diversification efforts as each state tries to promote its industrial capabilities and make its products the alliance standard. Alliance membership generally, therefore, is likely to increase diversification somewhat, while membership in NATO is likely to increase it significantly. Membership in the Warsaw Pact, however, which was characterized by centralized Soviet control, should decrease diversification.

In this chapter, I explore this theory and develop testable hypotheses. I then introduce my empirical strategy, including data and operationalization of key variables. I use two different specifications to measure diversity and execute appropriate models for each. To preview my conclusions, I find general support for my hypotheses and explore further implications for policymakers and scholars.

3.1 Arms and Autonomy

States can pursue autonomy via multiple paths. No state possesses a complete domestic supply chain for modern military systems, which rely on a variety of industries, technical knowledge, intellectual property, commercial components, and commodities sourced from global

markets.[108] As stated in Chapter 2, one critical path states can pursue is the diversification of their supply base. The greater the dominance of a single supplier over the state's stock of weapons, the greater the impact of a disagreement on the state's ability to use its weapons. Diversification of the supply base increases the range of possible win-sets between the state and at least one of its suppliers.

Diversification may not be costless. As discussed in the Introduction, in 2017, Turkey concluded a $2.5 billion agreement to purchase S-400 anti-aircraft missile systems from Russia, despite objections from NATO allies.[109] The S-400 is designed to target both missiles and aircraft, including stealth aircraft such as the U.S.-assembled F-35, which Turkey also contributed to via a joint development agreement.[110] U.S. officials have repeatedly stated that the S-400 cannot be integrated with American systems, and that the United States will not sell advanced missile systems nor the F-35 to Turkey should it complete the deal with Russia.[111] Upon the delivery of the first systems in July 2019, U.S. officials reiterated that Turkey will no longer be able to buy the F-35.[112]

The Turkish case suggests three challenges to diversification: first, the question of systems integration, second, the question of supplier backlash, and third, the question of operations and maintenance support. Systems integration is the engineering process of ensuring that different systems operate and communicate with each other, which may include both

[108] Devore, "Arms Production in the Global Village"; Bitzinger, "Defense Industries in Asia and the Technonationalist Impulse."

[109] "Russia to Supply Turkey with Four S-400 Missile Batteries for $2.5...," *Reuters*, December 27, 2017, https://www.reuters.com/article/us-russia-turkey-missiles-idUSKBN1EL0H6.

[110] Stein, "The Clock Is Ticking."

[111] "U.S. Will Block Sale of F-35 Fighters If Turkey Buys Russian S-400 Missile System, General Says," Time, accessed March 21, 2019, http://time.com/5544204/united-states-military-f-35-jet/.

[112] "Turkey Defies US over Russian Defence System."

hardware and software. Systems that are built by a single country often require years of development to ensure fluid communications and interoperability, but the benefits can be significant—radar and sensing systems dispersed across dozens of platforms, providing real-time visibility across a battle space, including adversary positions and targeting data, ultimately reducing the time lag between awareness, targeting, and decision-making.[113] Systems that lack effective integration enjoy none of these benefits.

Second, suppliers may refuse to provide advanced systems to a state that chooses to diversify. This backlash can reduce access to latest generation technologies globally, or force the state to shift most of its future purchases, leaving it with a bifurcated force structure. Suppliers may be wary of attempted integration of their most advanced systems—for example, if the Russian support teams trying to integrate S-400s into Turkey's force were given access to sensitive data or systems in the F-35.[114] That role—ongoing support by Russian teams—highlights the third diversification challenge, the additional costs of a relatively inefficient operations and maintenance support structure, highlighted in Chapter 2.

Because of the problems of systems integration, supplier backlash, and increased operations and maintenance costs, states that diversify may face a significant cost—a reduction in military capability relative to their total arms budget. In other words, they trade military capability for autonomy. This is especially acute for latest generation military technology and capabilities, which is vital for states facing high-end threats, but less relevant for states with low-

[113] The US Navy's Aegis Combat System, for example, integrates data from radars distributed across multiple ships and aircraft, satellites, and ground stations to gain over-the-horizon visibility, live target tracking, and missile defense capabilities.

[114] Stein, "The Clock Is Ticking."

end needs.[115] Given the costs of diversifying, when would a state choose to pursue such a strategy?

3.2 Rationales for Diversifying

States may choose to diversify, potentially at the cost of capability, to satisfy a need for autonomy, especially in a near-term timeframe that prohibits the development of indigenous industrial capabilities. Principally, states might prioritize autonomous use of their weapons when their perception of threat is high—when they fear near-term future conflict. Assessing threat perception can be challenging, but one useful indicator is the experience of recent conflict[116]—clear evidence that could reasonably increase the state's concern for the autonomous use of its arsenals. States must be prepared for possible conflict, and therefore they value as much flexibility in the use of their capabilities as possible. Consequently, a state should seek to reduce the possibility of an arms supplier denying sales, resupply, or operations support during a critical moment. It pursues this by increasing the diversity of its suppliers, to increase the likelihood that at least some of its arsenal will be usable during a future conflict.

States should also be sensitive to conflict intensity. A low intensity dispute may signal an emerging threat, while a more significant dispute may signal a precursor to war. Consequently, a militarized interstate dispute (MID) that remains low intensity should have less of an impact in driving state arming decisions than one that reaches near-war intensity. For example, I expect

[115] This may also depend on the particular conditions of influence events—instances when sellers try to pressure their buyers to pursue or abstain from policies, to compel or deter. There is mixed evidence that individual influence events are successful, though most studies examine particular cases or enduring rivalries, and may not account for potential selection bias. Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict."; for arms transfer dependence as a necessary, but perhaps insufficient condition, see Sislin, "Arms as Influence."

[116] Toby J. Rider, "Understanding Arms Race Onset: Rivalry, Threat, and Territorial Competition," *The Journal of Politics* 71, no. 2 (April 1, 2009): 693–703, https://doi.org/10.1017/S0022381609090549.

that Turkey's aggressive 1974 military response to the coup d'état in Cyprus should have greater impact on future arming decisions of both states than Guyana after Venezuelan troop movements along its border in 1999. I therefore posit my principal hypotheses:

Hypothesis 1: The recent experience of a MID is associated with greater diversity in subsequent arms imports.

Hypothesis 1.A: Higher recent MID intensity is associated with greater diversity in subsequent arms imports.

However, other factors, including domestic characteristics of states, trade, and alliances, may also encourage diversification. Democratic leaders, regardless of the threat environment, face greater pressure to provide domestic security as a public good.[117] That pressure explains why when democracies do face external threats, the supposed pacifying effects of democracy are less evident.[118] Democratic leaders who excessively favor imports from one supplier to the detriment of a flexible foreign policy, or who suffer the embarrassment of being pressured to back down in a conflict, may be replaced more easily in a democracy than in an autocracy.[119] More democratic states should therefore be expected to diversify their sources of arms, following the same logic of autonomy.

Hypothesis 2: As a state becomes more democratic, it is more likely to pursue greater diversity in arms imports.

Trade other than arms may also influence diversification. States that are heavily trade-dependent may be more likely to import arms from a greater range of suppliers than would be

[117] Bueno de Mesquita et al., *The Logic of Political Survival*.

[118] Sambuddha Ghatak, Aaron Gold, and Brandon C Prins, "External Threat and the Limits of Democratic Pacifism," *Conflict Management and Peace Science* 34, no. 2 (March 1, 2017): 141–59, https://doi.org/10.1177/0738894216650429.

[119] Bueno de Mesquita et al., *The Logic of Political Survival*.

expected otherwise. Many trade agreements, especially bilateral agreements, encourage industrial trade, which can include arms purchases. A country that trades more, therefore, may be more likely to diversify, regardless of its perception of threat or recent conflict experience.

Hypothesis 3: Greater dependence on trade is associated with greater diversity in arms imports.

3.3 Alliances and Diversification

States perceive a diversified supply base as increasing autonomy; states with the highest expectations for future conflicts—based on recent experience in militarized interstate disputes—are most likely to diversify their supply. But states have an alternative to relying on their military capabilities alone—they can form alliances. As Morrow argues, alliances reduce the immediate need to arm, because, pursuant to the conditions of the alliance, a state's forces may now be augmented by those of an ally. However, states in alliances face two risks: for the stronger partner, the risk of entrapment by the ally, and for the weaker partner, a reduction in autonomy.[120]

When would a state choose to ally and when would it choose to arm? If it arms, what arming strategy would it pursue? States perceiving a high risk of threat, based on recent dispute experience, have multiple options. The existing literature generally argues that rising perceived external threats lead states to trade some of their autonomy for protection, either through alliances or greater dependency on foreign support. However, diversification and alliances are not mutually exclusive. Arming strategies can be understood as one part of an overall effort to increase the state's security. In part, this is because the conditions that would drive a state to pursue autonomy over capability in its own arsenal would also drive it to pursue alliances.

[120] Morrow, "Arms Versus Allies."

However, because excessive reliance on an ally may magnify the risk of entrapment, the strength and consistency of the alliance is paramount.[121]

Forming alliances may therefore have mixed effects on purchasing decisions. Alliances may reduce the need to arm generally—the ally, rather than autonomy, provides the increased security. However, alliances are often formed in response to external threat, and are more likely as the probability of defeat by an opponent increases.[122] They may therefore also incentivize diversification. Alliances often involve gains from trade, which can include increased access to partner states' weapons systems, encouragement to standardize and integrate military capabilities, and arms trade agreements.[123] These can lead states party to alliances to diversify within the alliance, to increase cohesion and standardize military capabilities simultaneously. For example, after Romania joined NATO in 2009, it gained access to a number of weapons systems that enabled it to develop a more advanced conventional capability. It purchased weapons from both US and European arms manufacturers, establishing a more robust air force, a more advanced missile and missile defense system, and a more capable naval fleet than it had access to previously.[124]

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[121] I take up this question in Chapter 5.

[122] Jesse C. Johnson, "External Threat and Alliance Formation," *International Studies Quarterly* 61, no. 3 (September 1, 2017): 736–45, https://doi.org/10.1093/isq/sqw054.

[123] Michael W. Simon and Erik Gartzke, "Political System Similarity and the Choice of Allies: Do Democracies Flock Together, or Do Opposites Attract?," *The Journal of Conflict Resolution* 40, no. 4 (1996): 617–35; Krause, *Arms and the State*; Keith Hartley, "Defence Industrial Policy in a Military Alliance," *Journal of Peace Research* 43, no. 4 (July 1, 2006): 473–89, https://doi.org/10.1177/0022343306064976.

[124] "Romania – Weapons, Equipment, and Support for F-16 Block 15 MLU Aircraft | The Official Home of the Defense Security Cooperation Agency," accessed January 20, 2019, https://www.dsca.mil/major-arms-sales/romania-weapons-equipment-and-support-f-16-block-15-mlu-aircraft; "BR Analysis | Arms Race: US and Europe Go Head to Head over Defense Deals in Romania - Business Review," accessed January 20, 2019, http://business-review.eu/business/defence/br-analysis-arms-race-us-and-europe-go-head-to-head-over-defense-deals-in-romania-175612.

Though states may join alliances for the immediate augmentation of capabilities, states party to alliances may also face pressure to develop their own capabilities over time. For example, NATO members have agreed multiple times to spend 2% of GDP on domestic military spending. Though most member states have never come close to meeting the 2% threshold, they may spend more, and therefore possess a greater collective capability, than they would without the individual spending goals.[125]

A state that has entered a new alliance can therefore be expected to increase the diversity of its arms imports by shifting toward its new partners—a logic of diversification for interoperability, rather than from the desire for autonomy. Not all alliances, however, develop the same types of trade in arms. The two most important alliances in the period of study—NATO and the Warsaw Pact—operated very differently. While NATO's mostly democratic states engaged in a dense network of arms trade, the Warsaw Pact states traded mainly with the USSR. Instead of fearing desertion by well-armed allies, the United States sought to bolster NATO states military and economically to better distribute the burden of countering the Soviet Union. European states also maintain robust weapons and heavy industries, and continued to compete with the United States for arms deals within Europe and around the world, and especially in their former colonial empires.[126]

The Soviets, however, sought to control the distribution of arms within the alliance, centralizing arms sales with their partners. While lesser partners maintained their own weapons industries, they mostly provided inputs to Soviet final products. This afforded the Soviet Union

[125] T. Clifton Morgan and Glenn Palmer, "To Protect and to Serve: Alliances And Foreign Policy Portfolios," *Journal of Conflict Resolution* 47, no. 2 (April 1, 2003): 180–203, https://doi.org/10.1177/0022002702251028; Jeffry Rathke, "NATO: Measuring Results, Not Dollars, in Transatlantic Security," CSIS, July 9, 2018, https://www.csis.org/analysis/nato-measuring-results-not-dollars-transatlantic-security.

[126] Krause, *Arms and the State*.

greater control, but it also helped to standardize weaponry across the alliance, and was so effective that US military analysts thought the Warsaw Pact might have a conventional advantage due to the interoperability of its military forces.[127] Alliances therefore create multiple potential logics for diversification or centralization. Based on the core logic that membership in alliances leads states to pursue new trading partners, I posit the following:

Hypothesis 4: Membership in an alliance is associated with greater diversity in arms imports.

To address the specific logics of trade within the NATO alliance in contrast to the centralized control of the Warsaw Pact, I add the following:

Hypothesis 4.A: Membership in NATO is associated with greater diversity in arms imports.

Hypothesis 4.B: Membership in the Warsaw Pact is associated with lower diversity in arms imports.

3.4 Empirical Strategy

To test these hypotheses, I employ a cross-sectional time-series research design of 201 states from 1950-2008. The unit of analysis is the country-year, and the data contains 8,807 observations. I seek to understand the degree to which variables relating to conflict, domestic institutions, trade, and alliance relationships influence diversification.

3.4.1 Dependent Variable

My dependent variable is import diversity, operationalized via two primary measures: entropy and the Herfindahl-Hirschman Index (HHI). Each measure is derived from the

[127] Akerman and Seim, "The Global Arms Trade Network 1950–2007"; CIA, "Management of Warsaw Pact Weapons Acquisition: Soviet Goals and Pact Reality," 1986, https://www.cia.gov/library/readingroom/docs/DOC_0000499545.pdf.

Stockholm International Peace Research Institute's (SIPRI) Arms Transfers Database.[128] The SIPRI data includes all known arms transfers of major conventional weapons since 1950, comprising 53,374 deals. Major conventional weapons include aircraft, air defense systems, anti-submarine warfare weapons, armored vehicles, artillery, military-specific engines, missiles, military-specific sensors, reconnaissance satellites, military ships, and select military specific weapons parts.[129] The data includes new, second-hand, and second-hand modernized weapons transfers, using individual arms deals as the unit of observation. For example, the sale of 60 new M1A2 Abrams battle tanks by the United States to Saudi Arabia, delivered in 2013, represents one observation. As discussed later, I then transform the data into country-year observations.

SIPRI collects data on arms transfers by analyzing open source information from newspapers, reports, monographs, and industry data sources, among others. All sources are published and publicly available. SIPRI also takes a conservative approach to recording information.[130] Despite its global and temporal scope, SIPRI—and my indicators—may therefore have random and nonrandom measurement error by omitting or mischaracterizing deals in any given country-year. The data may fail to include deals in the primary arms market, or in the transfer of second-hand weapons. The data may be biased toward those deals that are publicly announced and officially recorded. A deal in which a publicly traded American company sells arms to a NATO ally, for example, would be reported publicly by the company, and by both governments in export and import approvals, military documents, and budgets. This greater publicity may bias the data toward recording more Western deals relative to Soviet or developing country deals. Some countries may also publicize their deals to a greater extent to announce their

[128] SIPRI, "SIPRI Arms Transfers Database."

[129] SIPRI, "Sources and Methods," accessed March 24, 2019, https://www.sipri.org/databases/armstransfers/sources-and-methods.

[130] SIPRI.

increased power to rivals as a deterrent, while others may prioritize the element of surprise in their arsenals.[131]

Secretive deals between states, including efforts to evade sanctions or circumvent embargoes, may also be omitted. For example, in 2013, Panamanian authorities intercepted a North Korean-flagged ship transporting sophisticated weapons systems beneath 200,000 sacks of Cuban sugar. This followed shipments of arms materiel to Syria in 2010 and Iran in 2008, all in violation of sanctions.[132] None of these transfers are included in the data, indicating the possibility that numerous transfers have eluded public notice.

Other weapons transfers and weapons support with relevance to my hypotheses may also be omitted. Transfers related to operations and maintenance support, parts, upgrades, and servicing may not be public, while dual use transfers, joint ventures and intellectual property deals leading to the transfer of military technology may not be subject to the same reporting requirements as finished products. Finally, also pertinent to my interest in diversification of state arsenals, weapons left by departing colonial powers and after the dissolution of the Soviet Union, though perhaps important to the overall diversity of state capabilities, are outside the scope of the data. Nonetheless, SIPRI represents the most comprehensive data on arms deals available.

To standardize analysis across arms transfers, SIPRI has developed the trend indicator value (TIV) metric, which estimates the military value of the arms transferred in a given deal. The TIV combines size and performance traits, system characteristics, weapons generation relative to year, novelty, and whether a system is new or used into a single measure.[133] The TIV

[131] Dana P. Eyre and Mark C. Suchman, "Status, Norms, and the Proliferation of Conventional Weapons: An Institutional Theory Approach."

[132] "Cuba Claims Ownership of Arms Seized on N Korean-Flagged Ship," Financial Times, July 16, 2013, https://www.ft.com/content/acccba6a-ee2f-11e2-a325-00144feabdc0.

[133] SIPRI, "Sources and Methods."

allows comparison across system types, countries, and years. For example, the sale of eight new minesweeper ships by the United States to Italy in 1954, the sale of four surface-to-air missile systems by France to Saudi Arabia in 1980, and the sale of 20 tanks by Russia to India in 2014 all have the same TIV of 80 units, indicating their comparable military value relative to their year and the capabilities of alternative systems.

Seller	Buyer	Designation	Numbers delivered	Year	Status	TIV deal unit	TIV deal value
United States	Italy	Adjutant Minesweeper Ship	8	1954	New	10	80
France	Saudi Arabia	Shahine SAM Air Defense System	4	1980	New	20	80
Russia	India	T-90S Tank	20	2014	New	4	80

Table 1 Comparing TIV estimates across years and arms categories

3.4.1.1 Measuring the Dependent Variable

I used two measures to capture diversity: entropy and the Herfindahl-Hirschman Index (HHI). To generate each measure, I sum arms deals at a country-year level to determine the total TIV imported and the TIV imported per country of origin. These form the base data for the diversity / concentration measures. Thus for India in 1994, I sum the total contribution of each of the seven supplier states, using the total TIV units imported (883.2) as a baseline. I then apply each measure to the data.

Entropy is a measure of randomness within a system, quantifying the number of microstates possible given a known set of macrostate characteristics.[134] In physics, if a macrostate has known characteristics—a known set of particles within a chamber—entropy quantifies the set of possible formations of those particles. In information theory, Shannon

[134] Daniel F. Styer, "Insight into Entropy," *American Journal of Physics* 68, no. 12 (November 16, 2000): 1090–96, https://doi.org/10.1119/1.1287353.

entropy quantifies the uncertainty in strings of text (the difficultly of predicting what subsequent information will follow previously received information).[135] This concept has been applied to ecology to measure the diversity within a set of species observations.[136] Greater entropy means an increase in the difficulty of predicting the species of a randomly selected observation from a dataset. I employ Renyi entropy, a generalization of Shannon and other measures of entropy.

I apply this concept to import diversity, relying on SIPRI's TIV units in place of species. Thus if India imports 883.2 TIV units of military capability in 1994, the entropy measure captures the uncertainty of the country of origin of a randomly chosen unit of TIV. As the magnitude of the entropy value increases, the uncertainty in predicting a randomly chosen TIV unit increases, as determined by both the number of countries of origin and the relative proportion of units each contributes to the total imports for a country-year.

Formally, if a discrete random variable X has n possible values, where the ith outcome has probability p_i, then the Rényi entropy of order α is defined to be:

$$H_\alpha(X) = \frac{1}{1-\alpha} \log_2 \left(\sum_{i=1}^{n} p_i^\alpha \right)$$

for $0 \leq \alpha \leq \infty$. For the cases $\alpha = 1$ or ∞ this expression describes the limit as α approaches 1 or ∞ respectively.

The second measure, the Herfindahl-Hirschman Index, is a common measure of industry concentration in economics.[137] HHI captures the concentration (or diversity) of an industry by

[135] Renyi, A., "On Measures of Entropy and Information," in *Proceedings of the Fourth Berkeley Symposium in Mathematical Statistics* (Berkeley: University of California Press, 1961), http://biocomparison.ucoz.ru/_ld/0/37_SjS.pdf.

[136] Isabelle Vranken et al., "A Review on the Use of Entropy in Landscape Ecology: Heterogeneity, Unpredictability, Scale Dependence and Their Links with Thermodynamics," *Landscape Ecology* 30, no. 1 (January 2015): 51–65, https://doi.org/10.1007/s10980-014-0105-0.

[137] Stephen A. Rhoades, "The Herfindahl-Hirschman Index," *Federal Reserve Bulletin* 79 (1993): 188.

summing the squares of the market share of each firm. The resulting metric is a unit interval (0-1] measure that allows for comparison of industries with different market dynamics. A pure monopoly, in which a single firm has 100 percent market share, leads to an HHI of 1. The minimum HHI is 1/N, where N is the number of firms in an industry. An industry with a dominant firm (60 percent of market share) and many smaller competitors produces a different HHI output than an industry with a comparable dominant firm (60 percent) and a single competitor (40 percent). This quality is substantively valuable to capture the impact on maintenance architectures of a profusion of unique systems.

Formally, where *s* is the market share of firm *i*, and *N* is the number of firms in a market:

$$H = \sum_{i=1}^{N} s_i^2$$

I apply this concept to import diversity, again relying on SIPRI's TIV by country of origin to capture market concentration. Similar to the entropy measure, if India imports 883.2 TIV units of military capability in 1994, the HHI measure captures the uncertainty of the country of origin of a randomly chosen unit of TIV. As the HHI value approaches 1, the uncertainty in predicting a randomly chosen TIV unit decreases, as determined by both the number of countries of origin and the relative proportion of units each contributes to the total imports for a country-year.

3.4.1.2 Stock and flow

Substantively, data on deals captures the flow of arms across borders. However, my theory relates not just to flow, but to the stock of arms within an arsenal as well. The diversity of deals a buyer pursues reflects an effort to achieve autonomy, but equally important is the resulting stock of arms, many of which are intended to be used for decades. It is the stock that ultimately affects questions like the relatively greater operations and integration budget needed

for a more diverse fleet. Further, procurement timelines vary by weapons system, meaning the deal year or the year of receipt only partially captures state decision-making.

Finally, deal making may be temporally distributed in a non-random way, reflecting the development of new systems, the diffusion of new technologies, changes in the international system, and availability of funds. For these reasons, I apply a smoothing function to the data, averaging the values of each measure for the past five years. This allows me to reduce the impact of granular temporal variation—relatively unimportant given the timelines involved—while still capturing flow trends and better reflecting the resultant stock underlying state decision making.

3.4.2 Primary independent variable

My primary hypotheses posit that recent conflict experience is most impactful in determining arming strategies. I therefore use recent Militarized Interstate Dispute data as my independent variable of interest. Recent conflict experience is operationalized as the occurrence of a militarized interstate dispute (MID) in the past five years. I use the Militarized Interstate Dispute dataset,[138] which defines MIDs as "united historical cases of conflict in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state. Disputes are composed of incidents that range in intensity from threats to use force to actual combat short of war."[139]

I employ two variants to capture recent MIDs: the presence of a MID for a state in the five years prior to time *t* (binary) and the highest intensity of a MID (measured via MID's hostility level variable, a 0-5 scale) for the state during that period. Including the lagged window,

[138] Glenn Palmer et al., "The MID4 Dataset, 2002–2010: Procedures, Coding Rules and Description," *Conflict Management and Peace Science* 32, no. 2 (April 2015): 222–42, https://doi.org/10.1177/0738894214559680.

[139] Jones, Bremer, and Singer, "Militarized Interstate Disputes, 1816–1992."

such as the highest intensity MID in the previous five years, accounts for the long duration of arming strategies.

A state that experiences a MID and decides rapidly to pursue a new arming strategy may nonetheless close a deal for new aircraft a few years later. Most complicated weapons systems are built to order, and systems often have production backlogs.[140] While some systems, such as the largest classes of marine vessels, can take more than a decade to build, such a lag would introduce too much randomness into the data. I therefore settle for a five-year window, which could account for decision-making, one-to-two years of production time, and up to a year of testing, before the year of delivery.

3.4.3 Additional independent variables of interest

To test hypotheses 2-4, I include variables to account for domestic political institutions, trade, and alliance membership. I rely on Polity IV scores (a continuous range from -10 to 10) for hypothesis 2 on the role of democracy in encouraging foreign policy autonomy.[141] To explore the role of general trade in increasing arms trade, I employ both the Correlates of War trade, import, and export data, and Gleditsch's Expanded Trade and GDP data.[142] I use these to generate an import ratio, the quotient of COW imports over Gleditsch's expanded real GDP, which I use in some models to capture trade dependence. For alliances, I incorporate the Alliance

[140] Doug Cameron, "Defense Firms Expect Higher Spending," *Wall Street Journal*, January 29, 2019, sec. Business, https://www.wsj.com/articles/defense-firms-expect-higher-spending-11548783988.

[141] Monty G. Marshall and Tedd R. Gurr, "Polity IV" (Center for Systemic Peace, n.d.), http://www.systemicpeace.org/polityproject.html.

[142] Katherine Barbieri, Omar M.G. Keshk, and Brian M. Pollins, "Trading Data: Evaluating Our Assumptions and Coding Rules," *Conflict Management and Peace Science* 26, no. 5 (November 2009): 471–91, https://doi.org/10.1177/0738894209343887; Kristian Skrede Gleditsch, "Expanded Trade and Gdp Data," *Journal Of Conflict Resolution* 46, no. 5 (October 1, 2002): 712–24, https://doi.org/10.1177/002200202236171.

Treaty Obligations and Provisions dataset, from which I use four variables.[143] First, I include a binary measure of whether a state is party to an alliance. Second, in some robustness checks I include the number of alliances a state is party to. Third and fourth, I include a binary measure of whether a state was a member of NATO or the Warsaw Pact during a given year. Separating these specifically allows me to test for the specific impact of the Cold War alliance formations as distinct from alliances more generally.

3.4.4 Control variables

To control for other possible causes of diversity, I employ variables that could explain the quantity of arms a state imports. A state that purchases a large quantity of arms might reasonably source from a variety of producers to meet its goals, solicit deals broadly to find the best bargains, and scout all possible sellers for each system needed. Though this would represent a less strategic method of arming, it is nonetheless possible. I therefore include controls that predict a high level of arms need and potentially a high level of imports.

From the Correlates of War, I include military expenditure, population size, and major power status.[144] While increasing military expenditure may relate to increasing personnel costs, it is likely that expenditures also derive from arms acquisition and sustainment. I include population size as another measure of the state's potential need for increased armaments and its possible need to source them abroad. I also include major power status, which implies a strategic context in which a state might shape its arming behaviors according to multiple other strategic logics. From Gleditsch, I include real GDP or real GDP per capita in my models, to account for

[143] Brett Leeds et al., "Alliance Treaty Obligations and Provisions, 1815-1944," *International Interactions* 28, no. 3 (July 2002): 237–60, https://doi.org/10.1080/03050620213653.

[144] Meredith Reid Sarkees and Frank Whelon Wayman, *Resort to War: A Data Guide to Inter-State, Extra-State, Intra-State, and Non-State Wars, 1816-2007*, Correlates of War Series (Washington, D.C: CQ Press, 2010).

the likelihood that wealth drives military acquisitions—for example, that a relatively small state might nonetheless buy high end, expensive, and capable weaponry, potentially selecting the highest quality from different producers.[145]

3.4.4.1 Descriptive statistics

Arms deals are relatively frequent in the data. The final dataset includes 8,807 country-year observations, 5,849 or 66% of which include at least one arms deal. The majority of country-years (4,717 or 53.6%) include more than one arms deal. Some degree of diversification is also fairly standard: 41.6%, or 3,668 country-years, include more than one seller. The frequency of deals and the number of sellers both display positive skewness, as seen in the histograms below.

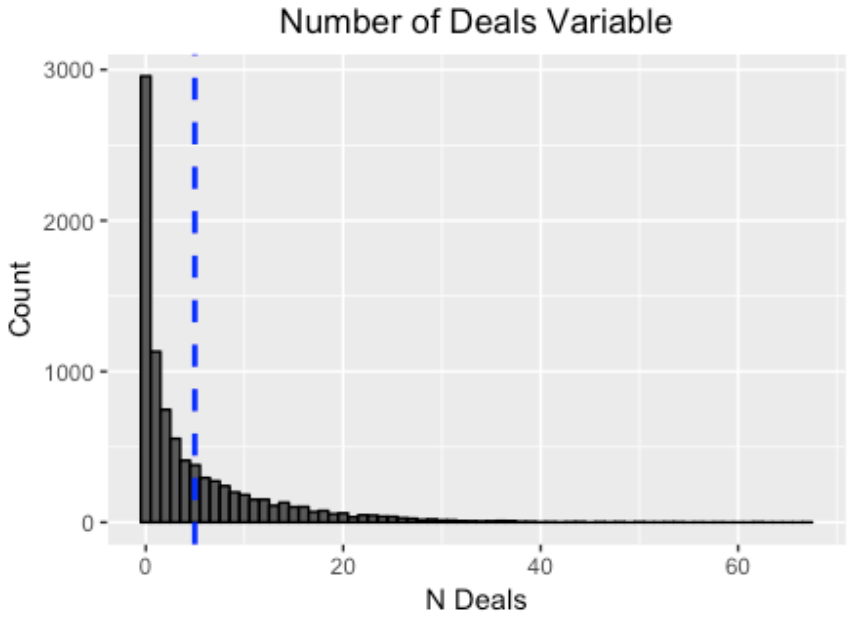


Figure 2 Number of Deals per State (Blue Line is Mean)

[145] Gleditsch, "Expanded Trade and Gdp Data."

