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Filling the weapons procurement gap in the Indo-Pacific: South Korean arms exports to India and Indonesia

Soul Park ^a and Chirayu Thakkar ^b

^aSchool of Politics, Philosophy & Area Studies, University of East Anglia, Norwich, UK; ^bFaculty of Arts & Social Sciences, Department of Political Science, National University of Singapore, Singapore, Singapore

ABSTRACT

How do second-tier suppliers adapt to defense-industrial globalization and expand their weapons sales in different regions? We offer a demand-side explanation of arms procurement. As the first-tier suppliers focus on advanced power projection weapons, two types of qualitative structural gaps emerge in the global arms market either due to excessive superiority or utter neglect of certain platforms. Consequently, buyer states turn to weapon systems produced by second-tier suppliers as they are proximate to their qualitative needs in terms of strategic/technical and doctrinal requirements. Through case studies of South Korea's weapons sales to India and Indonesia, we show how a second-tier supplier is able to outbid its first-tier counterparts on qualitative grounds to fill the structural gap left by global power disparity.

KEYWORDS Indo-Pacific; weapons procurement; South Korea; defense-industrial globalization

Defense-industrial globalization has majorly transformed the global arms industry as it has become increasingly more sophisticated and transnational in the post-Cold War era (Brooks, 2005; Mabee, 2009; Park, 2018). Scholars and policymakers argue that the changing nature of arms procurement would lead second-tier producers to either converge towards a liberal-market model or continue to rely on military technonationalism and incur the economic costs (Bitzinger, 2017; Hayward, 2001; Struys, 2004). Yet, even in the face of economic challenges posed by defense-industrial globalization and ensuing advances in weapons technology, many small and medium states in the international system have managed to maintain

CONTACT Soul Park  Soul.Park@uea.ac.uk  School of Politics, Philosophy & Area Studies, University of East Anglia, 0.29 Arts and Humanities Building, Norwich, Norfolk NR4 7TJ, UK

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defense autonomy and, in some cases, increased their market share (DeVore, 2015). How did these second-tier suppliers adapt to the globalization of arms production and expand their weapons sales in different regions?

Much of the weapons procurement literature has focused on the domestic policy shifts and adjustments made by the small and medium states in the face of defense industrial globalization, what we broadly refer to as the supply side explanation (e.g., Choi & Park, 2023; DeVore, 2015, 2016; Ikegami, 2013; Mawdsley, 2008). While this literature offers valuable insights, it remains a partial picture that lacks a systematic analysis of the reasons for the buyer (or client) state's motives for purchasing weapons from these second-tier suppliers—the demand side explanation. As recent works have noted, buyer states have shown a tendency to gravitate towards second-tier suppliers for a variety of reasons, particularly in the Indo-Pacific region: the rise of external threats (Groll & De Luce, 2016; Loo, 2005; Naseem, 2023); the provision of attractive offset packages (Anicetti, 2024; Mathews, 2019); the need to modernize outdated military arsenals (Lakshmana, 2018); or the push to diversify its weapons portfolio and reduce their dependence on particular first-tier suppliers in an era of growing strategic uncertainty (Boutin, 2009; Storey, 2021).

In this article, we focus on the demand-side of arms procurement and analyze the factors that lead regional powers to purchase platform-based weapons systems from second-tier states, at times distancing themselves from first-tier suppliers in the process. Moreover, this demand side explanation, as the rest of the article will demonstrate, increases our grasp on contemporary trends of weapons flow in the Indo-Pacific region as more and more regional powers facing security challenges from China pursue military modernization (Broad & Lakshmana, 2023). In addition to explaining a key pattern in the Indo-Pacific region, our research sheds additional light on the actual procurement calculus of regional actors drawn into a crisis situation, as the current Ukraine conflict has displayed (Herzinger, 2023).

In a nutshell, we argue that second-tier suppliers tap into the structural gap that exists in many cases due to the difference between the quality of the weapons the first-tier suppliers have to offer and the baseline quality requirements of the buyers. Specifically, two interrelated factors precipitate this quality gap. First, as major defense manufacturers from first-tier states focus on power projection capabilities, they either move too far ahead of the technology curve producing the most advanced weapons or neglect some platforms altogether. In such cases, their offerings are not relevant for regional players, who do not harbor power projection capabilities, leaving the defense needs of these states largely unmet. Second and subsequently, the second-tier suppliers have been more adept at meeting such defense needs, owing to either the similarity of threat environment or certain path dependence as they enter the market by improvising existing

platforms that are licensed or co-produced (Bitzinger, 2003). Consequently, we argue that regional powers, such as India and Indonesia, purchase arms from second-tier states precisely because the weapons systems they procure fit their baseline qualitative requirements. To operationalize “baseline requirement”, we employ a broad set of strategic/technical and doctrinal indicators.

The remainder of the article proceeds as follows. In the next section, we analyze the structural gap in the weapons procurement process created by the power disparity in the international system. We examine two interrelated structural gaps, one positive and the other negative, that have come to exist in the international system due to the first-tier suppliers’ pursuit of the most advanced weapons system and power projection capabilities. In the following section, we conduct in-depth case studies of South Korea’s (Republic of Korea or ROK) weapons sales: the diesel-electric *Jang Bogo/Nagapasa*-class submarines to Indonesia and the K9 *Thunder/Vajra-T* self-propelled howitzers to India. In particular, we assess the strategic and doctrinal reasons behind the two countries’ decision to strike arms deals with South Korea in recent years. We conclude with broad implications on the state of the global arms market flowing from our study.

