

BANG FOR THE BUCK: UNDERSTANDING DISPARITIES IN CONVENTIONAL
STRATEGIC SIGNALING CAPACITY ACQUISITION AMONG ARMS-
IMPORTING STATES

by

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A Dissertation
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Political Science

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Capacity Acquisition Among Arms-Importing States

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DEDICATION

To my mother, Hadia, in loving memory.

ACKNOWLEDGEMENTS

Prior to completing this dissertation, I already accorded my committee members tremendous respect for their expertise and accomplishments. To those causes I can now add accessibility, positivity, and patience. To Dr. Michael Hunzeker, Dr. Colin Dueck, and Dr. Laurie Schintler, I will be perpetually grateful.

Dr. Hunzeker in particular has accorded me the honor of being the first doctoral student whose dissertation he has chaired. From participating in his seminars as a student, to designing and leading crisis simulations as a CSPA fellow, to serving as a teaching assistant and—at his recommendation—an adjunct professor, to finally believing that I could make an original contribution to political science and security studies, none of the steps on this journey would have been possible without Mike betting on me, repeatedly and with good humor. I do not foresee ever being able to thank him enough.

My friends and family would be quite justified in feeling sick of hearing me talk about my research. Instead, I found them always receptive and encouraging. I particularly want to thank my brother Tom and my friends Greg Scaduto and Jeff Taves for listening to me go on, and on, and on about how and why states obtain conventional weaponry. On an intellectual level, I appreciated your feedback; on an emotional level, I felt so grateful and supported by your friendship and encouragement.

I made the highly questionable decision to pursue this Ph.D. while working full time. Without encouraging and accommodating supervisors, these already-inadvisable circumstances would have been completely unworkable. I am deeply grateful to Carrie, Tracey, Russ, Erin, and Kelly for consistently supporting and encouraging me (and signing lots of forms). If I had not had your support, I don't know if I could have sustained the audacity required to do this.

I am additionally grateful to *Journal of Military Studies* for granting me permission to include in the dissertation material from my forthcoming article as the appendix.

Last, but *most*, I am grateful to my wife, Leigh. It's near-impossible to convey the volume of patience and understanding that completing a Ph.D. program while working full-time requires from one's partner. Leigh, you kept loving me, you encouraged me, you picked up *so* much of my slack while pursuing a demanding career of your own, and helped me to keep from becoming completely oblivious to the passage of time or the outside world. Thank you; I love you; I'm so lucky to have you.

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LIST OF ABBREVIATIONS

ADF	Australian Defence Force
ASW	Anti-submarine warfare
AUD	Australian Dollar
AUKUS	Australia-United Kingdom-United States
CDF	Chief of the Defence Force (Australia)
CDS	Chief of Defence Staff (India)
CFP	Conventional firepower potential
CFPI	Conventional Firepower Potential Index
COAS	Chief of Army Staff (Pakistan)
DCS	Direct Commercial Sales
DND	Department of National Defense (Taiwan)
DoD	Department of Defence (Australia)
DSCA	Defense Security and Cooperation Agency (United States)
DTIC	Defense Technical Information Center
DV	Dependent variable
EDA	Excess Defense Article
FAA	Fleet Air Arm
FMA	Foreign Military Assistance
FMF	Foreign Military Financing
FMS	Foreign Military Financing
GDP	Gross domestic product
IISS	International Institute for Strategic Studies
INR	Indian Rupee
IV	Independent variable
JSF	Joint Strike Fighter
MCDM	Multiple criteria decision making
NTD	New Taiwanese Dollar
OPV	Offshore patrol vessel
PKR	Pakistani Rupee
PRC	People's Republic of China
RAAF	Royal Australian Air Force
RAN	Royal Australian Navy

RDT&E	Research, development, testing, and evaluation
ROC	Republic of China (Taiwan)
SIPRI	Stockholm International Peace Research Institute
STOVL	Short takeoff / vertical landing
TIV	Trend Indicator Value
U.S.	United States
UK	United Kingdom
UN	United Nations
USD	United States Dollar
WEG	Worldwide Equipment Guide (U.S. Army)

ABSTRACT

BANG FOR THE BUCK: UNDERSTANDING DISPARITIES IN CONVENTIONAL STRATEGIC SIGNALING CAPACITY ACQUISITION AMONG ARMS-IMPORTING STATES

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George Mason University, 2022

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This dissertation investigates variations in capability-based strategic signaling capacity acquisition between states who primarily import major conventional weaponry rather than indigenously producing it. The dissertation examines three potential drivers of conventional procurement efficiency derived from extant secondary literature: (1) technologically focused responses to threats posed by competitor states; (2) policy goals of vendor states; and (3) responsible government practices. The dissertation analyzes the procurement spending, inventory change, competitor arsenals and signals, vendor state goals, and government practices for four case states over the analytic window 2000-2020: (1) India; (2) Pakistan; (3) Australia; and (4) Taiwan. I use multivariate statistical analysis to identify associations for each of each of the surveyed theoretical causal accounts with variations in case state procurement efficiency, finding: (1) support for threat-focused procurement as positively associated with procurement efficiency at the

99% confidence level; (2) support for equipment origin from vendors with complex arms sales goals as positively associated with procurement efficiency at the 99% confidence level; and (3) no support for responsible government practices as positively associated with procurement efficiency. The dissertation then qualitatively analyzes each case through narrative probe process tracing, devoting a chapter to each. Finally, the dissertation illustrates four primary implications of the research: (1) high-quality estimation of undisclosed procurement spending levels by states that primarily import their major conventional weaponry; (2) educated projection of independent success/failure odds of a state's procurement-driven signaling strategy over a given window of time against a given competitor state; (3) a clear case for re-examining the consensus on transparent and responsible procurement practice definitions; and (4) systemic depiction of vendor attractiveness and comparative advantage among the most prolific arms-exporting states for prospective importers.

CHAPTER ONE

Introduction

On February 14th, 2019, the detonation of a truck laden with explosives and driven by a member of a Pakistan-based extremist group tore through a convoy carrying Indian security personnel on the Jammu Srinagar National Highway, killing 40 and superheating long-simmering tensions between Pakistan and India. In the weeks following that deadly Valentine's Day, the world held its breath as the nuclear-armed neighbors traded provocations culminating in the dramatic shootdown of an aging Indian MiG-21 fighter jet by one of Pakistan's comparatively far more sophisticated upgraded (and American-supplied) F-16s.¹ Although the two states ultimately de-escalated and resolved the standoff, a puzzle remained for those able to identify that the episode constituted a microcosm of the two countries' fighter jet ecosystems:² given the massive military spending disparity in India's favor, how had economically struggling Pakistan managed to effectively acquire and modernize a credible deterrent air force?

Diving into the numbers clarifies the nature of the puzzle. In the period 2000 to 2020, the narrowing quantitative and qualitative differences between the two countries'

¹ Lara Seligman, "India's Dogfight Loss Could Be a Win for U.S. Weapons-Makers," *Foreign Policy*, March 5, 2019, <https://foreignpolicy.com/2019/03/05/indias-dogfight-loss-could-be-a-win-for-u-s-weapons-makers-lockheed-boeing-pakistan/>.

² Chris Dougherty, *Force Development Options for India by 2030* (Washington, DC: Center for a New American Security, 2019), p. 3.

conventional arsenals appeared to defy economic logic. India's proportional advantage over Pakistan as scored by the Conventional Firepower Potential Index (CFPI)³—an aggregate measure of the number, type, and sophistication of major conventional weapons contributing to a state's deterrent signaling—declined by 25% from 2-to-1 to 1.5-to-1 (see Fig. 1.1). This occurred despite India's spending an annual average of six times more than Pakistan on military procurement in absolute terms (see Fig. 1.2).

A substantial disparity in military procurement spending between India and Pakistan makes sense; India's gross domestic product (GDP) was approximately ten times that of Pakistan as of 2020.⁴ Since the gap narrowed despite the two states drawing on dramatically different resource pools to fund their procurement spending, it appears both intuitive and data-supported that they procure with different rates of efficiency. Examining the CFPI's measure of procurement efficiency⁵—change in index score for the previous three years' procurement spending—bears this out (see Fig. 1.3). This striking difference between state experiences raises the central question addressed by this dissertation: **what factors account for variations in conventional armament procurement efficiency among arms-importing states?**

I investigate three causal theories derived from secondary scholarship and analysis: (1) responsible government practices; (2) threat-driven technological specialization; and (3) vendor state goals and practices. I employed four comparative

³ Lee Habib Roberts, "Apples to Apples, Fighters to Submarines: Comparative Analysis of Conventional Capability-Based Signaling Capacity through Technologically Weighted State Arsenal Indexing," n.p., under review by *Journal of Military Studies*, 2021, pp. 6-17, <https://cpfindex.org>.

⁴ International Monetary Fund World Economic Outlook (October 2021 Edition), interactive database, accessed January 28th, 2022, <https://www.imf.org/en/Publications/WEO/weo-database/2021/October>.

⁵ Roberts, p. 19.

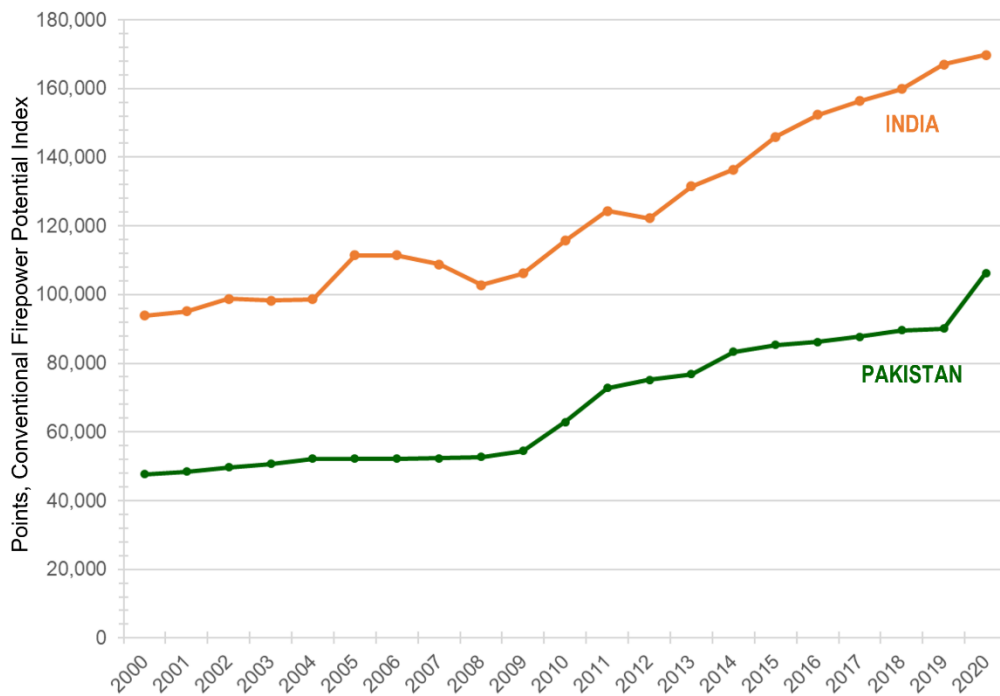


Figure 1.1: CFPI Score, India & Pakistan, 2000-2020

Sources: Conventional Firepower Potential Index, International Institute of Strategic Studies

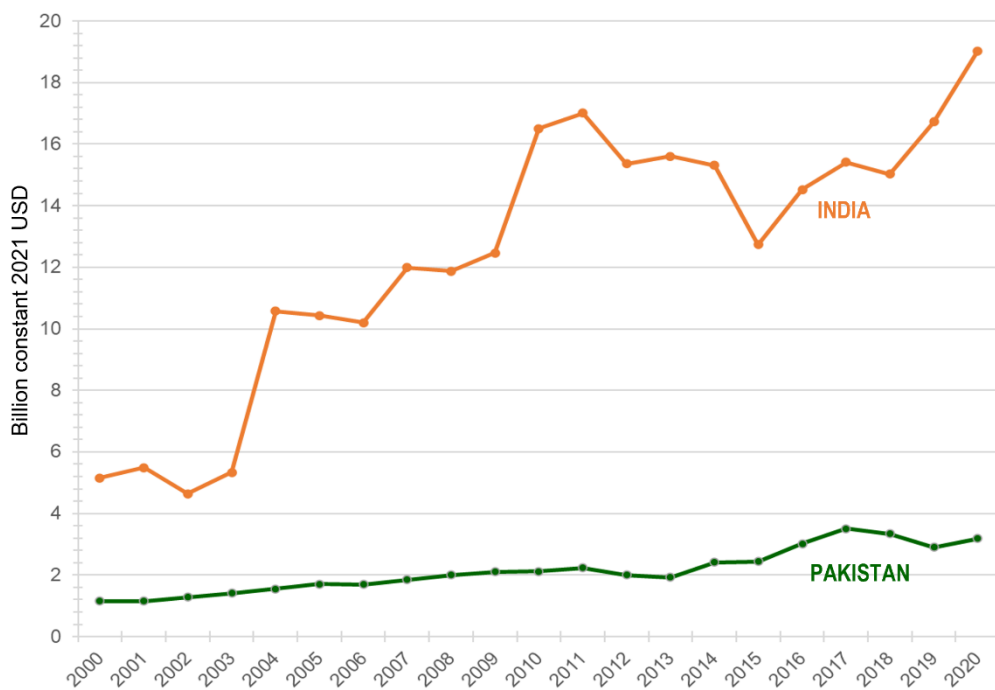


Figure 1.2: Procurement Spending, India & Pakistan, 2000-2020

Sources: Ministry of Finance (India), Ministry of Finance (Pakistan), Stockholm International Peace Research Institute (SIPRI)

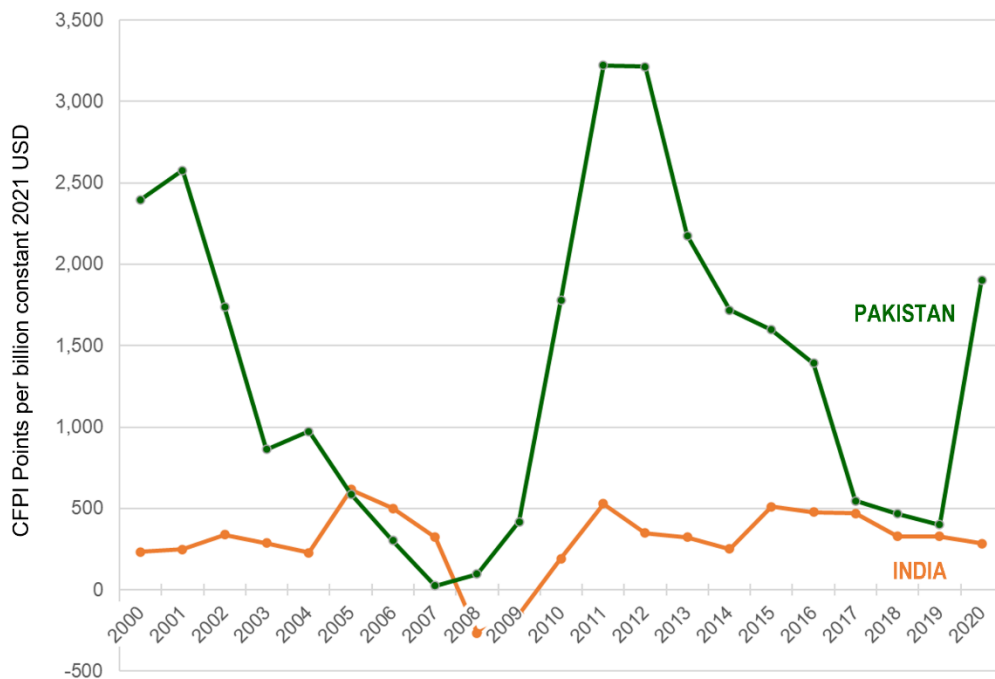


Figure 1.3: Procurement Efficiency, India & Pakistan, 2000-2020

Sources: CFPI, IISS, Ministry of Finance (India), Ministry of Finance (Pakistan), SIPRI

cases selected for their reliance on arms imports and their shared view of China as a regional security policy driver: (1) Australia; (2) India; (3) Pakistan; and (4) Taiwan.

Over the course of both multivariate statistical analysis and qualitative analysis through narrative process tracing probes, I encounter diverse outcomes for each of the investigated accounts. I found compelling support for threat focus as a driver of more efficient procurement, and mixed support for the policy goals of vendor states boosting efficiency for the importers. I found no significant support for the conclusion that commonly agreed responsible government practices were associated with higher rates of procurement efficiency; however, this finding did not rule out the phenomenon of states disregarding these practices in a way that compromised their procurement efficiency. In

chapters focused on each of the case studies, I draw on case state publications as well as the work of other analysts to flesh out the quantitative findings with an accessible narrative of each state's international signaling goals and relevant internal politics. I drew on the results of the within-case analysis to lay out a generalized theory of imported conventional deterrent procurement efficiency in Chapter 3.

Chapter 2 reviews selected literature germane to the accumulation of conventional strategic signaling capacity through military procurement. First, it attempts to distill an understanding of conventional military capability as an expression of national power and a basis for strategic signaling. The chapter then lays out each of the three causal accounts investigated by the dissertation and identifies the theoretical logic for each as a driver of the efficiency of a state's procurement of major conventional weaponry.

In Chapter 3, I present the methodology and the findings of the dissertation. First, I focus in more depth on the dependent variable—CFPI-measured procurement efficiency—and derive independent variables from each of the accounts visited in Chapter 2. Next, I provide an overview of my quantitative findings across all cases in both statistical and intuitive terms. I conclude the chapter by identifying the quantitatively indicated differences in the case state experiences that guided my qualitative exploration of each in the case study chapters.

Chapters 4 through 7 contain detailed analysis of the procurement experiences of each of the case states. For each of Australia, India, Pakistan, and Taiwan, I flesh out the quantitative findings with more accessible narratives supported by government publications and secondary scholarship and analysis to depict the strategic calculus and political perceptions driving the procurement activity documented in the study's analytic

window. In each case, I begin with a brief historical background of the state's security environment, summarize its procured capabilities, review efficiency performance against each of the three independent variables, and attempt to infer narrative relationships between government perspectives and domestic politics.

Chapter 8 concludes the dissertation by identifying implications of the research's findings to estimating undisclosed procurement spending, assessing the success or failure odds of procurement-dependent signaling strategies, recommendations for security assistance, and any vendor state-specific advantages or disadvantages from an importer perspective. I provide evidence-informed thoughts on which of the findings appear readily generalizable to the global system of state arms importers and which require additional nuance. I close by identifying unexplored avenues to validate the relevance of these lessons or to better understand these nuances.

CHAPTER TWO

Acquiring a Capability Basis for Conventional Strategic Signaling

This chapter explores the extant theoretical literature in which I ground my dissertation. This includes literature germane to the accumulation of conventional strategic signaling capacity through military procurement and precursor concepts. First, I distill an understanding of conventional military capability as an expression of national power and a basis for strategic signaling. I then summarize each of the three causal accounts of procurement efficiency drivers investigated by the dissertation in preparation to present their operationalization and analysis in the next chapter.

Conceiving of Arsenals as a Capability Basis for Conventional Strategic Signaling

This section reviews literature pertaining to military capability as a deliberate expression of national power in support of strategic signaling in international politics. The following paragraphs first explore the notion of military power as a representation of state power, highlighting the perspective that characterization of such capability yields greater utility as a signaling gauge than as a true predictor of conflict outcome. Accepting this use case for the sake of this research, the section then derives literature-based definitions of coercive and persuasive signaling strategies conventional arsenals can support.

Military Capability as an Expression of State Power

International relations theorists, military historians, and security policy analysts in the modern era and information age almost universally subscribe to the notion that a state's military capability serves as one of several key proxies for its national power. Acknowledging that states draw on all instruments of national power to pursue interests and send signals, this dissertation focuses narrowly on the component of national power expression housed in states' conventional arsenals. The following paragraphs thus focus on selected relevant literature illustrating developments in this concept without seeking to imply that competing theoretical perspectives are invalid—they simply pertain more to other contexts or expressions of national priorities.

The formally proposed notion that systematically measured military capabilities telegraph state power is now over 70 years old; seminal realist Morgenthau first proposed the notion of military preparedness as one of multiple elements of the military instrument of national power with the publication of *Politics Among Nations* in 1948. Morgenthau's posited understanding of military capability included technology, leadership, and quantity and quality of the armed forces.⁶

Waltz built on this notion and on the ideas captured in Schelling's groundbreaking *Arms and Influence*.⁷ As a result, Waltz positioned the retention and posture of unevenly distributed military capability to effect coercive national power signaling as a central feature of his neorealist school whose thinking now underpins much of modern hard

⁶ Hans Morgenthau, *Politics Among Nations*, 1949, 4th ed. (New York: Alfred A. Knopf, 1967), pp. 106-158.

⁷ Thomas C. Schelling, *Arms and Influence*, 1966, rev. ed. (New Haven, CT: Yale University Press, 2008).

power-focused international relations discourse.⁸ Paret offered an empiricist's endorsement of such an understanding by observing "military power expresses and implements the power of the state...and is also one of the instruments with which political power is originally created."⁹

While these authors do not explicitly present the acquisition of capability as a signaling activity, a reasonable inference from their collected writings would be that national military capability constitutes a deliberate manifestation of the national war-making capacity that a state *chooses* to showcase (via passive exercise of the informational instrument of national power) by virtue of the decision(s) to allocate resources toward the military instrument of national power. This was among the conclusions of a comprehensive RAND corporation study published in 2000 that developed methodological recommendations for accessible, useful methods to gauge national power in the post-industrial age. The report held that—while correlating to other dimensions of power distributed among the other instruments of diplomacy, economy, and information—deliberately acquired military capability remained the ultimate expression of national power in the eyes of the world (although instructive measurement of this capability remained problematic).¹⁰ A RAND Conference review of these

⁸ Kenneth N. Waltz, *Theory of International Politics*, 1979, reiss. paperback ed. (Long Grove, IL: Waveland Press, 2010), pp. 189-193.

⁹ Peter Paret, "Military Power," *The Journal of Military History*, Vol. 53, No. 3 (July 1989), p. 240.

¹⁰ Tellis et al., *Measuring National Power in the Postindustrial Age* (Arlington, VA: RAND, 2000), p. 134.

methods in 2005 adopted similar conclusions: policymakers seek to convert resources into military capability to present their states as powerful.¹¹

More contemporary scholars have crystallized the notion that acquiring and retaining conventional military capability constitutes a deliberate use of military power to send strategic signals, re-affirming their theoretical predecessors in the face of the changing character of war. Gerson observed the renewed importance of conventional arsenal composition to send deterrent signals; acquiring and/or modernizing weapons that deny access may bear reasonable interpretation as deliberate deterrence.¹² Morgan affirmed this view, further offering that “extraordinary levels” of conventional force and weaponry acquisition served as a ubiquitous foundation for modern deterrence strategies.¹³ Writing in 2018, Haffa cited both Morgan’s work and the earlier theorists mentioned in this chapter to re-organize three long-held components of deterrence (and strategic signaling in general): (1) capability, or the acquisition of military assets; (2) credibility, or the degree to which a state’s intent and resolve come across as believable to other states; and (3) communication, or unmistakable and deliberate relaying of purported intent by one state to another using spoken or written language.¹⁴ This dissertation focuses on arsenals and expenditure as primary indicators of the capability

¹¹ Gergory F. Treverton and Seth G. Jones, *Measuring National Power* (Arlington, VA: RAND, 2005), pp. ix-xi, 3, 6.

¹² Michael S. Gerson, “Conventional Deterrence in the Second Nuclear Age,” *Parameters*, vol. 39, no. 3 (Autumn 2009), pp. 32-34.

¹³ Patrick M. Morgan, “The State of Deterrence in International Politics Today,” *Contemporary Security Policy*, vol. 33, iss. 1 (April 2012), p. 87.

¹⁴ Robert P. Haffa, Jr., “The Future of Conventional Deterrence: Strategies for Great Power Competition,” *Strategic Studies Quarterly*, vol. 12, no. 4 (Winter 2018), pp. 96-97.

aspect of strategic signaling, using secondhand analysis of credibility and communication to provide interpretive context for capability.

All of these theoretical observations of the world's attitude toward *perceived* military power generate a compelling argument to focus on the capability component of strategic signaling rather than attempting to predict conflict outcomes. Capability-based assessments designed to predict conflict outcomes remain popular, but they do not perform particularly well for forecasting actual results. Carroll and Kenkel find that the most commonly used military capability assessment measures provide only a 1% improvement over a coin-flipping null model when it comes to predicting conflict outcome.¹⁵

As jarring as this statistic may be, a legitimate objection to its use is the high likelihood that states acquiring military capabilities do not take political science publications into account, instead intuitively pursuing the procurement of platforms that they believe will help them fight and win. Many states, whether developing or developed, cannot credibly employ their arsenals for long. The International Peace Institute's 2017 survey of decades of United Nations peacekeeping operations (UNPKO)—internationally visible events that ideally exercise a relatively low strain on a large pool of troop contributors—suggested that most member states who participate in UNPKO struggle to project and sustain even small fractions of their militaries over

¹⁵ Robert J. Carroll and Brenton Kenkel, "Prediction, Proxies, and Power," *American Journal of Political Science*, vol. 63, no. 3 (July 2019), pp. 577-593.

relatively short distances for anything more than a few weeks.¹⁶ Although the pool of UNPKO donor countries skews heavily toward the developing world, some of the world's premier military powers can hardly boast greater proportionate logistical capability. A 2017 RAND study found that the United Kingdom, France, and Germany would each be hard-pressed to marshal, deploy, and sustain a single brigade of combat power *within Europe* for more than a month without the undertaking becoming the main effort of their respective militaries such that it eclipsed any capacity for other contingencies.¹⁷

That states continue to acquire combat hardware without investing in the equipment and infrastructure to sustain its use seems to suggest one of two things: (1) defense policymakers the world over misunderstand or are unaware of the relationship between sustainment and power projection; or (2) a key rationale for most states' procurement of military hardware is strategic signaling. Though these are not mutually exclusive inferences, I embrace the latter as predominant.

It is in part because of this apparently counterintuitive acquisition of the *appearance* of capability without the infrastructure to employ it (which could be interpreted as an embrace of signaling) that I choose not to exclusively ground myself in the streamlined, structural realist theories cited earlier in this section. As this dissertation includes an analysis of a major facet of conventional strategy pursued by regional powers, I chose to follow the philosophical example of Vipin Narang's analysis of

¹⁶ Katharina P. Coleman and Paul D. Williams, *Logistics Partnerships in Peace Operations* (New York: International Peace Institute, June 2017), pp. 1-2.

¹⁷ Michael Shurkin, *The Abilities of the British, French, and German Armies to Generate and Sustain Armored Brigades in the Baltics* (Arlington, VA: RAND, 2017), pp. 1, 5-6, 9.

regional power nuclear strategy and draw insights from the neoclassical realist school.¹⁸ Like Narang and other scholars, I question the assertion that the central driver of international political dynamics should be solely (or even primarily) a function of the uneven distribution of capabilities. Specifically, I am convinced of Rose's argument that a state's foreign and security policy are "driven first and foremost by its place in the international system and specifically by its relative material power capabilities" but that "the impact of such power capabilities on foreign policy is indirect and complex, because systemic pressures must be translated through intervening variables at the unit level."¹⁹

Where Narang observed that his case states—despite not being "great powers" by the structural realists' standards—possessed the ability to disrupt the international balance of power through their retention of nuclear weapons,²⁰ the case states in this dissertation (whether or not they are nuclear-armed) are capable of adopting military innovations classified by Horowitz as bearing high financial and organizational costs²¹ seek to establish credible conventional deterrents against great powers and even against potential (or arguable) superpower China. As Chapter 3 details, these intervening, unit-level variables are key to my investigation the process by which they

¹⁸ Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton: Princeton University Press, 2014), p. 28.

¹⁹ Gideon Rose, "Neoclassical Realism and Theories of Foreign Policy," *World Politics*, vol. 51, no. 1 (1998), pp. 146.

²⁰ Narang, p. 28.

²¹ Michael Horowitz, *The Diffusion of Military Power* (Princeton: Princeton University Press, 2010), p. 49.

strive to transmute economic resources into a foundation for the basis of explicitly deterrent signaling.

Conventional Strategic Signaling

I employ a popular composite understanding of two primary strategic signals states may choose to send in any combination: compellence and deterrence. Any use of the terms “compel” or “deter” or any permutation thereof throughout this study thus derives its understanding from those terms’ adaptation in select publications in the theoretical strategic signaling literature. I further isolate my analysis to the capability component of strategic signaling. As detailed earlier, the capability component of a signaling strategy is restricted to the signals states send through their acquisition and retention of conventional weapon systems.²² The active communications measures states take through diplomacy and information release establish a context for interpreting the signaling significance of the capability component but are not themselves primary foci of the dissertation (although I visit them in the case-specific descriptive analysis chapters).

Thomas Schelling invented the term “compellence” (acknowledging that “to compel” existed in more imprecise usage at the time) in *Arms and Influence* to denote the coercion of a target to change the status quo when the target would prefer to maintain it.²³

While the word “deterrence” long predates its specialized use in modern security studies, for precision’s sake I draw on Schelling’s definition adopted by John

²² Haffa, p. 96.

²³ Schelling, p. x.

Mearsheimer in (appropriately enough) *Conventional Deterrence*. Deterrence strategies seek to prevent a target from acting to revise the status quo when the target would prefer to take such action.²⁴ A key difference between the two coercive signaling strategies of compellence and deterrence is thus that compellence seeks to induce a change in the behavior of the target state and the status quo, while deterrence seeks to keep the target state from changing its behavior and from moving to change the status quo.

Two terms are sometimes used for variants of compellence and deterrence: assurance and reassurance may be viewed as relatively persuasive (offering positive reasons to de-escalate) rather than purely coercive (conveying and leveraging the credibility of such threat). While “assurance” and “reassurance” have seen extensive and sometimes interchangeable usage, I rely on recent clarification made by Knopf among others. Using Knopf’s interpretation of Schelling as an instructive example, “assurance” in a deterrence context means balancing commitment to the use of force if an adversary persists with an equally credible commitment to refrain from using force if they desist.²⁵ Reassurance strategies instead speak to allies with the goal of bolstering their confidence that the deterring state is credible in its commitments; when the commitments in question are to support the allied state in coercing the target, this may be called “extended deterrence.”²⁶

²⁴ John J. Mearsheimer, *Conventional Deterrence*, 1983, paperback ed. (Ithaca, NY: Cornell University Press, 1985), p. 14.

²⁵ Jeffrey W. Knopf, “Varieties of Assurance,” *Journal of Strategic Studies*, vol. 35, iss. 3 (2012), pp. 375-399.

²⁶ *Ibid.*

Deterrence is the most relevant signaling strategy by far to the case study countries. While Taiwan's procurement also includes limited consideration of the other strategies—primarily through its attempts to induce assurance from the United States by buying American—this study undertakes a deliberate analysis solely of the *capability* dimension of conventional strategic signaling and thus almost exclusively deterrence.²⁷ This means that while communication and credibility provide crucial contexts for interpretation of capability indicators, they are subsequent rather than simultaneous considerations to conventional capability itself, and deterrence is typically the clearest signal sent by capability alone. To begin identifying significant themes in conventional signaling strategies as I propose, analysts need to be able to measure and describe the relative significance of military capabilities.

The premise that conventional weapons contribute to a state's strategic signaling capacity yields an avenue for comparative analysis and thus approximate measurement. Where most weapons are never employed in conflict, all weapons (save those successfully concealed) contribute to signaling. The relative signaling contribution of a weapon is a less complicated phenomenon to estimate than its prospective combat use, an activity that entails innumerable factors.

In this dissertation, I use the Conventional Firepower Potential Index (CFPI), a measurement scale that estimates the relative contribution of major conventional weapon systems to a capability basis for strategic signaling by considering their tactical role and

²⁷ Haffa, p. 96.

degree of technological sophistication.²⁸ I briefly illustrate using the CFPI to compute the dependent variable (CFP procurement efficiency) in Chapter 3; however, a more thorough explanation of the method is contained in the Appendix.

Drivers of Efficient Conventional Arsenal Procurement: Three Accounts

I considered three distinct, intuitively plausible, and mutually non-exclusive explanations derived from extant secondary literature. These causal accounts attribute conventional armament procurement efficiency to three different drivers: (1) threat-motivated specialization; (2) vendor states; and (3) government practices. This section reviews relationships posited by these accounts while identifying select explanatory shortcomings relative to understanding their role in unwinding the research puzzle.

Threat Focus

Given that conventional weaponry procurement writ large provides the procuring state with a capability-based deterrent signal against prospective threats to its security, the next explanatory account follows somewhat intuitively: the more a state's procurement goals focus on signaling against a particular competitor-posed threat, the more efficient those procurement efforts will be (or at any rate, the more efficient they are incentivized to be). This section focuses on three theoretical components of the threat-driven account: (1) competitor identification and signaling rationale; (2) tactical role identification; and (3) acquisition based on key attributes.

²⁸ Roberts, pp. 6-17, <https://cfpindex.org>.

The existence of a clear competitor posing a specific conventional threat provides a clear rationale for procurement on the part of the procuring state and a similarly clear incentive to procure efficiently. In theory, the overt retention of a conventional system in the absence of an active conflict constitutes the capability component of a strategic signal of deterrence (the other two components being accrued capability and explicit communication).²⁹ The acquisition of conventional weaponry at speed and scale is thus the cornerstone of many modern deterrent signaling strategies.³⁰

The identification of a single or small number of key tactical roles for major conventional weapons allegedly drives efficiency by incentivizing states to focus and presenting a compelling need to rapidly procure. Quickly acquiring or modernizing weapons that specifically match or counter systems in a competitor's arsenal represent a logical avenue of focused deterrent signaling through specialized, threat-driven capability procurement.³¹

In this vein, procuring systems in the matching or countering tactical role(s) based on standardized performance criteria in key distinguishing attributes drives efficiency by reducing the ambiguity and propensity for wasted time and funds (inefficiency by definition) inherent in weaponry procurement. The inherently complex processes of bureaucratic weapon system selection and acquisition represents a classic multiple

²⁹ Robert P. Haffa, Jr., "The Future of Conventional Deterrence: Strategies for Great Power Competition," *Strategic Studies Quarterly*, vol. 12, no. 4 (Winter 2018), pp. 96-97.

³⁰ Patrick M. Morgan, "The State of Deterrence in International Politics Today," *Contemporary Security Policy*, vol. 33, iss. 1 (April 2012), p. 87.

³¹ Michael S. Gerson, "Conventional Deterrence in the Second Nuclear Age," *Parameters*, vol. 39, no. 3 (Autumn 2009), pp. 32-34.

criteria decision making (MCDM) problem rife with opportunities for waste.³² The resolution of multiple inputs to the MCDM by identifying the tactical role to be matched or countered and the specific attribute criteria for weapons that sufficiently fulfil this deterrent response eliminates multiple avenues for procurement waste, thus substantially boosting efficiency.³³

The threat-driven account appears to have a compelling narrative logic owing largely to the clear incentives and theoretical focus that it presents a prospective procuring state. However, detailed quantitative and process-traced probes specifically tying threat identification to procurement are lacking, and cases wherein states failed to efficiently arm themselves despite being faced with clear competitive threats from other states do not benefit from a baseline understanding of the interaction of threat incentives and procurement efficiency.

Vendor State Goals and Practices

The second explanatory account of a procurement efficiency driver consists of vendor (arms exporter) states' contributions to the efficiency of importing states procurement performance. This section explores four aspects of this account centered on complex export policy goals (goals for arms sales beyond revenue generation): (1) selective availability of competitive systems; (2) regional balancing goals as a component of exporting state foreign policy; (3) competitive importer-facing pricing as a result of

³² Ching-Hsue Cheng and Don-Lin Mon, "Evaluating Weapon System by Analytical Hierarchy Process Based on Fuzzy Scales," *Fuzzy Sets and Systems*, vol. 63, no. 1 (April 1994), pp.2-4.

³³ Wen-Min Lu et al., "Major Weapons Procurement: An Efficiency-Based Approach for the Selection of Fighter Jets," *Managerial and Decision Economics*, vol. 41, iss. 4 (June 2020), p. 578.

deliberate exporter state domestic policy; and (4) arms trade-tied security assistance mechanisms boosting the purchasing power of the importer state.

Importing states who find themselves the selective recipients of top-tier systems seem to benefit from an opportunity to boost the capability-based signaling value of their arsenals and thus the efficiency of their procurement programs. This effect should be the most pronounced for states that offer relatively technologically competitive systems for sale as the result of deliberate policy decisions, with the quintessential example being the United States' heavily regulated security cooperation programs, wherein even less importer-attractive Direct Commercial Sales (DCS) must be the result of a deliberate policy decision (including a legislative acquiescence above a certain threshold).³⁴

The existence of regional balancing goals tied to the exporting state's foreign policy drives efficiency for a prospective importing state by increasing the likelihood of the exporter state to offer weapons with greater signaling value using sales and transfer mechanisms with greater fiscal advantages for importing states. Russia, China, and the United States provide prominent examples of this phenomenon: Russia uses exports to support its image as a global power and contest the United States' sphere of influence in targeted regions;³⁵ China's arms exports dovetail with other efforts to establish and expand political relationships with importing countries that may include development

³⁴ United States Department of Defense, Defense Security Cooperation Agency, *Foreign Customer Guide* (2019), pp. 2-6.

³⁵ Richard Connolly and Cecile Sendstad, *Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia* (London: Chatham House, 2017), pp. 3-4, 15-21, 26-29.

assistance and infrastructure access;³⁶ and the United States' exports to developing countries in particular achieve regional stabilization goals and selectively impose regional engagement costs on competitors like Russia, China, and Iran.³⁷

Competitive pricing represents one example of measures that can boost importing state procurement efficiency. Exporters can combine value-rich export variety platforms with selectively offered flyaway pricing. Foreign Military Sales (FMS)—the United States' arms transfer mechanism that is more lucrative for recipients relative to DCS—serves as the archetypal example of this phenomenon by making export varieties of American weaponry already in U.S. government inventory available to customer states at cost of production.³⁸ The initial purchase by the U.S. government ensures production remains profitable for American firms, with the federal government effectively subsidizing the sales.³⁹ This offloads much of the efficiency burden of the importing state's procurement programs on to the United States and dramatically improving the importer's procurement efficiency.

The most impactful vendor state practices consist of what are effectively subsidies for importers' procurement efforts. Particularly when occurring in the context of other favorable practices (selective availability of competitive systems, beneficial

³⁶ Daniel Byman and Roger Cliff. *China's Arms Sales: Motivations and Implications* (Santa Monica, CA: RAND, 1999), pp. 7-30.

³⁷ U.S. Library of Congress, Congressional Research Service, *Conventional Arms Transfers to Developing Nations, 2008-2015*, by Catherine A. Theohary (R44716), December 19, 2016, pp. 7-8.

³⁸ *Foreign Customer Guide*, pp. 3-4.

³⁹ A. Trevor Thrall and Caroline Dorminey, *Risky Business: The Role of Arms Sales in U.S. Foreign Policy* (Washington, DC: Cato Institute, 2018), pp. 9-10.

exclusive/near-exclusive pricing), such assistance has the compounded effect of directly paying for a portion of the already attractive purchase price of the imported arms. The United States Foreign Military Assistance (FMA) and Excess Defense Article (EDA) grant vehicles together constitute the clearest widely employed examples of this phenomenon.⁴⁰

Of the procurement efficiency-driving accounts surveyed in this section, direct and indirect contributions to importer efficiency by vendor state goals and practices arguably represents the most compelling and internally cohesive. Comparative analyses of such exporter state practices face the challenge of fractured comparison because of the heterogeneous nature of arms sales divided into discrete quantities and platforms; systematic comparison of vendor states effects on importing states' efficiency using a continuous, common dependent variable stands to provide insight lacking in this space.

Government Practices

Efficient procurement of conventional weaponry-based signaling capacity seems to boil down to the pursuit (or failure) of the process of procurement itself; that is, procurement efficiency (or lack thereof) seems to be a proxy for the degree of soundness of government practices. I focus on theoretical accounts of four government practices identified as key by the literature: (1) clear statutory and/or regulatory governance; (2) rigorous and repeatable needs assessment; (3) dedicated resource appropriation processes; and (4) real and effective accountability mechanisms.

⁴⁰ *Foreign Customer Guide*, pp. 5-6.

Clear, enforced rules understood by all participants in a state's procurement ecosystem to govern the process of purchasing weaponry appear to streamline acquisition. A system of regulation providing clear paths to initiate, advance, and conclude procurement projects can encourage innovative competition on a clearly defined playing field, boosting the efficiency of development, production, purchase, and fielding processes.⁴¹ Acquisition programs governed by commonly understood and effectively enforced rules appears to contribute to the setting of realistic schedules against the backdrop of predictable milestones and regulatory factors, with resolution of uncertainty in the procurement pipeline overcoming bureaucratic delays in an aggregate consideration of the process.⁴² In sum, government procurement actors set more realistic schedules and adhere to them with fewer setbacks and unanticipated delays under well-publicized and enforced regulatory regimes.

An iterative, systematically informed process to assess and articulate the needs of the procuring state would drive efficiency by spurring intra-governmental competition and focusing the efforts of government procurement actors. By following deliberate procedures for expert identification of a procuring state's requirements, governments can quickly determine procurement need and pursue acquisition of the required system.⁴³

⁴¹ Thomas L. McNaugher, "Weapons Procurement: The Futility of Reform," *International Security*, vol. 12, no. 2 (Fall 1987), p. 67.

⁴² Thomas Light, et al., *Benchmarking Schedules for Major Defense Acquisition Programs* (Santa Monica, CA: RAND, 2018), pp. 1-2.

⁴³ Philip S. Anton et al., *Strategies for Acquisition Agility: Approaches for Speeding Delivery of Defense Capabilities* (Santa Monica, CA: RAND, 2020), pp. 25-26.

A dedicated and clearly understood process to appropriate and commit resources for procurement theoretically drives efficiency by resolving uncertainty and permitting decision makers—both legislative and executive—to optimize available funds toward identified acquisition requirements. A recurring and well-understood process to make resources available and to commit those resources toward specific procurement should in principle allow government procurers to understand available funds, prioritize them based on requirements, schedule and execute their commitment, and monitor the progress of the associated procurement.⁴⁴

Finally, an empowered and effective system of accountability for the results of a state procurement program theoretically drives efficiency by identifying shortfalls in the above-reviewed dimensions for elimination or mitigation. Dedicated accountability offices operating on respected mandates both incentivize government procurers to improve their proficiency (and efficiency) and help to establish a culture of appropriately training and managing procurers in the first place.⁴⁵

The principal deficiency exhibited by this account in the literature is that attempts to measure the phenomenon of government practices relative to procurement efficiency focus more or less exclusively on measuring it in the negative. Detailed studies identify a *lack* of advisable government practices and estimate the *loss* of efficiency (or a

⁴⁴ U.S. Library of Congress, Congressional Research Service, *Defense Acquisitions: How DOD Acquires Weapons Systems and Recent Efforts to Reform the Process*, by Moshe Schwartz (RL34026), May 23, 2014, p. 5.

⁴⁵ U.S. Library of Congress, Government Accountability Office, *Weapons Systems Annual Assessment: Limited Use of Knowledge-Based Practices Continue to Undercut DOD's Investments* (GAO-19-336SP), May 2019, pp. 6-42.

comparable concept), but a versatile positive measurement for modeling purposes is absent in even rigorous, accountability-focused analyses.

This section examined various—but non-exclusive—accounts of three plausible drivers of state procurement efficiency: (1) government practices; (2) threat-driven specialization; and (3) vendor states. While each account exhibits its own internal gaps, shortcomings, and little-tested tensions, the absence of deliberate investigations of each of these accounts in a shared causal environment seems particularly glaring given that they do not obviously appear to exclude one another in explanatory feasibility. In the next chapter, I explain how I chose to operationalize and investigate these accounts.

CHAPTER THREE

Framework, Methods, and Findings

This chapter shares the results of the dissertation research in broad strokes. I intend it to share, in an accessible manner, the main lessons that I take (and I hope the reader takes) away from my work along with the basic information needed to assess and critique the rigor and methods with which I approached it.

The first section lays out an inductively derived predictive theoretical framework. Although the framework is quantitatively imprecise and uses the direction of statistical correlations rather than their exact magnitudes, I believe it represents the most useful tool for other scholars analyzing major conventional weapon procurement by arms-importing states. I deliberately present it to the reader prior to a detailed description of my analytic findings as both a primer for the findings presentation and to illustrate the potential of this work should they seek to apply and test it with other cases.

The second describes my quantitative methods and presents the findings of the statistical analysis. Identifying and operationalize variables, detail data sources, and explain statistical analytic method selection and employment. I use CFPI and defense budgetary data for four cases states selected for meeting specific informational constraints over the period 2000-2020. After testing a variety of statistical models and implementing controls for error and misspecification, I chose a cross-sectional time-series generalized least squares regression controlling for heteroskedasticity and cross-

sectional dependence. The statistical analysis indicated significant associations between the independent variables and the dependent variable; this was positive in the case of procurement threat focus (significant at the 99% confidence level) and vendor state complex goals (significant at the 99% confidence level), and negative in the case of government practice scores (significant at the 99% confidence level).

The third section closes the chapter with a description of my within-case analysis and a summary of my findings. I analyzed within-case with the focus of achieving a narrative understanding of the phenomena approximated by the operationalized independent variables, both to allow for accessible understanding of each case state's experience and to establish the beginnings of accretive analysis of conventional procurement in the context of strategic signaling. I conclude the section with extremely brief overviews of the descriptive analysis within each case (which each receive their own chapter), concisely summarizing narrative support for the quantitative findings. Australia's, India's, and Taiwan's difficulty achieving efficient procurement relative to Pakistan appear to be rooted in phenomena of military service resource territoriality, civilian bureaucratic and political control of military priorities, and the impact of domestic political incentives posed to civilian overseers that disrupt continuous and economical efforts to procure deterrent capability basis.

A Framework for Predicting Efficiency

This section presents a predictive theoretical framework for anticipating the relative efficiency of major conventional weaponry procurement in building conventional strategic signaling capacity—that is, the degree to which a state’s acquired conventional firepower potential will be relatively larger, accumulate faster, and be purchased at a more competitive price. The framework is inductively derived from my findings over the course of the dissertation research; I deliberately present it to the reader in a theoretical voice and prior to the reader’s review of my actual analytic findings. In this section, I do not address any contradiction of the variable associations predicted by the literature, nor do I provide any insight into the unit-level phenomena I observed while narratively tracing processes at the unit level; the reader may find contraindicative evidence in the third section of this chapter as well as explanatory or additional variables not addressed in the literature review. I address these later in the dissertation. For now, I wish the reader to find in this framework the central takeaway of my work; an approach that any interested scholar may test against other cases or repurpose as a premise of their own understanding or further theorizing.

The framework advances a number of generalizations that, all else being equal, correspond to more or less efficient signaling capacity acquisition over the several-year implementation of a major procurement decision (in this case the decision to acquire a number of a certain type of a weapon system to represent a conventional capability in a state arsenal). Threat focus, capability addition modality, system origin, military bureaucracy, civil-military relationship, and the degree to which regional security figures

as a topic in a state's domestic politics all coincide with minor or marked bonuses or decrements to procurement efficiency as explained in the following paragraphs (and depicted in Fig. 3.1, although at a considerable loss of nuance).

Threat Focus

A focus on the threat systems contained in the arsenal of a state's main threat state will drive more efficient procurement; procuring systems designed to counter threat systems rather than matching them will be slightly more efficient still.

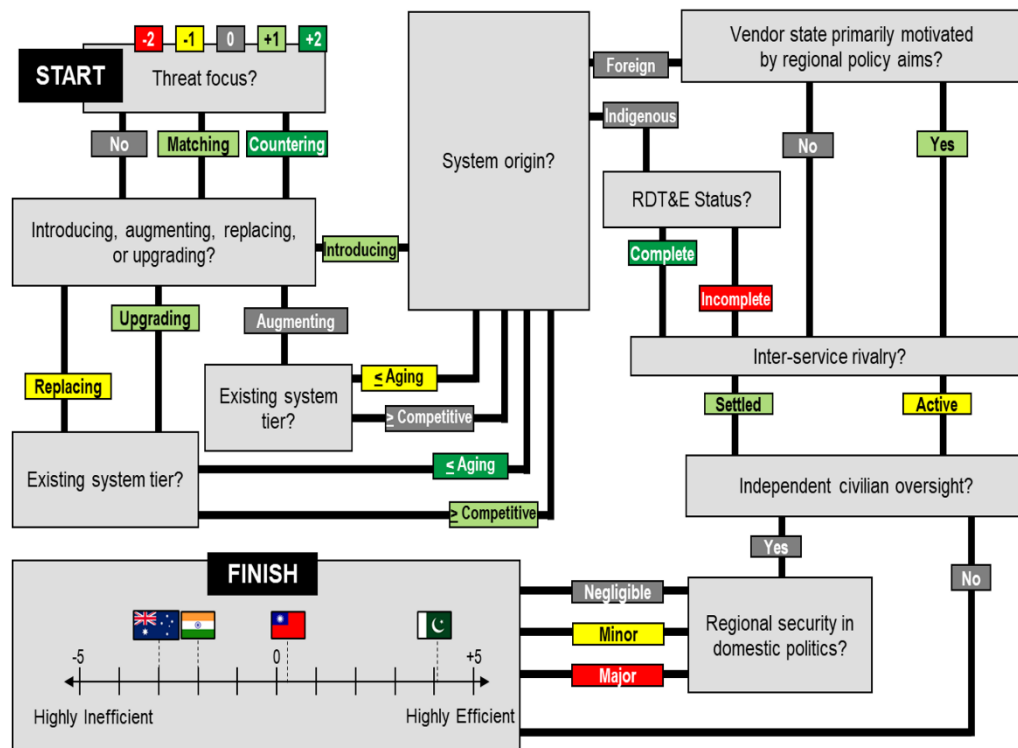


Figure 3.1: Predicting Relative Efficiency of Major Conventional Procurement

Matching. Matching consists of procuring the same type of platform as that which poses a prioritized conventional threat in the arsenal of the procuring country's main state threat. The matching advantage is greater for threats posed cumulatively by a large number of competitive platforms—like aircraft, missiles, or armor—and less pronounced for prestige capabilities like oceangoing naval vessels or advanced aircraft.

Countering. Countering consists of procuring platforms designed specifically to defend against or disrupt the platforms posing the prioritized threat in the threat state's arsenal. Countering system procurement is generally more efficient than matching system procurement because the focus of countering systems is often to field a credible defensive capability in a relatively small, economical package. Countering procurement frequently corresponds to asymmetrical procurement; CFPI scoring suggests that focused procurement of a large number of missile boats and fast attack craft quickly outstrips the gross conventional firepower potential contained in a small number of sophisticated destroyers purchased for the same amount even though the much smaller countering vessels do not represent a capability that can be projected much beyond a state's territorial waters.

Capability Addition Modalities

The modality of addition of conventional firepower potential coincides with different efficiency outcomes, whether introduction, augmentation, replacement, or update. The association of each with greater or lesser efficiency varies with the technological sophistication of any extant systems of the same capability type.

Introduction. “Introduction” refers here to the procurement of systems possessing a conventional capability that does not currently exist in a state arsenal. If a state has no surface-to-air missile systems of any type and purchases some, upon their delivery they are introduced. Introduction corresponds to a marked capability increase and a modest procurement efficiency boost generally regardless of the level of sophistication of the systems in question.

Augmentation. Adding systems with capabilities already in the inventory of the procuring state may have either a slightly decremental or neutral association with procurement efficiency outcomes. Generally, if the extant systems are aging or obsolete, merely adding to them (often at the same level of sophistication, since no replacement is occurring) represents purchases of no great value and merely delaying the imperative to retire the old systems. If, however, the extant systems are competitive or advanced, augmentation does not generally coincide with a less efficient procurement outcome.

Replacement. Replacement is a traumatic process. States do not undertake it lightly, preferring augmentation or upgrade if their needs assessment and political oversight processes will permit it. Replacement is, however, usually a net positive over the lifetime of the procurement initiative (provided the state can see it through). For a minor decrement in efficiency corresponding to the retirement of the existing systems, states quickly incur a marginally greater boost to efficiency when replacing competitive systems or a dramatically greater one when replacing aging systems (with those that are competitive or more sophisticated).

Upgrading. Military hardware is generally characterized by remarkable durability, and the modular construction of modern conventional weapon systems frequently capitalizes on this attribute by consisting of specialized, sophisticated components installed within or upon a chassis or superstructure. This often makes it possible to dramatically improve the conventional firepower of platforms already in a state's arsenal by upgrading them to a more advanced variant. A quintessential example of this, and one exhibited by every single one of the case states, is the retrofitting of fixed-wing combat aircraft with improved avionics and weaponry hard point interfaces. Assuming a state is either in indigenous possession of the technology required to upgrade a platform or benefits from a favorable relationship with a state that possesses the same, upgrading is the most efficient modality of capability addition. Upgrading aging or obsolete platforms to competitive (or better) sophistication coincides with an even greater efficiency advantage than upgrading competitive platforms to advanced sophistication.

System Origin

The origin of the acquired firepower potential may coincide with different efficiency outcomes when considered in combination with other factors. Foreign sourcing can characterize somewhat more efficient procurement, while indigenous manufacture can correspond either to a sharp increase or decrease in procurement depending on the status of the technology required to field the procured capability. foreign-sourced equipment from states with regional balancing aims corresponds to a slight efficiency increase, and indigenous production confers either a pronounced

increase (in the case of systems that are field-ready without further research, development, testing, and evaluation, or RDT&E) or a marked penalty (if substantive RDT&E is incomplete at the time of the procurement outlay).

Foreign. Foreign sourcing appears to characterize slightly more efficient procurement for a given set of vendor state motives. Specifically, the vendor state must seek more than revenue generation with the sale of the weapons, and the goal should not merely be to improve bilateral ties overall with the importing state; revenue-seeking or bilateral linkage improvement as primary motives correspond neither to a decrement nor a boost to procurement efficiency. If, however, the vendor state's main policy motive in selling the weapon is to advance its own security aims in the region of the importing state, we generally observe a modest boost to efficiency.

Indigenous. Indigenous weapon sourcing represents a double-edged sword for states seeking to maximize their procurement efficiency. Indigenization programs by states that have historically exclusively or near-exclusively imported their weapons are hellacious undertakings. A frequently heeded temptation is for a state to decide to indigenously source a weapon system for which it has not yet completed the requisite research, design, testing, and evaluation (RDT&E), assuming that the allocation of procurement funds will carry this process across the finish line. These decisions are generally poison pills for procurement efficiency, either seriously delaying production runs or leading to a phenomenon known as "concurrency" where RDT&E continues even after production starts, requiring expensive and inefficient retrofits and modifications of production models based on the results of the ongoing development activities. On the

other hand, if a state chooses to indigenously source largely off-the-shelf platforms (for which no further RDT&E and only minor modifications are required) for the desired variant and the production infrastructure already exists, the procurement outcome is typically markedly more efficient.

Military Bureaucracy and Domestic Politics

Finally, two sets of domestic factors may further correspond to different efficiency outcomes. These consist of the bureaucratic status quo for individual military service resource expectations and whether the state's governing apparatus includes independent civilian political oversight of military procurement occurring against the backdrop of some degree of electorate engagement in regional security affairs.

Service territoriality. A settled status quo of military service seniority coincides with a small efficiency bonus, while the existence of a competitive dynamic (whether focused on other services or on a civil authority) incurs a small decrement. The former state of affairs frequently indicates at least a partial autocracy controlled by the military service whose seniority is not meaningfully in contest; this service dictates the direction of procurement efforts, either prioritizing low-stakes and low-cost repression hardware that largely does not register on the CFPI, or selecting clear-eyed threat-focused procurement initiatives and sticking them out until their benefits can be realized. If the services have a territorial outlook, however, their jockeying does not preclude diverting state resources from procurement initiatives before they can be realized or protecting primacy by pre-empting the adoption of more capable paradigms.

Independent civilian oversight. If civilian political entities exercise meaningful independent oversight of military procurement, the coinciding procurement outcome is probably (but not definitely) less efficient. The degree of this decrement, if any, appears to correlate to the prevalence of regional security issues, including defense spending, in domestic politics. The more the electorate engages with regional security as a topic, the worse the procurement efficiency outcome.

The foregoing framework represents a post-hoc conceptualization inductively derived from my findings in each of the four cases. The reader should keep in mind that I did not formulate it prior to data entry and process tracing; otherwise, this dissertation would represent an impossibly good fit between hypotheses and findings. Instead, I chose to present it as a takeaway version of the research findings. The macro-associations indicated by the quantitative findings enriched by the causal relationships illuminated by the descriptive analysis suggest the foregoing framework. I expect that it would evolve were it subjected to subsequent testing with additional cases.

To support the reader's understanding of how I conceived of and represented variables representing each theoretical account from Chapter 2, the following section describes analytic methods and summarizes findings.

Quantitative Methods and Findings

In this section, I identify, operationalize, and derive the dependent and independent variables under investigation. I detail my data sources for each, and provide an overview of the quantitative analysis steps that led me to select a statistical model from which to conclude associations (or lack thereof). Finally, I explain my reasoning for engaging in within-case descriptive analysis and I describe the selected methods and aims.

Dependent Variable: Procurement Efficiency

I measure procurement efficiency as a state arsenal's total change in score on the Conventional Firepower Potential Index (CFPI)⁴⁶ in a three-year period over a staggered three-year total of procurement and modernization spending in time-constant and exchange-adjusted USD (an unbounded ratio quantity):

$$\eta_{Up} = \frac{\Delta U_{p(y)} + \Delta U_{p(y-1)} + \Delta U_{p(y-2)}}{x_{(y-1)} + x_{(y-2)} + x_{(y-3)}}$$

Equation 3.1: CFP Procurement Efficiency

where η_{Up} is procurement efficiency, ΔU_p is the difference in CFPI score (an indexed measurement of the capability-based strategic signaling value of a crewed conventional weapon system based on its intended role and degree of technological sophistication; see

⁴⁶ Roberts, pp. 6-17.

the Appendix for a more thorough orientation to its methods)⁴⁷ between a given year and the previous year, x is a given year's procurement expenditure in exchange rate- and inflation-adjusted billions of U.S. dollars, and y is the year of analysis.⁴⁸

Conceived thus, a higher relative value for the DV indicates that a state is doing one or more of: (1) procuring a greater quantity of weapons; (2) procuring more sophisticated weapons with greater individual deterrent value; (3) procuring weapons faster; and/or (4) procuring them at a lower level of procurement spending. A lower relative value for the DV indicates that a state is doing one or more of: (1) procuring fewer weapons; (2) procuring less sophisticated or less competitive weapons with lower individual deterrent value; (3) taking longer between procurement outlay and weapon delivery; and (4) spending a greater amount of money to procure a given signaling value relative to higher efficiency scores.

As a composite variable representing two sets of data (case state procurement spending and arsenal composition), calculating procurement efficiency requires two sources. I draw yearly arsenal contents allowing for CFPI score computation from the International Institute for Strategic Studies' (IISS) *The Military Balance (TMB)*.⁴⁹ *TMB* lists quantities and platform nomenclatures for major conventional weapons in every state arsenal in a yearly compendium. For procurement spending, I rely on official government publications by the case states (see *Case Selection* in *Methodological*

⁴⁷ Ibid.

⁴⁸ Ibid., p. 19.

⁴⁹ *The Military Balance* (Washington, DC: International Institute for Strategic Studies, 1998-2020 [all editions]).

Overview later in this proposal for specific data sources for case country procurement spending) and in the case of Pakistan additional estimative adjustments from the Stockholm International Peace Research Institute (SIPRI).

Independent Variables: Theoretical Account Proxies

Each of the theoretical explanations reviewed in the previous chapter exhibit a suggestive logic specifying a correlation between the systematized concepts of government practices, threat focus, and vendor state contributions. This section develops these intuitively suggested relationships by specifying hypotheses, observable implications, and independent variable operationalization for each of the surveyed causal accounts.

Threat focus. The surveyed literature suggests that a direct correlation should exist between a state's procurement to balance a clear competitor-posed threat and a state's procurement efficiency while engaged in the balancing procurement. As such, the null and experimental hypotheses for this account are (*ceteris parabis*):

H₀: Procurement efficiency (DV) does not vary in any association with the threat-dictated procurement ratio (IV #1).

H₁: Procurement efficiency exhibits a positive association with the threat-dictated procurement ratio.

The dissertation operationalizes IV #1 as a proportion of the tactical role and domain orientation of the case state's CFP change relevant to the role/domain of a competitor state threat, depicted as matching (same tactical role and domain), countering (a role and domain understood to counteract the role and domain of the competitor

threat), and matching *and* countering, over the absolute value of total CFP change and occurring over three years.

For example, if state A (a case state) has a primary competitor of state B, and state B's main conventional capability signal to state A resides in state B's ballistic missiles, threat-dictated procurement for state A would be expressed as follows:

Matching (A procures ballistic missiles to match B's ballistic missile threat)

$$\text{Threat-dictated procurement ratio (matching)} = \frac{\Delta U_{ab(y)}}{|\Delta U_{p(y)}|}$$

Countering (A procures air defense missiles to counter B's ballistic missile threat)

$$\text{Threat-dictated procurement ratio (countering)} = \frac{\Delta U_{ad(y)}}{|\Delta U_{p(y)}|}$$

Matching & Countering (A procures ballistic *and* air defense missiles to match and counter B's threat)

$$\begin{aligned} \text{Threat-dictated procurement ratio} &= \frac{\Delta U_{ab(y)} + \Delta U_{ad(y)}}{|\Delta U_{p(y)}|} \\ \text{Three-year ratio (IV \#1)} &= \frac{(\Delta U_{ab(y)} + \Delta U_{ad(y)}) + (\Delta U_{ab(y-1)} + \Delta U_{ad(y-1)}) + (\Delta U_{ab(y-2)} + \Delta U_{ad(y-2)})}{|\Delta U_{p(y)}| + |\Delta U_{p(y-1)}| + |\Delta U_{p(y-2)}|} \end{aligned}$$

where ΔU_p is the total change in CFP, ΔU_{ab} is the change in CFP attributable to ballistic missile acquisition, ΔU_{ad} is the change in CFP attributable to air defense missiles, and y is the year of analysis (a ratio quantity representing percent that could be negative and/or in excess of an absolute value of 1). Endogenous multicollinearity with the DV is not present; although at first glance they appear to share a constituent value (total CFPI change in $y-2$ through y as a numerator in the DV and a denominator in the IV), they in fact do not. The denominator of the IV is the sum of the absolute values of total CFPI change in $y-2$ through y , which can and throughout the sample frequently does

constitute a different quantity than the total CFPI change in y and thus does not exhibit collinearity. Table 3.1 lists threats, matches, and counters.

Table 3.1: Threat, Matching, and Countering Systems

Threat	Match	Counter
Vessels	Aircraft Carrier Destroyer Frigate	Corvette Missile Boat / Fast Attack Craft Tactical Submarine Shore-based Anti-ship Missile System
Fixed Wing Aircraft	Multirole Fighter Ground Attack Aircraft	Air Superiority Fighter Air Defense (Missile)
Missiles	Surface-to-surface Missile	Air Defense (Missile)
Armor	Main Battle Tank	Armored Fighting Vehicle Rotary Wing Attack

As with data used to compute the CFP change dimension of the dependent variable, the dissertation uses IISS *TMB* for the arsenal data of the case states and the primary competitor states (also identified in *TMB*). I originally anticipated arbitrating between two methods of choosing the roles and domains of competitor state-posed threats: (1) identifying quantitative predominance in the competitor state's arsenal; or (2) identifying a prevailing narrative and perception of a particular conventional technological threat from a competitor state even if the arsenal figures do not bear this out. However, I discovered that for all four case states quantitative predominance coincided with narrative adoption by secondary analytic sources, rendering this decision moot.

Vendor goals. The literature suggests a direct correlation between the proportion of a case state's imports coming from a vendor state with complex export policy goals and the case state's procurement efficiency. The resulting null and experimental hypotheses are (*ceteris parabis*):

H₀: Procurement efficiency (DV) does not vary in association the proportion of imports originating with states with complex arms export policy goals (IV #2).

H₁: Procurement efficiency exhibits a positive association with the proportion of imports originating with states with complex arms export policy goals.

