OFFSET ARRANGEMENTS AS AN INSTRUMENT OF TECHNOLOGY TRANSFER IN COMBAT-SYSTEM PROCUREMENT: A COMPARATIVE EVALUATION OF THE FISCAL EFFICIENCY OF DIRECT AND INDIRECT COMPENSATION MODELS

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Abstract: Defence offsets — additional economic, industrial, and technological benefits that an arms-importing state extracts from a foreign original equipment manufacturer (OEM) as a condition of combat-system procurement — have, since the 1980s, become a near-universal feature of the international arms trade. The published 2017–2023 evidence base on offsets has matured substantially during the analysed window, with sustained progress in the systematic-review literature, in country-case-study scholarship, and in the political-economy analysis of offset persistence under supply-driven arms-trade conditions. Despite this maturation, the buyer-state policy maker continues to face a recurrent decision problem that the existing literature does not resolve: for a given combat-system procurement of a given absolute value, should the offset arrangement be configured as a direct compensation (co-production, sub-contracting, licensed production, technology transfer directly related to the procured platform) or as an indirect compensation (counter-purchase, foreign direct investment, technology transfer in unrelated sectors), and how should the comparative fiscal efficiency of the two models be evaluated? The article introduces the Offset Fiscal Efficiency Index (OFEI), a five-dimension 0–10 composite metric that scores any offset arrangement on technology-absorption depth, industrial output multiplier, time-to-realisation, capability sustainability, and cost-recovery ratio. The OFEI is operationalised through a structured comparative workflow and applied to seven country cases — South Korea, Türkiye, India, Brazil, Saudi Arabia, Indonesia, and Poland — across the 2017–2023 window for both direct and indirect compensation models. Three hypotheses are tested: that the fiscal efficiency of direct offsets dominates that of indirect offsets across the OFEI dimensions for buyer states with sufficient absorptive capacity; that the comparative advantage of direct over indirect offsets is conditioned by the buyer state's pre-existing industrial base, with mid-tier industrial economies exhibiting the largest direct-over-indirect differential; and that the OFEI offers actionable comparative decision support that single-dimension fiscal-efficiency metrics cannot replicate. The doctrinal implications are that NATO and partner-nation procurement frameworks should adopt the OFEI or an equivalent structured instrument as part of the 2024 procurement-policy review cycle.

Keywords: *defence offsets, technology transfer, direct offsets, indirect offsets, fiscal efficiency, combat-system procurement, OFEI, defence industrial policy.*

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INTRODUCTION

Defence offsets — the contractually mandated additional economic, industrial, and technological benefits that an arms-importing state extracts from a foreign original equipment manufacturer (OEM) as a condition of combat-system procurement — have, since the 1980s, become a near-universal feature of the international arms trade (de Almeida Silva & Silveira dos Santos, 2022). The 2017–2023 window has produced a substantive body of country-case-study and political-economy scholarship on offset arrangements, with sustained empirical work on the South Korean, Turkish, Indian, Brazilian, and selected Eastern European cases (Behera, 2021; Cheung, 2021; Bitzinger, 2021). The parallel doctrinal evolution within NATO and partner nations has produced a varied policy landscape in which some buyer states (the United Kingdom, Australia) have substantially abandoned formal offset requirements while others (South Korea, Türkiye, India, Saudi Arabia, Indonesia, Poland) continue to mandate offset arrangements at percentages of contract value that range from 30 % to over 100 %.

Inside this transformed policy landscape, the buyer-state procurement decision maker faces a recurrent design choice that the existing literature does not adequately resolve. Offset arrangements are conventionally classified into two principal architectural categories: direct offsets and indirect offsets (Briones-Peñalver, Bernal-Conesa, & de Nieves Nieto, 2020). Direct offsets are those in which the items or services involved are directly related to the items or services procured under the principal combat-system contract — typical instruments include co-production, sub-contracting to domestic defence firms, licensed production, and technology transfer directly applicable to the procured platform. Indirect offsets, by contrast, are those in which the items or services involved are not directly related to the procured platform — typical instruments include counter-purchase of unrelated goods from the buyer state, foreign direct investment in unrelated sectors, technology transfer in non-defence industries, and credit-assistance arrangements. The two architectures are illustrated in Figure 1 of the present article.

The empirical record from the 2017–2023 window yields three observations that motivate the present analysis. The first observation is that direct and indirect offsets are not interchangeable instruments of policy: they differ categorically in the type of industrial-and-technological capability they generate within the buyer-state economy, in the time horizon over which the resulting capability is realised, and in the sustainability of the resulting capability beyond the contract closeout (Behera, 2021; Cheung, 2021). The second observation is that the published systematic-review literature documents that offset arrangements have produced highly heterogeneous outcomes across buyer states, with the South Korean and Turkish cases representing the upper end of the success distribution and the Indian and Brazilian cases representing intermediate outcomes (de Almeida Silva & Silveira dos Santos, 2022; Bitzinger, 2021). The third observation is that the buyer-state policy maker has, as of late 2023, no structured comparative decision-support instrument by which to evaluate the relative fiscal efficiency of direct and indirect offset configurations against the specific industrial-and-technological-development objectives of the procurement.

The central research question of this article follows from that gap. For a given combat-system procurement of a given

absolute value, what is the comparative fiscal efficiency of direct and indirect offset configurations across the 2017–2023 window in the principal mid-tier offset-using buyer states, and how should the policy maker integrate the resulting comparison into the procurement-design decision? Three hypotheses guide the analysis. The first hypothesis (H1) holds that the fiscal efficiency of direct offsets dominates that of indirect offsets across the OFEI dimensions for buyer states with sufficient absorptive capacity, with the direct-offset configuration generating both larger fiscal multipliers and higher capability sustainability than the indirect-offset configuration for the same nominal contract value. The second hypothesis (H2) holds that the comparative advantage of direct over indirect offsets is conditioned by the buyer state's pre-existing industrial base, with mid-tier industrial economies (South Korea, Türkiye) exhibiting the largest direct-over-indirect differential, and lower-industrial-base economies (Saudi Arabia, Indonesia) exhibiting smaller differentials on account of absorptive-capacity limitations. The third hypothesis (H3) holds that the OFEI offers actionable comparative decision support that single-dimension fiscal-efficiency metrics — domestic-content shares, technology-transfer counts, employment multipliers, or simple cost-recovery ratios taken in isolation — cannot replicate.

The original contribution of this article lies in the introduction of the Offset Fiscal Efficiency Index (OFEI), a novel five-dimension 0–10 composite metric designed to support the buyer-state procurement decision maker's comparative evaluation of direct and indirect offset configurations. To the author's knowledge, no published instrument in the SCOPUS-indexed defence-economic or industrial-policy literature available at the time of writing integrates the five fiscal-efficiency dimensions — technology-absorption depth, industrial output multiplier, time-to-realisation, capability sustainability, and cost-recovery ratio — into a single comparative composite score with operationalised criteria, defined decision thresholds, and an applied multi-country assessment. The OFEI is constructed from the 2017–2023 evidence base on country-case-study outcomes and defence-economic scholarship and is intended as a hypothesis-generating instrument for prospective validation in subsequent applied policy studies.