Structural gaps in weapons procurement: Demand-side explanation

In the contemporary era, the global arms market continues to be dominated by a small group of first-tier supplier states, who possess “the largest [research and development] R&D investments and domestic markets, [and] produce the entire range of modern weapons systems at the technological frontier and be the dominant arms producers” (Krause, 1992, pp. 31–32). When mapped over trade numbers, the top six manufacturers—US, Russia, France, China, Germany and the UK—who hold an average five percent global market share or above meet these criteria (Wezeman et al., 2023). The US, in particular, has been at the forefront of cutting-edge weapons technology and has continuously outspent about two-thirds of all other countries in the world on defense R&D (Beckley, 2012; Gholz & Sapolsky, 2021, pp. 856–859). Moreover, American defense firms dominate the global arms market overall, with six companies ranking among the top ten in 2021 (Defense News, n.d.; Caverley, 2018). Likewise, despite facing substantial challenges and declining sales trends in recent times (Storey, 2022), Russia, which ranks a notch below the US, has utilized its sizeable arms export as a key tool to advance its foreign policy interests abroad (Bowen, 2021). Defense firms from the other four major exporters—France, China, Germany and the UK—compete for the same space with the US and Russia in selling indigenously developed sophisticated platforms.

In certain categories, these first-tier suppliers have focused on producing long-distance power projection capabilities or exquisitely advanced platforms (Mazarr, 2020), often at the expense of other low-end and inexpensive options. For instance, the emphasis on high-end ships by the US Navy has led to the neglect of “less expensive, smaller vessels that can perform important combat missions on their own for sustained period on the high seas, even in contested environments” (Talent, 2018). Barring Germany, all tier-one manufacturers mentioned earlier have produced and possess a substantial number of power projecting air and naval assets, commensurate to their overall power (Lee & Thompson, 2017).

The focus on power projection capabilities and the pursuit of technical superiority of tier-one suppliers, we contend, has created two types of inter-related structural gaps in arms procurement in the international system. The first variant is what we refer to as a *positive structural gap* (TYPE 1) between the quality of the weapons first-tier suppliers have to offer and the qualitative requirements of buyers. Much of tier-one manufacturers’ production and research is aimed at developing the most advanced weapons, primarily to serve their own militaries and their ability to deal with various threats and crises across the globe. Yet, most arms-procuring countries neither require such advanced weapons for their own security nor can they afford such expensive platforms. As scholars note, “[m]ore often than not, lesser technologies are perfectly adequate” (Caverley & Kapstein, 2012, pp. 127–128; Caverley & Kapstein, 2016, p. 173).

Compared to first-tier states, regional and middle powers need weapons that can best deal with both the internal and external threats within their regional strategic environment. For instance, diesel-electric attack submarines, which the US has stopped producing since the 1950s, can be a cheaper and more appropriate option for many of the US allies in the Indo-Pacific region (Caverley & Kapstein, 2016; Holmes, 2018). Caverley and Kapstein (2016) succinctly note that “while the US defence industry excels at producing the type of arms that its principal client (the Pentagon) wants, it does not produce cheaper variants of items well suited for the mission that much of the world, particularly in Asia, currently demands” (p. 174). Similarly, commenting on US exports to Southeast Asia, others note that Washington’s lukewarm success in many cases can be attributed to its efforts at selling advanced and expensive weapons, which are “not quite needed in Southeast Asian countries” (Siow, 2023).

The qualitative inequality in arms production has simultaneously given rise to what we refer to here as a *negative structural gap* (TYPE 2) in the global arms market. As the other first-tier arms suppliers move ahead of the technology curve, they exhibit neglect in the R&D of certain types of platforms distancing them from the need of the export market. For instance, as the US and its NATO partners employed unmanned aerial systems since the

start of Operation *Enduring Freedom* in 2001, their reliance on artilleries declined, leading to a retreat from continuous investment and development in artillery enhancement (Gordon et al., 2019a; McKenney, 2007, pp. 311–324). Similar concerns were flagged in the wake of the Russia-Ukraine war as analysts felt that the US artillery systems “have atrophied after nearly two decades of focus on counterinsurgency warfare” (Peck, 2022). More technical analysis find NATO’s major guns such as the M109A6 Paladin have fallen behind its peers and currently lack “the more powerful gun and automation of the current generation of modern howitzer systems” (Gordon et al., 2019b, p. 19). Noting this as a prominent trend across weapons systems, scholars suggest the requirements of developing countries have been “largely ignored by major Western defence producers” (Siow, 2023).

In both these cases—of excessive superiority and utter neglect—the second-tier suppliers find an opportunity as they continue to rely on and enhance what has now become “legacy systems” for first-tier suppliers. Although it is not central to our argument, fine readings of multiple cases of second-tier suppliers suggest that these states initially started production through license agreements (Bitzinger, 2003). Over time, they are able to make technical changes that are better suited to local environments and have much better qualitative revisions to offer. This gives the second-tier producers a relative qualitative edge. Specialization, after all, has been one way for defense industries of medium and small states to survive the whirlwind of post-Cold War era globalization (DeVore, 2013). Figure 1 below depicts the thematic representation of both types of structural gaps in the global arms market.

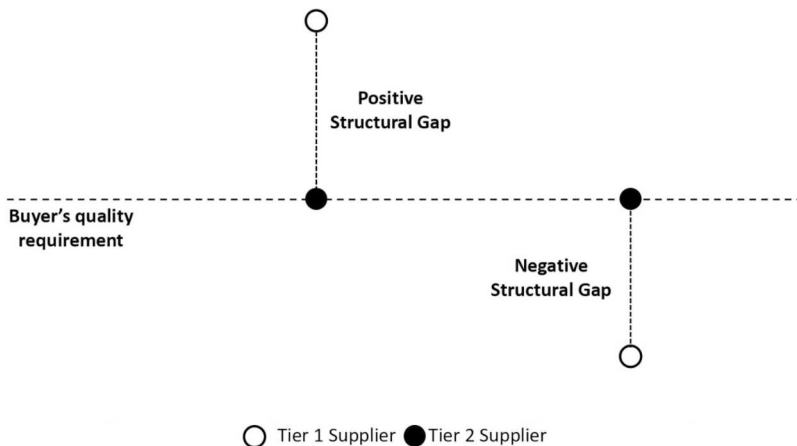


Figure 1. Thematic representation of positive and negative structural gaps.
Note: Figure by authors.