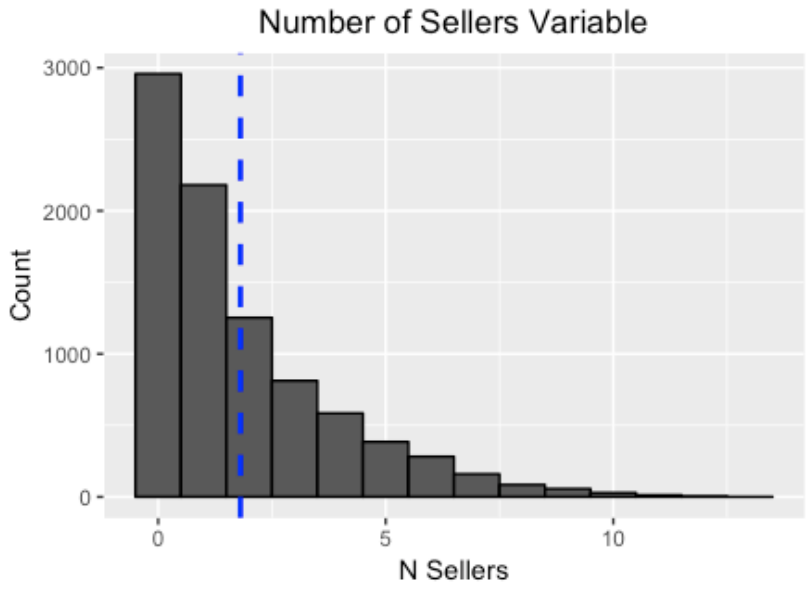


Figure 3 Number of Sellers per State (Blue Line is Mean)

Both alliances and MIDs are also commonplace. Alliances appear in 7,385 country-years, while states have more than one alliance in 5,765 country-years. States are also frequently engaged in militarized disputes—2,909 country-years, or 33% of the total, involve at least one MID. The most frequent type of observed MID is level 4, *use of force,* which occurs in 1,673 country-years. Due to the positive skewness of most of these variables, their standard deviations are all higher than their means, as shown in Table 2 below.

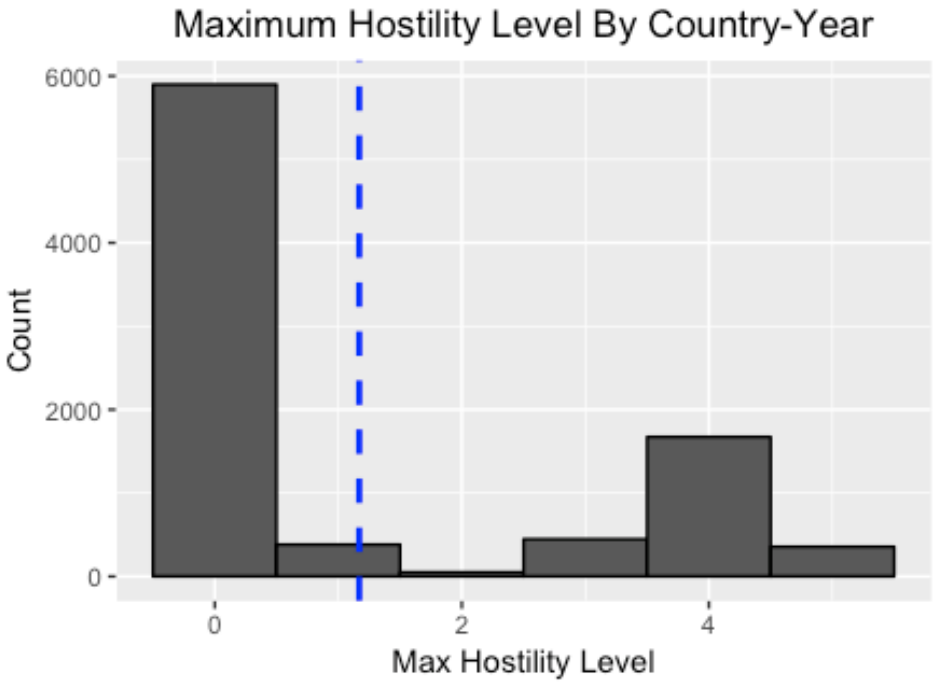


Figure 4 MID Hostility Levels (Blue Line is Mean)

Statistic	N	Mean	St. Dev.	Min	Max
Number of Deals	8,807	4.964	7.276	0	67
Number of Sellers	8,807	1.807	2.085	0	13
Number of Alliances	8,807	3.290	4.622	0	52
Number of MIDs	8,807	0.593	1.188	0	25
Max Hostility Level by Year	8,807	1.169	1.791	0	5
MID Origination	8,807	0.298	0.457	0	1

Table 2 Descriptive Statistics for Deal and Conflict Variables

The Total Indicator Value (TIV) measure is similarly skewed, with more than half (57%) of the observations less than or equal to 100, a median of 61.3, and a mean of 263.6. In half of all country-years with at least one deal, buyers purchased military goods of TIV comparable or less than the capability of one F-35 Joint Strike Fighter (60 TIV units per aircraft) in current terms.

Given the relative dominance of the F-35 today, the median value of 61.3 also means that half of all deal-years involve the sale of significant military capability.

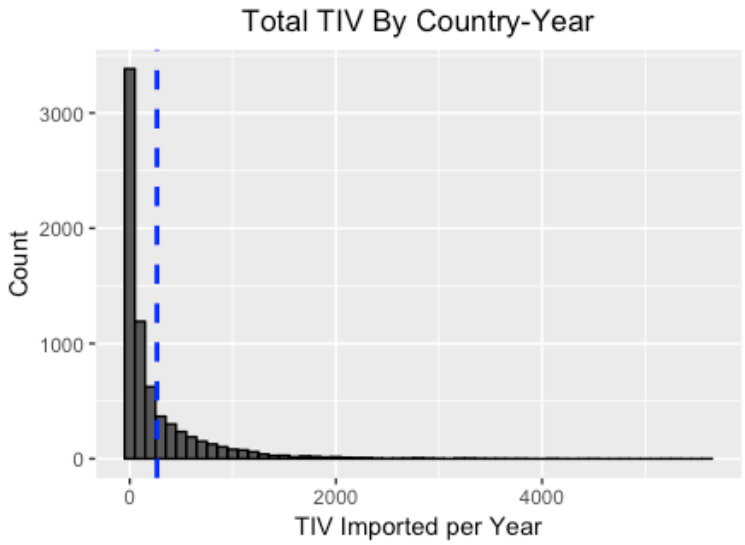
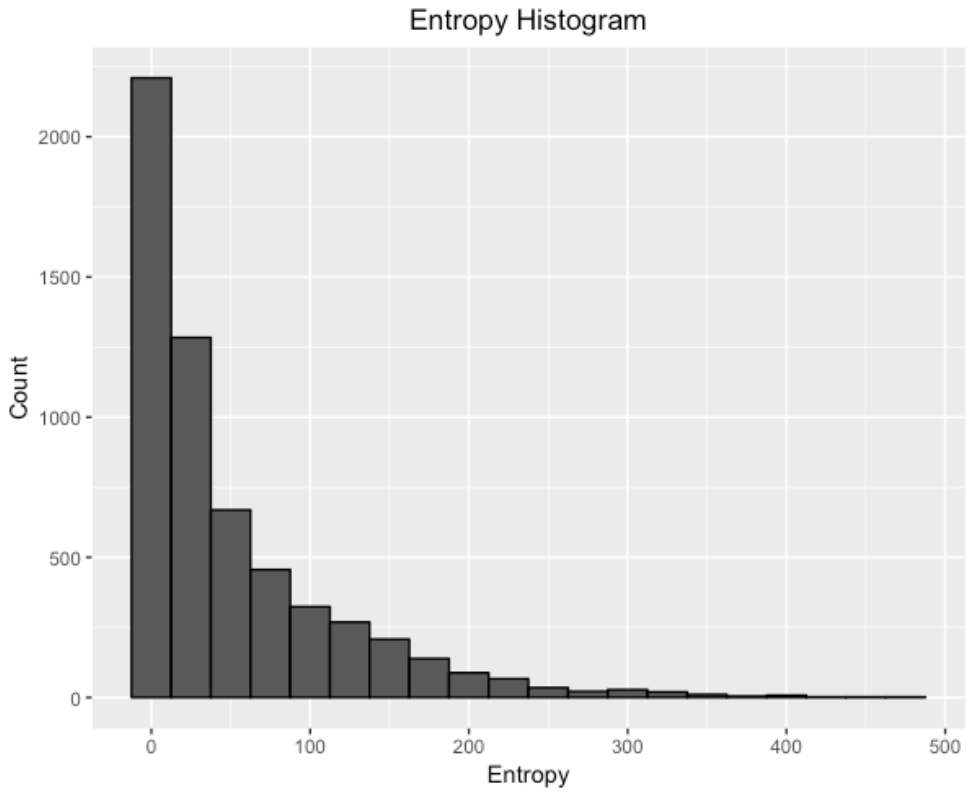


Figure 5 Value of Arms Imports (Blue Line is Mean)

Finally, the variable of interest, diversification, is measured in two ways: entropy and HHI. Both are similarly distributed, with the entropy value approaching zero, and the HHI value approaching 1, as diversity decreases. Table 3 below includes descriptive statistics for both measures and for the smoothed measures used in the analysis. Smoothing increases the number of observations, while reducing the magnitude of the standard deviation and slightly reducing the mean diversity in the data. The histograms below display similar distributions of each measure.

Statistic	N	Mean	St. Dev.	Min	Max
Entropy	5,849	49.608	67.479	0.000	473.202
Entropy Smoothed	7,430	38.954	53.444	0.000	397.154
HHI	5,849	0.756	0.253	0.155	1.000
HHI Smoothed	7,430	0.797	0.194	0.208	1.000

Table 3 Descriptive Statistics for Diversity Variables



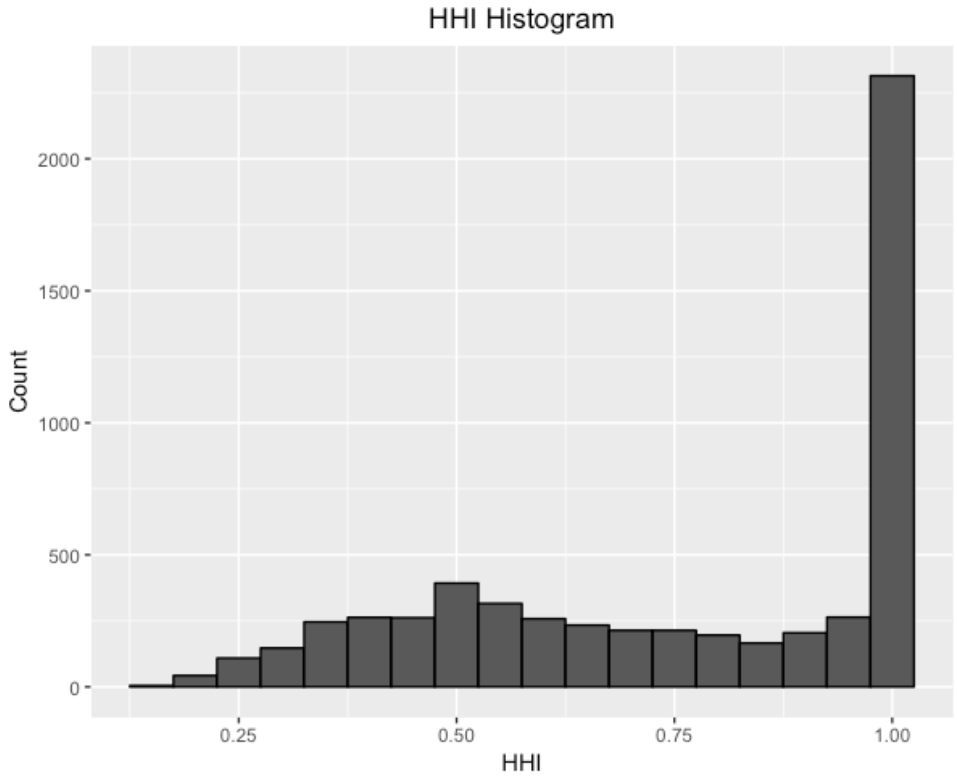


Figure 6 Diversification Histograms

Entropy and HHI treat magnitude differently: Entropy log transforms the summed and squared TIV proportions of each seller, leading to an exponential distribution based on magnitude of sales, while the HHI metric is independent of total TIV purchased.[146] Entropy can also reach a value of zero for years in which no sales occur, while HHI cannot. However, each measure illustrates similar patterns in the data. The smoothed variants of each measure are plotted below for India and Saudi Arabia. The HHI for each, at left, begins highly concentrated (close to 1) and gradually decreases (diversifying) over time, with distinct valleys indicating spikes in diversification. Similarly, the entropy measure at right begins highly concentrated (close to 0) and gradually increases over time (diversifying), with distinct peaks indicating spikes in diversification.

[146] A normalized formula for HHI exists, which removes information on the absolute number of market participants to assess equality of distributions. I do not use the normalize HHI, as it reduces the substantive value of a metric for which absolute number of suppliers is meaningful information. For example, with a normalized HHI, any equally distributed market, regardless of the number of suppliers, would appear as equal.

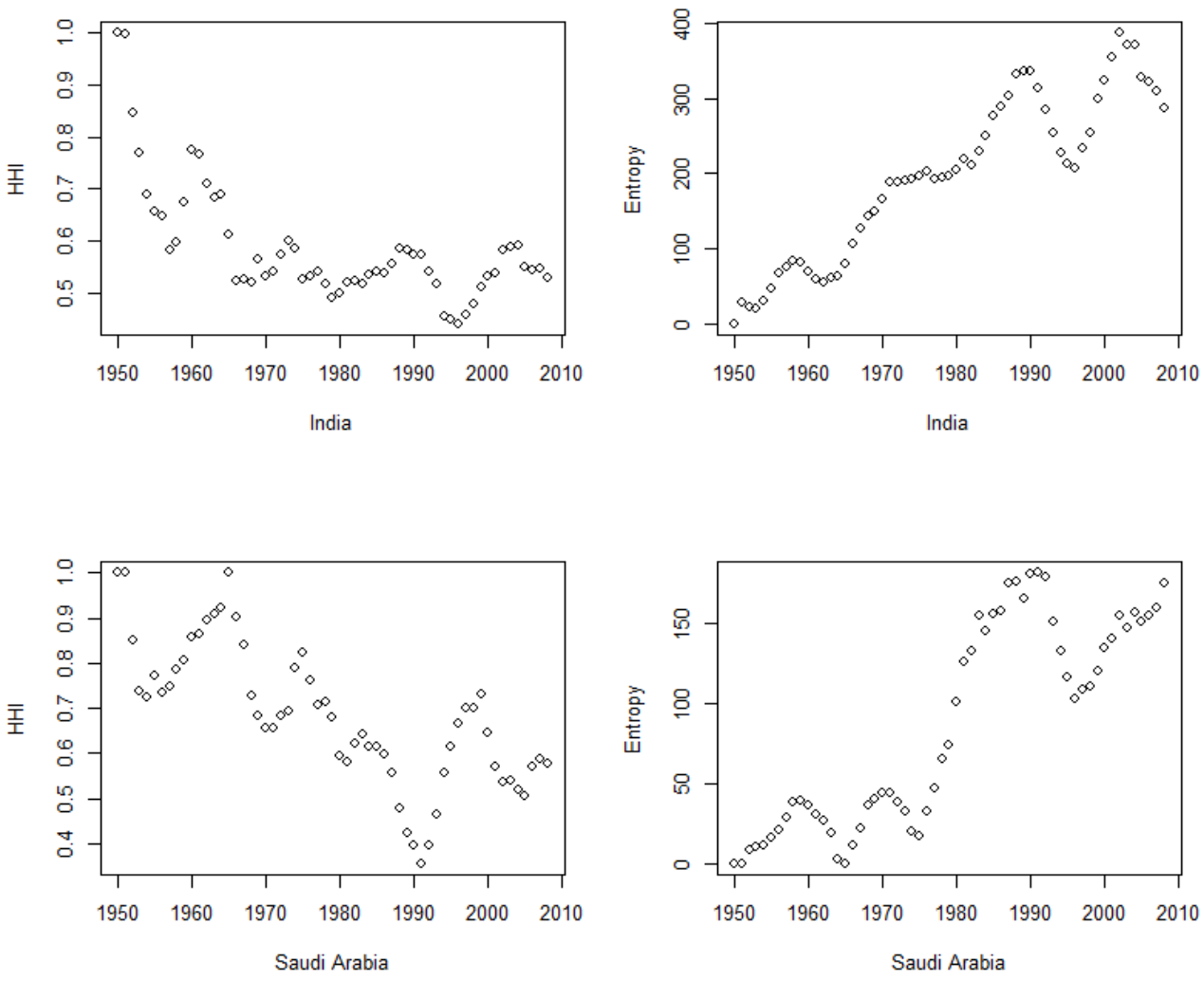


Figure 7 Comparison of Diversification Measures, India and Saudi Arabia

3.4.5 Data analysis

Due to the different scales of entropy and HHI, I test my hypotheses with a relevant model specification for each measure. For entropy I use a negative binomial regression to account for overdispersion in the dependent variable, and to relax the assumption of independent and identically distributed errors. For the HHI measure, I use a beta regression, which allows for dependent variables within the unit interval and similarly accounts for overdispersion. Each model is estimated with a linear time trend to control for time-dependent processes like systemic

changes not captured by other variables. These changes include globalization, technology progress, increased supply chain integration, and growth in the number of producers of weapons. Because these changes have been, in aggregate, monotonically increasing throughout the period, the linear time trend may capture at least part of these changes.

Model 1: Beta regression, full model

Model 2: Negative binomial regression, full model

3.5 Empirical findings

The results of both models are displayed below. In the negative binomial model, nearly all variables are statistically significant at the 0.05 level or below, while in the beta regression, all variables are statistically significant. In the negative binomial model, positive coefficients are associated with greater diversification, while negative coefficients signify diversification for the beta regression. First, the controls related to state power and size show mixed results. I expected military expenditure to increase diversification, on the logic that it increases the overall likelihood of spending on imports, but it appears to weakly reduce diversification in both models. I expected major power status, a binary, to increase diversification, though in both models it is associated with a decrease. However, the other measures are directionally as expected. I expected population and real GDP to increase diversification, on the logic that those variables signify greater need for military capability, and they do.

Hypothesis 1 dealt with the degree to which states diversify in response to their threat environment, measured by the recent experience of conflict. I expect that an increase in the hostility level of a recent MID increases the perception of threat, and that this would lead to diversification. I find support for both variables in both models. Hypothesis 2 dealt with the role of democracy in foreign policy independence, and therefore diversification. The Polity2 variable is associated positively with diversification in model 1 and negatively with concentration in

model 2, as expected. Hypothesis 3 addresses the role of trade in diversification: an increase in trade should lead to an increase in diversity. However, the import ratio sign is the opposite of what I expected in both models. As the share of imports relative to GDP increases, arms import entropy decreases and concentration increases.

I find mixed support for Hypothesis 4 on alliances. Directionally, membership in an alliance increases diversity in model 1, though not significantly. In model 2, it reduces concentration, as expected. Membership in NATO increases diversification in both models significantly. However, membership in the Warsaw Pact is less straightforward. In model 1, it increases diversity, though not significantly. In model 2, it decreases diversity, as expected, significantly. Overall, I find moderate support for my hypotheses. Model fit, however, is relatively weak. Overdispersion of the data may reduce the potential for these predictors to explain the variation of the dependent variables.

	Dependent variable:	
	Entropy	HHI
	Negative Binomial	*Beta Regression*
	(1)	(2)
Year	0.018***	−0.010***
	(0.001)	(0.001)
Military Expenditure (billions)	−0.011***	0.007***
	(0.002)	(0.001)
Major Power	−1.179***	1.114***
	(0.130)	(0.090)
Alliance	0.068	−0.083**
	(0.058)	(0.040)
NATO	0.557***	−0.864***
	(0.066)	(0.045)
Warsaw	0.010	0.359***
	(0.105)	(0.073)
Population (millions)	0.001***	−0.001***
	(0.0002)	(0.0001)
Real GDP (billions)	0.001***	−0.0004***
	(0.0001)	(0.00004)
Import Ratio	−0.111***	0.180***
	(0.035)	(0.023)
Max Hostility Level	0.161***	−0.077***
	(0.010)	(0.007)
Polity2	0.008***	−0.005**
	(0.003)	(0.002)
Constant	−32.481***	21.875***
	(2.427)	(1.680)
Observations	6,622	6,622
R^2		0.137
Log Likelihood	−28,958.600	6,455.115
θ	0.453*** (0.008)	
Akaike Inf. Crit.	57,941.200	
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 4 Diversity Models 1 and 2

3.5.1 Marginal effects

The average marginal effects provided below illustrate the impact of a change in each variable on diversification for the entropy model. The experience of a MID, *max hostility level*, on a 0-5 scale, has a substantively meaningful average marginal effect on the diversification score. Below I plot the marginal effect of MID hostility on entropy value. Given the skewness of the data, the MID hostility variable does not, on its own, account for the full variation in the entropy measure. However, it does demonstrate a substantively meaningful impact on the diversification within a state's arsenal. As the hostility level of a recent MID increases, the buyer diversifies to the extent of acquiring a sophisticated platform from a new supplier—up to, at the extreme, a platform equivalent to an F-35. For the average buyer, this represents a substantial increase in military capability from a new supplier in response to a perceived threat.

The marginal effect of major power status is also substantively meaningful, in that it reduces the diversification of the state's purchases, and fittingly corresponds to the negative effect of an increase in military expenditure on diversification. Being a major power has the estimated effect of reducing sophisticated imports by as many as two suppliers in a given year, while increasing military expenditures reduces imports as much as a sophisticated component, such as a sensor, or a ground vehicle, from an additional supplier country.

NATO membership is also an impactful predictor of diversification, with membership increasing the entropy measure by a magnitude of 65.69. This would be the equivalent of introducing a new supplier of a sophisticated system in a given year. This finding corresponds to existing research showing the relatively high density of arms transfers within the NATO network.[147] In contrast, membership in the Warsaw Pact, which was predicted to reduce

[147] Akerman and Seim, "The Global Arms Trade Network 1950–2007."

diversification of final products, has no substantive effect, despite its more centralized trade network during the Cold War.[148]

	factor	AME	SE	z	p	lower	upper
1	Alliance	7.99	7.46	1.07	0.28	-6.63	22.61
2	Import Ratio	-13.09	6.66	-1.97	0.05	-26.13	-0.04
3	Major Power	-139.04	61.37	-2.27	0.02	-259.32	-18.76
4	Max Hostility Level	18.95	7.90	2.40	0.02	3.47	34.42
5	Military Expenditure (billions)	-1.27	0.72	-1.76	0.08	-2.69	0.14
6	NATO	65.69	27.68	2.37	0.02	11.43	119.95
7	Polity2	0.96	0.49	1.97	0.05	0.01	1.92
8	Population (millions)	0.13	0.05	2.69	0.01	0.04	0.23
9	Real GDP (billions)	0.08	0.04	2.00	0.05	0.00	0.16
10	Warsaw	1.13	12.38	0.09	0.93	-23.14	25.40
11	Year	2.11	0.87	2.42	0.02	0.40	3.82

Table 5 Marginal Effects for Entropy Model

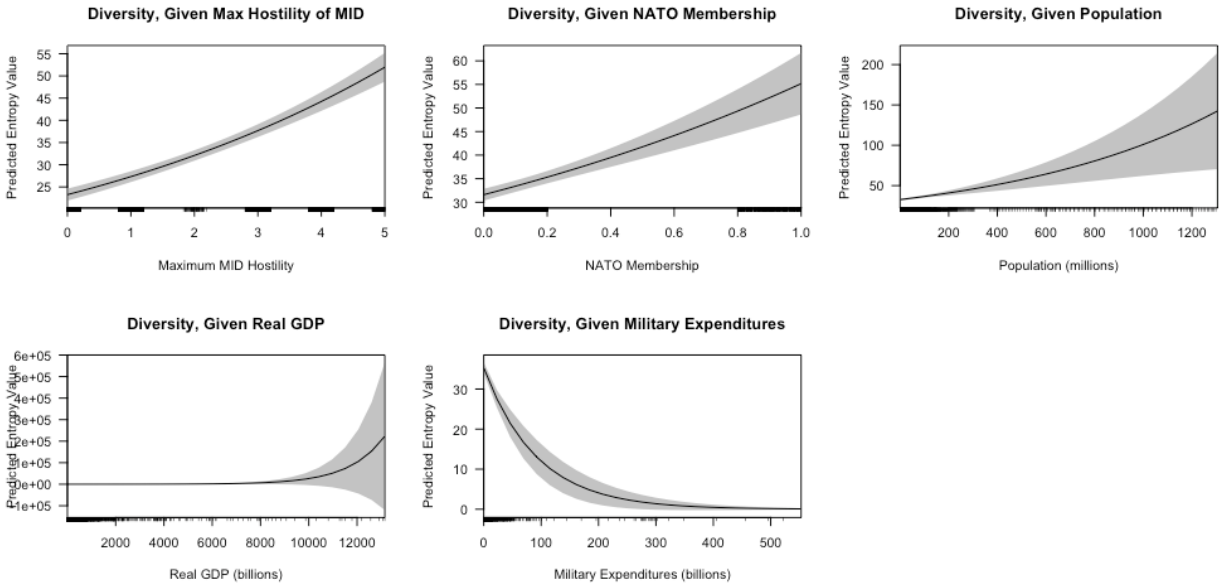


Figure 8 Marginal Effects Plots

For a sample state that suddenly experiences a MID at the median (3) of *max hostility level*, meaning a show of force or mobilization, the marginal effect estimates the country will add

[148] Akerman and Seim.

a new supplier of a moderately complicated system such as a high end ground vehicle or a sensor system. A state that has experienced a high end MID (5), however, is predicted to add two suppliers of moderately complicated systems, or one of a highly sophisticated system. Substantively, that could mean the difference between two suppliers with similar policy preferences (the US and the UK, for example),

3.6 Conclusion

In this chapter, I explored the conditions under which a state would seek to diversify its arms imports, potentially accepting a reduction in aggregate capability in exchange for increased autonomy. I posited that, under a logic of autonomy driven by perception of threat, states that had experienced a recent MID would increase the diversity of their imports. Under a logic of alliance integration, I argued that alliances generally, and NATO specifically, would increase diversity, while the Warsaw Pact would not. I also argued that trade and domestic institutions would increase diversification. Using a novel measure of arms import diversity, I tested these hypotheses and found general support for the theory—a limited, but substantively meaningful impact of recent conflict on diversity. These findings demonstrate the importance of understanding threat environment, based on recent conflict experience, in determining state arming decisions. They also point to the importance of domestic institutions, trade, and alliances in influencing arming decisions.

This finding has direct implications for policymakers. State arming strategies must be understood not just in their magnitude, but in their composition. Efforts to increase diversity within an arsenal may be interpreted as an increased need for autonomy based on perception of threat, especially for states outside formal alliance structures. In the next chapter, I explore the

degree to which this diversification then has subsequent impacts on conflict behavior—the downstream effect of increased autonomy.

Chapter 4 Who Fights? Arming strategy as enabling aggression

Chapter 3 argued that the security environment drives state arming decisions: States diversify their arms imports as a response to the perception of threat. But what happens after states diversify their arms imports? What do they then do with their arsenals? This chapter explores state behavior as a product of arming decisions. It argues that the freedom to use weapons *offensively* underpins the pursuit of arms autonomy. Suppliers may attempt to prohibit their customers' use of weapons when their policy preferences diverge, but a supplier that attempted to prevent the *defensive* use of its weapons would not find many customers in the future. However, potential customers may be more understanding of a supplier that attempts to prevent *offensive* use, especially when the buyer is pursuing a conflict in violation of international law or the laws of war. For this reason, diversification is a particularly useful strategy for states interested in going on the offense.

This chapter explores the linkages between arming strategy and subsequent state behavior to assess the degree to which the makeup of an arsenal enables future choices. Rather than claiming that arming strategies *cause* particular patterns of state behavior, it argues that the underlying perception of threat leads to an arming strategy, which subsequently *enables* future weapons use. However, the more complicated demands on maintenance and operations of a diversified force can impede sustained weapons use.

To explore these dynamics, I examine the case of Argentina, which faced obstacles to acquiring and using its arsenal, pursued an explicit strategy of arms diversification, and

subsequently engaged in more aggressive, though militarily unsuccessful, actions. Then, to examine these dynamics in aggregate, I use data on diversification and offensive conflict initiation to provide a second quantitative test of the theory that arms diversification is an attempt to achieve autonomy in response to the perception of threat. Findings illustrate that increased diversification is associated with increased conflict initiation, consistent with the theory.

4.1 Arming and belligerency

How does arming change state behavior? The primary lens for answering this question has been through studies of the dyadic dynamic between arming states. This includes literatures on the security dilemma, arms races, offense-defense theory, and others. These literatures focus almost totally on questions of perception, communication, security, and bargaining. To the degree to which they focus on the dynamics of arming, they largely ignore the particular details of arming strategies and downstream questions such as the challenge of sustaining combat operations. However, these literatures do provide an important frame for understanding the question addressed in this chapter: how states behave after choosing particular arming strategies. That is because by defining the expected behavior of states that arm *generally*, these works provide a frame for situating how arms procurement affects the (offensive) use of force.