The study operationalizes IV #2 as 10 subordinate variables, each corresponding to the percentage of Stockholm International Peace Research Institute (SIPRI) Trend Indicator Values (TIVs) in each case state's conventional major arms imports in each three-year window (corresponding to each three-year DV calculation period) attributable to each of the ten largest arms exporters identified over the 21-year analytic window of the study (a bounded ratio quantity with expected value of as low as 0 and up to 1). I rely on the statements of the exporting states and the work of other scholars and analysts to determine whether a given vendor state has complex goals. Only those sales originating with states that have these goals contribute to the value of this IV.

The SIPRI Arms Transfers Database (the source of the quantitative data for IV #3) identifies the most prolific arms exporters over 2000-2020 as: (1) United States; (2) Russia; (3) France; (4) Germany; (5) United Kingdom; (6) China; (7) Spain; (8) Israel; (9) Italy; (10) Netherlands.⁵⁰ The study relies on exporting government and secondary scholarly, analytic, and journalistic sources to identify vendor state export practices that

⁵⁰ *Arms Transfers Database*, Stockholm International Peace Research Institute, interactive database, updated January 2020. <https://www.sipri.org/databases/armstransfers>.

can substantiate the survey-identified phenomena of selective system availability, regional balancing goals, policy-enabled competitive importer-facing pricing, and arms trade-tied security assistance mechanisms to the importer state.

Government practices. The literature suggests that there should be a direct correlation between the presence and quality of government practices intended to enhance state conventional weaponry procurement and the efficiency of that procurement. The null and experimental hypotheses for this account are thus (*ceteris parabis*):

H₀: Variations in gross procurement efficiency (DV) do not vary in relation to government procedure optimization (IV #3).

H₁: Procurement efficiency exhibits a positive association with government procedure optimization either simultaneously or within a consistent leading indicator window.

I operationalize IV #3 as a quasi-quantitative aggregated assessment of appropriation and governance, needs assessment, and accountability mechanisms. I draw from procuring government sources as well as from rigorous secondary scholarly, analytic, and journalistic sources. I employ a standardized annual questionnaire (see Tab. 3.2) to arrive at a 4-point ordinal score for each of these three identified dimensions, with an average of the three yielding a numeric value representative of the relative quality of each case state's government procurement practices (a bounded interval quantity with expected value between 1 and 5). The state's staggered three-year average score gives us the value of IV #1 in a given year of analysis (IV#1 score in years $y-3$ through $y-1$ corresponds to the DV value in year y).

Table 3.2: Probing for Government Conventional Weaponry Procurement Practices

Dimension	Attribute - The degree to which:	Negligible	Limited	Substantial
1. Appropriation and Governance	A. Military budgeting including procurement is spelled out in law.			
	B. The constitutionally identified head of state approves the defense budget request, including procurement.			
	C. The legislature debates and approves itemized defense spending including procurement.			
	D. The defense ministry/department and military execute the appropriated procurement.			
2. Rigorous & Repeatable Needs Assessment	A. Procurement undergoes deliberate needs assessment, itself reviewed for improvement.			
	B. Any needs assessment is a repeated and repeatable process.			
	C. Any needs assessment is both threat- and performance-focused.			
	D. Currently executing procurement programs trace to previous needs assessments.			
3. Effective Accountability Mechanisms	A. Detailed procurement expenditure is published.			
	B. Military procurement expenditure is audited by an independent entity.			
	C. Audit results are published.			
	D. Most recent reforms map to previous accountability activity.			

Control Variables

I selected gross domestic product (GDP) and population as controls. These quantities are intuitive associates of the DV and controlling for them would mitigate the risk of finding spurious associations between the DV and one or more of the IVs.

To treat fiscal data the same across the study, I used nominal GDP in billions of 2021 USD by converting from current local currency amounts and adjusting for USD inflation between the year of analysis and 2021. I derived these figures from the October 2021 edition of the International Monetary Fund’s World Economic Outlook Database.⁵¹ I subsequently dispensed with GDP as a control following multicollinearity screening (more in “Specifying a Statistical Model”).

⁵¹ International Monetary Fund, “World Economic Outlook,” interactive database, October 2021, <https://www.imf.org/en/Publications/WEO/weo-database/2021/October>.

Case Selection

I deploy three screening criteria and one sorting criterion to support case selection. These include: (1) the state is identified by SIPRI as in the top 20 conventional arms importers over the analytic window (2000-2020); (2) the state is *not* in the top 10 conventional arms exporters identified by SIPRI over the analytic window to avoid attribution errors stemming from manufacture rather than import; and (3) the state's budgetary information is detailed to the point of including procurement/modernization-specific defense spending is publicly accessible. The sorting criterion sought a shared regional and strategic importance of China among selected cases, whether as an arms supplier, a competitor, or an existential threat. The four selected cases are: (1) Australia; (2) India; (3) Pakistan; and (4) Taiwan.

Australia. SIPRI designates Australia as the #6 most prolific arms importer during the period 2000-2020.⁵² Australia's government publications provide publicly accessible and sufficiently detailed budgetary information for all years required by the study.⁵³ Australia pursues a nascent strategic competition with China while preferring strategic ambiguity on this question in public during the analytic window.⁵⁴

⁵² *Arms Transfers Database*.

⁵³ Department of the Treasury (Australia), "Agency Resourcing," *Federal Budget*, 1998-2021 (all editions).

⁵⁴ Garry Woodard, "The Role of Strategic Ambiguity in Canberra's China Policy," Australian Institute of International Affairs, February 21, 2018, <https://www.internationalaffairs.org.au/australianoutlook/australia-strategic-ambiguity/>.

India. SIPRI identifies India as the #1 most prolific arms importer during the period 2000-2019.⁵⁵ India's government publications provide publicly accessible and sufficiently detailed budgetary information for all years required by the study.⁵⁶ India's primary and secondary competitors include China and Pakistan.⁵⁷

Pakistan. SIPRI identifies Pakistan as the #8 most prolific arms importer over the period 2000-2020.⁵⁸ Pakistan's government publications provide publicly accessible and sufficiently detailed budgetary information for 2008 through 2021.⁵⁹ Uniquely for Pakistan among the selected cases, a third-party verification with SIPRI's independent military expenditure estimates suggests that an adjustment of up to ~35% to Pakistan's government-reported expense figures is necessary in certain years;⁶⁰ this fact in combination with a lack of detailed defense expenditure for years prior to 2008 means that Pakistan is the only case state in the study with two data sources for expenditure. India is Pakistan's primary competitor, while China is an important security partner and arms supplier.⁶¹

⁵⁵ *Arms Transfers Database.*

⁵⁶ Ministry of Finance (India), "Capital Outlay on Defence Services," *Demands for Grants of Central Government*, 1997-2020 (all editions).

⁵⁷ Central Intelligence Agency, "India," *The World Factbook*, <https://www.cia.gov/the-world-factbook/countries/india/>.

⁵⁸ *Arms Transfers Database.*

⁵⁹ Ministry of Finance (Pakistan), "Defence Services Division," *Demands for Grants*, 2009-2021 (all editions).

⁶⁰ *Military Expenditure Database*, Stockholm International Peace Research Institute, interactive database, updated January 2020, <https://sipri.org/databases/milex>.

⁶¹ Central Intelligence Agency, "Pakistan," *The World Factbook*, <https://www.cia.gov/the-world-factbook/countries/pakistan/>.

Taiwan. SIPRI lists Taiwan as the #20 most prolific arms importer over the period 2000-2020.⁶² Taiwan regularly publishes national defense reports that detail conventional procurement expenditure for the year of publication and several previous years.⁶³ To Taiwan's government, China represents a constant and existential threat.⁶⁴

Specifying a Statistical Model

Having identified and operationalized independent variables and controls, a simplified multivariate regression expression reads (i = country and t = year):

$$\begin{aligned} \text{procurement efficiency}_{it} = & \beta_0 + \beta_1 * \text{threat focus}_{it} + \beta_2 * \text{complex vendor origin}_{it} \\ & + \beta_3 * \text{government practice score}_{it} + \beta_4 * \text{population}_{it} + \epsilon_{it} \end{aligned}$$

I dispensed with GDP as a control as a result of multicollinearity screening. I screened via the independent variable covariance matrix using a Pearson Correlation Coefficient (PCC) acceptability threshold of 0.7. GDP and population exhibited a PCC of ~0.72 signifying an unacceptable degree of collinearity. I chose to dispense with GDP as a control because it also exhibited the second highest PCC in the matrix at ~0.54 with IV #2 (government practices). Population did not exhibit a PCC greater than 0.21 with

⁶² *Arms Transfers Database*.

⁶³ Ministry of National Defense (Taiwan), *National Defense Report*, 2002-2020 (all editions).

⁶⁴ Michael Hunzeker and Alexander Lanoszka, *A Question of Time: Enhancing Taiwan's Conventional Deterrence Posture* (Arlington, VA: Center for Security Policy Studies, 2018), pp. 9-10, 15-17, 34-35, 40-41.

any of the IVs. None of the IVs exhibited unacceptable collinearity with respect to one another.

The time-longitudinal nature of the data in this study and the intuitive notion of the possibility of substantial variance across entities offered multiple modeling possibilities. Following significance and suitability testing, I ultimately selected a cross-sectional time-series fixed generalized least squares (FGLS) regression controlling for heteroskedastic panels exhibiting cross-sectional dependence.

Models Considered. I considered the following statistical models to approximate relationships between the DV and the IVs:

1. Pooled ordinary least squares (OLS) regression
2. Pooled OLS regression using robust standard error
3. Fixed-effects panel regression controlling for country effects
4. Random effects panel regression
5. Fixed-effects panel regression controlling for country effects using robust standard error
6. Random effects panel regression using robust standard error
7. Generalized least squares (GLS) panel regression controlling for heteroskedasticity and cross-sectional dependence (**Selected**)

Significance Testing. Table 3.3 details the results of significance testing of the seven models. IV coefficients were closely similar across the random effects models and the pooled OLS models whether or not robust standard error was used; however, significance was inconsistent. The GLS regression (informed by the results of the suitability tests detailed below) with heteroskedasticity and cross-sectional dependence controls yielded coefficients that exhibited reasonable similarity to those of the random effects and pooled OLS models considering a correction for misspecification controls. The GLS regression coefficients were also the most significant, at the 1 percent level for the three IVs and at the 5 percent level for the constant.

Table 3.3: Significance Testing Results

Model	Variables	Coefficients		Significance
		β	Std. Err.	
1. Pooled OLS	Constant	732.91	399.16	*
	IV 1 (Threat Focus)	680.17	195.82	***
	IV 2 (Complex Vendor Origin)	607.28	313.90	*
	IV 3 (Government Practices)	-337.47	101.58	***
	Control (Population)	-6.83E-08	1.36E-07	
	Fit	$R^2 = 0.37$		
2. Pooled OLS, robust standard error	Constant	732.91	506.15	
	IV 1 (Threat Focus)	680.17	200.38	***
	IV 2 (Complex Vendor Origin)	607.28	319.72	*
	IV 3 (Government Practices)	-337.47	120.40	***
	Control (Population)	-6.83E-08	8.32E-08	
	Fit	$R^2 = 0.37$		
3. Fixed (country)-effects panel regression	Constant	-1012.45	721.01	
	IV 1 (Threat Focus)	608.27	191.27	***
	IV 2 (Complex Vendor Origin)	182.55	365.40	
	IV 3 (Government Practices)	744.56	345.42	**
	Control (Population)	-2.60E-06	1.65E-06	
	Fit	$R^2 = 0.37$ (within); 0.00 (between); 0.00 (overall)		
4. Random effects panel regression	Constant	732.91	399.16	*
	IV 1 (Threat Focus)	680.17	195.82	***
	IV 2 (Complex Vendor Origin)	607.28	313.90	*
	IV 3 (Government Practices)	-337.47	101.57	***
	Control (Population)	-6.83E-08	1.36E-07	
	Fit	$R^2 = 0.71$ (within); 1.00 (between); 0.37 (overall)		
5. Fixed (country)-effects panel regression, robust standard error	Constant	-1012.45	309.98	*
	IV 1 (Threat Focus)	608.27	302.98	
	IV 2 (Complex Vendor Origin)	182.55	437.77	
	IV 3 (Government Practices)	744.56	99.93	***
	Control (Population)	-2.60E-06	1.39E-06	
	Fit	$R^2 = 0.16$ (within); 0.00 (between); 0.00 (overall)		
6. Random effects panel regression, robust standard error	Constant	732.91	516.81	
	IV 1 (Threat Focus)	680.17	472.28	
	IV 2 (Complex Vendor Origin)	607.28	115.13	***
	IV 3 (Government Practices)	-337.47	94.11	***
	Control (Population)	-6.83E-08	3.71E-08	*
	Fit	$R^2 = 0.71$ (within); 1.00 (between); 0.37 (overall)		
7. GLS regression, controlling for heteroskedasticity and cross-sectional dependence	Constant	539.91	244.69	**
	IV 1 (Threat Focus)	609.54	71.91	***
	IV 2 (Complex Vendor Origin)	593.60	133.41	***
	IV 3 (Government Practices)	-280.24	83.18	***
	Control (Population)	-1.29E-08	1.00E-07	
	Fit	Wald $\chi^2(4) = 98.36$		

Suitability Testing. To support selection of a preferred and appropriate statistical model, I performed suitability tests to ascertain: (1) preference between fixed- and random effects (Hausman);⁶⁵ (2) cross-sectional dependence (Breusch-Pagan);⁶⁶ (3) serial autocorrelation (Wooldridge);⁶⁷ and (4) heteroskedasticity (Wald).⁶⁸

For a $\chi^2(3)$ of 10.28, the Hausman test returned a diagnostic value of $\text{prob} > \chi^2 = 0.0104$. This indicates a preference for fixed effects. However, the study's macro scope and long time window (84 observations over more than 20 years) placed the data at risk for cross-sectional dependence.

The Breusch-Pagan test returned results indicating cross-sectional dependence (for $\chi^2(6) = 14.391$, $\text{Pr} = 0.0256$). This suggested either attempting to mitigate the dependence or testing the suitability of a different model.

The Wooldridge test returned results indicating first-order serial autocorrelation ($\text{Prob} > F = 0.0000$). This suggested mitigation by lagging or examining a different model. Lagging the variables by one year did not effectively control for autocorrelation and reduced both coefficient significance and goodness of fit measures.

Returning to the fixed effects model, the Wald test indicated groupwise heteroskedasticity. With $\chi^2(4) = 687.93$, the test stipulated $\text{prob} > \chi^2 = 0.0000$. This

⁶⁵ Oscar Torres-Reyna, "Panel Data Analysis: Fixed and Random Effects using Stata," Princeton University, 2007, <https://dss.princeton.edu/training>.

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ Ibid.

prompted evaluation of the fixed effects, random effects, and linear regression models using robust standard error.

Selected Model. The combination of the findings of cross-sectional dependence and heteroskedasticity prompted me to choose a generalized least squares (GLS) panel regression model that controlled for both these issues.⁶⁹ I chose to assume a minor misspecification risk associated with first-order serial autocorrelation because lagging did not address it and the recursive operationalization of the dependent and independent variable designs include three years of built-in lag. The suitability test-indicated model also returned significance test results suggesting highly significant associations and appropriate fit compared to the other tested models.

Quantitative Findings

Although statistical analysis using the specified model of a cross-sectional time-yielded specific coefficients, I believe the directionality of the coefficient-indicated associations is much more important than the magnitude of the coefficients in producing an inexact predictive framework. Both the resultant values from regression analysis and the visual presentation of each of the variables is highly instructive to begin within-case descriptive analysis and to inductively devise a framework to generalize these dynamics to the rest of the arms-importing world.

⁶⁹ Erik Biorn, “A Tutorial for Panel Data Analysis with Stata,” University of Oslo, 2010, <https://www.uio.no/studier/emner/sv/oekonomi/ECON5103/v10/undervisningsmateriale/>.

Regression Results. Significance and suitability tests supported the specification of a cross-sectional time-series generalized least squares regression. For simplicity's sake, I express the resultant model below as the approximated multiple regression following generalization and controlling for heteroskedasticity and cross-sectional dependence (the characteristics of the data that prompted selection of a GLS model):

$$\begin{aligned} \text{procurement efficiency}_{\text{year}} = & 539.91 + 609.54 * \text{threat focus}_{\text{year}} + 593.60 * \text{complex vendor origin}_{\text{year}} \\ & - 280.24 * \text{government practice score}_{\text{year}} - 1.29\text{E-}08 * \text{population}_{\text{year}} \\ & + \epsilon_{\text{year}} \end{aligned}$$

My descriptive findings in within-case exploration and the results of the suitability tests prompt me to place more importance on the positivity or negativity of the suggested IV-DV associations rather than on the specific coefficient values. Even controlling for heteroskedasticity and cross-sectional dependence, there is substantial error in the regression terms (71.91, 133.41, and 83.18 for the coefficients of IVs 1, 2, and 3 respectively) that potentially undermines any precise predictive value they may otherwise have offered. Nevertheless, computing coefficients that are reliably positive or negative at high levels of significance—supporting 99 percent confidence for all three of IVs 1, 2, and 3—constitutes an important finding for variable relationships that are under-explored in scholarship. This is particularly true for government procurement practices; while the literature suggests a positive association with procurement efficiency, the regression results indicate a negative association within the sample.

These results support rejection of the null hypotheses for all three IVs; procurement efficiency appears to vary in statistically significant association with each of

procurement threat focus, equipment origin from states with more than revenue generation goals, and responsible government procurement practices. Although this rejection implies support for the research hypotheses corresponding to the literature-suggested positive associations between each of the first two IVs and the DV, this is not the case for IV 3 (government practices) where the regression-indicated association between the DV and this IV is negative. It is important to understand that the compound nature of IV 3 means that further study would be needed before further interpreting this result; however, merely finding that—at least as defined in this study—responsible government weaponry procurement practices do not display a positive association with more efficient conventional firepower potential acquisition constitutes an interesting and important result.

The finding of coefficients that are significant in the positivity or negativity of the association they suggest but imprecise in their extrapolative predictive value is an important contributor to my decision to scope the theoretical framework presented at the outset of this chapter. Together with the results of the qualitative exploration of each case state's procurement experience, I was able to establish diverse evidentiary support for a framework to *generally predict relative degrees* (rather than compute precise quantities) of the conventional firepower potential procurement efficiency of state decisions to procure major weapon systems over several years.

The remainder of this subsection focuses on graphical depiction of the time-series and pooled values of the DV and regression term IVs. Where I believed it would be

instructive to break out and depict specific constituent variables of the IVs I have also done so.

Procurement Efficiency. Figure 3.2 depicts CFP procurement efficiency (DV) by country during the analytic window 2000-2020. Figure 3.3 pools all procurement efficiency values to provide a visual (box) summary within each country.

Threat Focus. Figure 3.4 depicts three-year threat-focused procurement ratios (IV 1) corresponding to the DV in each year by country during the analytic window. Figure 3.5 pools all IV 1 values to provide a visual (box) summary within each country. Table 3.3 identifies threat states and conventional threats for the case states over time. It is important to note that Australia is the only state whose narratively and quantitatively-indicated threats evolve over time as China acquires more numerous and sophisticated conventional capabilities.

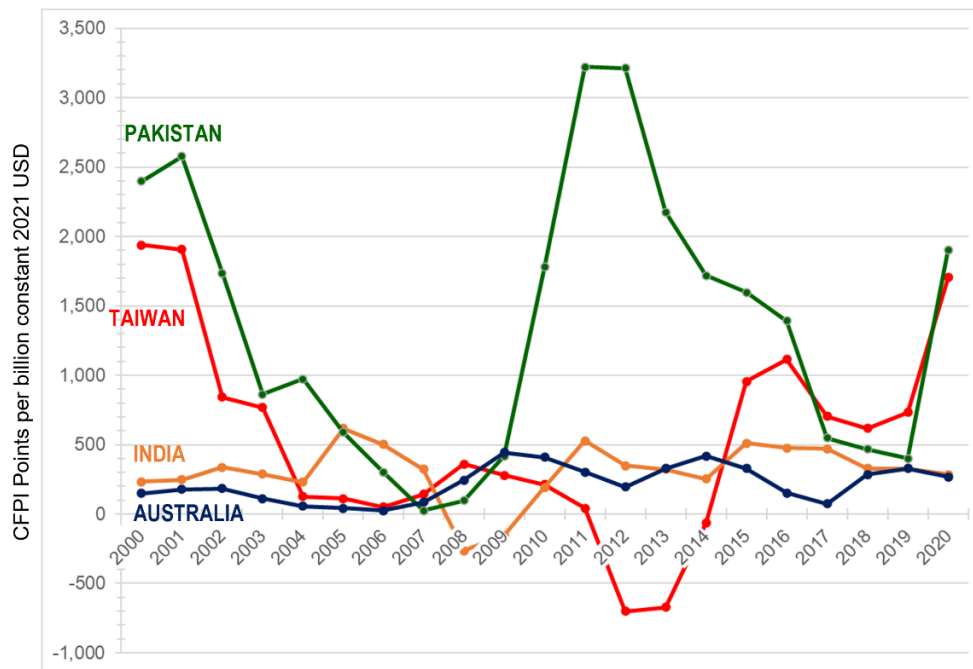


Figure 3.2: CFP Procurement Efficiency by Country, 2000-2020

Sources: CFPI, IISS, SIPRI, Ministry of Finance (India), Ministry of Finance (Pakistan), Department of Defence (Australia), Ministry of National Defense (Taiwan)

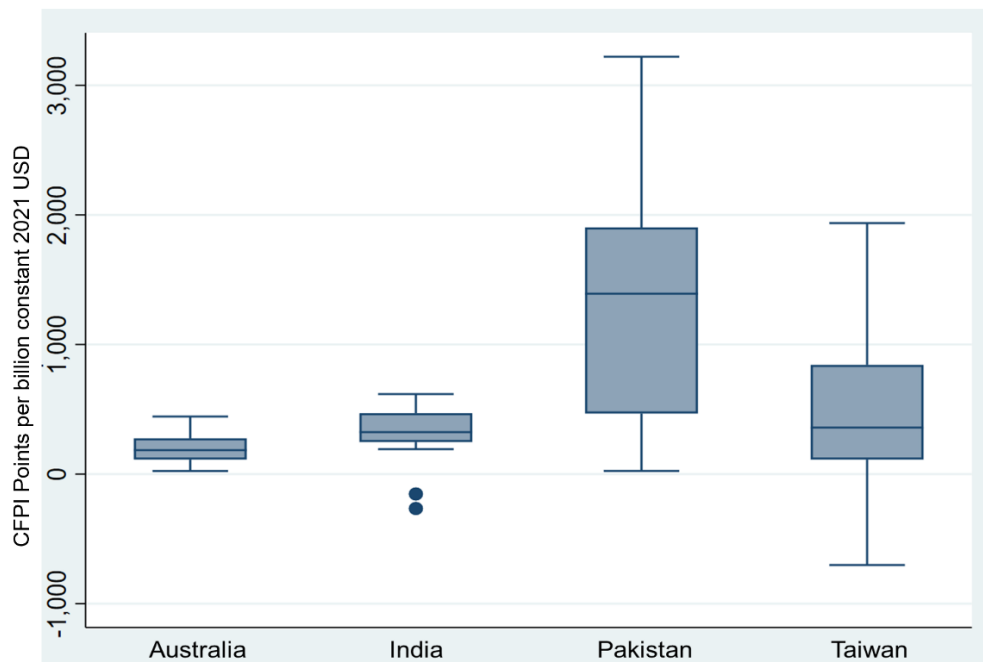


Figure 3.3: Pooled CFP Procurement Efficiency by Country, 2000-2020

Sources: CFPI, IISS, SIPRI, Ministry of Finance (India), Ministry of Finance (Pakistan), Department of Defence (Australia), Ministry of National Defense (Taiwan)

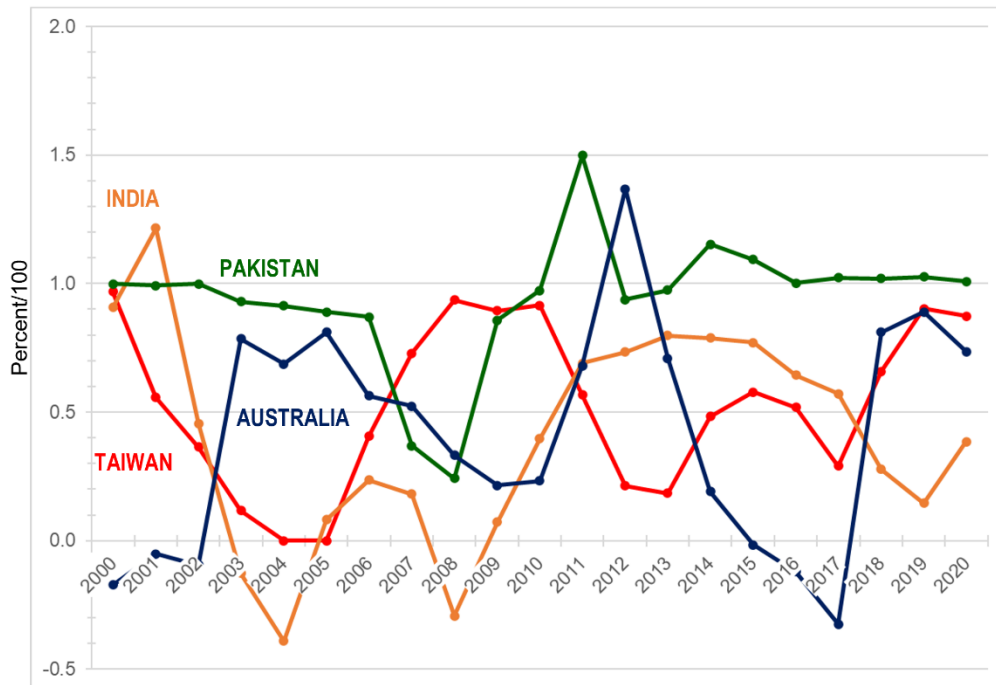


Figure 3.4: 3-Year Procurement Threat Focus Ratio by Country, 2000-2020

Sources: CFPI, IISS

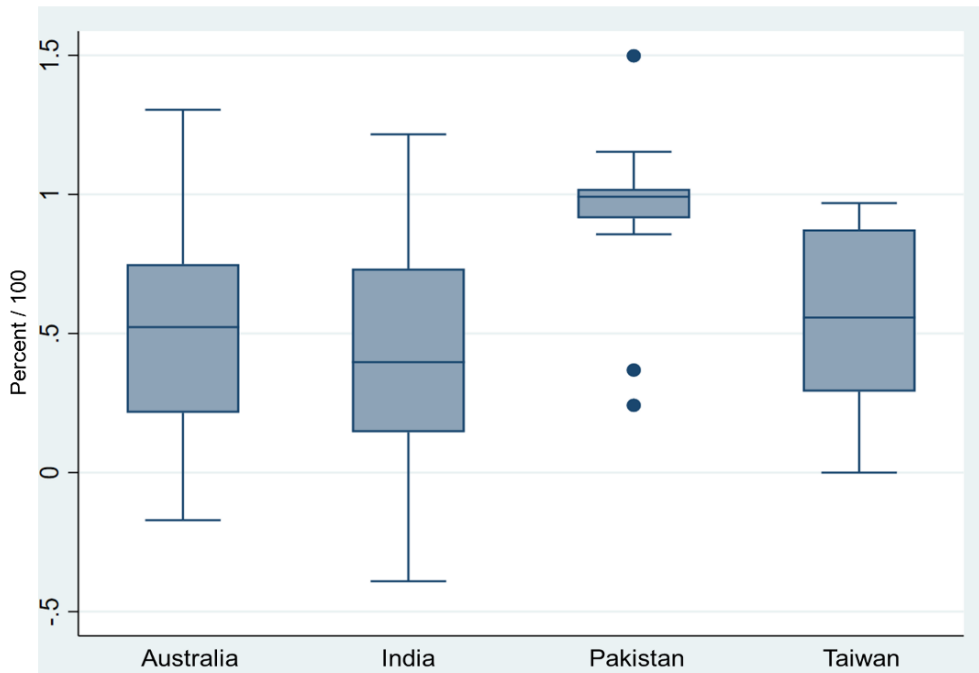


Figure 3.5: Pooled 3-Year Procurement Threat Focus Ratio by Country, 2000-2020

Sources: CFPI, IISS

Table 3.4: Case State-Perceived Threat States and Systems, 2000-2020

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Australia																						
Threat State	China	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	India																					
Threat Systems	Vessels	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Fixed Wing										X	X	X	X	X	X	X	X	X	X	X	
	Missiles																			X	X	
	Armor																					
India																						
Threat State	China	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	India																					
Threat Systems	Vessels	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Fixed Wing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Missiles	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Armor																					
Pakistan																						
Threat State	China																					
	India	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Threat Systems	Vessels	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Fixed Wing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Missiles																					
	Armor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Taiwan																						
Threat State	China	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	India																					
Threat Systems	Vessels	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Fixed Wing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Missiles	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Armor																					
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020

Sources: IISS, Australian Strategic Policy Institute (ASPI), Defense Security Brief (Taiwan), Institute for Defence Studies and Analysis (India), Pakistan Institute for Conflict and Security Studies (PICSS)

Equipment Origin and Vendor State Goals. Figure 3.6 depicts three-year proportions of imported weapon system origins from states with complex arms sales goals (primary goals other than revenue generation) (IV 2) corresponding to procurement efficiency in each year by country during the analytic window. Figure 3.7 pools all IV 2 values to provide a visual (box) summary within each country. Figure 3.8 isolates and pools United States origin. Figure 3.9 does this for China and 3.10 pools and isolates

Russian origin. Figure 3.11 combines and pools the proportion of all imported equipment with Chinese and American origin, while figure 3.12 depicts a pooled proportion of equipment from the other top seven vendors operating primarily on revenue generation goals (France, Germany, Israel, Italy, the Netherlands, Spain, and the United Kingdom).

Government Procurement Practices. Figure 3.13 presents IV 3, the three-year average government procurement practice scores staggered by one year from the DV year (years $y-3$ through $y-1$ are analyzed for association with current year y). Figure 3.14 pools all IV 3 values. Figures 3.15, 3.16, and 3.17 pool and isolate scores for the various attribute indicators: appropriation and governance; needs assessment; and accountability mechanisms. The case chapters go into more detail for each of these.

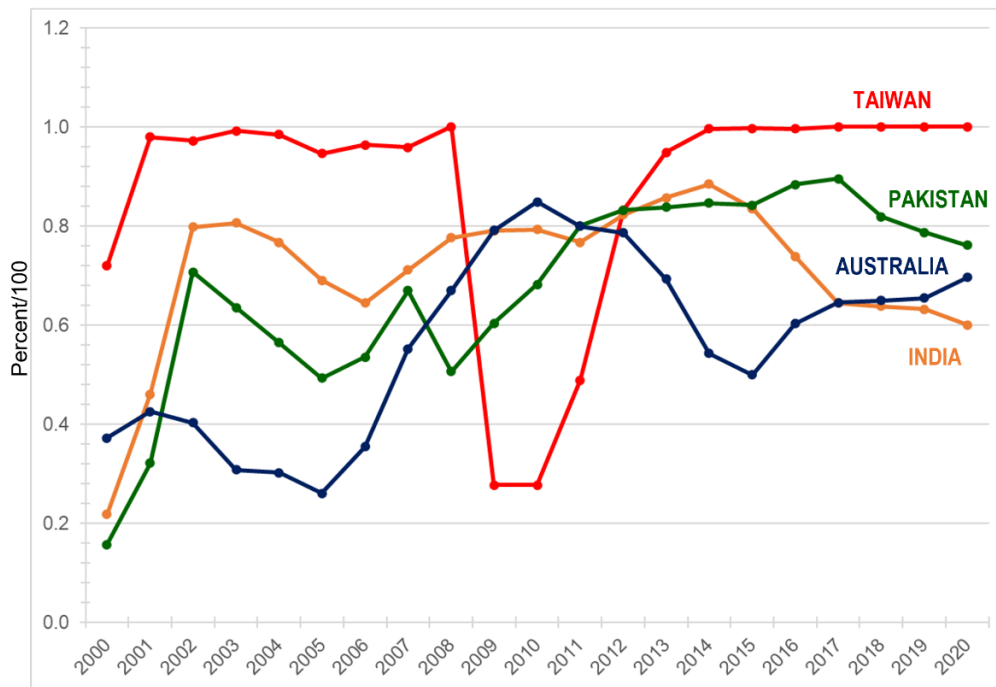


Figure 3.6: 3-Year Complex Goal Vendor Origin by Country, 2000-2020

Sources: CFPI, IISS

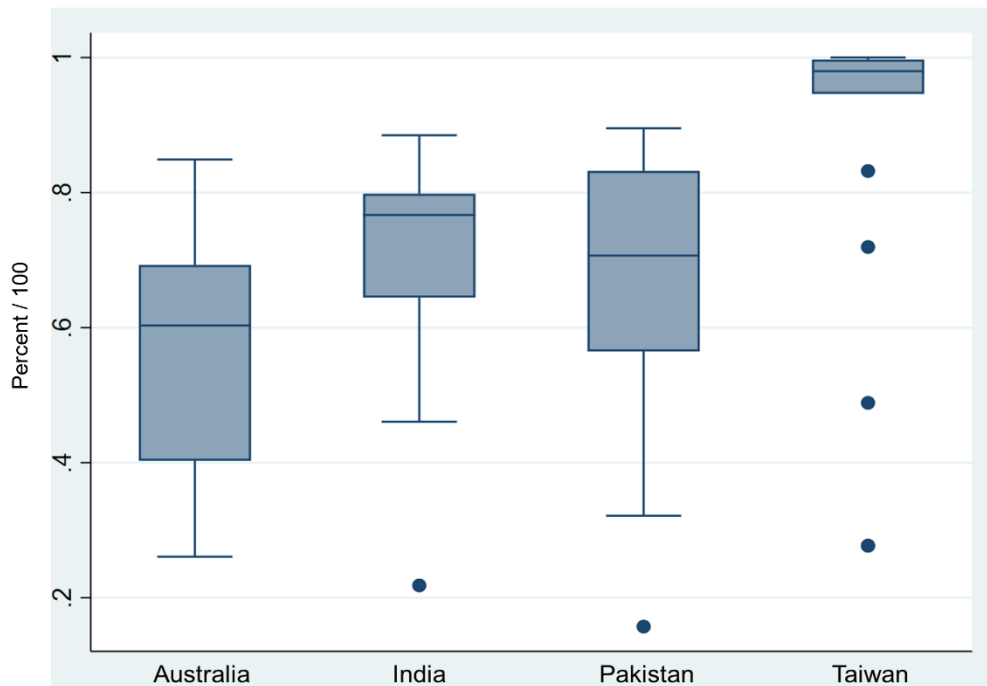


Figure 3.7: Pooled 3-Year Complex Goal Vendor Origin by Country, 2000-2020

Sources: SIPRI

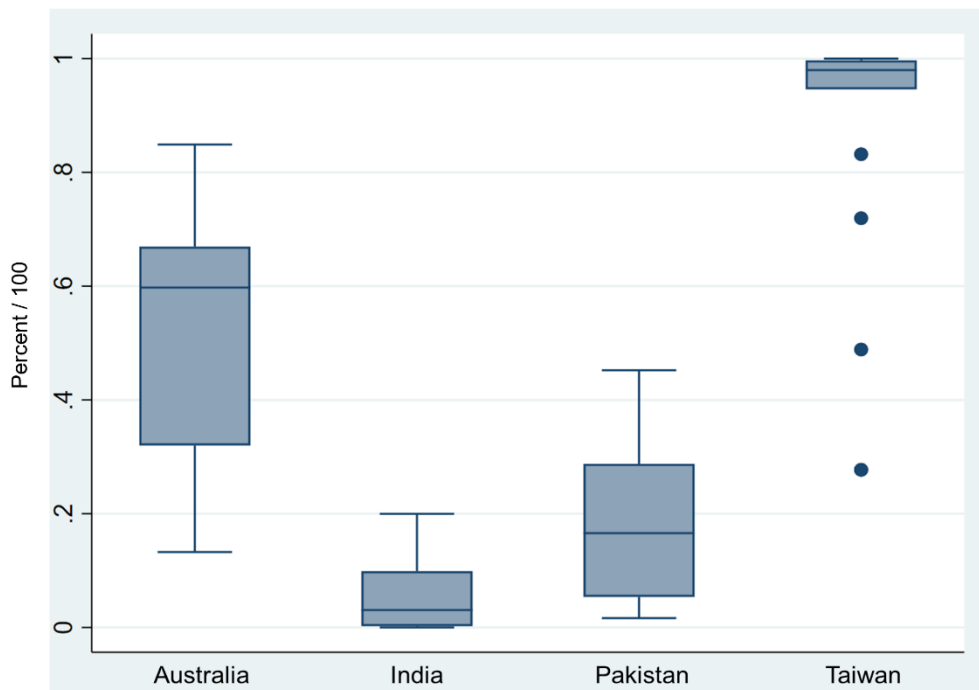


Figure 3.8: Pooled 3-Year United States Vendor Origin by Country, 2000-2020
 Sources: SIPRI

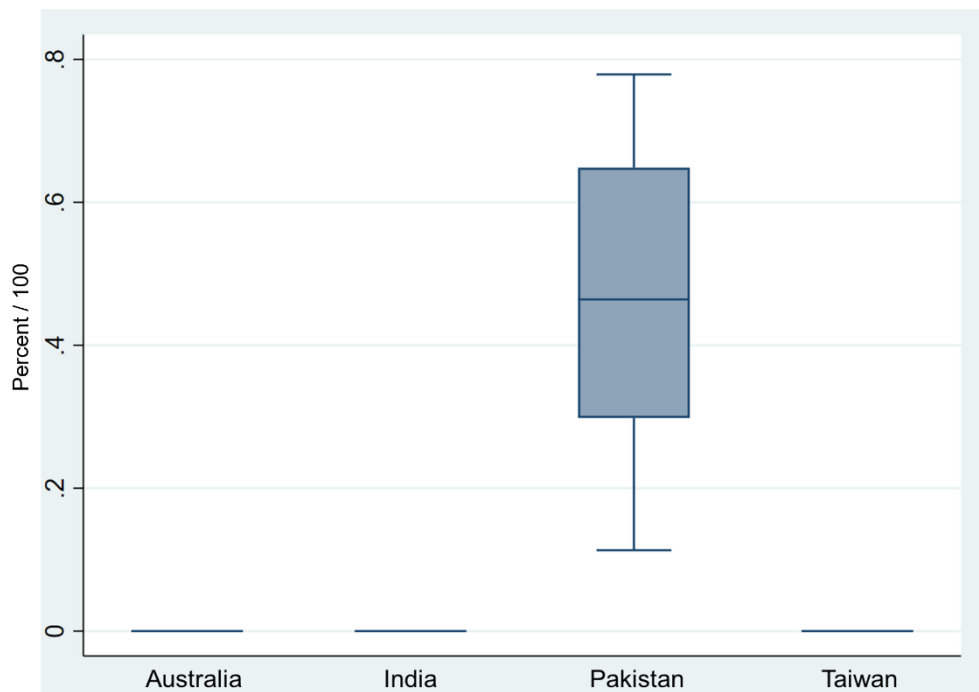


Figure 3.9: Pooled 3-Year China Vendor Origin by Country, 2000-2020
 Sources: SIPRI

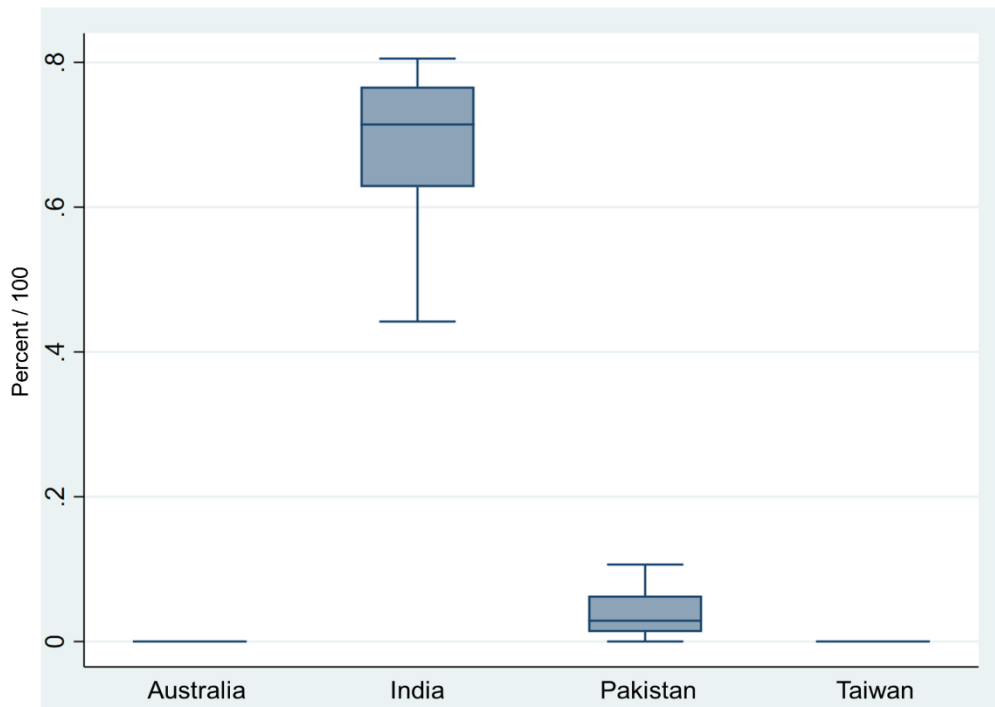


Figure 3.10: Pooled 3-Year Russia Vendor Origin by Country, 2000-2020
Sources: SIPRI

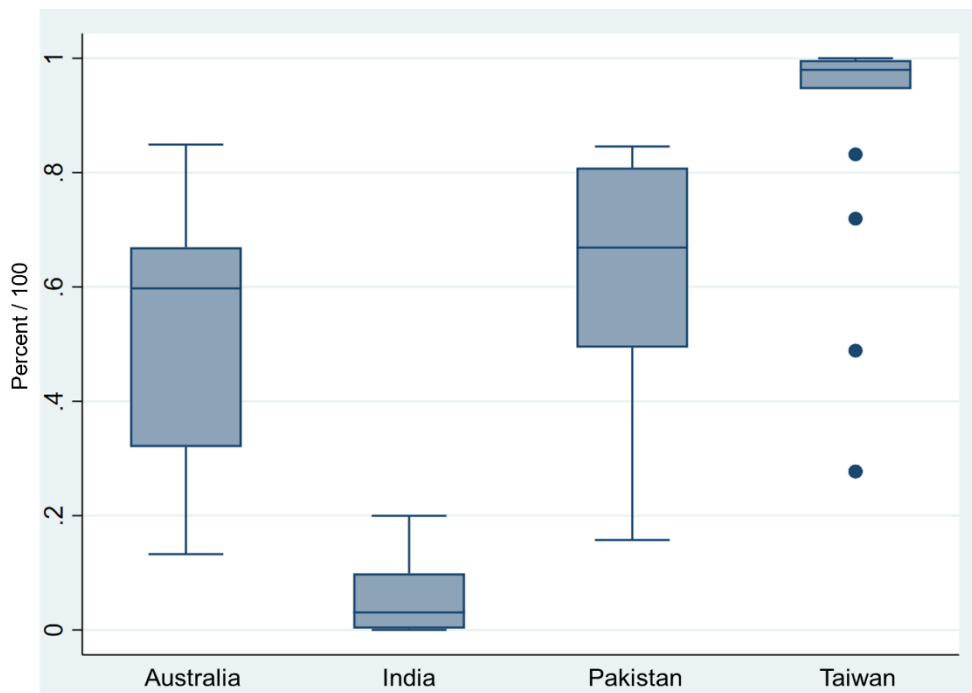


Figure 3.11: Pooled 3-Year U.S. & China Vendor Origin by Country, 2000-2020
Sources: SIPRI

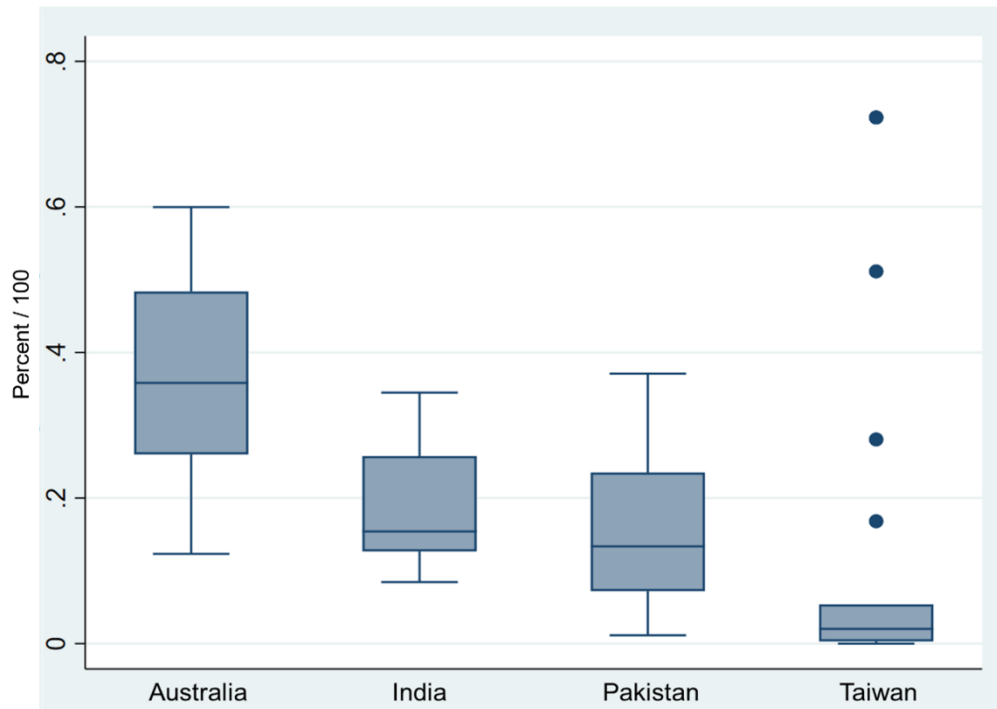


Figure 3.12: Pooled 3-Year Revenue Seeker Vendor Origin by Country, 2000-2020
Sources: SIPRI

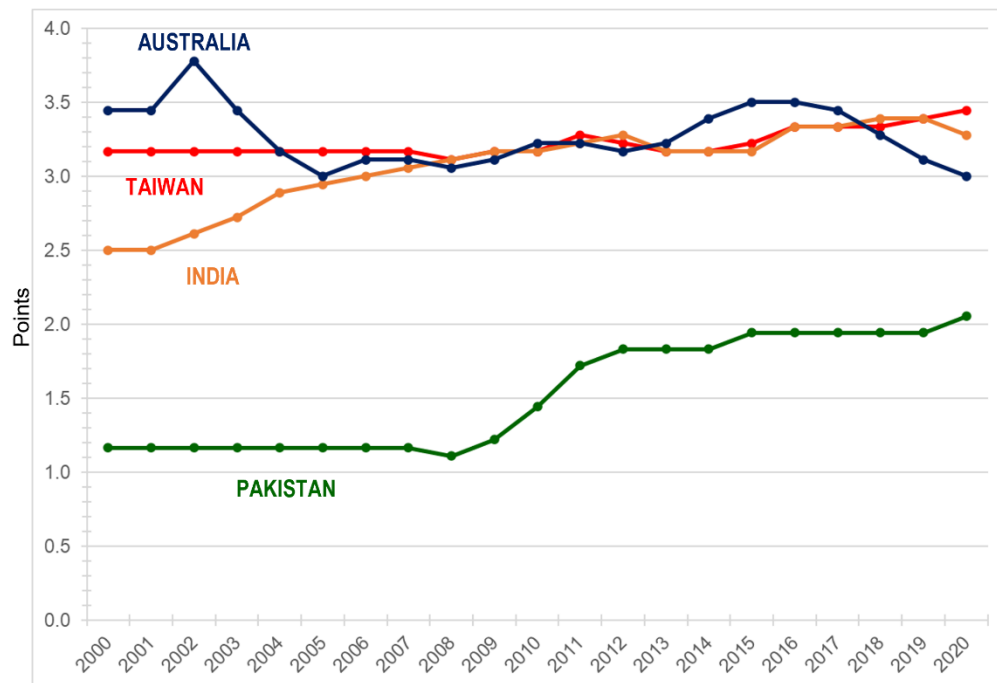


Figure 3.13: 3-Year Government Practice Average Score by Country, 2000-2020
Sources: CFPI, IISS

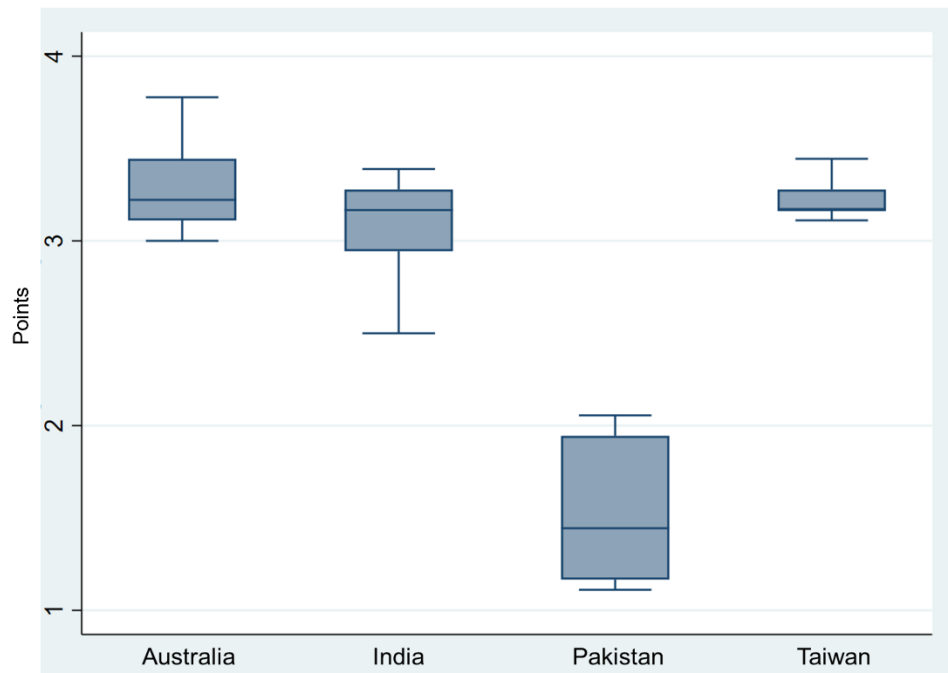


Figure 3.14: Pooled 3-Year Government Practice Average Score by Country, 2000-2020

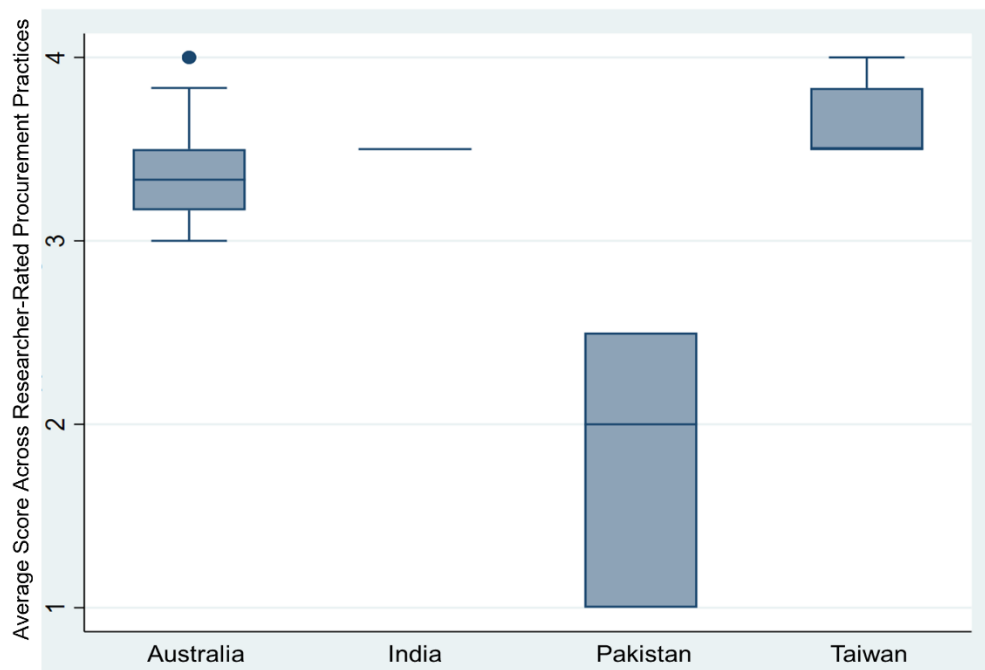


Figure 3.15: Pooled Appropriation & Governance Score by Country, 2000-2020

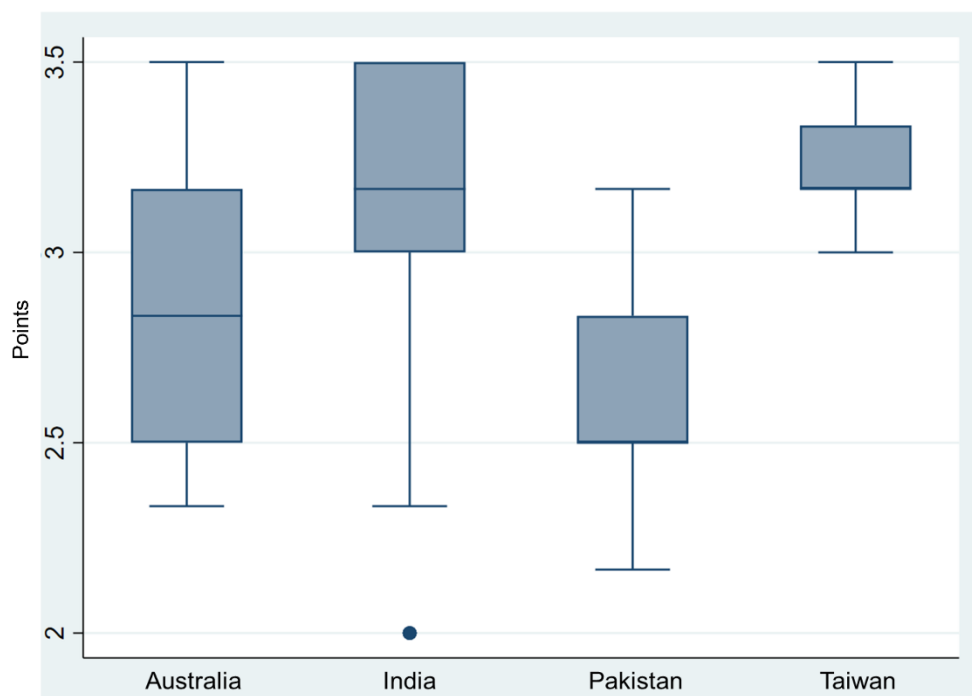


Figure 3.16: Pooled 3-Year Needs Assessment Score by Country, 2000-2020

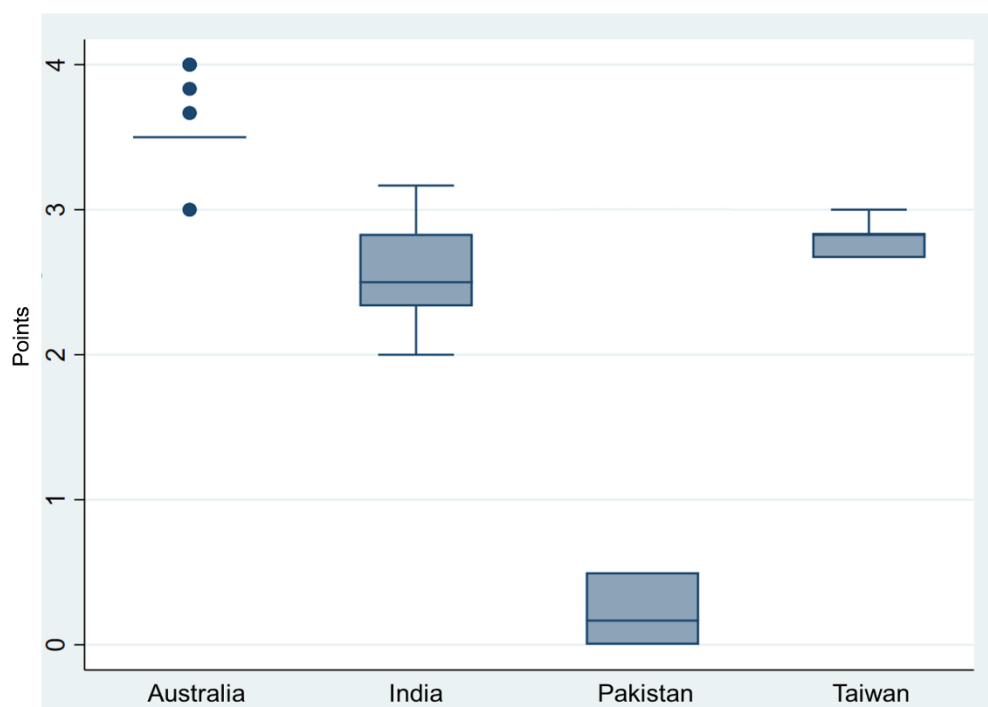


Figure 3.17: Pooled 3-Year Accountability Mechanism Score by Country, 2000-2020

Within-Case Methods and Findings

In addition to statistical probing, I set out to understand and describe the processes the case states were actually following in the years of the analytic window. I chose to do this to supplement the statistical analysis with qualitative exploration consistent with best practices prescribed by social scientists advocating for ever-more-meaningful integration of qualitative methods with quantitative research. I hope to not only make the narrative context of my quantitative findings accessible to the non-quantitatively inclined reader, but further to ensure appropriately I treat the case data as observational (rather than experimental).⁷⁰ Although much of the analysis will consist of description seeking substantiation for quantitatively indicated findings and thus be unstructured or semi-structured, I am embracing the notion that the accretion of unstructured knowledge is an important part of causal inference.⁷¹

To ensure I address the above goals, I present each case study with a common structure. First, I provide a brief background of the case state's regional security outlook in the modern era (circa World War II to present). Next, I detail major conventional procurement initiatives occurring during the analytic window and sync them with the case state's varying procurement efficiency performance. I examine each of the independent variables from a narrative perspective, and then seek reasons for the

⁷⁰ Henry E. Brady, "Doing Good and Doing Better: How Far Does the Quantitative Template Get Us?" in *Rethinking Social Inquiry: Diverse Tools, Shared Standards*, 2nd ed., Henry E. Brady and David Collier, eds. (Lanham, MD: Rowman & Littlefield, 2010), pp. 67-82.

⁷¹ Larry M. Bartels, "Some Unfulfilled Promises of Quantitative Imperialism," in *Rethinking Social Inquiry: Diverse Tools, Shared Standards*, 2nd ed., Henry E. Brady and David Collier, eds. (Lanham, MD: Rowman & Littlefield, 2010), pp. 83-88.

indicated associations, particularly when literature-suggested relationships are not supported by the statistical findings. In seeking these reasons I focus on intervening phenomena highlighting variation at the unit (state) level, particularly inter-service rivalry and domestic political dynamics. Finally, I attempt to sketch the upper and lower bounds of the case state's strategic signaling outlook, identifying procurement policies and organizational practices that could improve or degrade procurement efficiency in the next decade.

Within-Case Results

Although the remaining four chapters in the dissertation center on the case states whose quantitative data is presented in the preceding pages, from this point on quantitative findings will not be the central focus of my analysis. Instead, each chapter of descriptive analysis use the quantitative findings to guide inquiry and inference in order to present an accessible and useful narrative of the unit-level phenomena that coincided with the statistics. I close this chapter with a brief summary of what lies ahead for the reader in each case.

Australia. Australian government and industry publications have laid out aspirations for a robust and capable indigenous defense manufacturing sector for decades. Economic, strategic, and technical externalities have instead kept Australia primarily dependent on imports with the relatively recent exception of newer naval shipbuilding. A rowdy inter-service resource rivalry characterized in large part by chasing British and American capabilities combined with a longstanding stance of strategic ambiguity toward

China have meant that Australia's procurement mostly lacked bureaucratic or strategic focus during the analytic window. Australia's surprising decision to jettison a years-long requirements study to sign on to the F-35 Lightning II and its increasingly clear-eyed view of the latent regional threat of China have coincided with more efficient signaling capability acquisition in the last few years of the study.

India. Assertive civilian control of military affairs in India has coincided with decades of underspending procurement appropriation and a diffuse approach to system selection that has hindered the defense production sector in the achievement of economies of scale. The hallmark of India's arsenal's recent history is the lack of a clear flagship system for a given capability, nowhere more obvious than the remarkably diverse and aging fighter ecosystem maintained throughout most of the 2000s and 2010s. Adding to India's procurement efficiency woes in a big way are active inter-service rivalry and a resource-gobbling indigenization effort littered with abandoned initiatives for system production undertaken while RDT&E remain to be completed. A small number of prestige projects including indigenous nuclear submarine and aircraft carrier construction receive combined military and civilian political support for their great power posturing against China.

Pakistan. Pakistan's broader economic and political woes are plentiful, but its conventional deterrent procurement has been remarkably efficient. There is negligible inter-service rivalry; the Army is the undisputed king, including over the constitutionally prescribed civilian head of government when it comes to matters of national security and foreign policy. A clear, nearly all-consuming focus on countering the platforms key to an

Indian combined arms incursion, the supremacy of the Chief of Army Staff, and variously enjoying the regional aim-underpinned favor of China and the United States means that during the analytic window Pakistan made and followed through on procurement decisions that efficiently added to the foundation of credible conventional deterrent signaling.

Taiwan. Arguably facing the most existential threat out of any of the case states, Taiwan's conventional deterrent acquisition efforts occur in the shadow of estranged behemoth sibling China. Perhaps counterintuitively, a relatively high degree of domestic political focus on countering the Chinese threat has not had the effect of making Taiwan's procurement more efficient, perhaps because a political focus on security tends to be preoccupied with going toe-to-toe with China in "gray zone" provocations and fielding prestige capabilities for which the island has little use and which do not send a credible signal against Chinese incursion. A major theme in Taiwan's procurement has also been the likely misguided belief that buying American equipment heralds tacit assurances of American intervention when the invasion does come. These challenges risk overshadowing a remarkable indigenization success story; Taiwan proves steadily more capable of manufacturing advanced capabilities, particularly air and maritime denial platforms critical both to credible deterrent and effective asymmetric defense.

CHAPTER FOUR

Australia

On its face, Australia has the trappings of a potential multi-domain military giant. Its island geography, advanced economy (9th and 13th in the world for per capita and nominal gross domestic product)⁷² and membership in the “Five Eyes” alliance—arguably the world’s most capable and exclusive—with the United States and the United Kingdom suggests that it should have the technology, capacity, and geography to become at the least a world-class naval power. It does not come across this way, however; as measured by the CFPI, Australia’s conventional deterrent arsenal is the least of the four case states at roughly one-third of either Pakistan’s or Taiwan’s score, with its naval armament specifically splitting the difference almost exactly between the two countries (see figure 4.1).⁷³

The opening of the analytic window sees Australia with a small and arguably neglected conventional force, adding increasingly more sophisticated capability over the subsequent two decades with a marked improvement in technological advancement despite a continually diminutive size. Australia’s strategic circles’ solidifying consensus perception of China as a strategic threat and unprecedented degree of technologically-heavy cooperation with the United States seem poised to lend support and speed to

⁷² “World Economic Outlook.” <https://www.imf.org/en/Publications/WEO/weo-database/2021/October>.

⁷³ *Conventional Firepower Potential Index*, <https://cfpindex.org>.