Ironically, both types of gaps provide the structural conditions for selecting weapons produced by second-tier suppliers in the open market. As the US and first-tier suppliers are qualitatively farther from the buyers' requirements, which serves as the baseline in our figure, it advantages the smaller suppliers for certain key weapons. This qualitative proximity to the buyer's requirements, we argue, is a demand side explanation that helps us understand the survival, and in some cases flourishing, of the tier-two suppliers under the onslaught of arms industry globalization. Put differently, a producer's market success depends on the qualitative proximity of its weapons to the buyer's demands. Indeed, it is surprising that the role of qualitative proximity has remained subdued in theorizing procurement choices, especially because most conceptualizations of arms orders follow qualitative sophistication as the key marker of division (Bitzinger, 2003; Krause, 1992; Ross, 1989).

We operationalize a buyer's qualitative requirements through two inter-related factors: strategic and technical imperatives and doctrinal compatibility. First, purchasing states consider the strategic environment in which they operate and procure weapons that best align with their security requirements. Today's largest consumers in the arms market, such as India, Egypt and Indonesia, have professional armies going back to the colonial period. Consequently, their institutional memories, recent experiences, threat assessments and ecological factors, such as terrain and weather conditions, translate into technical specifications of weapons. Not only are weapons cheaper procured by second-tier suppliers in most cases, but they can also have features designed to meet similar threat environments of the client states, making them operationally appealing.

Second, the weapons that states purchase should also fit with their long-term doctrine. Doctrinal fit enables the armed forces to develop their operational capabilities to meet their defense requirements. Some buyer states have already gained operational experience from regional conflicts and other military engagements, which has helped them establish war doctrines of various levels of sophistication. Such doctrinal adherence can further shape specific operation demands, which, in turn, inform technical specifications for the platform. This amalgam of strategic/technical and doctrinal requirements produces a specific baseline of quality requirements. Anything too inferior or superior will prompt buyers to explore alternative options in the arms market.

At this stage, we want to caveat our argument with four points. First, we see our demand-side explanation as complementing rather than competing with the supply-side explanation focusing on domestic policy calibration for the survival of second-tier suppliers' defense industries. Domestic adjustments are indeed critical for achieving the economies of scale demanded by modern weapons systems (e.g., Choi & Park, 2023; DeVore, 2015, 2016;

Ikegami, 2013; Mawdsley, 2008). Second, we look at a narrow condition where the platforms offered by first-tier suppliers are too superior or relatively inferior. We do not strongly hypothesize about situations where there is qualitative parity between first- and second-tier suppliers, but we assume first-tier states might be the preferred choice for a number of other reasons. Nonetheless, our theoretical framework of qualitative proximity can be used by others to examine such cases of head-on competition. Third, to examine the role of qualitative proximity and study the success of second-tier states, we work under strong *ceteris paribus* assumptions in that our theoretical argument and research design deliberately exclude instances that grant decisive weight to a single variable. We are aware that procurement is a multi-causal decision, where states consider multiple factors. As aforementioned, studies focusing on demand side explanations cover an array of factors pertaining to the decision-making process of the buyer state. These include costs, external threat, technology transfer, direct and indirect offsets and attached political strings, among others (e.g., Anicetti, 2024; Harold et al., 2019; Kirkpatrick, 2004; Laksmana, 2018; Mathews, 2019; Storey, 2021). A single variable can, at times, decisively load the dice against one of the competitors. Despite noting these obvious confounding variables, we still proceed to analyze the role of qualitative proximity as it remains an under-researched and untheorized factor in the study of global arms flow. Fourth, we remain agnostic about domestic acquisition processes. Mistrust among civil–military elites, the lack of professional consultations or other institutional deficits that disallow technical expertise from translating into concrete acquisition decisions may pose challenges to our argument. It still does not preclude us from studying major buyers around the world that are predominantly stable polities with established norms and processes for acquisitions.

To sum up, a structural gap exists in the global arms market due to power disparities in the international system. As the US and other first-tier suppliers stay ahead in the technology curve and focus on state-of-the-art weapons systems while neglecting other platforms, they leave a vacuum around the median baseline of qualitative requirements of regional players. From an average buyer's perspective, there remains a preference for operational requirements against power projection, regional against global, cost-effective against expensive, and robust against the avant-garde. Both the positive and negative gaps, we argue, have provided opportunities for second-tier supplier states to survive and, at times, thrive in the global arms bazaar.

South Korean arms export to Indonesia and India

To investigate our theoretical argument, we examine South Korean arms sales in the Indo-Pacific region. As a second-tier supplier—defined as

having “a much lower overall R&D, domestic procurement and production base [than first-tier states], and will depend more heavily on exports or state subsidies” (Bitzinger, 2017, p. 4; Krause, 1992, pp. 31–32)—South Korea is a crucial case for our study (George & Bennett, 2005, pp. 120–121), for several reasons. First, the ROK has successfully defied the odds of arms globalization and become one of the leading exporters in its category. After initiating the *Yulgok* Project and launching its indigenous arms production in the early 1970s, the Korean defense industry has certainly come a long way (Kim, 2011; Moon et al., 2015; Nolan, 1986). If we identify first-tier suppliers as having a market share of five percent or above and second-tier suppliers in the sub-five percent region, South Korea tops the chart along with Spain, Italy, Israel and the Netherlands.¹ Even among its peers, ROK stands out with exports to nearly 90 countries worldwide (Ahn & Kim, 2018, p. 80), an increasing portion of which are platform-based weapons. This feat is even more notable given that South Korea lacked previous political or diplomatic ties with many of the states whom it sells arms. Seoul’s export momentum is likely to continue with recently completed deals in different regions (Kang, 2021; Yoo, 2022). In some niche areas, ROK has already become a dominant player; for instance, it now commands two-thirds of the howitzer market globally (Lee & Smith, 2023). Second, unlike some European manufacturers such as Spain and Italy, South Korea, together with Israel, are situated in a perpetually hostile environment involving adversaries of similar strength that mirrors challenges of many other regional buyers. This similarity of threat experiences leads to closer affinity in strategic and technical requirements of weapons, strengthening a vital condition we wish to study. Lastly, Seoul has undertaken requisite domestic adjustments to survive the onslaught of globalization and transform its defense industry towards an export-oriented sector (Bitzinger, 2019; Choi & Park, 2023). However, these shifts alone do not explain the South Korean arms industry’s successes with certain regional players. As such, our examination of South Korea’s exports allows us to control for endogenous explanations while looking at global patterns and trendlines that leave niche space for second-tier suppliers. That makes South Korea a crucial and paradigmatic case for understanding the success of second-tier suppliers.