The core arming dynamic across these literatures is the arms race. Do arms races cause, encourage, or enable conflicts? Diehl and Kingston examine whether arms buildups are associated with subsequent conflict and conclude that large increases in arms do not correlate to increased conflict involvement or militant threats.[149] They find that external threats do not consistently lead to growth in the state's arsenal, nor does the state's arsenal accurately predict conflict. However, like much of the literature that followed, Diehl and Kingston examine

[149] Paul F. Diehl and Jean Kingston, "Messenger or Message?: Military Buildups and the Initiation of Conflict," *The Journal of Politics* 49, no. 3 (August 1, 1987): 801–13.

whether states are buying arms, but not how. There are two problems with this approach. First, it ignores that states may change what they buy and from whom, while not necessarily 'building up' a larger military. Second, as Morrow argues, the logic of arms races is not driven by the average conditions, but by short-term swings in the relative power balance between rivals. Racing states can only gain the military advantage temporarily, and it is during these moments of military superiority that a state is most advantaged to attack its rival. Morrow argues that states that are less risk averse are more likely to take the initiative during these windows of opportunity, and attack their rivals.[150] In short, the dynamics of an arms race can provide unique, temporary opportunities for states to initiate conflicts. Behavior post-arming is therefore a reflection of the degree to which the state believes its arming choices have provided it an advantage.

The literature on arms races focuses on whether states should arm and when, within the narrow field of competition, it is most advantageous to strike the opponent. There are two other critical components to this dynamic: where the arms come from and the broader international context in which a state is considering conflict. Because conflict does not occur in isolation, states engaging in arms races and initiating conflicts must take into account the structure of the international system and potential reactions by other states. Lake posits that all these decisions take place in the context of a security hierarchy, in which smaller states have traded autonomy for security and order guaranteed by hegemonic powers—potentially shaping their behavior in a local arms race.[151]

[150] James D. Morrow, "A Twist of Truth: A Reexamination of the Effects of Arms Races on the Occurrence of War," *Journal of Conflict Resolution* 33, no. 3 (September 1, 1989): 500–529.

[151] David A. Lake, *Hierarchy in International Relations*, Cornell Studies in Political Economy (Ithaca, NY.: Cornell Univ. Press, 2011).

Bas and Schub argue that because the reaction of other states is such an important determinant of success for a conflict initiator, potential belligerents must carefully estimate the likely reactions before starting a war. The complexity of such estimation can vary substantially. When power in the international system is more hierarchical, as during the Cold War, the task of estimation is easier and states are more likely to pursue conflict. When power is distributed more evenly across multiple states in the system, as in late 19th century Europe, predicting the likely reactions by all relevant parties is extremely challenging, and states are less likely to initiate conflicts. Therefore, Bas and Schub argue, system-level characteristics are critical to understanding the likelihood of conflict initiation.[152]

The domestic structure of states may also affect conflict initiation under such conditions. Contrary to democratic peace theory, Bak et al. demonstrate that democracies and most autocracies are comparably selective in initiative a dispute, but that military regimes demonstrate a unique pattern of dispute initiation, often attacking stronger states.[153] Further, the interaction of domestic structure and context matters: When democracies face threats, they are more likely to initiate a dispute.[154]

The other critical factor in arming is where the weapons come from, as the origin of the arms has implications for state capabilities and third-party support. A state with a highly developed weapons industry faces fewer constraints than a state wholly dependent on imports. Similarly, a state that acquires large quantities of arms from an ally may have more support in a dispute than its opponent. Each variable has potential implications for how a state behaves upon

[152] Muhammet A. Bas and Robert J. Schub, "How Uncertainty about War Outcomes Affects War Onset," *Journal of Conflict Resolution* 60, no. 6 (September 1, 2016): 1099–1128.

[153] Daehee Bak, Michael R. Kenwick, and Glenn Palmer, "Who's Careful: Regime Type and Target Selection," *European Journal of International Relations* 22, no. 4 (December 1, 2016): 872–96.

[154] Sambuddha Ghatak, Aaron Gold, and Brandon C Prins, "External Threat and the Limits of Democratic Pacifism," *Conflict Management and Peace Science* 34, no. 2 (March 1, 2017): 141–59.

acquiring arms. Craft, for example, argues that arms transfers increase the likelihood of conflict initiation.[155] Krause similarly finds that arms transfers are often precursors to conflict initiation, especially if they are not accompanied by a defense pact between buyer and seller.[156] This may arise due to a substitution effect: Sellers may be using arms to facilitate the security of a buyer without committing to an alliance, providing offensive capabilities but not the deterrence needed to prevent conflict.

Arms transfers also occur within a context, often of rivalry or conflict. For example, Brzoska and Pearson argue that arms transfers are nearly always viewed as political statements during ongoing conflicts. Further, arms transfers sufficient to alter the military balance can both increase bloodshed and shorten the duration of conflict.[157] Kinsella, on the other hand, studies arms transfers within the context of specific enduring rivalries, and finds a less obvious effect. In the case of Soviet transfers to Egypt and Syria, arms exacerbated conflicts, whereas U.S. transfers to Israel did not show the same effect.[158]

The literature on arming and behavior generally agrees that states arm in response to threats, and that increased arming does not necessarily lead to increased security. However, there is mixed evidence as to how arming shapes the subsequent behavior of individual states. Throughout this literature, the study of arming tends to focus on *whether* states arm, but not necessarily *how* they arm—for example, if they pursue particular strategies in the sourcing of

[155] Cassady Craft, *Weapons for Peace, Weapons for War: The Effect of Arms Transfers on War Outbreak, Involvement, and Outcomes* (New York: Routledge, 1999).

[156] Volker Krause, "Hazardous Weapons? Effects of Arms Transfers and Defense Pacts on Militarized Disputes, 1950-1995," *International Interactions* 30, no. 4 (October 2004): 349–71.

[157] Michael Brzoska and Frederic S. Pearson, *Arms and Warfare: Escalation, de-Escalation, and Negotiation*, Studies in International Relations (Columbia, S.C: University of South Carolina Press, 1994).

[158] David Kinsella, "Conflict in Context: Arms Transfers and Third World Rivalries during the Cold War," *American Journal of Political Science* 38, no. 3 (1994): 557–81.

arms, or the integration of their military capabilities. There is a gap in our understanding of the composition of arms flows—state strategies of procurement—which may be able to reconcile the mixed findings in the literature on propensity to engage in conflict post-arming. Not all states become more belligerent after purchasing weapons. Evidence of state intentions, which may explain subsequent behavior, lies in the composition of those purchases.

4.2 Threat, diversity, and conflict

In the previous section, I found that the literature is inconclusive on the question of when and why arming leads to changes in state behavior, such as conflict initiation. In this section, I develop a theory that connects arming choices to state behavior. Why does the state's arming strategy matter? In Chapter 3, I argued that diversification provides the state with greater autonomy in the use of its weapons by increasing the probability that the state's policy preference is acceptable to at least one of its suppliers. States facing threats, in that chapter operationalized as recent MID experience, have a heightened fear of threat and a greater impetus to ensure they can rely on their military capabilities if needed. In this chapter, I add that the reason states need those capabilities is to engage offensively. The key to understanding the role of arms acquisitions in state behavior is in the composition of the arms, a reflection of the state's strategy and intent, and the context it faces. In brief, I expect that diversification increases the likelihood of dispute initiation.

This is an especially difficult argument to make, because as I claim in Chapter 2, diversification can lead to strictly militarily suboptimal capabilities. While it can be an asset to enable conflict initiation, it can be a liability for effectiveness within conflict. Why is it a poor strategy for achieving military effectiveness? First, there is a maintenance challenge. Maintaining more types of platforms, each with its own spare parts supply chain, its own requirements, and its own personnel and training demands, leads to reduced economies of scale

and the potential to reduce overall platform readiness. Second, a diversified military can suffer from interoperability, operational, and training problems. The differing strengths of weapons can lead to substantially different training, tactics, and ultimately strategy. Teaching crews to operate in different tanks, aircraft, or ships is not simply a question of learning from different manuals—it often requires teaching new ways of thinking about opportunity and constraint in battle. At best, this is inefficient. At worst, the military may neglect to provide the needed training, or may even lack the needed thinking, on the implications of each platform. Overall, the impact on military effectiveness in battle is negative.

Given the above, states with diversified arsenals should be wary to engage in battle. In the standard crisis bargaining model, a reduced military capability leads the state to expect a reduced probability of victory. That should increase the likelihood the state will pursue a negotiated solution rather than initiate a dispute. However, here, I argue that this logic does not constrain state behavior. Why do these challenges not moderate the emboldening effect of diversification? There are three factors that explain why. The first is that states may lack awareness of the degree to which diversification today leads to military challenges tomorrow. Though military maintenance units might predict the difficulties of a diversified force, actual evidence of how the strategy ultimately reduces military effectiveness is only discovered in battle. Further, because an important constraint is the *sustainment* of conflict, reduced effectiveness is not a problem the state would necessarily discover after, for example, aggravated skirmishes.

The second factor is that logistical challenges often fail to constrain state decisionmakers. While many battles and campaigns are won or lost on logistics, leaders do not always give full

consideration of logistics prior to conflict.[159] Combined, the inherent difficulty in predicting logistical challenges and the lack of leadership constraint mean logistical challenges can undermine campaigns once they are well underway. During World War I's Operation Michael, the German army adopted new tactics and scored its first major victory in years of trench warfare. German forces broke through the French and British lines and rapidly advanced 40 miles into French territory. However, as they progressed, their maintenance and operational support lines were strained—the territory they needed to cover had grown exponentially. The attack collapsed and German forces retreated to the line.[160] Both of these factors presume the state, as a unitary actor, is unaware of the degree to which it is constrained.

The third factor is that states may select-in to the decision, making the tradeoff knowingly, for the same reason they select-in to diversification in the first instance: They do not believe they have sufficient alternative means of protection from threat other than to arm for offensive action. A state willing to trade efficacy for autonomy may have already decided it needs to arm, however it can, to pursue the offense. Moreover, leaders may not intend to initiate a full-scale war, but merely to coerce using limited force. In the years after the Falklands War, discussed below, leaders of Argentina's junta professed they did not believe the United Kingdom would follow through with retaliatory action after they seized the islands.[161]

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[159] Thomas M. Kane, *Military Logistics and Strategic Performance* (Routledge, 2012), https://doi.org/10.4324/9780203357873. The history of war is riddled with campaigns by otherwise notable tacticians that were lost on logistics.

[160] Stephen D. Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton, NJ: Princeton Univ. Press, 2004); Baker, Ryan T., "Logistics and Military Power: Tooth, Tail, and Territory in Conventional Military Conflict." PhD Diss., The George Washington University, 2019.

[161] John Arquilla and María Moyano Rasmussen, "The Origins of the South Atlantic War," *Journal of Latin American Studies* 33, no. 4 (2001): 739–75.

Thus far, I have discussed the paradox of states choosing militarily suboptimal arming strategies for the purpose of going on the offensive. I have argued that these strategies enable autonomy and that states might reasonably choose them without understanding the ramifications, or they understand and accept them. Underlying this argument is the assumption that these states either prefer autonomy to protection, or do not fully trust any protector to come to their aid. A state that has a reliable protector with reasonably well-aligned threat perceptions may not see much need to diversify. The need rises to the extent that the protector is unreliable, threat perceptions diverge, or both. Therefore, another condition that drives this strategy must be that the state lacks a relationship with a patron that is sufficiently strong or consistent to prevent such a decision. This issue is addressed more fully in Chapter 5.

4.3 Arming Argentina

To explore these dynamics, I examine the case of Argentina from the 1950s-1980s. Argentina is useful for investigating the process of arms acquisition and subsequent state behavior for multiple reasons. First, it is typical of developing states in many respects during the period of study. Throughout the period, it was a middle income developing state, with weakly democratic institutions and a strong military, a common pattern during the Cold War. Second, during the period of study, Argentina varied in many of these key independent variables of interest. It had multiple regimes, multiple types of government, periods of development and of stagnation, regional challenges, and an imperfect relationship with a Cold War hegemon. Because of variation over time in each of these dimensions, it is also a valuable case for understanding how context affected arming choices and how arming choices relate to subsequent

state behavior.[162] Third, Argentina's leaders spent much of the period of study quashing pro-communist movements, often violently. Their anti-communism should have put Argentina firmly in the Western camp during the Cold War, and like many similar states, been consistent recipients of Western arms. Therefore, any evidence that Argentina's leaders—especially the anti-communist ones—diversified in response to threat is important.

The temporal expanse of the case allows me to evaluate the plausibility of two related hypotheses. In Chapter 3, I found that the recent experience of a MID, a proxy for the state's perception of its threat environment, led to greater diversification in arming. While the use of MIDs was necessary to systematically proxy threat perception for quantitative analysis, a qualitative case can dive deeper into other factors determining the perception of threat. I therefore generalize the hypothesis on threat as a driver of a state's arms strategy:

Hypothesis 1 (perception of threat variant): As a state's perception of threat increases, diversity in subsequent arms imports increases.

In essence, I expect to find critical junctures during which Argentinean leaders saw heightened threats and subsequently altered their arming strategies. This expands the scope of possible drivers of threat, from MIDs—militarized disputes through wars—to non-direct forms of competition, including perception of rivals' arming strategies and changes in relative power. For example, facing a growing power deficit relative to a rival, Argentina would be expected to diversify its sources of import.

This chapter adds another dynamic: the degree to which an arming strategy subsequently enables future weapons use. The theory presented in this chapter, that diversification is driven by

[162] Jason Seawright and John Gerring, "Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options," *Political Research Quarterly* 61, no. 2 (June 2008): 294–308, https://doi.org/10.1177/1065912907313077.

the need for offensive capabilities, leads to concrete expectations about state behavior subsequent to a change in arming strategies. After efforts to diversify, I expect Argentina to engage in more MIDs. Because diversification reduces the perception that military action will be vetoed by suppliers, I expect more aggressive behavior even if the perception of threat does not increase beyond the original impetus for arming. For example, should the perception of threat from a rival drive a change in arming behavior, Argentina would be expected to subsequently engage in more MIDs. I therefore posit the following hypothesis:

Hypothesis 2: Increasing diversification leads to increasing propensity for initiating militarized interstate disputes.

Finally, as I argue above, diversification can reduce the efficacy of a military force, particularly in sustained conflict. I therefore posit the final hypothesis:

Hypothesis 3: Increasing diversification reduces the probability of victory in sustained conflict.

To preview the conclusions, the case of Argentina illustrates some of the complicated dynamics of arming and arms use in practice. Argentina perceived significant threats from multiple sources through much of the twentieth century.[163] Argentina was also cut off from U.S. arms at multiple points, while its neighbors and rivals continued to receive military aid.[164] The state responded both by developing an indigenous arms industry and by explicitly adopting a strategy of arms import diversification.[165] As its perception of threat increased over time and the government became more militarist, Argentina increased its arms import diversification, and

[163] David R. Mares, *Violent Peace: Militarized Interstate Bargaining in Latin America* (New York: Columbia University Press, 2001).

[164] Edward S. Milenky, "Arms Production and National Security in Argentina," *Journal of Interamerican Studies and World Affairs* 22, no. 3 (1980): 267–88.

[165] Robert A. Potash, *The Army & Politics in Argentina* (Stanford, Calif: Stanford University Press, 1969).

subsequently its leaders behaved more aggressively. During this period Argentina was involved in militarized disputes with Chile and Brazil, internal conflicts, and a war with the United Kingdom.[166] Argentina's weapons diversity brought both autonomy and challenges with maintenance, operations, and munitions. Though the state was more autonomous, it was incapable of sustaining its military capacity. Combined with the increased autonomy enabled by its arming choices, this ultimately led to military defeat and political disaster in the Falkland Islands War.[167]

4.3.1 Rivalry in Argentina

Argentina's foreign policy was historically a product of the views of distinct groups of political elites. From the 1930s onward, Argentina's national security policy oscillated between two camps: a classically liberal internationalist camp and a nationalist camp. Both groups agreed that Argentina, due to its weak economic development and limited military resources, had missed its great power potential in international politics. Both groups emphasized the importance of developing Argentina economically, and of accompanying growth in the state's military capabilities. Yet they disagreed on how to achieve their goals. The liberals emphasized Argentina as a Western power, to be integrated within Western trade, financial, and security architectures, open to foreign investment and competition, and exporting primary commodities if necessary. This group included landowners, large corporations, and military leaders. The nationalists, on the other hand, emphasized state-led industrial development, while restricting

[166] João Resende-Santos, "The Origins of Security Cooperation in the Southern Cone," *Latin American Politics and Society* 44, no. 4 (2002): 89–126, https://doi.org/10.2307/3176996; Edward S. Milenky, "Arms Production and National Security in Argentina," *Journal of Interamerican Studies and World Affairs* 22, no. 3 (1980): 267–88, https://doi.org/10.2307/165490.

[167] Lawrence Freedman, *The Official History of the Falklands Campaign. Vol. 2: War and Diplomacy*, Reprinted, Whitehall Histories (London: Routledge, 2006).

investment and trade if needed to foster domestic industry. This group included Perónists, Radicals, urban intellectuals, and the rural poor, among others.[168]

During the 1950s and 1960s, Argentina had endured multiple periods of instability, with moments of rapid growth as well as hyperinflation, military coups, international disputes, and civil conflict. Throughout the period, the Argentine military played an important role in politics, as a critical power base for both civilian and military presidents. Despite their high level of turnover and mutable national security views, civilian and military leaders were generally consistent in seeing three principal sources of threat to the Argentine state: regional competition, often manifesting as border and maritime disputes; contested territorial claims in the South Atlantic; and internal threats.[169]

4.3.2 Argentina's perception of threat

Argentina had long seen its foremost threat as regional competition, principally from Brazil and Chile.[170] Argentina's long-term rivalry with each state dates to the colonial era. With Brazil, Argentina feared expansionism and the political dominance of South America. The states had warred intermittently since the 1820s, and during the 1960s and 1970s, Argentina was concerned about Brazil's faster economic growth, superior military prowess, and increasing resource use, especially its dam building. In 1966, Brazil struck an agreement with Paraguay to build the Itiapú hydroelectric dam on the Paraná River, upstream from where it forms a natural border between Brazil and Argentina. By 1971, Brazil had started construction, alarming

[168] Edward S. Milenky, "Arms Production and National Security in Argentina," *Journal of Interamerican Studies and World Affairs* 22, no. 3 (1980): 267–88.

[169] Edward S. Milenky, "Arms Production and National Security in Argentina," *Journal of Interamerican Studies and World Affairs* 22, no. 3 (1980): 267–88.

[170] Cameron G. Thies, "War, Rivalry, and State Building in Latin America," *American Journal of Political Science* 49, no. 3 (2005): 451–65.

Argentine leaders concerned about navigation downstream from the dam, and their own ability to leverage the river for hydroelectricity.[171]

At its most extreme, during the 1960s and 1970s, the Argentina-Brazil rivalry became a nascent race for nuclear weapons. Both states sought to obtain full-cycle nuclear technologies, and though Argentina had an early lead, by the mid-1970s Brazil was nearly capable of enriching uranium and reprocessing plutonium, requisite for a self-sustaining nuclear weapons capability.[172] In the late 1970s, Argentina was in turn building its own experimental facilities to reprocess nuclear fuel, to the consternation of the Carter Administration.[173] Despite the potential ramifications of a nuclear arms race, both states primarily pursued weapons to maintain parity with their rival.

Unlike the strategic competition with Brazil, Argentina's relations with Chile were more characterized by acute border disputes. Argentina and Chile share the third-longest border in the world, stretching along the Andes Mountains from the Atacama Desert to the Tierra del Fuego. Argentina saw a genuine territorial threat from Chile, fearing the seizure of its land along the Andes, which became a militarized and mined border in parts.[174] Argentina also contested Chilean claims to strategically important islands and waters at its southernmost tip, including navigable straits and exclusive economic zones in the adjacent seas. In particular, Argentina and

[171] João Resende-Santos, "The Origins of Security Cooperation in the Southern Cone," *Latin American Politics and Society* 44, no. 4 (2002): 89–126.

[172] Carlo Patti, "Origins and Evolution of the Brazilian Nuclear Program (1947-2011)," Wilson Center, November 15, 2012, https://www.wilsoncenter.org/publication/origins-and-evolution-the-brazilian-nuclear-program-1947-2011.

[173] Milton Benjamin, "Argentina on Threshold of Nuclear Reprocessing," *Washington Post*, October 16, 1978, https://www.washingtonpost.com/archive/politics/1978/10/16/argentina-on-threshold-of-nuclear-reprocessing/0fee6b67-e888-411e-a0f7-e027d85126fe/.

[174] "Chile removes more than 31,000 land mines along border with Peru," San Diego Union-Tribune en Español, May 27, 2016, https://www.sandiegouniontribune.com/en-espanol/sdhoy-chile-removes-more-than-31000-land-mines-along-2016may27-story.html.

Chile engaged in numerous militarized disputes over the waters and islands of the Beagle Channel, a strategically important waterway in the Tierra del Fuego. The two countries viewed the navigable straits as key to controlling shipping traffic, providing exclusive economic zones for profitable fisheries, and perhaps most importantly during the 1970s energy crisis, enabling ownership of potential offshore oil fields.[175]

Surrounded by rivals, Argentina saw itself overwhelmed, in an arms race with a more powerful adversary, and with the imperative to remain vigilant along its contested frontiers.[176] Further, it faced a host of domestic challenges during the period, from labor strikes and riots to hyperinflation. In 1976, a military coup ousted President Isabel Perón, who had been elected Vice President to her husband Juan Perón in 1973 and succeeded him after his death in 1974. A military junta seized the government and began a campaign of repression against its largely leftist rivals, culminating in the "dirty wars," during which the junta government kidnapped and murdered tens of thousands of Argentinean political opponents.[177]

Externally, in both acute and strategic dimensions, and internally, Argentina's leaders perceived significant threats to the country's territory and the survivability of its regime. This sense of regional rivalry, coupled with a concern for territory and proximate waters, was consistent across many of Argentina's leaders throughout the period, but were most pronounced under the various military juntas. For example, incidents in the Beagle Channel, disputed

[175] Mark Laudy, *Words over War: Mediation and Arbitration to Prevent Deadly Conflict*, ed. Melanie C. Greenberg, John H. Barton, and Margaret E. McGuinness, Carnegie Commission on Preventing Deadly Conflict (Lanham, Md: Rowman & Littlefield Publishers, 2000).

[176] Robert Nathan Burr, *By Reason or Force: Chile and the Balancing of Power in South America 1830-1905* (Berkeley: University of California Press, 1974).

[177] Paul H. Lewis, *Guerrillas and Generals: The "Dirty War" in Argentina* (Westport, Conn: Praeger, 2002).

territory with Chile, occurred under the rule of General Lonardi in 1958, General Onganía in 1967-68, General Videla in 1977-78 and 1980, and General Galtieri in 1982.[178]

4.3.3 Argentina's response

Like its neighbors, Argentina responded to the perceived threats by building its military capabilities.[179] Following the different schools of thought on national security, economically liberal militarists and statist nationalists, Argentina both sought to procure arms through international trade and to develop them via state-owned factories deemed critical to fostering a domestic industrial base. Argentina began developing its own major weapons systems beginning with ship building in the 1930s.[180] Argentina then experienced the first of its exclusions from international arms procurement. Following Argentina's insistence on neutrality during the Second World War, the United States prohibited Argentine participation in international conferences and banned arms exports to the country. Though Argentina declared war on Germany on March 27, 1945, in an attempt to reconcile with the victors, many military officers in the wartime junta, including then-Colonel Juan Perón, watched in agony as Brazil received plentiful arms and combat experience by embracing the United States.[181] (In fact, Argentina was the only state in the Americas that did not receive U.S. arms assistance during WWII.[182])

Perón was elected in 1945 in part by embracing a grievance-fueled nationalist platform, and he initiated an era of Argentine military development. He developed an economic plan based on domestic industrial production, including arms. In addition to ships, Argentina began to build

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[178] Lewis.

[179] David R. Mares, *Violent Peace: Militarized Interstate Bargaining in Latin America* (New York: Columbia University Press, 2001); Cameron G. Thies, "War, Rivalry, and State Building in Latin America," *American Journal of Political Science* 49, no. 3 (2005): 451–65, https://doi.org/10.1111/j.1540-5907.2005.00134.x.

[180] Milenky.

[181] Milenky.

[182] Stetson Conn and Byron Fairchild, *The Framework of Hemisphere Defense: The Western Hemisphere*, The United States Army in World War II (Washington, DC, 1989).

artillery, light arms, munitions, and by the 1950s, aircraft as well.[183] During this era, Argentina also developed its first nuclear energy capabilities, and it was sufficiently advanced that by the early 1960s, the United States and others accused Argentina of selling yellowcake uranium to Israel.[184]

Though Argentina was building its own conventional weapons, it also relied heavily on imports, principally from the United States and Europe. These included new platforms, often transport and light aircraft such as the U.S.-built Sikorsky S-55 transport helicopter and the French MS-760 *Paris* light transport aircraft.[185] However, most of Argentina's armed platforms for two decades after World War II were second-hand. They included U.S.-built M114 howitzer guns from WWII, the U.S.-built F-86 Sabre fighter jet, used in the Korean War, and even a British *Colossus*-class aircraft carrier built in 1942. The widespread availability of war surplus eventually highlighted the inefficiency of domestic production.[186]

Argentina's most significant shift in weapons procurement, however, happened in response to another round of U.S. arms export restrictions. In 1966, a military junta staged a coup, called the Argentinean Revolution, that led the United States to scale back weapons sales to Argentina. The coup ushered in another period of military government. Under the *de facto* president General Juan Carlos Onganía, Argentina embarked on a diversification and domestic production plan called "Plan Europa." Under Plan Europa, the military government sought to procure arms primarily from European suppliers, to reduce dependence on the United States.

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[183] Milenky.

[184] William Burr and Avner Cohen, "Israel's Quest for Yellowcake: The Secret Argentina-Israel Connection, 1963-1966," Wilson Center, June 28, 2013, https://www.wilsoncenter.org/publication/israels-quest-for-yellowcake-the-secret-argentina-israel-connection-1963-1966.

[185] SIPRI.

[186] Robert E Looney, *Third-World Military Expenditure and Arms Production.* (London: Palgrave Macmillan, 2014).

Procurement took two forms: purchases of equipment and licensed production from European firms.[187]

During the junta's rule, diversity of arms imports increased substantially—from an overwhelming bias toward the United States to regular purchases from eight different supplier states (see Figure 9 below).[188] Argentina secured licensing agreements to produce warships, missiles, tanks, and light arms from French, British, Swiss, and West German firms.[189] For example, Germany's Thyssen-Henschel modified its Leopard tank for local production, producing at least 280 Medium Argentine Tanks (Tanque Argentino Mediano, or TAM) for the army.[190] By the mid-1970s, Argentina's military had operating aircraft purchased from eight countries. Recognizing its waning influence, and seeking to bolster rightist regimes against a rising socialist movement in South America, the United States recommenced sales, picking up under the second Perón administration of 1973-1974.[191]

4.3.4 Peak performance, peak threat

In the 1970s, Argentina's military leaders believed their forces to be at the peak of their power. They had decisively defeated an insurgency in Tucumán province, wrongly believing it a military challenge comparable to the Viet Cong.[192] They had assembled a diverse and capable military force, backed by a domestic arms industry licensing modern European patents. The

[187] Robert A. Potash, *The Army & Politics in Argentina* (Stanford, Calif: Stanford University Press, 1969); David Pion-Berlin, *Through Corridors of Power: Institutions and Civil-Military Relations in Argentina* (University Park, Pa: Pennsylvania State University Press, 1997).

[188] SIPRI

[189] Thomas M. Leonard et al., eds., *Encyclopedia of U.S.-Latin American Relations* (Thousand Oaks, Calif: SAGE/CQ Press, 2012).

[190] Chris Bishop, ed., *The Encyclopedia of Tanks & Armored Fighting Vehicles: From World War I to the Present Day* (San Diego, CA: Thunder Bay Press, 2006).

[191] William H. Mott, *United States Military Assistance: An Empirical Perspective*, Contributions in Military Studies, no. 218 (Westport, Conn: Greenwood Press, 2002).

[192] David Pion-Berlin, *Through Corridors of Power: Institutions and Civil-Military Relations in Argentina* (University Park, Pa: Pennsylvania State University Press, 1997).

military value of their imports, as measured by SIPRI's trend indicator values, had increased about sevenfold since the nadir in the mid-1960s. Argentina's nuclear program was assessed as being within two years of producing a viable weapon.[193]

Yet Argentina's leaders also saw pervasive threats, both foreign and domestic. Brazil's Itiapú hydroelectric dam, in construction on the Paraná River upstream from the Argentinean border, risked reducing the navigability of the country's most economically important internal waterway. Territorial flare-ups with Chile continued, eventually leading the Pope to intercede, offering mediation.[194] Further, in 1970 Chile had elected socialist Salvador Allende, leading military leaders to fear a red wave through Latin America that was further bolstered when Perón returned. Though Allende was overthrown by a coup in 1973, the military dictatorship of Augosto Pinochet was seen in Buenos Aires as more aggressive and militarily capable, leading to years of tension between the two rightist dictatorships. Further, the return of the Perónist movement as a viable political force alarmed military leaders, who staged a coup in 1976 against Perón's successor, his wife and vice president Isabel. The leftist and labor reaction to the coup was put down violently, and the dictatorship's policy of torture and murder of political opponents, the Dirty War, fed a persistent perception of threat from within, believed to merit the use of both small and advanced weaponry.[195]

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[193] Terence A. Todman, "Briefing Memorandum: Your Visit to Argentina November 20-22, 1977" (Washington, DC: Department of State, November 1977), https://nsarchive2.gwu.edu//NSAEBB/NSAEBB588-Trump-release-continues-US-declassified-diplomacy-with-Argentina/documents/Argentina-Carter-Reagan-and-Bush-VP-Part-3.pdf.