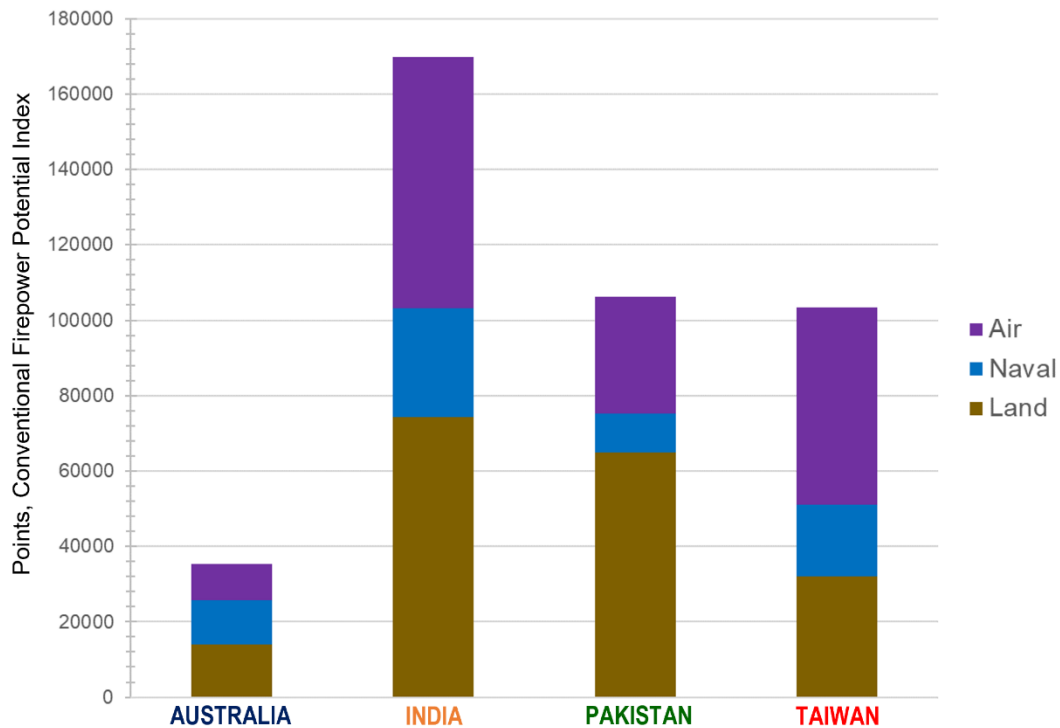


Figure 4.1: Australia's 2020 CFPI Score Compared to Other Cases

Sources: CFPI, IISS

subsequent deterrent procurement efforts. Although Australia's indigenous defense production has improved by leaps and bounds following both stumbles and successes, it will continue to face the prospect of political and bureaucratic forces that have repeatedly derailed its threat focus and procurement processes.

The first section of this chapter traces the history of major Australian conventional armament acquisition in the context of distinct phases of strategic orientation following World War II. In the second section, I connect Australia's variable value performance in the quantitative analysis to these real-life events the study's analytic

window. In that section I will elaborate on the intra-national factors of inter-service rivalry, civil-military relations, and domestic politics--for which I did *not* code statistical variables—and describe how they may have affected procurement in ways not apparent from the design of the quantitative model. In the third and final section, I examine where Australia’s conventional procurement seems to be headed, identify factors that could divert this course, compare possible outcomes to the period measured by the dissertation, and ascribe strategic significance to each.

Background

The story of Australian conventional procurement is in fact the story of Australian strategic orientation toward the rest of the world. In this section, I provide a brief background of four distinct phases of Australian defense thought—Forward Defence, The Defence of Australia, Interventions in the Near Abroad and the Global War on Terror, and Great Power Competition in East Asia—and highlight shifts in Australia’s major conventional weaponry procurement apparently spurred by each.

“Forward Defence,” 1945-1965

In the period following World War II, Australia’s defense establishment viewed its main threat to be the one decried by the United States and the United Kingdom: the global spread of communism. Accordingly, the doctrine of “forward defence” throughout this period equated defending Australia with contributing forces to the regional, anti-communist conflicts waged by Australia’s American and British allies, both to protect Australia from the communist threat and to induce the allies to remain

regionally committed.⁷⁴ “Forward defence” saw once-safe assumptions become untenable as the result of a combination of factors: long, unpopular colonialist conflicts in Southeast Asia; regional disengagements by the United Kingdom and the United States; and a growing realization that Australia lacked the capabilities to defend its own territory without intervention by its now-retreating, powerful western anglophone allies.

This period saw Australia involved in two major counterinsurgency operations each lasting in excess of a decade: the Malayan Emergency (1948-1960, with Australia’s commitment outlasting the combat from 1950-1963), and the Vietnam War (1955-1975 when figured to include the larger Second Indochina War; Australia committed troops from August 1962 to December 1972).^{75,76} British and American drawdown began even while hundreds of Australians died for their allies’ causes in the jungles of Southeast Asia; the United States refused to offer Australia assurances against the increasingly bellicose Indonesia under Sukarno and rapidly drew down its regional commitments in the Pacific as part of the Guam doctrine.⁷⁷ With Great Britain also pulling out of the region, albeit driven more urgently by resource constraints and economic contraction,

⁷⁴ Peter Dennis et al., “Forward Defence,” in *The Oxford Companion to Australian Military History*, 2nd Edition (Oxford: Oxford University Press, 2008), <https://www.oxfordreference.com>.

⁷⁵ Peter Dennis et al., “Malayan Emergency,” in *The Oxford Companion to Australian Military History*, 2nd Edition (Oxford: Oxford University Press, 2008), <https://www.oxfordreference.com>.

⁷⁶ Peter Dennis et al., “Vietnam War,” in *The Oxford Companion to Australian Military History*, 2nd Edition (Oxford: Oxford University Press, 2008), <https://www.oxfordreference.com>.

⁷⁷ Hugh White, “Four Decades of the Defence of Australia: Reflections on Australian Defence Policy over the Past 40 Years,” in *History as Policy: Framing the Debate on the Future of Australia’s Defence Policy*, ed. Ron Huiskens and Meredith Thatcher (Canberra: Australian National University Press, 2007), p. 164-165.

Australia's policymakers saw the need to begin equipping Australia seriously for its own defense.⁷⁸

The Menzies government (1949-1966) began a deliberate—if somewhat unfocused by modern standards—procurement push to equip Australia for its own defense, capitalizing on a willingness by the Americans and British to sell arms to Australia even if they would not remain. This period saw Australia's acquisition of American fighter and transport aircraft, guided missile destroyers, and armored vehicles. In a move that would eventually prompt the greatest drive for Australian defense indigenization, Australia also purchased *Oberon*-class submarines from the United Kingdom.⁷⁹ By the time the Indonesian threat was mitigated with the overthrow of Sukarno by Suharto in 1965, Australian strategic thought had already moved toward building on these nascent and completely imported capabilities to make Australia's defense truly self-sufficient.

“The Defence of Australia,” 1966-1998

By the early 1970s Australia's foreign and defense policy circles had clearly prioritized self-sufficient national defense. The McMahon government's Defence Review stated explicitly in 1972 that relying on allies for the security of Australia was imprudent and could not be the aim of responsible policy.⁸⁰ Four critical phenomena

⁷⁸ Ibid.

⁷⁹ Ibid, p. 165.

⁸⁰ Department of Defence, *Australian Defence Review* (Canberra: Australian Government Printing Service, 1972), p. 11.

characterized the next three decades of Australian military capability acquisition: (1) the definition of a clear, geographically rooted approach to capability acquisition for self-sufficient territorial defense; (2) a sustained, permissive domestic political context; (3) charting a course toward indigenous production of transferred foreign technology, particularly for naval platforms; and (4) stirrings of program territoriality that would in subsequent decades evolve into more pronounced civil-military tensions and interservice rivalry.

The Sea-Air Gap, Bare Bases, and the JORN. With China in possession of rudimentary conventional capability and the Soviet threat vivid but remote, strategic thinkers in Australia conceived of their nation's regional military geography against dangers that were then largely theoretical. The principal feature on which consensus emerged is the "sea-air gap," a maritime theater covering millions of square kilometers and separating the Australian mainland from the nearest substantial landmasses in Southeast Asia.⁸¹ Australia pursued and achieved two remarkably ambitious solutions designed to address this geographic problem. The first was the re-orientation of Royal Australian Air Force (RAAF) basing toward the north and west of the continent through the establishment of several new bases, most of which consisted of high-quality field airbases that would be minimally manned but could surge to full operational capacity in the event of a crisis.⁸² The second was to research, design, and by 1985 implement the largest, most advanced over-the-horizon radar network in human history in order to

⁸¹ Stephen Kuper, "Understanding Australia's Strategic Moat in the Sea-Air Gap," *Defence Connect*, June 18, 2019. <https://www.defenceconnect.com.au/key-enablers/4249-understanding-australia-s-strategic-moat-in-the-sea-air-gap>.

⁸² Ibid.

detect ships and aircraft approaching through the gap thousands of kilometers away by bouncing signals off the ionosphere.⁸³

It is difficult to adequately emphasize the centrality of these three intellectual and material investments to the entire subsequent trajectory of Australian conventional capability acquisition. Conceiving of the sea-air gap as a critical detection zone, relying the continuously upgraded Jindalee Operational Radar Network (JORN) to achieve those detections, and seeing the primary way of responding to malign detections in the gap as surged deployments of land-based aircraft through the “bare bases” would combine with a globally unparalleled degree of focus on submarine capability to dictate virtually all of Australia’s major air and naval procurement decisions.⁸⁴

Political Permissiveness Despite a Constitutional Crisis. The onset of “The Defence of Australia” era benefited from a remarkable degree of political continuity at its outset. In the periods 1967 to 1972 and again in 1975 to 1983, the Prime Ministership and Defence Ministership were occupied by a relatively small number of politicians, most of whom belonged to Australia’s Liberal party and had extensive experience serving in government with one another. Following the mysterious disappearance of Harold Holt in 1967 and despite their own famously acrimonious and public differences, John Gorton and Malcolm Fraser’s tenures in the Prime Ministership and Defence Ministership mutually built considerable momentum for “The Defence of Australia” culminating in the

⁸³ Peter Dennis et al., “Jindalee Operational Radar Network,” in *The Oxford Companion to Australian Military History*, 2nd Edition (Oxford: Oxford University Press, 2008), <https://www.oxfordreference.com>.

⁸⁴ Kuper, “Understanding Australia’s Strategic Moat in the Sea-Air Gap.”

publication of the 1972 *Defence Review* under the McMahon government.⁸⁵ This momentum, combined with nationally favorable attitudes toward economic and military self-reliance, was enough to survive two and a half years of intervening Labor control culminating in a constitutional crisis with the dismissal of Labor Prime Minister Gough Whitlam such that a Fraser government could continue the policy largely unimpeded well into the 1980s.⁸⁶ Although electorate complacency toward spiraling defense spending may not seem unusual for American audiences, the Australian political leadership's continuity of vision and appropriation over more than two decades and a recession despite the lack of clear threat is remarkable.

Collins: Learning to Build in Australia. While acquisition of some of Australia's capabilities during this period consisted of purchasing American and British platforms, "The Defence of Australia" era also saw the nation pivot to a model of seeking military-off-the-shelf (MOTS) naval technology transfer for production within Australia. During this era Australia's World War II-era aircraft carriers decommissioned and the replacement program was canceled under fiscal pressure related to the global oil crisis of the 1970s; as a result, Australia faced a capability vacuum in its ability to project survivable combat power into the sea-air gap.⁸⁷ In 1982, the Fraser government approved a study to identify a replacement for the aging *Oberon*-class submarines.⁸⁸ However, the

⁸⁵ White, pp. 166-167.

⁸⁶ Ibid.

⁸⁷ John Schank et al., *Learning From Experience: Lessons from Australia's Collins Submarine Program* (Santa Monica, CA: RAND, 2011), pp. 5-6.

⁸⁸ Ibid.

Department of Defence wished to avoid reliance on a foreign government for upgrades and maintenance; the Royal Australian Navy (RAN) had been entirely dependent on the United Kingdom's Royal Navy for the lifespan of the *Oberon*.⁸⁹ A multi-year competition resulted in the selection of a design by the Swedish shipbuilder Kockums but with ambitious modifications planned to meet Australian requirements for lengthy deployments and the stipulated transfer of critical intellectual property to allow for the maintenance and upgrade of the submarines in Australian facilities.⁹⁰

Lasting from 1990-2003, the *Collins* construction project was a trial by fire of Australia's nascent shipbuilding industry and exhibited a number of serious issues. Chief among these was a failure of the quasi-governmental Australian Submarine Corporation (ASC) and RAN to avoid the problem of excessive production-development concurrency. The RAN underestimated the implications of the modifications required to the Swedish design, seeing them as mostly an issue of scale.⁹¹ ASC moved to production while considerable RDT&E remained to achieve the Australian requirements, resulting in production stutters and costly refits and retrofits of production models and embarrassing media coverage.⁹² As I discuss later in this chapter, the painful lessons from the *Collins*-class construction (combined with those learned in the construction of the *Hobart*-class guided missile destroyers in the 2000s and 2010s) do not appear lost on the Australian

⁸⁹ Ibid.

⁹⁰ Ibid., pp. 16-20.

⁹¹ Schank et al., pp. 19-20.

⁹² Ibid., pp. 19, 23-24.

defense establishment and reflect in the contemporary Australian government approach to naval vessel construction.

Collins Resistance a Precursor of Things to Come. Perhaps surprisingly for the recipient service of the first major indigenous capability production program in Australia's history, the senior ranks of the RAN were not initially receptive to the *Collins* program. This was partly because of the lack of advancement opportunities for Australian submariners meant that the senior officer ranks were largely devoid of submarine experience, but also reflected the RAN brass' perception that the civilian leadership of successive Australian governments had failed to consult with them during the project.⁹³ Investigating the history of the project for a Department of Defence-commissioned analysis in 2011, RAND researchers concluded that senior RAN resistance to the *Collins* contributed substantially to inefficiencies in its design and production processes.⁹⁴ With the advent of major capability manufacture within Australia had come the awakening of largely dormant procurement dynamics of interservice rivalry and civil-military tension. As each of the six *Collins* submarines took float through 2003, Australia would emerge into a geostrategic landscape ripe for the acceleration of these dynamics by a resurgent Army.

⁹³ Ibid., pp. 35-38.

⁹⁴ Schank et al., pp. 36-38.

Interventions in the Near Abroad and the Global War on Terror, 1999-2014

While the advent of the “Defence of Australia” doctrine saw an embrace of naval and air capabilities, the period 1999-2014 would see the Army resume its historical place as the global face of Australian international military cooperation and reap substantial influence on major conventional procurement as a result. This period saw four important developments: (1) highly visible Australian land force deployments for humanitarian intervention and counterterrorism restoring the clout of the Army; (2) major emphasis on landing force capabilities driving force reorganization and procurement decisions; (3) the decision to commit to the development and acquisition of the F-35 Lightning II Joint Strike Fighter; and (4) the fraught but ultimately successful expansion of Australia’s shipbuilding industry into the production of advanced surface combatants.

East Timor, Iraq, and Afghanistan. Following the Howard government’s decision to press Indonesia on the issue of an independence referendum for the people of the relinquished Portuguese colonial possession of East Timor, Australia gained the blessing of the Clinton administration and UN Secretary-General Kofi Annan to lead a humanitarian intervention to prevent militia violence.⁹⁵ Australia’s ultimately successful leadership of a non-UN peacekeeping force with contributions from the militaries of 14 democracies propelled the Australian Army back to a position it had occupied in both World Wars: the face of Australian international military cooperation and a critical vehicle for advancing Australian prestige.⁹⁶ The Howard government’s decision to

⁹⁵ Taylor B. Seybolt, *Humanitarian Military Intervention: The Conditions for Success and Failure* (Oxford: Oxford University Press, 2007) pp. 86-87.

⁹⁶ White, p. 172.

immediately trigger the provisions of the mutual defense treaty with the United States following the September 11th, 2001 attacks would further elevate the Army's visibility through deployments to (and casualties in) Afghanistan and Iraq through 2014 and provide it leverage in the procurement debates to come.⁹⁷

Giving the Army a Navy. Following the Army's relegation to a limited counter-landing force during the "Defence of Australia" doctrine's development, the sudden demand for large-scale landpower projection to a southeast Asian island revealed Australia's military sea transport and amphibious warfighting capability to be seriously atrophied.⁹⁸ The RAN's troop transport capability at the time consisted of three relatively small vessels and required three days to transport a battalion-sized (800 troops) force; today, either of Australia's *Canberra*-class ships could make a single trip with the entire force in a few hours.⁹⁹ The decision to procure the two massive, Spanish-designed amphibious assault vessels that have served as Australian capital ships since 2014 was meant to address these shortcomings, and the repeatedly revisited (and reaffirmed) decision to forego a short-takeoff/vertical landing (STOVL) fixed-wing aircraft capability for the class is a reflection in part of the Army's fierce protection of its role as an amphibious assault-capable force.¹⁰⁰

⁹⁷ Peter J. Dean, "Amphibious Operations and the Evolution of Australian Defense Policy," *Naval War College Review*, vol. 67, no. 4 (Autumn 2014), p. 30.

⁹⁸ *Ibid.*, pp. 28-30.

⁹⁹ *Ibid.*

¹⁰⁰ Richard Brabin-Smith and Benjamin Schreer, "Jump Jets for the ADF?" Australian Strategic Policy Institute, 2014. <https://www.aspi.org.au/report/jump-jets-adf-0>.

F-35: A Leap of Faith. On June 27th, 2002, the Australian Department of Defence announced that it would join the U.S.-led Joint Strike Fighter (JSF) program and had selected the Lockheed Martin F-35 Lightning II multirole fighter to replace its lightly aged F/A-18 variants and museum-fugitive F-111s.¹⁰¹ This decision surprised many DoD-watchers, as it pre-empted a years-long competitor selection program known as Air 6000 Phase I without conclusively determining that the F-35 would meet requirements, and further occurred when many other potential JSF participant nations had deferred their decisions until the United States announced whether or not it would share software source code.¹⁰² While the first F-35A would not fly in Australian skies until 2018, the decision to embrace this little-understood future platform would guarantee Australia access to truly cutting-edge airpower even as a minor interservice storm set off at the prospect of acquiring the STOVL variant (a decision that Australia has famously foregone).¹⁰³ I discuss the F-35's place in Australia's interservice rivalry later in the chapter.

Building an Advanced DDGM in Australia. Commissioned in 1980, the most capable surface combatants in Australia's fleet during this period were the Adelaide-class guided missile frigates, clones of the American *Oliver Hazard Perry* class with minor modifications for Australian service. While the *Adelaide*-class vessels had been almost

¹⁰¹ Steven L. Jones, *Politics, Procurement and Policy: Australia's Procurement of the Joint Strike Fighter*, PhD Diss. (University of New South Wales, 2016), p. 214.

¹⁰² Ibid., pp. 214-221.

¹⁰³ Robert Farley, "The F-35B and Australia's *Canberra*-class: Still a Chance?" *The Diplomat*, February 14, 2019. <https://thediplomat.com/2019/02/the-f-35b-and-australias-canberra-class-still-a-chance/>.

completely produced in the United States with combat systems and finishing touches added in Australia, in 2007 the DoD decided based on the successful Australian construction of the smaller *Anzac*-class frigates in the 1990s that the next generation of advanced surface combatants would be completely indigenously manufactured.¹⁰⁴ The resultant three-ship *Hobart* class of multirole destroyer would not be operational until 2017, but production during this period added a litany of painful sophisticated surface combatant production lessons to Australia's long list of hard-won submarine production knowledge.¹⁰⁵ Critically, Australia's experience with the *Hobart*-class would contribute to a later decision to establish a continuous-production shipbuilding industry, the benefits of which have yet to be felt.

Australia's operations in this period prominently featured Australia's leadership of and contribution to land-focused conflicts in its own backyard and abroad. However, consequential future capability decisions it undertook for the F-35 and the *Hobart*-class were consistent with a mounting suspicion on the part of Australia's strategic and defense community: when it came to China, optimism would no longer work.

Great Power Competition in East Asia since 2015

In 2016 and 2020, Australia published editions of its periodic *Defence White Paper* (renamed *Defence Strategic Update* for the 2020 edition for the first time), policy and vision documents intended to provide transparency to the Australian public and clear

¹⁰⁴ John Birkler et al., *Australia's Naval Shipbuilding Enterprise: Preparing for the 21st Century* (Santa Monica, CA: RAND, 2015), pp. xxvi, 20-22, 32.

¹⁰⁵ John F. Schank and Paul DeLuca, *Insights on Australia's Naval Shipbuilding Capability* (Santa Monica, CA: RAND, 2020), p. 2.

signals to international audiences about the trajectory of Australian military and defense activities. The difference between the two is stark with respect to one prominently featured topic: China. Where the 2016 publication obliquely referred to the possibility of intensifying competition between the United States and China, the 2020 update explicitly notes “Major power competition has intensified and the prospect of high-intensity conflict in the Indo-Pacific...is less remote than in the past” in part because of “grey-zone activities...assertiveness and coercion aimed at achieving strategic goals...these activities have ranged from militarisation of the South China Sea to active interference, disinformation campaigns, and economic coercion.”¹⁰⁶ The procurement decisions undertaken during this period largely reflect a solidifying consensus in Australian strategic thought that a credible conventional deterrent to Chinese encroachment and aggression—no matter what contortions may be required to imagine a specific scenario—have become an imperative demanding development and acquisition of advanced and highly visible capabilities.¹⁰⁷

Though obviously still unfolding, this period already exhibits a number of important acquisition-related developments. These include: (1) Australia’s possession of truly premier maritime and air capabilities for the first time in its history; (2) increasingly conspicuous disparity between the relative sophistication of RAN/RAAF platforms and Army platforms; (3) the decision to transition to a continuous production naval

¹⁰⁶ Department of Defence, *2020 Defence Strategic Update* (Canberra: Department of Defence, 2020), p. 5.

¹⁰⁷ Mike Scafton, “Australia-China Relations and the Logic of Conventional Deterrence.” *The Strategist*, November 7, 2019. <https://www.aspistrategist.org.au/australia-china-relations-and-the-logic-of-conventional-deterrence/>.

shipbuilding paradigm; and (4) the de facto public death of strategic ambiguity toward China with the formation of the Australia-United Kingdom-United States (AUKUS) trilateral partnership and pursuit of a cutting-edge nuclear-powered submarine fleet.

On the Bleeding Edge of Naval and Air Capabilities. Although long in possession of relatively modern naval and air platforms in the form of the *Anzac*-class frigates and F/A-18E/F Super Hornets, this period has seen truly cutting-edge surface combat and multirole fighter capabilities come online for the Australian Defence Force. With the exception of a land-attack option, the *Hobart*-class guided missile destroyers boast comparable capabilities to the newest flights of the gold standard for multirole warships, the American *Arleigh Burke*-class. Critically, the *Hobart*-class' commissioning in 2017 made Australia one of only five navies in the world to use the United States' Aegis combat system, an integrated hardware-software system that arguably makes Aegis-equipped ships the most situationally aware and tactically capable surface combatants in existence.¹⁰⁸ The F-35A's 2018 induction into the RAAF likewise provided Australia the standoff strike, area denial, electronic warfare, and networked combat capabilities of the most advanced combat aircraft the world has ever seen.¹⁰⁹

Leaving the Army in the Dust. Fielding some of the most advanced surface combatant and multirole fighter platforms in the world makes the contrast between Australia's naval, air, and land-focused systems all the more pronounced. The Army's land combat vehicle fleet has no tracked armored vehicle manufactured after 1985,

¹⁰⁸ Department of Defence, *2020 Force Structure Plan* (Canberra: Department of Defence, 2020), p. 45.

¹⁰⁹ *2020 Force Structure Plan*, p. 50.

relying on lightly updated versions of the venerable American M1A1 Abrams main battle tank and M113 armored personnel carrier.¹¹⁰ Although the Boxer wheeled armored combat vehicle represents a modern platform (with introduction in 2011), the sheer age of the tracked fleet and the absence of any self-propelled or rocket artillery means that Australia's land forces do not exhibit capabilities considered standard in the forces of states with far less developed economies.¹¹¹

Continuous Shipbuilding. Expert analysis of Australia's indigenous shipbuilding capability found that the manufacture of the *Anzac* and *Hobart*-class vessels ran at a 30-40% premium compared to similar production activities in other countries.¹¹² The central recommendation to reduce this premium was to avoid the need for massive re-hiring and re-skilling for each production class by establishing a continuous shipbuilding schedule.¹¹³ In 2020, the Department of Defence indicated the government's decision to establish and maintain indefinite and continuous shipbuilding, acknowledging that a byproduct of the deliberate workforce and skill maintenance would be the production of more vessels than class-specific production runs would otherwise yield.¹¹⁴

The Death of Strategic Ambiguity? As the *Defence Strategic Update* cited at the beginning of this subsection implied, Australia's defense establishment gradually but clearly moved toward explicit acknowledgment of encroaching Chinese regional

¹¹⁰ Ibid., p. 68.

¹¹¹ Ibid.

¹¹² Birkler et al., pp. xxxv-xxxvi, xxxviii, 99-109.

¹¹³ Schank and DeLuca, p. 2.

¹¹⁴ 2020 *Force Structure Plan*, p. 37.

threat.¹¹⁵ In September of 2021, that acknowledgment became far less gradual. Australia, the United States, and the United Kingdom revealed a strategic partnership—AUKUS—that would include premier technology transfer and joint regional security operations.¹¹⁶ Central to this partnership was a commitment to build a fleet of nuclear-powered submarines in Australia using British and American marine reactor technology—the most advanced in the world and to date possessed by only the United States and the United Kingdom.¹¹⁷ Demonstrating the significance of the decision to deterring China, the director of the government-funded, nonpartisan Australian Strategic Policy Institute, Peter Jennings, joked that Australia should call the first submarine produced in the new class the *Xi Jinping* because “no person is more responsible for Australia going down this track.”¹¹⁸

As the preceding pages have shown, Australia’s defense history since World War II has seen it wholly focused on supporting allies, wholly focused on self-sufficient defense of its territory, and learning to chart a new course that includes both sets of priorities. The platforms, capabilities, and deterrent signaling capacity of the ADF have evolved along with these developments, but Australia’s overall armament is miniscule compared to its economic scale and level of development. In the second section of the

¹¹⁵ Scafton, “Australia-China Relations and the Logic of Conventional Deterrence.”

¹¹⁶ Rod McGuirk, “Australia Dumps French Submarine Deal for US Nuclear Fleet.” *The Diplomat*, September 16, 2021. <https://thediplomat.com/2021/09/australia-dumps-french-submarine-deal-for-us-nuclear-fleet/>.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

chapter, I attempt to connect the Australian case's performance in the measured variables to the events covered in this section falling within the analytic window of 2000-2020.

Conventional Firepower Potential Procurement Efficiency, 2000-2020

If the example of India's procurement efficiency compared to Pakistan's in the introduction of this dissertation came across as surprising to the reader, the contrast between the Pakistani and Australian cases is downright shocking. Australia spent an average of twice as much on annual procurement but gained less than one-seventh the CFPI score for each adjusted dollar spent. The quantitative summary in the previous chapter informed the reader that Pakistan's threat focus was substantially higher (94.1% of net positive CFP change versus 41.7% in Australia's case), Pakistan's average complex-goal vendor ratio was moderately higher (67.5% to 56.5%), and Australia's average government practice score was substantially higher (3.3 out of 4 compared to 1.5 for Pakistan). However, the quantitative differences—even those that rise to the level of statistically significant association—do not necessarily mean that observable phenomena in each measured arena bear out any type of correlative or causative logic.

In pursuit of that logic, this section reviews and attempts to decode the numbers that Australia registered as a case in the quantitative portion of the dissertation. My goal is to link the measures defined by the variables to specific events and shifts in the third and fourth strategic outlook periods described in the previous section. First, I review trends in Australia's procurement budgets, CFP procurement efficiency, and the systems being procured and retired during the unfolding of those trends. Next, I discuss trends in

each of the independent variables in turn—threat focus, vendor state dynamics, and responsible procurement practices—and without ascribing cause, describe developments in each. Finally, I describe Australia’s experience with unit-level phenomena for which I did not code quantitative variables, namely: inter-service rivalry; civil control; and regional security in domestic politics.

Procurement Spending, System Addition Modalities, and CFPI

The ADF’s procurement outlay rose steadily during the analytic window, engaging in all four modes of capability addition and even two prominent cases of *retirement*, or the removal of all platforms providing a particular capability with no replacement in sight. The positive and negative consequences of those actions and the corresponding outlay of resources came across extremely conspicuously in the deterrent signaling capacity of such a lean force.

Budgets. The ADF’s procurement spending increased an annual average of 192 million USD (adjusted for exchange rate and inflation to 2021 USD) from 2.47 billion in 2000 to 6.30 billion in 2020.¹¹⁹ Although control of the government changed hands twice times during the analytic window (from Liberal Party-led coalition to Labor in 2007 and back to the Liberal coalition in 2013), defense spending increased steadily throughout the analytic window with no downward fluctuations in procurement spending apparently attributable to the different windows of party control.¹²⁰

¹¹⁹ Department of Defence, *Defence Annual Report* (Canberra, 2002-2021, all editions).

¹²⁰ Ibid.

Systems and Capability Addition Modalities. The analytic window saw the ADF introduce, augment, upgrade, replace, and retire capabilities in all three conventional domains. In general, Australia's acquisition is trending toward predictable upgrade and replacement for major platforms and away from a somewhat haphazard and highly inefficient history of ill-fated introductions, sudden replacements, unplanned upgrades, and even retirements.

The ADF introduced three capabilities during the analytic window with one of the introductions starting before it: (1) the *Anzac*-class guided missile frigate from 1996 to 2008;¹²¹ (2) the Tiger attack helicopter from 2004-2012;¹²² and (3) the Super Seasprite armed maritime helicopter in 2007.¹²³ The *Anzac* fared the best out of all of these, going on to receive an upgrade and remaining in service with a planned replacement on the horizon; however, the upgrade was an unplanned fallback after the original upgrade program was scrapped in the design phase after two years of planning.¹²⁴ The Eurocopter Tiger attack helicopters remain in capable Australian service; however, their lifespan has been dogged with costly maintenance and performance issues, driving a decision to opt for substantially more advanced American-provided AH-64Es beginning in 2026.¹²⁵ The Seasprites' brief and fraught tenure (initial operational capability in 2007 followed with

¹²¹ IISS, *The Military Balance* (1996-2008).

¹²² IISS, *The Military Balance* (2004-2012).

¹²³ IISS, *The Military Balance* (2007-2008).

¹²⁴ Birkler et al., p. 18.

¹²⁵ Nigel Pittaway, "Australia Selects Boeing Apache as Next Armed Reconnaissance Helicopter," *Defense News*, January 19, 2021. <https://www.defensenews.com/global/asia-pacific/2021/01/19/australia-selects-boeing-apache-as-next-armed-reconnaissance-helicopter/>.

retirement by 2009) was evidence of engineering and political issues; it figures in this chapter's discussion of democratic civil-military control as a potential obstacle to procurement efficiency.¹²⁶

The ADF largely refrained from merely augmenting capabilities with the exception of various types of wheeled armored fighting vehicles. From 2008 to 2015 and in two ongoing processes starting in 2018 and 2020 respectively, the Army added the Bushmaster, Hawkei, and Boxer platforms, with the first of these two being versatile armored mobility vehicle and the third being a true armored fighting vehicle on wheels rather than tracks.¹²⁷ The ADF will need to decide if the thousand-strong Bushmaster fleet—really only of use in low-intensity conflict—is a relic of the operations in East Timor, Iraq, and Afghanistan, or a reserve capability in the event of another East Timor-like regional deployment. Although the Boxer represents a modern, indigenously built vehicle with versatile variance potential comparable to the American Stryker, its addition arguably highlights the lack of a modern main battle tank or heavy-duty, tracked infantry fighting vehicle in the Army's fleet.¹²⁸

The Army and RAN made the three principal upgrades during this period consisting of the modernization of the *Adelaide*- and *Anzac*-class guided missile frigates in 2007-2010 and 2011-2017 respectively, as well as the upgrade of the Army's M113A1 armored personnel carrier to the uniquely Australian M113AS4 variant in 2007-2014.¹²⁹

¹²⁶ Royal Australian Navy, "Kaman SH-2G(A) Super Seasprite," <https://www.navy.gov.au/aircraft/kaman-sh-2ga-super-seasprite>.

¹²⁷ IISS, *The Military Balance* (2005-2020).

¹²⁸ 2020 *Force Structure Plan*, p. 68.

The *Adelaide*-class' upgrade—the most complex major weapon system modernization ever undertaken by the Australian defense industry at that point—was notoriously plagued by performance failures, schedule delays, and cost overruns, even featuring a complete contract renegotiation several years into the planning phase.¹³⁰ Costing the modern equivalent of more than 1.6 billion USD and finishing more than four years after schedule, the *Adelaide* upgrade was yet another example of procurement tensions between the government and the RAN (which had preferred to replace them with the U.S. Navy's *Kidd*-class destroyers).¹³¹ The *Anzac* upgrade was relatively quick, economical, and successful in and of itself, but came only after a more ambitious upgrade was scrapped with millions already sunk in design.¹³² The M113 upgrade was likewise successful, but served to highlight that more than four decades after their manufacture Australia's fleet of armored personnel carriers were being upgraded rather than replaced.¹³³

The ADF made seven major replacements in the period 2000-2020: (1) *Collins*-class tactical submarines for the *Oberon*, 1996-2003; (2) F/A-18E/F Super Hornet multirole fighter jets for the F-111C/G ground attack aircraft, 2003-2012; (3) M777A2 towed howitzers for the M2A1/A2, M198, and L118, 2004-2016; (4) the M1A1 Abrams

¹²⁹ IISS, *The Military Balance* (2007-2017).

¹³⁰ "Australia's Hazard(ous) Frigate Upgrades: Done At Last," *Defense Industry Daily*, February 18, 2020, <https://www.defenseindustrydaily.com/australias-hazardous-frigate-upgrade-04586/>.

¹³¹ Ibid.

¹³² Brickler et al., p. 18.

¹³³ Declan Sullivan, "Infantry Fighting Vehicles Will Complete Australia's Armoured Forces," *The Strategist*, November 21, 2018. <https://www.aspistrategist.org.au/infantry-fighting-vehicles-will-complete-australias-armoured-forces/>.

main battle tank for the Leopard 1A2, 2007-2008; (5) the MH-60R anti-submarine warfare helicopter for the Super Seasprite and Sea King Mk42, 2009-2017; (6) *Hobart*-class multirole guided missile destroyer for the *Adelaide*-class guided missile frigate, 2016-2020; and (7) the F-35A multirole fighter for the F/A-18A/B, ongoing since 2017.¹³⁴ With the exception of the main battle tank replacement—where the lack of prompt upgrades to the American platforms after acquisition meant that an aging but capable German system had been replaced by a similarly aging but capable American one—Australia’s replacements have reflected successful, more advanced capability delivery and an enhanced deterrence posture.

Finally, the ADF retired two capabilities, one of which was unique. Neither the *Perth*-class guided missile destroyers (retired 1999-2001) nor the Rapier short-range air defense missile systems (retired 2007-2008) saw replacements slated.¹³⁵ With the departure of the Rapier and the National Advanced Surface to Air Missile System (NASAMS) not scheduled for introduction until 2023, Australia will have gone without a self-propelled land-based surface-to-air missile system for a decade and a half.¹³⁶

Threat Focus

Although it is accurate to observe that Australia’s procurement scored second lowest (just above India) out of the case states in “threat-focused procurement ratio” as I

¹³⁴ IISS, *The Military Balance* (1997-2021).

¹³⁵ IISS, *The Military Balance* (1999-2001, 2007-2008).

¹³⁶ 2020 *Force Structure Plan*, p. 77.

have defined it, it is only fair to note that Australia arguably faces the greatest challenge in identifying a clear threat over the whole course of the analytic window compared to the other cases. A combination of economic opening to China at the beginning of the analytic window as well as a Chinese conventional capability growth trajectory that had not yet exploded meant that as of 2000 there was not a strict consensus in Australian strategic thought circles that China was definitely the threat for which Australian acquisition prepared.¹³⁷ As the combination of China's rapid military modernization and increasingly assertive regional posture played out over the next two decades, this thinking changed.

Chinese Threats. To identify Chinese conventional systems that pose a threat to Australia is to trace a trajectory of China's maritime and airpower modernization since 2000. While naval vessels were in theory a threat to Australia at the start of the analytic window, it was not until 2009 that China's fixed-wing fleet of long-range aircraft gained the ability to launch standoff strikes on the northwest Australian mainland.¹³⁸ By 2018, ever-more-capable Chinese aircraft could deliver cruise missiles virtually anywhere on Australia, while conventionally-tipped intermediate range ballistic missiles could range its northwestern half.¹³⁹ Accordingly, I coded the Chinese threats to Australia as vessels for the entirety of the analytic window, fixed-wing aircraft from 2009 through 2020, and missiles for the final three years (2018-2020).

¹³⁷ Graeme Dobell, "ASPI's Decades: China and the United States," *The Strategist*, December 13, 2021. <https://www.aspistrategist.org.au/aspi-decades-china-and-the-united-states/>.

¹³⁸ Thomas Shugart, *Australia and the Growing Reach of China's Military* (Sydney: Lowy Institute, 2021), p. 12.

¹³⁹ *Ibid.*, p. 10.

Given the steady emergence of Chinese capability and crystallizing Australian strategic thought on the nature of the threat, the period 2000-2020 is remarkable for just how much of Australia's procurement did *not* reflect a focus on the northern threat. Throughout the analytic window, the three-year measure of threat focus indicated an annual average of only 47.9 percent of procurement as matching or countering threats in the Chinese arsenal. This can in part be explained by Australia's political focus on East Timor and Global War on Terror deployments; the most-procured platform in the period 2000-2020 was the Bushmaster wheeled infantry mobility vehicle at over 1,000 units.¹⁴⁰ This focus makes sense since ambush-protected wheeled vehicles were critical to the survivability of counterinsurgency troops in Iraq and Afghanistan, but such platforms do not rate highly in terms of conventional deterrent.

Matching. Throughout the analytic window, Australia's naval procurement exhibited platform-matching through the acquisition and upgrade of guided missile frigates and destroyers. During the fixed-wing threat period (2009-2020), advanced multirole fighter induction in the form of the F/A-18E/F and much later, the F-35A also counts as threat-matching procurement. Australia fielded no land-based surface-to-surface missile capability during any of the analytic window, let alone the missile threat period (2018-2020), and so exhibited no matching procurement for this threat.

Australia similarly inducted no ship-based fixed-wing suite of systems and so did not match the carrier facet of the Chinese vessel threat. The F/A-18E/F is carrier capable, but it would require a catapult system that does not exist in the Australian fleet. The two-

¹⁴⁰ IISS, *The Military Balance* (2008-2015).

ship *Canberra*-class was built complete with STOVL ski jump ramp and is nearly identical in proportion to its sister ship, the Spanish *Juan Carlos I*, which serves in a dedicated STOVL carrier role; however, Australia conspicuously declined both to make modifications required for fixed wing flight from its amphibious assault ships and to make arrangements to procure the F-35B STOVL variant of the JSF.¹⁴¹

Countering. With the exception of the prominent induction of the *Collins*-class tactical submarine representing a potent deterrent to unwanted naval vessel incursions, Australian procurement during the analytic window was characterized by a curious and total absence of platforms that provide the most effective and economical counters to the variously defined Chinese conventional threats. Australia never procured any of the relatively low-cost, relatively high firepower potential missile platform countermeasures, namely ground-based surface-to-air missile systems, shore-based anti-ship missile systems, or missile-equipped patrol vessels and fast attack craft. The Department of Defence has in fact conspicuously committed to *not* arming its forthcoming advanced offshore patrol vessels (OPVs) with any missile systems, despite their capacity to serve as missile craft being demonstrated by navies employing the same design of ship.¹⁴²

While it is true that pound-for-pound existing Australian platforms like the *Hobart*-class destroyers and the F/A-18A/B and E/F pack considerable anti-shipping, anti-aircraft, and anti-missile punch, Australia simply cannot be said to have enough of

¹⁴¹ Brabin-Smith and Scheer, “Jump Jets for the ADF?”

¹⁴² Marcus Hellyer, *From Concentrated Vulnerability to Distributed Lethality (Or How to Get More Maritime Bang for the Buck with Our Offshore Patrol Vessels)* (Canberra: Australian Strategic Policy Institute, 2020), pp. 5, 13-14.

them to credibly deter an adversary like China from employing precision standoff strikes if that course of action were ever to be selected. Lethal anti-shipping unmanned aerial vehicles (UAVs) are a capability that could take the place of missiles on the OPVs, but at this stage there do not appear to be plans for this substitute capability and in any case would not have to present a dichotomous choice that precluded missiles.¹⁴³

When it comes to both matching and countering, Australia appears to be deliberately missing relatively low-cost opportunities to gain large amounts of armament-supported deterrent signaling capacity. In foregoing a STOVL light carrier capability in the form of a *Canberra*-class/F-35B suite when they already have the ships and are procuring dozens of aircraft of another F-35 variant, the ADF directly cuts into advertised operational synergy with an American fleet in the event of a theoretical conflict with China. In avoiding the procurement of distributed land and naval missile systems—particularly deliberately declining the capability on an advanced OPV specifically designed to host it—the ADF cuts into its visible deterrent capability that would operate independent of any American involvement. The two missed opportunities undercut both principal aims of capability acquisition (contribution to allied operations and self-reliant territorial defense), and I discuss them further in the chapter in the areas of service territoriality, civil-military relations, and domestic political engagement.

¹⁴³ Ibid., p. 13.

Vendor Goals

Of the four importer case states, Australia purchased from the most diverse set of vendor states during the analytic window. It was the only case to purchase arms from six of the seven primarily revenue-seeking exporters, buying from France, Germany, Israel, Italy, Spain, and the United Kingdom (skipping only the Netherlands). Beyond the top ten, Australia extensively purchased equipment and designs from Sweden (most famously the *Collins*-class submarines from Saab subsidiary Kockums).¹⁴⁴ Australia's only arms vendor acknowledged by the study to have complex goals, however, was the United States.

The United States is explicit both about the criticality of its alliance with Australia to its regional aim of balancing China and about the fact that it has pursued the advancement of this alliance for decades.¹⁴⁵ Because of sponsorship by Washington, Canberra will now belong to three highly exclusive deterrent capability clubs: F-35 operation, Aegis combat system operation, and British-American marine reactor operation. Taken as a whole, American-provided or -facilitated platforms (including the *Hobart*-class, which requires American technology to function) account for more than 60% of Australia's conventional firepower potential and all of its airpower.¹⁴⁶ Additions of American-sourced capabilities over the analytic window corresponded to proportionate leaps and bounds in CFPI score for Australia at average or lower levels of procurement

¹⁴⁴ Schank et al., pp. 16-20.

¹⁴⁵ United States. *Indo-Pacific Strategy of the United States* (Washington, D.C.: The White House, February 2022), pp. 4-5, 7, 9.

¹⁴⁶ CFPI, <https://cfpindex.org>.

spending. The future of U.S.-Australian procurement cooperation seems to hinge on cutting-edge technology transfer for shared propriety and self-reliance for production, maintenance, and upgrade; the precise efficiency of American-facilitated gains in Australian deterrent capacity will thus hinge on the merits of the Australian defense industry.

Government Practices

Australia's procurement practices were the most consistent with the literature-derived measures of responsible, transparent procurement intended to avoid fraud, waste, abuse, and inefficiency. Of the four cases, Australia's procurement on average scored highest overall and highest in the realm of accountability mechanisms. Overall, Australian procurement practices are characterized by clockwork-like appropriation, clear and observed constitutional lines of authority, procurement that is mostly faithful to announced plans, rigorous, service-led needs assessment that have been prominently overridden by civilian political appointees on a number of occasions, and scrupulous, independent accountability mechanisms. Table 4.1 depicts observed indicators of Australia's government procurement practice indicators over the period 2000-2020.

Table 4.1: Australia Government Procurement Practice Indicators, 2000-2020

Dimension	Attribute - The degree to which:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1. Appropriation and Governance	A. Military budgeting including procurement is spelled out in law.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. The constitutionally identified head of state approves the defense budget request, including procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. The legislature debates and approves itemized defense spending including procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. The defense ministry/department and military execute the appropriated procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2. Rigorous & Repeatable Needs Assessment	A. Procurement undergoes deliberate needs assessment, itself reviewed for improvement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. Any needs assessment is a repeated and repeatable process.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. Any needs assessment is both threat- and performance-focused.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. Currently executing procurement programs trace to previous needs assessments.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3. Effective Accountability Mechanisms	A. Detailed procurement expenditure is published.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. Military procurement expenditure is audited by an independent entity.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. Audit results are published.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. Most recent reforms map to previous accountability activity.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ Negligible

● Limited

● Substantial

Appropriation and Governance. Australia's parliament approves resourcing for the Department of Defence, led by the cabinet-level Minister of Defence (who is a member of the legislature with an electoral constituency).¹⁴⁷ Although the Governor-General (Australia's mostly ceremonial head of state) is the Commander-in-Chief of the ADF (rather than the Prime Minister), he or she has no responsibility for budgeting, resourcing, and force design.¹⁴⁸ These responsibilities are shared by a diarchy of the career military Chief of the Defence Force and the career civil servant Secretary of Defence.¹⁴⁹ Two phenomena contributed to Australia's receiving moderately less than perfect scores for appropriation and governance: (1) typically abbreviated debate on defense spending, particularly outside the standing joint legislative committee; and (2) falling as much as 25% short of appropriated procurement spending goals in 2001 through 2003, 2006 through 2010, and 2016 through 2020 despite repeated commitments to spend appropriated funds.¹⁵⁰

Needs Assessment. Australia's defense acquisition processes require cooperation between the diarchy and their respective uniformed and civilian subordinates to assess

¹⁴⁷ Stefan Markowski, *A Comparison of the Defense Acquisition Systems of Australia, Japan, South Korea, Singapore, and the United States* (Fort Belvoir, VA: Defense Systems Management College Press, 2000), pp. 1-13, 1-20—1-22.

¹⁴⁸ Ibid., pp. 1-22—1-23.

¹⁴⁹ Ibid.

¹⁵⁰ Marcus Hellyer, *The Cost of Defence: ASPI Defence Budget Brief 2021-2022* (Canberra: Australian Strategic Policy Institute, 2021), pp. 56-59.

and set operational and technical requirements for military procurement.¹⁵¹ Throughout the analytic window, the needs assessment process most frequently exhibited deviation from its statutorily envisioned or Department-chartered course. Australian procurement in the period 2000-2020 features constantly shifting assessment methodology and is replete with instances either of the services resisting Secretary-led initiatives to assess, procure, and modernize, or (with slightly more observed frequency) the Secretary's authority to forward formal procurement recommendations to the Minister being upheld over the objections, preferences, and competing assessments of the CDF. Prominent examples of these dysfunctional dynamics with substantial associated costs in time and money include (but are not limited to): procurement of the *Collins*-class submarine;¹⁵² procurement of the Super Seasprite maritime helicopter;¹⁵³ and upgrade of the *Adelaide*-class frigate.¹⁵⁴ The most famous example of breakdown in diarchy-shared needs assessment procedures is the abrupt decision in 2002 to announce procurement of the F-35 to the surprise of a RAAF requirements study commission that had scarcely begun work to identify a replacement for the F/A-18, although inefficiencies stemming directly from this decision are more difficult to identify.¹⁵⁵

Accountability Mechanisms. Throughout the analytic window, Australia exhibited exemplary procurement accountability and transparency practices with the

¹⁵¹ Markowski, pp. 1-22—1-23.

¹⁵² Schank et al., pp. 35-38.

¹⁵³ "Kaman SH-2G(A) Super Seasprite."

¹⁵⁴ "Australia's Hazard(ous) Frigate Upgrades: Done At Last."

¹⁵⁵ Jones, p. 214.

exception of struggling to implement reforms that addressed all audit-identified issues. The Department of Defence publishes the most detailed procurement figures of any comparable agency in any of the case states, providing not only functionally specific line-item accounting but also detailed expense reports by major procurement project.¹⁵⁶ Both the Australian National Audit Office and the internally autonomous Department of Defence Inspector General audit the Department's budgetary performance annually (a frankly unthinkable feat for the United States) and the audit results are published, unedited, with the Department's statutorily mandated comprehensive annual report.¹⁵⁷ That the audits and independent analysis of the Department's spending repeatedly note that issues persist from audit to audit despite reform attempts incurred an observation of limited performance in that particular attribute even as it served as reinforcing evidence of the highly developed nature of the other transparency and accountability mechanisms.¹⁵⁸

As much as a descriptive inventory of the events and indicators that corresponded to the IV values over the course of the study may support understanding, in many respects they simply raise more causative questions. An inventory of threat focus revealed many apparently puzzling decisions to forego critical and arguably deterrent capabilities for what would be little additional cost when Australia was already engaged in procurement of the requisite vessels or aircraft. Reviewing performance against

¹⁵⁶ Department of Defence, *Defence Annual Report* (Canberra: Department of Defence, 1999-2021) (All editions).

¹⁵⁷ Ibid.

¹⁵⁸ Hellyer, *The Cost of Defence*, pp. 5-6.

government procurement practice indicators revealed surprisingly spotty performance in the area of needs assessment and apparent disconnects between civilian and military officials responsible for setting and following through on capability acquisition goals, but what were the origins and dynamics of these disconnects?

Service Territoriality and Domestic Political Incentives

As the foregoing question implies, the remaining paragraphs in this section attempt to illuminate the difficult-to-study dynamics and factors that underpinned the relative lack of threat focus and inconsistent needs/requirements performance of the government procurement processes inventoried in the preceding pages. Systemic capability acquisition inefficiencies stemming from deliberately missed opportunities and haphazard assessment-related decision making are rooted in the competing incentives influencing the individual military services, the career civil service, and elected members of government in the face of a population interested to various degrees in both national security and government spending writ large.

Service Territoriality. The services' incentives boil down to some form of resource territoriality, sometimes generalized as interservice rivalry and sometimes summed up as the "military" side of civil-military relations. Australia's acquisition history features perennial flareups of these dynamics intensifying as the "Defence of Australia" doctrine superseded "Forward Defence" and continuing into the present.¹⁵⁹ To

¹⁵⁹ Duncan Lewis, "Civil-Military Relations in Australia: A Dual Practitioner's View." In *Civil-Military Relations in Australia: Past, Present, and Future*, edited by Michael Evans, pp. 7-26. Canberra: Australian Defence College, 2021.

illustrate this dynamic, I will highlight four examples of service territoriality along with possible or probable impacts to signaling capacity acquisition. For my examples, I choose the RAN's resistance to two platforms—the *Collins*-class submarine and the prospect of arming the forthcoming *Arafura* OPVs--along with each of the Army and RAAF's resistance to the same platform, the F-35B STOVL variant of the JSF.

The *Collins*-class tactical submarine program essentially forged Australia's self-reliant shipbuilding capability while also inducting what was at the time the most submarine employed by any western Pacific nation. In fact, the RAN leadership was resistant to embark on the *Collins* project and instead favored upgrading and extending the service life of the venerable *Oberon*-class submarines.¹⁶⁰ As I documented in the background section of this chapter, the RAN brass' resistance seemed to immediately trace to a combination of factors including almost no senior officers with submarine experience, a misconception that submarine development would preclude surface combatants receiving additional resources, and the impression that the civilian elements of the Department of Defence had not been sufficiently communicative.¹⁶¹ RAND researchers identified a number of incentive-related ways to avoid the time and money lost (a year or more and potentially more than the 2021 equivalent of 100 million USD): (1) upgrading the promotion prospects of officers responsible for platforms likely to be prioritized in the future, such as improving the pathways for submariners to rise to positions of general responsibility given the clear strategic importance of submarine

¹⁶⁰ Schank et al., pp. 19-20.

¹⁶¹ Ibid., pp. 19, 23-24, 35-38.

capability to the security of Australia; (2) deliberately socializing the project with the military leadership of the affected service; and (3) establishing plan-based consensus expectations on upcoming allocations of resources to different programs and capabilities to mitigate perennial jockeying.¹⁶² The true cost of the RAN's resistance to the *Collins* may be unknowable, since more forthcoming Navy participation early in the program could have more thoroughly set requirements and avoided such an extensive degree of design-production concurrency necessitating refitting of production models with retroactively identified requirements and fixes.

Among the capabilities joining the ADF in the coming years is the new *Arafura* class of 12 advanced offshore patrol vessels (OPVs). Although the parent design calls for anti-ship missile launchers and sister vessels recently inducted into the Royal Brunei Navy have demonstrated the missile capability, RAN leadership has explicitly and thus far successfully advised the Department of Defence to keep the *Arafura* free of missile armament.¹⁶³ The resistance appears to be a territorial commitment to the development of large, resource-intensive, multirole surface combatants like the *Hobart* destroyer and the forthcoming *Hunter*-class frigate, although analysts believe that missile armament of the *Arafura*-class need not detract from the resourcing or production of these mega-platforms.¹⁶⁴ In this instance, RAN protectiveness of the resources of prestigious surface combatants is playing out in a manner similar to but even simpler than the case of the *Collins*-class. The *Arafura*-class represents a tested off-the-shelf design already fitted for

¹⁶² Ibid., pp. 33-34.

¹⁶³ Hellyer, *From Concentrated Vulnerability to Distributed Lethality*, p. 5.

¹⁶⁴ Ibid., pp. 13-14.

missile capabilities. Without missiles, the OPVs will be limited to constabulary duties and of no conventional deterrent value. With the launchers, the relatively large, modern OPVs more closely resemble corvettes, and the guided missile-capable defensive combatant count of the RAN doubles immediately (with Australia's naval CFPI score increasing by more than 10%) for a near-negligible shipbuilding cost.¹⁶⁵

Both the Army and Air Force have fiercely resisted the acquisition of the F35B STOVL variant for different territorial reasons. The Army's experience with East Timor was a central factor in Australia's acquisition of the *Canberra*-class amphibious assault ships.¹⁶⁶ As a result, the resources and leverage that accompanied a renewed focus on the Army's role in amphibious operations means that they have jealously guarded the dedicated role of the *Canberra*-class as a landing force delivery platform.¹⁶⁷ Given the continuing, decades-long drought for the acquisition and modernization of armored vehicles, self-propelled and rocket artillery, and surface-to-air missile systems, this is understandable even if it is wasteful and counterproductive for Australia's deterrence logic.

The RAAF leadership has its own reasons for staunch opposition to the acquisition of the STOVL. From the RAAF's perspective, F-35B acquisition represents one of two possible employment options: (1) bad, entailing the routine seconding of aircraft and aircrews to the operational control of the RAN (presumably 24 corresponding to the current fleet of F/A-18E/F and judging from the 12-STOVL complement employed

¹⁶⁵ Ibid.

¹⁶⁶ Dean, p. 30.

¹⁶⁷ Brabin-Smith and Scheer, "Jump Jets for the ADF?"

by the *Canberra*-class' sister ship, the *Juan Carlos I*); and (2) worse, resulting in the resurrection of fixed-wing capabilities in the Fleet Air Arm (FAA) of the RAN and costing the RAF a couple of dozen super-fighters along with their personnel, resources, and leverage in future decisions.¹⁶⁸

It is difficult to emphasize the deterrent capability that Australia is leaving on the table without sounding hyperbolic. Configuring the relatively new *Canberra*-class vessels for STOVL operations and patrolling them with a complement of between eight and twelve F-35Bs would offer Australia a highly versatile and potent regional (and even extra-regional) power projection capability that would demonstrably shrink the sea-air gap. To put it in simplistic terms as measured by this study, replacing Australia's 24 F/A-18E/Fs with 24 F-35Bs and configuring the two *Canberra*-class vessels as STOVL carriers would *nearly double Australia's total CFPI* score.¹⁶⁹ Australia faces none of the obstacles to carrier capability that filter out most other states; it already has, operates, and maintains the massive vessels that *already have ski-jumped runways on their flight decks*. Australia is already in the process of procuring dozens of F-35As and intends them to replace the F/A-18E/Fs.¹⁷⁰ These factors effectively put the total cost of two aircraft carriers at the price differential between the A and B variant for 24 already-programmed aircraft and any required modifications for deck resilience or internal storage needed to the two ships (although they are supposedly near-identical to Spain's *Juan Carlos I*, which required minor heat resistance treatment to an isolated patch of its deck, a

¹⁶⁸ Farley, "The F-35B and Australia's *Canberra*-Class."

¹⁶⁹ CFPI, <https://cfpindex.org>.

¹⁷⁰ 2020 *Force Structure Plan*, p. 50.

technique also employed by U.S. amphibious assault ships serving in a STOVL carrier role).¹⁷¹ It may never have been this cheap—or quick—to induct cutting-edge carrier fleet capabilities in history, as evidenced by rapidly proliferating adoption of similar suites by F-35B users.¹⁷²

Service territoriality may not be the whole story. It is possible that multi-service resistance to the F-35B has thus far conveniently allowed administrations in Canberra to avoid confronting the question of whether the acquisition of too much capability, too fast, might have a provocative rather than a deterrent effect on China. Otherwise, as the subsequent paragraphs will show, service resistance alone would not necessarily stop civilian leadership from pursuing major acquisition goals.

Domestic Political Incentives. The incentives affecting two different classes of civilians responsible for the ADF's capability acquisition are distinct but related. The first group consists of career civil servants, headed and embodied by the Secretary of Defence. The second consists of politicians, most influentially the Minister of Defence and the Prime Minister but for the purposes of public debate including virtually any Australian elected official at the state or national level. Together, the two groups exercise a binding power of the purse over their senior uniformed colleagues headed by the Chief

¹⁷¹ Brabin-Smith and Scheer, "Jump Jets for the ADF?"

¹⁷² Malcolm Davis, "Should Australia Follow Japan and Take the F-35 to Sea?" *The Strategist*, January 23, 2019. <https://www.aspistrategist.org.au/should-australia-follow-japan-and-take-the-f-35-to-sea/>.

of the Defence Force (CDF).¹⁷³ As such, the Secretary of Defence can—at the direction of the Minister and through the Under Secretary for Acquisition—override the recommendations of one of the service chiefs or the CDF in an acquisition decision as long as it is within the bounds for which the funds were appropriated.¹⁷⁴ Obviously, the bureaucratic, political, and social capital cost of doing so brusquely would be steep and could have knock-on effects for any number of other deliberations requiring the cooperation of senior military leaders. Despite this, Australian procurement history is replete with instances of civilian leadership overriding, circumventing, or disregarding the recommendations of the services.

In the next few paragraphs, I revisit two prominent examples of this phenomenon identified earlier in the chapter in an effort to illuminate possible proximate causes and implications for deterrent capability acquisition. These are: (1) the procurement of the Super Seasprite anti-submarine warfare (ASW) helicopter; and (2) the *Adelaide*-class frigate upgrade program.

The RAN originally intended to induct Super Seasprite ASW helicopter as part of a joint, interoperability-focused initiative with the Malaysian military. When Malaysia canceled their acquisition of the aircraft in 1997, the RAN assumed that Australia would follow suit.¹⁷⁵ Defence’s civilian leadership stuck with the system given that disbursement had already begun for modernizations planned to take place as part of

¹⁷³ Cameron Moore, “The Constitutional and Legal Foundations for Australian Civil-Military Relations: Continuity and Change since Federation,” in *Civil-Military Relations in Australia: Past, Present, and Future*, edited by Michael Evans (Canberra: Australian Defence College, 2021), pp. 33-38.

¹⁷⁴ Markowski, pp. 1-50—1-51.

¹⁷⁵ “Kaman SH-2G(A) Super Seasprite.”

Australia's induction.¹⁷⁶ Implementation of the modernizations proved fraught, and the RAN Chief withheld his certification of initial operating capability in 2002 for safety concerns only to be overridden by the Minister of Defence to induct eight of the aircraft into the FAA.¹⁷⁷ The envisioned modernizations proved nearly physically impossible because of the compact size of the airframe and the complete lack of electronics pre-upgrade, causing the project to fall years behind and hundreds of millions of dollars behind.¹⁷⁸ By 2006, the aircraft were relegated to passenger service roles and the projected cost per unit to complete modernization was the equivalent of 100 million USD in 2021, or roughly the current purchase price of an F-35B fifth-generation STOVL fighter.¹⁷⁹ This and other defense project costs had become an issue in Australian domestic politics ahead of the 2007 federal election, with the opposition Labor party vowing to cut wasteful defense spending—specifically the Seasprite—and the Liberal party leaning into a perception that they were strong on national security and refusing to make any direction changes that could be seen as soft on defense.¹⁸⁰ Following the Labor victory, the new Defence Minister officially terminated the program in 2008, directing the negotiation of a return-for-reimbursement deal with the manufacturer and recouping approximately 150 million of a nearly 800 million USD sunk cost.¹⁸¹

¹⁷⁶ Ibid.

¹⁷⁷ Ibid.

¹⁷⁸ “SH-2G Seasprite Helos: (Mis)Fortune Down Under,” *Defense Industry Daily*, <https://www.defenseindustrydaily.com/australia-to-continue-with-illstarred-sh2g-seasprite-project-03338/>.

¹⁷⁹ Ibid.

¹⁸⁰ Ibid.

¹⁸¹ Ibid.

The Seasprite episode illustrates the compounding effects of the initial bureaucratic sunk-cost calculation by the Department's civil service, the absolute power of the Minister to overrule the service chiefs, and the vulnerability of economical acquisition to domestic political pressure. The capability gained by ASW helicopters is important but modest compared to the other platforms this chapter has discussed, and the notion that the government would persist with a blighted modernization scheme that would effectively make them the most expensive helicopters ever flown while performing at the lowest margins can come across as baffling. Considered instead as an unsound sunk-cost issue that metamorphosed into a salient political point ahead of a highly competitive federal election in which the government felt vulnerable and the opposition was attacking them on defense spending, and most comparative politics scholars will conclude that the Seasprite program was clearly rendered immune to fiscally responsible decision making until after the election (when perhaps a re-elected Liberal party would have felt more secure in canceling it).

Yet another override of the RAN leadership occurred in the decision to upgrade the *Adelaide*-class, and one that would show that the Liberal party did not have a monopoly on wasteful procurement spending. The Labor administrations of Bob Hawke and Paul Keating overrode the RAN's recommendation to retire the aging, relatively incapable *Adelaide*-class ships and instead ordered and reaffirmed an Australian shipbuilding program to build an additional two vessels.¹⁸² While the RAN had advocated for picking up the already much more capable (and upgradeable) *Kidd*-class

¹⁸² "Australia's Hazard(ous) Frigate Upgrades: Done at Last."

guided missile destroyers being sold off by the U.S. Navy, this would not have the same job creating effect of a proportionately large and long-lasting expansion of Australia's shipbuilding industry.¹⁸³ As with the Seasprite modernization program, the physical attributes of the relatively small, old frigates were badly mismatched with the modern capabilities specified by the government. The *Adelaide* modernization ultimately completed in 2010 with all ships seaworthy and more capable, five years behind schedule, 1.5 billion dollars over budget, and following two requirements downgrades by the RAN.¹⁸⁴

The *Adelaide* ships represented initially the entirety and ultimately half of Australia's missile-capable surface combatants during the fraught upgrade program. The sacrifice of such a large portion of its naval deterrent in the probable service of domestic political priorities demonstrates once again the potency of the civilian authority in the Defence Department and the predilection of Australian politicians to write off defense waste in the service of popular policies.

The preceding section reviewed Australia's performance along indicators of threat focus and government practice. The vignettes in this subsection illustrated the ways that service territoriality and civilian control combined with domestic political incentives can preclude the economical adoption of powerful capabilities and waste vast amounts of time and money while compromising deterrent signaling capacity. Has Australia learned from these lessons? Many important structural decisions have been

¹⁸³ Ibid.

¹⁸⁴ Ibid.

undertaken by Defence in the last two decades; what do possible trajectories look like for Australia's conventional deterrent in the foreseeable future?

Key Junctures Ahead

In this section, I examine what comes next for Australia's conventional armament. I begin by reviewing the apparent China-balancing strategic direction of Australia's defense orientation, the dramatically more capable weapon systems—particularly naval surface combatants and submarines—its government has said it is pursuing, and the implications for its conventional strategic signaling basis should it realize these goals. I then take stock of traditional obstacles to Australian procurement follow-through, noting that Australia's chances of successful completion of these procurement initiatives has risen considerably with bipartisan China-wariness and hard-won effective indigenization of modern surface and subsurface shipbuilding capacity. Finally, I identify what I believe to be the regional and global balance implications of Australia's probable emergence from decades of relatively little capability as a newly minted major naval power.