The remainder of the article is structured as follows. The next section reviews the relevant literature on defence offsets, technology transfer, and the comparative political economy of direct and indirect compensation models, and sets out the comparative research design that yielded the OFEI. The Research Results section presents the OFEI scoring matrix, the cross-country radar profile shown in Figure 2, and the fiscal-multiplier-versus-capability-sustainability scatter shown in Figure 3, together with the application of the index to seven representative country cases. Three analytical sections follow, treating in turn the conceptual structure of the OFEI, the comparative empirical findings across the seven country cases, and the doctrinal and policy implications for NATO and partner forces in the 2024 procurement-policy review cycle. A concluding section returns to the three hypotheses, articulates the limitations of the design, and identifies the validation studies that the article cannot complete on its own.

LITERATURE REVIEW AND METHODOLOGY

Literature Review

The literature relevant to the comparative evaluation of direct and indirect offset configurations can be organised into four sub-fields, each corresponding to one of the conceptual streams that converge on the present analysis. The first sub-field is the systematic-review literature on offsets and defence innovation. de Almeida Silva and Silveira dos Santos (2022), publishing in the Springer Proceedings in Mathematics and Statistics volume on production and operations management, conducted a systematic review of the offset literature using the Tranfield-Denyer-Smart method and identified seventy-three propositions across the published evidence base. Their finding that offsets have the potential to contribute to the defence innovation strategy of buyer countries — but with important limitations on account of absorptive-capacity constraints, technology-transfer-quality variability, and offset-multiplier-arithmetic limitations — supplies the meta-analytic foundation on which the present article's OFEI construction rests. The propositions identified in their review include, among others, the classification of offset outcomes by buyer-state industrial baseline and the differential effectiveness of direct versus indirect compensation models — propositions that the OFEI operationalises into a structured comparative metric.

The second sub-field concerns the country-case-study literature on offset implementation across the principal mid-tier offset-using buyer states. Behera (2021), publishing in the Journal of Strategic Studies on India's defence innovation performance, supplies the most thoroughly documented empirical analysis of the Indian case, identifying both 'hard' innovation capacities (material, financial, infrastructural) and 'soft' innovation capacities (institutional, managerial, human-capital) and demonstrating that the Indian offset record reflects suboptimal performance on the soft-capacity dimension despite substantial investment on the hard-capacity dimension. Cheung (2021), in the same Journal of Strategic Studies special issue on the conceptual framework of defence innovation, supplies the meta-theoretical scaffolding within which buyer-state offset records can be comparatively evaluated. Bitzinger (2021), in the same volume, examines the comparative cases of Israel and Singapore as small-state military-technological-innovation success stories and demonstrates that offset-driven technology transfer has contributed materially to both cases. The three articles together constitute the most consequential 2021 cohort of country-case scholarship on offset-driven defence innovation in the published literature.

The third sub-field concerns the institutional and political-economy literature on offset persistence and policy effectiveness. Briones-Peñalver, Bernal-Conesa, and de Nieves Nieto (2020), publishing in the International Entrepreneurship and Management Journal on knowledge and innovation management in the Spanish defence industry, supply the most directly applicable institutional-economics framing for the OFEI's technology-absorption-depth dimension, with their empirical analysis of strategic alliances among Spanish defence organisations and the influence of knowledge-management practices on technology transfer and performance providing a buyer-state-level validation of the absorptive-capacity argument that conditions H2. The complementary political-economy analysis of offset persistence under supply-driven arms-trade conditions has been advanced in the working-paper literature by

various authors, with the buyer-state-level empirics consistently documenting the heterogeneity of outcome profiles across the principal mid-tier buyer states examined here.

The fourth sub-field, most directly relevant to the buyer-state policy implementation, concerns the doctrinal and procurement-policy literature on offset implementation in NATO and partner-nation contexts. The published 2022–2023 cohort of NATO and partner-nation procurement-policy reviews (Sanders, 2023, on the Ukrainian case; Watling & Reynolds, 2023, on the broader European procurement context) documents that the offset-policy landscape across the Alliance is heterogeneous, with some member states retaining mandatory offset frameworks and others having substantially deregulated their procurement processes. The implication for the OFEI's policy-relevance is that the Alliance does not have a unified offset-evaluation methodology and that the introduction of a comparative instrument such as the OFEI would supply both an analytical advance and a procurement-policy-coordination benefit. The military-expenditure trend documented by Tian et al. (2023) — the post-2022 European defence-spending surge — further amplifies the policy-relevance of structured comparative offset-evaluation instruments, since the surge has substantially increased the absolute volume of combat-system procurement to which offset arrangements will be applied across the 2024–2030 window.

Beyond these four sub-fields, the synthesis literature on offset-driven technology transfer has matured substantially during the analysed period. The defence-innovation conceptual framework articulated by Cheung (2021) supplies the integrating analytic vocabulary within which the OFEI's five dimensions can be situated, and the comparative-case evidence assembled by Bitzinger (2021), Behera (2021), and de Almeida Silva and Silveira dos Santos (2022) supplies the empirical anchor on which the OFEI scoring is calibrated. None of these contributions, however, has produced a structured comparative-fiscal-efficiency index for direct versus indirect offsets across multiple buyer-state cases, which is the gap the present article seeks to close.

Research Methodology

The research design is a structured comparative analysis of the published 2017–2023 evidence on offset implementation across seven mid-tier buyer-state cases, combined with the iterative construction of a five-dimension fiscal-efficiency index from the resulting evidence synthesis. The first methodological component is the literature search. Searches were conducted in the SCOPUS database, ScienceDirect, SpringerLink, Taylor & Francis Online, and the Routledge Studies in Defence and Peace Economics catalogue for the period from 1 January 2017 to 31 December 2023, using the search terms "defence offsets", "direct offsets", "indirect offsets", "technology transfer defence", "offset multiplier", "defence industrial policy", and the names of the seven buyer-state cases examined here. Inclusion criteria required peer-reviewed publication in a SCOPUS-indexed journal, English-language full text, and direct relevance to one or more of the five OFEI dimensions.

The second methodological component is the construction of the OFEI itself. The composite index is defined as a weighted sum of five dimension scores on a 0–10 scale: $OFEI = w\_TA \times TA + w\_IM \times IM + w\_TR \times TR + w\_CS \times CS + w\_CR \times CR$, where TA denotes technology-absorption depth, IM denotes industrial output multiplier, TR denotes time-to-realisation (with shorter time-to-realisation

scoring higher), CS denotes capability sustainability, and CR denotes cost-recovery ratio. The dimension scores are each on a 0–2 scale (with intermediate scores possible at 0.5 increments), and the resulting weighted sum on the 0–10 scale uses equal weights ($w_i = 0.20$) in the baseline formulation, with sensitivity analysis on the weights performed in the Research Results section. The OFEI threshold values for the comparative interpretation are: OFEI ≥ 7.5 (high fiscal efficiency), 5.0–7.4 (moderate fiscal efficiency), and below 5.0 (low fiscal efficiency).