[194] James L. Garrett, "The Beagle Channel: Confrontation and Negotiation in the Southern Cone," *Journal of Interamerican Studies and World Affairs* 27, no. 3 (ed 1985): 81–109, https://doi.org/10.2307/165601.

[195] David Pion-Berlin, *Through Corridors of Power: Institutions and Civil-Military Relations in Argentina* (University Park, Pa: Pennsylvania State University Press, 1997).

After the 1976 coup, junta leaders were intent on executing a military option to solve territorial disputes with Chile. Though the United States Congress, with support from the Carter Administration, had passed the Humphrey-Kennedy Amendment to the Foreign Assistance Act prohibiting arms sales to Argentina as a violator of human rights, Argentina's Plan Europa had ensured a steady flow of warships needed for an operation in the Tierra del Fuego. Since the late 1960s, Argentina had imported at least 27 warships and numerous assistance craft from five countries.[196] For example, in 1978, after the U.S. weapons ban, Argentina received two French-built corvettes originally destined for South Africa.[197] The junta leaders, having rejected a pro-Chile decision by the International Court of Arbitration, devised a plan to seize extensive portions of the contested Fuegian Archipelago and execute a land invasion of Chile, an attempt at a military solution to the Beagle Channel dispute.[198]

On December 22, 1978, the first phase of Operation Soberanía, naval attacks on disputed islands, began under severe weather conditions. The Argentine navy made limited progress while thousands of troops waited along the continental frontiers with Chile for the results of phase one. Though the Argentine navy approached within 20 nautical miles of the Chilean position, after a few hours the operation was postponed due to the weather.[199] Meanwhile, in Buenos Aires, the Papal Envoy was aggressively lobbying all parties to accept the Vatican's offer of mediation in the conflict. On the morning of December 23, the junta received a formal request from Pope John Paul II for a ceasefire to allow for papal mediation. After hours of debate, weighing the potential

[196] SIPRI.

[197] Eric Wertheim, *The Naval Institute Guide to Combat Fleets of the World: Their Ships, Aircraft and Systems.* (Place of publication not identified: Naval Institute, 2007).

[198] Ewen Southby-Tailyour, *Exocet Falklands: The Untold Story of Special Forces Operations*, 2016.

[199] David R. Mares, *Violent Peace: Militarized Interstate Bargaining in Latin America* (New York: Columbia University Press, 2001).

costs of fighting, the likelihood of victory, the possibility of obtaining their goals through negotiations, and the popular reaction in Argentina to rejecting the Pope's offer, the junta leaders accepted the offer and ordered a full withdrawal of all forces. Outnumbered Chilean forces, which had amassed in the waters of the Beagle Channel and in strategic mountain passes along the continental border, did not engage before the ceasefire. Based on the stunted progress of Soberanía, it is difficult to assess the operational efficacy of Argentina's forces at that point. However, tensions remained high until the papal mediation bore fruit after the fall of the Argentine junta.

4.3.5 An unsustainable force

Though Chile remained a threat, for the junta leaders, first General Videla then General Galtieri, the ultimate prize was the Falkland Islands. The British-controlled Falklands, or Islas Malvinas to Argentines, lie approximately 300 miles off the southern coast of Argentina. Disputed nearly continuously since the 18th century, the islands are of strategic importance principally for their maritime economic zone, which includes fisheries and possibly oil reserves.[200] Argentine leaders had called for the British to cede the islands for decades. In 1965, the United Nations General Assembly passed resolution 2065, calling on both countries to negotiate the status of the islands. British and Argentine diplomats began a series of negotiations in 1966. In 1968, they came close to agreement on a Memorandum of Understanding outlining an Argentine future for the islands, though the deal fell through on opposition from the UK-based Falkland lobby.[201] In the 1970s, Argentina began issuing veiled threats should the UK fail

[200] Laudy.

[201] Clive Ellerby, "The Role of the Falkland Lobby, 1968–1990," in *International Perspectives on the Falklands Conflict: A Matter of Life and Death*, ed. Alex Danchev (London: Palgrave Macmillan UK, 1992), 85–108, https://doi.org/10.1007/978-1-349-21932-2_5.

to comply.[202] For the junta leaders, seizing the islands could revive nationalist sentiment and bolster their government in the face of rapidly declining economic conditions.[203]

In planning an operation to seize the islands, the junta had studied the 1956 Suez Crisis, in which the United States had pressured the UK, France, and Israel not to prosecute a war against Egypt after President Nasser nationalized the Suez Canal. Wary of appearing to condone the colonial pretensions of its European allies, the United States prioritized the sentiment of Arab, non-aligned, and decolonizing states to reduce the risk they became Soviet satellites.[204] The international community accepted Egyptian control of the canal as a fait accompli. Similarly, junta leaders expected to seize the islands, avoid a British response, and negotiate over their future post fait accompli.[205] Further, the Suez represented a core strategic interest for Britain—most of its energy and commerce passed through the canal, and it was a vital conduit to its remaining colonial possessions and forward bases. The Falklands were hardly of strategic value—certainly Britain hadn't used them as such yet.[206]

In March 1982, a group of Argentine scrap metal workers, accompanied by Marines in civilian clothes, landed in the Falklands-administered island of South Georgia, ostensibly to harvest scrap metal from decaying facilities there. The action alarmed the British, who ordered the Argentines to take down their flag and report to the administrator of the island. Fearing British reinforcements would be deployed to the region before it could seize the Falklands,

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[202] Freedman.

[203] Freedman.

[204] Simon C Smith, *Reassessing Suez 1956: New Perspectives on the Crisis and Its Aftermath* (London; New York: Routledge, 2016).

[205] This was not farfetched. Minutes from the April 30, 1982 meeting of the U.S. National Security Council show then-Secretary of State Alexander Haig arguing forcefully for a negotiated settlement that would eventually legitimize the Argentine seizure of the islands.

[206] The Argentines noted that the 1981 British Nationality Act stripped Falklanders of their British citizenship, leaving them citizens of British dependent territories.

newly-installed Argentine President General Leopoldo Galtieri ordered an attack on the islands.[207]

The Falklands War lasted 74 days from April-June 1982, from the initial Argentine invasion until the successful British recapture of the islands. The war pitted a smaller South American force, already in-theater, against an aging, under-funded, but distant British force. Both Argentina and the UK inflicted casualties on each other, by land, air, and sea. The Argentines deployed their diversified air force against Britain, including aircraft acquired from France, the United States, Israel, the United Kingdom, and Italy, and aircraft built in Argentina. The Argentine Navy consisted of crafts built by the United States, France, Britain, the Netherlands, and Argentina.[208] The British fleets, however, were nearly entirely British-built, with a few American aircraft, some licensed and customized by British producers, and others custom-built by U.S. producers.[209]

In the planning of the operation, the junta became aware of the challenge of maintaining a high level of operations given its fleet. Argentina's diversified fleet was particularly difficult to sustain, and it was Britain's explicit policy during the war to take advantage of the maintenance, operations, and munitions challenge. Britain demanded an immediate NATO and Commonwealth arms embargo on Argentina, including spare parts, munitions, and maintenance services.[210] Argentina was forced to ground one of its five French-built Super Etendard fighter jets, its most capable aircraft, to cannibalize for spare parts.[211] Britain launched a global

[207] Freedman.
[208] Data on arms purchases from SIPRI.
[209] Freedman.
[210] Freedman.
[211] Freedman.

campaign to prevent French-built Exocet missiles, then cutting-edge air-to-sea anti-ship technology, from ending up in Argentine hands.[212]

While the war began both in the air and at sea, the sinking of the Argentine ship *ARA General Belgrano*, combined with persistent ship maintenance and sustainment challenges, led the Argentines to recall their blue water naval assets and focus on aerial operations the rest of the war. Argentina worked assiduously to find providers willing to supply and maintain its aircraft. It found providers willing to attempt resupply, maintain aircraft, and find spare parts. First, the Air Force was unable to launch French-made Exocet missiles from its Dassault Mirage III aircraft. A French engineering team happened to be in-country from the previous year's delivery of the missiles. When the Argentines were unable to connect the aircraft computers to the missiles, the French team, despite President Mitterand's embargo on French aid to Argentina, was able to fix the flaw.[213] Similarly, Israeli maintenance engineers assisted in ensuring the Mirages and Daggers (an Israeli modification of the Mirage) were capable of flying and launching munitions, and Israel has been accused of providing or attempting to provide additional spare parts and munitions as well.[214]

The Argentines found willing suppliers in many states that felt spurned by the UK. South Africa was accused at the time of providing spare parts, having developed an arms relationship with Argentina after it was embargoed by much of the world.[215] Other Latin American states,

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[212] Hannah Kuchler, "Thatcher Gave Paris Falklands Ultimatum," Financial Times, December 28, 2012, https://www.ft.com/content/dccd8e3a-4dc9-11e2-a0fc-00144feab49a.

[213] Mike Thomson, "How France Helped Argentina in the Falklands," March 6, 2012, sec. BBC Magazine, https://www.bbc.com/news/magazine-17256975.

[214] David Blair, "Israel Sold Weapons to Argentina at Height of Falklands War, Reveal Declassified Foreign Office Files," *The Telegraph*, August 24, 2016, https://www.telegraph.co.uk/news/2016/08/23/israel-sold-weapons-to-argentina-at-height-of-falklands-war-reve/.

[215] Paul Van Slambrouck, "S. Africa Claims Neutrality on Falklands' but May Be Selling Arms," *Christian Science Monitor*, May 25, 1982, https://www.csmonitor.com/1982/0525/052530.html.

from Peru to Paraguay to Brazil (which, under a rightist government, had recently reduced tensions), and states outside the region such as Libya, were also accused of attempting to assist Argentina in finding Exocet missiles, spare parts, and additional aircraft.[216]

Argentina's performance in joint operations was notably poor, and its communications systems did not facilitate effective coordination between air and ground forces. This led to numerous mistakes, including friendly fire and lack of joint operability.[217] A key problem was Argentina's lack of surveillance and information, exacerbated by the aging electronics and radar on its vintage Lockheed Neptune patrol aircraft.[218] However, given the obstacles it faced, the Argentine Air Force proved itself remarkably lethal against Britain, sinking six ships and damaging about a dozen others. This is important to note, because Argentine arming strategies, not its pilots' capabilities, were a deciding factor in its military performance.[219] Despite vigorous efforts to find suppliers and import spares, ultimately Argentina was unable to cobble together a sufficient supply and maintenance architecture to ensure its fleet could sortie sufficiently to meet the operational need.[220] The inability to sustain its force proved decisive.

[216] Edward Schumacher, "ARGENTINA BUYING NEW ARMS," *The New York Times*, June 6, 1982, https://www.nytimes.com/1982/06/06/world/argentina-buying-new-arms.html.

[217] Salvador Mafé Huertas and Jesús Romero Briasco, *Argentine Air Forces in the Falklands Conflict*, Warbirds Illustrated, no. 45 (Poole, Dorset : New York: Arms and Armour Press ; Distributed in the USA by Sterling Pub. Co, 1987).

[218] Jun Yanagisawa, "Military Implications of the Falklands War," *International Forum on War History*, 2013, 20.

[219] Dr. James S. Corum, "Argentine Airpower in the Falklands War: An Operational View. (Features)," *Air & Space Power Journal*, (Fall 2002), http://ezproxy.lib.gla.ac.uk/login?url=http://go.galegroup.com/ps/i.do?p=EAIM&u=glasuni&id=GALE%7CA94269861&v=2.1&it=r&sid=summon&authCount=1.

[220] Bryan Perrett, *Weapons of the Falklands Conflict* (Poole, Dorset : New York, N.Y: Blandford Press ; Distributed in the U.S. by Sterling Pub. Co, 1982).

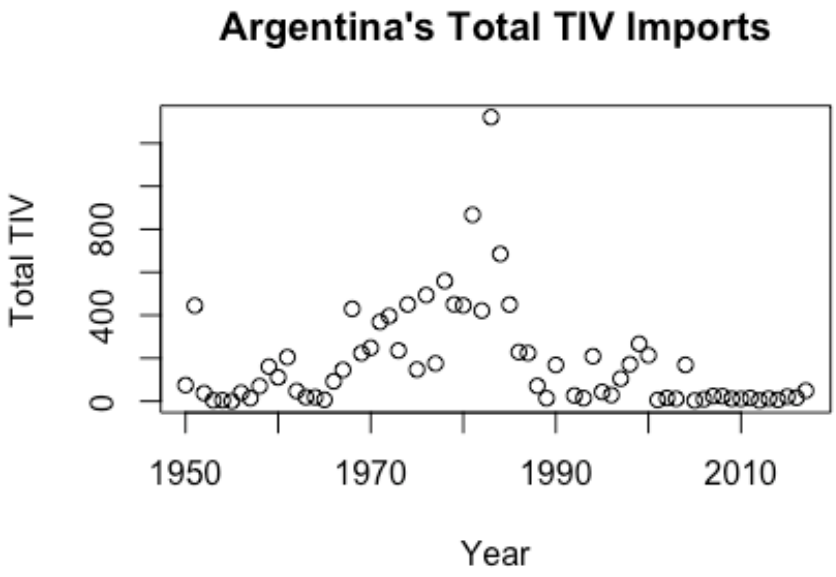

Figure 9 Military value of imports as Argentina's perception of threat and its desire to use force grew, from Plan Europa in 1966 to the Falklands War in 1982

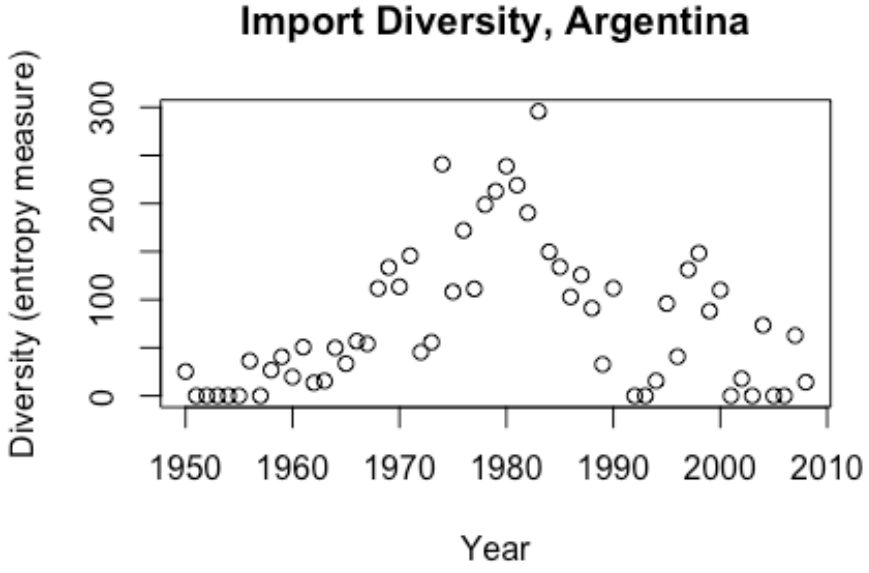

Figure 10 Diversity of imports as Argentina's perception of threat and its desire to use force grew, from Plan Europe in 1966 to the Falklands War in 1982

4.3.6 Evaluation of Hypotheses

What does the case of Argentina ultimately demonstrate? In response to the perception of threat from neighbors and foreign powers, and the desire for autonomy to use arms against U.S.-backed powers, Argentina both built arms domestically and diversified its sources of imports. Argentine arms procurement strategies such as Plan Europa were explicitly designed to counter perceived threats, reduce dependence, and leverage the differences between arms suppliers. These were particularly acute challenges during times of conflict. Maintenance, munitions, and other critical questions of operational sustainment were especially important drivers, leading Argentina to diversify even further in both hardware and services. The evidence is consistent with Hypothesis 1, on the perception of threat as a driver of import diversification.

However, the evidence also shows market factors—the availability of arms—as another important driver of Argentina's decision making. What differentiates a state responding to an embargo (as Argentina did multiple times) with a state actively choosing a pro-autonomy policy? The key difference is that in response to U.S. arms embargoes, Argentina did not simply replace American arms with French ones. Instead, the juntas (both in 1966 and 1974) chose to buy from multiple sources to reduce the possibility that another embargo could be as impactful. Their intent demonstrates a strategic, rather than a purely market-driven, reaction to the problem of weapons availability as U.S. administrations changed their views.

Consistent with Hypothesis 2 the diversification of arms, including both hardware and maintenance and operations services, enabled Argentina's more aggressive behavior, most significantly during the Falklands War. Though one could argue that Argentine leaders did not consider their previous arming strategy in the immediate decision to seize the islands and prosecute a war, simply put, they would not have been able to execute the modern air operations that allowed them to fight the war without it.

However, consistent with Hypothesis 3, the increased diversity in the Argentine arsenal made sustainable operations especially difficult. The combination of poor governance, ineptitude, and lack of high-end operational ability exacerbated the problem. It may not be possible to completely isolate the role of arms procurement and diversification within this period of Argentina's military history. However, Argentine leaders saw themselves as advancing their autonomy through their arms strategies, used that autonomy multiple times in acts of unprovoked aggression, and subsequently suffered the consequences of their lacking maintenance architectures. In short, a diversified military capability enabled Argentina's military aggression, but hobbled its sustainment.

4.4 Quantitative empirical strategy

The case of Argentina points to several broader questions. First is a set of questions on the efficacy of particular strategies of diversification. Given the challenges Argentina faced in supplying its fleet, what is a secure diversification strategy for a buyer state? Given that Britain was effectively able to cut off Argentina from resupply of critical munitions and components, is diversification within a political bloc (such as across NATO suppliers) a viable strategy? Second are questions on how diversification shapes the maintenance, operations, and tactics of a force. Does diversification enhance or reduce the available force for action? Is a heavily diversified force able to sustain high-end military operations? And third, does Hypothesis 2, that diversification enables military aggression, apply more generally?

Here I develop a quantitative strategy for addressing this third question. The case of Argentina shows that as military leaders perceived increasing threat, they diversified their arms sourcing, and subsequently behaved with greater aggression toward neighboring and competing states. However, Argentina was also a military dictatorship, with perhaps greater likelihood of behaving aggressively. It engaged in notable human rights abuses and disputes with U.S.-backed

neighbors, both potentially leading to greater arms restrictions than might be expected otherwise. And it entered a demonstrably lopsided war with Britain, which it believed it could win politically should its fait accompli be accepted, but that it realized could not be won purely through attrition.

How do other states behave as they diversify their sources of arms? If they behave as my theory suggests, and as Argentina did, then diversification is not just a response to threat but preparation for potential conflict. Further, it is preparation for offensive conflict, as the disadvantages of diversification for purely defensive purposes are manifold. To restate Hypothesis 2:

Hypothesis 2: Increasing diversification is associated with increasing propensity for initiating militarized interstate disputes.

To test this hypothesis, I rely on a cross-sectional time-series research design of 201 states from 1950-2008. As in Chapter 3, the unit of analysis is country-year, and the data set contains 8,807 observations.

4.4.1 Dependent variable

As I seek to understand the degree to which diversification increases the probability of conflict initiation, my dependent variable is conflict initiation, operationalized as the initiation of at least one militarized interstate dispute in a given country-year. I rely on the Militarized Interstate Dispute data, consolidated at the country-year level, to generate the dependent variable.[221] The variable is binary for whether the state initiated a MID of any intensity, directed toward any other state. MIDs range in intensity from threats of force through the initiation or joining of an interstate war. In total, states initiated 2,626 MIDs during the period of study,

[221] Palmer et al.

totaling nearly 30% of all country-years. MIDs constituting acts of war or greater—including, for example, clashes or blockades—occurred during about 23% of all country years, and initiation of an interstate war occurred in 4% of the observations.

4.4.2 Primary independent variable

The primary independent variable of interest is arms supplier diversification, operationalized via the entropy measure described in Chapter 3. The measure captures the likelihood that any randomly selected unit of military value, derived from the SIPRI total indicator value data, will be from the same supplier as the next randomly selected unit. As the variable increases in magnitude, the diversity of imports increases, and the likelihood of selecting a unit from the same supplier decreases. Because the variable is derived from a standardized measure of military value, it captures meaningful diversification, across the most important acquisitions the state makes. As in Chapter 3, the variable includes advanced military platforms, and does not capture small arms. The distribution of the variable exhibits heavy skewness, as most states have very low levels of diversification most years.

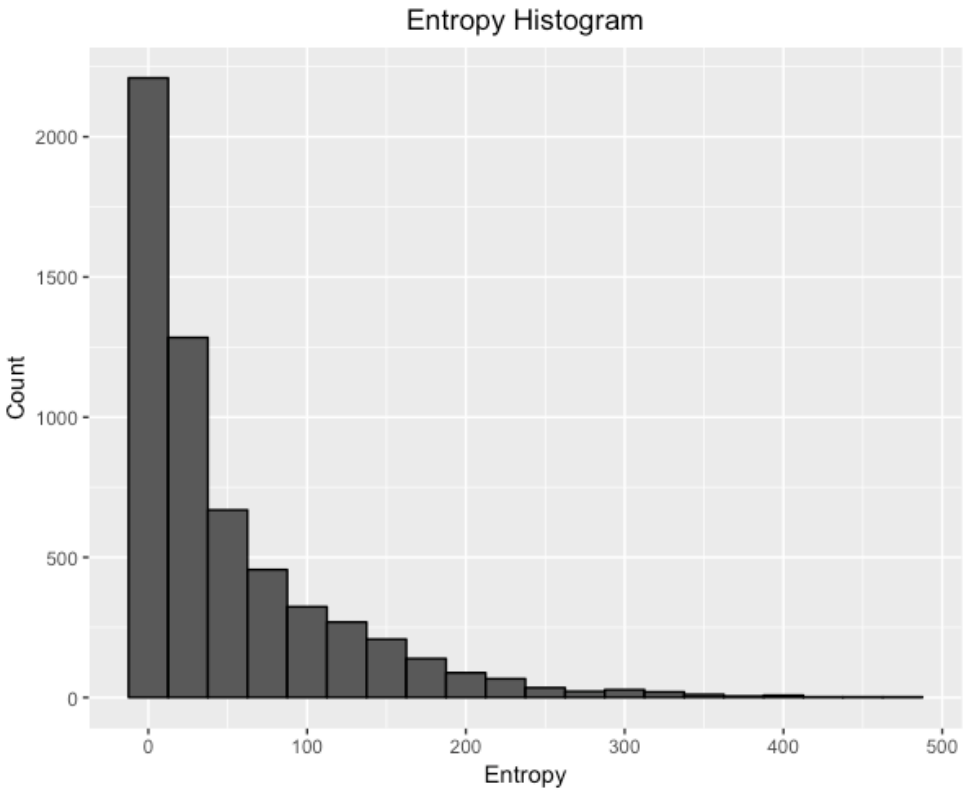

Figure 11 Histogram of diversity measure

I expect that as a state's arms diversification increases, the probability that that state will initiate a dispute also increases. As per the theory described above, I do not necessarily expect that diversification will lead a state to engage in a protracted conflict—the state may merely wish to coerce to achieve a policy aim, as was Argentina's initial intent during the Falklands War. As above, the diversification measure serves two purposes. First, it represents the functional facilitation of behavior, a reduction in the ability of a single supplier to veto military action, that enables MID initiation. Second, it represents the intent of the state to achieve greater autonomy in offensive action due to the rationales outlined in the theory section. The variable therefore captures, in a simple, measurable way, the state's efforts to achieve autonomy of action.

4.4.3 Control variables

What other factors might lead a state to initiate a conflict? I include control variables to account for democracy, national capabilities, import dependence, alliance membership, major power status, development, neighbors, and time. All state-level variables are lagged to prevent simultaneity bias in predicting behavior.

Democracies have been shown to display different types of conflict behavior than other regimes, including target selection, initiation, willingness to settle peacefully, performance, and in-conflict behavior.[222] Domestic political institutions may generate their own logics of conflict initiation or avoidance independent of arming strategies. Democracy is therefore an important potential predictor of propensity for conflict initiation. I rely on the democracy variable from Polity2 (ranging from 0 to 10) for democratic institutions.[223]

Development and trade may also have an impact on conflict behavior. Liberal theories argue that the democratic peace may be driven at least in part by economic development, in addition to political institutions. Greater development leads to a reduced likelihood of conflict.[224] I therefore include a control for GDP per capita (in thousands), from Gleditsch's Expanded Trade and GDP data.[225] Economic dependence is another potential predictor of state behavior. States that are especially dependent on trade may encounter greater risks in initiating a conflict

[222] Darren Filson and Suzanne Werner, "Bargaining and Fighting: The Impact of Regime Type on War Onset, Duration, and Outcomes," *American Journal of Political Science* 48, no. 2 (2004): 296–313, https://doi.org/10.1111/j.0092-5853.2004.00071.x; Jessica L. Weeks, "Strongmen and Straw Men: Authoritarian Regimes and the Initiation of International Conflict," *American Political Science Review* 106, no. 2 (May 2012): 326–47, https://doi.org/10.1017/S0003055412000111; Daehee Bak, Michael R. Kenwick, and Glenn Palmer, "Who's Careful: Regime Type and Target Selection," *European Journal of International Relations* 22, no. 4 (December 1, 2016): 872–96, https://doi.org/10.1177/1354066115611479.

[223] Monty G. Marshall and Tedd R. Gurr, "Polity IV," Center for Systemic Peace, http://www.systemicpeace.org/polityproject.html.

[224] Havard Hegre, "Development and the Liberal Peace: What Does It Take to Be a Trading State?," *Journal of Peace Research* 37, no. 1 (January 2000): 5–30, https://doi.org/10.1177/0022343300037001001.

[225] Kristian Skrede Gleditsch, "Expanded Trade and Gdp Data," *Journal Of Conflict Resolution* 46, no. 5 (October 1, 2002): 712–24.

than states that are relatively independent—a core concern in the logic of arms diversification. Liberal theory posits that trade should foster peace between states, and that trade dependent states should prefer pacific policies. Li and Reuveny argue at a more granular level that states in effect weigh the likely outcomes for trade from a conflict and make decisions accordingly—depending on the category and flow of goods, some conflicts are likely to damage trade while others are not.[226] Either way, states more dependent on trade should demonstrate greater concern for its effects on conflict. As in Chapter 3, this variable is constructed using Correlates of War trade, import, and export data, and Gleditsch's Expanded Trade and GDP data.[227] I use these to generate an import ratio, the quotient of COW imports over Gleditsch's expanded real GDP.

Alliances are another factor that may determine conflict behavior. Offensive alliances, for example, have been shown to increase the propensity toward conflict.[228] As the number of alliances a state is party increases, the likelihood the state may enter a conflict alongside an ally, or initiate a conflict, may also increase. Alternatively, to the degree to which alliances deter threats, they may also reduce the propensity to initiate conflict, especially for defensive alliances. I again use the Alliance Treaty Obligations and Provisions dataset to count the number of alliances each state is party to, ranging from 0-52.[229]

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[226] Quan Li and Rafael Reuveny, "Does Trade Prevent or Promote Interstate Conflict Initiation?," *Journal of Peace Research* 48, no. 4 (July 1, 2011): 437–53, https://doi.org/10.1177/0022343311406306; Zeev Maoz, "The Effects of Strategic and Economic Interdependence on International Conflict Across Levels of Analysis," *American Journal of Political Science* 53, no. 1 (2009): 223–40, https://doi.org/10.1111/j.1540-5907.2008.00367.x.

[227] Katherine Barbieri, Omar M.G. Keshk, and Brian M. Pollins, "Trading Data: Evaluating Our Assumptions and Coding Rules," *Conflict Management and Peace Science* 26, no. 5 (November 2009): 471–91; Kristian Skrede Gleditsch, "Expanded Trade and Gdp Data," *Journal Of Conflict Resolution* 46, no. 5 (October 1, 2002): 712–24.

[228] Brett V. Benson, "Unpacking Alliances: Deterrent and Compellent Alliances and Their Relationship with Conflict, 1816–2000," *The Journal of Politics* 73, no. 4 (October 1, 2011): 1111–27, https://doi.org/10.1017/S0022381611000867.

[229] Brett Leeds et al., "Alliance Treaty Obligations and Provisions, 1815-1944," *International Interactions* 28, no. 3 (July 2002): 237–60.

Similarly, major powers and powerful states are more likely to have the broad interests and security postures that could lead to conflict initiation. From the Correlates of War, I include a major power status binary variable. Major powers in the data are the United States, the United Kingdom, Russia, China, France, Germany, and Japan. Together, they account for 262 MID initiations, or about 10% of the total. I also include Correlates of War Composite Capabilities Index (CINC) scores to measure the aggregate capability of each state. CINC measures a state's share of military personnel, military expenditures, energy consumption, iron and steel production, urban population and total population in the international system for each year.[230]

Following arguments from Lake as well as Bas and Schub on system characteristics as an important determinant of conflict behavior, I include a binary post-Cold War variable for all country-years after 1990. I expect that states less embedded within a particular Cold War security hierarchy are more likely to initiate conflicts.

Finally, territorial disputes are one of the most frequent bases for MIDs, and are most likely to occur among neighbors. The more neighbors a state has, the greater the potential for territorial disputes to arise. This can arise both due to domestic political logics—diversionary war, for example—and historical state development that led to contested borders.[231] To account for the increased possibility of conflict initiation, I include a measure of the number of a state's contiguous neighbors from the Correlates of War Direct Contiguity Data.[232]

4.4.4 Data analysis

[230] Meredith Reid Sarkees and Frank Whelon Wayman, *Resort to War: A Data Guide to Inter-State, Extra-State, Intra-State, and Non-State Wars, 1816-2007*, Correlates of War Series (Washington, D.C: CQ Press, 2010).