Since the center of economic and geopolitical gravity is shifting to the Indo-Pacific, we chose this as region of interest. Anecdotally, one can see a continuously expanding footprint of Korean defense exports in the Indo-Pacific region—patrol corvettes to Malaysia, FA-50 light combat aircrafts and T-50 *Golden Eagle* advanced trainers to the Philippines, Indonesia and Thailand, AS21 Redback Infantry Fighting Vehicles to Australia, diesel-electric submarines to Indonesia, and K9 *Thunder* howitzers to India (Broad & Laksmna, 2023; International Trade Administration, 2020; Lim, 2023). Korea’s export figures in the Indo-Pacific market are in line with the

region's increasing arms appetite, outdoing all other regions around the world (Bitzinger, 2015; SIPRI, 2022). On the buyer side, therefore, we choose two regional players from the Indo-Pacific region: Indonesia and India. Both countries represent top recipients of South Korean arms in two sub-regions of the Indo-Pacific (Table 1): from Southeast Asia, Indonesia is the leading buyer, whereas India tops the table in South Asia. Many states in the Indo-Pacific have already undertaken or are in the midst of military modernization, replacing their outdated inventories, to attend to the changing strategic landscape due to an increasingly assertive China (Shambaugh, 2018). These efforts at modernization largely exclude power projection as a factor. When we emphasize these exigent threat calculations, we do not necessarily argue that regional powers lack interest in power projection. For instance, some states like India face dual calculus—addressing imminent threats in the continental theater against China and Pakistan, whereas joining its western allies in projecting power in the maritime theater, for which it is already looking up to the US for the most advanced platforms.

Given these export patterns to the region, we conduct in-depth analyses of two recent transactions to assess the factors that influenced the decision to purchase from a second-tier supplier state: *Jang Bogo*-class submarines to Indonesia and the K9 howitzers to India. Hence, our unit of analysis is a specific deal from the buyer-seller dyad that is chosen based on important theoretical and empirical considerations: availability of decision-making details in the public domain, competition with a tier-one supplier, and no other confounding variable such as price or geopolitics exerting a decisive influence in the decision-making process. In the next two sections, we analyze both cases individually. Each case study proceeds in three parts: the first part provides the overview of the deal, the second part analyzes the structural gap in each case, and the last part outlines the causes of success for the second-tier supplier, especially the strategic/technical and doctrinal elements that influenced the decision-making process. Following

Table 1. Top ROK weapons destinations 2001–2021 SIPRI (2022) arms transfer database (million TIV)⁵.

Turkey	1412
Indonesia	1405
Philippines	702
United Kingdom	532
Thailand	434
India	432
Iraq	431
Peru	368
Norway	220
Bangladesh	183

both case studies, we also consider a number of alternative explanations pertaining to our cases.

Indonesia and Jang Bogo-class submarines

The deal: Regional dynamics in Southeast Asia have become much tenser since the mid-2000s, chiefly due to China's assertiveness, particularly in the South China Sea (Wezeman, 2019). Most weapons acquisition patterns reflect the threat perception due to this shifting strategic landscape:

it is clear from the equipment acquired—combat aircraft, anti-submarine warfare (ASW) aircraft, air defence systems, coastal defence systems, submarines and major surface combat ships that perceptions of foreign threats are an important driver of most military acquisitions by South East Asian states. (Chang, 2014; also see O'Callaghan, 2012; Wezeman, 2019, p. 8)

While Southeast Asia is not in the midst of a traditional arms race as commentators have pointed out (Bitzinger, 2010), the region collectively has certainly seen an increase in military spending, making it the second-largest military market worldwide (Laksmana, 2018, p. 106).

As one of the parties to the South China Sea conflicts, Indonesia, like other regional players, slowly began to turn its attention towards naval military modernization. Chang (2021) succinctly points out that.

[t]he degree to which those countries with maritime interests have modernized their militaries appears to be increasingly linked to their strategic concerns related to changes in the geopolitical environment, edging out domestic considerations that have long dominated many of their military procurement decisions.

As an archipelagic state, Indonesia's defense strategy has placed maritime defense at the top of its policies as emphasized in the 2015 Defense White Paper (2015; Kembara, 2018, p. 8). Moreover, Indonesia has been vamping up its security on the Natuna Islands and surrounding areas, where it has faced conflict with China in recent years (Meyer et al., 2019).

With maritime security one of the official priorities, along with Indonesia's desire to be a regional player in Southeast Asia, Jakarta embarked on military modernization to replace its aging and outdated weapons systems and platforms (Ministry of Defence, 2015, p. 8; Wezeman, 2019). A key aspect of this military modernization program has been an emphasis on maritime capabilities of which submarines serve as an integral component (Andersson, 2015). As Indonesian Navy Chief of Staff Admiral Muhammad Ali recently pointed out: "the development of the submarine force stands as a game changer and ultimate weapon that will empower us, not only to resolve but also dominate the challenges that lie ahead" (quoted in Isjchwansyah, 2024). The purchase of submarines aligned with Indonesia's long-term

strategic goals of procuring 8–12 submarines by 2029 for its maritime security requirements (Jikibi, 2021; Parameswaran, 2018; Permana, 2021). At the time of the deal with South Korea, the navy's chief spokesperson Commodore Iskandar Sitompul outlined the importance of submarines for Indonesia in order to “safeguard its maritime territories... [and] to maintain a regional balance of power to secure peace” (Santosao, 2009). After a competitive bidding process, Indonesia and South Korea's Daewoo Shipbuilding and Marine Engineering (DSME) agreed to a \$1.1 billion deal for three Type 209/1400 *Jang Bogo/Nagapasa*-class diesel-electric submarines in 2011 (The Jakarta Post, 2017).