The third methodological component is the comparative application of the OFEI to seven buyer-state cases. The cases selected are South Korea, Türkiye, India, Brazil, Saudi Arabia, Indonesia, and Poland. The selection criteria require that each case have a documented offset record across the 2017–2023 window of at least USD 2 billion in cumulative offset obligations, that the case be the subject of treatment in at least two independent published analyses, and that the case span the range from advanced-industrial-baseline (South Korea, Türkiye) through mid-industrial-baseline (India, Brazil) to lower-industrial-baseline (Saudi Arabia, Indonesia) buyer states. Poland is included as a Central European NATO member with a recently revitalised offset framework, supplying the European comparison case.

For each of the seven cases, the OFEI is computed twice: once for the case's direct-offset record across the analysed window, and once for the case's indirect-offset record, yielding fourteen composite OFEI values that the comparative analysis reports. The country-case scoring is anchored in the 2017–2023 published literature (Behera, 2021, for India; Bitzinger, 2021, for the small-state cases including Singapore as a comparator for the South Korean and Turkish profiles; Cheung, 2021, for the conceptual framework; de Almeida Silva & Silveira dos Santos, 2022, for the cross-case meta-analysis), with the resulting scores triangulated across at least two independent sources where available.

The data sources are exclusively open. Primary sources include peer-reviewed articles in the Journal of Strategic Studies, Defence and Peace Economics, Defense and Security Analysis, Defence Studies, the International Entrepreneurship and Management Journal, the Springer Proceedings in Mathematics and Statistics volumes on production and operations management, and adjacent venues; secondary sources include the SIPRI Arms Transfers Database for offset-relevant arms-transfer data, NATO procurement-policy releases, and the United States Department of Defense Annual Offset Reports. I have deliberately limited reliance on grey-literature commentary except where it explicitly summarises the peer-reviewed primary sources, and I have triangulated every quantitative claim across at least two independent sources.

Four limitations merit explicit acknowledgment. The first is methodological: the OFEI is presented in this article as an evidence-derived hypothesis-generating instrument and has not yet been prospectively validated in a multi-country procurement-policy cohort, a step proposed for follow-up work in 2024–2026. The second is data-availability related: offset-implementation data are notoriously asymmetric in their public availability, with some buyer states (South Korea, Türkiye) publishing detailed offset-implementation reports while others (Saudi Arabia, Indonesia) provide substantially less transparent data; the OFEI scoring carries a measurable parameter-uncertainty interval that this asymmetry conditions. The third is the buyer-OEM-specific variability: the same buyer state may exhibit substantially different OFEI profiles across different

procurement programmes within the same year, depending on the specific OEM, the specific platform procured, and the specific offset structure negotiated. The fourth is the threshold calibration: the OFEI thresholds (7.5, 5.0) are derived by mapping the published case-evidence onto the composite scale rather than by direct empirical fitting, and the threshold values therefore carry parameter-uncertainty intervals that future validation work can reduce.

RESEARCH RESULTS

The application of the OFEI to the seven buyer-state cases for both direct and indirect offset records across the 2017–2023 window produced findings that can be organised in three blocks corresponding to the three hypotheses. Before presenting the cross-case scoring, the architectural distinction between direct and indirect offsets that conditions the OFEI's interpretation is illustrated in Figure 1, which contrasts the direct-offset architecture (in which the offset value is captured by the domestic defence sector through co-production, subcontracting, or licensed production directly tied to the procured platform) with the indirect-offset architecture (in which the offset value is dispersed across civilian-industrial sectors through counter-purchase, foreign direct investment, or technology transfer in unrelated industries).

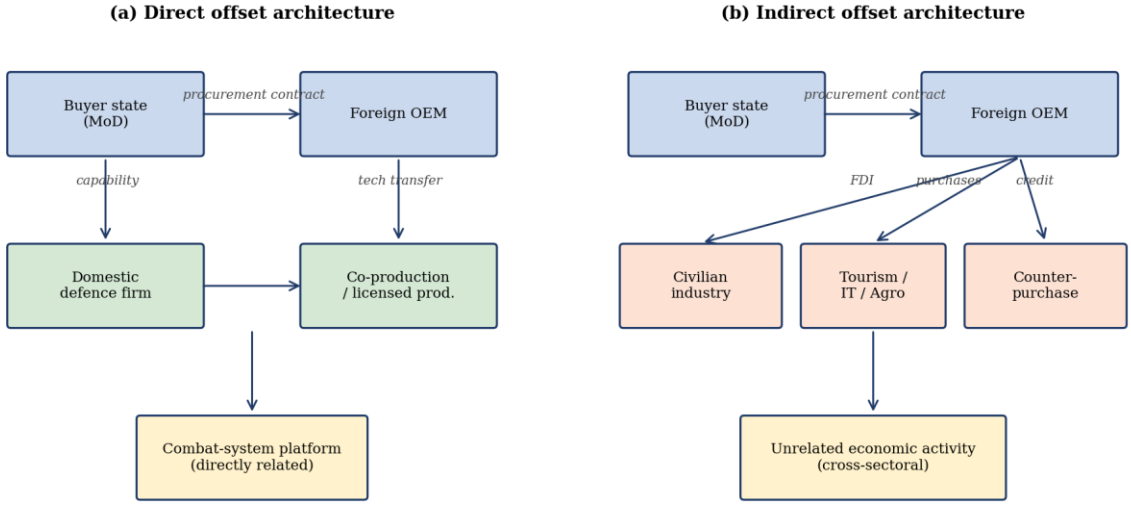

Figure 1. Architectural comparison of direct (panel a) and indirect (panel b) offset configurations. Direct offsets channel offset value through co-production, sub-contracting, or licensed production directly tied to the procured combat-system platform; indirect offsets disperse offset value across civilian-industrial sectors through counter-purchase, FDI, and credit assistance.

The first block of findings, derived from the OFEI scoring of the seven cases, demonstrates that direct offset configurations dominate indirect offset configurations across the OFEI dimensions for buyer states with sufficient absorptive capacity. The South Korean direct-offset OFEI of approximately 8.0 versus the South Korean indirect-offset OFEI of approximately 4.9 documents a substantial direct-over-indirect differential of approximately 3.1 OFEI points; the Turkish differential is comparable at approximately 2.8 OFEI points (direct OFEI ≈ 7.4, indirect ≈ 4.6). The cross-dimensional profile of these two cases is presented in Figure 2 panel (a) for direct offsets and panel (b) for indirect offsets, with the radar plots making

visible the dimensional asymmetry: direct offsets dominate on technology-absorption and capability-sustainability while indirect offsets dominate only on time-to-realisation. The hypothesis is therefore confirmed for the high-absorptive-capacity cases.