[231] Douglas M. Gibler, *The Territorial Peace: Borders, State Development, and International Conflict* (Cambridge [UK] ; New York: Cambridge University Press, 2012).

[232] Douglas M. Stinnett et al., "The Correlates of War (Cow) Project Direct Contiguity Data, Version 3.0," *Conflict Management and Peace Science* 19, no. 2 (September 2002): 59–67, https://doi.org/10.1177/073889420201900203.

My goal is to estimate the likelihood that a state will initiate a conflict in a given country-year, a binary outcome I seek to measure probabilistically. I therefore employ a logistic regression model to test my hypothesis, which ensures the outcome remains bounded within the unit interval. To address time-based changes that occurred over the period of the panel, the model is estimated with a linear time trend to control for processes that may affect the likelihood of conflict, such as system structure, changes in technology, growth in trade and production, and availability of arms. The variables are lagged, so that MID initiation at time $t+1$ is tested as the product of conditions at time t.

4.4.5 Empirical findings

The results of the model are displayed below. All the variables achieve statistical significance at the 0.01 level, and nearly all estimate an effect in the expected direction. The independent variable of interest, import diversity, shows a positive effect on the likelihood of conflict initiation, indicating that as a state pursues increasing arms diversification, the likelihood that it will also initiate a MID increases. The control variables I expect to increase the likelihood of conflict initiation include aggregate capabilities (CINC), neighbors, major power status, post-Cold War, and the number of alliances a state is party to. Of these, all variables except the control for alliances show a positive relationship with MID initiation. The control variables I expect to show a negative relationship with MID likelihood, development (GDP per capita), democracy, and trade (import dependence), are all in the expected direction. Overall, the results of the model are consistent with the expectations of my hypothesis.

	MID Initiation:	
	B	OR
Import Diversity	0.006***	1.0065
	(0.001)	
CINC	25.284***	
	(3.262)	
Major Power	0.671***	1.9560
	(0.212)	
# of Alliances	−0.030***	0.9707
	(0.008)	
Import Dependence	−0.436***	0.6467
	(0.162)	
Democracy	−0.050***	0.9511
	(0.008)	
GDP Per Capita (thousands)	−0.027***	0.9738
	(0.004)	
# of Neighbors	0.102***	1.1071
	(0.011)	
Post Cold War	0.263***	1.3013
	(0.098)	
Constant	9.058	
	(6.043)	
Observations	6,985	
Log Likelihood	−3,934.316	
Akaike Inf. Crit.	7,890.632	
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 6 Logit Model

The coefficients in a logistic regression are log odds ratios, and not directly interpretable. In addition to the betas, the table below includes the transformed odds ratios (OR) for each variable. Odds ratios can be interpreted as the change in odds given a unit change in the variable. Odds ratios greater than one indicate the odds of an event occurring are increasing as the variable increases one unit. Odds less than one indicate the odds are decreasing as the variable increases one unit. For example, if a state is a major power, the odds that it will initiate a MID in a given

year are 95.6% higher than for other states. Each additional neighbor a state has increases the odds the state will initiate a MID by 10.7%.

For the independent variable of interest, a one unit increase in import diversity increases the odds the state will initiate a MID by 0.6%. While this may not seem substantively meaningful, the range of the diversity variable is 0-400 and the standard deviation is 67. To understand the implications of the increasing odds, the predicted probability of MID initiation is plotted below for import diversity. A country with low import diversity has the baseline predicted probability of initiating a MID, while a country that has diversified to 200, equivalent to importing newest-generation jet fighters from 3-4 different supplier states, is more likely than not to initiate a MID. A country with no diversification that acquires a newest-generation jet fighter from a different supplier increases its predicted probability of conflict initiation by approximately 40%.

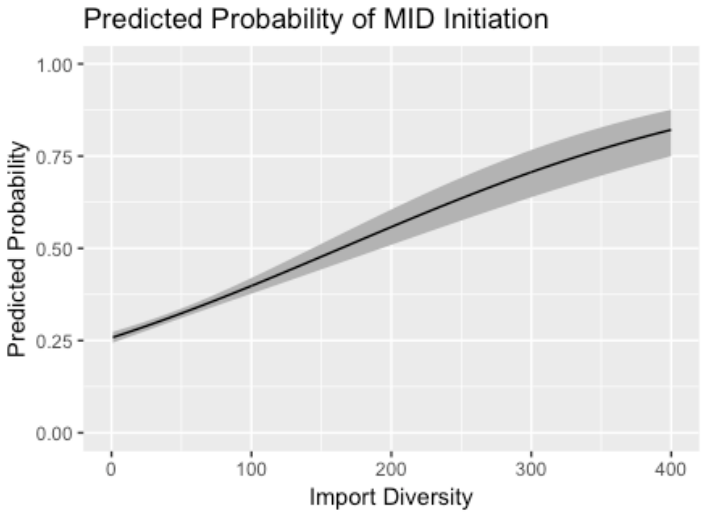

Figure 12 Predicted Probability of MID Initiation

Overall, the results of the model, in terms of coefficient direction, statistical significance, and magnitude, demonstrate the non-negligible effects of import diversity on conflict behavior. The model results support the hypothesis in a substantively meaningful way and provide

evidence consistent with the theory that certain arms import strategies enable conflictual behavior. The extreme case may be most demonstrative: For exceedingly high diversification strategies, the predicted probability that the buyer initiates a MID is greater than 75%.

To provide an additional test of the direction of influence, I include the results of two simple Granger 'causality' tests, focusing on the experience of Argentina. Granger tests are bivariate tests of the degree to which one variable *x* explains the subsequent pattern of another variable *y* better than the history of *y* explains its own future behavior. I test whether import diversification predicts dispute initiation and whether import diversification predicts the intensity of the dispute. The results are as expected. Import diversification is a better predictor of conflict initiation than the history of conflict initiation itself, with a P value of 0.04886. Though it just fails to achieve significance, import diversification is a close predictor of the intensity of those conflicts, with a P value of 0.05192.

Finally, as a robustness check, I employ a general additive model (GAM). GAMs use non-linear smoothing functions to model non-linearities in the data. GAMs estimate the functions simultaneously, allowing for possible non-linear effects in the resultant curve. This allows the GAM to better fit the data algorithmically, based on the assumption that relationships between the dependent variable and its predictors follow smooth patterns. Because of this quality, I omit the time-bound variables meant to capture variation and other unaccounted-for changes at the systemic level. The results are shown below for the significance of the smoothing terms, a measure of how well the GAM-generated curve fits each variable. The model was able to fit smoothing functions to the data quite well; all variables are highly significant other than import dependence. The resulting curves for the entropy diversity measure are included below, first in log odds, the output of the GAM, and then transformed into predicted probabilities.

A. parametric coefficients	Estimate	Std. Error	t-value	p-value
(Intercept)	-0.7915	0.0309	-25.6118	< 0.0001
B. smooth terms	edf	Ref.df	F-value	p-value
s(Entropy)	5.0539	6.1726	169.2318	< 0.0001
s(CINC)	1.0257	1.0500	101.3527	< 0.0001
s(of Alliances)	8.6947	8.9167	26.1311	0.0019
s(Import Dependence)	1.0002	1.0004	3.4766	0.0623
s(Democracy)	1.4882	1.8087	20.0872	0.0001
s(GDP Per Capita)	6.7833	7.8498	92.9737	< 0.0001
s(of Neighbors)	7.1153	7.9241	141.0613	< 0.0001

Table 7 Summary of GAM Results (Significance of Smoothing Terms)

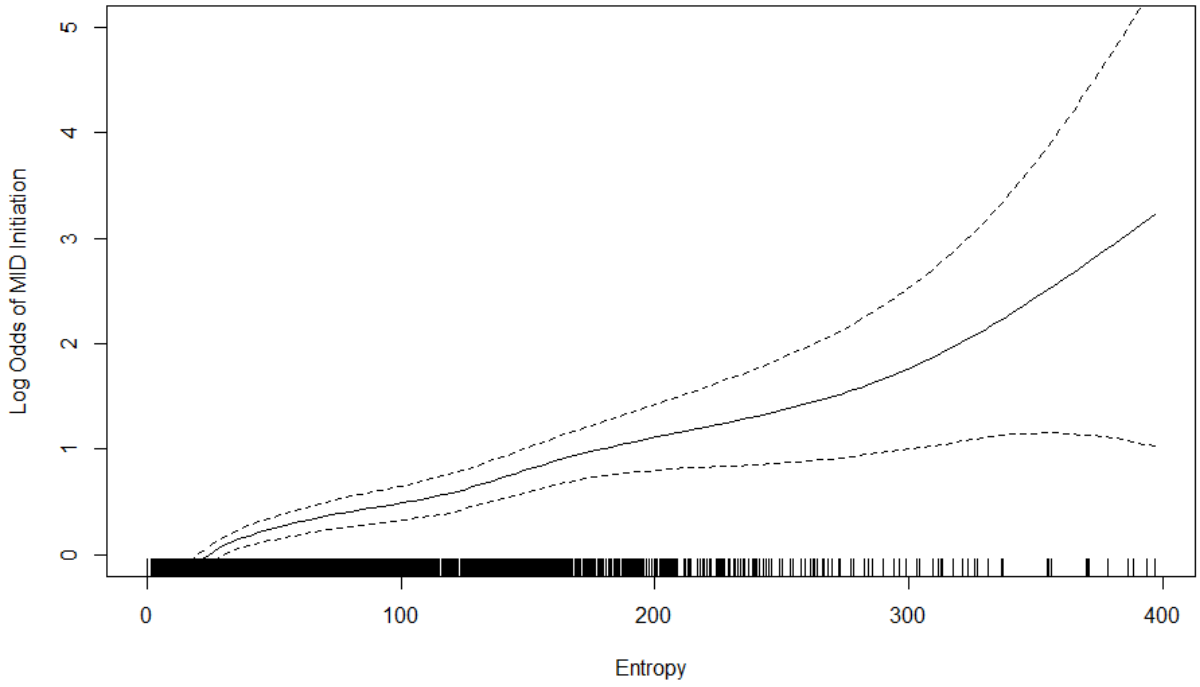

Figure 13 GAM Log Odds of MID Initiation

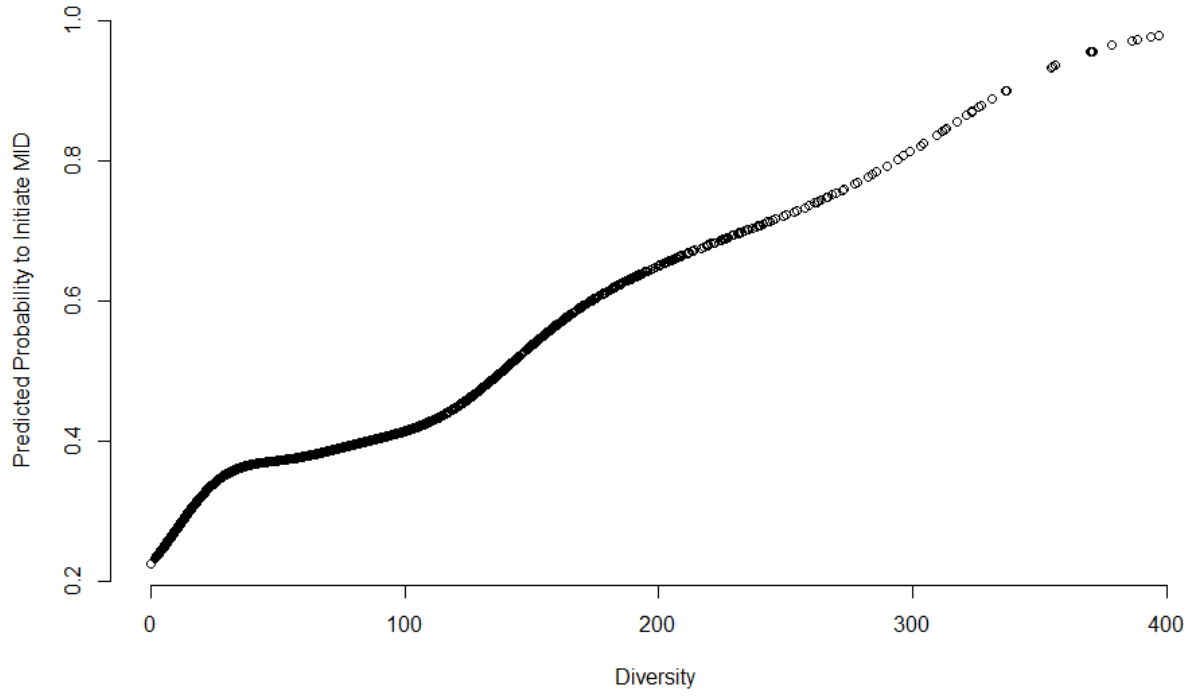

Figure 14 GAM Predicted Probability of MID Initiation

As Figure 13 illustrates, the odds of MID initiation increase as the state diversifies its imports. The odds are always positive, meaning that diversification always leads to a greater probability of conflict. Further, the odds increase monotonically. As diversification increases, the probability of conflict strictly increases. This is illustrated again in Figure 14, which shows that the probability of initiating a MID approaches 100% as import diversity increases. The predicted probabilities are included as point estimates in the graph. The areas of greatest density, below a score of 200, still lead to a significant increase in the likelihood of a MID. Even a limited increase in diversification—for example, introducing a new supplier to procure surface-to-air missiles and one more to procure tanks—can lead to a 50% increase in the probability of initiating a dispute.

4.5 Conclusion

This chapter began with the question: What happens after states diversify their arms imports? It argued that the freedom to use weapons *offensively* underpins the pursuit of arms autonomy. Rather than claiming that arming strategies *cause* particular patterns of state behavior, it argues that the state's perception of threat leads to an arming strategy, which subsequently *enables* future weapons use. The case of Argentina illustrates the complicated dynamics that can lead a state to pursue a diversified arming strategy and the multifaceted impact such a strategy can have on the state's aggregate military capabilities. The case provided a means of examining both the dynamics described in Chapter 3, and the hypothesis tested in this chapter, that import diversity is followed by MID initiation. The results of the empirical model are consistent with the proposition that the likelihood of initiation increases in diversification.

Together with Chapter 3, these findings bolster the theory of strategic arming as a reaction to threat and a precursor to conflict. This expands our understanding of state arming behavior and has important policy implications. Arms diversification, especially of militarily valuable systems, is typically an observable phenomenon for most states. Observing a change in a state's arming strategy may be a useful indicator of the state's perception of threat and a potential flag regarding future behavior. However, as in the case of Argentina, it may also signal at the maximum military weakness, due to the challenges of integration and sustainment, or at the minimum a reduction in aggregate capability relative to a more homogenous fleet.

Chapter 4 opens up important questions for future research. From the perspective of a conflict analyst, what specific patterns of weapons acquisitions are most likely to signal changes in behavior? And what are their respective effects on military performance? From the perspective of a supplier state, what combination of arming decisions lead to genuine autonomy for a buyer? And from the perspective of a buyer state, which diversification strategies produce

the most autonomous yet sustainable fleet? Are there other strategies that may reduce the risk involved in strategic arming? It is this last question that will be addressed in Chapter 5—how and why states develop arming strategies that genuinely increase their autonomy.

Chapter 5 Who builds? security guarantees and the shades of domestic industry

Chapter 4 argued that diversification of arms imports enables greater autonomy, specifically allowing states to behave more aggressively. The case of Argentina shows that a state can achieve a greater degree of autonomy after diversifying its imports and subsequently decide to initiate conflicts. However, Argentina's experience also showed that true autonomy can remain elusive: Despite its arming strategy, many of the challenges of maintenance, operations, and sustainment remained for Argentina. Those challenges hobbled the country's execution of military operations. Though it possessed a capable cadre of pilots that inflicted significant damage on the Royal Navy, Argentina's air force simply could not arm and sustain itself for multiple months of warfare. In the end, Argentina had neither the security of supply it needed nor the ability to upgrade or modify its imported arms.

Chapter 4 raised two questions. Why do some states choose autonomy over protection, and when they do, how do states overcome the challenge of decreased military capability? One important strategy is to develop an indigenous arms production capability or defense industrial base. Unlike many other industries, most indigenous arms producers are founded in service to the state, making government strategy a uniquely important driver in how and the degree to which an industrial base arises. This chapter focuses on when questions of security, threat, and autonomy—the same questions that determine state import behavior—also drive states to invest in domestic arms industries. When do states choose to develop their own capabilities? What do they choose to build? What determines their success?

Consistent with the theory from Chapter 2, and findings from Chapters 3 and 4, I argue that the degree to which states pursue autonomy through indigenous production is a function of their security environment. Most states in the previous chapters' period of study (1950-2008) did not possess advanced arms industries, and of those that did, most states could not have produced advanced arms in 1950. For most states, the choice to develop an arms industry was made in the context of also having advanced weaponry available for import from at least one potential source. However, as the experience of Argentina demonstrates—a state armed and diversified, but still constrained in its exercise of military power—the existence of weapons does not guarantee their usability to achieve policy ends.

In this chapter, I argue that the critical variable determining how states develop their indigenous capabilities is in how they relate to their arms suppliers. The strength and consistency of those relationships condition the state's response to the perception of threat. Specifically, the degree to which both states accept a security-autonomy tradeoff underpins the degree to which buyers will also try to become producers. In a security-autonomy tradeoff, the patron state, which can be the arms supplier or stronger partner in an alliance, guarantees the security of the client state. In exchange, the client accepts a reduction in policy autonomy.[233] The patron-client relationship is a matter of degree and credibility, and states make arming choices accordingly.

The two key determinants of a relationship are its strength and its consistency. Strength is defined relative to the terms of a relationship: Formalized treaties with mutual defense pacts are stronger than informal partnerships. Consistency is defined as the non-interruption of the terms of the relationship over time. States with relatively stronger security guarantees from partners have a weaker incentive to build their own weapons. States concerned that their suppliers will

[233] Lake, *Hierarchy in International Relations*.

overly restrict their policy autonomy without guaranteeing their security have a stronger incentive to build weapons. Further, the relationship is dynamic. The degree to which it fluctuates over time provides information to the client on the reliability of the guarantee. The strength and consistency of the state's security partnerships, moderated by its conflict experience and its domestic industrial resources, condition how it pursues indigenous weapons development.

To test this argument, I compare the development of indigenous arms capabilities in two states, Israel and South Korea. Israel and South Korea are remarkably similar in a number of ways. Today the two states have similar levels of development, similar experiences of existential conflict, and similarly robust democratic institutions. However, South Korea is substantially larger in size, population, military personnel, natural resources, and GDP, and it faces a rival that is confirmed to have nuclear weapons. According to existing theories, South Korea has more resources than Israel in most factors relevant to defense production, and therefore should have a much more significant indigenous weapons capability. Yet Israel's defense production, exports, and technology far exceed South Korea's. What explains the discrepancy?

Each has a security-autonomy relationship with the United States. Yet the strength of that relationship has varied substantially: The United States has sold weapons to Israel, and has in the past restricted those sales, whereas U.S. troops have been continually stationed in South Korea along its hostile border for over 60 years. Israeli leaders have no guarantees that the United States will involve itself in Israel's conflicts, whereas South Koreans are guaranteed to have, both practically and by treaty, direct U.S. involvement in their conflicts.[234] In this chapter, I

[234] See, for example, on U.S. influence attempts toward Israel: David Rodman, "Arms and Influence: The American–Israeli Relationship and the 1969-1970 War of Attrition," *Israel Affairs* 25, no. 1 (January 2, 2019): 26–41, https://doi.org/10.1080/13537121.2019.1554350. In contrast to the informal U.S.-Israel "special relationship," the Korean relationship is codified formally by the Mutual Defense Treaty Between the United States and the Republic of Korea.

explore the degree to which the difference in security guarantees accounts for the variation in each state's arms development. I find that confidence in the ability to rely on external security guarantees is an important determinant of the path each state took in domestic arms production.

5.1 Domestic Arms in Context

The literature on building indigenous arms industries is nested within a literature on the dynamic security relationship between allied or partnered states. Most states considering investing in domestic industry are also considering alliances and arms imports as well, in what Buzan and Herring call the arms dynamic of world politics, where arms shape the context and possibilities of international relations.[235] Most of these states also exist in what Lake terms a security hierarchy—a relationship in which one state dominates a subordinate.[236] In a typical relationship, a stronger ally, patron, or supplier state, seeks to extend its power while shaping the foreign policy of a weaker, client, or buyer state. The stronger state can choose the degree to which it will incorporate the weaker into its security posture, either by committing to an alliance or by selling arms. An alliance can extend the state's power significantly but can lead to entrapment, whereas failure to uphold the alliance can generate reputational costs.[237] Arms sales exert less influence, as the client increases its own military power, but consequently afford the patron with fewer benefits.

Yarhi-Milo et al. call this the "patron's dilemma," the challenge of providing security while avoiding entrapment.[238] The stronger the commitment, the greater possibility of entrapment, which patrons can lessen by providing arms instead of a formal alliance. Yarhi-Milo

[235] Barry Buzan and Eric Herring, *The Arms Dynamic in World Politics* (Boulder: Lynne Rienner, 1998).

[236] Lake, *Hierarchy in International Relations*.

[237] Morrow, "Arms Versus Allies"; Leeds et al., "Alliance Treaty Obligations and Provisions, 1815-1944."

[238] Yarhi-Milo, Lanoszka, and Cooper, "To Arm or to Ally?"

et al. argue that two principal factors determine whether a patron arms or allies: the alignment of security interests and the client's self-defense capabilities. Closer alignment and greater concern for the client's survival drive alliances, whereas limited shared interests and greater faith in the client's defensive capabilities suggest arms provision.

The client state also has a choice to arm or to ally. As Morrow argues, security alignment and cost are the critical factors influencing whether a state seeks an alliance or arms itself. Arms are more reliable but are costly and take longer to accumulate; alliances are an immediate augmentation of capability, but remain risky.[239] Sorokin sees both paths as viable, depending on relative costs and relative interest in alliance tightness. The weaker partner may prefer arms to preserve its autonomy or an alliance to obtain a degree of military power it could never achieve on its own. However, as in many studies, Sorokin's model presumes that the purchase of arms grants the client policy autonomy—an assertion that ignores the ongoing influence a supplier can maintain over its buyers.[240]

It is precisely the uncertainty over the degree of influence a patron will have that drives the dynamic nature of arms sales. Most of the literature on such dynamics focuses on arms as influence. Some see arms sales as an inducement. Sislin argues that American attempts to influence client states are more successful when they draw on a relatively stronger power imbalance between the United States and the client, reward good behavior, and focus on altering foreign, not domestic, policy.[241] Similarly, Derouen and Heo argue that military aid is primarily a

[239] Morrow, "Arms Versus Allies."

[240] Gerald L. Sorokin, "Arms, Alliances, and Security Tradeoffs in Enduring Rivalries," *International Studies Quarterly* 38, no. 3 (1994): 421–46, https://doi.org/10.2307/2600740.

[241] Sislin, "Arms as Influence."

function of foreign policy similarity.[242] Underlying the argument that arms transfers are a reward is their purportedly limited ability to induce changes in conflictual foreign policy behavior. Drezner argues that generally, carrots are underused in the anarchic system of world politics because they reduce future bargaining positions without guaranteeing results.[243] To wit, Sullivan et al. find that U.S. military aid engenders *less* subsequent cooperation from recipients.[244]

However, this literature largely fails to account for the role of continued access to weapons—a long-term concern deriving from the consistency of the relationship—and maintenance and operations support—an immediate combat concern related to the strength of the relationship. Limiting either form of support can restrict a client's options. In the case of Argentina, though its suppliers were unable to prevent military action, they did shape its outcome. Likewise, to preserve their supplier relationships, buyers genuinely concerned about the ability to sustain combat operations have an incentive to self-regulate, whereas determined conflict initiators may only respond to influence once their supply runs dry.

In either case, buyers can also produce their own military power. This is especially true precisely when suppliers seek to prevent it. As Levine and Smith show, suppliers walk a fine line between preventing proliferation of conventional arms and incentivizing it.[245] As suppliers reduce access to large conventional arms, their effective price increases, which can create

[242] Karl Derouen, Jr. and Uk Heo, "Reward, Punishment or Inducement? US Economic and Military Aid, 1946–1996," *Defence and Peace Economics* 15, no. 5 (October 2004): 453–70, https://doi.org/10.1080/1024269042000222392.

[243] Daniel W. Drezner, "The Trouble with Carrots: Transaction Costs, Conflict Expectations, and Economic Inducements," *Security Studies* 9, no. 1–2 (September 1999): 188–218, https://doi.org/10.1080/09636419908429399.

[244] Patricia L. Sullivan, Brock F. Tessman, and Xiaojun Li, "US Military Aid and Recipient State Cooperation: US Military Aid and Recipient State Cooperation," *Foreign Policy Analysis* 7, no. 3 (July 2011): 275–94, https://doi.org/10.1111/j.1743-8594.2011.00138.x.

[245] Paul Levine and Ron Smith, "Arms Export Controls and Proliferation," *Journal of Conflict Resolution* 44, no. 6 (December 2000): 885–95, https://doi.org/10.1177/0022002700044006011.

sufficient incentive to produce domestically. This is despite what Brzoska recognizes as the limited economic viability of platform production in low production run countries,[246] and what Bitzinger considers the fundamental inefficiency of attempts at self-sufficiency.[247]

What, then, are the drivers of domestic production for these states? Devore identifies two primary factors.[248] First is security of supply. States fear their ability to sustain military operations will be cut off during a conflict, as in Argentina. However, true security of supply is unobtainable for most states. Even the United States procures significant inputs for its military platforms from abroad, and in some cases, from its adversaries.[249] Smaller and weaker powers are effectively incapable of extricating their defense hardware from global supply chains, not to mention their defense software.[250]

The second factor is military adaptability. Devore argues that the impetus for the defense industrial investments of middle-tier countries, despite their relative inefficiency, is in the adaptability that such investments allow.[251] In preparation, during, and in the aftermath of conflict, domestic defense industries are uniquely capable of adapting, customizing, and improving a country's arsenal for its particular circumstances. Few foreign producers would be willing to develop custom products for a middle-tier buyer, while civilian industries at home and abroad are poorly equipped to meet the need. Domestic defense industries, however, are perfectly positioned to customize both domestic and foreign equipment for the state. In an

[246] Brzoska, "Economic Factors Shaping Arms Production in Less Industrialized Countries."
[247] Bitzinger, "Defense Industries in Asia and the Technonationalist Impulse."
[248] DeVore, "Commentary on The Value of Domestic Arms Industries."
[249] "Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States."
[250] Paul Dowdall and Derek Braddon, "Puppets or Partners: The Defence Industry Supply Chain in Perspective," in *The Future of the Defence Firm: New Challenges, New Directions*, ed. Andrew Latham and Nicholas Hooper, NATO ASI Series (Dordrecht: Springer Netherlands, 1995), 103–19, https://doi.org/10.1007/978-94-015-8512-5_9.
[251] DeVore, "Commentary on The Value of Domestic Arms Industries."

extreme example, during Israel's 2014 war in Gaza, some defense equipment providers were able to provide custom tweaks to military robotics on an almost daily basis.[252]

The benefit of such customization is both the ability to gain military advantage, *ceteris paribus*, and the ability to overcome arms restrictions by suppliers. In Devore's words, "Since war is unpredictable, it is often the side that adapts most rapidly to unexpected circumstances that prevails. Domestic defense industries contribute significantly to [the ability to] adapt both because of their technical capabilities and their patterns of routinized cooperation with a state's armed force."[253] The more the state engages in conflict, presumably, the more opportunities it has to develop its adaptive industries, test materiel, and iterate.

The existing literature examines how security alignment and cost determine both whether a (client) state should arm or form alliances, and how a patron should determine whether to guarantee a client's security through a formal alliance or enable it through arms sales. In the struggle to balance autonomy, policy preferences, and capability, both states face risks, and are forced to make inefficient investments in the pursuit of security. Yet these strategies are not mutually exclusive. States may build arms, buy them, and form alliances, and may shift their tactics in the pursuit of security under different circumstances. Exactly how these shifts occur and why remains unclear. Finally, the link between patron behavior and the shape of the client's domestic industry—for example, lack of an alliance commitment and the subsequent adaptability of the arms industry—is poorly understood.

5.2 Theory

To explore these questions, I propose a theory that builds on the findings of previous chapters by incorporating the behavior of supplier states (and potential patrons) more explicitly.

[252] Interview with Roboteam VP of Ground Systems, June 15, 2017.
[253] DeVore, "Commentary on The Value of Domestic Arms Industries."

In any arms deal or alliance, each party must assess the degree to which it will accept a tradeoff between security and autonomy. For the dominant party, the extension of power increases its autonomy, while the risk of entrapment reduces its security. For the subordinate party, the increase in defense capability increases its security, while the narrowing of policy options reduces its autonomy.[254] These relationships, however, are also on a spectrum—states can embrace them strongly or weakly. The degree of that embrace subsequently determines how the client state will pursue its domestic arms industry.

A stronger relationship can be codified in multiple ways. First, a formal alliance can signal intent to other countries. Formal alliances are often accompanied by arms sales, and sometimes by military exercises; shared military education, tactics, and standard operating procedures; and even troops stationed on the client's territory. Each element increases confidence in the relationship and improves interoperability, making joint action both more likely and more militarily capable. In contrast, a weaker relationship might have some of the same elements, but the client may lack confidence that its patron will protect it. For example, the United States has sold arms to states, and included them in joint training, without formally committing to their security.[255] These different approaches are compatible—not mutually exclusive—tools in a spectrum of security partnership.