After Strategic Ambiguity

The pronouncement that Australian strategic ambiguity toward China is dead—and further that it died a sudden, public death with the AUKUS announcement—is both sensationalist and overly simplistic. While Australian strategic thought has undergone an inversion with respect to China, it did so neither suddenly nor alone. Australian

perceptions of and stance toward China have shifted as the result of actions by both Australia and the PRC, and the growing urgency of adopting a deterrent stance while avoiding misunderstanding-sparked conflict is one shared by a growing list of ever-closer regional partners.

Increasingly wary of China in the lead-up to and publication of the *2020 Defence Strategic Update*, Australia's defense policy circles received a particularly unwelcome accelerant in the form of COVID-19. Well into the pandemic, the precipitous downturn of Australian perception toward China for a variety of reasons—ranging from exasperation to full-fledged racially tinged conspiracy theory—ripples into every sector of policy and makes a rapprochement seem ever less feasible.¹⁸⁵ Worsening views of China in the general public coincide with geopolitics observers noting China's apparent grievances against Australia and increasing willingness to use multi-modal deterrence to throw its weight around the Asia-Pacific, including but not limited to the employment of disinformation campaigns, cyberattacks, economic coercion, and increasingly confrontational maritime patrol activity.¹⁸⁶

The intensifying environment has seen Australia shore up its alliances at speed and to a remarkable degree. Perhaps unsurprisingly, Australia finds common cause with China's competitive neighbor India, with the two countries recently elevating their relationship in 2021 to a comprehensive strategic partnership complete with the exchange of intelligence

¹⁸⁵ Joshua McDonald, "Australia-China Trade Tensions Persist With Canceled Agreements and Sharp Statements," *The Diplomat*. May 17, 2021. <https://thediplomat.com/2021/05/australia-china-trade-tensions-persist-with-cancelled-agreements-and-sharp-statements/>.

¹⁸⁶ Nathan Beauchamp-Mustafaga et al., *Deciphering Chinese Deterrence Signaling in the New Era* (Santa Monica, CA: RAND, 2021), pp. 132-141.

liaisons and “2+2” foreign and defense ministerial dialogues.¹⁸⁷ Closer ties with India are part of a flurry of improving security partnerships throughout the region. In a far cry from the days when it occupied contested territory on Indonesia’s border as part of a humanitarian intervention, Australia and Indonesia agreed just before the first 2+2 with India that they would increase defense cooperation and hold joint exercises to promote regional security.¹⁸⁸ Perhaps most remarkably, in January of 2022 Australia became only the second country after the United States to enter a “reciprocal access agreement” with Japan.¹⁸⁹ The agreement, one step short of a mutual defense pact, provides for the near-unfettered coordinated access of the armed forces of Japan and Australia to one another’s territory and may see a basing exchange to support more rapid response to aggression by China.

Australia’s trajectory in the strategic environment seems to be progressing steadily toward a policy of maximizing responsible deterrent measures against China, with an emphasis either on self-reliance or mutual reliance on regional allies. While the United States will be a pivotal part of Australia’s security future—particularly with the advent of AUKUS—the logic of Australia’s capability acquisition and regional agreement pursuits suggest that the country may need to rely on its own capabilities to

¹⁸⁷ Rajeswari Pillai Rajagopalan, “Australia-India 2+2 Dialogue: Converging Interests,” *The Diplomat*, September 16, 2021. <https://thediplomat.com/2021/09/australia-india-22-dialogue-converging-interests/>.

¹⁸⁸ Sebastian Strangio, “Australia, Indonesia Agree to Ramp up Defense Relationship,” *The Diplomat*, September 10, 2021. <https://thediplomat.com/2021/09/australia-indonesia-agree-to-ramp-up-defense-relationship/>.

¹⁸⁹ Haruka Nuga and Steve McMorran, “Australia, Japan Sign Defense Pact as China Concerns Loom,” *The Diplomat*, January 7, 2022. <https://thediplomat.com/2022/01/australia-japan-sign-defense-pact-as-china-concerns-loom/>.

deter or respond to the initial phase of an armed crisis with China. Where is the ADF's deterrent arsenal headed, and what are the potential forks in the road?

Continuing On Course

Australia has accumulated ample source material for hard-won lessons in defense production and capability acquisition. If we choose to assume that, on the whole, the Department of Defence and current and future political establishments will heed those lessons, the *2020 Force Structure Plan* offers the most promising insights into the next ten years of Australian deterrent capability procurement. The ADF envisions near- and mid-term critical capability additions for all three services, and a common theme is construction in Australia with fully transferred intellectual property.

Near-term armed deterrent capability addition for the RAAF include not only the continued induction of the F-35A but also an advanced unmanned fighter-style “wingman” armed drone as early as 2025 (but more likely in the early 2030s).¹⁹⁰ Slated to be produced in Australia with technology transfer from Boeing, these so-called “Ghost Bat” aircraft thus far appear to have maneuverability comparable to 4th generation fighters and can be modularly configured for a variety of combat, intelligence, and electronic warfare missions.¹⁹¹

According to the DoD, the Army is purportedly on the cusp of an explosion of long-neglected core capabilities starting as early as this year. Self-propelled howitzers,

¹⁹⁰ *2020 Force Structure Plan*, p. 57.

¹⁹¹ Kyle Mizokami, “Meet ‘Ghost Bat,’ Boeing’s New Fighter-Like Drone,” *Popular Mechanics*, March 24, 2022, <https://www.popularmechanics.com/military/aviation/a39516597/boeing-wingman-drone-ghost-bat/>.

medium-range ground-based air defense missile systems, multiple rocket launch systems, upgraded Abrams tanks, and a new tracked infantry fighting vehicle are supposed to see induction starting in 2022 and continuing through 2030.¹⁹² Should these programs proceed on schedule, the Army will transition from being a curiously small and poorly-equipped force to being a curiously small and well-equipped one.

The RAN is slated to capitalize on the decision to undertake nonstop shipbuilding in Australia with a plethora of capability additions, including: (1) upgrades to the *Hobart*-class guided missile destroyer; (2) the adoption of loitering anti-ship munitions aboard many surface combatants; (3) the induction of shore-based anti-ship missiles; and (4) as soon as 2030 the induction of the misleadingly named *Hunter*-class frigate (a ship of greater size, armament, and capability of most destroyers, and with a stealth capability and sophisticated sensor suite that will arguably make it the superior of the *Hobart* in all-around capability).¹⁹³ The vaunted nuclear submarine capability is probably close to two decades away, but the addition of the listed platforms in the currently contemplated quantities would represent well over a 50% increase from Australia's current CFPI score.

Taken at its word, the Department of Defence seems prepared to apply the lessons learned from decades of excruciatingly difficult defense production indigenization efforts. A relatively newfound consensus on China suggests that the improved manufacturing capability should benefit from an unprecedented focus on capability

¹⁹² 2020 *Force Structure Plan*, p. 77.

¹⁹³ *Ibid.*, p. 45.

development against a real and growing threat. What could derail Australia from this apparently promising capability acquisition course, and what options does it have?

Challenges and Options

Despite the lessons it has learned from multiple major capability production and modernization programs on Australian soil, the enduring challenges Australia faces are the same that have complicated many of its programs and that keep it from pursuing its most promising and efficient deterrent capacity-building options. The current, published acquisition course reflects a consensus among the senior ranks of the services, suggesting that it is vulnerable to instability driven by civilian incentives rather than service territoriality. On the other hand, the current course is the current course because service territoriality has for the moment precluded the selection of courses of action that could yield far more capability with relatively few induction issues.

China certainly seems likely to figure in Australian politics for the foreseeable future.¹⁹⁴ Although the parties seem likely to use China coziness as an attack line with one another, this combined with their apparent genuinely worsening views of the PRC suggest that such acrimony would guarantee rather than jeopardize the acquisition of

¹⁹⁴ Joshua McDonald, "Australia-China Relations Again in Focus Ahead of Australian Election." *The Diplomat*, February 23, 2022. <https://thediplomat.com/2022/02/australia-china-relations-again-in-focus-ahead-of-australian-election/>.

deterrent capability.¹⁹⁵ The risk is thus not that projects will not be undertaken, but that necrotic projects will not be amputated out of a fear of appearing soft on China. Without cooler heads in the political and military ranks carefully carving out a credible off-ramp to any necessary procurement extrications, Australian capability acquisition might be slightly more vulnerable to the combined pressure of desirable China hawk credentials and defense manufacturing job preservation incentives.

Service territoriality likewise seems to continue to pose a threat to the adoption of any organizationally imaginative capabilities while constituting a wild card for the introduction of new platforms. As this chapter has reviewed, it remains an open question whether increasing threat perceptions of China will overcome the dual Army-Air Force resistance to the adoption of the F-35B aboard the *Canberra*-class, an argument that among other things suggest that joint operations with Australia's new allies in the South China Sea will see F-35A pilots transiting three hours each way for only three hours time on station even as one of the *Canberra* ships serves as Australia's flagship in the exercise.¹⁹⁶ The host of new capabilities to be introduced raise other questions about platform primacy. In an amusing example, both the Army and RAAF capability timeline pages in the most recent force structure plan show their respective services as having responsibility for the new medium-range ground-based air defense missile system.¹⁹⁷

¹⁹⁵ Collinson, Elena. "Australia's Main Parties Are More Alike Than Different on China Policy." *The Diplomat*, March 18, 2022. <https://thediplomat.com/2022/03/australias-main-parties-are-more-alike-than-different-on-china-policy/>.

¹⁹⁶ Brabin-Smith and Scheer, "Jump Jets for the ADF?"

¹⁹⁷ 2020 *Force Structure Plan*, pp. 57, 77.

In this Chapter, I described Australia's conventional deterrent capability procurement experience over the dissertation's analytic window. As a highly developed economy with a proportionately under-emphasized and unevenly modernized force in 2000, Australia added a great deal of increasingly modern capability with the result that it remains small but now literally boasts some of the most advanced combat systems in human history. Australia's more focused view of China as a military threat and ever-closer integration with the United States promises to buoy its capability acquisition in the foreseeable future. Despite hard-won lessons on indigenizing defense production that its defense establishment seems keen to implement, Australia remains vulnerable to bureaucratic and political forces that can play merry hell with any notion of efficient procurement. The next chapter explores India's experience in a similar fashion.

CHAPTER FIVE

India

While on its face India boasts the highest-scoring conventional deterrent arsenal of the four cases, a proportional examination reveals that it seems to be punching considerably below its weight. India's large and quickly-growing economy is an already-grand attribute seeming to foretell a much grander future if it can only modernize. Sixth in the world in nominal GDP, India's per capita rank of 145th in the same measure speaks to staggering developmental potential.¹⁹⁸ Despite having an economy more than ten times the size of Pakistan's, India's CFPI score is just over a third greater (see figure 5.1).¹⁹⁹ Even allowing that Pakistan's CFPI represents a disproportionately large score for its economic productivity, a comparison to China reveals India to conclude the analytic window with less than a quarter of the PRC's index-measured conventional deterrent arsenal (see figure 5.2).²⁰⁰

As of the year 2000, analysts conjectured that India might further expand slight competitive edges over China in some areas of conventional armament. A variety of unit-level factors appear to have seriously impeded the economical acquisition and modernization of the deterrent arsenal, a shortcoming for which the struggling defense

¹⁹⁸ "World Economic Outlook." <https://www.imf.org/en/Publications/WEO/weo-database/2021/October>.

¹⁹⁹ *Conventional Firepower Potential Index*, <https://cfpindex.org>.

²⁰⁰ Ibid.

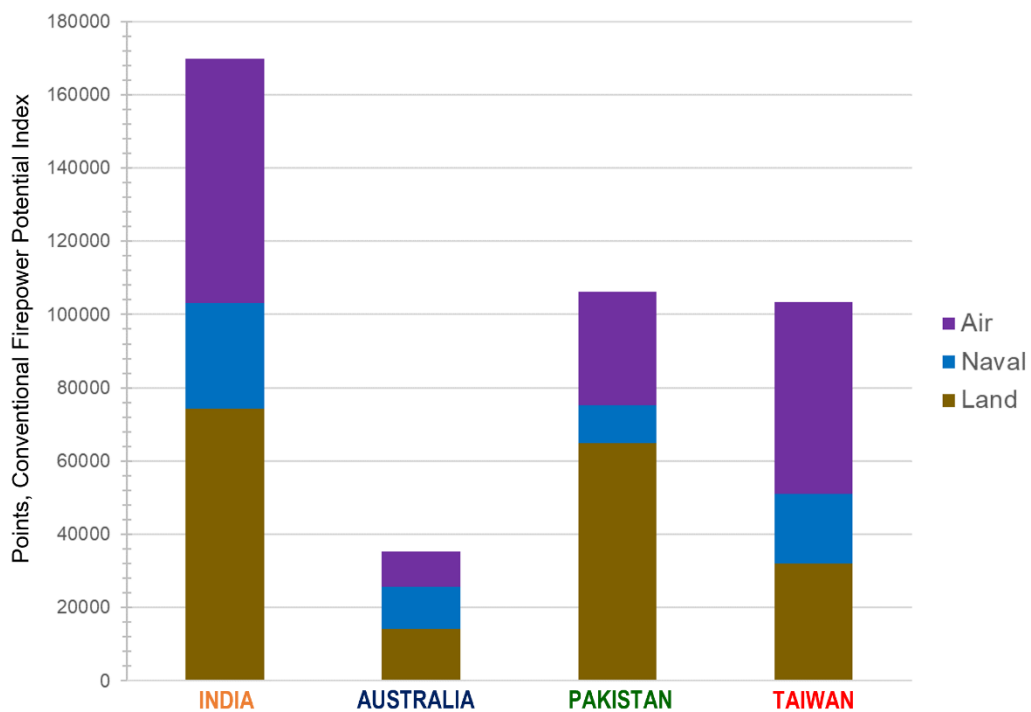


Figure 5.1: India's 2020 CFPI Score Compared to Other Cases

Sources: CFPI, IISS

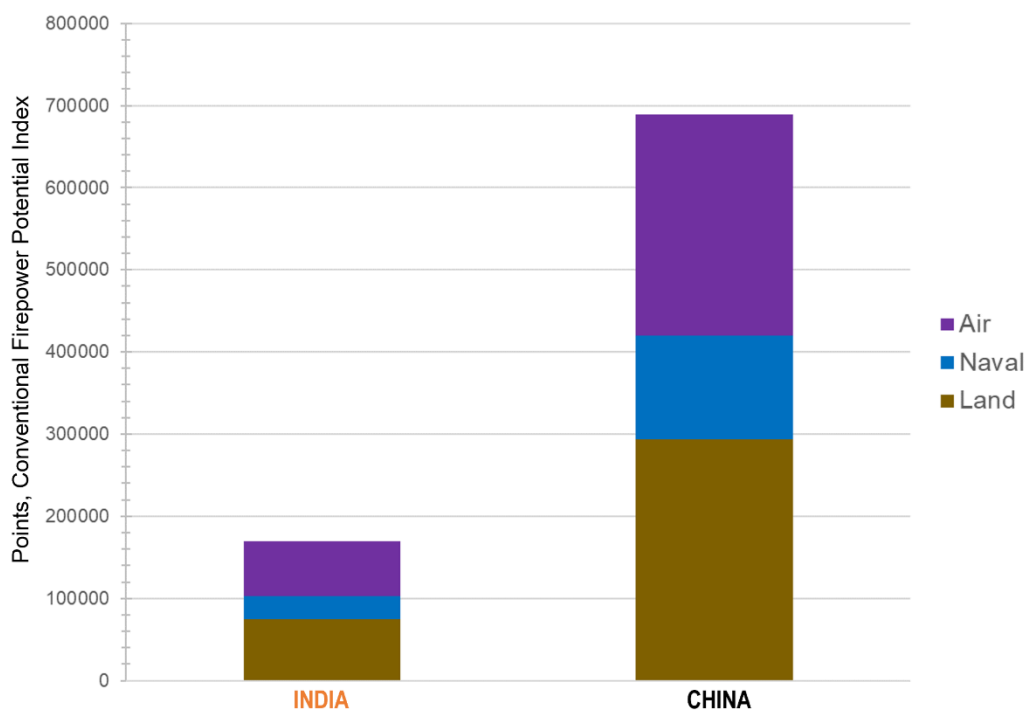


Figure 5.2: India and China 2020 CFPI Scores

Sources: CFPI, IISS

indigenization effort represents an appropriate façade. The Indian Armed Forces are the greatest draw for capital expenditure in the government's budget, but this expenditure is both too small to achieve economies of scale and too unfocused. Highly assertive civil control, near-abusive territoriality by the Army in the face of resource challenges from other services, and an apparent inability to modernize India's economy through agricultural sector reform have all thus far combined to keep defense procurement from gaining focus, efficiency, and relevance to the rapidly growing competitive threat from China. The establishment of an autonomous Chief of Defence Staff position and reforms to procurement policy and pension-exempt recruitment may notch incremental gains, but India is fighting a path-dependent, steeply uphill battle against continued and dysfunctional reliance on foreign imports.

The first section of this chapter describes the development of India's conventional armament approach over three stages of geopolitical outlook following Partition. In the second section, I map India's variable values in the quantitative analysis on to the events of the period 2000-2020. I explore the non-quantitatively analyzed, unit-level phenomena of service territoriality and civil control in the context of domestic political pressure. Lastly, in the third section, I identify the branching paths India's conventional signaling capacity may follow in the near future. I describe some of the most apparent factors that could impact these courses and offer some system-wide implications.

Background

India's pursuit of conventional weaponry tracks with its stance toward the rest of the global arena. In this section, I describe India's strategic footing in three stages—departure from true non-alignment, strategic emergence, and flexible alignment—and trace corresponding developments in the Indian approach to arms procurement.

Departure from True Non-alignment, 1947-1971

The independent state of India was born in the rushed, violent process of Partition in the summer of 1947. For the next quarter-century, successive Indian governments would pursue policies of non-alignment in the Cold War and clear civil control over the military services while repeatedly engaging in high-intensity armed conflict (three times with rival sibling Pakistan and once with China). These conflicts both illustrated the state of India's conventional capabilities and informed its approaches to procurement. The early days of defense acquisition saw brief flirtations with both the United States and the Soviet Union as vendors. This period culminated in a decisive turn away from the former and toward the latter, establishing path-dependent defense ties between India and the Soviet Union (and later Russia) throughout the rest of India's development as a military power.

A Premise of Peace. From the first days post-Partition, India's larger-than-life de facto founder Jawaharlal Nehru pursued a firm ideological commitment to the related tenets of non-alignment and non-militarization.²⁰¹ Having marshaled the ruling Congress

²⁰¹Sumit Ganguly, "A Tale of Two Trajectories: Civil-Military Relations in Pakistan and India," *Journal of Strategic Studies*, vol. 39, no. 1 (2016), pp. 183-184.

party to take on the British and win and receiving widespread local and international recognition in the process, Nehru represented an extraordinarily popular figure with powerful and consolidated influence over the shape of India's nascent democracy. A simmering threat from the relatively weaker Pakistan notwithstanding, Nehru saw China as an ideologically compatible developing Asian state building on a popular mandate and thus believed that India emerged into a relatively secure environment.²⁰² This perspective supported his pursuit of non-alignment in the Cold War both to break the cycle of the developing world acting as pawns to Western powers and to de-emphasize security threats that might give the military a pretext for seeking political power.²⁰³ Although India would abandon non-alignment in all but name by the end of this period, its norm of strong civil control of a politically weak military would endure to the present day.

Nehru's assessment of a relatively secure region was to prove at least somewhat optimistic, as India engaged in four armed conflicts with its neighbors during this period. In October 1947—only the second full calendar month after Partition—Pakistan and India went to war over the princely state of Jammu and Kashmir.²⁰⁴ One of the new United Nations' Security Council's first resolutions aimed to resolve the crisis through the withdrawal of Pakistani troops and an Indian-administered referendum of self-

²⁰² Ibid.

²⁰³ Lloyd Rudolph and Suzanne Rudolph, *In Pursuit of Lakshmi: The Political Economy of the Indian State* (Chicago: University of Chicago Press, 1987), p. 23.

²⁰⁴ Christophe Jaffrelot, *The Pakistan Paradox: Instability and Resilience* (New York: Oxford University Press, 2015), pp. 5-6.

determination, neither of which have been administered to this day.²⁰⁵ The Sino-Indian War of 1962—wherein Mao’s People’s Liberation Army overran and destroyed forward outposts of the Indian Army in disputed territory along the border with China—further refuted Nehru’s premise that India occupied a neighborhood safe from regional conflicts.²⁰⁶ Following Nehru’s death in 1964, India fought two more conflicts with Pakistan in the form of the 1965 Indo-Pakistani war (an embarrassing stalemate that saw unorthodox tactics by Pakistan gain a better foothold in Kashmir)²⁰⁷ and the 1971 war of the same name (that saw a rapidly improved Indian military successfully intervene in the Bangladesh War of Independence) that effectively removed the Pakistani threat from India’s eastern border.²⁰⁸

Formative Episodes in India’s Foreign Policy. India’s experience with each of China, the United States, and the Soviet Union during these conflicts would shape the trajectories both of strategic alignment (an official doctrine of “non-alignment” notwithstanding) and conventional capability acquisition. China’s attack shattered Nehru’s early hopes for close and cooperative Sino-Indian ties and steamrolled a miserably unprepared Indian Army.²⁰⁹ It also caused Nehru to reconsidered opposition to

²⁰⁵ Ibid., p. 7.

²⁰⁶ Sumit Ganguly and Manjeet Pardesi, “Explaining Sixty Years of India’s Foreign Policy,” *India Review*, vol. 8, no. 1 (2009), pp. 4-5.

²⁰⁷ Cohen, pp. 8-10.

²⁰⁸ Ganguly and Pardesi, p. 9.

²⁰⁹ Ibid.

increasing defense spending, and saw a rise in Indian interest in foreign procurement as well as in building an indigenous defense production capacity.²¹⁰

The Sino-Indian War also seemed to catalyze the United States' exploration of the prospect of a strategic relationship with India. Nehru enjoyed a relatively warm relationship with Kennedy, and he sought American intervention on India's behalf (although the White House was embroiled in the Cuban Missile Crisis for the majority of the Sino-Indian War).²¹¹ American influence over Pakistan and intervention on the side of India introduced cauterized the situation and prevented China from making further gains,²¹² but the Kennedy Administration ultimately decided against any proposition of more enduring military cooperation with India because of unacceptability to Pakistan.²¹³ During the 1965 war, the United States joined with the United Kingdom to enforce a materiel embargo on the Indian subcontinent and starve the two sides for ammunition, an approach that also risked being seen as an indignity for India.²¹⁴ In fact, the United States ceased any offer of military equipment for sale to India during each of the 1965 and 1971 wars in deference to the U.S. commitment to Pakistan.²¹⁵ During the latter conflict, the

²¹⁰ Manish Rana, "Defence Procurement in India: A Historical Perspective," *IDSa Comment*, December 2, 2021. <https://idsa.in/idsacomments/defence-procurement-in-india-mrana-021221>.

²¹¹ Athale, Anil. "The Untold Story: How Kennedy Came to India's Aid in 1962." *Rediff*, December 4, 2012. <https://www.rediff.com/news/special/the-untold-story-how-the-us-came-to-indias-aid-in-1962/20121204.htm>.

²¹² Ibid.

²¹³ United States Department of State. *Memorandum from Secretary of State Rusk to President Kennedy, Subject: Air Defense for India*. May 8, 1963.

²¹⁴ Russell Brines, *The Indo-Pakistani Conflict* (London: Pall Mall, 1968), p. 356.

door appeared to slam shut on uncomplicated relations between the United States and India. In granting Pakistan's request to stage a naval show of force against India by sending the nuclear-powered aircraft carrier *USS Enterprise* and its surface escorts into the Bay of Bengal, the United States secured an enduring place of acrimony and untrustworthiness in the minds of India's foreign policy and national security elite.²¹⁶

By contrast, India's experience with the Soviet Union before and during the 1962, 1965, and 1971 conflicts together propelled the two countries down a path of expanding security cooperation. Beginning in the early 1950s, the Soviet Union adopted India's position on Kashmir and supported it with vetoes in the Security Council.²¹⁷ Moscow's motivation to keep New Delhi out of Washington's orbit further precipitated economic aid and moderating influence on the Communist Party of India's activism.²¹⁸ When the United States and United Kingdom took a disenfranchising, parental approach to India and Pakistan in the 1965 war, the Soviet Union brokered prestigious and face-saving peace negotiations between the two neighbors.²¹⁹ India responded with favorable political steps toward the Soviets, voting with them on UN General Assembly measures

²¹⁵ Sameer Lalwani et al., "The Influence of Arms: Explaining the Durability of India-Russia Alignment," *Journal of Indo-Pacific Affairs*, January 15, 2021. <https://www.airuniversity.af.edu/JIPA/Display/Article/2473328/the-influence-of-arms-explaining-the-durability-of-indiarussia-alignment/>.

²¹⁶ Michael Walter, "The U.S. Naval Demonstration in the Bay of Bengal During the 1971 India-Pakistani War," *World Affairs*, vol. 141, no. 4 (Spring 1979), pp. 299-302.

²¹⁷ Vojtech Mastny, "The Soviet Union's Partnership with India," *The Journal of Cold War Studies*, vol. 12, no. 3 (2010), pp. 62-63.

²¹⁸ Ibid.

²¹⁹ Lalwani et al., "The Influence of Arms."

and quietly supporting the USSR's invasion of Czechoslovakia in 1968.²²⁰ When the U.S. fleet moved to the Bay of Bengal in 1971 to intimidate and distract India, a sizeable Soviet fleet of destroyers and submarines conspicuously tailed it into a standoff and mutual withdrawal.²²¹ The government of Prime Minister Indira Gandhi (Nehru's daughter) could hardly have asked for a more credible demonstration of the USSR's commitment to the "Peace and Cooperation" treaty signed with India earlier in the year.²²²

Indian acquisition of Soviet arms was a logical development in this context of improving Soviet-Indian relations and growing distance from the United States. In 1962, India made its first large-scale agreements with the USSR for the delivery of a major platform, the MiG-21 air superiority fighter.²²³ India's favorable experience with the jet's then-impressive capabilities, competitive pricing, and the Soviet willingness to allow job-generating assembly and partial production in India established the archetype of Indian arms deal with the USSR and Russia for decades to come.²²⁴ In the years ahead, India would rely on the Soviets both for their strategic friendship and for the procurement of submarines, helicopters, missile systems, tanks, and more.

²²⁰ Harsh V. Pant, *Indian Foreign Policy: An Overview* (Manchester, UK: Manchester University Press, 2016), p. 51.

²²¹ Shweta Sengar, "When Russia Stunned US & UK Naval Forces and Helped India Win the 1971 War," *India Times*, March 1, 2022. <https://www.indiatimes.com/news/india/when-russia-stunned-us-uk-naval-forces-helped-india-win-1971-war-563248.html>.

²²² Mastny, pp. 63-64.

²²³ Lalwani et al., "The Influence of Arms."

²²⁴ Ibid.

In contrast with its blossoming dependence on the Soviet arms trade for conventional capabilities in the land and air domains, India's indigenous naval shipbuilding industry was born during this period. In November of 1960, the Indian government approved the construction of three *Nilgiri*-class frigates (licensed copies of the British *Leander*-class).²²⁵ Although the ships would never carry missiles, they blazed a trail for indigenous manufacture to be the norm for Indian naval vessels to this day.

Strategic Emergence, 1971-2005

In the decades following Bangladeshi independence, India embraced dependence on Russian arms for its conventional weaponry and incurred varying degrees of alienation from the West because of its aspirations to nuclear armament. Despite the country teetering on the brink of autocracy, the military re-affirmed a commitment to refrain from politics. International tensions briefly boiled over following India's conclusive demonstration of its nuclear weapon possession in 1998, with follow-on effects with implications both for clashes with Pakistan and incentives to indigenize defense production. The terrorist attacks of September 11th would also spur a diplomatic opening between India and the United States, with rapprochement gathering momentum until blossoming into a new era of cooperation in the summer of 2005.

Deeper Soviet and Russian Integration for a World-Class Military. Throughout the 1970s and 1980s, India accelerated the pace and diversity of its arms imports from the

²²⁵ Abhjit Singh and Manoj Joshi, *From Buyer to Builder: The Indian Navy's Rocky Road to Self-Reliance* (New Delhi: Observer Research Foundation, 2020), p. 6.

Soviet Union. During this period, British, American, and other Western suppliers were largely out of India's reach because of factors including foreign policy quid pro quo expectations, requirements to pay in the vendor state's currency, and the ability of defense firms in each state to set revenue-seeking prices.²²⁶ By contrast, the Soviet Union made a point of offering India near-flyaway "friendship prices," offering generous credit terms and accepting payment in rupees, and even permitting barter payments.²²⁷

As with the initial MiG-21 deal, the USSR permitted licensed production and some degree of technology transfer. This meant Soviet arms sales fueled India's industrialization with factories springing up for the indigenous production of various systems including the MiG-23 and MiG-27 fighters and repairs for the T-72 main battle tank.²²⁸ The Soviet Union arguably provided India with more technical and intellectual defense production support than any other client state, granting it the same licenses it denied to China.²²⁹

By 1991, Soviet origin accounted for more than 70 percent of India's military equipment by unit count.²³⁰ Following the Soviet breakup, India stumbled but recovered from the shock of needing to deal with suppliers in former Soviet states and became a voracious customer of Russian military exports. Although Russia—cash-strapped and

²²⁶ Lalwani et al., "The Influence of Arms."

²²⁷ Stephen P. Cohen and Sunil Dasgupta, *Arming without Aiming: India's Military Modernization* (Washington, DC: Brookings Institution Press, 2012), p. 20.

²²⁸ Yuriy Kirshin, "Conventional Arms Transfers during the Soviet Period," in *Russia and the Arms Trade*, ed. Ian Anthony (Oxford: Oxford University Press, 1998), p. 66.

²²⁹ Shri Ram Sharma, *India-USSR Relations 1972-91: A Brief Survey* (New Delhi: Discovery Publishing House, 1999), p. 139.

²³⁰ Lalwani et al., "The Influence of Arms."

needing to recover its footing on the international stage—no longer offered “friendship prices,” India continued to opt for imports of Russian systems.²³¹ While Indian governments framed this as selecting cost-effective systems with competitive capabilities, dependence on Russian expertise for system operation and manufacturing was firmly entrenched by this point.²³²

Soviet and Russian imports and licensed production saw India acquire impressive and competitive military hardware throughout the period 1971 to 2005. In addition to receiving imports of prestigious systems like the *Kashin*-class guided missile destroyer (re-named *Rajput* in Indian service),²³³ partnership with Russia meant India would produce sophisticated systems that advanced both India’s deterrent capability and its prestige. Two prominent examples of this are: (1) the BrahMos supersonic cruise missile, the result of a 1998 joint venture; and (2) the Su-30MKI, the first fourth-generation fighter aircraft produced in India under Russian license.²³⁴ The latter case exemplifies a phenomenon that caused India to diversify its arms imports during this period: Russia would not transfer technology for the avionics, resulting in India’s patchwork but serviceable sourcing from France and Israel.²³⁵

²³¹ Karthik Bommakanti, “India-Russia Military-Technical Cooperation: Beyond Commercial Relations,” Observer Research Foundation. <https://www.orfonline.org/research/india-russia-military-technical-cooperation-beyond-commercial-relations/>.

²³² Lalwani et al., “The Influence of Arms.”

²³³ Ibid.

²³⁴ Bommakanti, “India-Russia Military-Technical Cooperation.”

²³⁵ Lalwani et al., “The Influence of Arms.”

Emergency Re-affirms Apolitical Military. Following guilty verdicts for election manipulation in both the Allahabad High Court and the Indian Supreme Court in 1975, Prime Minister Indira Gandhi induced President Fakhruddin Ali Ahmed to declare a state of national emergency.²³⁶ The consensus view holds that the Prime Minister mistakenly believed she could win back a popular mandate, explaining her decision to hold general elections in 1977 after two years of full-fledged autocratic rule including subversion of the press and the imprisonment and torture of opposition figures.²³⁷ Gandhi and the Indian National Congress Party lost the election badly, and India proceeded to quickly re-democratize.²³⁸ The episode is remarkable for the lack of intervention at any juncture by military leaders despite bearing all the hallmarks of coup vulnerability, a restraint that researchers attribute to a successfully institutionalized norm of apolitical military service.²³⁹

Nuclearization, Armament, and “All-Weather” Friendship. While both the United States and Russia provided India’s civil nuclear program assistance in the early 1970s, the former terminated this assistance and the latter re-affirmed it when India tested a nuclear weapon in 1974.²⁴⁰ Russian commitment to India endured both this test—which demonstrated India on the precipice of sustained nuclear armament but unable to

²³⁶ Aqil Shah, “The Dog that Did Not Bark: The Army and the Emergency,” *Commonwealth and Comparative Politics*, vol. 55, no. 4 (2017), p. 489.

²³⁷ *Ibid.*, pp. 489-490.

²³⁸ *Ibid.*

²³⁹ *Ibid.*, pp. 496-500.

²⁴⁰ Devika Sharma, “India-Russia Energy Cooperation” in *India-Russia Strategic Partnership: Challenges and Prospects*, ed. Nivedita Das Kundu (New Delhi: Academic Foundation, 2010), p. 76.

undertake it in earnest because of the global oil crisis—and a more globally provocative one in 1998.²⁴¹ In the wake of the 1998 test, India endured potentially ruinous sanctions and capital flight by key investors like Japan at the behest of the Clinton Administration.²⁴² Russia’s continued commitment to India’s nuclearization—assisting in the completion of two reactors following the 1998 test—demonstrated it to be an “all-weather friend” to India.²⁴³

Nuclear-Armed Neighborly Clashes. Pakistan demonstrated nuclear armament a mere two weeks after India (incurring even more severe economic punishment),²⁴⁴ raising the question of whether India-Pakistan armed conflict was a thing of the past or was a nuclear exchange catalyst waiting to happen. Two high-stakes crises during this period suggested what has now been demonstrated multiple times: mutual nuclear armament did not preclude regular and irregular armed exchanges between India and Pakistan.

Starting in a fashion similar to the Indo-Pakistani War of 1965, the 1999 Kargil Conflict began with Pakistan’s attempt to achieve a *fair accompli* with large-scale infiltration across the Line of Control by disguised Pakistani regular troops intermixed with sponsored militant groups.²⁴⁵ The conflict had little effect on the territorial status

²⁴¹ Ganguly and Pardesi, pp. 12-14.

²⁴² Ibid.

²⁴³ Sharma, p. 76.

²⁴⁴ T.V. Paul, *The Warrior State: Pakistan in the Contemporary World* (New York, Oxford University Press, 2014), p. 60.

²⁴⁵ Basrur, Rajesh. “India and Pakistan: Persistent Rivalry.” In *The Routledge Handbook of Asian Security Studies*, 2nd ed., edited by Sumit Ganguly, Andrew Scobell, and Joseph Chinyong Low (New York: Routledge, 2018), pp. 157-158.

quo, but resulted in thousands of casualties, galvanized world opinion against Pakistan for instigating the war, and set the scene for a military coup in Pakistan (addressed in Chapter 5).²⁴⁶ India never conducted a large-scale mobilization against Pakistan proper, restraint it would not show in the next crisis.²⁴⁷

In December of 2001, Pakistan-based militants staged an attack with firearms and grenades on India's Parliament House resulting in the deaths of 14 people including the five attackers.²⁴⁸ India threatened to invade Pakistan in retaliation, and both sides mobilized troops along their shared border.²⁴⁹ The crisis defused without escalating into a high-intensity conflict, but the embarrassingly slow pace of the Indian mobilization led to the formation of a "cold start" doctrine for rapidly invading Pakistan in the event of further attacks.²⁵⁰

Thawing U.S.-India Relations. Despite an initial sting, sanctions against India in the wake of its 1998 test did not appear sustainable owing to a lack of international political will and animosity toward Pakistan for its nuclear tests and its initiation of the Kargil Crisis.²⁵¹ The United States soon lifted the sanctions, and President Clinton traveled to India in 2000 in a visit that included the inauguration of a bilateral science and

²⁴⁶ Ibid.

²⁴⁷ Ganguly and Pardesi, p. 15.

²⁴⁸ Basrur, p. 158.

²⁴⁹ Ibid.

²⁵⁰ Walter C. Ladwig III, "A Cold Start for Hot Wars?" *International Security*, Vol. 32, No. 3 (Winter 2007-2008), p. 158.

²⁵¹ Ganguly and Pardesi, p. 12.

technology cooperation forum.²⁵² The Vajpayee government's outreach to the Bush Administration following the terrorist attacks of September 11th resulted in Vajpayee's visiting Washington in November of 2001 and presaged a period of cooperation on maritime security and other matters. Increased Indian willingness to submit to international monitoring of its civil nuclear program and nuclear weapons programs coincided with years of improving relations with the United States on all fronts.²⁵³

Over the next several years the United States and India established bilateral forums addressing all aspects of cooperation, including—controversially for U.S. support to the Nuclear Nonproliferation Treaty—civil nuclear cooperation.²⁵⁴ A Joint Statement issued in Washington by George W. Bush and Prime Minister Manmohan Singh formalized a continuing strategic partnership between India and marked the end of a diplomatic winter that had arguably begun in 1971.²⁵⁵

Flexible Alignment: Five Dynamics Since 2005

The period since 2005 has seen India emerge as an economic and security giant. Five dynamics during this period provide insight into India's approach to conventional armament throughout: (1) a progressively blossoming, sometimes awkward cooperative

²⁵² Norman Neureiter and Michael Cheetham, "The Indo-U.S. Science and Technology Forum as a Model for Bilateral Cooperation," *Science & Diplomacy*, December 16, 2013. <https://www.sciencediplomacy.org/editorial/2013/indo-us-science-and-technology-forum-model-for-bilateral-cooperation>.

²⁵³ "US Mulls India as Non-NATO Ally," *The Times of India*, March 23, 2004. <https://timesofindia.indiatimes.com/world/us/US-mulls-India-as-non-Nato-ally/articleshow/576446.cms>.

²⁵⁴ U.S. Library of Congress, Congressional Research Service, *U.S.-India Bilateral Agreements in 2005*, by K. Alan Kronstadt (RL33072), September 8, 2005, p. 5.

²⁵⁵ *Ibid.*, pp. 4-18.

relationship with the United States; (2) defense cooperation with Russia permitting huge technological strides even as Moscow becomes a reputational liability; (3) ever-more open strategic competition with China, also a vital economic partner; (4) the constant prospect of (and advent of several) crises with Pakistan; and (5) India's tortured, plodding, but undeniable progress toward defense production self-reliance.

United States. While Indo-American cooperation has by and large continued to improve on all fronts since 2005, the development most relevant to this dissertation was the resumption of U.S. weapon imports. These occurred throughout the period and include such diverse offerings as the AH-64E attack helicopter, the P-8I anti-submarine warfare aircraft, and the M777A2 towed howitzer.²⁵⁶ On a more strategic level, the United States and India in 2021 revived a quadrilateral economic and (primarily) security forum with Australia and Japan. The "Quad" has the all-but-explicit aim of balancing China's increasingly assertive economic and maritime coercion.²⁵⁷

Russia. India and Russia's defense and acquisition cooperation continued closely throughout this period. Although Russian exports as a share of India's total imports are declining as India diversifies its sourcing, India remains Russia's largest arms buyer, purchasing for fully one-third of the entire price tag of the Russian international arms

²⁵⁶ U.S. Library of Congress, Congressional Research Service, *India-U.S. Relations*, by K. Alan Kronstadt et al. (R46845), July 19, 2021.

²⁵⁷ Suomodeep Deb and Nathan Wilson, "The Coming of Quad and the Balance of Power in the Indo-Pacific," *Journal of Indo-Pacific Affairs*, December 13, 2021. <https://www.airuniversity.af.edu/JIPA/Display/Article/2870653/the-coming-of-quad-and-the-balance-of-power-in-the-indo-pacific/>.

trade over the last decade.²⁵⁸ The rising profile of Russian-sourced arms in India included an aircraft carrier and the ten-year lease of a nuclear-powered attack submarine, as well as the delivery of hundreds more fourth-generation fighters (Su-30MKI), several dozen advanced carrier-based combat aircraft (MiG-29K), and one of the world's most advanced air defense missile systems (the S-400).²⁵⁹ The two countries enacted various bilateral agreements throughout this period, perhaps most dramatically during a December 2021 summit in New Delhi where Russia's President Vladimir Putin and Indian Prime Minister Narendra Modi signed 28 bilateral agreements comprehensively addressing closer cooperation.²⁶⁰ While Russia's revisionism toward former Soviet states—particularly those considering NATO membership—was always a liability, Putin's 2022 invasion of Ukraine and subsequent high-intensity, atrocity-ridden conflict proves a true test of its de facto "mutual silence" arrangement with India.²⁶¹

China. Simmering border tensions with China erupted into actual fighting during two episodes in this period, amounting to no more than a literal scuffle in 2017²⁶² and a deadly melee in 2020 culminating in the first shots (albeit warning shots) fired along the

²⁵⁸ Lalwani et al., "The Influence of Arms."

²⁵⁹ Ibid.

²⁶⁰ "These are the 28 Agreements India, Russia Signed at Summit-Level Talks," *The Print*, December 7, 2021. <https://theprint.in/diplomacy/these-are-the-28-agreements-india-russia-signed-at-summit-level-talks/777650/>.

²⁶¹ Rajeswari Pillai Rajagopalan, "Russia's Invasion of Ukraine and India's Complex Strategic Circumstances," *The Diplomat*, March 10, 2022. <https://thediplomat.com/2022/03/russias-invasion-of-ukraine-and-indias-complex-strategic-circumstances/>.

²⁶² Sanjeev Miglani and Fayaz Bukhari, "India, China Soldiers Involved in Border Altercation: Indian Sources," *Reuters*, August 15, 2017. <https://www.reuters.com/article/us-india-china/india-china-soldiers-involved-in-border-altercation-indian-sources-idUSKCN1AV29F>.

Line of Actual Control since the 1962 war.²⁶³ Disengagement and conflict management talks between China and India proceed with varied effect, sometimes serving simply to keep the two countries in communication.²⁶⁴ The intensified border dynamic serves to compound the tension already stemming from the two neighbors' parallel, rapid military modernization²⁶⁵ and China's ever-more provocative naval presence in and near the Indian Ocean.²⁶⁶ China's close security cooperation with Pakistan, including extensive weapons exports, also means that India's secondary threat state remains well-armed.²⁶⁷ Despite these layered tensions, India and China are valuable economic partners to one another; the cessation or interruption of any significant fraction of the more than 100 billion USD in annual trade between the two would be likely to have global reverberations.²⁶⁸

Pakistan. The last two decades mostly did not see a reduction in the temperature of Pakistan-India tensions. A series of promising peace talks on Kashmir in 2007 became

²⁶³ Arzan Tarapore, *The Crisis After the Crisis: How Ladakh Will Shape India's Competition with China* (Sydney: Lowy Institute, 2021), p. 3.

²⁶⁴ "No Breakthrough in 15th Round of India-China Talks to End LAC Impasse." *The Hindu*, March 12, 2022. <https://www.thehindu.com/news/national/no-breakthrough-in-15th-round-of-india-china-talks-to-end-lac-impasse/article65217726.ece>.

²⁶⁵ Manjeet Pardesi, "China and India: Evolution of a Compound Rivalry," in *The Routledge Handbook of Asian Security Studies*, 2nd ed., edited by Sumit Ganguly, Andrew Scobell, and Joseph Chinyong Low (New York: Routledge, 2018), pp. 168-169.

²⁶⁶ Bhatt, Pooja. "China's Grey Zone Tactics in the Indian Ocean." *9DASHLINE*, May 5, 2020. <https://www.9dashline.com/article/chinas-grey-zone-tactics-in-the-indian-ocean>.

²⁶⁷ Naseer, Namra. "Pakistan's Drift Toward China: Maintaining Neutrality Amid Great Power Competition." *9DASHLINE*, February 18, 2021. <https://www.9dashline.com/article/pakistans-drift-towards-china-maintaining-neutrality-amid-great-power-competition>.

²⁶⁸ "India-China Trade Grows to Record \$125 Billion in 2021 Despite Tensions in Eastern Ladakh," *The Economic Times*, January 14, 2022. <https://economictimes.indiatimes.com/news/economy/foreign-trade/india-china-trade-grows-to-record-125-billion-in-2021-despite-tensions-in-eastern-ladakh/articleshow/88900383.cms?from=mdr>.

politically unfeasible following infamous terror attacks by the Pakistan-based group Lashkar-e-Taiba in Mumbai in December of 2008.²⁶⁹ The two countries have traded fire across the Line of Control multiple times a month since 2010, gathering intensity from 2016 onward until 2020 saw the ceasefire violated an average of 13 times a day.²⁷⁰ It was this volatile environment that the episode of February 2019 covered in the Introduction occurred, highlighting the state of India's fighter ecosystem. In March of 2021, the Indian Army and Pakistan Army Directors General for Military Operations issued a joint statement with no notice to the effect that both countries' militaries would strictly adhere to all conditions of all past ceasefire agreements, since which point no LOC ceasefire violations have been recorded or alleged.²⁷¹

Indigenizing India's Deterrent Capability Acquisition. This period saw India employing major platforms with advanced, majority-indigenous designs in all three conventional domains for the first time in history. Examples include the *Arjun* main battle tank, the *Shivalik*-class multirole stealth frigate, the *Rudra* multirole armed helicopter, and the *Tejas* lightweight multirole fighter.²⁷² Despite this accomplishment, India's defense production sector faces chronic issues of speed, scale, and requirements

²⁶⁹ Stephen Tankel, "Ten Years After Mumbai, the Group Responsible Is Deadlier Than Ever," *War on the Rocks*, November 26, 2018. <https://warontherocks.com/2018/11/ten-years-after-mumbai-the-group-responsible-is-deadlier-than-ever/>.

²⁷⁰ "Ceasefire Violations," *Indo-Pak Conflict Monitor*, interactive database, accessed April 10, 2022. <http://indopakconflictmonitor.org/search-cfv.php>.

²⁷¹ "LoC: India, Pakistan Exercised Restraint Since Ceasefire Agreement," *Hindustan Times*, March 21, 2022. <https://www.hindustantimes.com/india-news/loc-india-pakistan-exercised-restraint-since-ceasefire-agreement-says-govt-101647856346445.html>.

²⁷² IISS, *The Military Balance* (2005-2021).

drift.²⁷³ As such, India continues to import or license production of most of its weapons from foreign partners, albeit a more diverse field that includes France, Israel, and the United States.²⁷⁴

A survey of India's history relevant to conventional deterrent procurement reveals deep path dependence on Russian arms and expertise amidst long-standing desire to indigenize defense production. In the next section of the chapter, I seek to make sense of India's quantitative indicator performance when considered in the context of the periods described in the preceding section.

Conventional Firepower Potential Procurement Efficiency, 2000-2020

The introduction highlighted the disparity in procurement efficiency between India and Pakistan. As the figures throughout chapter 3 illustrate, India's three-year procurement focus on the theoretical threat from China averaged even lower than Australia's (41.0% compared to 47.9%) despite a number of crises with China during the analytic window. India's complex goal vendor ratio was higher even than Pakistan's (70.8% to 67.5%), although the evolving nature of this partnership may preclude friendly price schemes. India's average responsible government practice score was slightly lower than Australia's at 3.1, but still clearly in the "substantial" category. Rather than defining India's procurement efficiency as precisely greater than Australia's but considerably less

²⁷³ Dalip Bhardwaj, "'Make in India' in Defence Sector: A Distant Dream," Observer Research Foundation, May 7, 2018, <https://www.orfonline.org/expert-speak/make-in-india-defence-sector-distant-dream/>.

²⁷⁴ Roaten, Meredith. "India Manages Diverse Arms Sources for Military Modernization." *National Defense*, December 9, 2021. <https://www.nationaldefensemagazine.org/articles/2021/12/9/india-manages-diverse-arms--sources-for-military-modernization>.

than Pakistan's, it is instructive to approach the events behind the numbers with the aim of comparing and contrasting with the Australian case (similarly underpowered efficiency) and the Pakistani case (markedly overpowered efficiency).

This section facilitates that comparison with a systematic review of India's quantitative conventional firepower potential procurement indicators. As with the previous case, I attempt to connect the quantitative trends to identifiable events in the years of the analytic window. First, I describe trends India's capital outlay, procurement efficiency, and the platforms being added or changed during the corresponding period. Second, I trace trends in each of the study's independent variables (threat focus, vendor state aims, and responsible procurement practices) and attempt to identify relevant real-life developments. Third, I close the section by describing the unit-level phenomena of service territoriality, civilian control, and the place of defense spending and regional security in India's domestic politics.

Procurement Spending, System Addition Modalities, and CFPI

India's conventional procurement spending rose over the course of the analytic window. India's Armed Forces predominantly replaced and augmented systems during the analytic window, with few upgrades, introductions, and retirements. In India's sprawling forces characterized by multiple platform names serving in a single role, this capability addition appears unfocused and the incremental effects on overall and domain CFPI scores are not dramatic.

Budgets. India's conventional procurement spending nearly quadrupled increased over the analytic window, starting at 5.15 billion exchange- and inflation-adjusted USD and rising to 19.03 billion in 2020.²⁷⁵ Rather than doing this steadily, the overall rise was principally buoyed by an effective doubling in 2004 and an increase of nearly 50% in 2010.²⁷⁶ Although topline defense spending generally fell during years of United Progressive Alliance Control and rose during National Democratic Alliance control, procurement expenditure specifically increased during both coalition tenures with each seeing one of the aforementioned single-year large jumps.²⁷⁷

Systems and Capability Addition Modalities. The Indian Armed Forces principally replaced or augmented systems during the time window, with surprisingly few upgrades and introductions performed. This set up a pattern of augmenting classes of platforms that themselves would require replacement in sometimes as little as a few years. India's capability addition includes multiple examples of extremely protracted licensed production, delivery over-budget and over-time, and avoidable production-development concurrency.

India introduced three new capabilities during the analytic window: (1) the *BrahMos* surface-to-surface cruise missile system, 2007-2016 (and in other years for launch of the same missile from other platforms);²⁷⁸ (2) the *Chakra* nuclear-powered

²⁷⁵ Ministry of Finance (India), "Capital Outlay on Defence Services," *Demands for Grants of Central Government* (2001-2021, all editions).

²⁷⁶ Ibid.

²⁷⁷ Ibid.

attack submarine, 2010-2011;²⁷⁹ and (3) the *Shivalik*-class multirole stealth guided missile frigate, 2006-2013.²⁸⁰ Joint Indian-Russian development of the *BrahMos* probably represents a best practice from the Indian perspective, since it secured for India the technology underlying the missile system itself, detailed insight into adjacent Russian technology for propulsion systems and canisterization, and the prestige of developing a sophisticated cruise missile and conducting a world-first supersonic steep-dive test.²⁸¹

The *Chakra* represented a unique arrangement between Russia and India. A Russian *Akula II*-class nuclear-powered attack submarine, the *Chakra* was completely Russian-built but crewed by Indian and Russian personnel following launch.²⁸² While the ten-year lease price of nearly 700 million USD might seem steep given the estimated unit cost of 1.5 billion USD, the experience provided the Indian Navy experience in nuclear-powered submarine operation that proved critical to the development and commissioning of India's survivable nuclear second-strike submarines beginning in 2016 (not scored by the CFPI).²⁸³

At commissioning, the stealthy *Shivalik*-class multirole guided missile frigate represented the most sophisticated surface combatant produced in India.²⁸⁴ When

²⁷⁸ IISS, *The Military Balance* (2007-2016).

²⁷⁹ IISS, *The Military Balance* (2009-2011).

²⁸⁰ IISS, *The Military Balance* (2006-2013).

²⁸¹ Bommakanti, "India-Russia Military-Technical Cooperation."

²⁸² Lalwani et al., "The Influence of Arms."

²⁸³ Ibid.

²⁸⁴ Singh and Joshi, p. 11.

compared to the production pace of a similarly capable Chinese platform—the Type 054A (*Jiangkai II*-class) stealth multirole guided missile frigate—the *Shivalik*’s production time appears sluggish. To the extent publicly available information exists, some of the 054As completed final modifications and sea trials to commission in under a year following launch.²⁸⁵ Each of the three *Shivalik*-class ships took just over seven years to complete post-launch construction and undergo trials before induction.²⁸⁶ This astonishingly slow pace combined with the fact that only a single government-owned shipyard is accredited to produce the *Shivalik* means that despite being an impressive platform, India’s first indigenous stealth surface combatant’s procurement suffers from underperformance systemic to its naval shipbuilding sector.²⁸⁷

India carried out considerable augmentation of existing capabilities during the window, often with markedly different platforms than those already providing the capability. This was attributable primarily to the two factors of supplier diversification and indigenization. Augmentations in this period included: (1) adding the more-indigenous *Delhi*-class guided missile destroyer to the Russian-provided *Rajput*-class, 1997-2000;²⁸⁸ (2) the indigenous *Pinaka* multiple launch rocket system (MLRS) to the Russian BM-21, 1997-2020;²⁸⁹ (3) adding the indigenous *Arjun* main battle tank to the

²⁸⁵ Franz-Stefan Gady, “China Inducts 26th Type 054A Guided-Missile Stealth Frigate Into Service,” *The Diplomat*, January 16, 2018.

²⁸⁶ Sandeep Unnithan, “India’s Shipyards Take Years to Deliver Warships,” *India Today*, March 5, 2007. <https://www.indiatoday.in/magazine/defence/story/20070305-delayed-shipyards-by-india-is-hampering-the-navy-image-748867-2007-03-05>.

²⁸⁷ Sing and Joshi, pp. 11, 15.

²⁸⁸ IISS, *The Military Balance* (1997-2001).

Russian T-72M1, 1997-2011;²⁹⁰ (4) adding over 1,000 T-72M1 tanks to the existing stock of T-72M1s and *Arjun*, 1997-2019;²⁹¹ (5) adding the *Brahmaputra*-class guided missile frigate to the *Godavari*-class, 1998-2004;²⁹² (6) adding the indigenous *Rudra*-class armed multirole helicopter to an extremely diverse collection of primarily foreign-sourced multirole helicopters, 2002-present;²⁹³ (7) adding French-licensed Mirage 2000H multirole fighter to the existing store of less-advanced Mirage 2000D aircraft, 2007;²⁹⁴ and (8) adding Russian-licensed 9K58 MLRS launchers to the existing mixed fleet of BM21 and *Pinaka* launchers, 2009-present.²⁹⁵

It should already be apparent from this list that India has a habit of creating large pools of different systems offering different degrees of the same capability. These approaches seem to coincide with repeated realizations that an indigenous platform will not be produced quickly enough or with sufficient quality to meet operational requirements, resulting in the decision to import or license a foreign version that will offer a proven capability more quickly and at a higher cost.²⁹⁶ While India steadily builds conventional deterrent as indicated by CFPI score, this practice of fallback foreign

²⁸⁹ IISS, *The Military Balance* (1997-2021).

²⁹⁰ IISS, *The Military Balance* (1997-2012).

²⁹¹ IISS, *The Military Balance* (1997-2020).

²⁹² IISS, *The Military Balance* (1998-2005).

²⁹³ IISS, *The Military Balance* (2002-2021).

²⁹⁴ IISS, *The Military Balance* (2006-2008).

²⁹⁵ IISS, *The Military Balance* (2009-2021).

²⁹⁶ Bhardwaj, “Make in India in Defence Sector: A Distant Dream.”

procurement following years and millions of dollars of sunk cost in indigenous programs creates a number of inefficiencies: (1) the task of maintenance, a perennial challenge for the Indian Armed Forces, becomes even more complex owing to non-interchangeable parts with different foreign customers for spares;²⁹⁷ (2) while the fallback import may arrive quickly, the total time planned to deliver a given capability exceeds the anticipated schedule by years;²⁹⁸ and (3) a wicked project management decision is inserted one to two decades into the future of India's procurement when the Ministry of Defence must decide whether to invest in longevity for the fallback platforms at the expense of indigenous programs and maintenance simplicity, or to dispose of them compounding the overall financial loss with a short service life.²⁹⁹ This pattern applies primarily to augmentation but characterizes a substantial fraction of introductions and upgrades (upgrades of foreign systems are themselves sometimes fallbacks when indigenous introductions or replacements are not possible).

India made surprisingly few upgrades during the analytic window given its force size. Upgrades included: (1) modernization of the *Sindhugosh*-class conventionally-propelled attack submarine, 2004-present;³⁰⁰ (2) avionics and weapon compatibility upgrades to the imported MiG-29 air superiority fighter fleet, 2013-present;³⁰¹ and (3)

²⁹⁷ Roaten, "India Manages Diverse Arms Sources for Military Modernization."

²⁹⁸ Bhardwaj, "Make in India for Defense: A Distant Dream."

²⁹⁹ Ibid.

³⁰⁰ IISS, *The Military Balance* (2003-2021).

³⁰¹ IISS, *The Military Balance* (2012-2021).

upgrade of the fallback-procured French Mirage 2000D to the 2000I standard using a combination of French and Israeli components, 2015-present.³⁰²

All three upgrades reflect systemic issues affecting India's conventional deterrent procurement efficiency. The *Sindhughosh*-class upgrades have been slated so long that the modernization undergone by the last few boats in the class will be substantially different from those implemented to the first few.³⁰³ The MiG-29 and Mirage 2000 upgrades are examples of fallback upgrades. India's MiG-29 fleet was intended to be replaced by an indigenously produced, technology-transferred flagship multirole fighter, and upgrades demonstrate that no selection had taken place long after one was expected.³⁰⁴ In the case of the Mirage 2000 jets, their initial purchase was also a fallback decision when no principal advanced fighter could be selected, and their upgrade is further evidence that that decision has not been made.³⁰⁵ The maintenance and supply challenges of non-interchangeable aircraft with spares sourced by three different countries (Russia, France, and Israel) compound the cost inefficiency of fallback procurement.

Numerous fallback augmentations and tortured upgrades notwithstanding, India made many replacements during the study window. These include: (1) the *Godavari*-class multirole guided missile frigate for the *Nilgiri*-class ASW frigate, 1996-2013;³⁰⁶ (2)

³⁰² IISS, *The Military Balance* (2014-2021).

³⁰³ Manu Pubby, "Indian Navy, Minister of Defence in a Tussle Over Rs 45,000 Cr Submarine Project," *The Economic Times*, January 15, 2020. <https://economictimes.indiatimes.com/news/defence/navy-ministry-of-defence-in-a-tussle-over-biggest-submarine-project/articleshow/73237525.cms>.

³⁰⁴ Lalwani et al., "The Influence of Arms."

³⁰⁵ Bhardwaj, "Make in India in Defence Sector: A Distant Dream."

³⁰⁶ IISS, *The Military Balance* (1997-2014).

the S-125 air defense missile system for the S-75, 1997-2002;³⁰⁷ (3) the advanced, Russian-licensed Su-30MKI for various aging MiG-23 variants, 1997-2020;³⁰⁸ the *Kora*-class guided missile corvette for the *Arnala*-class, 1998-2006; (4) T-90S main battle tanks for T-55 and *Vijayanta* variants, 2002-2018;³⁰⁹ (5) the catapult-launched MiG-29K ship-based multirole fighter for the AV-6 Harrier I jump jet, 2007-2017;³¹⁰ (6) the Russian-built *Vikramaditya*-class aircraft carrier for the *Viraat*-class, 2012-2017;³¹¹ the American-sourced P-8I ASW aircraft for the Russian Tu-142, 2013-2018;³¹² (7) the *Akash* air defense missile system for the 2K12; (8) the *Kamorta*-class multirole stealth corvette for the *Abhay*- and *Veer*-classes, 2013-present; (9) the advanced, more-indigenous *Kolkata*-class guided missile destroyer for the *Rajput*-class, 2014-present; (10) the Russian-built *Talwar*-class guided missile frigate for the *Godavari*-class; (11) the Korean-licensed *Vajra-T* self-propelled howitzer for the 2S19; (12) the *Tejas* light multirole fighter for various MiG-21 variants, 2016-present;³¹³ and (13) the cutting-edge American AH-64E attack helicopter for the Mi-25 and Mi-35, 2019-present.³¹⁴

³⁰⁷ IISS, *The Military Balance* (1997-2003).

³⁰⁸ IISS, *The Military Balance* (1997-2021).

³⁰⁹ IISS, *The Military Balance* (2001-2019).

³¹⁰ IISS, *The Military Balance* (2006-2018).

³¹¹ IISS, *The Military Balance* (2011-2018).

³¹² IISS, *The Military Balance* (2012-2019).

³¹³ IISS, *The Military Balance* (2015-2021).

³¹⁴ IISS, *The Military Balance* (2019-2021).

As this list demonstrates, India is engaged in concerted efforts across all three domains of conventional warfare to improve the capability and technological sophistication of its deterrent armament. Three examples—the *Vikramaditya*-class carrier, the *Tejas* light multirole fighter, and the *Arjun* main battle tank—demonstrate that these replacements exhibit efficiency obstacles similar to and distinct from those described in the preceding pages.

The *Vikramaditya* (then the *Admiral Gorshkov*, a *Kiev*-class carrier) was purchased at the supposedly concessionary cost of only a refurbishment agreement, aircraft, and weapons package in 2004 (approximately 1.8 billion USD then, equivalent to 2.6 billion USD in 2021).³¹⁵ The transfer saw extensive refurbishment delays and cost overruns. Aggressive Russian negotiators at one point asked for 2.9 billion USD for the refit alone, and the two sides eventually agreed on 2.2 billion.³¹⁶ It later emerged that the Indian Navy officer liaison in Moscow recommended that the Ministry of Defence agree to a higher price because he was being extorted by Russian security services in possession of compromising photographs.³¹⁷ The higher cost of acquisition—at this point clearly a bad deal but impossible to unwind—was compounded by the need to extend the service life of the aging carrier *Viraat* while delaying work on the indigenous *Vikrant*, originally meant to be the first aircraft carrier built in Asia.³¹⁸ In stark contrast to the

³¹⁵ Lalwani et al., “The Influence of Arms.”

³¹⁶ Ibid.

³¹⁷ Dean Nelson, “Indian Navy Chief Caught in Russian ‘Honeytrap,’” *The Telegraph*, April 22, 2010. <https://www.telegraph.co.uk/news/worldnews/asia/india/7619501/Indian-Navy-chief-caught-in-Russian-honeytrap.html>.

“friendship prices” and goodwill-building measures that typified Soviet arms sales to India in the latter half of the 20th century, the *Vikramaditya*’s transfer was downright predatory. Despite the clear risks associated with relying on Russia for its conventional deterrent, the episode left India arguably more dependent on Russian expertise and spares than it had ever been and occurred at a direct cost to aircraft carrier indigenization efforts.

The *Tejas* light combat aircraft was meant to provide India with a modern, multirole fighter with interceptor-like agility.³¹⁹ While the first aircraft were inducted to the IAF in 2016, its development had been ongoing since 1984 in response to the identification of the MiG-21 interceptor fleet as quickly approaching the end of its reliable service life in 1995.³²⁰ The twenty-year delay in fielding an indigenous light combat aircraft—largely because the government-owned firm Hindustan Aeronautics Limited understandably struggled to develop an advanced fixed-wing aircraft without Russian tutelage—has led to either an overreliance on aircraft with more expensive operating costs (like the Su-30MKI) or unwise continued dependence on the decreasingly combat-effective, increasingly accident-prone MiG-21s themselves.³²¹ The *Tejas* aircraft in service at the end of the analytic window represent a limited-production variant that will either be refitted owing to advances during development concurrency or simply be less capable for their service life.

³¹⁸ Singh and Joshi, pp. 7, 15.

³¹⁹ Ajai Shukla, “How Tejas Mark 2 Is Evolving into a Bigger, Powerful Fighter.” *Broadsword*, December 30, 2021. <https://www.ajaiashukla.com/2021/12/how-tejas-mark-2-is-evolving-into.html>.

³²⁰ Ibid.

³²¹ “Why India Simply Refuses to Retire Its Soviet-Era MiG-21 Fighter Jets.” *The Eurasian Times*, May 21, 2021. <https://eurasianimes.com/why-india-simply-refuses-to-retire-its-soviet-era-mig-21-fighter-jets/>.