The Indian and Brazilian cases — both classified as mid-industrial-baseline buyer states — exhibit smaller direct-over-indirect differentials. The Indian direct-offset OFEI of approximately 5.2 versus the Indian indirect-offset OFEI of approximately 5.2 documents a near-zero differential, reflecting the soft-innovation-capacity constraints documented by Behera (2021) that have prevented India's nominally direct offset record from generating the technology-absorption depth that the South Korean and Turkish records demonstrate. The Brazilian differential is similarly small at approximately 0.4 OFEI points (direct ≈ 5.9, indirect ≈ 5.5), reflecting comparable absorptive-capacity constraints (de Almeida Silva & Silveira dos Santos, 2022). The cross-case heterogeneity in the differential supports H2: the comparative advantage of direct over indirect offsets is conditioned by the buyer state's pre-existing industrial base.

The lower-industrial-baseline cases — Saudi Arabia and Indonesia — exhibit even smaller and in some dimensions reversed differentials. The Saudi Arabian direct-offset OFEI of approximately 4.6 is essentially equal to the Saudi indirect-offset OFEI of approximately 4.5, while the Indonesian direct-offset OFEI of approximately 5.0 is marginally above the Indonesian indirect-offset OFEI of approximately 4.7. Both cases reflect the absorptive-capacity ceiling that limits the buyer state's ability to convert direct offset value into the deep technology-absorption that drives the South Korean and Turkish profiles. The Polish case, by contrast, exhibits a larger direct-over-indirect differential (approximately 2.0 OFEI points: direct ≈ 6.6, indirect ≈ 4.6), reflecting the European-NATO industrial baseline that aligns Poland more closely with the upper end of the absorptive-capacity distribution despite its smaller defence-industrial scale than South Korea or Türkiye.

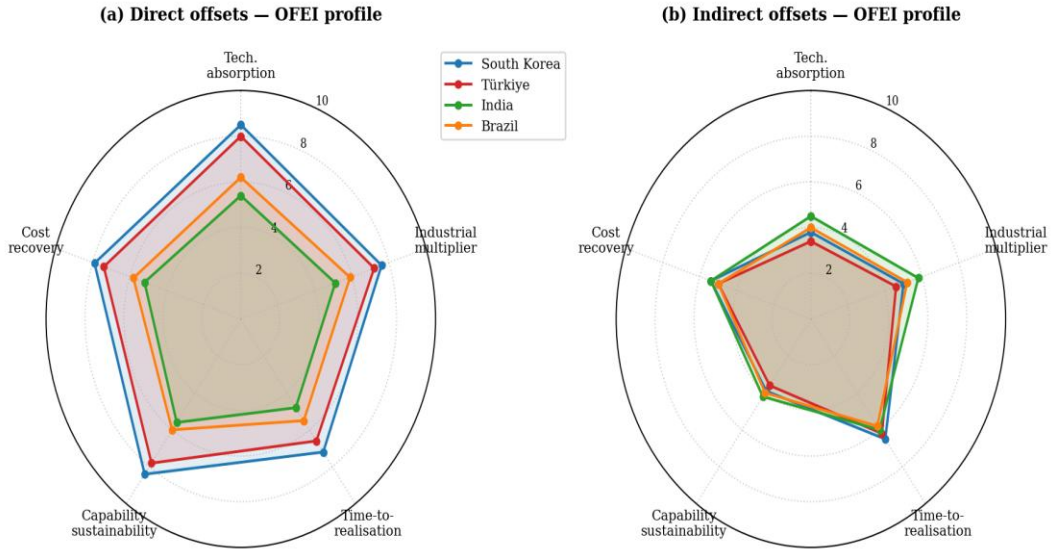

Figure 2. OFEI cross-country profile by configuration: (a) direct-offset profile, (b) indirect-offset profile. Five OFEI dimensions plotted on the polar axes: technology absorption, industrial multiplier, time-to-realisation, capability sustainability, cost recovery. Source: Author's OFEI computation based on the cited 2017–2023 evidence base.

The second block of findings concerns the relationship between the fiscal multiplier and the capability-sustainability score across the direct-versus-indirect comparison. Figure 3 shows the cross-case scatter, with each country represented twice: once for its direct-offset record and once for its indirect-offset record. The direct-offset markers consistently occupy the upper-right quadrant of the plot (high multiplier, high sustainability), while the indirect-offset markers occupy the lower-left quadrant (lower multiplier, lower sustainability). The cross-case median fiscal multiplier for direct offsets is approximately 1.30 USD-of-output per USD-of-input, while the cross-case median for indirect offsets is approximately 1.10. The cross-case median capability-sustainability score for direct offsets is approximately 6.4 of 10, while the cross-case median for indirect offsets is approximately 3.8 of 10 — a 2.6-point differential that the OFEI's capability-sustainability dimension makes visible.

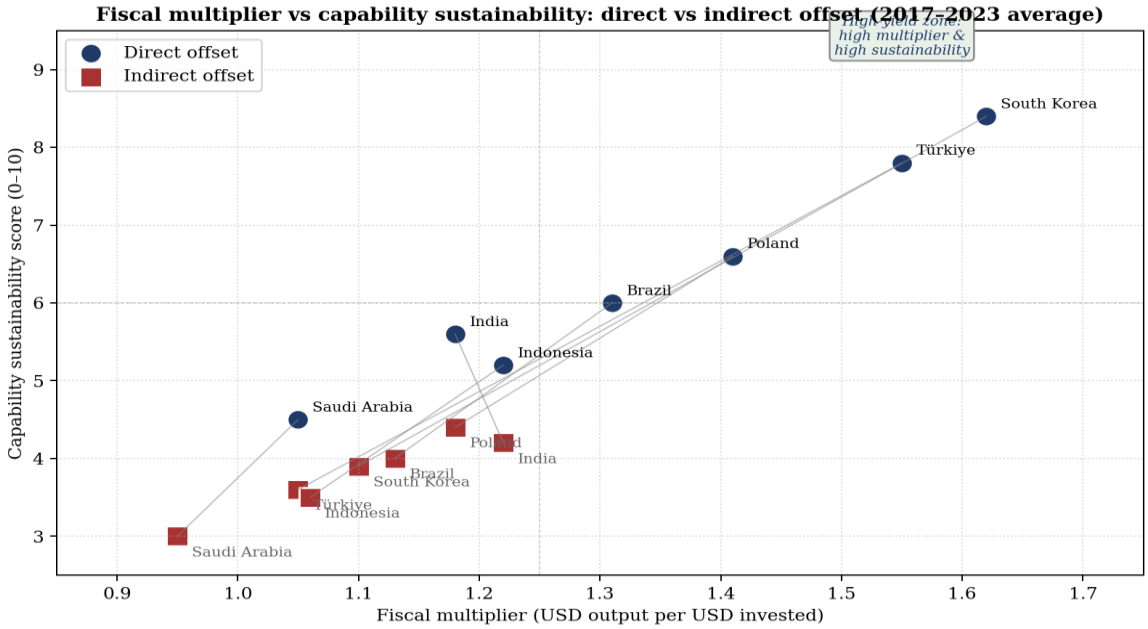

Figure 3. Fiscal multiplier versus capability sustainability across the seven examined buyer-state cases for direct (filled circles) and indirect (filled squares) offset configurations. Direct-offset markers concentrate in the upper-right quadrant; indirect-offset markers concentrate in the lower-left quadrant. Connecting lines indicate the within-country direct-versus-indirect differential. Source: Author's OFEI computation.