However, the weaker relationship is not just about mutual defense and attack—it is also about confidence in continued arms support during conflict. A weaker commitment by a patron leads to a particular type of abandonment fear—a supply of foreign arms that enables security alongside a dependence on foreign arms that can neuter the state's capabilities mid-conflict. In

[254] Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict."

[255] Israel is perhaps the most prominent example, though U.S. training of Latin American military units, such as Guatemala's, constitutes another set of cases.

short, states fear being in Argentina's position during the Falklands War. Weaker commitments can be expressed both by the lack of an alliance and by attempts to use supply to influence client behavior. The greater the state views this as a possibility, the more incentive it has to overcome its dependence. This precipitates the hypothesis:

Hypothesis 1: Client states with relatively stronger security guarantees have a weaker incentive to build their own weapons.

But the existence of a domestic industry is not a guarantee of security. By the Falklands War, Argentina had produced its own domestic small arms, artillery, aircraft, and tanks, yet none of these guaranteed it could fix bugs linking its high-end fighter jets' computer systems to its most capable missiles.[256] The form of its defense industry was not suited for the task: Argentina's military industry was shaped for a low-end domestic and foreign threat on the one hand, and by a particular domestic industrial structure on the other. Though Argentina had experienced numerous MIDs and had reason to fear its neighbors, it had not experienced the frequent, high-intensity, or sustained conflicts that would prompt it to develop maintenance infrastructure or begin manufacturing spare parts. In short, its industry was not suited to provide for Argentina's security in an intense conflict. I argue that the particular form a defense industrial capability takes is also a product of the state's relationships with its security partners, specifically with regard to the consistency of those partnerships. States with inconsistent security support from one or more suppliers are more likely to focus on military adaptation, driven by the availability of platforms but uncertainty of supply. Inconsistency or restrictions on policy can turn the substitutes of patronage versus arming into complements.

[256] Mike Thomson, "How France Helped Argentina in the Falklands," *BBC*, March 6, 2012, sec. Magazine, https://www.bbc.com/news/magazine-17256975.

Hypothesis 2: Client states with relatively more consistent security partnerships have a weaker incentive to focus their domestic arms industry on adaptation.

Together, these hypotheses advance a particular aspect of the arms-buying relationship as critical to understanding the impetus for security of supply. While many have written that security of supply is a goal for the state, the reason *why* it is a goal for some states more than others is poorly understood. The novel argument I forward here is that it is the relationship between buyer and seller, in particular driven by the policy preferences of the seller—who chooses whether to continue sales—that matters, rather than, for example, the techno-nationalist impulses of some leaders over others.

The shape of a domestic industry is also conditioned by the state's experience of conflict. A state with more experience of conflict has the opportunity to test the value of its partnerships, its domestic industry, and its military. It can understand its weaknesses and reshape its defense industrial capability as it evolves. Conflict serves as a means to analyze capabilities that are otherwise only understood through training and estimation. Therefore, states with more experience of conflict are more likely to have adaptation-driven industrial capabilities. One way to measure this tendency is to assess the relationship between domestic arms production and domestic military procurement. Does the military buy what the arms industry makes? The preferences of the military diverging significantly from the products manufactured domestically is a strong signal of a mismatch. This leads to the following hypothesis:

Hypothesis 3: Client states with relatively more conflict experience develop more adaptive arms industries.

This set of hypotheses connects international security relationships—the choice to arm or to ally, and the strength of those relationships—to domestic arms production, to the particular trajectories of arms production.

5.3 Research Design

Because the theory presented is multifaceted and requires tracing the specific causes of decision making in states over time, I employ a comparative case methodology. Small *N* analysis, such as the comparison of two states during a period, is a contested form of empirical evaluation of theory.[257] Lijphart sees case studies as a precursor to large *N* analysis, the result of resource constraints.[258] Yet Verba argues the small *N* approach is valuable for addressing subtlety and nuance in hypotheses.[259] And Skocpol and Somers argue that cases can, in fact, be used to test or validate theories, first via the systematic analysis of covariation for causal analysis, and second via the illumination of causal dynamics within cases through the use of a model.[260]

Because a comparison of states over multiple decades is subject to many variables, a test can focus on many states, possibly to the detriment of nuance in the causal analysis, or can focus on comparable cases. I choose the latter, what Lijphart calls the 'comparative method,' the analysis of cases that are closely matched on critical independent variables. To test these

[257] Theodore W. Meckstroth, "'Most Different Systems' and 'Most Similar Systems': A Study in the Logic of Comparative Inquiry," *Comparative Political Studies* 8, no. 2 (July 1975): 132–57, https://doi.org/10.1177/001041407500800202; Carsten Anckar, "On the Applicability of the Most Similar Systems Design and the Most Different Systems Design in Comparative Research," *International Journal of Social Research Methodology* 11, no. 5 (December 2008): 389–401, https://doi.org/10.1080/13645570701401552.

[258] Arend Lijphart, "Comparative Politics and the Comparative Method," *The American Political Science Review* 65, no. 3 (1971): 682–93, https://doi.org/10.2307/1955513.

[259] Sidney Verba, "Some Dilemmas in Comparative Research," *World Politics* 20, no. 1 (October 1967): 111–27, https://doi.org/10.2307/2009730.

[260] Theda Skocpol and Margaret Somers, "The Uses of Comparative History in Macrosocial Inquiry," *Comparative Studies in Society and History* 22, no. 2 (1980): 174–97.

hypotheses, the states must be similar in key respects, but must differ in the particular independent variable of interest, here the degree of their security guarantees from partner states. I therefore choose a most similar case method, leveraging what Mill calls the method of difference, in which two cases are compared that differ in one respect and lead to outcomes that differ in one respect.[261] While Mill's ideal level of isolation of variables is not possible to achieve in an historical case study, the method is nonetheless the closest approximation of a qualitative test of the theory.

I compare two states with surprisingly similar characteristics: Israel and South Korea. Democracies with nearly identical GDP per capita (PPP),[262] both are advanced industrial and high technology economies with relatively large military forces. Both states were founded in 1948 as relatively poor countries, and quickly fell into large-scale conflicts that continue, in formal and informal ways, to the present. Both face existential threats: Israel has historically faced threats from nearly all of its neighbors, and today fears the possibility of Iranian nuclear arms most; South Korea faces an already nuclear-capable North Korea just miles from its capital. Neither state benefits from strategic depth. Both have strategically-aligned neighbors with historically fraught relations: for example, Egypt and Saudi Arabia for Israel and Japan for Korea.

In many key respects, the two states are very similar. But South Korea is much larger than Israel: its GDP is nearly five times larger, its population about six times larger, its active duty military four times larger, and its military reserve 12 times larger. Further, South Korea faces a far more certain threat: the DPRK is known to possess nuclear weapons, and even with its

[261] John Stuart Mill, *A System of Logic: Ratiocinative and Inductive ; Being a Connected View of the Principles of Evidence and the Methods of Scientific Investigation* (Hawaii: University of the Pacific, 2002).

[262] World Bank.

conventional arsenal could kill millions in Seoul. Iran, on the other hand, has not successfully obtained a nuclear weapon. Israel is also militarily dominant at borders where it faces a hostile neighbor. Though these differences are important, for the purposes of the research design presented here, they should indicate that South Korea—larger, richer, and facing a greater threat—is more likely to have a well-developed arms industry than Israel. Yet despite these differences, Israel has a far more developed arms industry—in 2017, for example, it exported three times as many arms as South Korea. Thus, while there are important differences between the states that reduce their comparability, the differences should lead to the opposite outcome than is seen.

There are many possible explanations for Israel's relatively stronger arms industry. Israel has been a democracy longer than South Korea and may have developed its arms industry as a public good, increasing its domestic security.[263] The Israeli arms industry may also have developed as a distribution method to key constituencies. In contrast, the South Korean method of redistribution may have been conditioned by pre-existing non-military industries there.[264]

While these are possible explanations, the critical difference that I seek to test is the nature of the security partnerships of each state. To tease out the most valid explanation, I focus my case studies on critical junctures involving patron state behavior and subsequent arming decisions. Though both states are major recipients of U.S. military aid, Israel receives monetary aid, offsets, and access to weapons, while South Korea also hosts U.S. troops. That critical difference means that in any attack on South Korea, U.S. forces in Korea are almost guaranteed

[263] Alex Mintz and Michael D. Ward, "The Political Economy of Military Spending in Israel," *The American Political Science Review* 83, no. 2 (1989): 521–33, https://doi.org/10.2307/1962403.

[264] Jong-Chan Rhee, *The State and Industry in South Korea : The Limits of the Authoritarian State* (Routledge, 2002), https://doi.org/10.4324/9780203072677.

to be involved, and therefore spark greater involvement—and preemptively, greater preparation—while there is no comparable guarantee for Israel. Further, South Korea's only direct war experience was fought with extensive U.S. operational support, whereas Israel has experienced a lack of U.S. operational support many times. Through case studies on the development of the arms industry in each state, I explore how the difference in the degree of security partnership drives different levels of emphasis on the development of indigenous arms industries.

Specifically, I expect that when a state experiences the limits of its security partnership, through foreign controls on its arms acquisitions or use, or the refusal to guarantee its security, that state will turn in part to domestic production. As the state accumulates more experience with patron restrictions on its autonomy, it should develop an arms industry shaped to make up for the deficiency, i.e., adaptable to its military's particular needs. If, as I have argued in previous chapters, perceived threat drives a domestic defense industry, then states with stronger security guarantees have a lower imperative to develop their domestic industries, while states that lack them are strongly incentivized to pursue their own development. And while the degree of threat a state perceives leads it to pursue autonomy through its arming strategy, the degree of patronage it receives shapes its domestic production behaviors. In short, a patron's strong and consistent security guarantee should reduce the grounds for developing indigenous capabilities, while inconstancy should spur them. Next, I turn to the cases of Israel and South Korea to test this argument.

5.4 Israel: the struggle for supply

In the first phase of Israel's arms strategy, Israeli leaders struggled to procure advanced weaponry from the great powers and began to build a domestic arms industry that could provide for the country's defense. Israel's arms industry began covertly. During the Jewish insurgency in

Mandatory Palestine, prior to independence in 1948, the British government prohibited Zionist paramilitaries from obtaining arms and ammunition. The largest paramilitary, the Haganah, and the more extremist Irgun, were able to obtain rifles of various vintages, but ammunition became an acute concern during the most violent years of the insurgency, from 1944-1947. In response, the Haganah built an underground ammunition factory, hidden under a bakery and a laundry in a kibbutz. The small factory produced more than two million bullets during its few years of production.[265] More importantly, however, the experience conditioned Israel's founders to expect supply disruptions, to seek security of supply, and to explore domestic production preemptively.[266]

This disposition had immediate relevance: During Israel's War of Independence, in 1948, the country faced serious supply challenges. In 1947, when the civil war between Jews and Palestinians erupted, the Jewish forces had limited arms caches. The British mandate government aggressively sought to suppress the Jewish militias, and what weapons they could acquire were light, portable, and vintage.[267] Though President Truman had emerged as a political backer of the state in the United Nations, advocating for and ultimately securing passage of the United Nations Partition Plan for Palestine in 1947, the United States was not prepared to provide arms to the Haganah in 1947, nor to the state of Israel upon its founding in May 1948.

However, after independence, when the civil war became an international conflict with multiple Arab armies advancing on the new state, the military imbalance became increasingly

[265] Yaakov Katz and Amir Bohbot, *The Weapon Wizards: How Israel Became a High-Tech Military Superpower*, First U.S. edition (New York: St. Martin's Press, 2017).

[266] Uzi Rubin, "Israel's Defence Industries – an Overview," *Defence Studies* 17, no. 3 (July 3, 2017): 228–41, https://doi.org/10.1080/14702436.2017.1350823.

[267] Haggai Frank, Zdeněk Klíma, and Yossi Goldstein, "The First Israeli Weapons Procurement Behind the Iron Curtain: The Decisive Impact on the War of Independence," *Israel Studies* 22, no. 3 (July 14, 2017): 125–52.

severe. For example, at the outset of conflict the Arab armies possessed 40 tanks to Israel's 1, 200 armored cars to Israel's 2, 140 field cannons to Israel's 5, and 220 anti-tank and anti-aircraft guns to Israel's 24.[268] Even after Israel obtained about 50 aircraft, a CIA analysis estimated the Arab armies possessed about 250.[269] Still, the United States prohibited arms sales to Israel.[270] The United Kingdom, though lobbying against all arms sales to the region, continued to supply the Arab states, on the premise that they could be considered to be using the weapons for internal purposes.[271]

The young Israeli state turned to Czechoslovakia, increasingly a Soviet satellite, but still in flux; smuggling from other parts of Europe; and indigenous production, largely improvised.[272] Though the initial balance was firmly in favor of the Arab states, the difficulty of importing high quality arms to the region favored the Israelis, who had decades of experience smuggling people and goods from European ports. Again Israeli leaders faced a security of supply problem, and they responded by diversifying supply and improvising with domestic production.[273] This was both a lesson gained from experience and a deeply-ingrained aspect of the militant Zionist ideology espoused by the founders of Israel's early paramilitaries. However, in the pursuit of advanced weapons to ameliorate a vulnerable strategic position, Israel's leaders recognized the

[268] Frank, Klíma, and Goldstein.

[269] "Probable Effects on Israel and the Arab States of a UN Arms Embargo," Foreign Relations Of The United States, 1948, The Near East, South Asia, And Africa, Volume V, Part 2 (Department of State, August 5, 1948), https://history.state.gov/historicaldocuments/frus1948v05p2/d512.

[270] Shlomo Slonim, "The 1948 American Embargo on Arms to Palestine," *Political Science Quarterly* 94, no. 3 (1979): 495–514, https://doi.org/10.2307/2150455.

[271] Amitzur Ilan, "Other Arms Sources to Palestine in the 1948 War," in *The Origin of the Arab-Israeli Arms Race: Arms, Embargo, Military Power and Decision in the 1948 Palestine War*, ed. Amitzur Ilan, St Antony's Series (London: Palgrave Macmillan UK, 1996), 181–200, https://doi.org/10.1007/978-1-349-13696-4_6.

[272] Ilan.

[273] Frank, Klíma, and Goldstein, "The First Israeli Weapons Procurement Behind the Iron Curtain."

importance of finding a patron state. A few years later, when David Ben Gurion summarized his thoughts on Israel's defense in what became the country's national security strategy, he explicitly stressed the importance of obtaining great power allies while maintaining Israel's strategic autonomy.[274]

Shortly after, Israel gained its first great power patron. David Ben Gurion and Chaim Weizmann tried for years to forge a relationship with the United States, lobbying themselves and sending diplomats with deep American connections, such as Golda Meir.[275] Yet America remained hesitant. France, however, started warming to the idea of a partnership with Israel. In May of 1954, France decisively lost the Battle of Dien Bien Phu to the Viet Minh and was forced to abandon its colonies in French Indochina. Six months later, Algerian nationalists executed Toussaint Rouge, a series of coordinated attacks across Algeria on All Saints Day. Facing humiliating losses around the world, an insurgency in its Muslim-dominated colony, and foreseeing risks in the emerging nationalist leaders of Egypt, France shared common challenges with the young Israeli state.[276]

France began selling Israel weapons, eventually including its most advanced aircraft, such as Mirage and Mystère fighter jets, and a nuclear reactor, a critical step for Israel's broader nuclear program.[277] France sold, and in some cases gave, weapons to Israel, and notably France

[274] Charles D. Freilich, *Israeli National Security: A New Strategy for an Era of Change* (Oxford: Oxford University Press, 2018), https://www.oxfordscholarship.com/view/10.1093/oso/9780190602932.001.0001/oso-9780190602932.

[275] Abraham Ben-Zvi, *Decade of Transition: Eisenhower, Kennedy, and the Origins of the American-Israeli Alliance* (New York: Columbia University Press, 1998); Slonim, "The 1948 American Embargo on Arms to Palestine."

[276] Gadi Heimann, "From Friendship to Patronage: France–Israel Relations, 1958–1967," *Diplomacy & Statecraft* 21, no. 2 (June 22, 2010): 240–58, https://doi.org/10.1080/09592296.2010.482472.

[277] Heimann; SIPRI, "SIPRI Arms Transfers Database."

allowed its state-backed producers to foster the production capabilities of Israel's emerging aircraft producer, Israel Aircraft Industries (IAI, now Israel Aerospace Industries).[278] The 1956 Suez Crisis, in which France recruited Israel to join it alongside the UK in an operation to seize the Suez Canal from Egypt, cemented the relationship, leading to two golden years of arms transfers until the fall of the Fourth Republic in 1958.[279]

But the Franco-Israeli relationship had its limits. Under President de Gaulle, elected in 1958, France increasingly expected to gain direct political and economic benefits from Israel in exchange for its arms. This included Israel's prioritizing French firms in the building of its mercantile fleet and oil tankers, which France made a pseudo-requirement for future loans to Israel. In the political sphere, France expected Israel to vote for French interests at the UN, while in key votes for Israel, France refused to be seen prioritizing Israel over Arab states. Further, de Gaulle expected Israel to use its weapons to pursue French ends, but he could not restrain it from the offensive operations that endangered France's relations with Arab states.[280] This was a challenge for France, in that much of the coin it brought to relations with Arab states was its leverage over Israel, especially once de Gaulle began to mend relations with the Arab world after Algerian independence in 1962.[281] Meanwhile, France stubbornly refused to placate Israel's leaders by promising to guarantee the state's security. Israeli leaders thus felt persistent insecurity in the relationship with their primary supplier—a patronage characterized by inconsistency and impositions on Israel's autonomy.

[278] Heimann, "From Friendship to Patronage."

[279] Gadi Heimann, "A Case of Diplomatic Symbiosis: France, Israel and the Former French Colonies in Africa, 1958–62," *Journal of Contemporary History* 51, no. 1 (January 1, 2016): 145–64, https://doi.org/10.1177/0022009415596059.

[280] Heimann, "From Friendship to Patronage."

[281] Heimann.

However, Israel faced greater challenges with its other potential suppliers, the United Kingdom and the United States. Despite its lingering resentment over the Zionist insurgency and Israel's declaration of independence, Britain recognized Israel in 1950 and opened diplomatic relations. Still, the British Foreign Office, which largely determined Middle East policy, preferred strong relations with Arab states over Israel. Though it had proposed an embargo to the region to the United States, Britain continued to arm Arab states, principally to maintain access to oil. The British tried to use these arms flows to maintain its influence, providing Egypt alone in 1955 with more weapons than it sold Israel in the previous seven years. The Foreign Office believed that as the principal arms supplier, it could continue to influence the direction of Middle East powers.[282]

However, Britain was rapidly losing control throughout the region. In Iran, Prime Minister Mossadegh nationalized the Anglo-Iranian Oil Company in 1951, cutting Britain off from its most lucrative source of foreign revenue.[283] In 1952, nationalist Egyptian officers led by future president Gamal Abdel Nasser overthrew the moderately British-friendly King Farouk, and in 1954 pressured Britain into promising a withdrawal of its forces from the Suez by 1956.[284] In 1955, the Soviet Union funneled massive arms sales to Egypt through Czechoslovakia, effectively ending Britain's era as principal arms supplier.[285] Shortly after the last British troops withdrew from Suez to their new forward base in Cyprus, Nasser nationalized the canal, sparking the 1956 Suez Crisis (throughout which Britain refused to coordinate with Israel or acknowledge

[282] Neill Lochery, "British Arms Sales to Israel: Exercising the Foreign Office Veto, 1950–56," *Israel Affairs* 17, no. 4 (October 2011): 487–503, https://doi.org/10.1080/13537121.2011.603517.

[283] Stephen Kinzer, *All the Shah's Men: An American Coup and the Roots of Middle East Terror*, 2008 ed. (Hoboken, N.J: John Wiley & Sons, 2008).

[284] Keith Kyle, *Suez: Britain's End of Empire in the Middle East*, New ed (London: Tauris, 2011).

[285] Lochery, "British Arms Sales to Israel."

its participation).[286] Subsequent crises led to further deterioration of the British position: the Buraymi Oasis Dispute led to a breach in UK-Saudi relations from 1956-63 and the 1958 Iraqi coup d'état overthrew the British-installed Hashemite monarchy.

The United States similarly faced a dilemma. It supported the existence of Israel, but it did not want to be overly associated with it, nor promote its military capabilities. It lacked Britain's colonial pretensions, but the Eisenhower Administration, viewing the region through an anti-communist lens, wanted to avoid any actions that would push the Arab states toward the Soviet Union.[287] Similarly, it was concerned about access to oil. In his first term, Eisenhower refused to provide security guarantees to Israel, despite Ben Gurion's repeated efforts, and sold it mostly second-hand light aircraft.[288] However, as the United States watched one after another Arab state fall to nationalists who subsequently formed Soviet ties, the view in Washington began to change. Originally, it had favored a security system that tied the monarchies together against communists. By 1958, it viewed Israel as a potentially useful partner in combating nationalist revisionism throughout the region.[289]

Shortly after the 1958 coup in Iraq, a mix of nationalists, dispossessed Palestinians, and leftist forces threatened the Hashemite monarchy in Jordan. King Hussein requested British and American intervention to prop up his regime. Despite backing the intervention, the Saudis were unwilling to commit forces. Israel, however, recognized the Hashemite monarchy as a bulwark

[286] Kyle, *Suez*.
[287] Ben-Zvi, *Decade of Transition*.
[288] Ben-Zvi, *Decade of Transition*; SIPRI, "SIPRI Arms Transfers Database."
[289] Shai Feldman, *The Future of U.S.-Israel Strategic Cooperation* (Washington, D.C: Washington Institute for Near East Policy, 1996).

against encirclement by a union of nationalist adversaries. It offered support to Britain and the United States, including flyover rights—not an insignificant decision given Soviet opposition.[290]

For both powers, the 1958 crisis was a turning point. Both realized that despite their continued dependence on oil from Arab states and the importance of good relations with the much larger and stronger Arab world, Israel was the only regional power with shared geostrategic interests—and a willingness to act on them.[291] Britain, which had thus far sold small quantities of second-hand tanks to Israel, began selling it new Centurion tanks.[292] For the next decade, Britain pursued a mixed set of policies, reflecting an internal debate between British Arabists and interventionists. Arabists prioritized friendship with both monarchs and nationalist Arab states—and generally, a recognition of British dependence on their petroleum—while interventionists realized that Israel was the only state in the region that shared British interests.[293] This led to robust sales of the Centurion, but the refusal to sell its newer, more capable Chieftain tank to Israel, and an effective embargo of arms sales after 1967.[294] In short, it was a relationship that fed Israel with needed platforms but encouraged ultimate distrust.

The United States, however, was just beginning a new logic of arms supply to Israel. During the early 1950s, the United States had little interest in a strategic alliance with Israel. It too sought to avoid disrupting its energy supplies or alienating the more numerous Arab states. However, the turmoil of the 1950s and the realization that Arab states, not Israel, were moving

[290] Abraham Ben-Zvi, "The July 1958 Jordanian Crisis and the Origins of the American–Israeli Alliance: A New Perspective," *Journal of Israeli History* 24, no. 2 (September 2005): 215–28, https://doi.org/10.1080/13531040500195729.

[291] Ben-Zvi.

[292] Lochery, "British Arms Sales to Israel."

[293] Stephen Blackwell, *British Military Intervention and the Struggle for Jordan: King Hussein, Nasser and the Middle East Crisis, 1955-1958* (New York: Routledge, 2012).

[294] Simon C Smith, *Reassessing Suez 1956: New Perspectives on the Crisis and Its Aftermath* (London; New York: Routledge, 2016), http://site.ebrary.com/id/10250462.

closer to the USSR, led to the recognition of Israel's potential assistance to the United States. Rather than seeing it as an obstacle, as it had during the first Eisenhower Administration, Washington increasingly saw Israel as a useful tool in the pursuit of balance in the Middle East. U.S. efforts to maintain a military balance were, of course, explicitly antagonistic to Israel's goals of obtaining dominance. However, Washington was now willing to sell increasingly capable defensive products. The trend that began under Eisenhower continued to grow under Kennedy and Johnson—after the decision whether to arm Israel, it became a matter of degree.[295]

Balance was hard to maintain. The 1962 sale of anti-aircraft missiles by the Kennedy Administration strained relations with the Arab states. However, the Soviet arming of multiple Arab states, and the U.S. response of selling aircraft to Jordan, led it to believe the military balance was tilting decisively against Israel. The Johnson administration therefore began selling the first offensive U.S. weapons to Israel, A-4 Skyhawk jet bombers, in 1966. Believing that a military balance was most likely to prevent Israel's development and use of nuclear weapons, and seeking to avoid a formal alliance with Israel, the United States sold Israel the aircraft, while emphasizing it was not beginning a policy of selling Israel weapons consistently. U.S. officials insisted that Israel still procure its platforms from European suppliers, though this was increasingly difficult to accomplish.[296]

This was good news for Britain, which sought to maintain some leverage over Israel. Britain not only refused to sell Chieftan tanks to Israel, while continuing to sell them to adversaries such as Libya, it also pressured the United States not to sell its tanks to Israel. The aim of pressuring the Americans was to prevent Israel from choosing an alternate supplier;

[295] Ben-Zvi, *Decade of Transition*.

[296] Zach Levey, "The United States' Skyhawk Sale to Israel, 1966: Strategic Exigencies of an Arms Deal," *Diplomatic History* 28, no. 2 (April 2004): 255–76, https://doi.org/10.1111/j.1467-7709.2004.00408.x.

Britain sought to retain the option to sell to Israel at a later time. U.S. officials concurred with the British position.[297] However, the oscillation, inconsistency, and European embargoes after 1967 led Israel to further develop its domestic industry, and after the Chieftain refusal it began building its own advanced tank, the Merkava.[298] Similarly, in response to its inability to obtain critical systems, Israel had begun developing its own light arms, light aircraft, electronics, and ammunitions industries, in preparation for building platforms domestically.[299]

5.4.1 Self sufficient arms production

The Six Day War led to the second phase in Israel's defense industrial development: the drive for genuine self-sufficiency. The June 1967 war infuriated the Arab world and led European states to break off their arms sales to Israel. Fearing a permanent French arms embargo, Israel began manufacturing spare parts for its fleet of French aircraft, thus managing to minimize any gaps in aircraft availability before it received American Phantoms in 1970.[300] President de Gaulle's decision to formally place an arms embargo enraged Israeli leaders. The Israeli sense of injustice was further exacerbated when France refused to return $160 million Israel had already paid in advance for weapons.[301] In a particularly brazen response, Israeli agents stole five embargoed gunboats from the French port of Cherbourg that it had ordered and paid for.[302] Incensed, the policy was maintained by President Pompidou through 1974, and it

[297] Levey.

[298] Saul Bronfeld, "The 'Chieftain Tank Affair': Realpolitik, Perfidy and the Genesis of the Merkava," *Contemporary British History* 29, no. 3 (July 3, 2015): 380–400, https://doi.org/10.1080/13619462.2014.974568.

[299] Farah Naaz, "Israel's Arms Industry," *Strategic Analysis* 23, no. 12 (March 2000): 2077–87, https://doi.org/10.1080/09700160008455181.

[300] Francis Ofner, "Arms Refund?: Israel May Demand That France Return Funds Tied up in Embargo Embargo Resisted Spare-Part Development," *The Christian Science Monitor*, January 11, 1969.

[301] Ofner.

[302] Abraham Rabinovich, *The Boats of Cherbourg*, 1st ed (New York: Seaver Books, 1988).

generally ended the Franco-Israeli arms relationship.[303] Similarly, the brief British-Israeli arms relationship ended as well.[304]

The Americans stepped in. But despite the more generous flow of arms once the United States became Israel's principal arms supplier after 1967, Israel quickly realized it was ultimately subject to the strictures of U.S. policy preferences. The U.S. sale of Phantom aircraft to Israel in 1968 put it firmly on Israel's side in the dispute with Arab states, which did not possess as capable aircraft. The U.S. provided compensatory arms to both sides—Jordan and Israel—while the USSR provided arms to Egypt. However, the United States used the sale as an opportunity to pressure Israel over its non-conventional arms programs. This further solidified the Israeli view that no patron could be fully trusted.[305]

The trend continued during the Nixon Administration. During the War of Attrition between Israel and Egypt, primarily along the Suez Canal from 1969-1970, the United States sought to ensure Israel's survival without alienating Arab states and without ceding the Middle East to Soviet influence or sparking a broader conflict with the USSR. Once Soviet forces joined the Egyptian army in combat support roles, the United States decided to limit Israel's ability to inflict further damage by refusing to supply them with replacement parts or aircraft. Israel was forced to end its successful run of air strikes on Egyptian targets.[306] The United States further attempted to use arms to influence Israel's policy throughout 1970-71.[307]

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[303] "France Will Keep Embargo on Jets for Israel, Pompidou Says at Informal Conference," *The Globe and Mail (1936-Current); Toronto, Ont.*, July 11, 1969.

[304] Though Britain did honor purchases made before 1967 and supplied second-hand replacements for lost Centurions after the Yom Kippur War.

[305] David Rodman, "Phantom Fracas: The 1968 American Sale of F-4 Aircraft to Israel," *Middle Eastern Studies* 40, no. 6 (November 2004): 130–44, https://doi.org/10.1080/0026320042000282919.

[306] Rodman.

[307] Sislin, "Arms as Influence."

The burgeoning U.S.-Israeli arms relationship also initiated a new phase in Israel's defense industrial development. It began with the import of F-4E Phantom jets, a cutting-edge technology that many states were clamoring for. However, when Israeli pilots visited George Air Force Base in California's Mojave Desert, in 1969, they provided a series of critiques and suggestions for the jet, insisting that they be modified to meet Israel's unique needs. The pilots' extensive previous experience in dogfights and desert combat shaped their views on what an aircraft needed. Some customizations were accepted; others were later completed indigenously.[308] From then on, Israel presumed it would need to customize and tweak imported weapons, initiating a pattern of weapons adaptation that began to characterize Israeli innovation.