Positive structural gap: Unlike Russia and France, who were in the fray to win the Indonesian bid, the US was not even in the competition as it has stopped manufacturing diesel-electric submarines, even for exports. While nearly half of the Russian submarine fleet and the entire French fleet is nuclear, both countries have a successful diesel-electric export variant, which competed for the Indonesia order. However, according to Deputy Minister of Defense Sjafrie Sjamsoeddin, his government chose the South Korean offer, which came with the transfer of technology as part of the deal, “rather than from Russia and France upon consideration *on technical specifications, operational needs and budget*” (Antara News, 2011, emphasis added). In fact, Russia's bid was disqualified because their submarines were “too big and not suitable for an archipelagic country” (The Jakarta Post, 2011). The *Jang-bogo* class submarines (1,400-ton) are much smaller and lighter than the Russian Project 636 variant (2,450-ton) offered to Indonesia (Rosoboronexport, n.d.), which makes the former more suitable for the littoral environment surrounding Indonesia, especially for patrolling its maritime territory against foreign incursions (Global Security, n.d.). In terms of survivability, a larger hull size creates a bigger acoustic signature, compromising stealth of the vehicle (Moore, 2019). Furthermore, the *Jang-bogo* class submarines are much better aligned with Indonesia's anti-access strategy (Gady, 2016).

While the Russian Project 636 can be employed for most operations the Indonesian Navy intends to execute, it is primarily designed for force projection as a part of Russia's Pacific Fleet. For example, all three variants of Project 636 were the backbone of a provocative exercise the Russian Navy conducted much closer to the coast of Hawaii (Novosti, 2021). As others have noted, Project 636's broader role “relates to a limited force projection and ability to operate as part of a coalition. This task calls for ships that are capable of striking sea and land targets independently, and of supporting and defending land forces” (Luzin, 2021). These features exceed Indonesia's defensive needs, which would be served better by a fleet of smaller vehicles swarming across the archipelago. As Benjamin Schreer notes, a “larger number of smaller but modern submarines would make perfect sense ... in

the Indonesian archipelago” (Schreer, 2013, p. 19). In short, a positive structural gap was created due to excessively superior platforms—nuclear-only in the case of the US and conventionally-superior in the case of Russia and France—which South Korea was able to fill in.

Strategic/technical and doctrinal compatibility: In the past, the Commander of the TNI (Tentara Nasional Indonesia) Admiral Agus Suhartono and then Defense Minister Purnomo Yusgiantoro have pointed to the need for Indonesia to be equipped with up to 12 submarines to police its naval territories and protect its sea lanes (Rostiyani, 2012; Suhartono & Wong-Anan, 2010). As others have noted, “this latest [ROK] submarine deal reveals Jakarta’s strategic priorities—to develop the capability for a sea denial strategy” (Wu, 2019). The idea of “anti-access” is deeply ingrained in Indonesia’s security lexicon and strategic thought. For instance, while planning for the new administrative capital in Nusantara, the National Resilience Institute (or Lemhannas) suggested that the “the government should adopt an anti-access or area denial strategy to safeguard the new capital” (Jakarta Globe, 2022). It is within this context that one needs to view Indonesia’s investments in other naval assets, such as the sophisticated anti-ship cruise missiles or the Dutch *Sigma*-class frigates, that play an offensive role operationally in anti-access strategy (Sambhi, 2017, p. 86; Schreer, 2013, p. 20). Here too, South Korea’s own operational experiences in developing anti-access capabilities for its own complex shorelines has parallels with Indonesian defense needs (Bowers, 2019, pp. 6–7).

Once operational and fully equipped, the submarine fleet is expected to be a critical pillar of Indonesia’s maritime strategy, specifically “area denial strategy”² against China’s expanding naval intelligence capabilities in the South China Sea. This involves aggressive surveillance and reconnaissance in the short term (Chang, 2021), as well as monitoring the archipelagic sea lanes and preventing access for enemy forces in the long term. Moreover, the submarine fleet is envisioned as implementing Indonesia’s evolving maritime strategy as a fulcrum between the Indian and Pacific Oceans (Parameswaran, 2020). And even though the diesel-electric vehicles are not as silent as their nuclear counterparts, the modern variants “are not only stealthy, but also more lethal with the advent of underwater-launched anti-ship missiles” (Chang, 2021). There are very specific upgrades to this effect; for instance, the Torpedo Acoustic Counter Measure (TACM), which increases the survivability in a “hider-finder competition” with enemy vessels by generating deflecting noise to deceive the SONAR of incoming torpedos (Rahmat, 2019). For its attack options, the submarine has torpedo tubes that can carry mines as well as UGM-84 Harpoon missiles for surface targets (Military Today, n.d.). In a way, attack submarines such as *Jang-bogo* class serve as an “ideal alternative for surface vessels” for navies like Indonesia as it provides “greater deterrence ... and their long-range strike capability provides a degree of force projection” (Honrada, 2022).