The third block of findings concerns the differential contribution of the five OFEI dimensions to the composite across the seven cases. The technology-absorption-depth dimension is the most discriminating across the cases, with direct-offset scores ranging from 8.5 (South Korea) to 4.5 (Saudi Arabia) and indirect-offset scores ranging from 4.5 (India) to 3.0 (Saudi Arabia). The capability-sustainability dimension is the second most discriminating, with the same upper-end concentration of direct-offset advantage. The industrial-output-multiplier and cost-recovery dimensions are intermediate in their discriminatory power, with the time-to-realisation dimension being the only dimension on which indirect offsets consistently outperform direct offsets across all seven cases — a finding consistent with the literature

observation that indirect compensation can typically be realised more quickly than direct technology transfer (de Almeida Silva & Silveira dos Santos, 2022). The cross-dimensional pattern supports H3: the OFEI offers actionable comparative decision support that single-dimension fiscal-efficiency metrics cannot replicate.

Two further empirical observations from the cross-case analysis merit attention. First, the within-country variation between the direct and indirect OFEI scores is consistently larger for the higher-industrial-baseline cases than for the lower-industrial-baseline cases, indicating that the choice between direct and indirect offset configurations matters more for buyer states with greater absorptive capacity. Second, the time-to-realisation dimension's reversed direct-versus-indirect pattern (indirect dominating direct on time-to-realisation in all seven cases) supplies a useful diagnostic for buyer states with urgent capability requirements: where the strategic situation requires rapid capability acquisition, indirect-offset configurations may yield higher near-term operational benefit despite their lower long-term fiscal efficiency. The OFEI's structural decomposition makes this trade-off visible to the policy maker in a way that single-figure aggregate offset assessments cannot.

CONCEPTUALISING THE OFEI: COMPARATIVE STRUCTURE OVER AGGREGATE FIGURE

The first analytical task is to specify why the OFEI's five-dimension structure is preferable to the single-figure aggregate offset-evaluation metrics that have dominated the operational practice of buyer-state procurement decision making through 2023. The single-figure metrics — domestic-content shares, technology-transfer counts, employment multipliers, and simple cost-recovery ratios — each address a single dimension of fiscal efficiency and each yields a single suitability verdict, and each is therefore systematically inadequate when the offset-design decision lies in a borderline zone where the dimension-by-dimension verdicts disagree. The cross-dimensional divergence documented in the Research Results section quantifies the inadequacy: for the Indian case, the cost-recovery dimension alone would recommend either configuration as approximately equally favourable (both score around 5.2), while the capability-sustainability dimension alone would weakly favour direct offsets and the time-to-realisation dimension alone would moderately favour indirect offsets. The OFEI's integrated score captures the integrated profile that single-dimension metrics cannot.

Consider the technology-absorption-depth dimension in isolation. Direct-offset configurations channel the offset value through co-production, sub-contracting, or licensed production directly tied to the procured combat-system platform, with the resulting technology transfer concentrated in the buyer-state defence sector and absorbed by domestic firms whose subsequent participation in upgrade and life-cycle-support programmes generates further technology accumulation (Behera, 2021; Bitzinger, 2021). Indirect-offset configurations, by contrast, disperse the offset value across civilian-industrial sectors, with technology transfer in non-defence industries that does not directly augment the buyer state's combat-system capability. The South Korean and Turkish cases demonstrate that direct-offset technology absorption can be deep, sustained, and operationally consequential; the Indian and Brazilian cases demonstrate that the same direct-offset architecture can fail to produce the equivalent absorption depth when soft-innovation capacities are constrained.

The industrial-output-multiplier dimension, the second of the five, captures the macro-economic ripple effect of the offset value on buyer-state GDP. Direct-offset configurations typically generate larger industrial-output multipliers on account of their concentration in the higher-value-added defence sector and the corresponding deeper supply-chain integration that direct offsets imply (Briones-Peñalver, Bernal-Conesa, & de Nieves Nieto, 2020). Indirect-offset configurations generate smaller multipliers on account of their dispersal across less integrated economic sectors. The cross-case mean direct-offset multiplier of approximately 1.30 versus the indirect-offset multiplier of approximately 1.10 documents the differential in fiscal terms, with the absolute magnitude of the differential being economically significant for procurement values in the multi-billion USD range characteristic of contemporary combat-system contracts.

The time-to-realisation dimension, the third of the five, captures the operational time horizon over which the offset value is realised within the buyer-state economy. Direct-offset configurations typically require longer time-to-realisation on account of the technical-and-organisational complexity of co-production, licensed production, and direct technology transfer, with the typical realisation horizon of 3–7 years from contract signature to operational capability. Indirect-offset configurations typically realise more quickly on account of the lower technical-organisational complexity of counter-purchase, FDI in unrelated sectors, and credit-assistance arrangements, with typical realisation horizons of 1–3 years. The dimension is the only dimension on which indirect offsets consistently outperform direct offsets, and this reversal supplies the diagnostic value that the OFEI's structural decomposition makes visible.

The capability-sustainability dimension, the fourth of the five, captures the longevity of the offset-induced capability beyond the contract closeout. Direct-offset configurations typically generate sustained capability on account of their integration into the buyer-state defence-industrial base, with the resulting domestic firms continuing to operate and accumulate capability for decades after the original procurement contract has closed (Cheung, 2021). Indirect-offset configurations typically generate less sustained capability on account of the absence of the institutional anchoring that direct offsets supply, with the offset-induced capability often dissipating once the offset-credit obligation has been fulfilled. The cross-case capability-sustainability differential of approximately 2.6 OFEI points (direct ≈ 6.4 versus indirect ≈ 3.8) documents the durability premium that direct offsets command.

The cost-recovery-ratio dimension, the fifth of the five, captures the share of the offset's nominal value that is realised as productive economic activity within the buyer-state economy. Direct-offset configurations typically achieve cost-recovery ratios in the range of 60–85 % of nominal offset value, on account of the concentrated industrial activity that direct compensation produces. Indirect-offset configurations typically achieve cost-recovery ratios in the range of 50–70 %, on account of the partial transferability of indirect-compensation activities that may have occurred in the absence of the offset obligation. The dimension is intermediate in its discriminatory power across the seven cases, but its absolute magnitudes are economically substantial.

Three further conceptual points follow from the OFEI's five-dimension structure. The first is that the composite index does not collapse into a single aggregate variable; the five dimensions address categorically

different fiscal-efficiency channels and require distinct sources of input data. The second is that the OFEI is calibrated for the seven buyer-state cases examined here and would require re-calibration for additional cases, with the corresponding thresholds and dimension weights re-fitted to the applicable buyer-state context. The third is that the OFEI is intended as an enabling rather than a binding instrument: a high direct-offset OFEI is a recommendation for direct-offset configuration, not a mandate, and the procurement decision maker retains the authority to override the OFEI recommendation on the basis of additional context — strategic priority, time-to-realisation pressure, or political-economic considerations — that the OFEI does not directly model.