The indigenously developed *Arjun* main battle tank's fraught induction demonstrates two phenomena not examined in the previous examples in this chapter: anti-indigenous system bias and failure to achieve economies of scale. The *Arjun*'s induction should have meant that it would become India's primary—and, with a gradual retirement or disposal of T-72 variants, only—main battle tank. Under the public enterprise model employed between the Defence Research and Development Organisation, the Ministry of Defence, and the services, the Army was free to decline to order any more than the initial production run of just over 100 tanks.³²² Army leadership cited a belief that the Russian T-90S was a superior tank (despite test data suggesting that the *Arjun* was at worst equal in capability) and posited that *Arjun* would lack ammunition and spares.³²³ These perspectives are remarkably resilient against evidence, as Army personnel would not be able to make an informed comparison of the platforms without fielding the *Arjun*, and greater production of ammunition and spare parts would only follow larger-scale production in response to service orders.³²⁴ The *Arjun* is a vivid example of multiple modes of path-dependence on Russian arms and technology imports preventing the achievement of economies of scale that might make indigenous production of key platforms sustainable.³²⁵

³²² Ajai Shukla, "Army Reluctant to Buy Indian-Made Arjun Tank, Prefers Russian T-90S," *Business Standard*, February 9, 2020. https://www.business-standard.com/article/defence/army-reluctant-to-buy-india-made-arjun-tank-prefers-russian-t-90s-120020801285_1.html.

³²³ Ibid.

³²⁴ Ibid.

³²⁵ Lalwani et al., "The Influence of Arms."

Finally, the Indian Armed Forces retired two platforms without one-for-one replacements. These were the PT-76 armored fighting vehicle or light tank (2008-2009)³²⁶ and the *Vidyut*-class missile boat (1997-2004).³²⁷ The PT-76 was a relic of pre-anti-tank guided missile (ATGM) mounts on non-tank armored fighting vehicles and had no role to fill in a modernizing Indian Army. Discontinuing the *Vidyut* corroborated Indian naval aspirations to rely on larger corvettes for mobile coastal defense as part of a prestige-seeking approach to build a dominant fleet around carriers and large, sophisticated guided missile warships.³²⁸

Threat Focus

India and China observe a multimodal rivalry that has included conventional strategic competition for almost sixty years.³²⁹ Despite this, India's procurement reflected the least average focus on its conventional threat source—China—out of the four case states. While China represented a consensus threat—if not always an active one—in Indian strategic thought circles, the composition and focus of the Chinese conventional threat has changed over time.

Chinese Threats. Although India and China share a land border in excess of 3,000 linear kilometers with a total disputed territory area of more than 120,000 kilometers square, the rugged Himalayan geography precludes traffic by armored fighting

³²⁶ IISS, *The Military Balance* (2007-2010).

³²⁷ IISS, *The Military Balance* (1997-2005).

³²⁸ Singh and Joshi, pp. 6-7.

³²⁹ Pardesi, pp. 168-170.

vehicles and severely degrades rotary wing aviation.³³⁰ The major conventional threats to India thus come in the form of sophisticated power air and naval power projection systems. The beginning of the analytic window—2000—prefaced a major investment by China in its naval, air, and missile forces, posing at least theoretical threats to India across all conventional domains.³³¹ Accordingly, I coded Chinese threats to India throughout 2000-2020 as vessels, fixed-wing aircraft, and missiles.

Judging purely from India's performance on the CFPI can give the impression that it either did not notice China's explosion of conventional capability, could not compete with it, or chose not to compete. Based on India's aspirations to great power aspirations,³³² prioritization of prestige projects like nuclear submarines and aircraft carriers,³³³ and willingness to contest its maritime neighborhood,³³⁴ it has both noticed and is willing to compete with China's increasingly capable and assertive conventional signaling. How did India's efforts to send matching and countering deterrent signals fare?

³³⁰ Ibid., p. 169.

³³¹ Ibid.

³³² William Thompson, "India and Its Great Power Aspirations," in *The Routledge Handbook of Asian Security Studies*, 2nd ed., edited by Sumit Ganguly, Andrew Scobell, and Joseph Chinyong Low (New York: Routledge, 2018), pp. 202, 209-210..

³³³ Rajat Pandit, "China-Wary India Oks 56 New Warships, 6 New Subs in 10 Years," *The Times of India*, December 3, 2018. <https://timesofindia.indiatimes.com/india/eye-on-china-india-wants-56-new-warships-and-six-new-submarines-over-next-decade/articleshow/66923859.cms>.

³³⁴ Tuneer Mukherjee, "Sino-Indian Maritime Competition: Shadow Fighting in the Indian Ocean," *9DASHLINE*, June 18, 2020. <https://www.9dashline.com/article/sino-indian-maritime-competition-shadow-fighting-in-the-indian-ocean>.

Matching. As an aspirant great power, matching represent's India's de facto preference for competitive signaling procurement relative to the Chinese threat. Indian procurement matched the Chinese threat to some degree; as the previous pages detail, India acquired some of every type of platform in the Chinese threat, including fixed-wing combat aircraft, surface combatant warships, a carrier aviation suite, and surface-to-surface missile systems. The overall matching ratio was low the volume and pace of India's matching procurement was simply anemic compared to China's. Figure 5-3 depicts a side-by-side CFPI score comparison of the oceangoing surface fleets (aircraft carriers, cruisers, destroyers, frigates, and carrier-based fixed-wing aviation) of India and China at the beginning and end of the analytic window. In 2000, India's carrier-centered surface fleet arguably held a narrow quantitative and qualitative edge over China's.³³⁵ By 2020, China had long decisively outstripped India in the acquisition of both surface combatants and carrier-based multirole combat aircraft.^{336,337} The speed and scale issues highlighted during the capability addition inventory earlier in the chapter translate to a clear Chinese signaling basis advantage and a widening gulf in China's favor.

Countering. Although India did procure some countering firepower potential during the analytic window—namely air superiority fighters, air defense missile systems, attack submarines, and corvettes—it perhaps should not be surprising that these were

³³⁵ Rick Joe, "A Tale of 2 Navies: Reviewing India and China's Carrier and Escort Procurement," *The Diplomat*, July 3, 2021. <https://thediplomat.com/2021/07/a-tale-of-2-navies-reviewing-india-and-chinas-aircraft-carrier-procurement/>.

³³⁶ Ibid.

³³⁷ Rick Joe, "A Tale of 2 Navies: India and China's Carrier Airwing Development," *The Diplomat*, October 11, 2021. <https://thediplomat.com/2021/10/a-tale-of-2-navies-india-and-chinas-carrier-airwing-development/>.

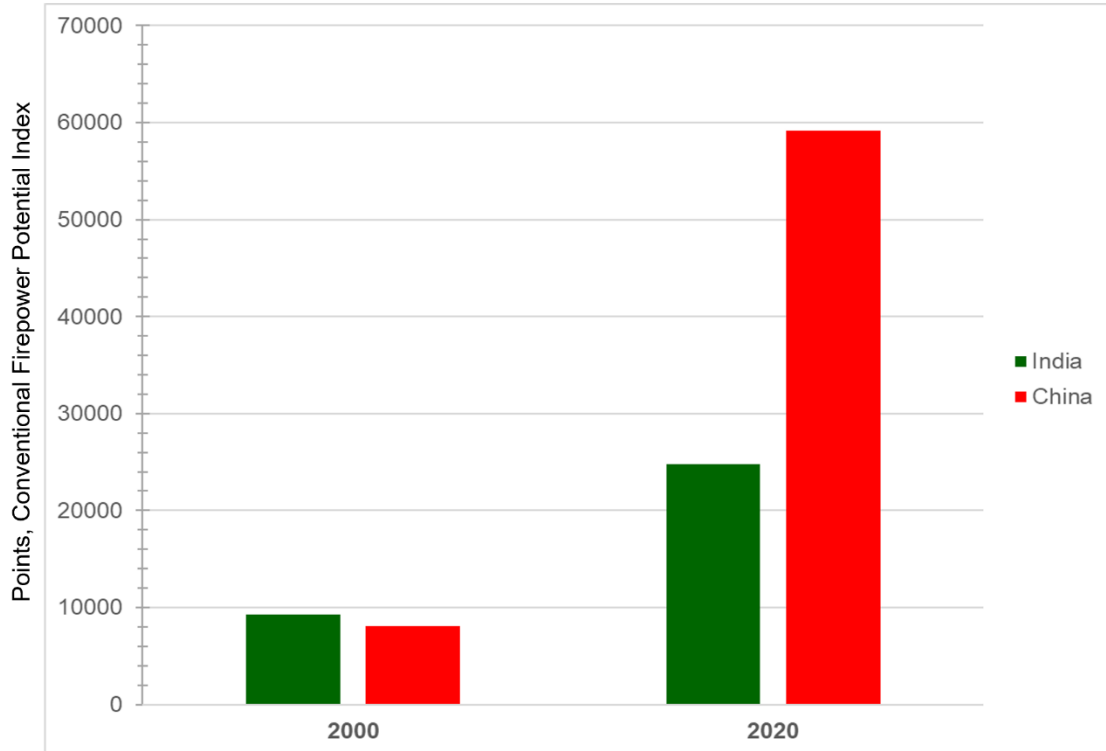


Figure 5.3: Surface Combatant and Carrier Aviation CFPI Score, 2000 and 2020
Sources: CFPI, IISS

neither of sufficient quantity or comprehensive enough in nature to send a clearly credible deterrent signal in light of the sheer volume of Chinese capability. Having opted for prestigious competition on even footing with China, India's opting for asymmetric capabilities could come across as being satisfied with the status of regional, spoiling power.³³⁸ Although India thus procured some systems from the trinity of deterrent value (air defense missile systems, shore-based anti-ship missile systems, and guided missile fast attack craft) its change in countering CFPI derived from these systems was actually negative over the analytic window because it failed to procure adequate system volume to

³³⁸ Pardesi, pp. 164-166.

replace the deterrent capability it was withdrawing. India eliminated missile boats without procuring replacements (corvettes are substantially more expensive ton for ton than missile boats), acquired no shore-based anti-ship missile systems, and eliminated far more air defense missile system capability than it replaced (perhaps creating a clear case for its efforts to acquire the Russian S-400 with deliveries starting in the years following the analytic window).³³⁹

Upon revisiting the trichotomy I posed at the beginning of this subsection—that India is ignorant of, willfully not competing with, or unable to compete with China’s rapid accumulation of conventional armament—the evidence in the preceding paragraphs suggests the third possibility corresponds to reality. In the next subsections I describe characteristics of and possible causes for this lack of capacity.

Vendor Goals

India’s recent efforts to diversify its arms sales notwithstanding, it purchased a clear majority (68.78 percent) of its conventional firepower potential from Russia over the analytic window. India also purchased a non-negligible minority (5.7 percent) from the United States. If we narrow our consideration to only the final six years of the study those percentages become 55.6 and 13.2 respectively; still a clear majority for Russia compared to all other importers, but a diversification away from Russia as a principal source is evident. Is there evidence in the policy approaches of Russia or the United States that would suggest favorable export practices to advance regional aims?

³³⁹ Lalwani et al., “The Influence of Arms.”

Russia. Although Russian arms deals with India have their origin in Soviet courting of India as a client state (if officially non-aligned), the export-import relationship between Russia and India during the analytic window has exhibited stark differences from the Soviet-Indian model. Far from offering “friendship prices,” deals like the *Vikramaditya* carrier discussed earlier in the chapter arguably represent predatory sales practices to a locked-in customer, albeit one whose diplomatic support Russia clearly values.³⁴⁰ It is not even apparent that Russia has regional balancing aims to pursue against any of India’s neighbors; Russia’s relations with China have always been a few hairs better than neutral,³⁴¹ and Russia appears to have quickly moved to take advantage of American disinvestment from South Asia as the United States shunned Pakistan and drew down its involvement in Afghanistan.³⁴²

Although balancing—or spoiling—the United States’ goals in the region is a plausible aim for Russia, the means to do this would seem to be sustaining Indo-Russian bilateral ties.³⁴³ I therefore judge the strengthening and maintenance of bilateral ties on more or less equal footing to be Russia’s goal over and above revenue generation (although the end of “friendship prices” and shakedown-like negotiations with India seem to imply a clear revenue element).³⁴⁴ This is the principal, conjectural source of my

³⁴⁰ Sribala Subramanian, “Is Russia Really India’s Friend?” *The Diplomat*, March 9, 2022. <https://thediplomat.com/2022/03/is-russia-really-indias-friend/>.

³⁴¹ Rajeswari Pillai Rajagoplan, “The Sino-Indian Clash: Russia in the Middle,” *The Diplomat*, June 25, 2020. <https://thediplomat.com/2020/06/the-sino-indian-clash-russia-in-the-middle/>.

³⁴² “Pakistan, Russia to Strengthen Military Ties,” *Dawn*, September 30, 2021. <https://www.dawn.com/news/1649224>.

³⁴³ Lalwani et al., “The Influence of Arms.”

inefficient categorization of bilateral tie-seeking arms exports in the inductive framework presented at the beginning of Chapter 3.

The United States. Since 2005, the United States has been explicit about its goal of closer cooperative ties with India and only moderately less explicit that the purpose of these ties are to achieve American regional balancing aims principally focused on China.³⁴⁵ As relations improved with India over the analytic window, the United States implemented a raft of measures to extend favorable weapon export policies to India. These included the U.S. designation of India as a Major Defense Partner in 2016 and elevation to Strategic Trade Authorization Tier 1 in 2018, which allow license-free access to military and dual-use technologies normally heavily regulated by the Department of Commerce.³⁴⁶

Although these designations would almost certainly have come too late in the analytic window to be measurable in changes in India's CFPI score, more than half the systems that *were* transferred to India from 2008 to 2020 moved via Foreign Military Sales (FMS) rather than Direct Commercial Sales (DCS).³⁴⁷ FMS allows the importing state to purchase directly from U.S. government inventory rather than from U.S. defense firms and generally results in a far more competitive price; this may become even more lucrative for the importing state if they are deemed eligible for part of the purchase price

³⁴⁴ Pankaj. Jha, "From Barter to Partner in the Russia-India Arms Trade," *East Asia Forum*, April 18, 2020. <https://www.eastasiaforum.org/2020/04/18/from-barter-to-partner-in-the-russia-india-arms-trade/>.

³⁴⁵ *Indo-Pacific Strategy of the United States*, pp. 4-5.

³⁴⁶ U.S. Department of State, Bureau of Political-Military Affairs, *Factsheet: U.S. Security Cooperation with India*, January 20, 2021.

³⁴⁷ *Ibid.*

to be paid by the United States as in the case of Foreign Military Financing (FMF), but India was not the recipient of FMF.³⁴⁸ The United States' actions toward India in the sphere of military exports seem intended to improve the economy of American-sourced armament for India; however, the relatively low volume of American-sourced trade and the recency of the most favorable steps in the relationship may account for the difficult-to-detect impact on India's CFPI performance.

Government Practices

India's weaponry acquisition procedures were mostly consistent with literature-derived standards for responsible and transparent acquisition. India's conventional weaponry procurement exhibits constitutionally regular appropriation by the parliament that typically features allocation inconsistent with the needs-based projections of the military services (in which event modified allocation is entirely the parliament's prerogative).³⁴⁹ Under-allocation and crushing personnel costs make proportionately little capital available for procurement and modernization, and the services still typically underspend this remainder. Although civil control is absolute, a public enterprise model that makes the Defence Research and Development Organisation (DRDO) a salesperson to the services means that each service gets a veto over offered systems and until 2020 India lacked an overall principal military advisor to the Minister of Defence or the Prime Minister. Appropriation is generally transparent, with inconsistency surrounding the

³⁴⁸ "Foreign Military Sales vs Direct Commercial Sales," National Defense Industrial Association, accessed April 10, 2022. <https://www.ndia.org/policy/international/fms-vs-dcs>.

³⁴⁹ Laxman Kumar Behera, *Bigger, Not Necessarily Better: India's Defence Budget 2022-2023* (New Delhi: Observer Research Foundation, 2022), pp. 4-6.

Table 5.1: India Government Procurement Practice Indicators, 2000-2020

Dimension	Attribute - The degree to which:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1. Appropriation and Governance	A. Military budgeting including procurement is spelled out in law.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. The constitutionally identified head of state approves the defense budget request, including procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. The legislature debates and approves itemized defense spending including procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. The defense ministry/department and military execute the appropriated procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2. Rigorous & Repeatable Needs Assessment	A. Procurement undergoes deliberate needs assessment, itself reviewed for improvement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. Any needs assessment is a repeated and repeatable process.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. Any needs assessment is both threat- and performance-focused.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. Currently executing procurement programs trace to previous needs assessments.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3. Effective Accountability Mechanisms	A. Detailed procurement expenditure is published.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. Military procurement expenditure is audited by an independent entity.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. Audit results are published.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. Most recent reforms map to previous accountability activity.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ Negligible

● Limited

● Substantial

detailed publication of audit results. Table 5.1 depicts indicators of India's government procurement practice indicators during the analytic window.

Appropriation and Governance. India's parliament appropriates funding for the Department of Defence under the executive leadership of the cabinet-level Minister of Defence (a member of the parliament with an electoral constituency).³⁵⁰ Parliament also votes on a proposed allocation of the total defense appropriation, typically approving the allocation voted out of the joint Standing Committee on Defence in consideration of the projections submitted by the Ministry of Defence.³⁵¹ The responsibility for resource requests and administration and force design belongs to the politically appointed Minister on the immediate recommendation of the career civil servant Defence Secretary, who until 2020 was the Minister's sole direct subordinate in the defense policy chain.³⁵² The appointment of a permanent career military Chief of Defence Staff in 2020 meant that the Minister of Defence would have a direct military subordinate and the Secretary would—at least in theory--have a military co-equal responsible for providing military advice ostensibly free of service-specific bias.³⁵³ India's appropriation and governance score reflected scrupulous adherence to constitutional authorities and procedures culminating in

³⁵⁰ Shah, "Civil-Military Relations in South Asia," p. 185.

³⁵¹ Behera, pp. 5-7.

³⁵² Rahul Singh, "Government Sets Up Department of Military Affairs to be Headed by Chief of Defense Staff," *Hindustan Times*, August 11, 2020. <https://www.hindustantimes.com/india-news/govt-sets-up-dept-of-military-affairs-to-be-headed-by-chief-of-defence-staff/story-eIC4HPpbexJgGtpEfMaLI.html>.

³⁵³ Ibid.

the services underspending their already shortchanged procurement allocation by more than 20% in every single year of the study.³⁵⁴

Needs Assessment. India followed a three-tier needs assessment and requirements specification procedure throughout the study: Long Term Integrated Procurement Planning (LTIPP) focused on service-immaterial system needs up to 15 years in the future or further as discernable; Services Capital Acquisition Plan (SCAP) determined service-specific capital needs up to 5 years in the future; and the Annual Acquisition Plan (AAP) identified service-specific requirements and adjustments to ongoing procurement in the current and next year of procurement.³⁵⁵

The first two tiers fall formally under the purview of the Integrated Defence Staff, which now ostensibly supports the Chief of Defence Staff but during the analytic window forwarded programmatic recommendations to the Defence Secretary.³⁵⁶ Although the services are encouraged to contribute to the LTIPP through a directorate of the DRDO specifically designed for the purpose,³⁵⁷ in practice the LTIPP reflects the DRDO's interpretation of tri-service requirements.³⁵⁸ Despite the service control that the name may suggest, a similar process plays out for setting SCAPs; however, the input of the services is more pressing for DRDO as an unmet Service Qualitative Requirement (SQR)

³⁵⁴ Ministry of Finance (India), "Capital Outlay on Defence Services," *Demands for Grants of Central Government*, 1998-2021 (all editions).

³⁵⁵ Ministry of Defence (India), *Defence Procurement Procedure 2016*, September 2016, pp. 3-4.

³⁵⁶ Ibid.

³⁵⁷ Directorate of Interaction with Services for Business. "Roles and Responsibilities." Accessed April 10, 2016. <https://www.drdo.gov.in/headquarter-directorates/area-of-work/dte-interaction-services-business-disb>.

³⁵⁸ Bhardwaj, "Make in India for Defence: A Distant Dream."

might result in a service refusing to take delivery of a procured system.³⁵⁹ The AAP is effectively left entirely to the discretion of the services.³⁶⁰

Throughout the study India's needs assessment score consistently suffered for the repeatability of needs assessments in support of major capability acquisition, executing programs reflecting needs assessments, and articulated requirements reflecting performance- and threat-focused assessments. A variety of observed phenomena contributed to "limited" scores in these areas during the analytic window: (1) DRDO distorting the service-articulated, threat- and performance-focused needs for a LTIPP or SCAP; (2) services moving SQR goalposts between LTIPP and SCAP in order to make a desired foreign system perform best in a selection assessment despite indigenous content requirements that became progressively more explicit over the course of the analytic window; (3) induction of an indigenous system being delayed—usually by multiple years—to allow for revised SQR integration; and (4) fallback acquisition in the form of an upgrade to an existing (usually foreign-sourced) system or acquisition of a licensed or foreign-sourced system in contravention of LTIPP and/or SCAP.

While the acquisition of multiple systems displayed these phenomena (some of which are summarized earlier in this chapter), I provide two examples for the reader that I found particularly illustrative. These are the acquisition pathways of the *Arjun* main battle tank acquisition and the *Akash* air defense missile.

³⁵⁹ *Defence Procurement Procedure 2016*, pp. 5-7.

³⁶⁰ *Ibid.*

India began induction of its indigenously designed and produced air defense missile system, *Akash*, for use by the Indian Air Force and Indian Army starting in 2013.³⁶¹ While the Indian Air Force deemed the road-mobile *Akash* suitable for base protection, the Indian Army refused to induct more than two regiments contending that it did not meet operational requirements for a quick reaction surface to air missile (QRSAM).³⁶² The Army cited a need for higher mobility and integrated infrared seeker technology, proposing the Israeli SPYDER as meeting these requirements not originally specified in the LTIPP.³⁶³ Analysts conjecture that the Army did not want to wait for the mobility and infrared seeker to be incorporated into its missiles during a scheduled block upgrade to the *Akash*'s missiles and may have had a preference for foreign-sourced systems.³⁶⁴ Ultimately, the Army was successful in obtaining the SPYDER order will still need to induct further *Akash* systems, incurring procurement costs compounded by maintenance and spares diversification.³⁶⁵

As summarized in the capability addition modality inventory, the Indian Army used a similar tactic to avoid inducting the updated *Arjun* indigenous main battle tank. The service claimed that the *Arjun* Mk1A did not meet the (very recently) revised SQR

³⁶¹ IISS, *The Military Balance* 2014.

³⁶² Rajit Pandat, "Enough of Akash Says Army as It Opts for Israeli Missiles," *The Times of India*, March 30, 2016. <https://timesofindia.indiatimes.com/india/Enough-of-Akash-says-Army-as-it-opts-for-Israeli-missiles/articleshow/51608406.cms>.

³⁶³ Ibid.

³⁶⁴ Ibid.

³⁶⁵ "Army Deploys Israeli SPYDER Missiles Along with Akash Air Defence System Near China Border." *The Eurasian Times*, June 29, 2020. <https://eurasianimes.com/india-deploys-akash-air-defence-system-israeli-spyder-missiles-along-india-china-border/>.

because it was too heavy in addition to triggering their concern about the availability of ammunition and spares.³⁶⁶ This had the result of triggering a fallback purchase order of additional T-90S *and* causing DRDO to address a variety of increasingly creative requirements for induction of the improved *Arjun* including additional armor (which had the effect of making it heavier still, although its more powerful engine made it faster than the T-90) and a turret-launched guided missile that could engage targets inside the two-kilometer minimum range of the *missile that was already provided with the tanks*.³⁶⁷ The improved *Arjun* is scheduled for induction beginning in 2022, although without the missile since two kilometers is well within the reliable primary ammunition kill range of the tank.³⁶⁸

Accountability Mechanisms. India's performance in the accountability and transparency attribute of government practices is solidly mediocre. It repeatedly incurred penalties for insufficiently detailed expenditure publication, incomplete audit publication, and a lack of audit reflection in reform measures.

For most of the analytic window, the Ministry of Finance published a combination of submitted budget projections and revised estimates reflecting allocation and disbursement of the concluded year.³⁶⁹ While this provides the highest-quality estimate of actual procurement expenditure available to the member of the general public outside of an audit report, it is not exact. Beginning with its 2019 Union Budget, the

³⁶⁶ Shukla, "Army Reluctant to Buy Indian-Made Arjun Tank, Prefers Russian T-90S."

³⁶⁷ Ibid.

³⁶⁸ Ibid.

³⁶⁹ Ministry of Finance (India), "Capital Outlay on Defence Services," 1998-2017 (all editions).

Ministry of Finance began publishing confirmed expenditure figures for the year executed two years prior to the published budget.³⁷⁰ This refined the previously published revised estimate by between one and two percent and improved the defense expenditure transparency to an optimal level.

The National Audit Office of India carried out multiple audits of selected defense procurement activities in most years, sometimes publishing summaries of the results in the Ministry of Defence's comprehensive annual report along with information required to look up the complete reports.³⁷¹ In other years, only the substantially less-detailed summaries are available.³⁷² No annual report or corresponding audit information has been published for 2020 or 2021.³⁷³ Although each successive DPP/DAP seems more narrowly scoped to avoid the type of foreign fallback procurement described in the vignettes on the preceding pages, such episodes characterized the entire analytic window.

The Ministry of Defence has made a concerted effort to implement procurement reforms designed to accomplish the dual aims of eliminating inefficiency and advancing the indigenization of Indian defense production. These policy overhauls, known as Defence Procurement Procedures (DPPs) or, in 2020, Defence Acquisition Procedure (DAP) were published six times during the analytic window.³⁷⁴

³⁷⁰ Ministry of Finance (India), "Capital Outlay on Defence Services," 2019-2022 (all editions).

³⁷¹ Ministry of Defence (India), *Annual Report* (2007, 2010, 2011, 2013-2017, 2019 editions).

³⁷² Ministry of Defence (India), *Annual Report* (2000-2006, 2008, 2009, 2012, 2018)

³⁷³ Ministry of Defence (India), "Annual Reports," accessed April 10, 2022.
<https://www.mod.gov.in/documents/annual-report>.

³⁷⁴ Ministry of Defence (India), *Defence Procurement Practices* (2002, 2005, 2006, 2008, 2012, 2016 editions).

A descriptive exploration of the observable events underpinning India's IV indicators seems to illuminate recurrent proximate causes of inefficient procurement episodes, but as with the previous case study they raise causative questions. India pursues an outspoken strategy of matching the Chinese threat with increasingly advanced indigenous deterrents even as systemic procurement issues prevent the realization of these plans on schedule. Parliament routinely under-allocates capital expenditure, and the DRDO has attempted to dictate long-term requirements to the service even though the Army in particular employs bureaucratic measures to engineer the acquisition of foreign systems at the compound cost of both procurement and maintenance time and money while ensuring shortfalls in indigenization goals. The next subsection explores the variables—unspecified by the quantitatively oriented research model—that may drive the phenomena described in this paragraph.

A Vicious Cycle Swirling Around a Wicked Dilemma

The dynamics apparently underpinning India's conventional deterrent procurement dysfunction is substantially more complex than its counterpart in the Australian case. India's dysfunctional dynamics can best be described as a vicious cycle swirling around a wicked dilemma.

The cycle consists of three interlocked phenomena iteratively triggering one another apparently *ad infinitum*. Civil control by the parliament and career government civilians disenfranchises the services through ivory-tower planning and unfeasibly low budget allocations owing to competing domestic priorities. The services game the

acquisition system and seriously impair long-term efficiency by indigenization. Finally, the Army jealously guards a pie that is way too large for it and ensures that parliament feels pressured to under-allocate capital. The dilemma consists of a macro policy choice to prioritize defense reforms to unsnarl efficiency, or to accept acquisition capacity risk while addressing issues of larger economic development that could provide capital breathing room to address acquisition problems further down the line. I expand on each of these under the italicized headings below.

Civil Control: Service-Exclusive Planning and Under-allocation. Ingrained norms of civil control and a politically weak military enable this phase of the cycle. At the parliamentary level, under-allocation of the defense budget has become institutionalized and acceptable.³⁷⁵ Defence still receives the largest topline of any ministry, including the largest capital allocation in absolute terms.³⁷⁶ Career civilians in the Ministry of Defence attempt to formulate long-term acquisition plans that conform to this under-allocation and advance indigenization imperatives even though capital in recent years has been allocated as much as 50 percent under Ministry requests.³⁷⁷ This austere planning context disincentivizes DRDO planners from truly socializing the plans with service counterparts (particularly in the Army), whom they have witnessed employ all kinds of bureaucratic gambits and whom they may not fully trust to contribute to responsible plans.³⁷⁸

³⁷⁵ Lok Sabha, “Army, Navy, Air Force, and Joint Staff,” Sixth Report, Standing Committee on Defence (2021), pp. 13-14.

³⁷⁶ “Union Budget of India: How Government Allocates Its Funds.” *The Times of India*, January 30, 2022. <https://timesofindia.indiatimes.com/business/india-business/budget/data/how-india-spends>.

³⁷⁷ Behera, pp. 7-8.

Service Survival: Game the Acquisition System to Get Desired Platforms. The services, cognizant of having very little in the way of actual acquisition capital, cook off key junctures of the plans that do not reflect their buy-in and bureaucratically engineer the receipt of the systems they actually want (read: without which they feel they cannot succeed, often lacking confidence in indigenous systems).³⁷⁹ These frequently successful maneuvers ensure that indigenous systems do not reach—or take much longer to reach—critical thresholds of adoption that permit economies of scale for their production and maintenance.³⁸⁰ This type of fallback procurement has the dual effect of squandering time and money allocated against long-term plans and spending less in a given year than whole-hearted indigenization would, resulting in underspending that validates legislative decisions to lowball Ministry budgetary projections.³⁸¹

A Fat Army Starving Everyone Else. The Indian Army is the dominant—but not permanently supreme—service, and it does not hesitate to throw its weight around to secure its parochial interests. India’s Army is far larger than any reasonable needs assessment can justify, particularly given China’s halving of the PLAGF.³⁸² Its bloated size and legion alumni mean that the Army routinely takes up to 60 percent of the

³⁷⁸ Stephen P. Cohen and Sunil Dasgupta, “The Drag on India’s Military Growth,” The Brookings Institution (Policy Brief #176), September 2010, pp. 3-5.

³⁷⁹ U.S. Library of Congress, Congressional Research Service, *Russian Arms Sales and Defense Industry*, by Andrew Bowen (R46937), October 14, 2021, p. 20.

³⁸⁰ Roaten, Meredith. “India Manages Diverse Arms Sources for Military Modernization.”

³⁸¹ Cohen and Dasgupta, “The Drag on India’s Military Growth,” p. 6.

³⁸² Shenesh Alex Philip, “Indian Army Now World’s Largest Ground Force as China Halves Strength on Modernisation Push,” *The Print*, March 17, 2020. <https://theprint.in/defence/indian-army-now-worlds-largest-ground-force-as-china-halves-strength-on-modernisation-push/382287/>.

Defence allocation—which is always under political pressure to minimize—and must spend more than 80 percent of that on salaries and pensions.³⁸³ The Indian Army achieved a difficult-to-dislodge position of seniority during land conflicts in India’s formative years. It is not in the Army’s institutional interests to give up the stranglehold it enjoys on the defense resource pipeline either by downsizing or by accepting pension reforms. As a result, the resource vacuum of the Army ensures that every budget projection that crosses the desks of the Indian Parliaments will demand under-allocation, re-creating austere planning pressure on the career civilians of the Ministry.

The Dilemma: Farmers or Fojis? The pressures on India’s defense budget—and thus its ability to efficiently acquire a capability basis for deterrence against China—occurs in the context of an Indian economy that is operating at a tiny fraction of its potential. Sixth by nominal GDP but 145th by per capita means that there are raging forces of growth locked behind India’s low level of development that could unleash a decadent flood of government revenue and a veritable atmosphere’s worth of breathing space to implement costly defense reforms. A quick look at the composition of India’s workforce illuminates the problem even as it does not recommend any easy solutions.

A clear majority—just under 60 percent—of India’s workforce is engaged in agriculture and related pursuits, with more than 80 percent of those classified as “small” or “negligible” in scale.³⁸⁴ A large majority of the labor force engaged in small-scale farming (that is, farming that does not feed considerably more people than it employs,

³⁸³ Behera, pp. 9-12.

³⁸⁴ Ministry of Commerce and Industry (India). “Agriculture and Allied Industry.” India Brand Equity Foundation. November 2021. <https://www.ibef.org/industry/agriculture-india>.

which would allow for increased specialization and development in other sectors) raises questions about the ability of these farmers to earn living wages at fair produce prices,³⁸⁵ the effect of intensive, rustic cultivation on the soil,³⁸⁶ and dependence on subsidies if either earnings or crop yield fall short.³⁸⁷

None of these are easily solved, and the Modi government was forced to retrench from attempted reforms in the face of massive, roiling agricultural protests.³⁸⁸ While coming to grips with the scope of this problem could easily provide the basis for an entire other dissertation, I include the very broad outlines of the problem to alert the reader to the fact that without costly government intervention almost two-thirds of India's citizens become insolvent. I hope this makes the imperative of keeping topline defense spending low more salient while illustrating the sheer amount of human capital that India cannot encourage to pursue more development-friendly vocations under the current statutory regime. One of the slated military reforms I discuss in the next and final section of the chapter seeks to incrementally address obstacles to the diffusion of non-agricultural skills in India's economy.

³⁸⁵ Deo Kumar Ghatak, "Dilemma Over Minimum Support Price (MSP)," *The Times of India*, December 13, 2021. <https://timesofindia.indiatimes.com/blogs/samvad/dilemma-over-minimum-support-price-msp/>.

³⁸⁶ Sandeep Kandikuppa and Pallavi Gupta, "Where Do India's Farmers Go From Here?" *The Diplomat*, April 8, 2022. <https://thediplomat.com/2022/04/where-do-indias-farmers-go-from-here/>.

³⁸⁷ Gulati, Ashok. "Subsidies Too High to Boost Farmers' Income." *The Times of India*, February 2, 2022. <https://timesofindia.indiatimes.com/business/india-business/budget-subsidies-too-high-to-boost-farmers-income/articleshow/89284864.cms>.

³⁸⁸ Kandikuppa and Gupta, "Where Do India's Farmers Go From Here?"

Key Junctures Ahead

What comes next for India? In this section, I visit the international and domestic state of play for India's deterrent acquisition and military modernization prospects. India finds itself in a position to benefit from a host of potentially politically, economically, and militarily lucrative alliances in its de facto role as China's regional ballast. It also faces a host of familiar challenges to its military modernization on the domestic front, but new developments make breakthroughs there at least theoretically possible if various tensions can be kept in check.

New(er) Allies, New Options

The previous section demonstrated that even were India to rapidly resolve many of the barriers to its procurement efficiency, the capability gap with China is too large to bridge in the foreseeable future on its own. Regional clarity and consensus on China's increasingly coercive behavior affords India a special position of de facto leadership in the region, and it continues to be a high engagement priority for the United States. Depending on how far America is willing to go—and how far India is willing to let it go—the worsening tenor of the Ukraine conflict may present the perfect opportunity either to rip off the Russian band-aid or accept an unlikely opening with China.

The Quad. India's inclusion in the revived Quad despite speaks to a position of heightened opportunity. While true that India does not share the perspectives of its

“Quadmates” on a diverse raft of issues from Myanmar to Taiwan to human rights,³⁸⁹ an astute Indian government would de-emphasize points of friction in favor of establishing deterrence stability against China in a way that buys space and time for India to build its own capabilities. The slim, uncontroversial Indo-Australian “Shared Vision” at the heart of the new comprehensive strategic partnership is well-positioned to act as a nucleus for the regional stability goals of the Quad and of any neighborhood states who wish to be of help.³⁹⁰

The United States. For all its faults from the Indian perspective, successive U.S administrations have done what Kennedy couldn’t in the 1960s—set the stage for a truly premier-level defense cooperation relationship with India.³⁹¹ The stumbling block then—Paksitan—is no longer an obstacle following the United States’ withdrawal from Afghanistan without rekindling the two states’ defense ties.³⁹² The United States is offering what India has always wanted: license-free access to American defense technology at astonishingly generous rates.³⁹³ There is the opportunity for an extraordinarily constructive defense indigenization tutelage relationship if India can make

³⁸⁹ Zeeshan, Mohamed. “India Keeps Floating Away From Its Quad Partners.” *The Diplomat*, February 14, 2022. <https://thediplomat.com/2022/02/india-keeps-floating-away-from-its-quad-partners/>.

³⁹⁰ Anush Wagle, “India and Australia’s ‘Shared Vision’: Setting the Stage for Indo-Pacific Maritime Security Engagement,” *The Diplomat*, June 11, 2020. <https://thediplomat.com/2020/06/india-and-australias-shared-vision-setting-the-stage-for-indo-pacific-maritime-security-engagement/>.

³⁹¹ Sameer Lalwani, and Heather Byrne, “Great Expectations: Asking Too Much of the US-India Strategic Partnership,” *The Washington Quarterly*, vol. 42, no. 3 (2019), pp. 43.

³⁹² *Ibid.*, p. 42.

³⁹³ *Factsheet: U.S. Security Cooperation with India*, January 20, 2021.

up its mind about what is likely to be Washington's condition in the near term: break its silence on Russia.

The End of "Mutual Silence?" As the world wakes each day to remarkably detailed documentation of Russian atrocities in Ukraine, India's awkward spot becomes a greater and greater liability.³⁹⁴ Even from a non-normative perspective, it is not clear whether Russia will emerge from the economic pain of its extreme pariah status as a viable partner to continue to support India's deterrent capability, or whether it will be so desperate that it resorts to *Admiral Gorshkov*-like price gouging and dirty tricks while routinely failing to deliver.³⁹⁵ If India were ever going to relieve itself of the Russian liability, it could probably obtain explicit U.S. assurances to make its technology transfer and indigenization dreams come true. Otherwise, if India were to eschew U.S. sponsorship, the Ukraine crisis might represent an unprecedented opportunity for rapprochement with fellow silent giant China.³⁹⁶ China's apparent willingness to overlook lethargic border negotiations to trade appearances at the BRICS summit and the

³⁹⁴ Kelkar, Ram. "India's Ukraine Dilemma Could Have Consequences for Years to Come." *The Wire*, March 23, 2022. <https://thewire.in/diplomacy/indias-ukraine-dilemma-could-have-consequences-for-years-to-come>.

³⁹⁵ "Why Indian Defence Is Concerned About Russia-Ukraine Crisis: Project Delivery, Lessons China Draws." *The Print*, February 28, 2022. <https://theprint.in/defence/why-indian-defence-is-concerned-about-russia-ukraine-crisis-project-delivery-lessons-china-draws/850372/>.

³⁹⁶ Mohamed Zeeshan, "China Has a Huge Strategic Opening with India," *The Diplomat*, March 21, 2022. <https://thediplomat.com/2022/03/china-has-a-huge-strategic-opening-with-india/>.

G-20 (hosted by India and China respectively) suggests that improved relations merit exploration.³⁹⁷

Defense Reforms: No Easy Path

The branching paths for India's potential international approach to deterrence stability may present a far simpler puzzle than its domestic impediments to self-reliant armament. Despite the pathologies of the vicious cycle I described in the last section, there are reasons to suspect that meaningful defense reforms might gain a toehold: the establishment of a Chief of Defence Staff position could mitigate the interface between the services and career civil servants while enabling previously unthinkable discussions between the service chiefs; creative approaches to short-term enlistment could solve COVID-exacerbated military manpower shortages without adding to the pension bill; India may have finally found an advanced fighter for a high-tech indigenized airpower future; and India's shipbuilding industry could be a figurative open door away from unlocking its China-matching potential.

A Chief of Defence Staff At Last. In 2019, the Indian government overcame decades of historical opposition and the bureaucratic preference of the service chiefs to formally establish the position of Chief of Defense Staff.³⁹⁸ Taking control of the Integrated Defence Staff and in theory being equal in rank to the Defence Secretary, the

³⁹⁷ Sudha Ramachandran, "Why Does China's Foreign Minister Want India to Put the Border Dispute on the Back Burner?" *The Diplomat*, March 29, 2022. <https://thediplomat.com/2022/03/why-does-chinas-foreign-minister-want-india-to-put-the-border-dispute-on-the-back-burner/>.

³⁹⁸ Rahul Singh, "Government Sets Up Department of Military Affairs to be Headed by Chief of Defense Staff."

CDS reports directly to the Minister of Defence. The inaugural holder tragically died in a helicopter crash less than two years into his tenure,³⁹⁹ but General Bipin Rawat seemed to embrace a truly joint role in the issues he chose to tackle, chief among them personnel reforms and the establishment of theater commands.⁴⁰⁰

Fire Warriors. Two factors drive the Army budget vacuum in India: the size of the force and the archaic and costly pension scheme.⁴⁰¹ Building on reform efforts started by the late General Rawat, the Indian Army will pilot a program intended to address both while also serving as a conduit for non-agricultural skilled labor to proliferate in Indian society.⁴⁰² The program will recruit term enlistees called *Agniveers* (or “fire warriors”) under a three-to-five year entrance-exam-free contracts during which they are ineligible for pension benefits (but eligible for contributory retirement benefits).⁴⁰³ At the conclusion of these terms, a minority would remain in the armed forces, while the majority would return to the Indian labor force with critical, non-agricultural skills

³⁹⁹ Raj, Suhasini, and Mujib Mashal. “India’s Top Military General Dies in Helicopter Crash.” *The New York Times*, December 8, 2021. <https://www.nytimes.com/2021/12/08/world/asia/helicopter-crash-india-top-general.html>.

⁴⁰⁰ Manoj Naravane. “Setting up Theatre Commands Next Step in Military Reforms,” *Business Standard*, October 21, 2020. https://www.business-standard.com/article/pti-stories/theaterisation-of-armed-forces-next-logical-step-in-military-reforms-after-appointment-of-cds-army-chief-120102101564_1.html.

⁴⁰¹ Angad Singh and Javin Aryan, “Pensions or Manpower? Searching for Meaningful Military Reforms,” Observer Research Foundation, November 12, 2020. <https://www.orfonline.org/expert-speak/pensions-or-manpower-searching-for-meaningful-military-reforms/>.

⁴⁰² “India’s Defence Establishment Has Come Up with a New Recruitment Scheme.” *The Economic Times*, April 7, 2022. <https://economictimes.indiatimes.com/news/defence/indias-defence-establishment-has-come-up-with-a-new-recruitment-scheme-the-agnipath-for-jawans-defence-experts-decode/videoshow/90710875.cms?from=mdr>.

⁴⁰³ Ibid.

including basic mechanical and computer literacy.⁴⁰⁴ The effects of the fire warriors on India's larger economic woes are likely to be as drops in a bucket, but even if the pilot is scrapped it represents the most innovative structural thinking on India's military in well over a generation and seems attributable to the advent of the CDS.

A Fighter For the Future, Today. Although it was not in the originally desired quantity of over 100, for better or worse India finally reached a deal on a future fighter with French firm Dassault's Rafale-D.⁴⁰⁵ The deal has come under volumes of criticism for its shifting scale and high price tag (which includes technology transfer and pilot and maintainer training), but the stalemate over the next fighter finally seems to be broken.⁴⁰⁶ India will face tough decisions about the eventual end of service for its sizeable Sukhoi fleet, but if it can achieve indigenous economy of scale with the new Rafale ecosystem it may finally be able to bid farewell to the Su-30MKI's high operating costs and Russian baggage.⁴⁰⁷

A Slumbering Shipbuilding Giant. Should India choose to continue a matching acquisition approach to China's maritime threat, it will need to solve the pace and scope problem of its sluggish naval shipbuilding. To outside observers, the solution seems obvious: India has massive untapped productive capacity in the form of its commercial

⁴⁰⁴ Ibid.

⁴⁰⁵ Pushan Das, "Rafale: Did India Get a Bad Government-to-Government Deal?" Observer Research Foundation, November 20, 2018. <https://www.orfonline.org/research/rafale-row-did-india-get-bad-government-to-government-deal-45612/>.

⁴⁰⁶ Ibid.

⁴⁰⁷ Dario Leone, "The Real Reason Why India Does Not Actually Want More Su-30MKI Fighters," *The National Interest*, August 14, 2019. <https://nationalinterest.org/blog/buzz/real-reason-why-india-does-not-actually-want-more-su-30mki-fighters-73456>.

shipbuilders.⁴⁰⁸ Although successive Indian governments have been loath to extend private shipbuilders any of the advantages they reserve for public entities, the winds of defense reform seem to be blowing and the next CDS could well prioritize a maritime breakthrough.

This Chapter reviewed India's experience acquiring conventional deterrent during the period 2000-2020. Although it started the period with a slight edge over China in some conventional respects, a raft of complex systemic issues have made India's military modernization slow and prevented true defense production self-reliance. India faces real opportunities to leverage alliances to share its deterrent burden, take the United States up on its offer of defense technology-sharing, or pursue a rapprochement with China predicated on non-normative foreign policy and economic ties. Finally, a glimmer of reform capacity with the advent of India's first tri-service chief suggests that the changes needed to free up capital allocation are possible; they will not, however, come easy. In the next chapter, I will probe Pakistan's relative success in efficiently procuring a credible conventional deterrent capability basis.

⁴⁰⁸ Singh and Joshi, pp. 15-18.

CHAPTER SIX

Pakistan

A description of the diversity and sophistication of Pakistan's military arsenal could lead unfamiliar audiences to imagine heights of economic advancement. Indigenously produced supermaneuverable fighter jets with advanced avionics, sleek new stealth frigates, and sophisticated guided missile technology across all domains of conventional warfare collectively imply a formidable economic base. Instead, Pakistan's economy is figuratively starved at 43rd in nominal GDP and 159th in per capita (sandwiched between East Timor and Myanmar).⁴⁰⁹ With one out of every four of its citizens below the poverty line, many Pakistanis also literally starve even as their nation fields objectively impressive military capabilities.⁴¹⁰

Pakistan's CFPI score puts it second out of the four cases, behind only India—the state its defense establishment sees as the principal threat (see figure 6.1).⁴¹¹ Although the clearly prevailing view of the India-Pakistan dyad has until recently held that India enjoys an overwhelming conventional advantage over Pakistan (necessitating the latter's

⁴⁰⁹ "World Economic Outlook." <https://www.imf.org/en/Publications/WEO/weo-database/2021/October>.

⁴¹⁰ "Poverty Data: Pakistan," Asian Development Bank, accessed April 12, 2022. <https://www.adb.org/countries/pakistan/poverty>.

⁴¹¹ Cohen, p. 6.

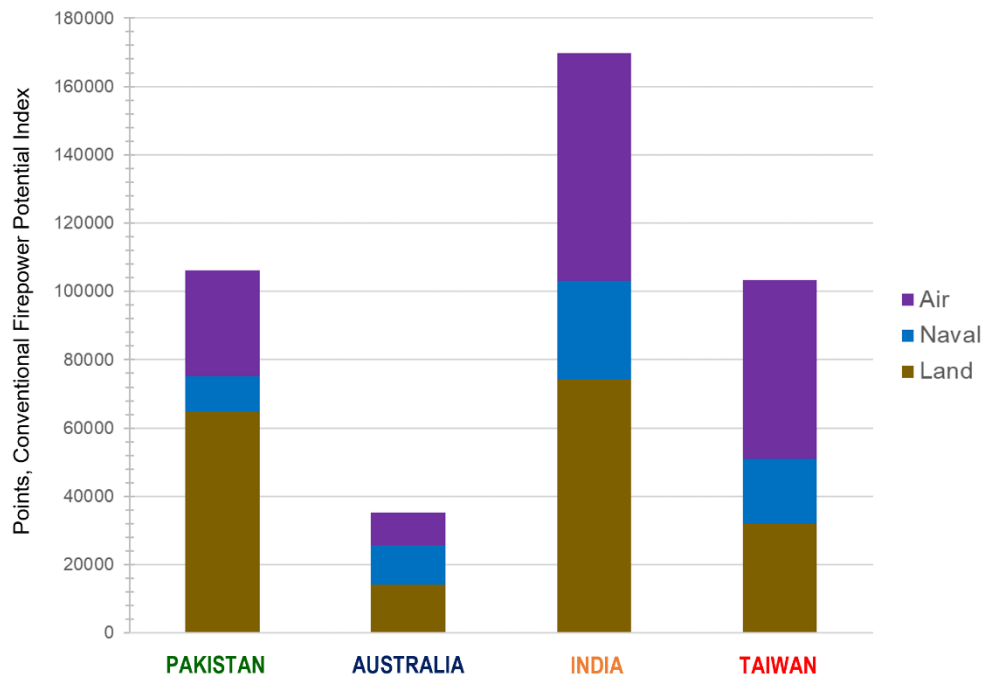


Figure 6.1: Pakistan's 2020 CFPI Score Compared to Other Cases

Sources: CFPI, IISS

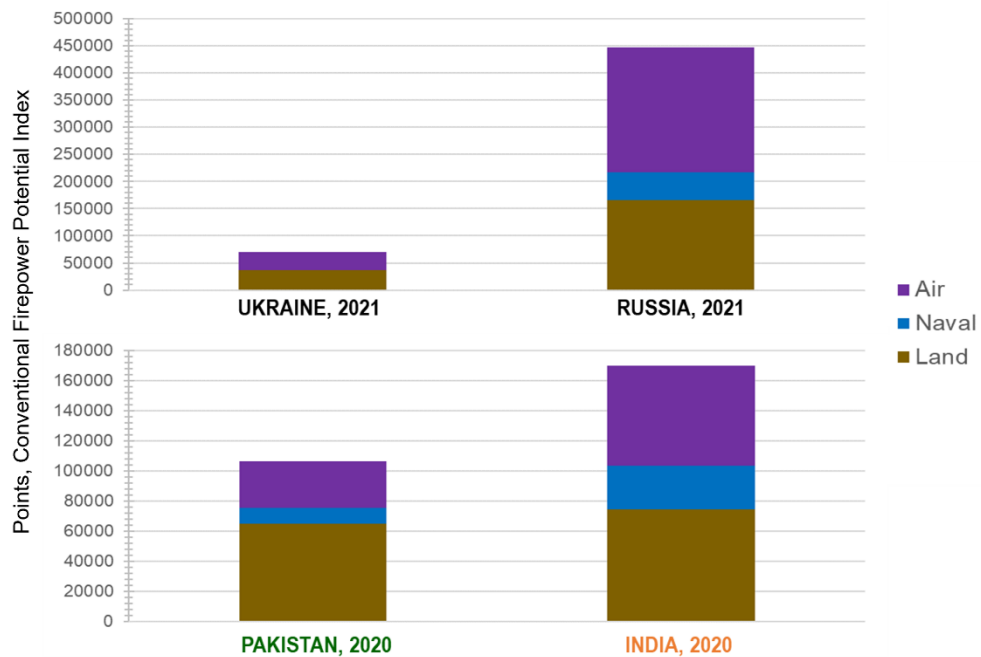


Figure 6.2: Comparing CFPI Balances, Ukraine-Russia and Pakistan-India

Sources: CFPI, IISS

reliance on asymmetric nuclear escalation), journalists, scholars, and analysts have in recent years begun to seriously consider the existence of credible Pakistani conventional deterrent.^{412,413,414} CFPI-facilitated analysis suggests support for this increasingly articulated perspective. This will become apparent throughout the chapter, but figure 6.2 offers a concise and compelling basis for skepticism of the heretofore India-skewed traditional consensus: the ratio of Pakistan's CFPI score to India's at the conclusion of the analytic window is more than four times greater than Ukraine's was to Russia immediately before Russia's ignominious performance in its drive to take Kiev.⁴¹⁵ CFPI alone is not a sound basis for conflict outcome prediction, but the ratio raises a question as to how the discipline, maintenance, logistics, and morale of a hypothetical Indian invading force (presumably responding to a militant or terrorist provocation) would stack up next to those of the bloodied Russian force.⁴¹⁶

How has Pakistan managed to keep pace with (arguably, to gain ground on) India's conventional arsenal? While the previous chapter described apparent obstacles to Indian conventional firepower potential procurement efficiency, this chapter probes for

⁴¹² Walter C. Ladwig III, "Indian Military Modernization and Conventional Deterrence in South Asia," *Journal of Strategic Studies*, vol. 38, iss. 5 (2015), pp. 729-772.

⁴¹³ Menakshi Sood, "Pakistan's (Non-Nuclear) Plan to Counter 'Cold Start,'" *The Diplomat*, March 25, 2017. <https://thediplomat.com/2017/03/pakistans-non-nuclear-plan-to-counter-cold-start/>.

⁴¹⁴ Franz-Stefan Gady, "Is the Indian Military Capable of Executing the Cold Start Doctrine?" *The Diplomat*, January 29, 2019. <https://thediplomat.com/2019/01/is-the-indian-military-capable-of-executing-the-cold-start-doctrine/>.

⁴¹⁵ CFPI, <https://cfpindex.org>.

⁴¹⁶ Praveen Swami, "India vs. Pakistan Military Lesson from Ukraine: Generals Must Let Leaders Know Reality," *The Print*, March 14, 2022. <https://theprint.in/opinion/security-code/india-vs-pakistan-military-lesson-from-ukraine-generals-must-let-leaders-know-defence-reality/871699/>.

the drivers of Pakistan's success. The supremacy of the Pakistan Army, its obsession with India as an all-consuming threat, and strategically motivated favors from the United States and China have provided Pakistan's conventional procurement with the continuity of effort, the urgency, and the comparative advantage required to stay within the conventional balancing window with India. As will become clear in the subsequent pages, the same factors that contribute to Pakistan's relative successes in the pursuit of conventional military deterrent basis are those that exacerbate its stubborn and worsening social and economic problems.

The first section of this chapter traces Pakistan's experience through four phases of political and security footing since Partition, each seeing important developments to its approach toward conventional armament. The second section connects Pakistan's variable values in the study to more detailed descriptions of the indicators that actually characterized these stages. As with the other case studies, this section will include an exploration of the issues of service territoriality and domestic politics, finding them not without their crises but also not impeding the efficient acquisition of major conventional weaponry. Finally, the third section looks to the near future for Pakistan's political and economic outlook with implications for continued or disrupted deterrent procurement performance.

Background

Pakistan's historical trajectory since at least as far back as Partition is instructive in understanding its evolving approach to building a conventional deterrent basis. This section briefly describes Pakistan's experience in four stages—existence as East and West, nuclear armament bookended by military coups, intense and uneasy sponsorship by the United States during the Global War on Terror, and the current period where for the first time since Partition there is no U.S. partnership nor is it clear there will ever be again—to position this approach the context of indelible lessons for Pakistan's military leaders and their political clients.

Dawn to Dismemberment, 1947-1971

Like India, Pakistan gained independence via the horrors of Partition. Unlike India, Pakistan was unabashed in its sustained offer to the United States to be a reliable client in the Cold War. For Pakistan, the period culminating in the end of Bangladesh's war for independence (and the Indo-Pakistani War of 1971) is one of political and security trauma. Constitutional crises marred Pakistan's development from the very beginning, with military leadership showing no qualms with respect to puppeting civilian leaders or simply wresting power from them overtly. Ultimately, dismemberment from the majority of the people and economic productivity awarded it by the former British overlords would leave Islamabad—and more importantly, Rawalpindi, home of the Army General Headquarters (GHQ)—feeling more vulnerable than ever to the now clearly-demonstrated and existential Indian threat.

Constitutional Crises and the Entrenchment of Military Tutelage. As the strongest institution bequeathed to Pakistan by their colonial overseers, the Pakistan Army rapidly grew to exert both indirect and direct political power. The first Chief of Army Staff, Ayub Khan, exercised broad powers early on including instructing military attachés to pursue treaty negotiations with other states, instructing the Governor-General (Pakistan’s head of state prior to the signing of the 1956 Constitution) to dismiss the Prime Minister and exercise emergency powers to restore order in the wake of ethnic and religious riots, and finally seizing power in a 1958 coup d’état to rule directly for more than a decade until the spring of 1969.⁴¹⁷ The reaction of the Pakistani public was initially relief and the hope that a strong hand might stabilize the diverse and geographically disjointed country with virtually no functioning institutions of governance.⁴¹⁸ Ayub Khan’s heavy-handedness, austere economic policies, and apparent failure to integrate the many communities of Pakistan into a single state caused a steady build-up of public animosity toward him, and in 1969 he handed the reins of power to Yehya Khan, his successor as head of the Pakistan Army in Pakistan’s first peaceful transfer of power (although from one military dictator to another).⁴¹⁹

1947 and 1965 Wars. Pakistan’s initiation of the 1947 war was also its first foray into proxy sponsorship. The Pakistan Army provided weapons and supplies to local militias in Kashmir—where the population was Muslim and the hereditary ruler Hindu,

⁴¹⁷ Arshad Ali and Robert G. Patman, “The Evolution of the National Security State in Pakistan: 1947-1989,” *Democracy and Security*, vol. 15, iss. 4 (2019), pp. 308-311.

⁴¹⁸ *Ibid.*, p. 311.

⁴¹⁹ *Ibid.*, p. 313.

leading to conflicting claims by both Pakistan and India according to the hastily agreed terms of Partition—to facilitate their revolt against the maharaja, who then signed a document of accession to Indian rule in return for the intervention of the Indian Army.⁴²⁰ As the previous chapter related, in 1965 the Pakistan Army joined the irregulars to renew the contest that the UN had frozen but not resolved in 1949.⁴²¹ The 1965 provocation caused India to invade West Pakistan, and the brief but intense conflict resulted in a stalemate and Soviet-negotiated ceasefire agreement.⁴²²

Loss of Bangladesh. When Yehya Khan went back on a promise to allow an independence referendum for East Pakistan if the eastern Awami League won a majority in the general election of 1970, the Bengali resistance movement boiled into open revolt prompting a bloody crackdown from the Pakistani military.⁴²³ The better-prepared Indian military largely routed Pakistan in 13 days of intense, multi-domain fighting, with a notable exception being Pakistan’s submarine-launched torpedo scuppering of an Indian frigate during the bombardment of Karachi (the first submarine kill of another vessel since World War II, and the last until the Falklands War of 1982).⁴²⁴ The 1971 War served as a stinging illustration of the reality and consequences of India’s military edge.

Founding Pakistan’s Conventional Arsenal. Pre-Partition agreements called for one-third of the British Indian Army’s military equipment to transfer to Pakistan.

⁴²⁰ Ibid., p. 306.

⁴²¹ Cohen, pp. 8-10.

⁴²² Ibid.

⁴²³ Ali and Patman, p. 314.

⁴²⁴ Roger Branfill-Cook, *Torpedo: The Complete History of the World’s Most Revolutionary Naval Weapon* (Barnsley, UK: Seaforth, 2014), p. 229.

Because this handover had not occurred prior to Pakistan's instigation of the 1947 conflict in Kashmir, India delayed and ultimately provided less than a third of Pakistan's agreed share.⁴²⁵ Ayub Khan's overtures to the United States in the early 1950s bore fruit for Pakistan, and between 1951 and 1959 Pakistan received nearly 9 billion USD (the equivalent of more than 80 billion in 2021 USD) in military and economic assistance from an America eager for regional clients in its Cold War with the Soviet Union.⁴²⁶

Pakistan quickly discovered that the United States had certain conditions for its assistance; not only did the United States not assist Pakistan with its prosecution of the 1965 conflict, it actively embargoed arms and ordnance to Pakistan together with the United Kingdom and other allies.⁴²⁷ This prompted the Ayub Khan government to diversify its security relationships, and led to increased contact with China (which had fought a war with India in 1962 and signed a border agreement with Pakistan in 1963).⁴²⁸

Proxy Wars in Afghanistan and the Bomb Between Two Coups, 1971-2001

The losses of 1971 were disastrous, and within a few years the Army had resumed direct rule of Pakistan. The Zia regime saw the most explicit and transactional chapter to date of the U.S.-Pakistan relationship while considerably advancing Pakistan's

⁴²⁵ Ali and Patman, p. 307.

⁴²⁶ Ibid., p. 311-312.

⁴²⁷ Salma Malik, "Security Sector Reforms in Pakistan: Significance, Challenges, and Impediments." *Strategic Studies*, vol. 38, no. 3 (2018), pp. 6-7.

⁴²⁸ Rudra Chaudri, "The Making of an 'All-Weather Friendship': Pakistan, China, and the History of a Border Agreement, 1949-1963," *The International History Review*, vol. 40, iss. 1 (2018), p. 41-42.

weaponization of militant extremists for strategic depth. Demonstration of nuclear armament immediately after India in 1998 set off a far more economically painful chain of consequences for Pakistan than its neighbor had suffered. International—and particularly American—responses to nuclearization, the Kargil conflict, and Pervez Musharraf’s military coup made clear that Pakistan’s without the strategic utility it had provided during the Cold War, its military elites could no longer expect such overt freedom of action.

Another Coup. Military leadership had relinquished governance to the civilian Pakistan People’s Party (PPP) in 1971 following the disgraceful outcome of the war, and appeared to stand by during the enactment of a constitution in 1973 that explicitly subordinated the military to civilian rule.⁴²⁹ During his rule, Zulfikar Bhutto empowered the Inter-Services Intelligence (ISI), a joint military organization that has served to this day as Pakistan’s principal intelligence agency.⁴³⁰ Although he had been able to use the ISI as a tool of repression, it did not support him when Chief of Army Staff Mohammad Zia Ul Haq deposed him to start a second period of direct military rule in 1977.⁴³¹ Zia’s successful coup and decade of rule punctured any illusion of the potency of civil control provisions in the 1973 Constitution, already severely undermined by the repressive years of civilian rule under Bhutto.⁴³²

⁴²⁹ Ali and Patman, p. 314.

⁴³⁰ Ibid., p. 315.

⁴³¹ Ibid.

War in Afghanistan. Although the coup was initially met with international opprobrium, the Soviet invasion of Afghanistan in 1979 provided a window for Zia's government to rekindle ties with a powerful former sponsor in the United States.⁴³³ For the second time in Pakistan's history, cooperation with the United States in its regional balancing aims netted massive infusions of security and economic assistance, this time nearly 8 billion USD (or approximately 30 billion in 2021) and the provision of advanced military technology including F-16A/B fighter jets.⁴³⁴

Militant Sponsorship. Pakistan's involvement in Afghanistan on behalf of the United States would allow it to extend its ventures into proxy group sponsorship to the west. While involved to some degree in the sponsorship of India-facing groups focused on Kashmir since Partition, the American shadow war against the Soviets offered Pakistan the opportunity to train, finance, and build rapport with the Afghan mujahedeen to the tune of more than 2 billion USD of funneled aid.⁴³⁵ Following the Soviet retreat, more than 22,000 Pakistani-trained and -equipped fighters remained in Afghanistan looking to their ISI handlers for instructions or further opportunities.⁴³⁶ Newly-connected with fundamentalist financiers in Saudi Arabia and under the leadership of the avowed Islamist Javed Nasir, the ISI proceeded to back primarily Pashtun groups advancing an

⁴³³ Ibid., p. 316.

⁴³⁴ Ibid., p. 317.

⁴³⁵ Ahmad Waqas Waheed, "Pakistan's Dependence and US Patronage: The Politics of 'Limited Influence,'" *Journal of Asian Security and International Affairs*, vol. 4, no. 1 (2017), pp. 74-79.

⁴³⁶ Ali and Patman, p. 320.

extremist interpretation of Sunni Islam in the chaotic Afghan Civil War.⁴³⁷ The winning movement that coalesced from these groups—the Taliban—thus had ties to Pakistan from its outset, while strategists in Pakistan saw control of Afghanistan by the Taliban (or someone like them) key to an emerging concept of strategic depth against Indian aggression.⁴³⁸

This connection would become newly problematic following attacks on the U.S. Embassies in Kenya and Tanzania by the Sunni extremist group Al Qaeda.⁴³⁹ Retaliatory cruise missile strikes undertaken by the Clinton Administration missed killing Al Qaeda's leader, Osama Bin Laden, instead striking a group of ISI officers unaccountably present at one of Bin Laden's training camps in eastern Afghanistan.⁴⁴⁰ This episode and others bringing the ISI-militant connection to the attention of the United States national security apparatus would play a key role in informing approaches to Pakistan in late 2001.

Nuclear Armament. In May of 1998, Pakistan followed Indian demonstrations of nuclear armament with six underground tests of its own.⁴⁴¹ Although international economic backlash against India dissipated, Pakistan was hit much harder and plunged into a debt crisis so severe that it required among other measures the reactive spending of

⁴³⁷ Steve Coll, *Ghost Wars: The Secret History of the CIA, Afghanistan, and Bin Laden, from the Soviet Invasion to September 10, 2001* (New York: Penguin, 2004), pp. 263-265.