The *Jang Bogo*-class submarine is doctrinally compatible with Indonesia's Minimum Essential Force (MEF) plan for a minimum credible deterrence against potential foreign encroachment. Introduced under president Susilo Bambang Yudhoyono in 2005 and upgraded by his successor, Joko Widodo (Jokowi), under his Global Maritime Fulcrum vision (Morris & Paoli, 2018, pp. 15–18; Parameswaran, 2020), the Indonesian government adopted MEF as a “twenty-year plan (2005–2024) that sets forth a military modernization agenda, with a special emphasis on the modernization of the Indonesian navy and air force” (Koh, 2015, pp. 437–438; Shekhar & Liow, 2014). Undergirding this modernization agenda was the “maritime axis” vision, which recognizes the maritime domain as central to Indonesia's foreign and security policies (Agastia & Perwita, 2015, p. 36). Among other things, it envisions an advanced Indonesian Navy that can form a defensive firewall “to protect the country's maritime assets, sea-lanes and territorial waters from both non-traditional security threats and external incursions” (Shekhar & Liow, 2014). In the future, Indonesia would develop a green-water navy that would be well-positioned to conduct “effective EEZ [exclusive economic zone] policing and limited regional, and occasionally even international, force projection capabilities” (Koh, 2015, p. 435; Supriyanto, 2012). Evolving from this vision, the TNI's joint Tridek (*Tri Dharma Eka Karma*) doctrine “envisions the armed forces being able to destroy the enemy at its base, en route, or upon entry into the country's territory” (Malufti & Sciascia, 2022). Moreover, Indonesia's submarine bases are located in the maritime “choke points” in the South China Sea and on Makassar Strait (Isjchwansyah, 2024), thus enabling it to implement its maritime strategy, of which submarines form an integral component. This sort of doctrinal emphasis lays a certain combination of defensive and offensive demands in terms of warfare that requires optimum fit and customization for all vessels. The submarines that were built for Indonesia is a customized variant that is slightly bigger than the Type 209 that South Korea currently possesses and are “designed for a range of missions, including anti-surface warfare (ASuW), anti-submarine warfare (ASW), mine laying, and special forces operations” (Gady, 2016; Naval Technology, 2011). Moreover, the upgraded *Jang-bogo* submarines with a new combat management system and improved target detection and tracking capability are well-suited “to carry out underwater warfare in a more effective manner” (Gady, 2019).

It is in this vein that the Jokowi government recently outlined intentions to spend more than \$120 billion over the next 20 years to continue upgrading and modernizing its military capabilities as part of the MEF plan (Indo-Pacific Defense Forum, 2021). It was reported that Jakarta aims to “get its hand on bigger and more advanced submarines” in the coming years in order to develop a navy that is capable of “operat[ing] far beyond its territorial waters” (Malufti & Sciascia, 2022). Consequently, the Indonesian navy has

canceled the follow-on order for three more ROK submarines due to a variety of factors (Arthur, 2024; Hynd & Broad, 2023). Instead, Indonesia has agreed to procure France's Naval Group *Scorpène*-class submarines in Indonesia (Guild, 2024). The new *Scorpène*-class submarines will feature lithium-ion batteries that will allow them to remain submerged for longer periods, equipped with unmanned underwater vehicles which are well-suited for supporting special forces "as well as intelligence, surveillance, and reconnaissance (ISR)" missions and armed with "SM39 B2 Mod 2, a submarine-launched variant of the Exocet missile family" (Guild, 2024; Malufti, 2024). The submarine partnership with France, as Colin Koh notes, "will allow it [the Indonesian indigenous defense industry] to absorb and grow" other technologies (quote from Arthur, 2024), which is a comparative advantage over the South Korean offer.

As noted in the previous section, client states will go with first-tier states should they offer the best package and offsets (Arthur, 2024). Yet, under the old equilibrium with limited strategic goals, South Korean submarines were indeed a natural fit for Indonesian needs. More broadly, South Korea moved into Southeast Asia, where a structural gap existed, and "filled the gap in the market for advanced, but affordable combat platforms and systems" and emerged as a "top arms supplier to all four of Southeast Asia's largest maritime countries" over the past decade (Chang, 2021).

India and K9 Thunder/Vajra-T

The deal: Relations between India and South Korea were uneasy during the Cold War (Brewster, 2010; Panda, 2019). The mutual visits by President Lee Myung-bak and Prime Minister Manmohan Singh in the mid-2000s placed India-ROK relations on an upward trajectory. The successful deal of K9 *Thunder/Vajra-T* self-propelled howitzers marked South Korea's formal entry into the Indian defense market. It was a significant deal for India, too, as it was the first such large order placed under prime minister Narendra Modi's flagship "Make in India" scheme that aimed to produce major platforms locally. India had long fancied tracked self-propelled howitzers as part of its artillery modernization program (Shukla, 2015), with the requirement of an estimated 252 new guns divided into 12 regiments (on the Indian Army's force structure, see Joshi, 2015). The first lot of 100 guns was placed in May 2017 and fulfilled by February 2021, with an Indian company Larson and Toubro (L&T) serving as the local partner (Unnithan, 2022). Though initially acquired for the desert plains on India's western flank, K9s were deployed in the mountainous terrain against China during the 2021 conflict, where it far exceeded the Indian Army's expectations in that terrain. New orders for an additional 200 guns were formally placed afterwards (Unnithan, 2022).

Indian military modernization has been laggard, to say the least (Behera, 2021; Cohen & Dasgupta, 2018; Cowshish, 2016; Matthews & Lozano, 2014), as the arms acquisition process remains marred by many bureaucratic and institutional challenges.³ The lethargy in acquiring howitzers and other platforms reached a critical point when then Army chief, Gen. V. K. Singh, had to write a letter to Prime Minister Singh urging him to address the dire situation (The Times of India, 2012). After sustained delays under successive administrations, the acquisition process of artilleries was set into motion.

The, 2011 request for proposal (RFP) for tracked howitzers resulted in four offers: Indian automaker Tata Power's Strategic Electronics Division, Indian government company Bharat Earth Movers Limited (BEML), Russia's state manufacturer Rostec (exported by Rosoboronexport), and Samsung Techwin (later Hanwa Defense) (Singh, 2016). Tata and BEML pulled out mid-way as they did not meet the Indian Army's technical requirements. This underscores the fact that professional armies with long-standing military planning and experience are quite precise in their requirements, be it mobility, range or fuze. Ultimately, Rostec's 2S19 MST-A and Hanwha's K9 *Thunder*, partnered with the Indian government's Ordnance Factory Board (OFB) and L&T respectively, were left in the race. Eventually, India acquired the K9 self-propelled howitzers over the Russian 2S19 MST-A.