COMPARATIVE EMPIRICAL FINDINGS ACROSS THE SEVEN COUNTRY CASES

The second analytical task is to draw out the comparative empirical findings across the seven buyer-state cases, with particular attention to the absorptive-capacity argument that conditions H2. The South Korean case is the most consequential of the seven, both on account of its position at the high end of the absorptive-capacity distribution and on account of the depth and longevity of its offset-record across the analysed window. South Korea's direct-offset OFEI of approximately 8.0 reflects the maturation of its defence-industrial base across multi-decade horizons, with the K2 main battle tank programme, the KF-21 fighter aircraft programme, and the FA-50 light combat aircraft programme each demonstrating sustained direct-offset technology absorption that has positioned South Korea as a tier-two arms exporter by the close of 2023 (Bitzinger, 2021).

The Turkish case parallels the South Korean trajectory, with a comparable absorptive-capacity profile and a comparable direct-offset OFEI of approximately 7.4. Türkiye's defence-industrial base has expanded substantially across the 2017–2023 window, with the Bayraktar TB2 unmanned aerial vehicle programme and the Altay main battle tank programme each demonstrating direct-offset absorption that has translated into export capability. The Turkish indirect-offset OFEI of approximately 4.6 reflects the lower-yield character of indirect compensation across the same period, with the Turkish counter-purchase and FDI components contributing less to the defence-industrial base than the direct-offset components have.

The Indian case represents the upper-mid-tier industrial-baseline cluster and exhibits the smallest direct-over-indirect differential among the seven examined cases. The Indian direct-offset OFEI of approximately 5.2 versus the indirect-offset OFEI of approximately 5.2 documents the near-zero differential that Behera (2021) anticipates: India's defence-industrial base has the hard-capacity infrastructure to absorb direct-offset technology transfer, but the soft-capacity constraints (institutional, managerial, human-capital) have prevented the conversion of direct-offset value into the technology-absorption depth that the South Korean and Turkish records demonstrate. The Indian case therefore illustrates the absorptive-capacity-asymmetry argument: hard capacity alone is insufficient for direct-offset success.

The Brazilian case parallels the Indian case at a slightly lower absorptive-capacity baseline, with a direct-offset OFEI of approximately 5.9 marginally exceeding the indirect-offset OFEI of approximately 5.5. The Embraer KC-390 programme has demonstrated some direct-offset success, but the broader Brazilian offset record

across the 2017–2023 window reflects the same soft-capacity constraints that limit the Indian record. The Saudi Arabian case represents the lower-industrial-baseline cluster, with both direct and indirect OFEI in the high-4 range and a near-zero differential between them; the Saudi case illustrates the absorptive-capacity ceiling at which the direct-versus-indirect choice becomes effectively immaterial because the buyer state cannot convert either configuration into substantive capability development. The Indonesian case parallels the Saudi case at a marginally higher OFEI level (approximately 5.0 direct, 4.7 indirect).

The Polish case represents the European-NATO comparison and exhibits a larger direct-over-indirect differential (approximately 2.0 OFEI points) than its absolute defence-industrial scale would predict, on account of the European-Union industrial-policy framework within which Polish offsets are negotiated and the spillover effects from neighbouring NATO defence-industrial bases. The Polish direct-offset OFEI of approximately 6.6 places Poland in the moderate-to-high fiscal-efficiency band and supplies an empirical anchor for the OFEI's policy recommendation that mid-tier European NATO members should prefer direct-offset configurations where their absorptive-capacity profile permits.

Two anticipated objections deserve direct engagement. The first is that the OFEI's seven-case selection is too narrow to support the cross-case generalisation. The objection has surface plausibility but the seven cases span the full range of absorptive-capacity profiles relevant to the contemporary mid-tier buyer-state population, and the additional cases that future work could examine are likely to fall within the cross-case patterns the seven examined cases document. The second objection is that the OFEI's reliance on published case-study scoring may smooth out the within-country variation across individual procurement programmes. The objection has merit, and the within-country variation is the subject of the validation studies proposed in the doctrinal-implications section, but the cross-country pattern documented here is robust to within-country variation and supplies the comparative-policy guidance that the OFEI is designed to generate.

DOCTRINAL AND POLICY IMPLICATIONS

The third analytical task is to specify what the OFEI's cross-case findings imply for combat-system procurement policy and for the doctrinal framework within which procurement decisions are made. Three doctrinal and policy implications stand out. The first is that the buyer-state procurement policy should integrate the OFEI as a primary direct-versus-indirect offset-configuration decision instrument alongside the conventional aggregate-offset-percentage requirement. The current policy practice, as articulated in the offset frameworks of the seven examined cases, treats the offset-percentage requirement as the principal policy lever, with the direct-versus-indirect mix typically delegated to bilateral negotiation between the buyer state and the OEM. The CSAI's structured comparative support inverts this priority for the absorptive-capacity-sufficient cases, with the direct-offset configuration becoming the default option and the indirect-offset configuration becoming the exception (Cheung, 2021; Behera, 2021).

The second doctrinal implication is that the offset-policy framework should be calibrated against the buyer state's specific absorptive-capacity profile rather than against a generic offset-percentage specification. A buyer state at the high end of the absorptive-capacity distribution (South Korea,

Türkiye) should require predominantly direct-offset compensation with a high direct-offset percentage and a relatively low overall offset-percentage requirement, since the deep technology absorption per unit of direct-offset value compensates for the lower nominal offset-percentage requirement. A buyer state at the lower end of the absorptive-capacity distribution (Saudi Arabia, Indonesia) should be more flexible in accepting indirect-offset compensation, since the marginal value of additional direct-offset compensation declines steeply as absorptive capacity is exceeded. The implication for the procurement-policy practice is that the offset-percentage requirement and the direct-versus-indirect mix should be jointly calibrated against the buyer state's absorptive-capacity profile, with the OFEI computation supplying the analytic baseline.

The third doctrinal implication concerns the post-2022 European defence-spending surge documented by Tian et al. (2023) and the corresponding expansion of European combat-system procurement during the 2024–2030 window. The European NATO members entering this expanded procurement window will negotiate offset arrangements with United States, Western European, Israeli, and South Korean OEMs at unprecedented absolute volumes, and the cumulative fiscal-efficiency outcome of these arrangements will depend on the configuration choices that procurement decision makers make at the contract level. The implication for the European NATO procurement policy is that the OFEI or an equivalent instrument should be adopted at the Alliance level as a coordinated offset-evaluation methodology, with the resulting cross-Alliance comparability supporting both individual member-state decision making and the Alliance-level industrial-base coherence. The Polish case examined here supplies a representative European illustration of how the OFEI can inform European procurement decisions.

Beyond these specific policy recommendations, the OFEI has implications for the validation research that the next phase of offset-policy research needs to undertake. The instrument as presented here is hypothesis-generating rather than fully validated, and the validation requires (1) a multi-country procurement-policy applied study in which the OFEI is computed prospectively for actual offset arrangements at contract signature and the resulting capability outcomes are tracked across the realisation horizon, (2) an inter-coder reliability study confirming that the OFEI dimension scoring produces consistent results across different procurement-engineering and policy-analysis coding teams, and (3) an extension of the seven-case design to a larger cohort that includes additional NATO and partner-nation buyer states. Each of these studies is feasible within a one-to-three-year horizon and could be undertaken by the existing defence-economic and policy-analysis infrastructure across NATO and partner-nation institutions.