⁴³⁸ Aidan Parkes, "Considered Chaos: Revisiting Pakistan's 'Strategic Depth' in Afghanistan." *Strategic Analysis*, vol. 43, no. 4 (2019), pp. 298-299.

⁴³⁹ Bruce Riedel, *Avoiding Armageddon: America, India, and Pakistan to the Brink and Back* (Washington, DC: Brookings Institution Press, 2013), pp. 126-127.

⁴⁴⁰ *Ibid.*, p. 127.

⁴⁴¹ Jaffrelot, p. 142.

fully half the country's foreign exchange reserves in less than three months.⁴⁴² Pakistan also received capital lifelines from Gulf monarchies and from its probable nuclear tutor, China.⁴⁴³

Kargil and Musharraf. As mentioned in the previous chapter, Pakistan would soon trigger armed conflict with India through instigation of the Kargil conflict of 1999. When Prime Minister Nawaz Sharif blamed Chief of Army Staff Pervez Musharraf for an embarrassing conclusion to the conflict, Musharraf responded by removing Sharif from power in a bloodless coup that returned Pakistan to direct military rule.⁴⁴⁴

Uneasy Spotlight, 2001-2018

The September 11th attacks spiked U.S. interest in Afghanistan—Pakistan's newly-established strategic back patio—to unimaginable levels in an instant. The better part of the next two decades would see Pakistani military and political elites attempt a sort of coerced doublespeak, appearing to support Washington enough to continue reaping the windfall of security assistance even while largely unsuccessfully trying to keep the de-stabilizing effects of the Afghan conflict from infecting the fabric of Pakistan. By the time Washington definitively decided it would no longer pay for a cooperative relationship in Afghanistan, the Pakistani conventional deterrent arsenal had

⁴⁴² "Pakistan Takes a Beating," *The Economist*, August 22, 1998. <https://www.economist.com/asia/1998/08/20/pakistan-takes-a-beating>.

⁴⁴³ Filippo Boni, "Civil-military Relations in Pakistan: A Case Study of Sino-Pakistani Relations and the Port of Gwadar," *Commonwealth and Comparative Politics*, vol. 54, no. 4 (2016), p. 499.

⁴⁴⁴ Shah, p. 182.

hugely benefited from both American and Chinese partnerships even as militancy had become a clear concern for the internal stability of Pakistan itself.

Shakedown and Tightrope. The weeks immediately following the 9/11 attacks saw a series of high-level meetings between American and Pakistani officials (including in short order Deputy Secretary of State Richard Armitage, ISI Director General Mahmud Ahmed, Secretary of State Colin Powell, President Pervez Musharraf, and President George W. Bush). These left the Musharraf government with the impression that failure to appear to support the Bush Administration in Afghanistan could result in the War on Terror expanding into Pakistan.⁴⁴⁵ This marked the beginning of 17 years of Pakistani governments accommodating U.S. policy in Afghanistan to some degree while effectively undermining it through continued ISI sponsorship of the Taliban and other militants and further attempting to mitigate public opinion backlash in Pakistan.⁴⁴⁶

Militancy. The ISI's sponsorship of the Taliban and other groups active in Afghanistan included some degree of territorial sanctuary within Pakistan. The porous nature of the border and the less-direct nature of Islamabad's rule over the Federally Administered Tribal Areas (FATA) meant that militancy in Afghanistan could freely influence disaffected groups and would-be militants inside Pakistan.⁴⁴⁷ The emergence and acceleration of militant groups in Pakistan was characterized by chronic violence and instability in Pakistan's western provinces of Khyber Pakhtunkhwa, FATA, and

⁴⁴⁵ Paul, p. 61.

⁴⁴⁶ Malik, pp. 7-8.

⁴⁴⁷ Ibid., pp. 1-4.

Balochistan.⁴⁴⁸ Militant violence would occasionally and prominently affect the interior of Pakistan, as with the bloody 2007 siege of the Red Mosque in Islamabad.⁴⁴⁹

Exit Washington. Sponsorship of or inadequate counteractions toward militant groups in Pakistan was a perennial driver of tension between Pakistan and the United States throughout this period. Critically, the discovery and killing of Osama Bin Laden in the military academy town of Abbottabad in 2011 solidified the view in American strategic circles that—through perfidy, gross incompetence, or both—Pakistan could not be a reliable ally in the ill-fated American struggle to stabilize non-fundamentalist governance in Afghanistan.⁴⁵⁰ For the part of the Pakistani public, the CIA-facilitated special operation that targeted Bin Laden struck them as a flagrant, armed violation of Pakistan’s sovereignty.⁴⁵¹ After seven steadily more uneasy years of fraught cooperation marked by reductions in aid for insufficient counterterrorism progress, the United States terminated security assistance to Pakistan in 2018.⁴⁵² The period following the

⁴⁴⁸ Ibid., pp. 9-16.

⁴⁴⁹ Boni, p. 506.

⁴⁵⁰ Carlotta Gall, *The Wrong Enemy: America in Afghanistan, 2001-2014* (New York: Mariner Books, 2015), p. 248.

⁴⁵¹ Jane Perlez and David Rohde, “Pakistan Pushes Back Against U.S. Criticism on Bin Laden,” *The New York Times*, May 3, 2011. <https://www.nytimes.com/2011/05/04/world/asia/04pakistan.html>.

⁴⁵² Phil Stewart and Idrees Ali, “Pentagon Cancels Aid to Pakistan over Record on Militants,” *Reuters*, September 1, 2018. <https://www.reuters.com/article/us-usa-pakistan-military-exclusive/exclusive-pentagon-cancels-aid-to-pakistan-over-record-on-militants-idUSKCN1LH3TA>.

September 11th attacks had seen Pakistan receive 12 billion USD in assistance⁴⁵³ and a modern fleet of upgraded F-16 variants.⁴⁵⁴

Closer Ties with China. This period saw rapid expansion of both the breadth and depth of economic and security ties between Pakistan and China. On the economic front, China continued its extension to Pakistan of billions of USD worth in various instruments of economic assistance including loans and grants.⁴⁵⁵ This coincided with Chinese investments of infrastructure, including large-scale development of a seaport (including naval basing option) at Gwadar.⁴⁵⁶ By the mid-2010s, Gwadar would be the western anchor for the China-Pakistan Economic Corridor (CPEC), an artery of road, rail, and other infrastructure projects connecting Pakistan to China and facilitating a rapidly increasing volume of exports from the former to the latter.⁴⁵⁷ Large swathes of Pakistan's conventional arsenal also took on a distinctly Chinese-sourced character with the purchase and licensed production of missile systems, rocket artillery, and fighter jets.⁴⁵⁸

⁴⁵³ Paul, p. 63.

⁴⁵⁴ Sebastien Roblin, "Pakistan's Enormous Dependence on the F-16 Fighting Falcon." *The National Interest*, January 14, 2022. <https://nationalinterest.org/blog/reboot/pakistans-enormous-dependence-f-16-fighting-falcon-199333>.

⁴⁵⁵ Boni, p. 503.

⁴⁵⁶ Ibid., pp. 502-504.

⁴⁵⁷ Toufic Sarieddine, "How CPEC Has Altered China-Pakistan Trade," *The Diplomat*, April 2, 2022. <https://thediplomat.com/2022/04/how-cpec-has-altered-china-pakistan-trade/>.

⁴⁵⁸ IISS, *The Military Balance* (2007-2021, all editions).

Single Sponsorship Since 2018

With long-standing security ties to Washington severed, Pakistan now needs to know if it can rely on China for some form of the lucrative sponsorship it had enjoyed from Washington. While it has sunk deeper into China's embrace, it still has to determine whether it is at the start of a strategic relationship with Russia. The Kashmir dispute has been as tense as ever until a surprise ceasefire amid the pandemic, the future of which is unclear.

China Sponsorship. The economic and security relationship between Pakistan and China continues to intensify. Where Pakistan previously sold to a diverse group of importers, China now purchases more than 80 percent of Pakistan's mineral exports and takes delivery via the CPEC transport network.⁴⁵⁹ Commercial revenue is up for Pakistan, but it must also account for continued repayment and servicing of Chinese-held development debt.⁴⁶⁰ As I describe in the remaining sections of the chapter, China's military sponsorship of Pakistan builds on the impressive diversification of weaponry during the period 2001 to 2018 to induct platforms representing some of China's foremost conventional capabilities.

India. As covered in the introduction, Pakistan and India navigated a serious crisis in 2019 in the form of the Pulwama attack and subsequent events including the air-to-air kill of the Indian MiG-21.⁴⁶¹ Although the Pulwama episode occurred in the

⁴⁵⁹ Sareddine, "How CPEC Has Altered China-Pakistan Trade."

⁴⁶⁰ Ibid.

⁴⁶¹ Seligman, "India's Dogfight Loss."

context of voluminous ceasefire violations across the Line of Control,⁴⁶² since March of 2021 Pakistan has found itself on the other side of the curiously durable truce noted in the last chapter.⁴⁶³ Whereas India's continued arming since the truce can be rationalized as fulfilling other national security priorities (implicitly balancing China, for example), Pakistan's observation of the ceasefire is underpinned with the knowledge of all parties that any armament it pursues in the meantime is for the avowed purpose of improving its conventional deterrent toward India.

Russia. Starting in 2017 and continuing through this period, Pakistan's civilian and military leadership has probed expanding relations with India's longtime arms supplier Russia. Scarcely days after the termination of international military officer education exchanges with the United States, Pakistan and Russia signed an agreement for comparable exchange programs completed by Pakistani officers at Russian programs.⁴⁶⁴ Although somewhat symbolic given that Russian language proficiency is far less common in the largely English-fluent Pakistani officer corps, the deal contributes to a pattern of expanded engagement that includes arms transfers and energy integration.⁴⁶⁵

⁴⁶² "Ceasefire Violations."

⁴⁶³ "LoC: India, Pakistan Exercised Restraint Since Ceasefire Agreement."

⁴⁶⁴ Baqir Sajjad Syed, "Accord with Russia Signed for Training of Pakistani Troops," *Dawn*, August 8, 2018. <https://www.dawn.com/news/1425673>.

⁴⁶⁵ Niha Dagia, "Bilateral Bond Between Pakistan and Russia Deepening," *The Diplomat*, June 23, 2021. <https://thediplomat.com/2021/06/bilateral-bond-between-pakistan-and-russia-deepening/>.

Conventional Firepower Potential Procurement Efficiency, 2000-2020

Pakistan displayed the highest procurement efficiency throughout the study, exceeding Taiwan's by an annual average of three times and each of India's and Australia's by five or more times. Pakistan's procurement was nearly entirely focused on the multi-domain threat perceived from neighbor India, with the threat-matching or -countering platforms accounting for an average of 94.14% of procured conventional firepower potential. Pakistan derived more than two-thirds of its procurement from imports or licenses from vendors with regional aims (the United States and China), both of whose policies may have compounded one another's efficiency-boosting effects on Pakistan's deterrent capability acquisition. The military equipment procurement practices of Pakistan's government routinely violated Pakistan's laws and were never subject to even cursory mechanisms of transparency or accountability other than beginning to publish budgetary lines in 2009.

This section of the chapter will describe the procurement behavior and other dynamics coinciding with those measurements. First, I review the spending and capability addition Pakistan undertook during the analytic window. Next, I substantiate narrative descriptions for each of the independent variables. Finally, I explore key differences between Pakistan's interservice, civil-military, and domestic political attributes and those of the cases explored that far that appear relevant to each state's experience with procurement.

Procurement Spending, System Addition Modalities, and CFPI

Pakistan's procurement spending rose markedly over the analytic window. The Pakistan Armed Forces steadily replaced platforms with a combination of turnkey imports and indigenously constructed platforms, including some reverse-engineered by Pakistani manufacturers from their experiences during licensed production runs. Pakistan made a few upgrades and managed to make no retirements without replacement platforms. Perhaps most remarkable are the number of capabilities that Pakistan introduced during this time, transforming its military into a far more versatile force by 2020.

Budgets. Pakistan's procurement spending rose nearly tripling in absolute terms from 1.15 billion to 3.19 billion adjusted 2021 USD.^{466,467} The only other case with a greater proportionate increase over the study period was India. As might be expected given the independence of military spending from civilian political control—discussed further later in the chapter—the steady increase occurred independent of governing party.

Systems and Capability Addition Modalities. The period 2000-2020 was marked by a rapid pace of diversification and modernization of Pakistani conventional military capabilities. Although typically Pakistan's capability addition consisted of replacements, upgrades, or augmentation by systems with better capabilities than those already in the arsenal, Pakistan undertook two instances of augmentation by systems of the same or less

⁴⁶⁶ *Military Expenditure Database*, Stockholm International Peace Research Institute. Interactive database, updated January 2022. <https://sipri.org/databases/milex>.

⁴⁶⁷ Ministry of Finance (India), "Defence Services Division," *Demands for Grants* (2009-2022, all editions).

sophisticated capability than its existing inventory in both case demonstrating some uncertainty as to whether or not U.S. platforms would always be available.

Pakistan introduced or began introduction of four capabilities between 2000 and 2020: (1) the European multinationally-developed SPADA-2000 medium-range air defense missile system, 2011-2013;⁴⁶⁸ (2) the Chinese-licensed A-100 long-range rocket artillery system, 2012-2019;⁴⁶⁹ (3) the Chinese-licensed *Zarb* (YJ-62) shore-based anti-ship cruise missile system, 2018-2020;⁴⁷⁰ and (4) the Chinese-licensed HQ-9P long-range air defense system, 2019-2021.⁴⁷¹ The introductions indicate a concerted effort by Pakistan's military leadership to establish a multi-domain area denial capability using precision strike weaponry.⁴⁷²

The analytic window saw Pakistan augment nine capabilities: (1) adding the American F-16C/D multirole fighter alongside a growing inventory of Chinese-licensed JF-17A/B fighters, 2004-2012;⁴⁷³ (2) American M109A5 self-propelled howitzers joining their predecessor M109A2s, 2006-2010;⁴⁷⁴ (3) adding the jointly Chinese- and Pakistani-built *Zulfiqar*-class multirole guided missile frigate to the *Tariq*-class variable-role

⁴⁶⁸ IISS, *The Military Balance* (2010-2014).

⁴⁶⁹ IISS, *The Military Balance* (2011-2020).

⁴⁷⁰ IISS, *The Military Balance* (2017-2021).

⁴⁷¹ IISS, *The Military Balance* (2018-2021).

⁴⁷² Masood Ur Rehman Khattak and Mansoor Akbar Kundi, "Conventional Asymmetries between India and Pakistan: A Threat to the Deterrence Stability of South Asia," *Journal of Political Studies*, vol. 26, no. 1 (2019), p. 74.

⁴⁷³ IISS, *The Military Balance* (2003-2013).

⁴⁷⁴ IISS, *The Military Balance* (2005-2011).

guided missile frigate, 2008-2011;⁴⁷⁵ (4) adding a single refurbished *Oliver Hazard Perry*-class American ASW frigate (PNS *Alamgir*) to the *Zulfiqar*-class multirole frigates, 2010-2012;⁴⁷⁶ (5) adding F-16A/B fighters to a larger pool of upgraded F-16AM/BM (F-16A/B MLU) aircraft, 2010-2014;⁴⁷⁷ (6) adding American-provided MaxxPro wheeled armored fighting vehicles to a smaller number of BTR-70 and BTR-80 wheeled armored personnel carriers, 2015-2018;⁴⁷⁸ (7) adding the Chinese-provided FM-90 short-range air defense missile system to the French-manufactured but indigenously-upgraded Crotale 4000, 2015-2018;⁴⁷⁹ (8) adding more advanced Russian-provided Mi-35M attack helicopters to older American provided AH-1F, 2016-2018;⁴⁸⁰ and (9) fielding the Chinese-licensed LY-80 medium-range air defense missile system alongside the SPADA-2000, 2017-2018.⁴⁸¹

Three of these augmentations stand out as small-scale and counterintuitive at first glance. The addition of a unique frigate to Pakistan's fleet occurred under the Excess Defense Articles instrument of American arms transfer policy, allowing Pakistan to pick up a used American guided missile frigate for the cost of refurbishment (effectively a 50

⁴⁷⁵ IISS, *The Military Balance* (2007-2012).

⁴⁷⁶ IISS, *The Military Balance* (2009-2013).

⁴⁷⁷ IISS, *The Military Balance* (2009-2015).

⁴⁷⁸ IISS, *The Military Balance* (2014-2019).

⁴⁷⁹ Ibid.

⁴⁸⁰ IISS, *The Military Balance* (2015-2019).

⁴⁸¹ IISS, *The Military Balance* (2016-2019).

percent discount on the total capability received).⁴⁸² The F-16s, original variants of the type that the United States had upgraded for Pakistan during the uneasy post-9/11 honeymoon, were purchased secondhand from Jordan with tentative plans to upgrade them but with the advantage of a familiar, proven platform with interchangeable parts providing plenty of incentive.⁴⁸³ The four Mi-35M attack helicopters were a tentative purchase, reflecting both the unfamiliar territory of buying arms from Russia and the active search for a replacement for the aging American AH-1F aircraft.⁴⁸⁴

Pakistan made seven major conventional platform upgrades over the course of the analytic window: (1) the Crotale 2000 short-range air defense missile system to the 4000 standard, 1998-2000;⁴⁸⁵ (2) the *Talha* armored fighting vehicle iteratively to the *Maaz* tank destroyer variant, ongoing since 2000;⁴⁸⁶ (3) the Hatf-1/A short-range surface-to-surface ballistic missile to the guided 1B standard, 2001-2004;⁴⁸⁷ (4) the Type 59 Chinese-provided main battle tank to the indigenously developed *Al Zarrar* variant, 2003-2010;⁴⁸⁸ (5) the F-16A/B to F-16AM/BM (MLU) standard, 2010-2014;⁴⁸⁹ (6) the

⁴⁸² United States Department of Defense, Defense Security Cooperation Agency, “Pakistan – Refurbishment of Oliver Hazard Perry Class Frigate” (Transmittal 09-28), February 19, 2010.

⁴⁸³ Roblin, “Pakistan’s Enormous Dependence on the F-16 Fighting Falcon.”

⁴⁸⁴ Franz-Stefan Gady, “Pakistan Receives 4 Advanced Attack Helicopters from Russia,” *The Diplomat*, August 29, 2017. <https://thediplomat.com/2017/08/pakistan-receives-4-advanced-attack-helicopters-from-russia/>.

⁴⁸⁵ IISS, *The Military Balance* (1997-2001).

⁴⁸⁶ IISS, *The Military Balance* (1999-2021).

⁴⁸⁷ IISS, *The Military Balance* (2000-2005).

⁴⁸⁸ IISS, *The Military Balance* (2002-2011).

⁴⁸⁹ IISS, *The Military Balance* (2009-2015).

M109A2 self-propelled howitzer to M109A5 standard, 2011-2020;⁴⁹⁰ and (7) the modernization upgrade of *Khalid* conventionally-powered tactical submarines, ongoing since 2017.⁴⁹¹ Two of these upgrades—the F-16s and M109s—were the results of agreements undertaken during ostensible U.S.-Pakistani cooperation on Afghanistan and would not be possible since aid termination in 2018.

Pakistan replaced extensively during this period, in many cases transitioning from aging platforms to competitive and even advanced systems. Replacements included: (1) *Jalalat*-, *Jurrat*-, and *Zarrar*-class missile boats for Chinese *Hegu* and *Huangfeng*-class missile boats, 1997-2011;⁴⁹² (2) *Khalid*-class (French-licensed) conventionally-powered tactical submarines for *Hangor*-class subs, 1998-2006;⁴⁹³ (3) indigenously produced *Talha* armored personnel carriers for the American M113 variants from which they were reverse engineered, 1998-2020;⁴⁹⁴ (4) F-16A/B air superiority fighters for Chinese F-7Ps, 1999-2014;⁴⁹⁵ (5) indigenously designed and produced *Al Khalid* main battle tanks for aging American M48A5s, 2001-2014;⁴⁹⁶ (6) advanced, Chinese-licensed JF-17A/B multirole fighter jets for Chinese-provided F-7P/PG, 2007-2021;⁴⁹⁷ (7) JF-17AB for

⁴⁹⁰ IISS, *The Military Balance* (2010-2021).

⁴⁹¹ IISS, *The Military Balance* (2016-2021).

⁴⁹² IISS, *The Military Balance* (1997-2012).

⁴⁹³ IISS, *The Military Balance* (1997-2007).

⁴⁹⁴ IISS, *The Military Balance* (1997-2021).

⁴⁹⁵ IISS, *The Military Balance* (1998-2015).

⁴⁹⁶ IISS, *The Military Balance* (2000-2015).

⁴⁹⁷ IISS, *The Military Balance* (2006-2021).

Chinese-provided A-5C ground attack aircraft, 2009-2012;⁴⁹⁸ Chinese-provided Z-9C ASW helicopter for the Sikorsky Sea King, 2009-2012;⁴⁹⁹ Chinese-licensed *Azmat* class guided missile fast attack craft for *Zarrar*-class missile boats, 2011-2022;⁵⁰⁰ and the Chinese-provided *Tughril*-class (Type 054A/P) stealth multirole guided missile frigate for the *Tariq*-class variable-role frigate, ongoing since 2020.⁵⁰¹ As the next section will elaborate, these replacements are remarkable for the pace, threat focus, and jump in technological sophistication that they represent.

Threat Focus

Acquiring military capability to counter the threat posed by India has been Pakistan's central national security priority since the beginning of its independent existence.⁵⁰² During the analytic window, Pakistan displayed the greatest focus on platforms that matched or—more often—countered the threats posed by India's arsenal. Pakistan has arguably been the most successful in acquiring systems to deter any attempts by India to achieve air superiority, supposedly the first focus of the “Cold Start” doctrine.⁵⁰³

⁴⁹⁸ IISS, *The Military Balance* (2008-2013).

⁴⁹⁹ Ibid.

⁵⁰⁰ IISS, *The Military Balance* (2010-2021).

⁵⁰¹ “Pakistan Inducts Chinese-made Frigate.” *Defence Review Asia*. February 1, 2022. <https://defencereviewasia.com/pakistan-inducts-chinese-made-frigate/>.

⁵⁰² Cohen, p. 6.

⁵⁰³ Ladwig, “A Cold Start for Hot Wars?” p. 168.

Indian Threats. The border between Pakistan and India is similar in length to that between India and China at over 3,000 kilometers. Unlike the border region between India and China, much of the India-Pakistan border traverses wide-open plains conducive to overland advance by armored forces.⁵⁰⁴ I thus coded Indian threats to China as armor, fixed-wing aircraft, and vessels (given the demonstrated bombardment of Karachi in 1971). Pakistan's procurement during the analytic window was heavily focused on threats, particularly countering.

Matching. Pakistan pursued some matching procurement over the analytic window, most notably through the acquisition of multirole fighters, main battle tanks. Indigenous production of the licensed JF-17A/B provides Pakistan a sustainable, low-cost source both of highly capable fourth-generation combat aircraft, but also a flagship export item for its own foray into the arms trade. Although India's naval fleet far outclasses Pakistan, Pakistan appears to be on track to add 054A/P frigates at a faster pace and a higher capability level than India for several years.⁵⁰⁵ However, Pakistan's procurement really shines in its economical countering of Indian threats.

Countering. Pakistan extensively acquired and updated countering capabilities, particularly from the three generally economical platforms of fast attack missile craft, anti-ship missile systems, and air defense missile systems. The rapid construction of a flotilla of updated fast attack missile craft combines with Pakistan's growing frigate

⁵⁰⁴ Shusant Singh, "The Challenge of a Two-Front War: India's China-Pakistan Dilemma," Asia Issue Brief, The Stimson Center. April 19, 2021. <https://www.stimson.org/2021/the-challenge-of-a-two-front-war-indias-china-pakistan-dilemma/>.

⁵⁰⁵ "Pakistan Inducts Chinese-Made Frigate."

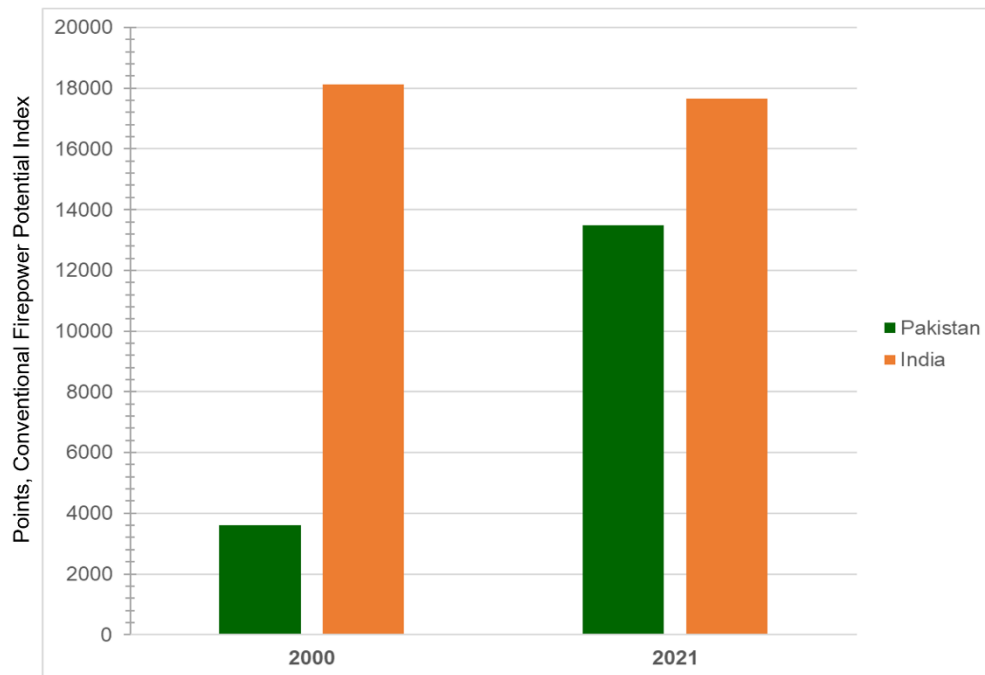


Figure 6.3: Air Defense Missile System CFPI Score, 2000 and 2021

Sources: CFPI, IISS

count to present contested if not denied territorial waters.⁵⁰⁶ The mobile missile capabilities of these coastal combatants compound the standoff advertised by Pakistan's new anti-ship missiles.⁵⁰⁷ However, in no respect does Pakistan's threat-counterering deterrent procurement seem as successful in the area of air defense missile systems.

Given the theoretical reliance of an Indian conventional invasion of Pakistan on achieving air superiority, fielding a credible and sophisticated air defense network has

⁵⁰⁶ Gabriel Dominguez, "Pakistan Launches Fourth Azmat-class Fast Attack Craft." *Janes*, November 28, 2019. <https://www.janes.com/defence-news/news-detail/pakistan-launches-fourth-azmat-class-fast-attack-craft>.

⁵⁰⁷ Gabriel Dominguez, "Pakistan Navy Tests Zarb Coastal Defence Missile." *Janes*, November 7, 2019. <https://www.janes.com/defence-news/news-detail/pakistan-navy-tests-zarb-coastal-defence-system>.

been a procurement priority for Pakistan. Figure 6.3 compares the Pakistan-India CFPI balance derived from air defense missile systems. Beyond simply targeting quantity and sophistication of systems, Pakistan's military has worked to develop a layered surface-to-air missile envelope that allows for effective response against aircraft and missile threats at various distances and altitudes. In addition to its indigenous upgrade of the Crotale, the acquisition of Chinese short, medium, and long-range systems mean that Pakistan clearly advertises the capability to effectively contest control of the skies in any hypothetical defensive scenario.^{508,509} Because of S-400 delivery delays from India to Russia, 2021 saw Pakistan in possession of a viable long-range surface-to-air missile (SAM) system while India did not field one. Figures 6.3 and 6.4 trace the configuration of the SAM envelopes of each country in the years 2000 and 2021 (when the HQ-9P was inducted but the S-400 was not yet inducted).

Vendor Goals

Pakistan purchased did well over two-thirds of its conventional weapon procurement business as measured by SIPRI with vendors that I code as having complex goals beyond revenue generation, that is the United States, China, and Russia. A plurality of Pakistan's added conventional firepower during the study window originated

⁵⁰⁸ "Pakistan Inducts Chinese SHORAD Missile,," *Defense Update*, May 11, 2015. https://defense-update.com/20150511_pakistan-inducts-improved-shorad-missiles-acquired-from-china.html.

⁵⁰⁹ Samuel Cranny-Evans and Gabriel Dominguez, "Pakistan Army Commissions HQ-9/P Air-Defence System," *Janes*, October 15, 2021. <https://www.janes.com/defence-news/news-detail/pakistan-army-commissions-hq-9p-air-defence-system>.



Figure 6.4: Pakistan and India Surface-to-Air Missile Envelopes, 2000

Sources: IISS, U.S. Army Worldwide Equipment Guide

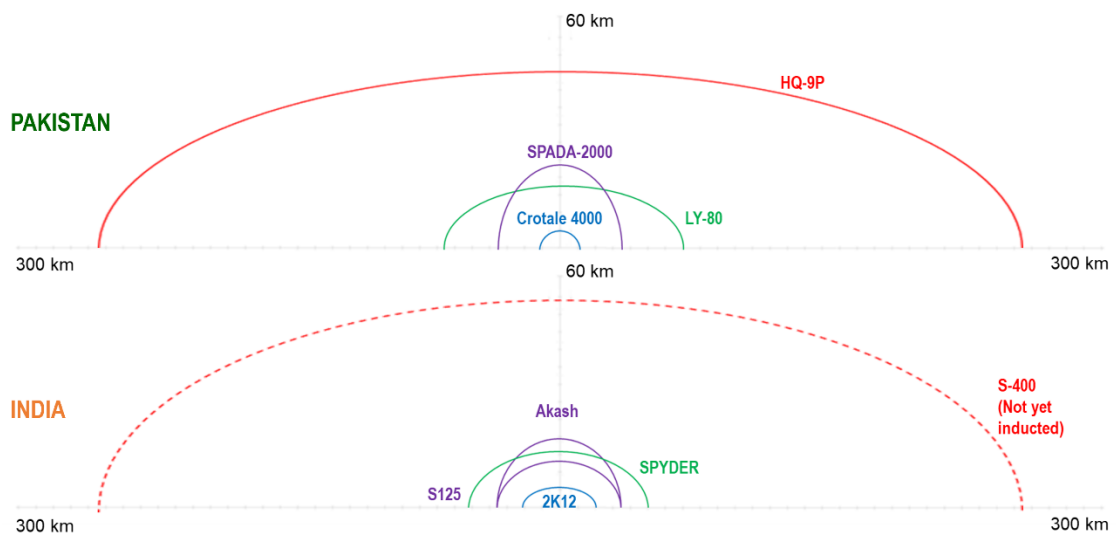


Figure 6.5: Pakistan and India Surface-to-Air Missile Envelopes, 2021

Sources: IISS, U.S. Army Worldwide Equipment Guide

with China (more than 45 percent), a sizeable minority with the United States (more than 15 percent) and a minor share originated with Russia (less than 3 percent). What were China's and the United States' approaches to arms transfers to Pakistan and would they logically correspond to improved procurement efficiency?

China. China's principal contribution to Pakistan's efficiency seems to be a ready library of largely proven, off-the-shelf designs. Whether providing Pakistan the HJ-8 anti-armor missile systems with which to convert armored personnel carriers to tank destroyers or the air defense systems covered in the previous subsection, the availability of China's designs means that Pakistan spends no time in a figurative requirements hell auditioning systems or pushing for research and development breakthroughs needed for production to move ahead.⁵¹⁰ For licensed production, Pakistan can churn platforms out without needing to modify them (unless it chooses to). When purchasing Chinese-manufactured platform, Pakistan gains access to Chinese economies of scale. A custom-built run of several frigates would undoubtedly cost much more than four ships out of a pre-planned run of fifty, and the ability to field multirole stealth guided missile warships is one that would probably cost-prohibitive in terms of time and money.⁵¹¹ For China, some of the benefit seems intuitive; Pakistan's fielding even a few guided missile surface combatants contributes to the partial encirclement of India's western fleet.

United States. Weapon transfers from the United States during that analytic window seem incontrovertibly to have enhanced efficiency by virtue of being highly

⁵¹⁰ Khattak and Kundi, pp. 81-82.

⁵¹¹ "Pakistan Inducts Chinese Frigate."

competitive and costing Pakistan only a fraction of what they would to other customers. The Excess Defense Articles transfer of a frigate to Pakistan probably came at a savings of 60 million USD (or more than 25% of Pakistan's procurement budget that year).⁵¹² The United States also extended Pakistan considerable assistance in the form of various instruments that *had* to correspond to economical and rapid acquisition of capability-granting platforms. In addition to Foreign Military Financing (as much as 200 million USD per year under the Bush and Obama administrations prior to conditional parebacks under the Trump Administration), the United States gave Pakistan billions in each of Coalition Support Funds (CSF), Pakistan Counterinsurgency Fund (PCF), and Pakistan Counterinsurgency Capabilities Fund (PCCF) for the purposes of reimbursing Pakistan for operational assistance to the United States, allowing it to fight militants within its borders, and building long-term capabilities within its forces.⁵¹³ Like FMF, these funds had clear and statutorily mandated applications, but Obama and Trump Administration officials were convinced that the Pakistani military was diverting them to various unsanctioned military capability acquisition uses.⁵¹⁴ Figure 6.6 explores this by charting Pakistan's procurement efficiency with the curve of the four principal U.S. security assistance funds overlaid. While it is not possible to say for sure, the corresponding shapes in the main efficiency spike (2008-2017) and the proportion of Chinese-sourced or

⁵¹² "Pakistan – Refurbishment of Oliver Hazard Perry Class Frigate."

⁵¹³ Faiza Bashir and Shahida Aman, "U.S. Security Assistance to Pakistan in Post 9/11 Period." *FWU Journal of Social Sciences*, vol. 15, no. 2 (Summer 2021), pp. 96-116.

⁵¹⁴ *Ibid.*, p. 110.

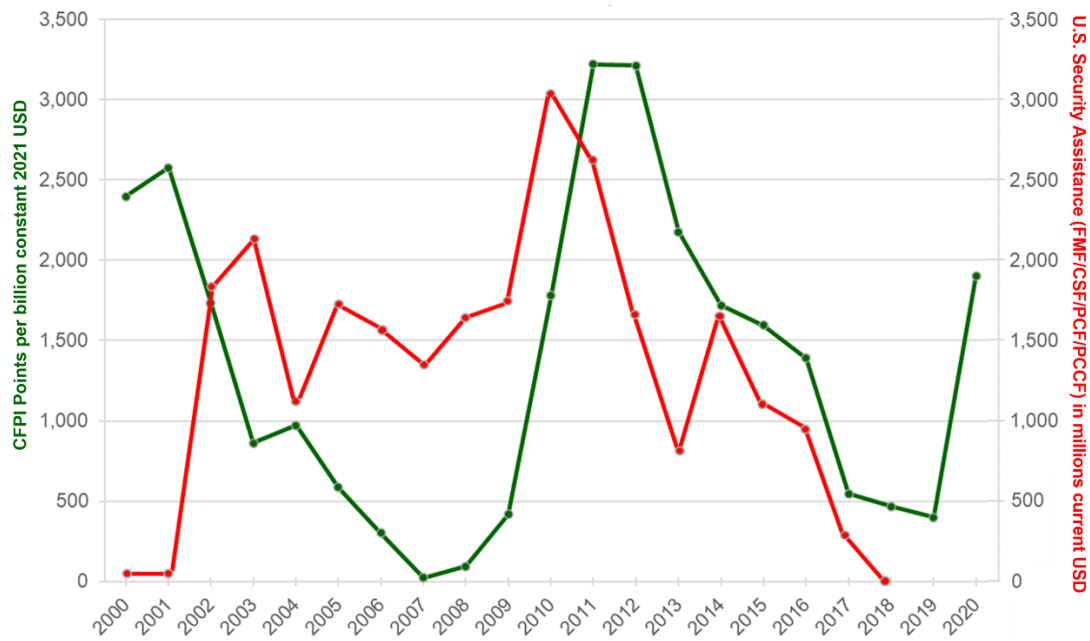


Figure 6.6: U.S. Security Assistance to Pakistan and Pakistan's Procurement Efficiency, 2000-2020

Sources: CFPI, IISS, United States Agency for International Development (USAID)

licensed acquisition during this time suggests that at least some American money was purchasing Chinese weaponry for Pakistan.

Government Practices

Pakistan's procurement procedures exhibited stark divergences from the literature-derived standards for conventional weaponry acquisition programs. There is no effective civil control with respect to appropriation, despite what the country's constitution says. Military leaders are assured of regular and satisfactory resource allocation, and procurement decisions once undertaken are almost never suspended or reversed. The process is opaque, with procurement expenditure figures not even being public until after 2009. Table 6.1 shows government practice indicators for Pakistan.

Table 6.1: Pakistan Government Procurement Practice Indicators, 2000-2020

Dimension	Attribute - The degree to which:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1. Appropriation and Governance	A. Military budgeting including procurement is spelled out in law.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. The constitutionally identified head of state approves the defense budget request, including procurement.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	C. The legislature debates and approves itemized defense spending including procurement.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	D. The defense ministry/department and military execute the appropriated procurement.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2. Rigorous & Repeatable Needs Assessment	A. Procurement undergoes deliberate needs assessment, itself reviewed for improvement.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	B. Any needs assessment is a repeated and repeatable process.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	C. Any needs assessment is both threat- and performance-focused.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. Currently executing procurement programs trace to previous needs assessments.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3. Effective Accountability Mechanisms	A. Detailed procurement expenditure is published.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	B. Military procurement expenditure is audited by an independent entity.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	C. Audit results are published.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	D. Most recent reforms map to previous accountability activity.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○ Negligible

○ Limited

● Substantial

Appropriation and Governance. While the Constitution holds that parliament should appropriate funds in the nation's budget, defense budgets are presented to members of parliament by military leaders in an informative briefing ("this is what we *will* spend next year") at the end of each fiscal year.⁵¹⁵ The military routinely overspends by ten percent or more, with Pakistan Army both receiving the greatest allocation and overspending by the most historically.⁵¹⁶ A pro forma routing of the service-prepared requests travels through the bureaucracies of both the Ministry of Defence and the Ministry of Finance, and Ministry of Defence officials even engage in limited discussion with members of parliament prior to the approval of the budget, a foregone conclusion with no precedent for denial.⁵¹⁷

Needs Assessment. In all but a few years, the military releases no evidence of deliberate needs assessment or force structure planning.⁵¹⁸ There are three "year books" publicly released that contain reports reflecting needs and requirements assessments and resulting procurement or manufacturing goals that.⁵¹⁹ Beyond these three surprisingly detailed publications, there is no evidence of regular, repeatable needs assessments.

Accountability Mechanisms. Pakistan's military spending is not subject to any known independent scrutiny, with the Pakistani Military Accounts Department

⁵¹⁵ Shane Mason, *Military Budgets in India and Pakistan* (Washington, DC: The Stimson Center, 2016), p. 25.

⁵¹⁶ Ibid., p. 22.

⁵¹⁷ Ibid., pp. 25-27.

⁵¹⁸ Ministry of Defence (Pakistan), "Publications." <https://www.mod.gov.pk/Publications>.

⁵¹⁹ For example, "Construction of 6 Maritime Patrol Vessels," *Year Book 2014-2015*, pp. 124-127.

responsible for formulation, disbursement, and accountability of military funds.⁵²⁰ The official position of the military is that the entirety of Pakistan's military budgeting is public knowledge and has never exhibited accounting deficiencies.⁵²¹ No known audit information has ever been made public.

Descriptively navigating the events and indicators corresponding to variable values depicts a deeply undemocratic set of processes exhibiting single-minded focus on countering India and benefiting from the agendas of both the United States (formerly) and China (currently and for the foreseeable future). Further analysis of Pakistan's case encounters many of the issues identified during the survey of causal accounts in chapter 2; in a field where performance is frequently analyzed with a focus on negative developments, understanding why Pakistan achieved efficient procurement is considerably more difficult than understanding why the other cases examined thus far—Australia and India—exhibited relatively inefficient procurement. In the next subsection, I posit untested deductive explanations for Pakistan's procurement avoiding the same pitfalls as Australia's and India's.

No Unity of Command Like Authoritarian Unity of Command

Previous chapters identified a number of issues that appeared to derail or degrade efficient conventional weaponry procurement. These were (1) civil-military disconnects; (2) service resource territoriality; (3) the influence of domestic politics on the ability of

⁵²⁰ Mason, p. 26.

⁵²¹ Ibid.

political leaders to make timely and clear-eyed procurement decisions; and (4) an aversion to procuring countering platforms. Pakistan avoids these issues for procurement efficiency at great cost to the country's developmental capacity even as it enhances its ability to procure an armament basis for conventional deterrent.

As this chapter has covered, there is no meaningful civil control of the military in Pakistan despite the stipulation of the Constitution. There cannot thus be the service-Department/Ministry planning disconnects observed in the cases of India and Australia. Civilian authority also has not acted as a brake on the military's sponsorship of militant groups to the detriment of Pakistan's internal stability.⁵²²

It would be naïve to think that there is absolutely no resource territoriality between Pakistan's different services, but perhaps more meaningful to say that there is negligible rivalry compared to the other case states. As with India, the Army receives more than fifty percent of the budget, but the Chief of Army Staff also functions as a first among equals for the purpose of foreign policy and national security decisionmaking to include force design, weapon procurement, and the other general officers who will serve in inter-service organizational positions as the intelligence chief or even the statutorily superior Chairman Joint Chiefs of Staff Committee.⁵²³ The CJCSC does not have a meaningful fraction of the power of the Chief of Army Staff, but can get some say when

⁵²² Malik, pp. 1-2.

⁵²³ Mason, p. 27.

establishing consensus. Even here the Army is dominant: of thirteen CJSCs in Pakistan's history, ten have been Army officers.⁵²⁴

As the Chief of Army Staff and other senior military officers are not elected, there would intuitively seem to be no risk from interplay of domestic electoral politics and procurement decisionmaking. A clear consequence is that identified resource needs by the military are granted ahead of those of a large developing country where one in four people live below the poverty line.⁵²⁵ During the pandemic, the continued tendency for the resource needs of the military to be met appeared to contribute to the unpopularity of the civilian Prime Minister.⁵²⁶

Finally, Pakistan's procurement activity over the analytic window seems to show a highly cost-effective preference for platforms that counter Indian threats rather than those that would match them at much greater cost. This is perhaps the benefit of Pakistan's strategic circles perennially seeing the conflict as skewed in India's favor; India's insistence on the pursuit of prestige platforms rather than cost-effective counters to deter China seems at least in part attributable to wishful thinking about supposed parity of the dyad.⁵²⁷

⁵²⁴ Inter-services Public Relations. "Chairman Joint Chiefs of Staff Committee." <https://ispr.gov.pk/chairman-joint-chiefs-of-staff-committee.php>.

⁵²⁵ "Poverty Data: Pakistan"

⁵²⁶ Zuha Siddiqui, "In Pakistan, the Army Tightens its Grip," *Foreign Policy*, July 8, 2020. <https://foreignpolicy.com/2020/07/08/in-pakistan-the-army-tightens-its-grip/>.

⁵²⁷ For an example of such wishful thinking, see: Singh, Abhay Kumar. *India-China Rivalry: Asymmetric No Longer*. New Delhi: KW Publishers, 2021.

Unlike the Australia and India cases, these conjectured positive drivers of efficiency seem considerably less tangible and intuitive than the identified obstacles to efficiency from each of those cases. A disadvantage of this study design is limited ability to identify positive drivers with greater than conjectural confidence and any more insight than the quantitative analysis implied. What seems clear, however, is that Pakistan's military's uncontested prioritization of deterrent acquisition probably comes at some degree of cost of opportunities to address the legitimate development issues of the country.

The chapter thus far identified Pakistan as enjoying focused pursuit of increasingly sophisticated countering capabilities and at least one major international sponsor able to provide them with a serious comparative advantage in the form of either effective subsidies or comparative advantage. In the final section of this chapter, I examine Pakistan's apparent conventional deterrent trajectory

Key Junctures Ahead

Pakistan finds itself in an episode of turmoil in its civilian politics that does not appear engineered by the military but is unfolding in a way that reaffirms its authority. The reaffirmed ceasefire with India continues to hold despite an accidental missile launch into Pakistan's territory. Does political upheaval for Pakistan mean anything for its single sponsorship relationship with China or recent openings with Russia? Is apparent goodwill between military and civilian leaders in India and Pakistan an expansion of the same phenomenon underpinning the reaffirmed ceasefire?

Khan-Army Fissures: Faint But There

Recently ousted Prime Minister Imran Khan came into power with the backing of Pakistan's powerful military, but when the opposition made its play to terminate his tenure the service chiefs remained silent. The maneuver (raised the question of whether the apparent withdrawal of their support indicated an underlying cause and any change in Pakistan's international orientation.

One area of apparent difference between Khan and the Chief of Army Staff, Qamar Javed Bajwa, is the pair's public statements on Russia. Imran Khan traveled to Russia February of 2022 in order to agree to proceed with a joint natural gas project, and

ended up sitting next to Putin as news cameras rolled the day after the invasion.⁵²⁸

Pressed by the Western press to condemn Russia in subsequent days, Khan bristled and doubled down despite having led protests against Putin's past actions in Chechnya.⁵²⁹

General Bajwa, on the other hand, forcefully condemned Russia and used the situation to make an analogy to Pakistan's self-image of vulnerability to India.⁵³⁰ He expressed a hope that India's leaders would take note of the ability of a smaller country to resist the aggression of a larger one through "selective military modernization in equipment,"⁵³¹ Whether this was solely a reference to Pakistan's bolstered conventional deterrent or a reference to an 85 million USD for tank modernization that Pakistan had signed with Ukraine is unclear.⁵³² Although this is unlikely to have been the sole cause of the former Prime Minister's fall from favor, public opprobrium to Russia by the COAS may indicate that Pakistan must seriously consider entry into substantial development projects with Russia.⁵³³ Khan's actions during the episode may have themselves been enough to alienate military leaders who had merely withdrawn their support; Khan

⁵²⁸ Hamid Mir, "Pakistan's Prime Minister Couldn't Have Picked a Worse Time to Make Friends with Vladimir Putin," *The Washington Post*, March 9, 2022. <https://www.washingtonpost.com/opinions/2022/03/09/imran-khan-pakistan-picks-terrible-time-make-friends-with-vladimir-putin/>.

⁵²⁹ Ibid.

⁵³⁰ Ayaz Gul, "Pakistan Army Chief Blasts Russia's Aggression Against Ukraine," *Voice of America*, April 2, 2022. <https://www.voanews.com/a/pakistan-army-chief-blasts-russia-aggression-against-ukraine/6512372.html>.

⁵³¹ Ibid.

⁵³² Sibte Arif, "Ukrainian Defence Conglomerate Signs \$85m Contract with Pakistan," *The News*, February 23, 2021. <https://www.thenews.com.pk/print/794407-ukrainian-defence-conglomerate-signs-85m-contract-with-pakistan>.

⁵³³ Asma Khalid, "The PGSP: A Turning Point for Pakistan and Russia?" *South Asian Voices*, October 1, 2021. <https://southasianvoices.org/the-psgp-a-turning-point-for-pakistan-and-russia/>.

publicly railed at the military's leadership for not taking a position on the constitutional crisis.⁵³⁴

Although Islamabad's recently warming relationship with Moscow may be in question, any deviation from China sponsorship (including significant rapprochement with the West) seems unlikely. The depth of economic and military dependence is difficult to dislodge, and China is both Pakistan's biggest export customer and the greatest benefactor of its development.⁵³⁵ Continued close ties with China suggest that Pakistan will continue to enjoy the opportunity to acquire the upper limits of China's conventional military equipment offers, keeping its procurement efficiency high.

Realistic Risk of Peace Breaking Out?

In the context of the longest unbroken ceasefire across the Line of Control in decades (notwithstanding a misfired, unarmed cruise missile)⁵³⁶ new Prime Minister Shehbaz Sharif reciprocated Indian Prime Minister Modi's hopes for peaceful relations.⁵³⁷ A day later, COAS Bajwa expressed confidence that the two countries could

⁵³⁴ Bosotti, Aurora. "Pakistan on Brink as Khan Breaks With Army With Brutal Jibe, 'Only Animals Are Neutral!'" *Express*, March 11, 2022. <https://www.express.co.uk/news/world/1579185/Pakistan-Imran-Khan-no-confidence-vote-Pakistani-Army-vn>.

⁵³⁵ Krzysztof Iwanek, "Government Change in Islamabad Will Not Derail China-Pakistan Relations," *The Diplomat*, April 1, 2022. <https://thediplomat.com/2022/04/government-change-in-islamabad-will-not-derail-china-pakistan-relations/>.

⁵³⁶ Umair Jamal, "Pakistan Alarmed Over India's Accidental Missile Firing," *The Diplomat*, March 14, 2022. <https://thediplomat.com/2022/03/pakistan-alarmed-over-indias-accidental-missile-firing/>.

⁵³⁷ Rezaul Laskar, "'Pakistan Desires Peaceful Ties,' Says Shehbaz Sharif in Response to PM Modi," *Hindustan Times*, April 12, 2022. <https://www.hindustantimes.com/world-news/pakistan-desires-peaceful-ties-says-shehbaz-sharif-in-response-to-pm-modi-101649756861148.html>.

capitalize on the durability of the ceasefire to establish lasting peaceful relations.⁵³⁸ The synchronized message from Pakistan's civilian and military leadership at first glance seems to suggest an opening for the two states.

Peace is a tall order, however. Sharif's speech included the condition that India unwind the abrogation of Article 370 of the Indian Constitution, a move that effectively forced full-fledged Indian rule into Kashmir.⁵³⁹ Follow-up legislation building on the constitutional abrogation also attempted to establish the Territory of Ladakh in land disputed with China.⁵⁴⁰ Relations between the new Prime Minister (who must face election again within two years) and India are thus off to a very complicated start in a context where a simple continuation of the ceasefire will be a noteworthy achievement.

In addition to its performance as an efficient procurer, Pakistan was distinct from the first two cases explored because it had long articulated a narrative of existential threat from India where Australia and India struggled to frame their stance toward China the same way. The next and final case study chapter will explore the conventional deterrent procurement experience of Taiwan, who arguably faces the clearest, most imminent, and most existential threat to its existence.

⁵³⁸ Umer Farooq, "General Bajwa Has an Ambitious Vision of Normalising Relations with India. Will He Succeed?" *The Friday Times*, April 13, 2022. <https://www.thefridaytimes.com/2022/04/13/general-bajwa-has-an-ambitious-vision-of-normalising-relations-with-india-will-he-succeed/>.

⁵³⁹ Sharangee Dutta, "New Pak PM Shehbaz Sharif Puts Kashmir as Condition to Have Good Ties with India," *Hindustan Times*, April 11, 2022. <https://www.hindustantimes.com/india-news/new-pak-pm-shehbaz-sharif-puts-kashmir-as-condition-to-have-good-ties-with-india-101649689282629.html>.

⁵⁴⁰ Ibid.

CHAPTER SEVEN

Taiwan

Taiwan's attributes reflect politically stable and economically developed country. Its advanced democracy earns high marks from the non-profit Freedom House, whose index of political and civil liberties awards it a score of 93 out of a possible 100 (ten points higher than the United States' score).⁵⁴¹ Ranking twenty-second the world by nominal GDP, and 40th per capita places Taiwan solidly in the upper quintile of economies the world over.⁵⁴² Under normal circumstances, a country with this profile would not face difficulties in building a modern if lean conventional arsenal; it would not logically face embargoes or a dearth of capital. Instead, Taiwan's status as a contested state claimed by China presents it with both an urgency to procure deterrent capabilities and substantial international political obstacles to doing so easily.

The analytic window opened with Taiwan able to credibly advertise superior conventional armament relative to China's in some respects. Taiwan's inability to compete with the pace of China's development-driven military modernization meant that the edge was narrowly gone 2010 and the scales overwhelmingly tipped in China's favor years before 2020 (see figure 7-2). While it is unlikely that Taiwan could

⁵⁴¹ "Global Freedom Status 2022," *Freedom House*. <https://freedomhouse.org/explore-the-map?type=fiw&year=2022>.

⁵⁴² "World Economic Outlook." <https://www.imf.org/en/Publications/WEO/weo-database/2021/October>.

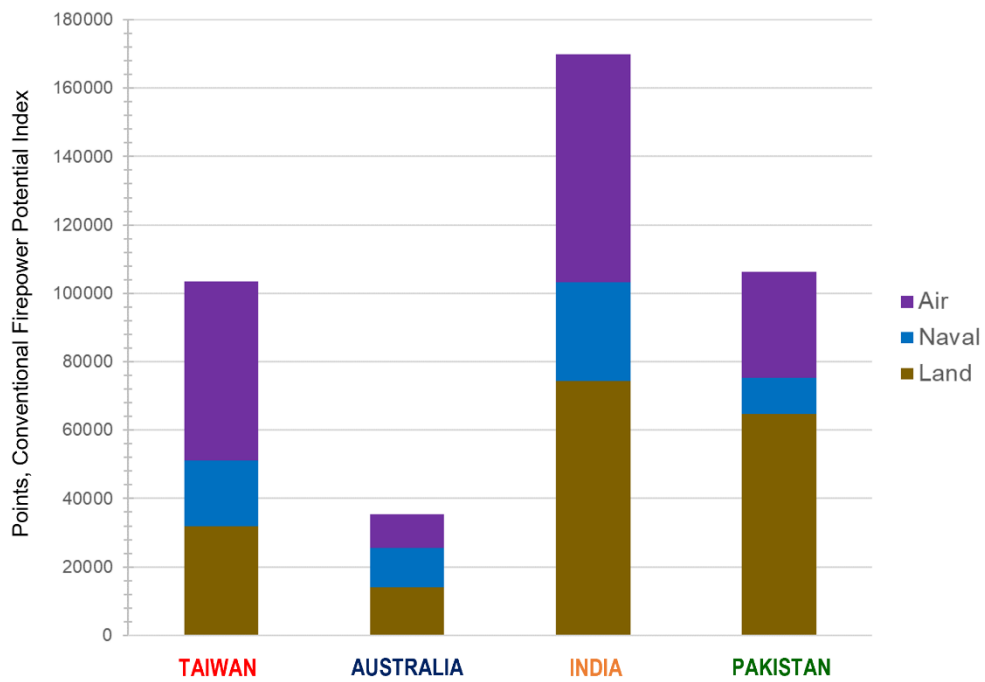


Figure 7.1: Taiwan's 2020 CFPI Score Compared to Other Cases

Sources: CFPI, IISS

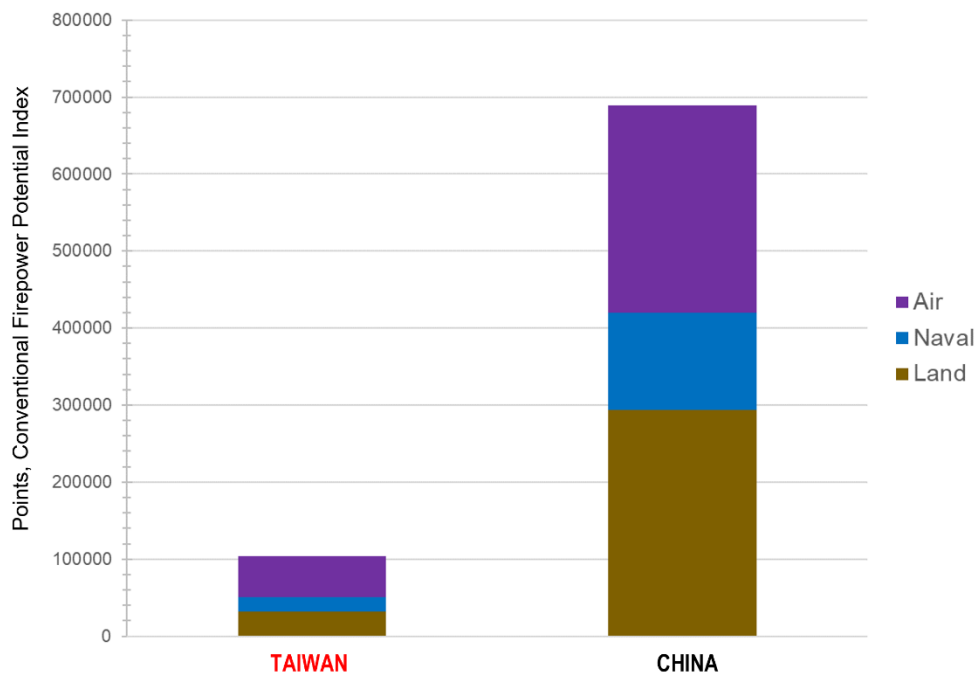


Figure 7.2: Taiwan and China 2020 CFPI Scores

Sources: CFPI, IISS

have kept pace with China's explosive advancement under the best of conditions, Taiwan's conventional capability procurement exhibits dysfunctions that echo those of all three of the other case states. Like Pakistan, Taiwan remains to some degree subject to the pathologies of military dictatorship in its formative years with ramifications for civil control despite its successful democratization. Like India, Taiwan's procurement efforts suffer from direction changes, a lack of focus and civil-military rapport, under-allocation, underspending, and political difficulty accepting the need for asymmetric deterrence compounded by the obstacles presented by its status as a contested state. Like Australia, service territoriality by Taiwan's senior military leadership directly impedes the most efficient capability procurement paths, a particularly tragic reality for the island's remarkable and hard-won indigenous production capacity.

The first section of this chapter visits junctures in Taiwan's security that then and now inform the perspectives of its political and military leadership's deterrent capability procurement decisions over three historical periods. Next, I trace Taiwan's observable performance in each of the studied variables, culminating in a focus on civil control, service territoriality, and domestic politics. Finally, I examine recently emerged possibilities that could define Taiwan's defense trajectory as a whole, including of course its conventional deterrent procurement.

Background

Taiwan's experiences at critical security junctures are central to understanding the outlook of its military and political leadership's perspectives on acquiring deterrent capabilities. In this section, I describe three stages of these experiences—post-retreat until the end of the U.S. mutual defense treaty, contention with China through 2008, and a new, uneasy pragmatism.

Under U.S. Protection Post-Retreat: 1949-1979

The bitter conflict of the Chinese Civil War saw the transplantation of two million nationalists to the island of Taiwan—already inhabited by six million people—culminating in 1949. Their experience over the course of multiple armed clashes as a revanchist, authoritarian military polity with the deeply committed support of the United States blazed paths for both strategy and strategic signaling. Although loss of widespread international recognition—including a permanent U.N. Security Council seat—was no doubt traumatic, the transition from assured protection by the most powerful country in the world to the ambiguities of the Taiwan Relations Act carried arguably more relevance to Taiwan's confrontation of China.

A Pair of Crises and Clear U.S. Commitment. In 1954 and 1958, the continued contestation of islands just off the coast of mainland China—including the deaths by shelling of several American military advisors to the Republic of China (ROC) forces in 1954) saw the United States strengthen its commitments to the Nationalists, whom it

recognized as comprising the legitimate government of all China.⁵⁴³ Each crisis saw the Joint Chiefs of Staff recommend or at least seriously consider the use of nuclear weapons on the Chinese Communist Party (CCP), and the 1954 Crisis resulted in a mutual defense treaty between the ROC and the United States that prudently excluded islands along the Chinese mainland coast.⁵⁴⁴

Military-Authoritarian Rule. The Nationalists arrived as a military organization in the midst of a war that they planned on fighting and established one-party authoritarian rule under the Kuomintang (KMT).⁵⁴⁵ Chiang Kai-shek, who had overseen purges on the mainland and at least initially vowed to reconquer it, would rule for more than a quarter-century after the retreat.⁵⁴⁶ While the KMT would lead Taiwan through initial economic reforms and eventual democratization, the traumas of the Chinese Civil War and the legacy of the KMT created a distinct brand of prestige-centered militarism that continues to manifest in the perspectives of the modern KMT and the Taiwanese military.⁵⁴⁷

Loss of Recognition and Formal Protection. Following repeated petitions and votes, the Chinese Communist Party finally passed the required vote threshold in the

⁵⁴³ John Franklin Copper, *Taiwan: Nation-State or Province?* 7th edition, (New York: Routledge, 2019), p. 65.

⁵⁴⁴ Ibid.

⁵⁴⁵ Ibid., p. 144.

⁵⁴⁶ Christopher Hughes, *Taiwan and Chinese Nationalism: National Identity and Status in an International Society* (London: Routledge, 1997), chapter 1.

⁵⁴⁷ Dee Wu, "The KMT's Defense Policy: Toward a Symmetric Posture," *The Diplomat*, April 1, 2022. <https://thediplomat.com/2022/04/the-kmts-defense-policy-toward-a-symmetric-posture/>.

General Assembly in 1971 to assume the representation of China.⁵⁴⁸ The next few years saw the rapid flight of diplomatic missions from Taipei to Beijing, culminating on January 1st, 1979 with President Carter's announcement that the United States would sever formal relations with Taiwan in conjunction with a one-year sunset on the U.S.-Republic of China Mutual Defense Treaty.⁵⁴⁹ Although Congress partly mitigated this through the passage of somewhat less strongly-worded commitments in the Taiwan Relations Act (TRA) in the same year, Taiwan's position undeniably became substantially more precarious with the withdrawal of treaty-bound American protection.⁵⁵⁰

A Hoard of Arms. Taiwan's arsenal during this period largely reflected its armament by an early Cold War-focused United States that had been keen to see communism turned back in China. These included fighter aircraft, artillery, naval vessels, and various armored vehicles.⁵⁵¹ That some of these now-ancient platforms remain in service with the ROC's armed forces as of this writing reflects an arms hoarding mindset precipitated by the uncertain knowledge of which states would be willing to transfer weapons to Taiwan following the loss of recognition.⁵⁵²

⁵⁴⁸ Copper, p. 251.

⁵⁴⁹ Ibid., p. 252.

⁵⁵⁰ David Tawei Lee, *The Making of the Taiwan Relations Act: Twenty Years in Retrospect* (Hong Kong: Oxford University Press, 1999), chapter 7.

⁵⁵¹ Ralph N. Clough, *Reaching Across the Taiwan Strait* (Boulder, CO: Westview Press, 1993),

⁵⁵² Dennis Hickey, *United States-Taiwan Security Ties: From the Cold War to Beyond Containment* (Westport, CT: Praeger, 1994), p. 124.

Contention with China, 1980-2008

With only a remnant of its international recognition left and under less formal U.S. protection, Taiwan's leaders after Chiang Kai-Shek had to grapple with questions of long-term existence. This period saw thawing of the position toward China overall despite the pronounced disruption of another crisis, varying levels of demonstrated U.S. commitment, and an intensifying problem of access to military materiel.

Three "No"s to 92 Consensus. President Chiang Ching-Kuo (Chiang Kai-Shek's son) responded to the termination of the mutual defense treaty by reiterating three "no"s with respect to China: no contact, no negotiation, and no compromise.⁵⁵³ However, Taiwan's relationship with mainland China gradually became more pragmatic, as public opinion and the socio-economic reality on the ground did not support a strict separation.⁵⁵⁴ "Pragmatic diplomacy" was precisely the policy that Lee Teng-hui (the first Taiwanese-born ROC President, and subsequently the first directly elected) pursued, and he both terminated Taiwan's formal war footing against Beijing and engaged in direct talks resulting in the deliberately vague "92 Consensus" basis for resumed cross-strait relations.⁵⁵⁵

"Breaking Out" into Another Crisis. Lee balanced his rapprochement with an assertion of Taiwan's right to engage in sovereign international relations, and as part of

⁵⁵³ Dennis Hickey, *Foreign Policy Making in Taiwan: From Principle to Pragmatism* (London: Routledge, 2007), pp. 83-87.

⁵⁵⁴ Andrew J. Nathan, "The Effect of Taiwan's Political Reform on Taiwan-Mainland Relations," in *Political Change in Taiwan*, edited by Tun-jen Cheng and Stephen Haggard (Boulder, CO: Lynne Rienner Publishers, 1992) p. 211.