Adaptation became more important as the number of threats Israel faced began to grow. While in the 1950s and early 1960s, Israel faced the loosely organized Palestinian militants known as *fedayeen*, with small arms, and Arab states with Soviet weapons, by the late 1960s it confronted new threats, tactics, and doctrines. The Palestine Liberation Organization, founded in 1964, was increasingly active, with various factions testing new methods of attack. Eventually, these trends would lead to the Lebanese Civil War and the founding of Iranian-backed Hezbollah and the Sunni Hamas, but in the short term, they forced Israel to innovate not just against its regional rivals, but also in low-intensity conflict.

In the face of these threats, the American efforts to influence Israeli policy convinced the defense establishment it would need to build its own platforms, maintenance capabilities, and logistical support. Even American assistance during the 1973 Yom Kippur War was subject to supply restrictions: Most European states refused refueling rights to U.S. aircraft delivering

[308] Oz Frankel, "'Your Part in the Phantom': American Technology, National Identity, and the War of Attrition," *Israel Studies* 24, no. 1 (November 27, 2018): 174–99.

materiel to Israel.[309] Particularly after its brush with defeat in the war, Israel's defense establishment concluded it would need both self-sufficiency and technological superiority.[310] Facing embargoes, security of supply questions, and the need for advanced weaponry, Israel at first tried to build its own platforms through its three primary defense firms: Israeli Military Industries (IMI), Israeli Aircraft Industries (IAI), and Rafael.[311] The goal of the effort was control over the core platforms and munitions of each military branch, including a tank, a fighter jet, and a gunboat. The effort eventually produced Shafrir and Python air-to-air missiles, anti-ship missiles, missile boats based on French designs, the Merkava battle tank in use today, Nesher and Kfir fighters, and the doomed Lavi jet fighter program.[312]

Israel's defense industry grew to one of the primary employers in the country. Using design experience from French plans and licensed production, it developed prototypes in every key category. However, a major challenge for all manufacturers of advanced platforms is funding sufficiently large production runs to reduce unit cost to an acceptable level. Otherwise, a product is not economical relative to competitors. The IAI Lavi program produced an aircraft that was tailor-made for Israel's needs, including what Israeli pilots believed to be better combat capabilities and air-to-air maneuverability than the U.S.-built F-16, the most advanced fourth-generation fighter, along with close air support capabilities that the F-16 lacked.[313] Its supporters believed the program was the key to Israel's platform independence. But to turn the Lavi from prototype to full scale production economically would have required a run of hundreds of

[309] Rubin, "Israel's Defence Industries – an Overview."
[310] Rubin.
[311] Devore, "Arms Production in the Global Village."
[312] John W. Golan, *Lavi: The United States, Israel, and a Controversial Fighter Jet* (Dulles: Potomac Books, 2016), http://ebookcentral.proquest.com/lib/umichigan/detail.action?docID=4313185.
[313] Golan.

aircraft—so many that Israel would need to recoup its investments by exporting. The existence of the Lavi ran afoul of U.S. producers, already selling aircraft in Israel with lavish U.S. subsidies. The notion that Israel would then compete on the global market sparked a backlash in Congress and the Department of Defense.[314] Further, Israel's economy had struggled for years during the early 1980s, ending only after the Stabilization Plan of 1985, which dramatically cut state expenditures and liberalized the economy.[315] Under such conditions, a large-scale procurement of the costly fighter jet was deemed unfeasible.

The Lavi program was canceled in 1987. Then-Defense Minister Yitzhak Rabin argued forcefully that Israel could not achieve—and had not achieved—the self-sufficient production it had sought. Even if it could spend extravagantly to build high-end platforms, it could not produce them economically, because it simply did not have the domestic scale. Export could help, but the market for Israel's aircraft was limited in the 1980s, and it would be forced to compete with its own suppliers in a way that could damage their relationship. Further, each of its major projects were still entirely dependent on U.S. and European inputs, including engines and other critical components. Thus, in an embargo scenario, its indigenous platforms were buying Israel limited additional time relative to foreign platforms, at an enormous cost. Rabin argued for a policy of "focused self-reliance," in which Israel would focus on uniquely capable systems, critical spare parts and components, and modifications to foreign platforms. It would buy most major products from the United States, and upgrade or customize to meet its needs.[316] In choosing an adaptation-driven industry, it would be able to modify whichever aircraft it acquired, in pursuit of the standards it had set for the Lavi.

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[314] Feldman, *The Future of U.S.-Israel Strategic Cooperation*.

[315] Stanley Fischer, "The Israeli Stabilization Program, 1985-86," *The American Economic Review* 77, no. 2 (1987): 275–78.

[316] Rubin, "Israel's Defence Industries – an Overview."

5.4.2 Only in Israel

After the significant cost overruns of the 1980s, and the ultimate failure of key programs, Israeli industry sharpened its focus on high technology weapons. This began the third period of Israel's defense industry, in which it produced arms for niche corners of the market, only available from Israel. It developed smaller, unique products, such as the first unmanned aerial vehicles, which quickly caught the attention of the U.S. Department of Defense.[317] Israel took advantage of its strong talent pool and fluid labor market, and liberalized its import and export policies to ensure the remaining industries could achieve scale and efficiency.[318] It bolstered military programs designed to cultivate human capital and experiment with technology solutions to tactical problems, such as the elite Talpiot unit.[319]

The strategy had another benefit: Israeli firms could modify, customize, maintain, and upgrade foreign platforms, even during embargoes or influence attempts. These were frequent. For example, for decades the UK consistently denied and revoked export licenses of military products destined for Israel. From 2000-2008, it refused 237 licenses and revoked 24. After its 2009 war in the Gaza Strip, facing pressure from NGOs, the UK banned five more licenses and initiated an effective embargo.[320] Then, from 2013-2018, the UK sold Israel more than $400 million in parts and equipment.[321] Germany, on the other hand, has sold Israel submarines since

[317] Devore, "Arms Production in the Global Village."

[318] Devore, "Defying Convergence."

[319] Jason Gewirtz, *Israel's Edge: The Story of the IDF's Most Elite Unit - Talpiot* (Jerusalem: Gefen Publishing House Ltd, 2016).

[320] Gerald M. Steinberg, Anne Herzberg, and Asher Fredman, "A Farewell to Arms? NGO Campaigns for Embargoes on Military Exports: The Case of the UK and Israel," *Israel Affairs* 19, no. 3 (July 1, 2013): 468–87, https://doi.org/10.1080/13537121.2013.799869.

[321] Jamie Doward, "British Arms Exports to Israel Reach Record Level," *The Guardian*, May 27, 2018, sec. World news, https://www.theguardian.com/world/2018/may/27/british-arms-exports-israel-new-record.

the Gulf War, which Israel is suspected of having modified into a leg of its strategic deterrent.[322] In both cases, Israeli defense planners had come to expect, and build in, supply oscillation and the need for customization into industrial planning, and believed they could rely on domestic adaptation to facilitate any needed changes.

Though it could not achieve economical production runs with full-scale platforms, Israel notably bolstered its domestic production and reduced unit costs by aggressively pursuing exports, especially of unique high-end systems, to countries that otherwise faced arms restrictions. Since the 1980s, buyers have included South Africa, Argentina, Sri Lanka, China, Russia, India, Azerbaijan, and Vietnam.[323] Exports have included missiles, UAVs, and sensors.[324]

The shape of Israel's defense industry, emphasizing adaptability,[325] had direct effects on how it fought wars. For example, during the 2014 war in Gaza, Israeli robotics firms were able to modify unmanned vehicles and robotics based on feedback from operators in the field on an almost daily basis.[326] Israel has continued to significantly alter imported weapons, such as the F-35, and develop add-ons, including the Trophy missile defense system for ground vehicles. The inconsistent, weak, and restrictive relations with Israel's security partners and arms suppliers was coupled with a frequent experience of conflict that Israel capitalized on to develop new weapons. The outcome is a domestic industry that is both highly adaptive to the Israeli Defense Force's

[322] Marcel Serr, "Bilateral Arms Cooperation: The Roots of German–Israeli Relations," *Israel Journal of Foreign Affairs* 9, no. 2 (May 4, 2015): 213–25, https://doi.org/10.1080/23739770.2015.1043612.

[323] Islam Ayyadi and Mohammed Kamal, "China-Israel Arms Trade and Cooperation: History and Policy Implications," *Asian Affairs* 47, no. 2 (May 3, 2016): 260–73, https://doi.org/10.1080/03068374.2016.1170491.

[324] SIPRI, "SIPRI Arms Transfers Database."

[325] DeVore, "Armaments after Autonomy."

[326] Interview with Roboteam VP of Ground Systems, June 15, 2017.

unique needs, focused intensely on sustainment of platforms, and is designed to overcome the continued restrictions on imports, such as the removal of sensitive systems in imported U.S. aircraft.

5.5 South Korea: a state of dependence

At the end of World War II, Korea was liberated from Japanese colonial occupation. Japan had ruled Korea since ousting Chinese and Russian interests in the 1890s and early 1900s. However, rather than achieving a long-sought peace, the peninsula once again became a battleground as rival factions supported by the United States and the USSR fought for dominance in one of the first civil conflicts of the Cold War. South Korea declared its independence in 1948, followed by two years of an insurgency backed by Kim Il Sung's forces in North Korea. The Korean War (1950-53) pitted the North's forces, supported by the Soviet Union and China, against the U.S.-backed South and its coalition of United Nations forces.[327] After a brutal three years, the U.S. commander reached the Korean Armistice Agreement with the North and China, while the South's U.S.-educated leader, Rhee Syngman, refused to sign.

The Korean War killed millions, devastated the economy, and left two impoverished Koreas in its wake. Though the United States was hopeful about the South's nationalist leader, Rhee proved to be authoritarian in practice, crushing dissent and pursuing policies that led to economic stagnation. Incensed that the United States had concluded an armistice, Rhee nonetheless understood he was totally dependent on U.S. forces. It was imperative to keep the American presence on the peninsula, or the South would have quickly fallen to its Chinese- and

[327] Scott A. Snyder, *South Korea at the Crossroads, Autonomy and Alliance in an Era of Rival Powers* (New York: Columbia University Press, 2018), https://doi.org/10.7312/snyd18548.

Soviet-backed adversary. U.S. leaders were concerned both about losing Korea to communist forces and by the prospect of Rhee, or other nationalist Koreans, reigniting the conflagration.[328]

It was in this context that the United States signed the Korean Mutual Defense Treaty with South Korea in 1954. By instilling a fear of both communist takeover and excessive anti-communist fervor, Rhee was able to successfully leverage the Cold War context to secure an alliance with the United States that would provide for Korea's long-term defense. U.S. forces remained in Korea, under the command of an American general, and through monetary aid and military materiel, the United States began to supply the majority of Korean defense needs. The Americans also began a pattern that would continue for decades, providing military aid while demanding that Korea step up its contributions to its own defense.[329]

Rhee's Liberal Administration focused on developing the domestic market; ending feudalist practices, primarily in rural agriculture; and import substitution industrialization. Its economy in shambles, with little industrial capability remaining from the days of the Japanese-run *zaibatsu* (family-run conglomerates), Korea began a general policy of fostering and rewarding industrial firms who could meet the country's growing needs. The general devastation proved to be an opportunity to rebuild.[330] The Japanese *zaibatsu* provided a model for Korea's new industrial firms, based on close collaboration with the state.[331] Known as *chaebol*, the Rhee

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[328] Snyder.

[329] Yong-Sook Lee and Markusen, Ann, "The South Korean Defense Industry in the Post-Cold War Era," in *From Defense to Development?: International Perspectives on Realizing the Peace Dividend*, ed. Sean M. DiGiovanna, Ann Markusen, and Michael C. Leary (Abingdon, United Kingdom: Routledge, 2003), http://ebookcentral.proquest.com/lib/umichigan/detail.action?docID=182667.

[330] Jong Won Lee, "The Impact of the Korean War on the Korean Economy," *International Journal of Korean Studies* 5, no. 1 (Spring/Summer 2001).

[331] Meredith Jung-En Woo-Cummings, "National Security and the Rise of the Developmental State in South Korea and Taiwan," in *Behind East Asian Growth: The Political and Social Foundations of Prosperity*, ed. Henry S. Rowen (London: Routledge, 1998), http://ebookcentral.proquest.com/lib/umichigan/detail.action?docID=178638.

government began the pattern of providing each major firm with certain contracts, a system that designated production choices while limiting competition. The firms emerged during the Korean War, leveraging some of the leftover Japanese capacity, while filling orders in the wartime Korean economy and supplying U.S. forces. But after the war, they flourished in the reconstruction effort. As Rhyu writes, the Korean War was the "defining condition for their emergence."[332]

The *chaebol* continued to grow, bolstered by preferential government policies, low-interest loans, access to U.S. dollars, and strategic opportunities through state contracts. However, their focus was almost entirely civilian. First, they had inherited the civilian industrial assets of the *zaibatsu*. Second, United Nations relief funds were directed toward civilian industries and post-war reconstruction. Third, despite U.S. efforts to direct more of its aid money toward military spending, and less toward civilian, the Rhee government actively resisted increasing military allocations, confident that U.S. forces would remain, and choosing to subsidize import substitution and exchange rate triage instead. Further, because U.S. forces remained in Korea, mainly armed with leftover weapons and rearmed with U.S. munitions, the market for Korean defense products was nonexistent. Growth was not to be found in arming the state, but rather in industrial goods and eventually consumer products. Defense production remained a niche activity, mainly providing parts for maintenance depots, small arms, and U.S.-designated equipment.[333]

President Rhee fled Korea during large demonstrations in 1960; his successor and protégé, Yun Posun, served briefly before General Park Chung-hee seized power in 1961. As a

[332] Sang-young Rhyu, "The Origins of Korean Chaebols and Their Roots in the Korean War," *The Korean Journal of International Relations* 45, no. 5 (December 31, 2005), https://doi.org/10.14731/kjis.2005.12.45.5.203.

[333] Rhyu.

young officer, President Park had been trained in a Japanese-run military academy in Korea and at the Imperial Army Academy in Japan, before fighting for the Imperial Army of Manchukuo for the Japanese. After returning to Korea, he commanded troops alongside U.S. forces during the war and received further training in the United States. Park believed that survival in international politics was a question of power more than morals or ideology. He desired nothing more than a secure guarantee of U.S. support. To obtain it, he decided to make Korea indispensable to U.S. objectives in Asia. First, he became a vigorous anti-communist, making South Korea an outpost of U.S. interests in a region under siege by communist forces. Second, he contributed to U.S. interests in the region, sending more than 300,000 troops to Vietnam, where they fought alongside American troops and gained valuable military experience.[334] Finally, despite vociferous dissent, he normalized relations with Japan, a top U.S. priority in East Asia. During the 1960s, he used these contributions to secure promises from the United States such as not removing any U.S. forces from the peninsula without his permission, a continuation of military and economic support, and other tangible commitments to Korean security. He also used his anti-communist credentials to resist calls for a return to civilian leadership.[335]

5.5.1 The industry is born

Until the late 1960s, President Park aligned South Korea's foreign policy with the United States and maintained a near-total reliance on U.S. weapons and security assistance. Despite the costs of maintaining troops in Vietnam and the domestic pushback against his rapprochement with Japan, Park continued to seek American commitments, and continued to fear

[334] Snyder, *South Korea at the Crossroads, Autonomy and Alliance in an Era of Rival Powers*.

[335] Snyder.

abandonment.[336] However, as the Vietnam War dragged on, the United States had decreasing interest in maintaining its costly security architecture in East Asia. The Tet Offensive of 1968 sapped U.S. forces of morale, while the two Korean divisions still in Vietnam failed to sway U.S. leaders of the importance of maintaining their bases on the peninsula. North Korea also stepped up its attacks on the South, executing 629 guerrilla and commando attacks in 1968. The most dramatic attack was a raid on the Blue House, South Korea's presidential palace in the heart of Seoul, which killed 100 South Koreans and nearly claimed President Park's life.[337]

North Korea also attacked U.S. forces in the region. In 1968, it captured the USS Pueblo, an intelligence ship, and shortly after, shot down a U.S. reconnaissance aircraft over the East China Sea. The United States, embroiled in battles elsewhere, responded with a denunciation but no show of force, and eventually offered to negotiate directly with North Korea's President Kim.[338] A year later, the North Korean seizure of a Southern patrol boat was met again with American passivity. In the nuclear realm, the U.S. posture was also shifting, from the massive retaliation doctrine to flexible response, a worrying development for Korea.[339] Finally, the coup de grace came when President Nixon announced what became known as the Nixon Doctrine, that the United States would increasingly insist that its allies in Asia take responsibility for their own defense.

Predicting a reduction in the U.S. commitment, the Nixon Doctrine was deeply worrying for Koreans, and it became a turning point for President Park and the country's defense industry.

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[336] Snyder.

[337] Hwang Dong Joon, "South Korea's Defense Industry: An Asset for the U.S.," Asian Studies Center (Heritage Foundation, December 1985), https://www.heritage.org/report/south-koreas-defense-industry-asset-the-us.

[338] Joon.

[339] Snyder, *South Korea at the Crossroads, Autonomy and Alliance in an Era of Rival Powers*.

Park responded with a pledge to achieve *chaju kukpang*, or "self-reliant national defense." He called for a dramatically increased Korean military and militia force armed by Korea's own industry.[340] He planned to leverage U.S. technical assistance and Korea's rapidly growing domestic industry to foster a world-class defense production capability as quickly as possible. [341]

Subsequent U.S. actions only heightened Park's fear of abandonment. In 1971, Nixon withdrew the 20,000 troops of the U.S. Army's 7th Division from Korea and reduced military assistance.[342] That same year, President Nixon revealed that he had opened secret negotiations with China, a revelation that stunned Korea. The United States sidelined Korean fears, no longer prizing Korean involvement in the Vietnam War, which Nixon sought to end. President Park tried to follow suit, meeting with North Korea for the first time and issuing the short-lived Inter-Korean Declaration in 1972. However, his main efforts focused on building a domestic defense industry.

In 1970, Park established the Agency for Defense Development, an advanced institute for the study of the armed forces. In 1972, Korea published its first National Defense Objectives and began to align its law, its industry, and its security goals. The 1973 Law on the Defense Industry formed the basis of Korea's modern defense industrial production. The 1974 Force Improvement Plan led to the growth of the Korean military. Korea's defense budget, already on the rise, nearly doubled between 1973 and 1974.[343] The 1975 Defense Tax Law imposed a 10% income and consumption tax in an effort to pay for a dramatically increased defense industry. Whereas

[340] Woo-Cummings, "National Security and the Rise of the Developmental State in South Korea and Taiwan."

[341] Joon, "South Korea's Defense Industry."

[342] Joon.

[343] Chung-in Moon and Sangkeun Lee, "Military Spending and the Arms Race on the Korean Peninsula," *The Asia-Pacific Journal* 8, no. 13 (March 2010), https://apjjf.org/-Chung-in-Moon/3333/article.html.

earlier defense production had focused on the manufacture of light weapons and ammunition, almost all using U.S. technical packages and licensing agreements, Park intended to develop an end-to-end defense industry that could, if the American commitment fell through, provide for Korea's self-defense.[344]

The defense laws provided both incentives and requirements that reshaped Korean industry. Defense producers were to be given subsidized loans at below-market interest rates. They were to be granted tax credits, advanced payment on contracts, and exemptions on tariffs. Even industry employees and manufacturing sites were given priority.[345] The defense tax was accompanied by fundraising campaigns, and money was poured into research and development (R&D). Defense budgets rose consistently until 1983.[346] By the end of the push, South Korean firms were building most of their own small and medium weapons.[347]

The Nixon Doctrine, Sino-American rapprochement, and the fall of South Vietnam continued to alarm Koreans regarding the U.S. commitment to South Korea. President Carter set up the Combined Forces Command in 1978, with the goal of Korea taking the lead on its defense in preparation for a U.S. withdrawal. Korea agreed to spend more on defense, and continued to develop its domestic industry. President Park directed defense production top-down. Korea continued to rely on U.S. designs and licenses. Most production was alongside U.S. partners, or based on American technical plans. Seoul sought to maintain interoperability with U.S. weapons, and ensured its designs were in line with American standards.[348]

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[344] Chung-in Moon and Jin-Young Lee, "The Revolution in Military Affairs and the Defence Industry in South Korea," *Security Challenges* 4, no. 4 (2008): 117–34.

[345] Moon and Lee, "Military Spending and the Arms Race on the Korean Peninsula."

[346] Moon and Lee.

[347] Moon and Lee, "The Revolution in Military Affairs and the Defence Industry in South Korea."

[348] Joon, "South Korea's Defense Industry."

The Park government's industrial planning relied heavily on the *chaebol*. It assigned portions of the need to the private industrial giants, giving each firm a virtual monopoly on a critical defense product but demanding they produce it. The firms were not always enthusiastic about this use of their resources: Each *chaebol* produced its assigned defense products as a limited portion of its overall portfolio, and each was ready and able to shift resources away from defense as the domestic market became saturated. The *chaebol* tended to use subsidies and privileges granted to defense production to shift toward larger, more stable civilian sectors, such as automobiles and electronics, to reduce their dependence on continued defense budgets.[349]

Continued U.S. technical assistance helped. U.S. producers were happy to work with Korean firms, licensing designs at a significant return, while modernizing the Korean forces. The *chaebol* took advantage of the transfer of technology, personnel, and know-how, and within a few years, Korean firms were producing advanced weaponry.[350] However, the assistance meant they dedicated little R&D funds toward domestic defense innovation. The United States offered hundreds of technical data packages, crowding out local investment.[351] At the same time, Park tried to prevent overreliance on any one firm, limiting military work to less than 30% of a firm's portfolio, and leading firms to tend toward dual-use products, not military investment.[352] Further, the government kept its state-backed R&D efforts in designated research institutes, separating the drivers of technological progress from the producers.[353]

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[349] Lee and Markusen, Ann, "The South Korean Defense Industry in the Post-Cold War Era."
[350] Joon, "South Korea's Defense Industry."
[351] U.S. Congress, Office of Technology Assessment, *Arming Our Allies : Cooperation and Competition in Defense Technology OTA-ISC-449* (Washington, DC: U.S. Government Printing Office, 1990).
[352] Lee and Markusen, Ann, "The South Korean Defense Industry in the Post-Cold War Era."
[353] Lee and Markusen, Ann.

At his most extreme, President Park responded to his fears of U.S. abandonment by trying to develop Korea's own nuclear deterrent. Park believed that, as he perceived with Israel, the United States would tacitly accept nuclear proliferation if it saw a sufficient security alignment in its partner. However, though he started the nuclear weapons program and devoted significant resources to it, Park eventually abandoned it to preserve relations with the United States.[354]

President Park was assassinated in 1979, and his eventual successor, Chun Doo-Hwan, promoted the defense industry somewhat less aggressively. The 1982 Chun coup was justified in part by an effort to improve quality of life and civilian industries. However, licensing and joint production agreements continued in the defense industry, leading to a vastly larger indigenous capability aimed at Korea's most direct ground forces and defensive needs.[355] While the industry was far more capable, it also had too much capacity for the domestic market, at a time when South Korean forces were already well-armed and not losing any weapons in battle. At the same time, the threat was not changing—the South was arming almost exclusively to counter the North. It did not need to adapt frequently to a variety of different threats. Domestic production sank toward less than half capacity, and many facilities were shut down.[356]

The Korean defense industry turned to foreign sales, but its efforts were stymied by the United States. Because Korean firms had licensed nearly all their core technologies, the U.S. arms control regime, known as ITAR, was able block Korean sales of many desirable products.[357] President Reagan also undermined the impetus for Korea's arms industry by

[354] Rebecca K. C. Hersman and Robert Peters, "Nuclear U-Turns," *The Nonproliferation Review* 13, no. 3 (November 1, 2006): 539–53, https://doi.org/10.1080/10736700601071629.
[355] U.S. Congress, Office of Technology Assessment, *Arming Our Allies*.
[356] Joon, "South Korea's Defense Industry."
[357] Joon.

reasserting U.S. military support. He provided security guarantees, kept U.S. forces in place, maintained tactical nuclear weapons on the peninsula, and provided Korea with advanced platforms. Chun ended the remnants of Korea's nuclear program and de-emphasized domestic arms production.[358] Defense industrial utilization plummeted. Though Korea tried to export to address its idle capacity, it lacked the R&D capability and the ownership of intellectual property necessary to be competitive in international markets.[359] Korean firms therefore changed their emphasis toward high tech and dual use products.

In 1982, Korea introduced its offset program, which strongly encouraged transfers of technology, as a way of developing its defense industry's R&D capability.

Throughout this period, most of South Korea's industry focused on conventional arms for a peninsular war—small arms, ammunition, and other light weapons for land and sea. Though the chaebol did assemble some advanced platforms and electronics, they relied almost entirely on licensed American technologies and manufacturing processes. Further, Korean military planners never warmed to domestic platforms, recognizing that American imports would provide a more decisive edge over North Korea.[360]

5.5.2 Korea's industry goes global

President Chun was succeeded by Roh Tae-Woo in 1988, who embraced a policy called Nordpolitik, an opening up to the communist world. Korea began relations with China, the Soviet Union, and other former adversaries. Korea also ramped up its exports, becoming a middle-tier supplier in its own right, focusing on middle and smaller powers that sought military

[358] Snyder, *South Korea at the Crossroads, Autonomy and Alliance in an Era of Rival Powers*.

[359] U.S. Congress, Office of Technology Assessment, *Arming Our Allies*.

[360] Lee and Markusen, Ann, "The South Korean Defense Industry in the Post-Cold War Era."

capability but could not afford cutting edge American or European weapons. The end of the Cold War also brought U.S. troop drawdowns and an effort to transition the command of the forces to the Korean military. Renewed U.S. efforts to prevent the North from obtaining nuclear arms brought about the U.S.-North Korean Agreed Framework in 1994. Fearing a dwindling need for U.S. troops in the region, South Korea's leaders were nervous that the end of the Cold War had finally given the Americans an opportunity to leave.

However, in 1995, the United States reasserted its commitment and ended the troop drawdown, followed by the death of North Korea's founding leader, Kim Il-Sung. This gave South Korea the opportunity to restructure relations with the North, initiating a "sunshine policy" of positive engagement with its hermetic neighbor. Once again, despite brief fears of U.S. abandonment, the United States had reassured the Koreans of its intent, and the impetus for growing the Korean defense industry waned.

The post-Cold War environment encouraged exports in Korea's most profitable commercial sectors. Its defense capacity shifted toward export and a reduction in heavy industries, as the domestic market remained saturated. However, the international market was too competitive given Korea's limited portfolio of innovative, unique products.[361] Thus defense was not a major contributor to GDP growth.[362] The government sought to streamline its defense industrial footprint, increasing R&D, investing in dual-use technologies, and designating specific defense contractors for each segment of the market.[363] However, much of the budget was still directed toward foreign purchases. For example, maintaining interoperability was a key requisite

[361] Lee and Markusen, Ann.

[362] Uk Heo, "The Political Economy of Defense Spending in South Korea," *Journal of Peace Research* 33, no. 4 (November 1, 1996): 483–90, https://doi.org/10.1177/0022343396033004008.

[363] Lee and Markusen, Ann, "The South Korean Defense Industry in the Post-Cold War Era."

for the credibility of the joint Korean-American forces. Obtaining upgrades from the United States was a primary driver of hardware and software expenditures.[364]

Of the domestic purchases, the *chaebol* dominated, with the vast majority of defense purchases going to the ten largest firms, including Samsung, Hyundai, Daewoo, and LG. But the Asian Financial Crisis of 1997-1998 revealed just how overleveraged and overcapacitated these firms were. Twenty-five *chaebol* went bankrupt during the crisis, and eleven collapsed completely, including Daewoo, one of the largest. To consolidate capacity, in 1999 the government forced a merger between the aerospace divisions of Samsung, Hyundai, and Daewoo, creating Korean Aerospace Industries, its most significant reform to its industrial structure in decades.[365]

The newer, streamlined industry stepped up its exports, and for the first time, Korea diversified its imports as well, mainly purchasing from arms trading partners.[366] In recent years, South Korea has firmly established itself as an exporter of arms to middle-tier buyers. Though the United States increasingly turned operational control over to the Korean military, U.S. forces remain in Korea, and the U.S. commitment to defending against North Korea, and increasingly, China, remained steady. The Korean defense industry grew in fits and starts, and has not yet achieved the advanced capabilities, scale, or cutting-edge weaponry that would be expected given Korea's geopolitical position and commercial advanced manufacturing. Since 2000, defense planners have increasingly sought to fill any gaps in Korea's abilities that were

[364] J.J. Suh, "Allied to Race? The U.S.-Korea Alliance and Arms Race" (Institute for Policy Studies, May 17, 2010), https://ips-dc.org/allied_to_race_the_us-korea_alliance_and_arms_race/.

[365] Robert C Feenstra, Gary H Hamilton, and Eun Mie Lim, "Chaebols and Catastrophe" (Asian Economic Policy Conference, Seoul, Korea, 2001), 106.

[366] SIPRI, "SIPRI Arms Transfers Database."

heretofore provided by the United States. However, its efforts are firmly focused on interoperability with U.S. forces, rather than hedging against them.[367]

5.6 Analysis

The experiences of Israel and South Korea vary dramatically. In many respects, the two countries are strikingly similar. In others, Korea's situation is far more hazardous. Yet despite Korea's relatively more dangerous position geopolitically, facing a nuclear-armed rival to its north, its significantly greater resources and economy, and its larger industrial capability, it nonetheless lags behind Israel in advanced defense industrial capabilities. The principal explanatory variable, I have argued, is the role of security guarantees that mediate the state's perception of what it needs to counter a threat. I sought to use this case comparison to test four hypotheses on the role of security partnerships in determining domestic arming decisions:

Hypothesis 1: Client states with relatively stronger security guarantees have a weaker incentive to build their own weapons.