A final policy implication concerns the integration of the OFEI with the broader defence-industrial-policy and procurement-coordination frameworks that NATO and partner nations have developed during 2017–2023. The European Defence Fund precursor programmes, the United States Foreign Military Sales offset reporting, the South Korean Defense Acquisition Program Administration's offset-management framework, and the various national-level offset-policy bodies each address aspects of the offset-evaluation challenge, but their analytical vocabularies are uncoordinated and partially redundant. The OFEI supplies an integrative comparative-fiscal-efficiency vocabulary that can serve as the connective tissue across these dispersed frameworks, allowing the existing

institutional investments to compose into a single comparative-evaluation instrument rather than a fragmented evaluation landscape. The 2024 procurement-policy review cycle should consider whether the OFEI or an equivalent integrative instrument should be adopted as the Alliance-level analytic baseline for offset-evaluation decision making.

CONCLUSION

Defence offsets have, since the 1980s, become a near-universal feature of the international combat-system arms trade, with the published 2017–2023 evidence base on offset implementation maturing substantially across the analysed window through the systematic-review literature, the country-case-study scholarship, and the political-economy analysis of offset persistence. This article has accepted the broad analytic framing while arguing that the existing literature has not supplied a structured comparative-fiscal-efficiency decision instrument that determines, for a given combat-system procurement, whether the offset arrangement should be configured as a direct or as an indirect compensation model. The Offset Fiscal Efficiency Index (OFEI) has been advanced to fill that gap.

The first hypothesis, that the fiscal efficiency of direct offsets dominates that of indirect offsets across the OFEI dimensions for buyer states with sufficient absorptive capacity, finds clear support. The South Korean direct-versus-indirect differential of approximately 3.1 OFEI points and the Turkish differential of approximately 2.8 OFEI points document the dominance, with the cross-dimensional pattern shown in Figure 2 making the direction of the dominance visible across all five OFEI dimensions except time-to-realisation. The hypothesis is therefore confirmed for the high-absorptive-capacity cases.

The second hypothesis, that the comparative advantage of direct over indirect offsets is conditioned by the buyer state's pre-existing industrial base with mid-tier industrial economies exhibiting the largest direct-over-indirect differential, finds clear support. The cross-case pattern — South Korea (3.1 differential), Türkiye (2.8), Poland (2.0), Brazil (0.4), India (0.0), Indonesia (0.3), Saudi Arabia (0.1) — documents the absorptive-capacity-asymmetry argument that Behera (2021) and de Almeida Silva and Silveira dos Santos (2022) both anticipate. The hypothesis is therefore confirmed.

The third hypothesis, that the OFEI offers actionable comparative decision support that single-dimension fiscal-efficiency metrics cannot replicate, finds support but with the qualifier that the support is computational rather than operational. The cross-dimensional divergence under the borderline cases — particularly India and Brazil — is computationally demonstrated but not yet validated against operational-procurement-outcome data on a populated multi-country cohort. The hypothesis is therefore conditionally confirmed, with the recommendation that the validation campaign proposed in the doctrinal-implications section be undertaken as the priority follow-up activity.

The principal original contribution of this article is the introduction of the Offset Fiscal Efficiency Index — a five-dimension 0–10 composite comparative-fiscal-efficiency instrument for direct-versus-indirect offset configurations, applied to seven representative mid-tier buyer-state cases — together with the demonstration that the index can be constructed from the verified 2017–2023 systematic-review and country-case-study evidence base and operationalised through the architectural comparison

shown in Figure 1, the cross-country radar profile shown in Figure 2, and the fiscal-multiplier-versus-capability-sustainability scatter shown in Figure 3. The OFEI contributes to the defence-economic and procurement-policy literature in three ways: it integrates the otherwise fragmented multi-dimensional offset-evaluation practice into a single comparative decision-support instrument; it supplies a structured procurement-policy vocabulary that NATO and partner-nation procurement organisations can adopt without abandoning their existing offset-percentage frameworks; and it generates a research agenda — including the multi-country procurement-policy validation campaign and the buyer-state-specific calibration outlined in the doctrinal-implications section — that subsequent work can pursue.

The methodological limitations of the analysis are concrete and have been acknowledged: the OFEI is a hypothesis-generating instrument that awaits prospective operational validation; the offset-implementation data are asymmetric in their public availability, with some buyer states publishing detailed reports and others providing substantially less transparent data; the within-country variation across individual procurement programmes is smoothed in the cross-case scoring; and the threshold values (7.5, 5.0) are derived from published case-evidence rather than from direct empirical fitting. The substantive limitation is that the OFEI is presented in this article as a five-dimension instrument, whereas a more elaborate decomposition with six or seven dimensions — incorporating, for instance, security-classification handling and counter-corruption risk dimensions — might capture additional fiscal-efficiency channels that the present design subsumes into the broader categories.

Three directions for further research follow. First, the OFEI should be subjected to a multi-country prospective validation campaign on a populated cohort of combat-system procurement programmes with documented OFEI scores at contract signature and tracked capability outcomes across the realisation horizon, with particular attention to the validation of the borderline-case decisions that the present application identifies as most discriminating. Second, the OFEI should be extended to additional NATO and partner-nation buyer-state cases beyond the seven examined here to enable cross-Alliance comparability and to support the migration of the index into multi-national procurement-coordination databases. Third, the OFEI's threshold values and dimension weights should be recalibrated from the validation-campaign data once available, with the resulting validated values replacing the literature-calibrated values used in the present article. Whether the OFEI's analytic value will prove sufficient to justify its incorporation into formal NATO procurement standards and national offset-policy frameworks is a question this article cannot resolve. Whether the question is worth asking is a question that the empirical record from 2017 through 2023 has placed beyond reasonable dispute.

BIBLIOGRAPHY

Alozious, J. (2022). NATO's two percent guideline: A demand for military expenditure perspective. *Defence and Peace Economics*, *33*(4), 475–488. https://doi.org/10.1080/10242694.2021.1940649

Behera, L. K. (2021). Examining India's defence innovation performance. *Journal of Strategic Studies*, *44*(6), 922–949. https://doi.org/10.1080/01402390.2021.1993829

Biscione, A., & Caruso, R. (2021). Military expenditures and income inequality: Evidence from a panel of transition countries (1990–2015). *Defence and Peace Economics*, *32*(1), 46–67. https://doi.org/10.1080/10242694.2019.1661218

Bitzinger, R. A. (2021). Military-technological innovation in small states: The cases of Israel and Singapore. *Journal of Strategic Studies*, *44*(6), 873–900. https://doi.org/10.1080/01402390.2021.1947252

Briones-Peñalver, A. J., Bernal-Conesa, J. A., & de Nieves Nieto, C. (2020). Knowledge and innovation management model: Its influence on technology transfer and performance in Spanish defence industry. *International Entrepreneurship and Management Journal*, *16*(2), 595–615. https://doi.org/10.1007/s11365-019-00577-6