⁵⁵⁵ Copper, p. 251.

his desire to “break out” of the island’s isolation he traveled to the United States on an officially sanctioned visit in 1995.⁵⁵⁶ This combined with other tensions precipitated another Taiwan Straits Crisis, this time featuring the PRC conducting missile tests that impacted the water perilously close to Taiwan. The United States interceded for Taiwan, dispatching two carrier groups to the vicinity of the Taiwan Strait in a breathtaking show of force.⁵⁵⁷

Partnership Under the Taiwan Relations Act. The response to the crisis had been a monumental demonstration of American commitment and prompted rumors of the end of “strategic ambiguity” despite overtures toward China by the Clinton Administration.⁵⁵⁸ Ultimately, cooperation on theater missile defense with South Korea and Japan would preclude a strategic partnership with the PRC, and an incident soon after in the Bush Administration involving the fatal collision of a Chinese fighter and a U.S. EP-3 reconnaissance plane saw President George W. Bush vowing to do “whatever it took” to protect Taiwan.⁵⁵⁹ This phrase would be the source of speculation when in 2005 China’s parliament enacted a law in response to independence rhetoric by the Chen administration vowing that China would use “non-peaceful means” if necessary.⁵⁶⁰

Arms Access. Taiwan faced a mounting problem during this period: it did not have continuously reliable access to weapons markets to update its armed forces even as

⁵⁵⁶ Alan M. Wachman, *Why Taiwan? Geostrategic Rationales for China’s Territorial Integrity* (Stanford, CA: Stanford University Press 2007), p. 14.

⁵⁵⁷ Copper, p. 265.

⁵⁵⁸ Ibid.

⁵⁵⁹ Hickey, *Foreign Policy Making in Taiwan*, p. 36.

⁵⁶⁰ Copper, p. 274.

the PRC embarked on a massive military modernization effort. In 1982 Washington actually promised Beijing that it would end arms sales to Taiwan, though it reserved the right to transfer technology and imparted the knowledge to manufacture a range-governed indigenous multirole fighter.⁵⁶¹ Following the purchase of two Dutch submarines, the PRC placed so much pressure on the Government of the Netherlands that the otherwise-prolific exporter refused to accept any more Taiwanese business.⁵⁶² In 1992, however, the George H. W. Bush administration authorized the sale of F-16A/B fighters and the French government followed suit with Mirages.⁵⁶³ Following the EP-3 incident, the George W. Bush administration authorized a raft of equipment sales and transfers, including Kidd-Class guided missile destroyers⁵⁶⁴ and Patriot air defense missile systems.⁵⁶⁵

Pursuing Uneasy Pragmatism since 2008

As genuine electoral democracy in Taiwan entered its second decade, the Ma presidency lowered cross-strait tensions but had to confront the dual realities that China was surpassing Taiwan in many respects and that the views of the Taiwanese people were evolving. With dwindling international recognition and a looming, conventionally-

⁵⁶¹ Ibid., p. 258.

⁵⁶² Ibid., p. 257.

⁵⁶³ Clough, pp. 156-157.

⁵⁶⁴ Hunzeker and Lanoszka, p. 59.

⁵⁶⁵ Jonathan D. Pollack, "Short-Range Ballistic Missile Capabilities," in *If China Attacks Taiwan: Military Strategy, Politics and Economics*, edited by Steve Tsang (London: Routledge, 2006), pp. 57-72.

superior China, the Tsai administration's challenges include both the running of an economically thriving liberal democracy and arming a state that at least theoretically faces conquest at any time.

"Viable Diplomacy." Ma Ying-jeou's assumption of the presidency followed a period of increased isolation for Taiwan on a variety of fronts, and he prioritized improvements in both cross-strait and Taiwan-U.S. relations.⁵⁶⁶ The Ma administration attempted to use reduced tensions with the PRC to make engagement with Taiwan appear less risky to other states to considerable success.⁵⁶⁷

Changing Domestic Sentiment. Public sentiment initially supported Ma's reaching across the strait; however, by the end of his term his approach to China was seen as compromising Taiwanese autonomy.⁵⁶⁸ Taiwan's first female president and its second from the Democratic Progressive Party (DPP), Tsai Ing-wen won election and re-election in 2016 and 2020 amid an electorate where more voters than ever thought of themselves as uniquely Taiwanese.⁵⁶⁹ Although public opinion polling in late 2021 demonstrated that the defense of Taiwan was seen as a remote issue by most Taiwanese,⁵⁷⁰ the February 2022 invasion of Ukraine by Russia has catapulted the island's readiness for a

⁵⁶⁶ Copper, p. 252.

⁵⁶⁷ Ibid.

⁵⁶⁸ Ibid.

⁵⁶⁹ Shannon Tiezzi, "Taiwan Shouts Back: President Tsai Wins Re-Election Despite China's Pressure Campaign," *The Diplomat*, January 12, 2020. <https://thediplomat.com/2020/01/taiwan-shouts-back-president-tsai-wins-re-election-despite-chinas-pressure-campaign/>.

⁵⁷⁰ Liam Gibson. "Taiwan Says It Is 'Preparing For War,' But Are Taiwanese Mentally Ready?" *The Diplomat*, October 25, 2021. <https://thediplomat.com/2021/10/taiwan-says-it-is-preparing-for-war-but-are-taiwanese-mentally-ready/>.

potential PRC invasion to the front and center of public consciousness and domestic political debate.⁵⁷¹

A Precarious International Position. As has been the case since losing the UN seat in 1971, a constant concern for Taiwan during this period has been its international recognition. Taiwan participates in some 37 international organizations⁵⁷² but has recognition from few other states. The Solomon Islands' recent decision to sever diplomatic ties with Taiwan in favor of closer cooperation with the PRC amid accusations of bribery and political interference from both Taipei and Beijing illustrates the high stakes that Taiwan accords these relationships as well as their vulnerability to PRC engagement.⁵⁷³

Overall Defense Concept...Or Not. Taiwan's Ministry of National Defense made waves among strait-watchers when it announced the "Overall Defense Concept" (ODC), a new approach to Taiwan's defense that would eschew symmetric and gray-zone provocation-answering approaches to the island's defense in favor of many small, smart, survivable platforms.⁵⁷⁴ Although Taiwan continues to use the language of "asymmetric defense" in MND publication, analysts have pointed out that since the retirement of

⁵⁷¹ Brian Hioe, "Taiwan Watches the Ukraine Invasion and Asks: Are We Ready?" *The Diplomat*, March 15, 2022. <https://thediplomat.com/2022/03/taiwan-watches-the-ukraine-invasion-and-asks-are-we-ready/>.

⁵⁷² Copper, p. 288.

⁵⁷³ Baron, James. "Taiwan Must Avoid Pouring Fuel on Solomon Islands Fire." *The Diplomat*, December 8, 2021. <https://thediplomat.com/2021/12/taiwan-must-avoid-pouring-fuel-on-solomon-islands-fire/>.

⁵⁷⁴ Lee His-ming and Eric Lee. "Taiwan's Overall Defense Concept, Explained." *The Diplomat*, November 3, 2020. <https://thediplomat.com/2020/11/taiwans-overall-defense-concept-explained/>.

Admiral Lee His-Ming as Chief of the General Staff its service chiefs have prioritized the acquisition of platforms associated with a (mathematically doomed) symmetric balancing approach to the PRC.⁵⁷⁵

Conventional Firepower Potential Procurement Efficiency, 2000-2020

Taiwan's procurement efficiency throughout the study appeared generally higher than India's and Australia while still being approximately a third of Pakistan's; although some twenty country's arsenal scores for 2021 are coded in the CFPI, more longitudinal procurement analysis is needed before Taiwan's efficiency score can be characterized as low or merely lower than Pakistan's (unusually high) score. Nevertheless, some remarkable attributes of Taiwan's procurement stand out, particularly given the existential threat it faces from China. Taiwan's three-year threat focus ratio was higher than India's at 53.1 percent, but considerably lower than Pakistan's. Its complex goal vendor ratio was unsurprisingly high at 87.3 percent given its heavy reliance on the United States over the analytic window. Taiwan also displayed the second-highest average score for responsible procurement practices at 3.22.

As with the other cases, this section will visit Taiwan's performance in each of the measured variables to identify the corresponding pattern of events. The section starts by reviewing Taiwan's procurement spending, efficiency, and capabilities added by major system. Second, I look deeper at each of threat focus, vendor goals, and

⁵⁷⁵ Michael A. Hunzeker, "Taiwan's Defense Plans Are Going Off the Rails," *War on the Rocks*, November 18, 2021. <https://warontherocks.com/2021/11/taiwans-defense-plans-are-going-off-the-rails/>.

procurement practices to identify explanatory events. Finally, I elaborate on the roles of service territoriality, civil control, and domestic politics in Taiwan's attempts to procure a conventional deterrent capability.

Procurement Spending, System Addition Modalities, and CFPI

Taiwan's procurement spending rose slightly over the course of the analytic window. The ROC Armed Forces pursued a balance of capability addition modalities that was slightly heavy in augmentation reflective of the hoarding mentality referenced earlier in this chapter.

Budgets. Taiwan's conventional procurement budget rose negligibly on average over the course of the study, exhibiting both upward and downward fluctuations. Taiwan was the only case that did not increase its annual procurement spending by a substantial percentage in absolute terms between 2000 and 2020 (see figure 7-3). This relatively anemic procurement spending did not distinguish between party control, with one key exception: the two largest year-over-year increases in procurement spending (and defense budget writ large) occurred under DPP control of both the Legislative Yuan and the Presidency in 2006 through 2008 (see figure 7-4). Despite having set a goal of three percent of GDP on overall defense spending,⁵⁷⁶ Taiwan's spending has struggled to exceed the two percent mark.⁵⁷⁷

⁵⁷⁶ Hunzeker and Lanozka, p. 47.

⁵⁷⁷ Ministry of National Defense (Taiwan), *National Defense Report 2021* (2021), p. 131.

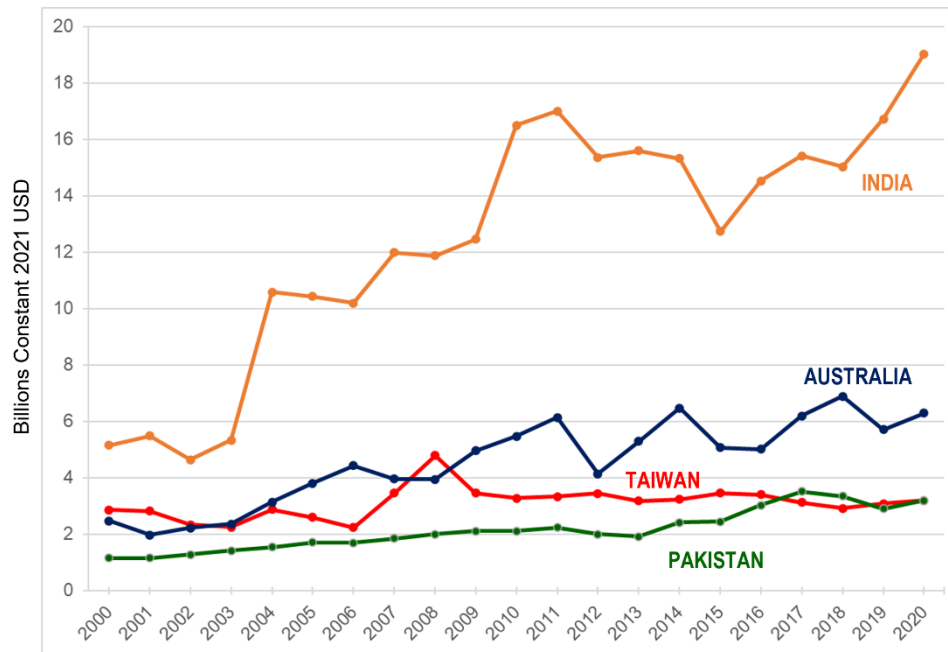


Figure 7.3: Equipment Procurement and Modernization Spending, 2000-2020

Sources: Ministry of Finance (Pakistan), Ministry of Finance (India), Department of Defence (Australia), Department of National Defense (Taiwan), SIPRI

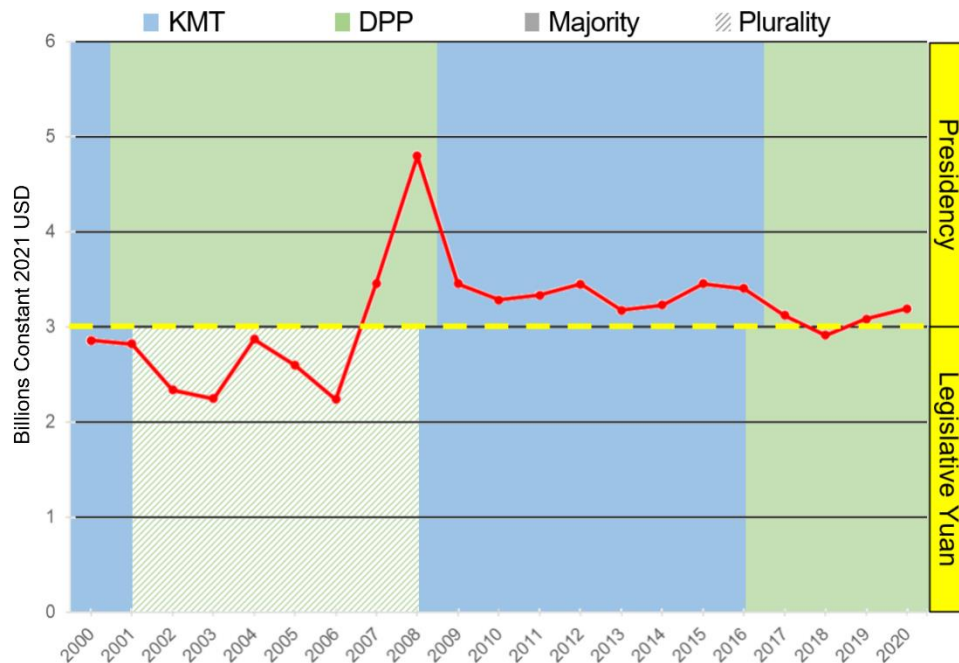


Figure 7.4: Taiwan's Procurement and Modernization Spending by Party Control

Source: Britannica

Systems and Capability Addition Modalities. Taiwan's military pursued a balance of capability additions, augmenting rather than replacing in some cases likely because of the uncertainty Taiwan faces with regard to opportunities for arms imports. Taiwan's indigenous defense production capacity shows great and increasing promise for both coastal combatant vessels and fighter jets; however, the desirability of the former to the services and the advisability of the latter in the event of a PRC invasion are both in question.

Taiwan introduced seven conspicuous capabilities during the analytic window. These include: (1) the F-CK-1A/B multirole fighter, 1992-2000;⁵⁷⁸ (2) the *Ching Chiang*-class guided missile corvette, 1994-2006;⁵⁷⁹ (3) the CM-32 wheeled infantry fighting vehicle family, 2007-2017;⁵⁸⁰ (4) the HF-IIE surface-to-surface cruise missile system, 2011-2014;⁵⁸¹ (5) the HF-III road-mobile anti-ship cruise missile system, 2013-ongoing;⁵⁸² (6) the TK-III road-mobile air defense missile system, 2019-ongoing; and (7) the *Tuo Jiang*-class stealth multirole guided missile corvette, ongoing since 2019.⁵⁸³ Notably, all seven of these platforms are indigenously produced, with the F-CK-1A/B made possible by technology transfer from the United States.⁵⁸⁴ Although early

⁵⁷⁸ IISS, *The Military Balance* (1997-2001).

⁵⁷⁹ IISS, *The Military Balance* (1997-2007).

⁵⁸⁰ IISS, *The Military Balance* (2006-2018).

⁵⁸¹ IISS, *The Military Balance* (2010-2015).

⁵⁸² IISS, *The Military Balance* (2012-2021).

⁵⁸³ IISS, *The Military Balance* (2018-2021).

⁵⁸⁴ Copper, p. 258.

advanced platform manufacturing efforts were considerably more expensive than importing weapons would have been, Taiwan's indigenous production of a variety of missiles, small coastal combatant surface vessels, and fighter jets is increasingly economical and has the potential to become more so (notwithstanding questions of political will or bureaucratic ability to focus on cost-effective systems).⁵⁸⁵ Indigenous production does not come without its hazards. The CM-32 in particular was marred by a production scandal wherein executives of the manufacturer violated their contracts by sourcing cheap parts from mainland China that resulted in breakdowns and fires during testing; these issues have been resolved and multiple executives were convicted on corruption charges.⁵⁸⁶

Taiwan augmented more than it employed any other addition modality, including in some instances where a state with reliable access to arms imports would probably have carried out a replacement. Augmenting inductions included: (1) *Chi-yang*-class (*Knox*-class) guided missile frigate with the *Cheng Kung*-class (*Perry*-class) guided missile frigate, 1993-2004;⁵⁸⁷ (2) M48A5 and M48H main battle tanks with the M60A3/TTS, 1996-2001;⁵⁸⁸ (3) Mirage 2000-5E air superiority fighter with F-16A/B, 1997-2001;⁵⁸⁹

⁵⁸⁵ David An, Matt Schrader, and Ned Collins-Chase, *Taiwan's Indigenous Defense Industry: Centralized Control of Abundant Suppliers* (Washington, DC: Global Taiwan Institute, 2018), pp. 6-8.

⁵⁸⁶ "CHEM Officials Receive Jail Terms for Armored Vehicle Procurement Fraud." *Focus Taiwan*, October 20, 2021. <https://focustaiwan.tw/society/202110200017>.

⁵⁸⁷ IISS, *The Military Balance* (1997-2005).

⁵⁸⁸ IISS, *The Military Balance* (1997-2002).

⁵⁸⁹ Ibid.

(4) KF-3/4/6 rocket artillery system with the RT-2000, 2007-2012;⁵⁹⁰ (5) LVTP-5A amphibious assault vehicle with AAV-7A1, 2008-2010;⁵⁹¹ and (6) AH-1S/W helicopter with the AH-64E, 2013-2018.⁵⁹² An attack helicopter fleet that mixes AH-1s with AH-64Es represents a span of more than fifty years and a blend of one of the oldest such platforms in service with one of the newest;⁵⁹³ it would arguably not be unreasonable to compare the functional difference between the two to that between a typewriter and a new laptop computer. Of these platforms, only the RT-2000 multiple launch rocket system is indigenously produced.⁵⁹⁴

Taiwan carried out four major upgrades during the analytic window, although it frequently solicits for upgrades to its systems from the countries that originally manufactured them. Upgrades included: (1) GDF-003 air defense gun system to GDF-006 standard, 2009-2012;⁵⁹⁵ (2) *Ching Chiang*-class guided missile corvette (sensors and missiles), 2012-2019;⁵⁹⁶ (3) F-CK-1A/B multirole fighter jets to F-CK-1C/D variant, 2017-2019;⁵⁹⁷ and (4) upgrade of F-16A/B air superiority fighter jets to F-16V multirole

⁵⁹⁰ IISS, *The Military Balance* (2006-2013).

⁵⁹¹ IISS, *The Military Balance* (2007-2011).

⁵⁹² IISS, *The Military Balance* (2012-2019).

⁵⁹³ Franz-Stefan Gady, "Taiwan Stands Up 1st Apache AH-64E Attack Helicopter Brigade," *The Diplomat*, July 18, 2018. <https://thediplomat.com/2018/07/taiwan-stands-up-1st-apache-ah-64e-attack-helicopter-brigade/>.

⁵⁹⁴ An, Schrader, and Collins-Chase, p. 7.

⁵⁹⁵ IISS, *The Military Balance* (2008-2013).

⁵⁹⁶ IISS, *The Military Balance* (2011-2020).

⁵⁹⁷ IISS, *The Military Balance* (2016-2020).

variant, ongoing since 2019.⁵⁹⁸ Of these, all but the F-16V upgrade (undertaken in conjunction of delivery of jets built to the V standard) were carried out completely indigenously. The low cost but high capability delivery (improved avionics, weaponry compatibility, sensors, targeting, and greatly increased range) for the F-CK-1C/D fleet upgrade has the result of greatly improving the lifetime procurement and modernization cost effectiveness per aircraft, which were disproportionately expensive at their initial manufacture.⁵⁹⁹

Not surprisingly given a history of sporadic availability of weapon imports, Taiwan replaced the fewest systems of any case states. Replacements included: (1) the *Kee Lung*-class (*Kidd*-class) guided missile destroyer for the *Yang*-class (*Gearing*-class) guided missile destroyer, 2004-2008;⁶⁰⁰ (2) the *Kuang Hua VI*-class fast attack missile craft for the *Hai Ou*-class missile boat, 2009-2013;⁶⁰¹ and (3) the S-2T antisubmarine warfare aircraft with the P-3C Orion, 2012-2017.⁶⁰² The *Kuang Hua* vessels are the only indigenously designed and produced platforms of this list.

⁵⁹⁸ IISS, *The Military Balance* (2019-2021).

⁵⁹⁹ “AIDC Delivers Last Advanced Function IDF C/D Models to ROCAF,” Aerospace Industrial Development Corporation, October 18, 2018. <https://www.aidc.com.tw/en/news/344>.

⁶⁰⁰ IISS, *The Military Balance* (2003-2009).

⁶⁰¹ IISS, *The Military Balance* (2008-2014).

⁶⁰² IISS, *The Military Balance* (2011-2018).

Threat Focus

China's avowed intent to "unify" with Taiwan and its repeated armed provocations⁶⁰³ comprise arguably the most salient existential conventional threat faced by any of the case states. Only 53.1 percent of Taiwan's procurement reflected matching or countering focus on the threat of Chinese invasion or violent coercion.

Chinese Threats. China has two options to visit conventionally armed violence on Taiwan: standoff strikes or a large-scale combined arms cross-strait invasion. Either will require a critical mass of firepower delivered by aircraft, naval vessels, and land-based missile systems. I coded Chinese threats to Taiwan throughout 2000-2020 as vessels, fixed-wing aircraft, and missiles.

As previous sections in this chapter have covered, the threat awareness of Taiwan's national security establishment may not coincide with the opportunity to procure weapon systems. Was Taiwan able to procure systems for either symmetric (matching) or asymmetric (countering) deterrence?

Matching. Taiwan's KMT party and service chiefs advocate a symmetric deterrence policy procuring large surface combatants and fixed-wing aircraft to contest gray zone provocations.⁶⁰⁴ Taiwan did engage in matching procurement during the window, perhaps as some combination of deliberate and opportunistic acquisition. Specifically, acquiring and upgrading fighter aircraft, destroyers, and frigates constituted

⁶⁰³ "Taiwan Reports New Large-Scale Chinese Air Force Incursion," *Al Jazeera*, January 23, 2022, <https://www.aljazeera.com/news/2022/1/23/taiwan-reports-new-large-scale-chinese-air-force-incursion>.

⁶⁰⁴ Raymond Kuo, "The Counter-Intuitive Sensibility of Taiwan's New Defense Strategy," *War on the Rocks*, December 6, 2021. <https://warontherocks.com/2021/12/the-counter-intuitive-sensibility-of-taiwans-new-defense-strategy/>.

matching procurement. Taiwan can attribute nearly a quarter (23.4 percent) of its overall CFPI score gain to these platforms and their estimated cost is a third of the total procurement spending over the analytic window (~31.3 percent). Setting aside the tactical wisdom or lack thereof, matching China's acquisition of large, advanced platforms does not seem economically feasible (see figure 7.5).

Countering. Taiwan procured countering platforms, including air superiority fighters, air defense missile systems, anti-ship missile systems, corvettes, and missile boats/fast attack craft. Countering platform expenditure accounted for an estimated one-third of the Taiwan's procurement spending (~34.1 percent) in 2000-2020. However, inducted or upgraded countering platforms also represented nearly two-thirds of Taiwan's overall CFPI score gain (63.1 percent) in the period 2000-2020. Of the countering systems listed above, only the air superiority fighters (American F-16A/B and French Mirage 2000-5E) were not indigenously produced. The TK-III air defense missile system,⁶⁰⁵ HF-III anti-ship missile system,⁶⁰⁶ and Huang Kua fast attack missile craft⁶⁰⁷ all represent advanced capabilities of their type that telegraph painful area denial tactics and can be produced cost-effectively in Taiwan assuming continued access to components not also produced locally. The *Ching Chiang*-class corvette (which was

⁶⁰⁵ "TK III Air Defense Weapon System," *National Chung-Shan Institute of Science and Technology*, accessed April 16, 2022. https://www.ncsist.org.tw/eng/csistdup/products/product.aspx?product_Id=11&catalog=28.

⁶⁰⁶ "Taiwan Deploys More Anti-Ship Missiles." *Asian Military Review*, September 3, 2021. <https://www.asianmilitaryreview.com/2021/09/taiwan-deploys-more-anti-ship-missiles/>.

⁶⁰⁷ Michael Thim and Liao Yen-Fan, "Taiwan Navy Emphasizing Domestic Shipbuilding Program in Ongoing Maritime Restructure," *USNI News*, March 25, 2016. <https://news.usni.org/2016/03/25/taiwan-navy-emphasizing-domestic-shipbuilding-program-in-ongoing-maritime-restructure>.

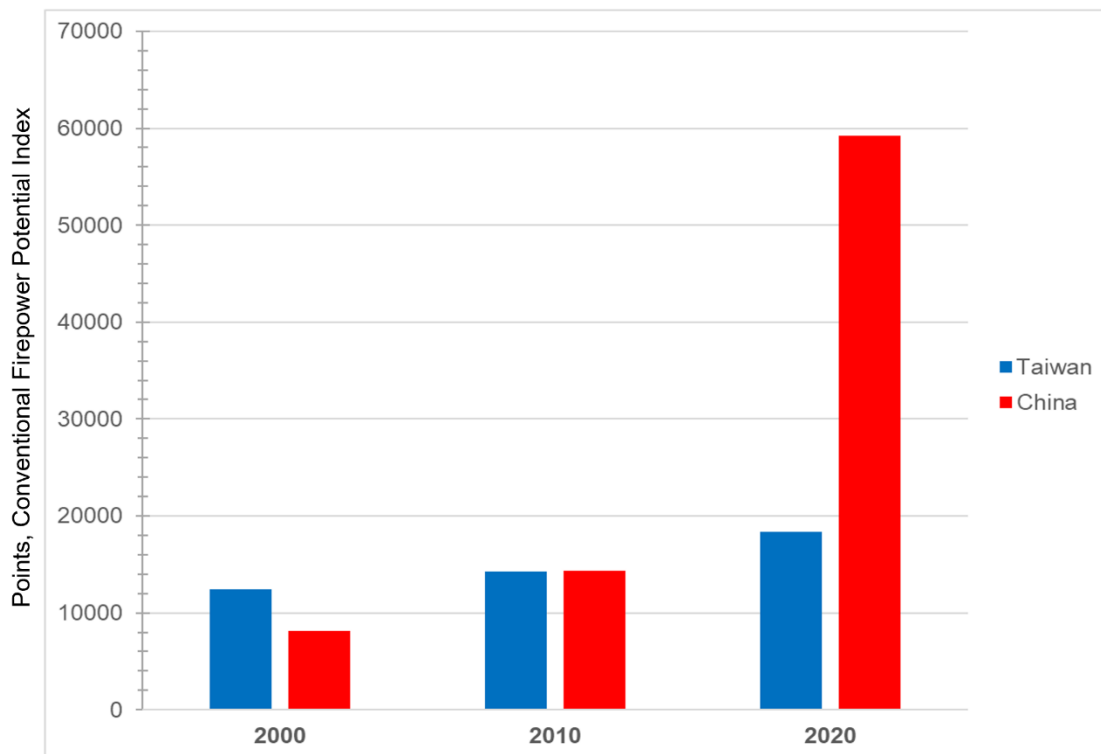


Figure 7.5: Surface Fleet CFPI Scores, 2000, 2010, and 2020

Sources: CFPI, IISS

upgraded with newer missiles) remains competitive, while the *Tuo Chiang*-class stealth corvette constitutes one of the most cutting-edge platforms of its type anywhere in the world.⁶⁰⁸ Independent of any tactical wisdom of favoring the procurement of threat-countering (asymmetric) platforms over threat-matching (symmetric) ones, Taiwan has demonstrated that it can obtain considerably more bang (or at least, more flash) for the buck by indigenously producing advanced asymmetric defensive platforms.

⁶⁰⁸ Larson, Caleb. "Taiwan Adds Another 'Carrier Killer' Corvette as it Strengthens its Defenses Against China." *Business Insider*, September 15, 2021. <https://www.businessinsider.com/taiwan-adds-stealth-carrier-killer-corvette-as-it-strengthens-defenses-2021-9>.

Vendor Goals

Since its relocation to the island of Taiwan, the ROC has been overwhelmingly reliant on the United States for its access to non-indigenously produced conventional weaponry. As measured by SIPRI, 87.2 percent of Taiwan's weapons imports in the period 2000-2020 originated in the United States.⁶⁰⁹ Beyond the quantitative association indicated by the regression analysis, a deeper look at the American approach to arms transfers to Taiwan suggests that the United States has a goal of effectively enhancing the efficiency of Taiwan's conventional deterrent procurement spending as a matter of strategy and policy.

Throughout the analytic window, executive and legislative officials in the United States espoused a goal of helping Taiwan's defensive capabilities. Examples include presidential actions,⁶¹⁰ multiple bi-partisan pro-Taiwan defense bills introduced each year,⁶¹¹ and explicitly stated and reaffirmed intent to empower Taiwan and modernize its defenses in strategic documents.⁶¹²

Taiwan further enjoys a privileged status relative to all other importers of American weapons. All other transfers of weaponry by the United States to other states are primarily governed by two statutes: the Foreign Assistance Act (FAA) of 1961 and

⁶⁰⁹ "Arms Transfers Database." <https://www.sipri.org/databases/armstransfers>.

⁶¹⁰ "Obama to Push Ahead on Taiwan Frigate Sales despite Chinese Anger," *CNBC*, December 15, 2015, <https://www.cnbc.com/2015/12/14/obama-to-push-ahead-on-taiwan-frigate-sales-despite-chinese-anger.html>.

⁶¹¹ "Why US Lawmakers Introduce Bill After Bill to Help Taiwan," *Voice of America*, August 3, 2020. <https://www.voanews.com/a/east-asia-pacific-why-us-lawmakers-introduce-bill-after-bill-help-taiwan/6193842.html>.

⁶¹² *Indo-Pacific Strategy of the United States*, pp. 9, 13-15.

the Arms Export Control Act (AECA) of 1976.⁶¹³ FAA and AECA mandate a number of rigorous requirements, including determination that the transferred articles will be used in a manner consistent with the UN Charter.⁶¹⁴ Arms sales and transfers to Taiwan are governed by the TRA of 1979, which is specifically written to supersede the FAA and AECA and simply requires a determination by the executive branch and Congress that the weapons contribute to self-defense needs of Taiwan.⁶¹⁵ The TRA is further written in a manner that mandates the periodic transfer of weapons to Taiwan: "...the United States *will make available* to Taiwan such defense articles and defense services in such quantity as may be necessary to enable Taiwan to maintain a sufficient self-defense capability."⁶¹⁶

Most U.S. arms transfers to Taiwan made during the analytic window occurred via FMS. Taiwan was not a FMF recipient during the analytic window,⁶¹⁷ meaning that it did not receive any capital funding or payment waiver from the United States. As covered earlier in the dissertation, FMS prices tend to be more favorable to importers than DCS prices for comparable systems.⁶¹⁸ Although a precise tally of DCS carried out during the Trump Administration is not yet available, the breakdown of FMS-DCS transfers during the Obama administration was approximately 70 percent (~14 billion

⁶¹³ U.S. Library of Congress, Congressional Research Service, *Transfer of Defense Articles: Sale and Export of U.S.-Made Arms to Foreign Entities*, by Nathan J. Lucas and Michael J. Vassalotti (R46337) April 30, 2020, p. 4.

⁶¹⁴ Ibid.

⁶¹⁵ Ibid., p. 5.

⁶¹⁶ *Taiwan Relations Act*, PL 96-8 (1979), 22 USC § 3301 et seq.

⁶¹⁷ United States Department of State and United States Agency for International Development, *ForeignAssistance.gov*, interactive database, accessed April 15, 2022. <https://foreignassistance.gov/>.

⁶¹⁸ "Foreign Military Sales vs Direct Commercial Sales."

USD) to 30 percent (~6 billion USD).⁶¹⁹ The Defense Security and Cooperation Agency (DSCA) announced more than 22 billion USD in FMS to Taiwan during the Trump Administration.⁶²⁰ Assuming a comparable ratio, these transfers are evidence of the United States government and industry selling competitive weapons to Taiwan using a blend of transfer instruments that favors advantageous pricing.

Procurement ultimately requires delivery, and sales from the United States can be challenged to transit to Taiwan. Although Taiwan's recent FMS have included high-value platforms (like a purchase in 2020 of 100 coastal defense missile systems),⁶²¹ as of this writing many of these systems have yet to be delivered and pandemic-exacerbated transportation issues make their timeline uncertain.⁶²²

⁶¹⁹ U.S. Library of Congress, Congressional Research Service, *Taiwan: Issues for Congress*, by Susan V. Lawrence and Wayne M. Morrison (R44996), October 30, 2017.

⁶²⁰ U.S. Department of Defense, Defense Security and Cooperation Agency, *Major Arms Sales*, accessed April 15, 2022. <https://www.dscamilitary.com/press-media/major-arms-sales>.

⁶²¹ U.S. Department of Defense, Defense Security and Cooperation Agency, "Taipei Economic and Cultural Representative Office in the United States (TECRO) – RGM-84L-4 Harpoon Surface Launched Block II Missiles" (Transmittal No. 20-68), October 26, 2020.

⁶²² Bryant Harris, "Document Reveals \$14 Billion Backlog of US Defense Transfers to Taiwan," *Defense News*, <https://www.defensenews.com/pentagon/2022/04/14/pandemic-delays-spark-14-billion-backlog-of-us-defense-transfers-to-taiwan/>.

Government Practices

Taiwan's acquisition practices mostly reflected literature-derived prescriptions for accountable and transparent procurement. Government reforms just prior to the analytic window that established the Executive, Legislative, and Control Yuan made Taiwan an exemplary case of specialized entities following statutorily prescribed processes to ensure resource availability, application, and accountability. Under-allocation is a consistent observation throughout the analytic window, although Taiwan's services do not under-spend their allocations as frequently as do India's and the government may be willing to pursue special allocation vehicles. Appropriation is generally transparent and audits appear independent and able to discover and prosecute corruption, although detailed results are not published and procurement practices struggle to incorporate reform recommendations. Table 7-1 contains a summary of observed indicators of Taiwan's procurement practices over the analytic window.

Appropriation and Governance. Taiwan's unicameral legislature, the Legislative Yuan, appropriates and allocates funds for the Ministry of National Defense (MND) and other ministries on the basis of requests submitted by the ministries.⁶²³ Although the Executive Yuan's divisions are called "ministries," they are not truly such because their ministers are political appointees rather than legislators.⁶²⁴ The responsibility for resource requests and force design belongs to the Minister of National Defense,

⁶²³ Copper, p. 129.

⁶²⁴ Ibid., pp. 126-127.

Table 7.1: Taiwan Government Procurement Practice Indicators, 2000-2020

Dimension	Attribute - The degree to which:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1. Appropriation and Governance	A. Military budgeting including procurement is spelled out in law.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. The constitutionally identified head of state approves the defense budget request, including procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. The legislature debates and approves itemized defense spending including procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. The defense ministry/department and military execute the appropriated procurement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2. Rigorous & Repeatable Needs Assessment	A. Procurement undergoes deliberate needs assessment, itself reviewed for improvement.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. Any needs assessment is a repeated and repeatable process.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. Any needs assessment is both threat- and performance-focused.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. Currently executing procurement programs trace to previous needs assessments.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3. Effective Accountability Mechanisms	A. Detailed procurement expenditure is published.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	B. Military procurement expenditure is audited by an independent entity.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	C. Audit results are published.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	D. Most recent reforms map to previous accountability activity.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ Negligible

● Limited

● Substantial

supported by two civilian vice-ministers, a chief of the general staff, and service chiefs.⁶²⁵ The current minister of national defense and both vice-ministers are retired military officers.⁶²⁶ The service chiefs are theoretically equal to the chief of the general staff by protocol, but the chief of the general staff has responsibilities of the role of chief of defense in other states including integrating all services, joint doctrinal decisions, and serving as most senior advisor to the minister on military matters.⁶²⁷ With the exception of the MND underspending by up to 20 percent in 2000 through 2012, Taiwan's appropriations and governance rose to the "substantial" threshold throughout the study.⁶²⁸

Needs Assessment. In theory, Taiwan's MND has a rigorous assessment process intended to identify shortfalls, articulate requirements, assess candidate systems against those requirements, and provide justifications for programming and disbursing funds against the purchase or development of these systems.⁶²⁹ The Operations Directorate (J3) of the General Staff is responsible for generating an Operations Requirement Document (ORD), identifying an operational requirement that—based on existing capabilities and doctrine—must be filled by a new platform or additional copies of an existing platform for approval by the Chief of the General Staff or their delegate, the (military) Director for

⁶²⁵ Ministry of National Defense (Taiwan), *About MND*, accessed April 15, 2022, <https://www.mnd.gov.tw/English/Publish.aspx?p=74731&title=About%20MND&SelectStyle=Ministry%20Of%20National%20Defense>.

⁶²⁶ Ibid.

⁶²⁷ Ibid.

⁶²⁸ Ministry of National Defense (Taiwan), *National Defense Report*, 2004-2021 (all editions).

⁶²⁹ Steven X. Li, *Why So Little? The Curious Case of Taiwan's Defense Spending*, PhD Diss., University of Washington, 2020, p. 159.

Operations.⁶³⁰ A system analysis report (SAR) builds on the ORD to identify how to best fulfill the capability gap, identifying desired platform, quantity, and justification for the Vice Minister for Armaments.⁶³¹ Finally, the Armament Bureau within the ministry itself provides an investment plan detailing the procurement vehicle, sourcing, target price, and financing method and timeline.⁶³² With the approval of the Vice Minister (Armaments), the package (ORD, SAR, and investment plan) is forwarded for inclusion in the Minister's core or special budget request.⁶³³

In practice, this process is routinely used to pinpoint specific systems according to the pre-determination of the service chiefs.⁶³⁴ Since most of the time the two options for sourcing and purchase vehicles are effectively either FMS (or CDS) from the United States and indigenous production, this decision is often made by senior military leaders prior to the ORD development and includes considerations of political feasibility.⁶³⁵ The SAR's development is either service-generated or Ministry-generated depending on a purchase threshold of 1 billion NTD (~34 million USD), meaning that services would be responsible for smaller purchases but that service chiefs and their representatives must lobby and build consensus for larger orders.⁶³⁶ This caused largely "limited"

⁶³⁰ Ibid.

⁶³¹ Ibid., p. 160.

⁶³² Ibid.

⁶³³ Ibid.

⁶³⁴ Ibid., p. 161-164.

⁶³⁵ Ibid., p. 163.

⁶³⁶ Ibid.

performance on the questionnaire when evaluating the rigor and repeatability of the assessment itself.

Taiwan's Ministry of National Defense funds outside experts to participate in less tailored needs assessments that focus more on threats and innovative operational concepts. The trend in the findings of these supplementary assessments is to recommend the purchase of numerous smaller defensive capabilities, particularly incorporating road-mobile and maritime missile systems.⁶³⁷ Prior to such recommendations (the first half of the analytic window), procurement targets reported by MND had no justifications or routine, vague justifications reflective of implicitly understood prestige goals.⁶³⁸ In the latter half, MND documents did not mention the word "asymmetric," with a considerable volume of purchases targeted in the last three years reflective of the emerging ODC.⁶³⁹ This caused "limited" performance on the indicator of procurement practices reflecting assessments until the final three years of the analytic window.

Accountability Mechanisms. Taiwan's Control Yuan has the mission of auditing government agencies for efficiency and investigating suspected misuse of government resources, with the ability to refer criminal enforcement actions if determined to be appropriate.⁶⁴⁰ While the annual report (or "brief report" prior to 2012) includes at least

⁶³⁷ Thomas J. Shattuck, "The Future is Small and Fast: Assessing Taiwan's 2021 Quadrennial Defense Review and U.S. Defense Posture in the Indo-Pacific," *Defense Security Brief*, vol.10, iss. 1, pp. 9-18.

⁶³⁸ Ministry of National Defense (Taiwan), *National Defense Report*, 2002-2009 (all editions).

⁶³⁹ *Ibid.*, 2011-2019 (all editions).

⁶⁴⁰ Control Yuan, "About Us," accessed April 15, 2002, <https://www.cy.gov.tw/en/>.

one MND-related incident summary, neither detailed reports of specific investigations nor the results of routine audits—which occur—appear to normally be made public.^{641,642}

Both the annual reports and the Control Yuan’s public activity focus on the enforcement actions resulting from their investigations. These suggest that the Control Yuan’s autonomy is real and potent, and that procurement in Taiwan has something of a corruption problem. Prominent examples include: (1) the CM-32 manufacturing scandal previously mentioned;⁶⁴³ (2) a minelayer procurement financing fraud scandal resulting in decades-long prison terms sought for the CEO of a shipbuilding firm and his family as well as the dismissal the directors of three state-run banks;⁶⁴⁴ and (3) indictment and conviction of the Taiwanese participants in the La Fayette scandal, a Hollywood-esque saga behind the selection of the French La Fayette frigate design in the mid-1990s involving hundreds of millions in USD of bribery, the murder of a Taiwanese naval officer, and the seduction and manipulation of a French foreign minister.⁶⁴⁵

Descriptively tracing observable indicators of Taiwan’s government practices revealed dynamics of MND underspending of allocated funds, theoretically rigorous assessment procedures hijacked by deliberately gamed platform requests, MND-funded

⁶⁴¹ Control Yuan, *A Brief Report on the Work of the Control Yuan, Taiwan, Republic of China*, 2002-2011 (all editions).

⁶⁴² Control Yuan, *Annual Report of the Control Yuan, Taiwan, Republic of China*, 2012-2020 (all editions).

⁶⁴³ “CHEM Officials Receive Jail Terms for Armored Vehicle Procurement Fraud.”

⁶⁴⁴ Jonathan Chin, “Five Indicted over Ching Fu Scandal,” *Taipei Times*, February 13, 2018. <https://www.taipeitimes.com/News/front/archives/2018/02/13/2003687548>.

⁶⁴⁵ “Taiwan’s Lafayette Frigate Affair,” The Fletcher School, Tufts University, November 10, 2020. <https://sites.tufts.edu/corruptarmsdeals/taiwan-the-lafayette-affair/>.

outside analysis mostly disregarded, and periodic evidence of corruption. The next subsection examines uncoded dynamics revealed by this descriptive tracing, specifically focusing on the interaction of senior military officials, the MND, the President, and Taiwan's domestic politics.

Taiwan's Bureaucratic-Political Obstacle Course

As mentioned in the opening of this chapter, Taiwan's experiences with the explanatory variables of service territoriality, civil control, and domestic politics echo some of the most challenging phenomena and aspects observed in the India and Australia cases while also displaying vestiges of the military-authoritarian pathology that grips Pakistan. This subsection focuses on accounting for the process issues identified in the preceding paragraphs during the analytic window. Because these are evolving dynamics, I largely avoid engaging with more current developments until the final section of the chapter ("key possibilities").

Taiwan's stunted procurement sourcing options, military-authoritarian origins, and availability biases for American platforms exacerbate the incentives of its services to indulge their bureaucratic territoriality tendencies and pursue inefficient platforms that are economically and operationally inadvisable. In addition to their territoriality, the services are vulnerable to doctrinal inertia and a slowness to absorb the (in their view) sudden inversion of military balance between the ROC and PRC. The KMT lean of the military means that these tendencies either receive unbridled encouragement when the KMT is in power or that the DPP struggles to staff MND leadership positions and prevail

on the services to undertake unpopular reforms when the government is under DPP control. DPP leadership is also sensitive to Taiwan's extremely competitive domestic political climate. Finally, a climate of U.S. dependence is difficult to shake because a reasonable view of recent history can very easily mislead observers into thinking that there exists a reliable commitment of U.S. intervention and because the United States' own competitive domestic politics generate a lot of noise-obstructing signals.

Service Territoriality. Beyond any idiosyncrasies, of Taiwan's case, its military services are bureaucratic organizations in some degree of open competition for limited resources. This natural tendency combines with doctrinal inertia (see "Doctrinal Inertia and the Gray Zone" below) and pro-U.S. bias to realize the worst inefficiency excesses of MND's procurement system as a vehicle to sharpshoot U.S. platforms or pursue prestigious indigenous platforms to the extent that they can be built.⁶⁴⁶ While it is true that the FMS-targeting machine occasionally targets cost-effective systems (like anti-ship missiles),⁶⁴⁷ the United States (as an exquisite airpower and sea-control navy superpower) simply does not stock many of the platforms that Taiwan would need and in fact already produces well; the *Tuo Chiang*-class corvette and *Kuang Hua VI*-class fast attack missile craft are production-ready, tactically sound, and cost-effective.⁶⁴⁸

Civil Control. The DPP's origins as a progressive protest movement against the the military-authoritarian KMT has the legacy effect that it does not have a robust roster

⁶⁴⁶ Li, pp. 160-164.

⁶⁴⁷ "Taipei Economic and Cultural Representative Office in the United States (TECRO) – RGM-84L-4 Harpoon Surface Launched Block II Missiles."

⁶⁴⁸ Thim and Liao, "Taiwan Navy Emphasizing Domestic Shipbuilding Program in Ongoing Maritime Restructure."

of credible and experienced national security professionals.⁶⁴⁹ This causes even the DPP to rely on retired military to staff key positions within the MND and the national security apparatus, rendering agendas for defense doctrine and strategy reform vulnerable to the entrenched thinking of the career military.⁶⁵⁰ A degree of prudent bureaucratic politics may also influence the thinking of the DPP political leadership to not wish to burn organizational capital picking likely losing reform battles with KMT-leaning military brass.⁶⁵¹ This is to say nothing of the domestic political challenges of reform (see “Domestic Politics” below).

Doctrinal Inertia. For the first half of the analytic window, Taiwan’s military held a sufficient surface combatant edge over China to project the appearance of effective control around Taiwan. This predilection has translated into a renewed obsession with countering Chinese gray zone provocations that threatens to crowd out reform approaches.⁶⁵² A rationale seems to be an unwillingness to give China’s provocations an inch lest Taiwan find itself sliding into a *fait accompli*.⁶⁵³ This perceived threat—not sudden invasion—combined with decades of experience for the most senior military brass, seems to have solidified their view of the imperative of sea control irrespective of a

⁶⁴⁹ Copper, pp. 216, 246-248, 275-276.

⁶⁵⁰ Michael A. Hunzeker, “Taiwan’s Defense Plans Are Going Off the Rails,” *War on the Rocks*, November 18, 2021. <https://warontherocks.com/2021/11/taiwans-defense-plans-are-going-off-the-rails/>.

⁶⁵¹ John Chen, “Why Taiwan Won’t Be Able to Build an Effective All-Volunteer Force,” *Georgetown Security Studies Review*, April 10, 2015. <https://georgetownsecuritystudiesreview.org/2015/04/10/why-taiwan-wont-be-able-to-build-an-effective-all-volunteer-force/>.

⁶⁵² *Quadrennial Defense Review 2021*, pp. 54, 59-60.

⁶⁵³ Raymond Kuo, “The Counter-Intuitive Sensibility of Taiwan’s New Defense Strategy.”

temporary lip service to the ODC.⁶⁵⁴ This seems imprudent given the balance with China in recent years, but it is not unreasonable to think that senior officials who could point to a realistic goal of sea parity scarcely a decade ago (see figure 7-5 earlier in the chapter) may experience entrenched anchoring biases. It is also worth remembering that Taiwan's constitution includes an explicit mandate to purchase weapons that are capable of counterattack,⁶⁵⁵ something that probably cannot be said of a shore-based littoral-ranging missile system or a fast attack craft that cannot transit the strait.

Domestic Politics. During the analytic window, public awareness of the threat and willingness to contribute to a whole-of-society approach (whether participation in civil defense or allowing more tax revenue to go to the MND) posed a constant challenge and therefore a salient political risk.⁶⁵⁶ Amid Taiwan's ultra-competitive domestic politics, the well-resourced opposition KMT does not hesitate to espouse its profoundly different view, which coincidentally speaks to the ROC's prestige and the pride of the older generation.⁶⁵⁷ Even younger Taiwanese are not invulnerable to the perceived morale-boosting effects of traditionally prestigious, manned platforms; Hunzeker and Lanozska relate an interview with a national security official who pointed out that it was not possible to sell the concept of a hero drone pilot to the public.⁶⁵⁸ The high visibility, vague threat, and national pride/embarrassment levers of China's gray zone provocation

⁶⁵⁴ Hunzeker, "Taiwan's Defense Plans Are Going Off the Rails."

⁶⁵⁵ *About MND.*

⁶⁵⁶ Hunzeker and Lanozska, pp. 109-111.

⁶⁵⁷ Dee Wu, "The KMT's Defense Policy: Toward a Symmetric Posture."

⁶⁵⁸ Hunzeker and Lanozska, p. 65.

and an imperative to respond to them mean that the distracting impulse to procure aircraft and sea control platforms is compounded by domestic political incentives as well.⁶⁵⁹

U.S. Dependence. The dynamics of the U.S.-Taiwan relationship add further potential for miscalculation by Taiwanese leaders trying to discern the best capability acquisition path forward. Setting aside the troubling question of when and how the United States could help if it chose to intervene,⁶⁶⁰ Taiwan's policy and military elite seems to be peppered with untested logic of "buy US platforms get US intervention."⁶⁶¹ As questionable as this proposition may be to outside observers, it may not be so unreasonable given that every crisis—including the crisis of the mid-1990s amid a U.S. policy regime that was far less vocally supportive of Taiwan—has seen a carrier strike group mobilized in favor of Taiwan.⁶⁶² Subscribers to the sales-for-intervention logic will find their hopes bolstered by an especially robust roster of deals in the past two decades,⁶⁶³ and the current administration has likely only encouraged them.⁶⁶⁴ If U.S. platforms are really harbingers of U.S. intervention commitment and not simply the

⁶⁵⁹ Ibid., pp. 63-66, 67.

⁶⁶⁰ Owen R. Cote, "One if by Invasion, Two if by Coercion: US Military Capacity to Protect Taiwan from China," *Bulletin of the Atomic Scientists*, vol. 78, no. 2 (2022), pp. 65-72.

⁶⁶¹ A. Trevor Thrall, Jorden B. Cohen, and Michael Klare, "New Arms Sales Send the Wrong Signal on Taiwan," *Defense News*, August 17, 2021. <https://www.defensenews.com/opinion/commentary/2021/08/17/new-arms-sales-send-the-wrong-signal-on-taiwan/>.

⁶⁶² Copper, p. 265.

⁶⁶³ "U.S. Arms Sales to Taiwan." *Forum on the Arms Trade*. Updated April 5, 2022. <https://www.forumarmstrade.org/ustaiwan.html>.

⁶⁶⁴ Dennis Hickey, "Biden, Taiwan, and Strategic Ambiguity," *The Diplomat*, October 25, 2021. <https://thediplomat.com/2021/10/biden-taiwan-and-strategic-ambiguity/>.

capabilities they confer in and of themselves, then waiting years (and even decades) for them to arrive ceases to be puzzling and instead becomes inconsequential.⁶⁶⁵

Key Possibilities

Where the Australian and Indian case studies engaged in at least some degree of competing futures consideration, this chapter has probably over-emphasized the inertial tendencies that could and quite possibly will keep Taiwan on a course to avoid efficient procurement of conventional capabilities. As such, I focus instead here on possible countercurrents—events and developments that could signal a resumption of ODC-like pursuits to some degree.

There are developments that genuinely could enable meaningful progress on a larger reorientation of Taiwanese thinking about preparing for Chinese invasion. Although this dissertation is somewhat narrowly focused on the dimension of signaling credibility that derives from visible conventional capability, progress toward efficient procurement will probably only happen as part of such a larger shift. The seismic development of the Ukraine war, small important steps forward by the government (and steps back that were not as big as originally thought), and the remarkable apparent political security of the DPP all incrementally suggest that change is at any rate *more* possible than it was before.

⁶⁶⁵ Harris, “Document Reveals \$14 Billion Backlog of US Defense Transfers to Taiwan.”

The Ukraine Factor

The sheer surprise and attention-getting value of Russia's brutal war in Ukraine should not be overlooked. Ukraine's experience and its potential implications for Taiwan vaulted to the top of every media discussion and prompted an alert status elevation of the island's reserve forces to surprisingly little public pushback.⁶⁶⁶

Whether Taiwan concludes that the United States' reaction to the conflict in Ukraine at each stage is indicative of what it would do in the event that Taiwan is threatened may be besides the point; either conclusion would be instructive. Should the United States intervene militarily in Taiwan, such an intervention cannot be immediate and Taiwan would require a survivable asymmetric delay and denial arsenal; should the United States choose not to intervene and attempt the same policy levers as it employed for Ukraine, it is all the more pressing that Taiwan have both an arsenal that can impose unacceptable costs on the Chinese force and the capacity to replenish that arsenal.⁶⁶⁷

It is also possible that Taiwan has been leaving diplomatic gains on the table with respect to prospective European partners. Thus far, Taiwan has confined itself to seeking narrow cooperation on armament, counting a win to include events like getting France to agree to simply upgrade the frigates that it sold Taiwan decades ago (yes, the murder

⁶⁶⁶ Brian Hioe, "Taiwan Watches the Ukraine Invasion and Asks: Are We Ready?"

⁶⁶⁷ Scott Singer and Mathias Gjesdal Hammer, "A Tale of Two Crises: Why US Strategy in Ukraine Has Few Implications for Taiwan," *The Diplomat*, January 8, 2022. <https://thediplomat.com/2022/01/a-tale-of-two-crises-why-us-strategy-in-ukraine-has-few-implications-for-taiwan/>.

scandal frigates from the last section).⁶⁶⁸ Instead, Taiwan might investigate the question of whether key international norms are strengthening in the face of Russia's aggression. It may not be that European militaries are prepared to mount expeditions, but auxiliary assistance with gray zone aggression, cyber and information offensives, blockade permeability, and more ambitious procurement could all substantially improve Taiwan's resilience and outlook.⁶⁶⁹

Recent Procurement Upsides

The counter-ODC focus of the 2021 QDR notwithstanding, Taiwan is in fact manufacturing increasing quantities of systems that would be indispensable to an asymmetric defense.⁶⁷⁰ Even the recent deal with the United States to upgrade all of Taiwan's F-16s and deliver 66 more at a "4.5 generation" level of sophistication is technically good resource news if it ultimately closes the door on the markedly inefficient prospect of F-35 acquisition.⁶⁷¹

The demonstrated willingness of the Tsai administration to use the special defense budget allocation process (versus the more bureaucratically inert core process) to specifically target anti-ship missile systems and other threat-countering platforms could

⁶⁶⁸ Eleanor Albert, "Is Taiwan Looking to Diversify its Defense Partnerships?" *The Diplomat*, May 20, 2020. <https://thediplomat.com/2020/05/is-taiwan-looking-to-diversify-its-defense-partnerships/>.

⁶⁶⁹ Franz-Stefan Gady and Oskar Glease, "What Could European Militaries Contribute to the Defense of Taiwan?" *The Diplomat*, April 1, 2022. <https://thediplomat.com/2022/04/what-could-european-militaries-contribute-to-the-defense-of-taiwan/>.

⁶⁷⁰ "Taiwan Deploys More Anti-Ship Missiles."

⁶⁷¹ Ralph Jennings, "F-35s Unlikely, Taiwan Upgrades F-16 Fighters to Counter China," *Voice of America*, January 11, 2019, <https://www.voanews.com/a/f-35s-unlikely-taiwan-upgrades-f-16s-fighters-to-counter-china/4738485.html>.

be a sign of increasing assertiveness and reform momentum.⁶⁷² There is fundamentally no reason to doggedly subscribe to the truisms that underpin symmetric capability acquisition provided even a modicum of media inventiveness is brought to bear. Why should fighter pilots be any more heroic than intrepid coastal artillerymen, or the dashing crewmembers of a potentially lynchpin of Taiwanese pride in the form of the possibly peerless *Tuo Chiang*-class stealth corvette?⁶⁷³ With the right camera angles, stirring music, and social media integration, it is probably not out of the government's (or a consultant's) reach.

A Permissive Landscape for Continuous Vision of Reform?

A major consideration for any efforts by Taiwan's political leadership to press for further defense capability and societal re-orientation on the threat from China is the permissiveness of the domestic political climate. While it is always possible for things to change, the DPP seem to be enjoying a period of relative political security having translated momentum from Tsai Ing-Wen's re-election and continued control of the Legislative Yuan into successful defense against a host of KMT maneuvers to attempt to exploit recall reforms.⁶⁷⁴

⁶⁷² Jon Grevatt and Andrew McDonald, "Taiwan Progresses 'Special' Funding Plan as Relations with Beijing Deteriorate," *Janes*, October 5, 2021. <https://www.janes.com/defence-news/news-detail/taiwan-progresses-special-defence-funding-plan-as-relations-with-beijing-deteriorate>.

⁶⁷³ Larson, Caleb. "Taiwan Adds Another 'Carrier Killer' Corvette as it Strengthens its Defenses Against China."

⁶⁷⁴ Brian Hioe, "DPP Sweeps Taiwan's Latest Referendum Vote." *The Diplomat*, December 20, 2021. <https://thediplomat.com/2021/12/dpp-sweeps-taiwans-latest-referendum-vote/>.

The KMT on the other hand do not currently seem to exhibit resilience to DPP momentum.⁶⁷⁵ Amidst a spate of multi-level losses, the KMT has chosen the curious course of establishing an opposition lobby in Washington.⁶⁷⁶ In his first interview since the office's official opening, envoy Alexander Huang announced that while China wanted to "end the game" and the DPP wanted to "quit the game," the goal of the KMT was to "make the game infinite" to buy time to integrate U.S. weapons.⁶⁷⁷ Should the DPP need to worry about an opposition campaign seeking to "make the game infinite," it is probably an indication that they have suffered other, deeper, and insurmountable political setbacks.

The attitude of the population may be growing more permissive to a message of whole-of-society resilience from the DPP. Even before the Ukraine conflict, approval attitudes toward Taiwan's military and reserves—traditionally challenged because of conscription and a legacy of military-authoritarian rule—had improved almost 20 points in the space of only a few years.⁶⁷⁸ If the Tsai administration or its successor can synergize these changing attitudes with alarm over the fates of Hong Kong⁶⁷⁹ and

⁶⁷⁵ Brian Hioe, "KMT Served Double Defeat in Taiwan's Latest Recall and By-Election," *The Diplomat*, January 10, 2022. <https://thediplomat.com/2022/01/kmt-served-double-defeat-in-taiwans-latest-recall-and-by-election/>.

⁶⁷⁶ Fu, Hiro. "Why is Taiwan's KMT Returning to Washington?" *The Diplomat*, February 8, 2022. <https://thediplomat.com/2022/02/why-is-taiwans-kmt-returning-to-washington/>.

⁶⁷⁷ "Taiwan Opposition's New U.S. Envoy Explains Kuomintang Policy Toward Washington, Beijing." *TaiwanPlus News*, April 7, 2022. <https://www.youtube.com/watch?v=TPwsHtdlqJs>.

⁶⁷⁸ Austin Horn-En Wang et al. "What Do People in Taiwan Think About Their Military?" *The Diplomat*, October 21, 2021. <https://thediplomat.com/2021/10/what-do-people-in-taiwan-think-about-their-military/>.

Ukraine, societal mobilization (and willingness to accept higher defense bills or a redefinition of heroes away from fighter pilots) may be higher than any time in recent history.⁶⁸⁰

Facing the greatest existential threat of any of the cases and displaying some degree of all of their bureaucratic and political procurement pathologies, Taiwan of all four states arguably faces the most serious challenge with the most constrained resources. Having concluded an examination of all four cases in depth, the next and final chapter concisely reiterates the lessons of the dissertation in order to identify avenues for additional testing and knowledge-building.

⁶⁷⁹ Wang, T. Y. “Hong Kong National Security Law: The View From Taiwan.” *The Diplomat*, July 2, 2020. <https://thediplomat.com/2020/07/hong-kong-national-security-law-the-view-from-taiwan/>.

⁶⁸⁰ Brian Hioe, “Taiwan Watches the Ukraine Invasion and Asks: Are We Ready?”

CHAPTER EIGHT

Conclusion

In this dissertation, I undertook the first true commodified statistical analysis of the procurement of major conventional military hardware. I did so because I suspected that after lacking a fungible measurement scale for so long, the highly variable rate of return for conventional procurement outlay experienced by different states would be a remarkable phenomenon whose measurement would yield important insights. When states make decisions to pursue an improvement in their status with respect to the distribution of military capabilities, they do so in a context of limited resources and prospects and in some cases with the whole world watching. I saw gaining a better understanding of the factors that could motivate, bolster, or impede those efforts as being worthwhile and carrying important implications to more expedient analysis of other states making the decisions with which Australia, India, Pakistan, and Taiwan are faced.

Much of the existing literature focusing either on the distribution of military capabilities, strategic signaling, and coercive diplomacy has exhibited two problematic characteristics against which I sought to demonstrate mitigation. First, many projects have undertaken a conflict outcome prediction approach, something that I consider both fraught for the sheer number of variables involved as well as less helpful in improving understanding of the many signaling standoffs around the world that persist for decades without open conflict since the end of World War II. Second, when these works attempt

to incorporate a quantitative, comparative dimension, the metrics—macroeconomic measures of overall war-making capacity that would take years or total war mobilization to be realized, or overall military personnel figures, or overall defense spending, or numbers of aircraft without a precise magnitude distinction by capability—they must take on a vague and speculative nature that has the effect of blunting or drowning out the many valuable insights that scholars have to offer in the course of such projects.

Insight into states' ongoing or previous conversion of some fraction of their economic might into a fungible, truly comparable conventional military form carries enormous potential. It can recast understanding in regions characterized by long-held prevailing understandings, such as the view that India holds an overwhelming conventional armament advantage over Pakistan. It can draw attention to vendor-importer relationships that are truly impacting a regional distribution of capabilities and signaling, like China's transfers to Pakistan. It can uncover quantitative trends that serve as leads for investigating unit-level phenomenon like service territoriality, civil control, and a more precise understanding of the interplay of domestic politics with major weaponry procurement. The signaling comparisons it enables and the balances it projects can help explain why prior to the invasion itself many analysts were convinced that Vladimir Putin would secure concessions from Ukraine and the West,^{681,682} putting the squandered leverage in sharper relief. Further, the example of India should offer insight

⁶⁸¹ David Brennan, "Vladimir Putin Refuses to Rule Out Ukraine Invasion, Wants Concessions 'Now,'" *Newsweek*, December 23, 2021. <https://www.newsweek.com/vladimir-putin-refuses-rule-out-ukraine-invasion-west-concessions-now-1662524>.

⁶⁸² Brian Bennet and W.J. Hennigan, "Why Biden Is Already Losing in Putin's Ukraine Gambit," *Time*, January 27, 2022. <https://time.com/6143191/joe-biden-putin-ukraine/>.

and raise questions about the effects on conventional signaling balances the world over should the reliability of Russia's arms exports decline.

Implications

Fundamentally, the dissertation delivers the tools to achieve greater understanding not just of the quality and quantity of arms that underpin a state's signaling posture but of the factors that enable or inhibit modification of that posture through materiel. Because of the foundational efforts required for this dataset, future analyses undertaken using the CFPI will be less arduous and at some point can even benefit from an existing base of coded country data without requiring researchers to personally code the arsenals of the countries they select for analysis.⁶⁸³ The findings of this dissertation imply potential gains in understanding along a minimum of four additional avenues.

Estimation of Procurement Spending

The cases in this dissertation are unusual examples in that they belong to the minority of states for whom it is possible to obtain detailed military procurement spending (even with Pakistan's figures requiring a limited degree of outside refinement). Procurement spending—versus defense spending writ large—is a secret figure for most states, and although there have been no shortage of speculation as to the procurement outlay of certain states based on things like estimated production costs of the delivered

⁶⁸³ CFPI, <https://cfpindex.org>.

systems, there is no reason to believe that these estimates are reliable in an industry where pricing arrangements vary wildly.

The statistical analysis performed in this dissertation almost certainly does not enable a precise reckoning of this procurement spending, particularly because of the subjective nature and pro-democracy bias of the government practices IV. Instead, it should provide an estimative ability where none really existed. If the model used in this study means that we can more reliably estimate that a country is paying many multiples of production cost, or that it is getting systems for close to flyaway cost, the starting posture of a variety of analytic applications focused on the distribution of capabilities and signaling balances will be substantially improved.