Negative structural gap: The better fit of K9s availed India the long-desired opportunity to diversify its weapons portfolio, and move away from its reliance on Russian arms, which accounts for anywhere between 60–86 percent of India's inventory (Thakkar, 2024). In its diversification bid, India has been looking up to its western partners such as the US, France, and Israel (Wezeman et al., 2023). However, in the category of self-propelled howitzers, the US did not have anything specific to offer to India as its M109 (39 caliber) could not match the competing models in terms of range, lethality, or mobility (Gordon et al., 2019b, p. 19). India's military planners were well aware of the US' abject neglect of artillery. For instance, Lt Gen Dushyant Singh (2021), former head of the Eastern Command, recently noted that such neglect of artillery has "led to the US and Western artillery forces becoming a laggard especially in comparison to Russia". In the late 1990s, the US envisioned an 11 billion dollar program to design the next generation of 155 mm self-propelled howitzers but later dropped it entirely (Shankar, 2002). The situation for the UK is not any different. As one observer predicted, the continuous neglect of conventional deterrence through ground forces, including artillery regiments, can lead to a situation where NATO and British forces will be "comprehensively outgunned and outranged, leaving enemy artillery free to prosecute fire missions with impunity" (Watling, 2019). Moreover, during the Russia-Ukraine war, it was brought to light that the BAE Systems cannot manufacture gun barrels that get worn out

after certain rounds of firing (Hinton, 2023). Russia had a comparable alternative to offer but it paled operationally compared to the Korean howitzer as highlighted in the following section. However, in the case of portable guns, where the US had to offer ultralight yet advanced M777 howitzers that the Indian Army can easily sling under choppers, India willingly bought it. In sum, in the category of tracked self-propelled howitzers, India faced a negative structural gap, which was filled in by South Korea.

Strategic/technical and doctrinal compatibility: For starters, K9's technical features met the Indian Army's primary technical requirements. K9 *Vajra*, the Indian variant, is a 47-ton tracked 155 mm/39 caliber howitzer with a 1,000 HP engine with an effective firing range of 40 km and traveling capacity of 450 km on power, making it suitable for "shoot and scoot" operations deep into adversary's territory (Lt. Gen. Katoch, n.d.). To meet the Indian requirements, 14 "critical sub-systems" were replaced, including its automatic fire-control, direct-fire, ammunition handling systems, auxiliary powerpacks, air conditioning units, as well as nuclear, biological and chemical protection kits (Bedi, 2021).

K9's firing speed is similar to its Russian counterpart—six to eight rounds per minute, and two to three rounds for a sustained firing of an hour (Army Guide, n.d.). Nor is there a significant difference between the two in terms of range required by the Indian Army (Bedi, 2014). However, mobility played the decisive role since India was buying howitzers for the Pakistan-bordering deserts of Rajasthan with unusually rugged terrain.⁴ MSTA's engine failed to match K9's mobility in hill climbing exercises and in desert ranges under plus 40°C temperature due to lower performance of its gas-turbine engine (Lee, 2020). The K9 *Vajra* is propelled by an automatically controlled 1000 HP engine, whereas the Russian howitzer is an MSTA-S gun mounted on a T-72 main battle tank chassis that is powered by an 840 HP engine. Locomotion is indeed a critical criterion for tracked guns proposed for desert operations. Here, South Korea's own hostile experience with over 6,000 North Korean artillery systems is reflected in the technical/mobility features required to fulfill operational demands of offensive and counter-batter firings (Barnett et al., 2020).

K9 *Vajra's* superior mobility suited India's evolving war doctrine that places a premium on swiftly moving tracked howitzers as a part of its integrated battle formation. After the logistical flaws of the previously subscribed Sundarji doctrine were exposed during Operation *Parakram* in 2004 (Sood & Sawhney, 2003), the Indian Army was forced to undertake a doctrinal revision in the form of much-discussed Cold Start doctrine (Ladwig, 2007), which has been openly acknowledged since 2017 (Unnithan, 2017). Under the new doctrine, the strike corps were to be divided into integrated battle groups (IBGs), a formation of infantry, artillery and armored divisions with air support, that can mount quick offense in multiple sectors, simultaneously introducing

elements of surprise, strength and stretch. With the acquisition of K9s, the Indian armed forces would now be able to fully meet the performance needs imposed by the doctrine, specifically the agile and swift-moving tracked guns would allow it to perform “shoot and scoot” operations. As defense analyst and veteran Ajai Shukla (2015) explains, “[t]he strike corps’ T-90S tanks currently outpace their artillery guns ... [and] ... With the K-9 Vajra mounted on a tracked vehicle that keeps up with tanks, the armour spearheads would be assured of heavy fire support.” Another veteran, Maj. Gen. Harsha Kakar makes a similar point:

The Vajra is destined for the plains and deserts and would form part of the strike corps. Being self-propelled they would operate alongside armoured formations and provide much needed firepower. For a long time, these formations *lacked requisite firepower with matching mobility*. (Kakar, 2018, emphasis added; also see Sengupta, 2017)

Amidst India’s acquisition of K9 *Vajra*, the Russia-Ukraine war broke out, which turned out to be a major conventional war involving artillery (Peck, 2022). While Russia and Ukraine had initially similar artillery systems based on legacy Soviet designs, Ukraine has been supplied with German, American, British and Czech artilleries since February 2022 (Saw, 2023). Interim performance assessments on both sides have found the “vulnerability of towed artillery systems” with alarming levels of loss, whereas “self-propelled artillery emerges as the logical solution to artillery requirements” (Saw, 2023). Even Indian military planners have inferred that for force preservation, more quantities of self-propelled guns with shoot and scoot capabilities would be required (Dutta, 2023). This assessment reinforced their prior technical and doctrinal assessment.