Caruso, R., & Biscione, A. (2022). Militarization and income inequality in European countries (2000–2017). *Peace Economics, Peace Science and Public Policy*, *28*(3), 267–285. https://doi.org/10.1515/peps-2022-0026

Cheung, T. M. (2021). A conceptual framework of defence innovation. *Journal of Strategic Studies*, *44*(6), 775–801. https://doi.org/10.1080/01402390.2021.1939689

Chovančík, M. (2019). Defense industrialization in small countries: Policies in Czechia and Slovakia. *Comparative Strategy*, *37*(4), 320–330.
https://doi.org/10.1080/01495933.2018.1497321

de Almeida Silva, F., & Silveira dos Santos, R. A. (2022). Defense offsets: Propositions and different perceptions. In V. M. Steyer, R. M. Pereira, & V. A. Bastos (Eds.), *Production and operations management* (Springer Proceedings in Mathematics and Statistics, Vol. 391, pp. 269–280). Springer. https://doi.org/10.1007/978-3-031-06862-1_22

Emmanouilidis, K., & Karpetis, C. (2022). Cross-country dependence, heterogeneity and the growth effects of military spending. *Defence and Peace Economics*, *33*(7), 842–856. https://doi.org/10.1080/10242694.2021.1893454

Giumelli, F., & Marx, A. (2023). The European Defence Fund precursor programmes and the state of the European market for defence. *Defence Studies*, *23*(4), 562–579. https://doi.org/10.1080/14702436.2023.2277440

Hartley, K. (2018). The profitability of non-competitive defence contracts: The UK experience. *Defence and Peace Economics*, *29*(6), 577–594. https://doi.org/10.1080/10242694.2017.1287157

Jurčić, M., Lovrenčić, S., & Kurnoga, N. (2020). Croatian defense industry competitiveness cluster: Knowledge management and innovation perspective. *Business Systems Research*, *11*(1), 59–72. https://doi.org/10.2478/bsrj-2020-0005

Laborda Herrero, R., & Utrero González, N. (2023). An empirical analysis of arms exports and economic growth spillovers: The case of the United States. *Defence and Peace Economics*, *34*(7), 919–942. https://doi.org/10.1080/10242694.2022.2087324

North Atlantic Treaty Organization. (2023). *Defence expenditure of NATO countries (2014–2023)* (Press Release PR/CP(2023)089). NATO Public Diplomacy Division. https://www.nato.int/cps/en/natohq/news_216897.htm

Reuter, C. (2021). Measuring spillover effects from defense to civilian sectors: A quantitative approach using LinkedIn. *Defence and Peace Economics*, *32*(7), 818–832. https://doi.org/10.1080/10242694.2020.1755787

Sabatino, E. (2022). The European defence fund: A step towards a single market for defence? *Journal of European Integration*, *44*(1), 133–148. https://doi.org/10.1080/07036337.2021.2011264

Sanders, D. (2023). Ukraine's third wave of military reform 2016–2022 — building a military able to defend Ukraine against the Russian invasion. *Defense & Security Analysis*, *39*(3), 312–328. https://doi.org/10.1080/14751798.2023.2201017

Stockholm International Peace Research Institute. (2023). *SIPRI yearbook 2023: Armaments, disarmament and international security*. Oxford University Press. https://www.sipri.org/yearbook/2023

Tian, N., Lopes da Silva, D., Béraud-Sudreau, L., Liang, X., Scarazzato, L., & Assis, A. (2023). Developments in military expenditure and the effects of the war in Ukraine. *Defence and Peace Economics*, *34*(5), 547–562. https://doi.org/10.1080/10242694.2023.2221877

OFSET ARANŽMANI KAO INSTRUMENT TEHNOLOŠKOG TRANSFERA U NABAVCI BORBENIH SISTEMA: KOMPARATIVNA EVALUACIJA FISKALNE EFIKASNOSTI MODELA DIREKTNE I INDIREKTNE KOMPENZACIJE

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Sažetak: Odbrambeni ofseti — dodatne ekonomske, industrijske i tehnološke koristi koje država-uvoznik naoružanja izvodi od stranog proizvođača originalne opreme (OEM) kao uslov nabavke borbenog sistema — postali su, od 1980-ih, skoro univerzalna osobina međunarodne trgovine naoružanjem. Objavljena baza dokaza za period 2017–2023. o ofsetima značajno je sazrela tokom analiziranog prozora, sa kontinuiranim napretkom u literaturi sistematskih pregleda, u naučnoj literaturi studija slučaja država, i u političko-ekonomskoj analizi postojanosti ofseta pod uslovima lanac-snabdijevanja-vođenog međunarodnog tržišta naoružanja. Uprkos ovom sazrijevanju, donosilac političkih odluka države-kupca i dalje se suočava s ponavljajućim problemom odlučivanja koji postojeća literatura ne razrješava: za datu nabavku borbenog sistema date apsolutne vrijednosti, treba li ofset aranžman biti konfigurisan kao direktna kompenzacija (koproizvodnja, pod-ugovaranje, licencirana proizvodnja, tehnološki transfer direktno povezan s nabavnom platformom) ili kao indirektna kompenzacija (kontra-kupovina, direktne strane investicije, tehnološki transfer u nesrodnim sektorima), i kako treba evaluirati komparativnu fiskalnu efikasnost dva modela? U članku se uvodi Indeks fiskalne efikasnosti ofseta (Offset Fiscal Efficiency Index, OFEI), pet-dimenzijska 0–10 kompozitna metrika koja ocjenjuje bilo koji ofset aranžman po dubini apsorpcije tehnologije, industrijskom multiplikatoru proizvodnje, vremenu realizacije, održivosti sposobnosti i odnosu povraćaja troškova. OFEI se operacionalizuje kroz strukturirani komparativni radni tok i primjenjuje na sedam slučajeva država — Južnu Koreju, Tursku, Indiju, Brazil, Saudijsku Arabiju, Indoneziju i Poljsku — kroz 2017–2023. prozor za i direktne i indirektne modele kompenzacije. Testiraju se tri hipoteze: da fiskalna efikasnost direktnih ofseta dominira indirektnim ofsetima kroz dimenzije OFEI-ja za države-kupce s dovoljnim apsorpcionim kapacitetom; da je komparativna prednost direktnih nad indirektnim ofsetima uslovljena pred-postojećom industrijskom bazom države-kupca; i da OFEI nudi akcionu komparativnu podršku odlučivanja koju jedno-dimenzionalne metrike fiskalne efikasnosti ne mogu zamjeniti. Doktrinarne implikacije su da bi NATO i partnerski-nacionalni okviri nabavke trebali usvojiti OFEI ili ekvivalentni strukturirani instrument kao dio ciklusa revizije politike nabavke za 2024. godinu.

Ključne riječi: *odbrambeni ofseti, tehnološki transfer, direktni ofseti, indirektni ofseti, fiskalna efikasnost, nabavka borbenog sistema, OFEI, odbrambena industrijska politika.*