Procurement-Driven Balance Projections

India and Taiwan were surprised by the exponential pace of China's conventional capacity addition, and India may be just waking up to a similar surprise concerning Pakistan's buildup since 2000. I take the view that such surprises are volatile and—departing from a purely academic perspective—the world might well be safer if they could be avoided. Using the analyses demonstrated by this dissertation can help scholars, analysts, and the policymakers consulting their work gain an appreciation for the pace of changing signaling and capability balances while there is still time to mitigate the likelihood of responses undertaken from surprise, panic, or fear.

Re-evaluation of Consensus Views on Effective Procurement?

At first glance, the dissertation's most provocative finding is perhaps the suggestion of a negative association between consensus-viewed responsible and accountable procurement practices and the accumulation of an arsenal basis for signaling (which translates to some degree of capability potential). I caution against expansive interpretation of this finding for three reasons: sample size; pro-democracy bias; and a more meaningful interpretation of explanatory phenomena.

First, the state sample for this dissertation was small—Pakistan was the only country that violated most of the literature-indicated practices. With a sample size of one for largely unaccountable governments it is difficult to say whether Pakistan's successes are mirrored by other states similarly eschewing transparency and accountability.

Second, the practices used for this dissertation's questionnaire exhibit extensive prior subscription to the notion that transparency and accountability breed efficiency, a premise that may be true, true in the long term but not in the short term, or untrue. This premise is a direct reflection of my reliance on prescriptions advanced by the United States' Government Accountability Office, meaning that the attributes along which I measured tended to accord higher scores to the practices of democratic governments. As with the previous point, a larger sample size or otherwise refined investigation would help to demonstrate whether the negative association finding can be accepted on its face.

Third, where Australia, India, and Taiwan encountered inefficiency in the context of their less efficient procurement, tracing their processes always revealed snarls in those practices recommended by the literature. Each of these cases scored high overall, but

unit-level phenomena including some or all of service territoriality, civil-military dysfunction, and domestic political pressure co-opted some part of the recommended practices, whether appropriation, needs assessment, implementation, or reform. This could indicate that I inappropriately weighted the components of the government practices variable, or that the associations uncovered are valid but that we should be very specific in the explanatory lessons we derive.

Better Understanding of Vendor Effects

I was interested to see if investigation of vendor goals' effects on importing states procurement efficiency would yield a result that could be interpreted as "the most prolific exporters achieve economies of scale that make purchasing from them desirable." The results in this sample suggest this is not the case, although as with the previous three implications, wider investigation is required for a more confident conclusion.

Russia's sales to India—though underpinned by greater motivation than profit—illustrated a phenomenon of path-dependent vulnerability to non-competitive prices whereby India had little choice but to continue inefficient procurement from Russia to have any hope of stabilizing its deterrence posture toward China. China's rapid and low-cost armament of Pakistan might be an illustration of pure economies of scale, but there at least exists the real possibility that this efficiency indicates Chinese efforts to encircle India. Finally, the finding of a highly significant association between U.S. export origin and efficiency substantiated by extensive evidence of U.S. policy goals to affect regional balance went considerable distance in validating my suspicions.

Further Research Avenues

The implications identified in this chapter and the findings presented in this dissertation provide avenues for further research. These include but are not limited to: (1) regional and dyadic balance analysis; (2) macro-analysis of weaponry procurement; and (3) qualitative theoretical exploration and development of explanatory factors.

Whether procurement is included or excluded, CFPI scoring provides a proxy for more accessible comparison of at least the material dimension of regional or dyadic capability distribution. A prospective reader, scholar, or policymaker does not need to know the significance of every number, prefix, and suffix of every variant of military hardware to appreciate figure 7-5 in the previous chapter. This is not to say that CFPI scoring alone comprehensively summarizes these balances; instead, it removes a barrier to entry, providing a synopsis for the technological distribution of capabilities that allows more focus on other variables like strategic logic and interaction between governments. The more states whose arsenals over time are coded into the CFPI dataset, the more it can support such dyadic and regional analysis.

Should a majority or the entirety of state arsenals undergo CFPI scoring—as is my intent at this writing—then the statistical analysis I have undertaken will take on a pilot quality compared to the systemic analysis that becomes possible. We can imagine extensive applications unlocked by achieving a fungible understanding of the global distribution of an accessible measure either of an important aspect of military capabilities or of a serviceable proxy for capability distinction among states that are otherwise similar.

Finally, my identification of explanatory phenomena in the form of service territoriality, civil-military dysfunction, and domestic political influence had a crude quality when compared to deliberate and theoretically informed investigation of these phenomena. I believe that this dissertation illuminates new possibilities for more informed exploration of these phenomena and their effects on states' ability to acquire capabilities that would benefit from a more focused investigative approach.

Although I undertook this dissertation informed in part by a premise that most states do not use their conventional arsenals, the war in Ukraine has demonstrated that even if this premise is sound its exceptions are truly terrible. In the final reckoning, perhaps the greatest contribution this work can make is an appreciation of the sheer magnitude of resources required to achieve even incremental gains in technologically sophisticated conventional arms. At the risk of appearing naïve or un-academically idealistic, I think it is worth closing on some non-academic questions. How many schools and clinics does a multirole fighter cost? What does it mean if skipping or deferring a single generational advancement in naval radar would end a national, regional, or even global hunger problem? What is the significance amid more frequent forest fires and hurricanes of a collective blind spot to the environmental impact of manufacturing and exercising hulking armored vehicles? Until these questions do not come across as absurd, perhaps the best I can offer are the incremental contributions to the field that I have presented in this dissertation.

APPENDIX

Deriving Conventional Firepower Potential

Note: This appendix originally appears as “Apples to Apples, Fighters to Submarines: Comparative Analysis of Conventional Capability-Based Signaling Capacity Through Technologically Weighted State Arsenal Indexing,” accepted with revisions by Journal of Military Studies as of April 2022. The body text and chart attributes (table and figure presentation style and numbering) have been edited to conform with George Mason University’s formatting requirements for inclusion as an appendix in this dissertation, but otherwise this appendix reflects the editorial and style requirements of Journal of Military Studies.

Abstract: In this paper, I propose a new contribution to the field of comparative analysis of state conventional military capabilities. First, I review other scholars’ perspectives on the merits of comparing capabilities, arguing that the most accessible insights lie in the signals sent by state arsenals rather than in predicting conflict outcomes judging from state armament. Second, I present the conventional firepower potential indexing (CFPI) method and demonstrate that coding for tactical roles and degree of technological sophistication enables previously unfeasible estimative comparisons of deterrent signaling value. Third and last, I apply CFPI scoring to the conventional arsenals of the United States and the four prospective adversary states named in that country’s most

recent National Defense Strategy. (China, Russia, North Korea, and Iran), deriving conclusions that would be more difficult without accessible comparative analysis.

Introduction

In May of 2018, then-President of Ukraine Petro Poroshenko made a remarkable assertion. During an address commemorating the end of World War II, he congratulated his Ministry of Defense on the Ukrainian military becoming one of the ten most powerful in Europe. (Kuzmenko 2018) Although most listeners would not register this as unusual, military analysts and security scholars were likely intrigued by the claim: how could Poroshenko make this declaration with any confidence when the elements of military power are so extensive and varied as to defy authoritative comparison?

Investigative journalist Oleksiy Kuzmenko reveals that Poroshenko cited rankings from a commercial and self-styled entertainment site called *Global Firepower Index* (*GFI*) run by an entrepreneur whose other ventures include a wedding dress customization site. Kuzmenko's reporting revealed several things to be true about *GFI*: (1) its opaque methods yield questionable conclusions; (2) it lacks credibility with serious analysts; and yet (3) it is widely cited by relatively reputable journalistic outlets including *Newsweek* and *Forbes*.

While shoddy work by a staff eager to inject some high notes into a leader's remarks might be to blame, the episode raises a genuine issue: given the importance of military strength (however conceived) to the international distribution of power, the lack of accessible, rigorous methods for comparing military capabilities suggests that

journalists and government staff may continue citing commercial sources purporting to perform such analysis even if they lack credibility.

In this paper, I propose a new contribution to the field of comparative analysis of state conventional military capabilities. First, I review other scholars' perspectives on the merits of comparing capabilities, arguing that the most accessible insights lie in the signals sent by state arsenals rather than in predicting conflict outcomes judging from state armament. Second, I present the conventional firepower potential indexing (CFPI) method and demonstrate that coding for tactical role and degree of technological sophistication enables previously unfeasible estimative comparisons of deterrent signaling value. Third and last, I apply CFPI scoring to the conventional arsenals of the United States and the four states named in that country's most recent National Defense Strategy (China, Russia, North Korea, and Iran), deriving conclusions that would be more difficult without accessible comparative analysis.

Why Compare Capabilities?

In this section, I review selected perspectives on merits and challenges inherent in making comparisons between state capabilities. Noting that capability analysis—particularly arsenal analysis—alone is unreliable in predicting conflict outcome, I posit that the prevalent use for major military hardware is to contribute to strategic signaling rather than to prosecute conflict. I then highlight extant methods for arsenal analysis and derive principles for a signaling value-focused approach.

Conflict Outcome Prediction versus Signaling Value Interpretation

While it seems intuitive to apply comparative arsenal analysis to conflict outcome prediction, compelling scholarship indicates materiel-focused analysis is unreliable. Carroll and Kenkel find that capability-based conflict outcome prediction performs only one percent better than a coin flip, while their own substantially improved method fares only 20% better. (Carroll and Kenkel 2019) Biddle demonstrates convincingly that insight into conflict outcome comes from states' employment of their forces during combat, an approach that to have predictive value would require reliable estimates of how a state's military *would* act during prospective conflict. (Biddle 2004)

These lessons run into an empirical challenge: most states do not use their arsenals for interstate conflict. Sarkees and Wayman's exhaustive examination of interstate conflicts reveals that in the 60 years following World War II, fewer than 60 state governments—less than a third of the 188 accorded undisputed sovereign status by the United Nations—engaged in interstate armed conflict. In the preceding 60 years, over 120 distinct states engaged in such conflict over substantially longer durations. (Sarkees and Wayman 2010) The modern era sees most states purchasing and retaining conventional weapons that spend the vast majority—or entirety—of their existences unused in combat.

It is not clear that most states could employ their arsenals in any sustained way even if they were to commit to interstate conflict. An International Peace Institute survey of United Nations Peacekeeping Operations (UNPKO) suggests most states struggle to project and sustain even small fractions of their militaries over short distances for more

than a few weeks. (Coleman and Williams 2017) Nor is this challenge limited to the generally smaller and more developing pool that typically participates in UNPKO; a study by RAND concluded that the United Kingdom, France, and Germany—developed states with some prevalence of premier conventional armaments—would each be hard-pressed to marshal, deploy, and sustain a single brigade of combat power *within Europe* for more than a month without the undertaking becoming the main effort of their respective militaries and eclipsing any capacity for other contingencies. (Shurkin 2017)

Given that the majority of state-owned military hardware never sees combat and that most states struggle to employ their arsenals, continuing, widespread procurement of combat systems without addressing logistical deficiencies suggests a major aim of acquiring weaponry is merely having it. Scholars identify weapon possession as the capability dimension of conventional strategic signaling capacity, where credibility (reputational willingness to employ weapons for strategic aims) and communication (explicit statements from one state to others) constitute the other two dimensions. (Haffa 2018; Morgan 2012; Gerson 2009)

The premise that conventional weapons contribute to a state's strategic signaling capacity yields an avenue for comparative analysis. Where most weapons are never employed in conflict, all weapons (save those successfully concealed) contribute to signaling. The relative signaling contribution of a weapon is a less complicated phenomenon to estimate than its prospective combat use, an activity that entails innumerable factors. With this in mind, I survey selected methods of arsenal

computation to derive lessons for signaling capacity estimation and identify precursor techniques for the CFPI method.

Adapting Arsenal Computation Methods for Signaling Value

Representing an impressive recent innovation in comparative arsenal analysis, the *Distribution of Military Capabilities* (rDMC) dataset uses data from the International Institute for Strategic Studies' (IISS) *The Military Balance* to code military technology distribution among 173 countries from 1970 to 2014. (Gannon 2021) While no public resource currently matches rDMC's depiction of the prevalence of *types* of technology in state arsenals throughout this period, rDMC makes no distinction between systems within each technology type on the basis of sophistication or effectiveness. Analysts can use rDMC to see which states have—for example—air defense missile systems, their quantities, and how distribution over time changes. However, aging, relatively incapable systems code identically to advanced systems that cost far more and arguably contribute to more compelling strategic signals. While this criticism is simple, an accessible, informative solution to the comparison problem is another matter. The ensuing paragraphs explore computational methods that attempt quality-based distinctions between weapons.

A majority of extant analytic methods attempting quality distinctions between conventional weapons purport to project their performance under certain combat conditions. The archetype of these is the venerable Lanchester set of models, which—despite being re-validated by RAND as highly informative for engagement modeling—

undercuts its feasibility by assuming large-scale engagements involving simultaneously firing masses of weapons. (Lanchester 1916; Darilek et al. 2001) Innovations in this tradition modifying Lanchester's concepts for guided weapons and modern defenses similarly attempt attritive results rather than inherent comparative value for the systems themselves, attracting criticism for unwieldiness. (Hughes 1995; Armstrong 2013; Lucas and McGunnigle 2003)

Three techniques that distinguish themselves from the Lanchester and related conflict outcome methods are: (1) the summation technique in the United States Naval Postgraduate School's aggregated firepower score (AFS) method; (2) Dubois et al.'s algebraic incorporation of combat power *potential* in their *Concise Theory of Combat Power*; and (3) the coefficient weighting technique in the United States Army Concepts Analysis Agency's Weapon Effectiveness Index (WEI) method. (U.S. Naval Postgraduate School 2000; Dubois, Hughes, and Low 1997; U.S. Army Concepts Analysis Agency 1991)

The AFS method also attempts engagement outcome prediction, but approaches it distinctly from Lanchester and other attritive tools. While Lanchester and salvo models attempt to project casualties and survivors by matching weapon systems on each side of an engagement, AFS adopts the straightforward but elegant solution of coding values to different types of equipment, multiplying these by their quantity, and then adding them to the scores of other systems to aggregate a score for all equipment arrayed in a given engagement. (Naval Postgraduate School 2000) While arguably far too reductive for predicting the outcome of an activity as complex as combat, AFS provides an obvious

precursor technique for a comparative method for estimating inherent signaling value for weapon systems rather than predicting their combat performance.

In their theory, Dubois, Hughes, and Low express the potential firepower inherent in any weapon system as part of a comprehensive combat power concept. (Dubois, Hughes, and Low 1997) Isolating a facet of combat power that consists solely of the inherent potential firepower of a weapon system offers a proxy for signaling; the capability-based signaling value of a weapon logically resides in its *potential* for employment, potential being a property that does not require actual use to manifest.

Finally, the WEI method piloted by the now-defunct U. S. Army Concepts Analysis Agency differentiated between degrees of technological sophistication among weapons of the same tactical role with weighted coefficients. (U.S. Army Concepts Analysis Agency 1991) A major limitation of WEI was the need for recurrent re-evaluation by panels of experts with divergent views on the indexed systems' effectiveness in combat, one of the shortcomings that Ben-Haim partly mitigates by adding robustness. (Ben-Haim 2018) Avoiding the complex task of engagement outcome prediction by focusing on signaling value contribution means a weighted coefficient concept can be used without constant re-evaluation for effectiveness.

The next section of this paper incorporates WEI's weighting concept, AFS' role-sensitive summation approach, and Dubois et al.'s expression of potential into processes to compute relative signaling capacity contribution by conventional systems.

The Conventional Firepower Potential Indexing (CFPI) Method

This section describes the CFPI Method's computational processes. First, I algebraically derive the CFPI's processes from the precursor techniques. Second, I illustrate CFPI's accounting for tactical roles and technological sophistication of weapons using a comparative example (China and Russia air-focused CFPI in 2021). Third, I note constraints and unexplored possibilities of CFPI-informed analysis.

Deriving an Expression for Conventional Firepower Potential

The CFPI method uses conventional firepower potential as a proxy for capability-based strategic signaling capacity. The following computational processes are intended only to abstractly score capability contributing to signaling. See *Constraints, Trade-offs, and Possibilities* at the conclusion of this section of the paper for a summary of the distinctions between using indexed approximations of capability for signaling value versus engagement outcome projection, something that CFPI never attempts to do.

The firepower potential of a set of conventional weapons is the sum of the products of each system's role, technological sophistication, and quantity. In this approach, CFPI builds on the precursor techniques of AFS, DuBois et al.'s algebraic expression of combat power, and the WEI method's weighted coefficient approach. These techniques are expressed as follows:

$$FPI = \left(\sum_{i=1}^n x_i \right) s_i \qquad \vec{P} = f[\alpha N, \vec{u}] \qquad WEI = c_f F + c_m M + c_s S$$

Equation A.1: CFPI Precursor Methods

The AFS expression yields the total firepower assessed for weapons of type i assigned a relative firepower score of S_i and present in quantity X . Dubois et al. conceive of combat power, P , as a vectored quantity that exists as a function of potential combat power (u) and realizing actions (αN). A helpful simplification of WEI expresses a weapon's score as the sum of the firepower (F), mobility (M), and survivability (S) scores assigned to all weapons of a particular type once modified by a coefficient intended to compare specific models with a base model. (Kronstad et al. 2007)

Eliminating the aim of predicting combat effectiveness or engagement outcomes means that only certain elements of these concepts apply to an index of strategic signaling value. Combining applicable concepts of the three methods means that CFPI score—an approximation of the *potential* firepower inherent in the technology considering no other factors or actions—for a certain number of weapon systems of the same type and technological sophistication is expressed:

$$U_{oe} = \alpha_{oe} (\sum t_h)$$

U is potential firepower, o is a domain marker (air, land, or naval), and e designates the type of system (e.g., destroyer, main battle tank). The numeric score in the index is the product of α , the weighted value attributes for the system (see *Tactical Roles and Generational Tiers*), and the sum of the quantities of all systems of that type and technological tier, or t_h . Where there are multiple technological tiers among the same weapon type, these are accounted for by separate summation as follows:

$$U_{oe} = \alpha_{oe} (\sum t_{h1} + \sum t_{h2})$$

This expresses CFPI score for a group of one weapon type drawn from two generational tiers of sophistication h_1 and h_2 . CFPI divides the global pool of major conventional weapons into five such groupings across the three conventional domains of air, land, and sea. Score focused on a single domain is expressed:

$$U_o = U_{oe1} + U_{oe2} + \dots$$

This expression uses as many terms as necessary to account for all types of weapon categorized as belonging to the domain. To make this concrete, the following expresses the CFPI score of a state's major conventional weapons focused on the air domain:

$$U_a = U_{ai} + U_{am} + U_{ag} + U_{ad}$$

The a subscript represents the air domain, while other subscripts represent weapon systems whose firepower potential focuses on that domain: i for air superiority fighters (interceptors); m for multirole fighters; g for ground attack aircraft; and d for air defense missile systems. The total CFPI for a state arsenal incorporates the firepower potential-possessing (and therefore signal value-contributing) systems focused on all three domains, expressed:

$$U_p = U_a + U_l + U_n$$

The subscript p denotes conventional firepower across all domains, making U_p the overall notation for a state's CFPI score. The other subscripts correspond to domains: a for air; l for land; and n for naval ("naval" used in place of "sea" for precision because of the inclusion of naval aviation systems that resemble fixed-wing systems categorized as air-focused).

The preceding paragraphs algebraically express the process of indexing a state’s conventional arsenal into firepower potential scores. To enumerate these algebraic expressions, we must compute a value for the coefficient α . The next subsection details enumeration of α with proxy values for tactical role and relative technological sophistication of each system in the CFPI.

Tactical Roles and Generational Tiers

CFPI derives a relative, unitless value for each system type’s intended tactical role and a generational tier coefficient for technological sophistication. The overall coefficient applied to each system quantity is expressed:

$$\alpha_{thoe} = G_h r_{oe}$$

The subscript th denotes technological sophistication of degree h . G is the constant multiplier associated with degree h . The variable r represents the conventional firepower potential—unmodified by technological sophistication—for all systems e in domain o . Numeric values for r and G permit numeric CFPI scores.

To estimate r -values for a given weapon type weapon, CFPI first computes a “raw” firepower potential and then weights this for the system’s *advertised* versatility in releasing its munitions and ostensibly engaging other systems. For brevity, I refer to these three factors as the normalized yield ratio, release versatility, and engagement versatility. The following paragraphs derive each of these and concretely illustrate the process with the multirole fighter weapon type.

“Raw” firepower potential is the product of absolute values of a system’s single-engagement explosive yield, index munition range, and operational range (or two-hour travel range in the case of naval vessels) with all ranges expressed in hundreds of kilometers and the process removing all units. In every system’s case, this product is multiplied by a scaling constant of 0.036 and rounded to the nearest whole number solely to achieve a more intuitive scale across the CFPI. In the following expression—not reflecting these last two scaling steps— m represents the index munition (a munition commonly employed by the index system of this weapon type).

$$Raw FP_{oe} = |Engagement yield_{moe}| * |Range in 100s of km_{moe}| * |Operational range in 100s km_{oe}|$$

For engagement explosive yield, CFPI uses estimated energy yield in megacalorie (Mcal) TNT equivalence of the index munition’s explosive mass assuming it behaves consistent with tritonal explosive’s properties (a mixture of 80% trinitrotoluene and 20% aluminum commonly employed in modern munitions and releasing approximately 18% more energy than a comparable mass of TNT). (U.S. Department of Energy 2002) This assumption uses the U.S. National Institute for Standards and Technology’s TNT equivalence convention of one gram of TNT releasing 4.184 kilojoules or one kilocalorie; one kilogram of tritonal explosive would yield approximately 1.18 megacalories. (U.S. Department of Commerce 2008) This in turn is multiplied by aimed releases of the index munition by the index system in the space of a single minute.

$$Engagement yield_{moe} = Tritonal mass equivalent in kg * 1.18Mcal * Aimed releases in 1 minute$$

The following steps compute the r -value for multirole fighter aircraft. CFPI uses the American F-16C as an index system for multirole fighter jets and the GBU-12 precision air-to-ground bomb as the index munition.

$$\text{Engagement yield}_{\text{GBU-12}} = 87 \text{ kg} * 1.18 \text{ Mcal} * 1 \text{ release} = 102.66 \text{ kg-Mcal-release}$$

Next, we multiply the engagement explosive yield by the index munition range and the index system range. Multiplying this product by the scaling coefficient of 0.036 and rounding provides the normalized yield ratio, the computed firepower potential precursor of tactical role value.

$$\text{Raw } FP_{\text{am}} = | \text{Engagement yield}_{\text{GBU-12}} | * | \text{Range in 100s km}_{\text{GBU-12}} | * | \text{Range in 100s km}_{\text{F-16C}} |$$

$$\text{Raw } FP_{\text{am}} = 102.66 * 0.25 * 8.6 = 220.72$$

$$\text{Normalized yield}_{\text{am}} = 0.036 * \text{Raw } FP_{\text{am}} = 0.036 * 220.72 = 7.95 \approx 8$$

The last step in deriving role value for a weapon system type is to apply ordinal weight for release versatility and engagement versatility. Release versatility expresses the index system's advertised adaptiveness to target behavior when releasing the index munition, while engagement versatility accounts for two factors: (1) whether the index system is ordinarily intended to engage in one or multiple domains; and (2) whether the index system is ordinarily configured to engage the systems designed to neutralize it. Table A.1 offers a rubric for determining release and engagement versatility.

Remembering that CFPI's tactical role value for a weapon system type is the product of normalized yield, release versatility, and engagement versatility, the tactical role value of multirole fighters thus computes:

$$r_{\text{am}} = \text{Normalized yield}_{\text{am}} * \text{Release versatility}_{\text{am}} * \text{Engagement versatility}_{\text{am}} = 8 * 2 * 2 = 32$$

Table A.2 contains the weapon types, index systems and munitions, normalized yields, versatilities, and *r*-values of the CFPI method, which does not consider operational readiness, ammunition availability, environmental effects, crew proficiency,

Table A.1: CFPI Release and Engagement Versatility Rubric

Value	Release Versatility	Engagement Versatility
3	Index system releases systems of release versatility 2 that release the index munition, giving the index system multiple levels of release articulation and adaptiveness to target behavior	Index system is ordinarily intended to engage systems in multiple domains and is ordinarily configured to engage those systems purpose-built to target the index system
2	Index system can maneuver leading up to and during index munition release allowing a larger window of adaptation to target behavior	Index system is ordinarily intended to engage systems in multiple domains or is ordinarily configured to engage those systems purpose-built to target the index system
1	Index system must be motionless to release the index munition; the index system cannot make dynamic adaptations to target behavior immediately leading up to or upon release of the index munition	Index system is ordinarily intended to engage systems in only one domain and is not ordinarily configured to engage those systems purpose-built to target the index system

or any other factors. Where possible, index systems selected are examples of the middle or “competitive” generational tier. CFPI uses index systems to set the tactical role value for all systems of one type. Since CFPI scores are only abstract representations of relative capability-based contributions to signaling (rather than to performance), specific technical differences between same-type, same technological generational systems are superfluous.

To generate $G_{hr_{oe}}$ (setting the value of the coefficient α_{oe} and enabling calculation of numeric FCPI scores), the CFPI method employs five different weighted degrees of relative technological sophistication: obsolete, aging, competitive, advanced, and cutting-edge. These correspond to the four-tier technological grading employed by the U.S. Army’s *Worldwide Equipment Guide* (WEG) as of 2021 with several modifications noted in table A.3. An important difference is that the *WEG*’s tier numbers decrease as

Table A.2: Weapon System Role Values

Domain	Role	Index System	Index Munition	Normal Yield Ratio	Versatility		r-Value
					Release	Engagement	
Air	Air Superiority Fighter	F-16A/B Blk 15/20 (USA)	AIM-120	6	2	2	24
	Multirole Fighter	F-16C/D Blk 52+ (USA)	GBU-12	8	2	2	32
	Ground Attack Aircraft	A-10C (USA)	GBU-12	12	2	1	24
	Air Defense (Missile)	MM-104C (USA)	PAC-2	24	1	1	24
Land	Main Battle Tank	M1A2SEP (USA)	M830A1	2	2	2	8
	Armored Fighting Vehicle	M2A3 (USA)	M792	1	2	2	4
	Self-Propelled Cannon Artillery	M109A6 (USA)	M483A1 DPICM	2	1	1	2
	Towed Cannon Artillery	M119A1 (USA)	M915 DPICM	1	1	1	1
	Rocket Artillery	M270A1 (USA)	M26A2 DPICM	3	1	1	3
	Rotary Wing Attack	AH-64A (USA)	AGM-114N	4	2	2	16
	Multirole Armed Rotary Wing	MH-60A (USA)	7.62x51mm NATO	1	2	2	4
	Air Defense (Gun)	ZSU-23-4 (RUS)	23x152B BZT	1	1	1	1
	Surface-to-Surface Missile	DF-16 (PRC)	DF-16 Conventional	24	1	1	24
Naval	Aircraft Carrier	America-Class (USA)	AGM-154C via AV-8B	400	3	3	3,600
	Ship-Based Armed Rotary Wing	MH-60S (USA)	AGM-114B	3	2	1	6
	Ship-Based Armed Fixed Wing	AV-8B (USA)	AGM-154C	8	2	2	32
	Ground-Based Armed Maritime Fixed Wing	P-8A (USA)	Mk-46 Mod 5	12	2	1	24
	Cruiser	Ticonderoga-Class (USA)	RGM-109E	75	2	3	450
	Destroyer	Arleigh Burke (flt. II) (USA)	RGM-109E	50	2	3	300
	Frigate	Grigorovich (RUS)	P-800	35	2	2	140
	Corvette	Type 056A (PRC)	YJ-83K	15	2	2	60
	Missile Boat / Fast Attack Craft	Type 022 (PRC)	YJ-83K	12	2	1	24
	Tactical Submarine (Nuclear-Powered)	Los Angeles-Class (flt. III) (USA)	RGM-109E	50	2	3	300
	Tactical Submarine (Non-nuclear-powered)	Kilo-Class (Improved) (RUS)	53-65M	15	2	2	60
	Ground-Based Anti-Ship Missile	YJ-62 (PRC)	YJ-62	30	1	1	30

Reference: U.S. Army Worldwide Equipment Guide

Table A.3: WEG-CFPI Technological Tier Conversion and Coefficient Weighting

WEG Tier	CFPI Tier	Descriptor	G-value	Adjustments (Additions)
1(+)*	4	Cutting-edge	6	System introduction establishes new generation; long-range missile systems of <i>WEG</i> tier 1
1	3	Advanced	4	Long-range missile systems of <i>WEG</i> tier 2
2	2	Competitive	3	Long-range missile systems of <i>WEG</i> tier 3; short-range missile systems of <i>WEG</i> tier 1; wheeled armored fighting vehicles of <i>WEG</i> tier 1; towed anti-aircraft systems of <i>WEG</i> tier 1
3	1	Aging	1	Long-range missile systems of <i>WEG</i> tier 4; short-range missile systems of <i>WEG</i> tier 2; wheeled armored fighting vehicles of <i>WEG</i> tier 2; towed anti-aircraft systems of <i>WEG</i> tier 2
4	1	Aging	1	Short-range missile systems of <i>WEG</i> tier 3; wheeled armored fighting vehicles of <i>WEG</i> tier 3; towed anti-aircraft systems of <i>WEG</i> tier 3
4(-)*	0	Obsolete	0	Short-range missile systems of <i>WEG</i> tier 4; wheeled armored fighting vehicles of <i>WEG</i> tier 4; towed anti-aircraft systems of <i>WEG</i> tier 4; systems of <i>WEG</i> tier 4 operated in a quantity less than 1% of their lifetime production run

Reference: *U.S. Army Worldwide Equipment Guide*

Sophistication increases, with tier 1 most sophisticated and tier 4 least sophisticated.

CFPI's tiers increase directly with degree of sophistication for two reasons: (1) although the *WEG* was useful in designing CFPI, the two need not be perpetually linked; and (2) rather than recalibrating tiers in an inverse tier-number scale, CFPI can add new systems to appropriate existing tiers or create new tiers as generations of technology emerge.

Like the *WEG* tiers, CFPI tiers correspond roughly to introduction dates of weapon systems exhibiting newer technological characteristics. Using weighted coefficients for sophistication and representing capability-based contribution to strategic signaling value rather than conflict outcome precludes the need to compare or adjust systems toe-to-toe. CFPI thus understands state possession of any system of a particular role in a particular tier the world over to contribute the same capability-based element to strategic signaling, enabling comparative analysis across the global system of arsenals. I next flesh out an example of such comparison through CFPI scores for the air-focused components of Chinese and Russian arsenals in 2021.

Example: CFPI Scoring of Chinese and Russian Air-focused Systems, 2021

In this brief demonstration, the computational procedures from the previous section generate index scores for the conventional weapon systems of the People's Republic of China and the Russian Federation in the air domain as of 2021. Beginning with the expression for overall CFPI score, I expand to express score within a single domain (air) and expand and compute CFPI score for a single system type (multirole fighters). I then illustrate how even one domain's CFPI score for two states allows comparative capability-based signaling analysis that previously would not have been possible. The expression for total CFPI score is:

$$U_p = U_a + U_l + U_n$$

Focusing on the air domain:

$$U_a = U_{ai} + U_{am} + U_{ag} + U_{ad}$$

Multirole fighters specifically:

$$U_{am} = (G_0(\sum t_{0am}) + G_1(\sum t_{1am}) + G_2(\sum t_{2am}) + G_3(\sum t_{3am}) + G_4(\sum t_{4am})) r_{am}$$

The above results from expanding the expression for a single system type to include systems at each of the five generational tiers of the CFPI. Tables A.4 and A.5 list multirole fighter inventories of China and Russia in the year 2021 per the International Institute for Strategic Studies' *The Military Balance*, an annual resource that estimates weapon quantities in the arsenals of over 170 states. Note that the data—lists of platforms and quantities—are incomprehensible to readers lacking expertise in the designations of these weapons, and even those readers with some familiarity may lack a command of the variants of each fighter.

Table A.4: Chinese Multirole Fighters, 2021

Platform	Quantity
J-10A/S	307
J-10B/C	175
J-11/B/BS	202
J-16	150
J-20/A	24
Su-27/B/C	32
Su-30M2/MKK/MKI/SM	97
Su-35/BM/S	24

Source: *International Institute for Strategic Studies*

Table A.5: Russian Multirole Fighters, 2021

Platform	Quantity
MiG-29SM	16
MiG-31BM	107
Su-27/B/C	48
Su-27ML/SM/SM3	71
Su30M2/MKK/MKI/SM	132
Su-35/BM/S	94

Source: International Institute for Strategic Studies

Faced with the raw data, an analyst unfamiliar with each platform designation would be limited to unhelpful techniques like simply comparing the number of multirole fighters in each inventory (an unfortunately common practice). At this point, it is only apparent that China's 2021 arsenal contained more multirole fighters and that there is some model overlap between the two states. To avoid such underwhelming conclusions, analysts can either abandon the pursuit or commit considerable effort to gaining familiarity with the seemingly endless nomenclatures of conventional weapons. A downside to the latter approach is that the ensuing analysis risks being incomprehensible to its intended audience.

In order to make comparisons that do not encounter granular barriers to entry, we can score the systems using CFPI. Table A.6 lists a selection of multirole fighters currently coded in the CFPI and found in the arsenals of the United States, China, Russia, North Korea, and Iran with generational tiers resulting from *WEG* conversion (table A.3).

Table A.6: Multirole Fighters by CFPI Tier

Platform	CFPI Tier
EF-2000	2
F/A-18 A/B	2
F/A-18 C/D	3
F-15E	3
F-16C/D	2
F-35/A/I	4
FC-20	2
J-10A	2
J-10B/C	3
J-11/B/BS	2
J-16	3
J-20	4
J-6	1
JAS 39A/B	1
JAS 39C/D	2
JAS 39E	3
JF-17/A/B	2
MiG-29SM	2
MiG-31BM	2
Mirage 2000/E	2
Mirage F1	1
Rafale B F3/C F3/B F3-R/C F3-R	3
Rafale B/C/DH/DM/EH/EM (F2)	2
Su-27/B/C	1
Su-27ML/SM/SM3	2
Su-30	2
Su-30M2/MKK/MKI/SM	3
Su-35/BM/S	3

Reference: U.S. Army Worldwide Equipment Guide

Using table A.6, we can compute values representing the conventional capability-based signaling afforded Russia and China by each state's multirole fighters in the year 2021. Tables A.7 and A.8 demonstrate this.

Table A.7: Chinese Multirole Fighter CFPI Score, 2021

Platform	Quantity	<i>t</i>	<i>G</i>	<i>r</i>	CFPI
J-10A/S	307	2	3	32	29,472
J-10B/C	175	3	4	32	22,400
J-11/B/BS	202	2	3	32	19,392
J-16	150	3	4	32	19,200
J-20/A	24	4	6	32	4,608
Su-27/B/C	32	1	1	32	1,024
Su-30M2/MKK/MKI/SM	97	3	4	32	12,416
Su-35/BM/S	24	3	4	32	3,072
<i>U_{am}</i>					111,584

Quantity Source: International Institute for Strategic Studies

Table A.8: Russian Multirole Fighter CFPI Score, 2021

Platform	Quantity	<i>t</i>	<i>G</i>	<i>r</i>	CFPI
MiG-29SM	16	2	3	32	1,536
MiG-31BM	107	2	3	32	10,272
Su-27/B/C	48	1	1	32	1,536
Su-27ML/SM/SM3	71	2	3	32	6,816
Su30M2/MKK/MKI/SM	132	3	4	32	16,896
Su-35/BM/S	94	3	4	32	12,032
<i>U_{am}</i>					49,088

Quantity Source: International Institute for Strategic Studies

Having followed the CFPI scoring steps, some more helpful conclusions follow. We could already observe that Russia's inventory of multirole fighters was considerably smaller than China's, but we can additionally observe that it is only marginally less technologically sophisticated. The difference between the capability contribution of multirole fighters to the signaling value of each state's arsenal is then roughly

proportional to the numerical difference, a conclusion that we could not make with any real confidence before scoring. Table A.9 lists data and scores for the entire air-focused components of Chinese and Russian conventional arsenals in the year 2021.

Table A.9: Comparison of Air-focused CFPI Scores, Russia and China, 2021

System Type	CFPI Score	
	Russia	China
Air Superiority Fighter (U_{ai})	3,984	19,248
Multirole Fighter (U_{am})	49,088	111,584
Ground Attack Aircraft (U_{ag})	38,328	27,744
Air Defense Missile System (U_{ad})	138,480	111,072
Total (U_a)	229,880	269,648

Underlying Quantity Source: International Institute for Strategic Studies

The data suggest instructive conclusions concerning the two state's capability basis for air-focused conventional signaling. China's airpower arsenal exhibits two principal repositories of firepower potential: multirole fighters and air defense missiles. This suggests a relatively even prioritization of deterrence through unambiguously defensive systems (air defense) and through systems whose offensive potential for power projection lends them an ambiguous quality. Russia, on the other hand, has a clear center of gravity for its air-focused firepower potential: air defense missile systems. Restricting our consideration for the moment to air-focused CFPI scores, the data do not suggest a robust Russian airpower projection signal relative to that inherent in China's inventory.

Constraints, Trade-offs, and Possibilities

This paper's method aims to enhance the pursuit of capability-based balance of power analysis by enabling estimative comparisons of conventional strategic signaling value of state arsenals, with distinct constraints and possibilities. These include: (1) the abstract nature of indexes; (2) the inability to consider unconventional capabilities or systems not listed; (3) the impossibility of using CFPI scoring to predict conflict outcomes with any confidence; and (4) the possibilities of using CFPI scoring to enhance other avenues of defense analysis.

I simply cannot claim that CFPI enables any sort of precise measurement of the aggregate quality of state conventional weapon systems; it only improves incrementally on the current paradigm of comparative analysis, which is characterized by a practical inability to make quality-based comparisons between weapons outside methods intended to project their effectiveness in combat with questionable conclusions. Just as gross domestic product (GDP) provides an accessible overall metric but fails to capture nuances beyond an economy's size and easily masks sector-specific weaknesses or strengths, CFPI enables analysts without granular conventional weaponry knowledge to discern only the broad contours of capability-based signaling capacity for balance of power analysis.

By its very nature, CFPI is unable to capture signaling contributions of military systems that are not conventionally armed. These include nuclear platforms (aircraft, submarines, and missile systems primarily intended for nuclear weapons delivery are excluded from CFPI tables), logistical systems that could contribute to strategic signals

(particularly large-scale airlift or sealift systems), and mobility systems (e.g., mine warfare vessels, bridging vehicles). While these blind spots are understandable given the method's firepower potential focus and the observation at this paper's outset that most states procure far more combat hardware than their relatively weak logistical systems can support, they are blind spots nonetheless and analyses using CFPI should appropriately caveat or avoid broad ascriptions of intent or capability.

CFPI absolutely cannot on its own support conflict outcome prediction with any degree of confidence, and even with multiple tools conflict outcome prediction is a fraught pursuit. It may seem ironic that, having noted the criticism that has befallen techniques like aggregated firepower score and WEI/WUV, I root CFPI's tactical role value computation in reductive approximations of explosive yields by index systems releasing index munitions under wholly theoretical conditions. However, I do not propose—and strongly caution against—applying normalized munition yields from CFPI *r*-values toward engagement outcome prediction. CFPI projects neither damage nor survivability prospects, and in fact does not incorporate engagement modeling at all beyond an initial proxy for the capability component of “capability-based” signaling capacity. There are simply too many other factors—possibly an unknowable number—that contribute to combat power potential.

These caveats notwithstanding, I believe CFPI solves real problems facing would-be military balance of power analysts. Accepting the premise that most of the world's conventional weaponry serves a signaling contribution role most of the time, CFPI scoring represents an accessible proxy for this signaling in the conventional arena. CFPI

can also combine with other concepts to make well-worn avenues of defense analysis more informative.

Assuming that when states purchase weapons they are usually purchasing the capability-based component of conventional signaling capacity, more meaningful analysis of procurement spending becomes possible. Even when procurement spending is disaggregated from total defense spending—a constantly cited figure that typically lacks information to be useful—the inability to make comparisons between state arsenals impedes a full appreciation of procurement analysis.

While the applications in this paper focus on CFPI scoring for comparative analysis between states in the same year, CFPI also enables analysis of state arsenals over multiple years. This may simply describe and compare change over time or support procurement analyses. The change in a state's CFPI score is expressed:

$$\Delta U_p = U_{p(y)} - U_{p(y-1)}$$

In this straightforward, recursive expression, change in CFPI score is the difference in CFPI score between the year of analysis y and the previous year $y-1$. This is not yet suitable for linking procurement spending to ΔU_p since procurement is not instantaneous. Embracing the approximate natures of proxy values and indexes, a staggered recursive value of CFPI change across several years over the expenditure of previous years compensates for lag. A 2018 RAND study found an average of 3 years between intermediate design, production, and fielding milestones in the U.S. acquisition system roughly analogous to those of purchase agreement and inventory receipt for states

importing weapons. (Light et al. 2018) Using this, a staggered recursive expression for CFPI score change over procurement spending and across time would be:

$$\eta_{Up} = \frac{\Delta U_{p(y)} + \Delta U_{p(y-1)} + \Delta U_{p(y-2)}}{x_{(y-1)} + x_{(y-2)} + x_{(y-3)}}$$

Analysis employing this expression requires longitudinal CFPI scores and procurement spending data, and probably cannot work for states that indigenously produce their weapons (particularly with substantial research and development). Within these constraints is an avenue for comparative proxy analysis of conventional weaponry procurement by arms-importing states. The merits of adopting one proxy measurement over another is debatable—and any inferences to intent would require additional evidence and analysis—but it seems difficult to refute the observation that states updating their inventories with more competitive systems, at lower expense, and over shorter periods of time are procuring more efficiently compared to other states.

Using CFPI Scoring to Gain Insight into the U.S. National Defense Strategy

The United States released the most recent version of its statutorily mandated National Defense Strategy (NDS) in 2018. The thesis statement reads:

*Long-term strategic competitions with **China** and **Russia** are the principal priorities for the Department, and require both increased and sustained investment, because of the magnitude of the threats they pose to U.S. security and prosperity today, and the potential for those threats to grow in the future. Concurrently, the Department will sustain its efforts to deter and counter rogue regimes such as **North Korea** and **Iran**, defeat terrorist threats to the United States, and consolidate our gains in Iraq and Afghanistan while moving to a more resource-sustainable approach.* (U.S. Department of Defense, 2018)

Does a comparative analysis of the approximate signaling value of the Chinese, Russia, North Korean, and Iranian conventional arsenals offer insight into the “magnitudes of the threats” or “potential for those threats to grow”? What do apparent conventional postures of each state suggest for “increased and sustained investment”? In this section, I use CFPI scoring to examine the premises and conclusions of the NDS in ways that would be difficult or misleading without structured comparative analysis of capacity-based conventional strategic signals.

Before presenting CFPI results, I visit *GFI*’s ranking of the five countries’ capabilities to highlight how a number of academic, professional, and journalistic settings troublingly cite *GFI* as premises for strategic arguments. I next present CFPI scoring for the five states: overall; by domain; by technological tier; and by extra-regional deterrence suitability. Finally, I translate this into three main conclusions: (1) of the prospective adversary states, only China appears eventually capable of a truly competitive conventional posture; (2) the conventional advantage of the United States heavily incentivizes all four states to pursue unconventional capabilities including nuclear armament, cyber, and disinformation; and (3) the investment called for can only do so much to further extend a long conventional posture lead and may be better allocated to countermeasures against unconventional state threats.

GFI – Cited by Journalists, Professionals, and Even Scholars

The *Global Firepower Index* enjoys widespread citation by journalists and governments despite the opacity of its methodology. The next few paragraphs expand *GFI*'s ratings for the states mentioned in the NDS while reviewing a sampling of ostensibly serious journalistic, professional, and academic settings glossing over the non-rigorous nature of *GFI* to cite these rankings. I further illustrate the problem raised in the introduction, namely that a dearth of accessible methods for comparative analysis exacerbates tendencies of would-be analysts to cite sources like *GFI*.

GFI purports to rank states by overall “military strength,” “airpower,” “land forces,” and “naval forces.” (Global Firepower 2021) Figure A.1 is a normalized depiction of these rankings where each state’s score is depicted as a percentage of the highest score awarded by the site in each category.

Site rankings put the United States first overall, with Russia a close second and China a close third. As *GFI* does not publish its methods, readers must wonder how the individual domain rankings generate overall rankings. Rankings for “Airpower,” “Land Forces,” and “Naval Forces” simply entail counting military aircraft, main battle tanks, and naval vessels respectively. Despite this approach, there is no identifiable relationship between the domain ratings and the overall ratings. *GFI* puts North Korea ahead of Iran in all three domains, but ranks Iran ahead of North Korea overall. Incidentally, *GFI* ranks North Korea ahead of the United States in “Land Forces” and “Naval Forces.”

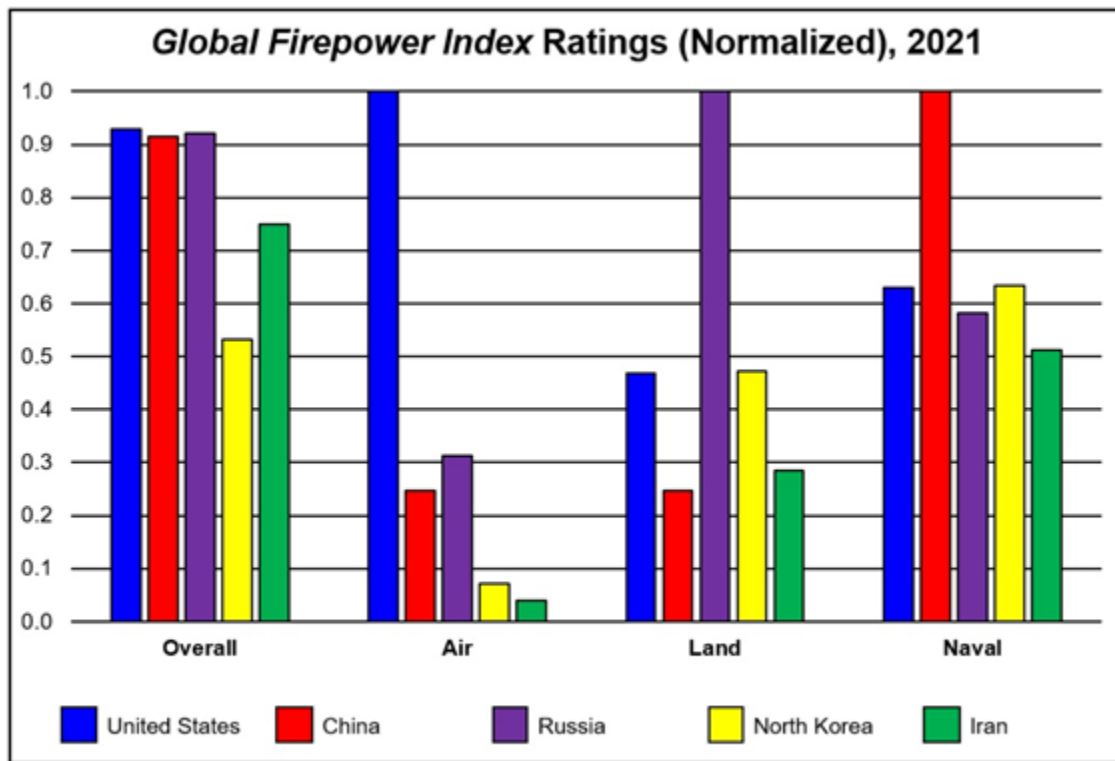


Figure A.1: GFI Scores for the U.S., China, Russia, North Korea, and Iran, 2021
Source: *Global Firepower*

These questionable conclusions do not completely dissuade citation of *GFI*'s analysis in journalistic, professional, and even academic settings. *Business Insider* cited *GFI*'s 2018 rankings to report on the NDS, depicting Russia and China as close behind the United States. (Woody 2018) The Association of the United States Army (AUSA), the principal professional organization for current and former American soldiers and officers, cited *GFI* in asserting that the United States trails Russia and China in land power. (Association of the United States Army 2019) The instructional materials for "America's Weapon Systems," a shortform course at the College of William and Mary,

cites *GFI* to state that “Russia overwhelmingly leads” in the arena of conventional land systems. (Hickok 2018)

Oleksiy Kuzmenko’s reporting indicates serious security scholars and defense analysts either have not heard of *GFI* or do not take it seriously. Nevertheless, *GFI* and the malleable narratives implied by its rankings still proliferate through citations in settings assumed to be reliable. Widespread use of *GFI*’s rankings offers a prestige boost—or perhaps raises alarm—for Russia and Iran. *GFI* has consistently ranked Iran’s military ahead of Israel’s, a fact noticed by both states’ journalistic communities. (Winston 2019; Iran International 2019) While this paper does not score Israel’s arsenal, the next subsection paints a starkly different landscape for Russia and Iran than does *GFI* and advances more transparently informed conclusions.

CFPI Scoring of the U.S. and Prospective Adversaries Identified in the 2018 NDS

I focus on depicting comparative results of CFPI scoring for the United States, China, Russia, North Korea, and Iran using arsenal data from the 2021 edition of the IISS’ *The Military Balance*. Figure A.2 depicts overall and domain-specific scores for the five states, while Table A.10 lists each state’s score derived from each of the 25 system types.

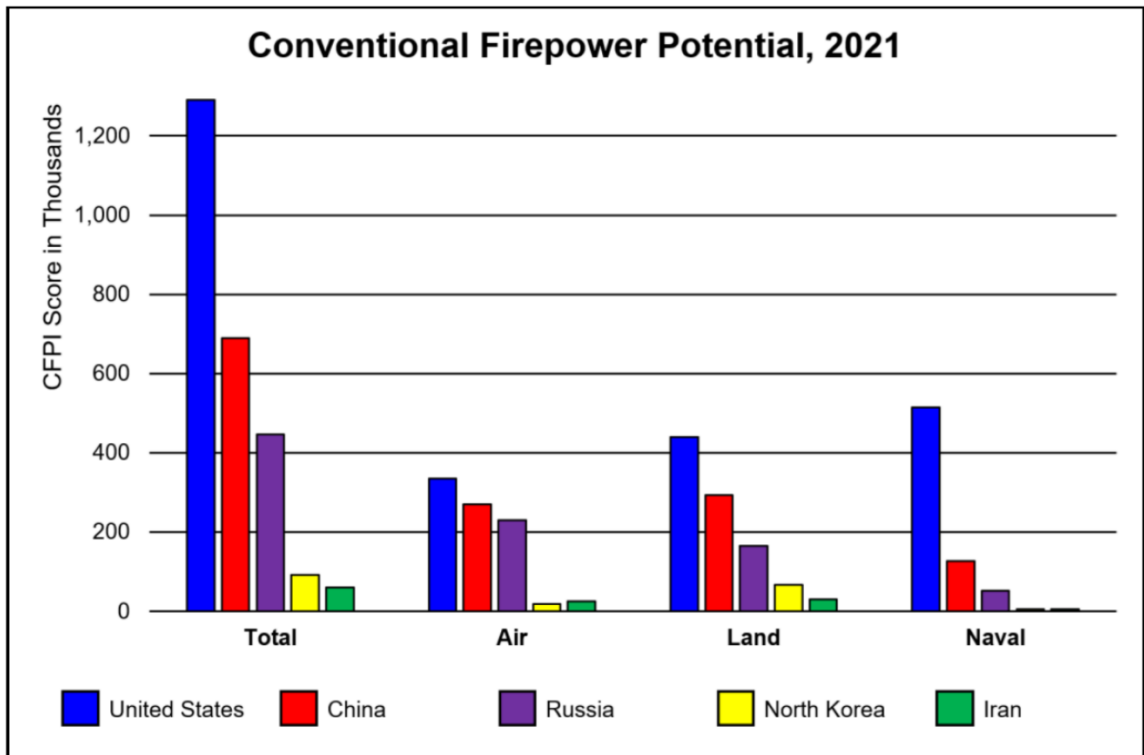


Figure A.2: CFPI Scores for the U.S., China, Russia, North Korea, and Iran, 2021
Underlying quantity source: International Institute for Strategic Studies

It is immediately apparent that CFPI suggests a dramatically different set of capabilities contributing to conventional strategic signals compared to the popular *GFI* portrayal. The core of this difference is the United States' greater concentration of systems—particularly naval—that CFPI accords higher role scores and technological tiers. Figure A.3 depicts technological composition of each state's arsenal in system counts (with no tactical role weighting). Figure A.4 shows the derivation of each state's score from systems of each degree of sophistication. Figures A.3 and A.4 demonstrate why simply counting platforms muddies insights into arsenal composition. Finally,

Table A.10: Comparison of Conventional Firepower Potential Index Scores, U.S., China, Russia, North Korea, and Iran, 2021

System Type [†]	CFPI Score				
	United States	China	Russia	North Korea	Iran
Air Superiority Fighter	44,424	19,248	3,984	7,776	3,912
Multirole Fighter	193,280	111,584	49,088	0	3,200
Ground Attack Aircraft	20,880	27,744	38,328	2,736	2,256
Air Defense Missile System*	76,680	111,072	138,480	8,880	15,408
Air Domain Subtotal	335,264	269,648	229,880	19,392	24,776
Main Battle Tank*	49,448	110,400	48,560	33,160	10,760
Armored Fighting Vehicle*	279,300	114,428	70,040	7,112	3,700
Self-Propelled Cannon Artillery*	6,876	10,840	7,742	8,596	584
Towed Cannon Artillery*	6,201	1,288	3,825	2,150	1,840
Rocket Artillery*	5,760	10,110	4,656	9,435	828
Rotary Wing Attack*	57,024	15,872	15,840	0	800
Multirole Rotary Wing*	30,844	7,288	2,964	1,144	424
Air Defense Gun System*	0	1,446	210	2,750	572
Surface-to-Surface Missile*	5,136	22,200	11,664	2,496	11,520
Land Domain Subtotal	440,589	293,872	165,501	66,843	31,028
Aircraft Carrier	212,400	14,400	3,600	0	0
Ship-Based Rotary Wing*	20,448	1,062	864	0	78
Ship-Based Fixed Wing	113,120	4,352	3,360	0	0
Shore-Based Maritime Fixed Wing*	10,152	4,776	1,728	0	72
Cruiser	35,100	1,800	2,700	0	0
Destroyer	64,800	31,200	3,600	0	0
Frigate	11,760	17,640	5,880	280	420
Corvette*	0	13,200	11,580	0	60
Missile Boat / Fast Attack Craft*	720	4,896	0	840	1,536
Tactical Submarine – Nuclear-Powered	46,800	6,300	9,900	0	0
Tactical Submarine – Non-Nuclear Powered*	0	9,120	2,160	3,600	960
Shore-based Anti-ship Missile*	0	17,310	5,880	540	1,620
Naval Domain Subtotal	515,300	126,056	51,252	5,260	4,746
Total 2021 CFPI Score	1,291,153	689,576	446,633	91,495	60,550

Underlying quantity source: International Institute for Strategic Studies

[†]Systems are classified according to international convention reflected in IISS' *The Military Balance*. This sometimes means systems are evaluated as types different from the retaining state's label (e.g. large "corvettes" may be scored as frigates).

*Indicates systems excluded from extra-regional projection CFPI score (see figure A.5).

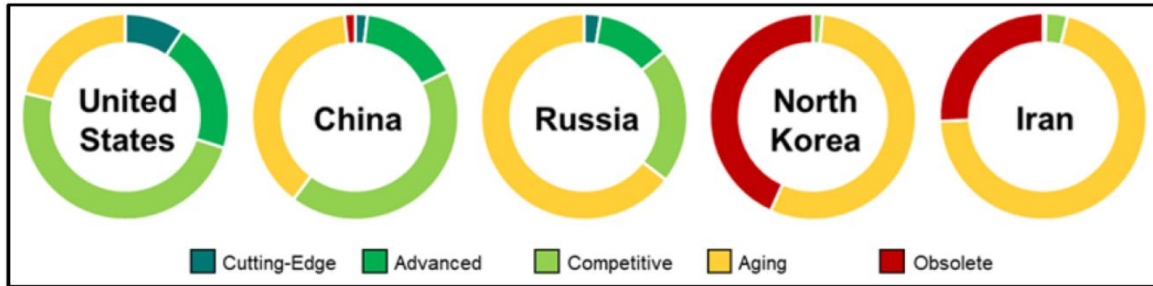


Figure A.3: Technological Composition of U.S., China, Russia, North Korea, and Iran Conventional Arsenals (Excluding AFVs), 2021*

Quantity Source: International Institute of Strategic Studies

*All five states have large, mostly aging inventories of armored fighting vehicles (AFVs)—armored, armed vehicles other than main battle tanks—that would inject misleading noise into this depiction, which counts but does not weight systems. Figure A.4 takes AFVs into account.

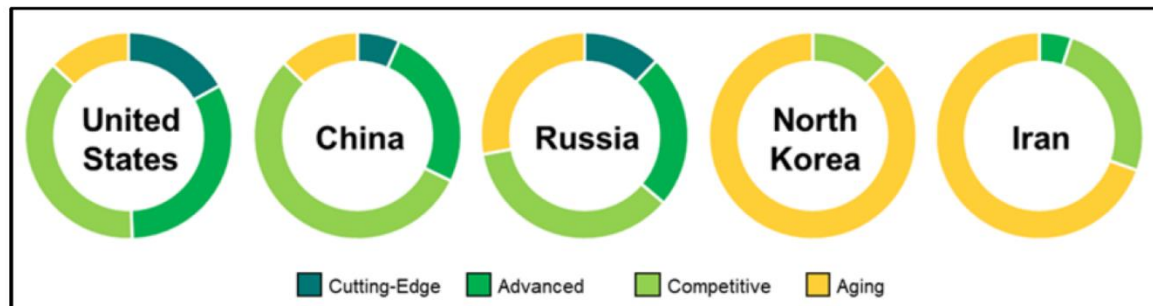


Figure A.4: Technological Composition of U.S., China, Russia, North Korea, and Iran Conventional Arsenals by Sources of CFPI Score, 2021

Underlying quantity source: International Institute for Strategic Studies

figure A.5 scores only conventional firepower potential for systems suited to extra-regional projection and thus extended deterrent signals. These include extended flight-capable fixed-wing aircraft, blue-water naval vessels, and ship-based naval aviation (see table A.10).

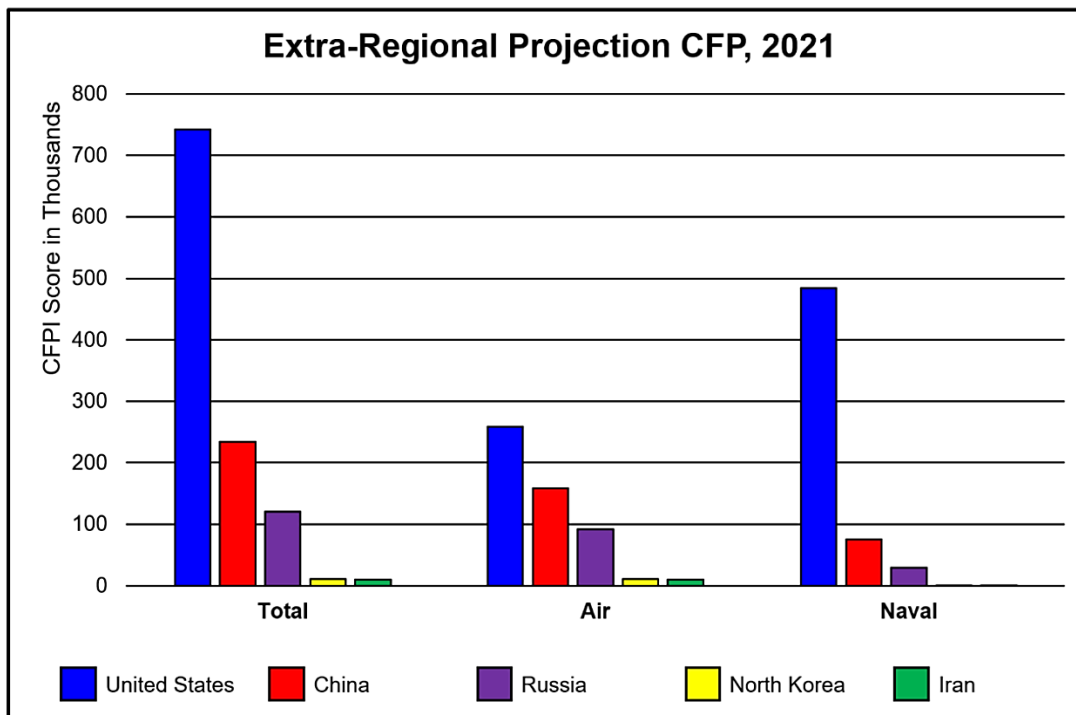


Figure A.5: CFPI Scores for Extra-Regional Projection Platforms* for the U.S., China, Russia, North Korea, and Iran, 2021

Underlying quantity source: International Institute for Strategic Studies

*"Extra-regional projection platforms" includes the set of systems, air defense systems, and short-range or coastal naval platforms (corvettes, missile boats, non-nuclear-powered tactical submarines, and anti-ship missiles). See list in table A.10.

CFPI-Facilitated Analytic Conclusions for the NDS' Threats and Investments

The data of the preceding charts enables us to revisit the 2018 NDS thesis. Rather than embarking on an in-depth analysis of each chart—the aim of this paper is to contribute the CFPI method and illustrate possibilities, not a deep-dive into the NDS' outlook—I briefly distill insights into the magnitude and nature of the cited threats and prospective investments.

CFPI scoring combined with readily available macroeconomic data suggests that only China can realistically contemplate future conventional parity with the United States. The yawning gap in conventional posture incentivizes the other states to pursue unconventional advantages. For North Korea and Iran, nuclear arms represent an attractive insurance policy. Russia, already possessing nuclear arms and with its legacy ability to advance a prestige narrative by showcasing some premier capabilities, is nonetheless also incentivized to exploit capabilities in the difficult-to-attribute realms of offensive cyber and disinformation operations. (Lilly and Cheravitch 2020; Cunningham 2020)

While the United States is free to pour resources into politically popular and technically straightforward efforts to further bolster conventional advantage, the reality is that America's arsenal uniquely postures it to send robust extra-regional extended conventional deterrent signals. This means that “increased and sustained” investment in conventional capabilities—while necessary if the U.S. prioritizes a conventional posture edge over China—probably crosses a point of diminishing returns given the extant capability gaps and the astronomical price tags of advanced air and naval systems. The

most lucrative avenue for the U.S. to keep China's capability-based posture in check may be to devote resources to arming allies in the region; note Australia's abandonment of longtime strategic ambiguity in agreeing to receive nuclear-powered submarines from the United States implicitly to balance China. (Pei 2021)

Setting aside the largely diplomatic challenges of managing nuclearization by North Korea and Iran, CFPI scoring suggests that, dollar for dollar, more promising applications for "increased and sustained" investment lie in counter-cyber and counter-disinformation measures. An irregular warfare annex to the 2018 NDS particularly noted Russia's proclivity toward and proficiency with disinformation and cyber operations, which suggests that at least some within the Pentagon share this perspective. (U.S. Department of Defense 2020)

This all confines the scope of the CFPI scoring-informed analysis to threats cited by the NDS. Other voices argue climate change and pandemics represent risk sources that would benefit from some share of U.S. spending otherwise pouring into extending already wide conventional advantages. If comparative arsenal analysis represented a great enough challenge to justify the writing of this paper, devising a framework for fiscal value judgments across completely disparate realms of policy justifies authorship of multiple libraries of books.

Conclusion

This paper set out to identify a problem and propose some degree of solution. Conceiving the problem as the existence of extensive obstacles to meaningful, accessible comparative conventional arsenal analysis and the proclivity of journalists and governments to cite non-credible sources in the absence of credible ones, the solution is adopting a clear if reductive framework with modest goals to enable comparative conventional armament posture analysis. By avoiding conflict outcome prediction and focusing on the capability component of conventional strategic signals suggested by arsenal compositions, I believe the CFPI contributes some new methodological good to the field. I look forward to exploring and improving the method by employing it in more systemic and longitudinal analyses.

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