Hypothesis 2: Client states with relatively more consistent security partnerships have a weaker incentive to focus their domestic arms industry on adaptation.

Hypothesis 3: Client states with relatively more conflict experience develop more adaptive arms industries.

Israel and South Korea both maintained security partnerships throughout most of the period. For Israel, this meant a concerted effort to sway nearly any great power to arm it over its neighbors. Israel found its first partner in France, which subsequently embargoed it; it obtained arms from the United Kingdom, which subsequently embargoed it; and it eventually developed a relationship with the United States, which at many points stopped the flow of arms to pressure it

[367] John Feffer, "Ploughshares into Swords: Economic Implications of South Korean Military Spending," *Korea Economic Institute*, February 2009, 12.

toward a U.S. policy goal. The challenges Israel faced in obtaining weapons and in establishing consistent security partnerships ultimately shaped the strategy of its arms procurement, including the direction of its domestic defense industry. Israel faced intermittent embargoes by its most critical suppliers starting in the 1950s and continuing through the 2000s.

Israel responded by seeking to ensure its security of supply, first by developing its own sustainment capabilities, then by seeking to develop a platform-building capability, then when realizing the inefficiency of the endeavor, by returning to its focus on upgrades and specialty industries needed for customizing military platforms and creating replacement parts. The realization that developing platforms indigenously did not guarantee autonomy—it merely pushed dependence up the supply chain—spurred Israel to focus on adaptability. This enabled Israel to reduce the risks posed by maintenance and operations supply insecurity, allowing Israel to come closer to curtailing the long tail of dependence post-platform acquisition that plagues many buyers.

In addition, Israel's adaptive industry allowed it to overcome the reductions in the probability of victory during conflict created by the risk of maintenance supply disruptions. The case of Argentina presented in Chapter 4 illustrated that the maintenance challenge of a diversified fleet reduced the state's ability to achieve military victory. Why did Argentina fight without a fully developed maintenance system? It is possible that Argentina simply blundered, like Napoleon invading Russia, by not considering the full extent of its logistical challenges. It is also possible that states may develop military capabilities primarily for deterrence, not necessarily expecting to use their armed forces in war. However, the case of Israel demonstrates that concern for maintenance resupply during prolonged conflict is a learned behavior, and with

each successive conflict and each successive supply disruption, Israel's industry became increasingly adapted to compensating.

Korea, on the other hand, while facing worrying instances of U.S. drawdown, nonetheless had a consistent U.S. military presence in-country and a formal treaty it could rely upon. The United States did not supply its enemies in an attempt to maintain balance against it, nor did it dramatically reduce support at critical moments. The continued American support led to less uncertainty and fewer major decisions or inflection points in South Korean policy. Evidence of this can be found in Korea's forays into self-reliant defense production. Major increases in South Korean defense spending happened each time Korean leaders believed the United States was reducing its commitment to the region. However, U.S. forces ultimately remained, and while solving overdependence on the United States has long been a Korean priority, the search for adaptability, autonomy, and high-end platforms was limited.[368] In short, while South Korea was generally inclined to achieve autonomy and reduce dependence, it faced less pressure to do so, and therefore responded less consistently and intently to the challenge.

To what extent did path-dependence shape each industry? The path of Korean firms, from inheriting Japanese industrial assets to occupying state-approved niches of the economy in a way that continues, to some degree, to the present, seems overdetermined. However, the decision to instruct the *chaebols* to enter the arms industry in the 1960s, and how, was a political one, and the decision to prioritize civilian production in the 1980s was also political. In Israel, by contrast, arms production had been one of the most important sectors of the economy, employing tens of thousands of people by the 1970s. However, in response to its changing security needs, Israel radically shifted the direction of its arms industries multiple times.

[368] Feffer.

A path-dependent arms industry would most likely have continued to build indigenous platforms regardless of the true degree of autonomy they enabled. By the time the Israeli cabinet decided to cancel the Lavi fighter program in 1987, it had already invested heavily in the aircraft and had strong domestic constituencies in favor of producing it at scale. However, the argument that without the full supply chain, it would still be at the mercy of suppliers, won the day. The decision to end those programs was hugely devastating to the industry, but politically astute. Rabin pressured the industry to focus on adaptation, killing thousands of jobs, but improving Israel's security. Israel's overall emphasis on defense may have been path dependent, but its production choices pivoted, often significantly, as a response to changing conditions. In contrast, South Korea lacked the impetus to veer from its path.

In general, I find qualified support for all three hypotheses. First, Korea's stronger security guarantee generally, and in some periods acutely, led Korea's leaders to deemphasize domestic production and its firms to prioritize commercial, industrial, and civilian products. Second, Israel's frequent changes in patron for the first decades of its existence spurred it to develop a highly adaptive industry that could work with nearly any platforms it could obtain, in contrast to Korea's limited, licensed, and conventional production capability. Third, Israel's far more frequent experience with significant, direct conflict led it to adapt its weapons more frequently, and to insist that imported weapons be adaptable as well. And fourth, while Korea exports significant amounts of arms, its military recognizes the superiority of American weapons. In contrast, while Israel does not produce its most sophisticated platforms, Israel's military prefers its industry to reshape and modify foreign arms purchases extensively.

These findings bolster the key propositions on state arming behavior developed in previous chapters. The degree to which the state searches for autonomy determines the degree of

effort it dedicates toward achieving the independent use of its weapons. The relationship with supplier states determines the method the buyer chooses to obtain that autonomy—an external force, rather than a purely internal impetus, driving the decision. In this case, the consistency and strength of the patron's commitment influences the form of the client's domestic industry. Finally, as states gain experience with oscillating commitment from suppliers, their domestic industries become increasingly shaped by the need to fill maintenance and operations gaps specifically, which allow them to overcome the sustainment challenge during conflict.

5.7 Conclusion

This chapter asked how states overcome the challenge of supplier leverage, specifically focusing on when states would choose to develop their indigenous production capabilities, what would shape their decision making, and how their security conditions would ultimately affect the direction of their arms industries. I argued that a critical determinant of state behavior is the degree of patronage or support of other states—in short, its relations within the international security environment. Through a comparative case analysis, I found evidence consistent with the theory that conflict and uncertainty spur a state to develop an adaptive arms industry upon which it can rely for its own defense. In contrast, greater certainty and fewer direct experiences with conflict can lead to a smaller, more targeted, and less adaptable and desirable military production capability.

This chapter contributes to the scholarship on arming, alliances, and state behavior. Principally, it finds evidence of an explicit connection between the state's security environment, its foreign relations, and the particular structure of its defense industry. Second, it elucidates the importance of particular strategies for states seeking to bolster their security and serves as a warning to states supplying arms and security guarantees. It points to a curvilinear connection between security guarantees and arms production: The strongest guarantees and the weakest

guarantees lead to predictable outcomes, while an oscillating guarantee leads a buyer to consider building the enabling materiel that would allow it to adapt, modify, and maintain platforms from around the world.

For future scholarship, this chapter demonstrates that the existence of a defense industry or an arms trading relationship does not equate consistent capability and predictable support. Further, in some cases such relationships can actually reduce the trust between partners, as each oscillation provides more reason to hedge against future disruptions, even if, in the short term, supply resumes. It also raises questions for future research. To what extent does adaptability ultimately solve the problems of maintenance and operations support that plague many developing militaries? To what extent, if at all, does it exacerbate it? How do the particular forms of an indigenous defense industry affect state behavior? And finally, in a world of interconnected supply, how does the state maximize its security and hedge against supply disruption? This chapter takes the first step in addressing these themes.

Chapter 6 Conclusion: Arms in International Relations, A Reconsideration

Scholars of international relations have long focused on power, interests, and the wars states fight to realize their objectives. The role of arms—the machines that enable modern war—is often overlooked. Many studies presume that states that decide to fight can do so. Others assume that possessing weapons means being able to use them. And some of the most widely used proxies of state power equate the existence of industrial capabilities with the ability to produce and use arms in warfare. This study has attempted to provide a counterpoint to these assumptions. States, regardless of their power, bloc, or history, are enmeshed in a global network of arms and supplies. No state can entirely control its own materials, supply, or production. The ability to buy, build, or use weapons is a product of the approval—explicit or tacit—of other states. Suppliers can enable or prevent the actions of their buyers, sometimes completely and directly, and sometimes in circumscribed ways. Buyers can strategically procure, manipulate, and build to obtain greater flexibility in the use of their weapons. Turning weapons into power in any significant way is ultimately a collective decision.

This study began with a core question: How do states strategize the acquisition of arms? States face a complicated set of choices in turning their resources—economic, population, and material—into military power. But while the manning and funding of a military is ultimately a question of state capacity, popular will, and domestic politics, for most states the acquisition of arms is a question of foreign policy. Most states must purchase most of their weapons from abroad, and even the largest states obtain critical components, materials, and technologies from

abroad. This creates dependence, which can increase risk and reduce autonomy. Sometimes this dependence is immediate: The United States maintains and services Saudi Arabia's fleets of U.S.-built aircraft, which cannot be operated without direct U.S. support.[369] Sometimes this dependence is longer-term, felt only once an existing stockpile of munitions runs out.

Alternatively, states can seek to eliminate dependence through their acquisition strategies, often at great cost, either financial or in terms of the integration of their forces. If the state chooses to build critical components domestically, it must invest heavily up front, with uncertain prospects for a return, and typically weak unit economics. It must choose the most important or at-risk products to build: No state can build everything domestically, so in other products it will remain dependent. Or it can purchase strategically, diversifying its sources of supply. This is often inefficient both financially and militarily, given weaker unit economics, differing maintenance architectures, and integration challenges. This leads to a second question: How do states weigh the value of pursuing autonomy through their arming strategies?

States that do not choose to diversify may find themselves unable to exercise their military power, while states that do may find themselves unable to exercise it effectively, especially during protracted conflicts. Lake, Morrow, and others provide an answer to the former case—states are embedded within a security hierarchy, and the alliances they form acknowledge tradeoffs in security and autonomy.[370] But states often do pursue the latter case, even when the outcome means they may be less capable. Argentina deployed a capable air force during the Falklands War, yet despite its advantages in geography and its numerous successes against the UK, its forces were ultimately unable to sustain conflict. From the perspective of the execution

[369] Walsh and Schmitt, "Arms Sales to Saudis Leave American Fingerprints on Yemen's Carnage."

[370] Lake, *Hierarchy in International Relations*; Morrow, "Arms Versus Allies."

of a military operation, diversification may enable the autonomy needed to act. But from the perspective of the execution of a war, diversification may do more harm than good. When would states accept these tradeoffs, making seemingly suboptimal military procurement choices?

6.1 The state of the field

The existing literature on the trade, strategy, and acquisition of arms provides many valuable insights. Most of the literature focuses on the largest arms producers, their strategies of arms sales, and their efforts to control client states. Few address the arming dynamic from the perspective of middle- and lower-tier states. The literature can be organized along the lifecycle of an arms buyer. It begins with the motivations for arming, within the context of the international arms market. It then continues to the strategic dynamic of arming, typically driven by bilateral sales, and the options available to buyers to improve their arsenals. Finally, perhaps most important for understanding the effects of arms in international relations, it studies the impact of arming on state behavior.

Perhaps the fundamental question is: Why do states arm? The principal debates on the determinants of state arms acquisitions center on two drivers: domestic and international. This literature focuses on the degree to which states pursue arming—*how much,* though not *how.* The domestic literature emphasizes the role of domestic institutions,[371] the historical processes of state formation,[372] the development of a politico-military elite consensus on defense,[373] and defense spending as a means of redistribution.[374] The international literature focuses on the role

[371] Hartley and Russett, "Public Opinion and the Common Defense"; Goldsmith, "Defense Effort and Institutional Theories of Democratic Peace and Victory Why Try Harder?"

[372] Tilly, *Coercion, Capital, and European States, AD 990-1992*.

[373] Gholz, "Eisenhower versus the Spin-off Story"; Brooks, "Introduction: The Impact of Culture, Society, Institutions, and International Forces on Military Effectiveness."

[374] Koistinen, *State of War*; Dunne, Smith, and Willenbockel, "Models of Military Expenditure and Growth"; Whitten and Williams, "Buttery Guns and Welfare Hawks."

of external threats as a driver of state arming decisions[375] and the development of state military capacity,[376] as well as the specific logic of arms races.[377] A subset of the literature argues that domestic and international causes—such as political institutions and foreign threats—mutually reinforce the state's development of military capacity.[378] This literature provides compelling evidence for both domestic and international arming logics, but largely fails to capture the rationales for particular arming decisions—the strategies I argue are essential to ensuring states can use their arms.

States pursue their arms acquisition strategies in the context of the international arms trade. The literature on weapons trade and technology diffusion provides a valuable frame for the expectations of states to obtain weapons and to remain at the technological frontier. This literature focuses on the dynamics of security hierarchies[379] in a competitive international system[380] and the types of arms producers and buyers in each wave of arms development.[381] It highlights particular mechanisms facilitating arms transfer, including alliances, trade blocs, and regime similarity,[382] while demonstrating that only organizationally competent states can successfully take advantage of arms diffusion.[383] Though this literature captures the patterns of arms diffusion, it provides limited insight into the logics of the individual transactions that

[375] Nordhaus, Oneal, and Russett, "The Effects of the International Security Environment on National Military Expenditures."

[376] Gibler and Miller, "External Territorial Threat, State Capacity, and Civil War."

[377] Morrow, "A Twist of Truth."

[378] Bueno de Mesquita et al., *The Logic of Political Survival*; Parrott, *The Business of War*; Krause, *Arms and the State*; Tilly, *Coercion, Capital, and European States, AD 990-1992*.

[379] Lake, *Hierarchy in International Relations*.

[380] Krause, *Arms and the State*.

[381] Krause.

[382] Akerman and Seim, "The Global Arms Trade Network 1950–2007."

[383] Van Creveld, *Technology and War*; Christopher S. Parker, "New Weapons for Old Problems: Conventional Proliferation and Military Effectiveness in Developing States."

comprise the arms trade, which I argue are critical to understanding how and why states pursue particular arming strategies.

To understand the logics of bilateral arms transfer, a distinct literature has focused on the patron-client relationships between buyers and sellers. Arms sales relationships can be characterized by the degree of leverage a supplier attempts to assert over a buyer, typically by providing access to arms in exchange for desired policy concessions.[384] Like alliances, they can reduce the autonomy of a buyer, but unlike alliances, they do not necessarily commit the seller, nor can they necessarily entrap the seller.[385] Arms sales, however, do not always lead to the desired policy concessions. Buyers have ways to use military power without supplier approval (though not sustainably).[386] However, most states that favor long-term arms access are likely to consider their suppliers' views prior to initiating a militarized dispute.[387] While the literature on the logics of bilateral arms transfer provides an important building block for my argument, it does not adequately capture the options and strategies of the arms buyer.

The arms buyer operates in a constrained context: It has the reduction in autonomy expected of an ally without the security guarantee. To overcome this challenge, buyers can choose to build or augment their arsenals domestically, either to ensure security of supply or to facilitate the adaptation of imported arms.[388] Middle-tier domestic industries usually represent an inefficient allocation of resources, but by enabling greater adaptability and sustainment, they can

[384] Krause, "Military Statecraft."

[385] Yarhi-Milo, Lanoszka, and Cooper, "To Arm or to Ally?"; Morrow, "Arms Versus Allies."

[386] Pierre, *The Global Politics of Arms Sales*.

[387] Levine, Sen, and Smith, "A Model of the International Arms Market"; Sislin, "Arms as Influence."

[388] DeVore, "Armaments after Autonomy."

reduce the risks of dependence on their suppliers.[389] Still, they typically remain dependent on foreign sources for access to capital,[390] and building weapons is not the only answer to the client's dilemma. As I have argued, states can also reduce their dependence by pursuing diversification, an alternative that the literature fails to address in any depth.

Finally, the field provides limited answers on the impact of arming strategies on state behavior, rather focusing on the impacts of arms transfers *generally*. States that receive arms have been shown to be more likely to abuse human rights domestically,[391] while arms transfers generally have also been shown to increase the likelihood of conflict behavior internationally.[392] While this literature generally argues that arms transfers increase the probability of conflict, they generally fail to assess the impact of specific arming strategies. Further, to date they fail to include systematic empirical studies of arms transfers, acquisition strategies, and state behavior.[393]

6.2 Toward a holistic approach to arms strategy and behavior

The existing literature successfully frames many of the key dynamics of the arms trade. However, it fails to link them into a coherent picture of arms acquisition and behavior. In this dissertation, I have attempted to link each of these elements, from state motivations to arming strategies to subsequent behavior. Further, I have focused on the perspective of the arms buyer as a strategic actor. In Chapter 2, I provide a theory of arms acquisition that outlines the state's options and the tradeoffs involved, particularly the efficacy-autonomy tradeoff of arms and

[389] DeVore.
[390] Devore, "Arms Production in the Global Village."
[391] Blanton, "Instruments of Security or Tools of Repression?"
[392] Craft, *Weapons for Peace, Weapons for War*; Krause, "Hazardous Weapons?"; Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict"; Sanjian, "Promoting Stability or Instability?"
[393] Krause, "Hazardous Weapons?"

diversification. Arms importers are to some degree dependent on their suppliers' approval for military action. Supplier disapproval can lead to supply interruptions, which is particularly dangerous for states engaged in conflict. States that face greater foreign threats and greater potential restrictions on their use of arms are incentivized to seek autonomy, despite the risks to their aggregate military capabilities in terms of integration and maintenance and operations costs. States that pursue autonomy face fewer restrictions on their ability to execute conflict at the low end, but the reduction in aggregate capability may increase risk during high-end conflicts. This theory generates a number of falsifiable hypotheses that are explored in the empirical chapters. The arc of the empirical chapters begins with the state's efforts to arm strategically in the face of threats, then continues to the state's behavior after pursing its arming strategy, then examines how states respond dynamically to both threats and arms restrictions over time.

In Chapter 3, I provide the first test of this theory, exploring the conditions under which a state would accept such a tradeoff. Chapter 3 argued that the primary motivation for such a decision is the state's perception of threat. Specifically, states with a strong reason to believe they face threats, for example, by having experienced conflict recently, are more likely to seek autonomy in their use of weapons. In seeking that autonomy, they are more likely to increase the diversity of their imports, in an effort to ensure at least some of their arsenals are available for use during a conflict. This is especially true for states that originate disputes, as they have previously demonstrated their intent to engage in conflict, and for democracies, which are more likely to value foreign policy autonomy.

Chapter 3 introduced two measures of arms import diversification, an entropy-based measure and an industry concentration measure. The measures capture the degree of diversity (or conversely, concentration) in a state's foreign arms purchases. Each measure relies on SIPRI's

trend indicator values, which capture the military value of conventional arms on an annual basis, thus conceptualizing diversity not just in terms of the number of different sources of arms, but the value of the arms obtained from each. Using recent conflict experience as a proxy for perception of threat, I then tested the degree to which a state's fear of threat drives its arming strategy. The results demonstrated a positive, significant relationship between threat and the subsequent decision to diversify arms acquisitions, consistent with the theory. These results help nuance our understanding of why and how states arm, and under what conditions they will attempt to reduce dependence on a supplier or patron. Specifically, an important rationale for arming decisions is the development of autonomous capability, meaning states may in order to reduce the risks associated with abandonment during times of conflict.

Chapter 4 studied how states behave after they diversify their arms imports. It starts by positing that the reason states respond to threats with diversification is that they fear being restricted by a supplier from using their weapons offensively. A supplier preventing defensive weapons use is unlikely, given that suppliers typically want to enable some degree of security in their buyers. However, a supplier may try to prevent the undesirable international ramifications of offensive weapons use. To overcome this concern, buyer states interested in countering a threat offensively may seek to diversify. Importantly, Chapter 4 did not argue that diversification *causes* particular patterns of behavior. Rather, it enables more aggressive behavior by reducing the barriers to weapons use.

To explore the relationship between arms diversification and subsequent conflict initiation, I examined the case of Argentina from the 1950s through the Falklands War. Argentina's leaders believed they faced persistent external and domestic threats, and tried various methods for ensuring their security of supply. Argentina confronted obstacles to arming

by pursuing an explicit strategy of arms diversification. After achieving a more varied arsenal, Argentine leaders engaged in a more aggressive foreign policy. While the case explored one country's experience in depth, to examine these dynamics in aggregate, I used data on diversification and conflict initiation to execute a large-*n* quantitative test of the theory. The findings were consistent with the hypothesis that increased diversification enables a greater likelihood of conflict initiation.

Chapter 4 also demonstrated the pitfalls of diversification, one of which is the difficulty of maintaining and modifying a wide array of systems. While Argentina was able to inflict significant damage against British forces during the Falklands War, it was unable to sustain the conflict long enough to win. Because of its weak security of supply, varied maintenance demands, and inability to leverage its domestic industry for resupply, Argentinean forces were ultimately limited to fighting with what they possessed at the start of the war. Chapter 5 considered how states address this problem through the use of domestic industry.

One common strategy to overcome the maintenance and sustainment challenge is to develop a domestic defense industrial base. Chapter 5 argued that the critical driver of domestic defense industrial development is the degree of commitment the state has obtained from its suppliers. A state that perceives a high level of threat, but enjoys a greater level of commitment from its supplier, is less likely to focus on developing indigenous industry than a state with a high level of uncertainty in its supplier's commitment. Further, the state's fear of both a foreign threat and of abandonment by its supplier shapes the direction of its domestic industrial development. As credible fear of conflict and supply disruption increases, the degree to which domestic industry develops compensatory measures increases.

To test this argument, I compared the development of indigenous arms industries in Israel and South Korea. Israel and South Korea share a number of key similarities. In most respects, South Korea has more resources and faces a greater threat: It is far larger than Israel and has a nuclear-armed neighbor that has threatened its annihilation. However, South Korea has a moderating influence—a far stronger commitment to its security from the United States, codified formally by treaty and practically through the presence of thousands of American troops in-country. Chapter 5 traced how the differences in the degree of guarantee from arms suppliers affected the choices of leaders in both countries from their founding in 1948 to the present.

Neither state enjoyed a purely linear path—both enjoyed moments of commitment and faced moments of uncertainty with their suppliers—but throughout, Israel's more frequent experience of high intensity conflict and its consistently weaker security partnerships spurred it to develop a stronger domestic industry. As it changed suppliers over time and probed the weak points in its maintenance and operations capabilities, Israel shaped an industry that could maintain, modify, upgrade, and adapt weapons imported from nearly any country. South Korea, on the other hand, pursued a more traditional industrial capability, developing a standard battery of weapons platforms, mostly using American-licensed and -controlled technologies. Today, Israel's defense industry is far more attuned to the needs of the state, demonstrated by the Israeli Defense Forces' reliance on Israel's industry, as compared to the South Korean Armed Forces' preferences for more capable imported weapons. I conclude that, consistent with the theory, the perception of threat, moderated by the security guarantee from a patron state, drove Israel toward an industrial structure meant to compensate for insecurity of supply, while South Korea's stronger guarantee did not to nearly the same degree.

6.3 Contributions to the field

This dissertation makes three primary contributions to the existing scholarship on the strategy of arms acquisitions. The first is substantive. It develops the first theory of arms buying as an efficacy-autonomy tradeoff based on the diversification of sources of import and acquisition, in which autonomy-seeking states maximize the range of possible policy positions under which they can use their arms. It shifts the focus from one-time arms sales to arms sustainment relationships. This allows the theory to characterize the efficacy aspect of the tradeoff as function of the cost and ability to maintain more diverse fleets, contingent upon ongoing relationships with arms suppliers.

This study also attempts to understand the arc of arms acquisitions in a holistic way. While most previous studies focus on specific aspects of arming—the trade and diffusion of arms, the patron-client relationship—I provide a framework that connects the context of arms diffusion, the dynamics of bilateral relationships, and the strategy of arms acquisition. Further, I provide the first study that explicitly connects these strategies to the threat environment states face, including both procurement choices and domestic industrial policy. Then, the dissertation connects these decisions to subsequent behavior in both conflict and acquisitions. Though there is more to be done to develop and test the theory presented herein, I provide the first step toward a more integrated understanding of the middle-tier arms buyer in international relations.

Methodologically, I develop the first empirical measure of arms import diversification. Previous studies have posited that states may seek to reduce their dependence on a single supplier, but none have measured such a reduction systematically and tested their hypotheses empirically. The import diversity measures I present also shift the emphasis from the number of supplier states, which obfuscates their relative importance, to the military value of their contributions, a more important factor when considering dependence. I then use this to

understand both why states choose a diversification strategy, and what such a strategy enables in subsequent behavior.

Finally, in highlighting the logic of arms acquisition strategies, this dissertation contributes to the arms policy and security policy fields. It provides a framework for understanding the focal points of supplier leverage, particularly in the sustainment phase of acquisitions, while highlighting the ways in which states can overcome such pressure through both foreign and domestic means. It also provides a warning to policymakers in buyer states who seek to achieve autonomy through reducing dependence, in that highly diversified states face challenges in their maintenance, sustainment, and ability to muster their full arsenals in conflict.

This study also provides nuance to arms control debates. Advocates for arms restrictions are correct that suppliers can pressure their buyers, but the effects of such pressure are not necessarily straightforward, and sufficient pressure may increase the costs of the bilateral relationship to the point where the buyer will either diversify or develop an indigenous industry, ultimately reducing supplier leverage. Further, arms control, arms embargoes, and supply restrictions are not, in themselves, ways to prevent war. States facing them may still choose to fight. Leaders, especially belligerent leaders who go so far as to diversify in order to more readily fight a war, may not allow the sustainment and logistics challenge to restrain them. (Even great generals and logisticians, from Alexander to Napoleon, have failed to fully account for sustainment challenges when initiating conflicts.) However, arms embargoes are able to restrict the state's options once at war.

Finally, this study points policymakers toward a more nuanced study of middle-tier arms industries. The case of Israel highlights how the ability to develop and build a platform is not as important as the ability to independently sustain operations. From the 1960s to the 1980s, Israel

successfully fielded and prototyped various aircraft. By the 1980s, it had developed the Lavi jet fighter, which could compete technologically with the most advanced aircraft of its day. Nonetheless, it abandoned the project in 1987, realizing that it could never achieve supply security with a full-scale platform, which required thousands of inputs, and would be better served by an industry that could sustain *any* foreign platform. Israel no longer builds military aircraft, which Argentina did in the 1960s, and South Korea is developing today, but its industry is far more advanced in its ability to ensure Israel's autonomy of action. Analysts of the arms trade should be careful in assessing the power-generating capability of a defense industrial base without a nuanced understanding of the shape and roles of the industry.

6.4 Directions for future research

This study leaves a plethora of important questions unanswered. First and foremost, it posits that under certain conditions, states arm strategically to achieve autonomy, potentially at the expense of military efficacy. However, it devotes insufficient energy to the study of military efficacy. There are three aspects to the proposed reduction in efficacy: maintenance and operations architectures, cost, and interoperability.

The question of maintenance and operations architectures is undertheorized in the literature. Maintenance and operations support are technically difficult and expensive endeavors—most aerospace and defense firms depend on it for the bulk of their revenue streams.[394] These vital support functions are what allow states to use their weapons. However, the role of these architectures, the challenge of operating multiple architectures, and the way

[394] Steve Trimble, "U.S. Air Force Wants To Take Back Sustainment From Industry," MRO Network, April 3, 2019, https://www.mro-network.com/maintenance-repair-overhaul/us-air-force-wants-take-back-sustainment-industry; Anthony Capaccio, "Lockheed's Costly F-35 to Be Billions Costlier, Pentagon Finds," *Bloomberg.Com*, April 22, 2019, https://www.bloomberg.com/news/articles/2019-04-22/lockheed-s-costly-f-35-to-be-billions-costlier-pentagon-finds.

states leverage them in international relations are all poorly understood. This study highlights the importance of continued research into how these pillars of military support function to allow or prevent the state's options in its foreign policy. Further, given the case of Argentina, it is important to understand the degree to which weaknesses in the state's maintenance architecture influence decision making, whether leadership is aware of the challenges, and how readiness affects leaders' choice to go to war. Whether leaders understand the importance of sustainment, its difficulty in a diversified force, and how it will affect their fighting capability, is poorly understood. Similarly, the degree to which leaders understand the lifecycle costs of products and the ramifications of choosing a diversification or indigenous strategy merits further study.

The question of interoperability within a military has important implications for the measurement of national power. In many studies, military power is based on the number of platforms within a nation's arsenal—how many aircraft, tanks, and ships it has. While studies generally acknowledge that a patrol boat and an aircraft carrier are qualitatively different capabilities, this research illustrates the importance of accounting for diversity and interoperability within a nation's fleet. Weapons that are designed to work together are more powerful than those that struggle to integrate. A state with eight aircraft from four suppliers may be less capable than a state with four perfectly integrated aircraft.

The means with which systems are integrated matters as well. Command and control, radar, and other enablers confer an additional qualitative advantage far beyond the value of platforms. Integrated capabilities allow global visibility, communication across platforms, over-the-horizon awareness, and networks of firepower. A unified capability, connecting command and control, aircraft, ships, and missile systems, is far more powerful than a measure of the same platforms without the glue. The role of these enabling capabilities is largely ignored in the study

of state power. An important next step is to assess when and how interoperability matters, what types of acquisitions most enable and impede its implementation, and how states can overcome the challenge.

Scholars of military power are best served by pursuing more granular measure of military composition, institutions, and integration, and the role these play in decision making, foreign policy, and war. The military power of the state is not the existence of its military force. Rather, it is a contingent, contextual, ongoing dynamic that enables, obstructs, and otherwise shapes conflict in the international system.

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