To conclude, K9’s optimum balance between mobility, range and lethality made it an evident choice in a complex integrated environment. The recent Sindhu Sudarshan military exercises involving battlegroups and the frequent inclusion of IBGs in official pronouncements further evince the Indian Army’s offensive intentions, for which K9 *Vajra* proved to be an ideal match (Kulkarni, 2019; Ministry of Defence, 2020). This is not to say that K9 *Vajra* is the only piece of artillery potent enough to meet the Indian Army’s needs. However, we wish to emphasize that the K9 *Vajra* was selected because of its strategic/technical and doctrinal suitability, which was much closer to the Indian Army’s qualitative requirements.

Alternative explanations

This section discusses alternative explanations on why the buyer states decided to strike arms procurement deals with second-tier suppliers. A first plausible alternative argument is the expanding nature of the global arms market which avails more opportunities to suppliers. Yet, contrary to

such arguments, the past decade has shown a certain equilibrium in the volume of international arms transfer at around 30 billion trend-indicator value (TIV) (SIPRI, 2022). More specifically, the regional market could be argued to be expanding but commentators have noted that the arms market has equally “become saturated with highly motivated sellers” (Bitzinger, 2015). Consequently, second-tier suppliers seem to be competing within the same market space against their first-tier counterparts in certain platform categories. The reason for the recent success of the former, as we have argued in this article, is due to their ability to provide buyer states with weapons that meet the qualitative baseline requirements for specific types of weapons systems.

Alternatively, some have noted that the global arms market has not only grown in overall size but has also become a “buyers market” since the end of the Cold War (e.g., Bitzinger, 2015; Mathews, 2019, p. 150). This applies especially to the Indo-Pacific region with many states currently undergoing a process of military modernization. It can be argued that the buyer states are trying to diversify their weapons portfolio and minimize their vulnerability with first-tier suppliers rather than continue with import dependence. This aspect is perhaps more acutely felt in a today’s competitive buyer’s market. Trends in weapons procurement in the region certainly indicate this to be the case (Bitzinger, 2015; Lakshmana, 2018; Wezeman, 2019) and this move has provided more market opportunities for second-tier suppliers. Nevertheless, buyer states attempting to diversify their weapons portfolio is not mutually exclusive to the argument developed here. Second-tier suppliers, such as South Korea, still need to win out other motivated sellers in a competitive arms market. In other words, the diversification argument leads to certain indeterminacy in understanding probable alternatives, which can be addressed by understanding the qualitative proximity between buyers and suppliers. As our case study analysis has shown, even as buyer states pursue diversification strategies, they will look for weapons that best meet their qualitative needs in terms of strategic/technical and doctrinal requirements regardless of whether it is from a second—or a first-tier supplier.

Conclusion

Defense-industrial globalization has resulted in a widening technical gap between the advancement by the US along with a small number of first-tier suppliers and the defense requirements of the emerging regional powers in the Indo-Pacific region. What is becoming evident is the fact that many regional powers do not seek the most advanced and sophisticated weapons to meet their security needs, nor do they want to settle with neglected platforms that fall short of their qualitative expectations. It is this gap where second-tier suppliers step in with platforms that they not only

operate but also continuously upgrade based on their own operational experiences. Some of these weapons have been procured by second-tier states due to their domestic defense industry's continuous efforts to adjust to the dictates of the globalized arms market. In addition to their domestic transformation and adjustments—the supply-side explanation of their success—is their qualitative proximity to buyer states, what we have identified as a demand-side explanation. More specifically, the platform-based weapons produced by the second-tier suppliers are well-suited to meet the strategic and doctrinal needs of the buyer states within their regional context. This serves as one of the key reasons behind the success of their weapons sales in the Indo-Pacific region and elsewhere, as our case study analysis of two recent yet major South Korean sales in the region demonstrated, the *Jang Bogo*-class submarines to Indonesia and the K9 *Thunder* howitzers to India.

To be sure, our research does not imply that these are the only reasons that states consider when procuring weapons costing billions. Procurement decisions, as the literature points out, are often much more complex and multi-layered. However, we emphasize that procurement decisions cannot be separated from strategic concerns and—depending on the regional context—could serve as an influential factor in client states' final decisions.

We conclude with two broad policy lessons stemming from our study. First, much of the scholarly and policy attention has been focused on the global network of production and the most up-to-date weapons systems, such as the F35s stealth fighters, and these are rightfully important in their own right. However, patterns of weapons sales by second-tier producers can help us better understand regional security dynamics, especially pertinent to the Indo-Pacific region considering that it serves as the hotbed for great power rivalry.

Second, we cautiously predict the continued success of second-tier suppliers in arms sales as long as the power disparity in the international system persists. As long as the US and other first-tier states focus on power projection capabilities and produce either too superior platforms or neglect them altogether, second-tier suppliers will flourish with alternative offerings. This pattern is observable in recently concluded transactions, such as South Korea's sale of the first indigenously manufactured mid-range surface-to-air missiles (*Cheolmae-2*) to the United Arab Emirates and Saudi Arabia, Japan's *Mogami*-class frigates deal with Indonesia, as well as India's BrahMos missiles sales to the Philippines, among others (Arthur, 2024; ET Bureau, 2022; Navy Recognition, 2021). In other words, the structural gap existing in the global arms order will continue to provide avenues to the second-tier suppliers, who remain proximate to the demands of regional states and other emerging powers.

Notes

1. We employ this heuristic to cluster peers and map Krause's classic definition (1992) on export figures.
2. We consider "anti-access" more as an operational rather than a grand strategic concept. For multiple interpretations at various levels of analysis in the Indonesian context, see Laksmana (2020).
3. Here we use procurement and acquisition interchangeably (see Mukherjee, 2020, p. 98).
4. K9s would be deployed against China during the 2020 conflict due to the lack of artillery regiments with necessary range (Chaturvedi, 2021).
5. Trend-indicator value (TIV) is the common unit in the SIPRI arms transfer dataset that measures the volume of international transfer of conventional weapons. TIV is based on the "known unit production costs of a core set of weapons and is intended to represent the transfer of military resources" (SIPRI, n.d.).

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ORCID

Soul Park  <http://orcid.org/0000-0001-6692-9080>

Chirayu Thakkar  <http://orcid.org/0000-0002-7698-4283>

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