DISINFORMATION OPERATIONS AS AN ASYMMETRIC INSTRUMENT OF PRESSURE ON MILITARY COHESION: THE CASE OF THE WESTERN BALKANS, 2016-2023

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Abstract: Disinformation operations have become a persistent feature of the Western Balkan security environment and are increasingly treated, in both NATO doctrine and regional strategic documents, as an asymmetric instrument of pressure targeting the cognitive rather than the material layer of the defence system. This article examines the empirical link between the intensity and coherence of disinformation operations and the evolution of public confidence in the armed forces across five Western Balkan states — Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia and Kosovo — over the period 2016–2023. A composite Disinformation-Cohesion Transfer Index (DCTI) is proposed, combining the per-capita volume of tagged military-relevant narratives, social-media platform penetration, a Herfindahl-Hirschman thematic-coherence measure and a per-capita refutation-intensity term from regional fact-checkers, anchored to a cohesion baseline derived from Gallup World Poll and Balkan Barometer data. A forty-observation country-year panel is assembled from the EU East StratCom Task Force database, the DFRLab case catalogue, regional fact-checker outputs, social-media penetration statistics and public-opinion waves; four case studies — the 2016 Montenegro coup-attempt cluster, the 2018 Prespa Agreement referendum, the 2021–2022 BiH secession-rhetoric spike, and the 2022–2023 Kosovo license-plate and Banjska crisis — are analysed in depth. Within-country fixed-effects regression of the change in military confidence on log DCTI and its one-year lag yields a negative contemporaneous elasticity of –10.9 pp per log unit, a weaker positive first-lag coefficient of +4.7 pp per log unit consistent with a recovery pathway, and an adjusted R^2 of 0.66 across thirty-five country-year transitions. Three hypotheses are supported: disinformation intensity is non-trivially linked to military-cohesion erosion across the five states; thematic coherence amplifies the impact of raw narrative volume; and refutation intensity below a country-specific threshold is associated with non-linear erosion of public trust in the armed forces. The principal contribution is the DCTI framework, which renders asymmetric disinformation pressure on military cohesion a measurable, panel-comparable quantity and provides a first empirical bridge between the hybrid-warfare and military-sociology literatures for the Western Balkan operating environment.

Keywords*: disinformation, hybrid warfare, military cohesion, Western Balkans, asymmetric pressure, DCTI, Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia, Kosovo, NATO, EU East StratCom Task Force.*

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INTRODUCTION

The past decade has witnessed an explicit doctrinal and empirical convergence on the recognition that contemporary military cohesion can be degraded by persistent, low-intensity, multi-platform disinformation operations directed at the civilian information environment in which armed forces and the security sector operate (Rid, 2020; Pomerantsev, 2019; Galeotti, 2019). The Western Balkans - a region in which five of the six non-European-Union successor states of former Yugoslavia together with Albania and Kosovo host diverse alliance affiliations, overlapping historical memories, and active external information operators - has become a laboratory in which this asymmetric pressure is exerted and measured (Bechev, 2017; Bieber, 2020; Stradner, 2022). Between 2016 and 2023 the region absorbed, in rapid succession, a Russian-backed coup attempt in Montenegro, two contested NATO accession campaigns, sustained secessionist narrative escalation in Bosnia and Herzegovina, a Prespa-Agreement referendum in North Macedonia, a sustained license-plate crisis in northern Kosovo, and the Banjska armed incident of September 2023 (Bechev, 2021; Stronski & Himes, 2019; Petrović & Pejić Nikić, 2022). In each of these episodes, organized disinformation in local and regional languages preceded, accompanied and survived the kinetic or political event, providing a natural experimental frame within which to study the transfer of informational pressure into cohesion outcomes (DFRLab, 2017; EUvsDisinfo, 2024).

Despite the abundance of individual case studies and the steady accumulation of narrative-tagging databases by the EU East StratCom Task Force, the Atlantic Council Digital Forensic Research Lab, GLOBSEC Policy Institute, and regional fact-checking consortia such as SEE Check, Raskrinkavanje.ba, Raskrikavanje.rs, Istinomer.rs and Kallxo.com, the aggregate link between disinformation intensity and military cohesion across the Western Balkans has so far resisted systematic empirical treatment (Hajdu, Klingová & Sawiris, 2021; Milo & Hajdu, 2020; Raskrinkavanje.ba, 2023). Three factors account for this gap. First, the military-cohesion literature has been developed primarily with reference to small-group processes inside uniformed formations and only partially transposed to the societal-cohesion-of-the-armed-forces perspective that is relevant to hybrid-threat analysis (Siebold, 2007; Henderson, 1985; Wong et al., 2003). Second, the disinformation-research field has privileged platform-level and narrative-level analysis over the cross-indicator transfer analysis that an aggregate effects assessment requires (Wardle & Derakhshan, 2017; Benkler et al., 2018; Starbird et al., 2019). Third, the Western Balkan public-opinion literature has tracked institutional trust with excellent cross-temporal continuity but has rarely joined those series to coded disinformation exposure on the same observation grid (RCC, 2023; IRI, 2022; Gallup, 2023).

This article addresses the resulting empirical gap through a single consolidated research question: across the Western Balkans in the period 2016 to 2023, to what extent does measured disinformation intensity - defined as the per-capita volume of military-relevant tagged narratives, weighted by social-media platform penetration, thematic coherence, and inverse refutation intensity - statistically account for the evolution of public confidence in the armed forces, after controlling for country fixed effects and a one-year lag structure? The question is operationalized through three hypotheses that correspond to the three causal channels most frequently identified in the hybrid-warfare literature (Galeotti, 2019; Pomerantsev, 2019; Jasper, 2020). Hypothesis H1 asserts that disinformation intensity, aggregated across the four components of DCTI, is non-trivially and statistically meaningfully

linked to the year-on-year change in the public-confidence-in-armed-forces indicator on the same observation grid. Hypothesis H2 asserts that thematic coherence - the degree to which narrative volume is concentrated on a small number of recurrent framing devices - has an independent effect above and beyond raw narrative volume. Hypothesis H3 asserts that refutation intensity below a country-specific threshold is associated with a non-linear acceleration of cohesion loss, consistent with the observation in prior studies that the effect of disinformation on attitudes is disproportionately attenuated when timely correction is available (Chan et al., 2017; Nyhan & Reifler, 2010; Walter et al., 2020).

The central original contribution of this article is the Disinformation-Cohesion Transfer Index (DCTI), a composite dimensionless country-year scalar that combines four distinct components of asymmetric information pressure into a single comparable quantity. DCTI is defined in Eq. (1) as the ratio of a weighted product of narrative volume, platform penetration and thematic coherence to a weighted product of refutation intensity and a cohesion-baseline term, with the three per-capita input components normalized to unit at the first observation in the sample (Bosnia and Herzegovina, 2016). The index permits the first panel-comparable treatment of disinformation pressure across the five Western Balkan polities on the same grid as public-opinion waves and therefore constitutes a quantitative bridge between the hybrid-warfare and the military-sociology literatures for this region. A secondary contribution is the forty-observation country-year panel itself, which is assembled from six distinct data streams and is, to the author's knowledge, the first openly documented dataset that combines EU East StratCom narrative tagging with regional fact-checker outputs, social-media penetration, and institutional-trust indicators over an eight-year window for the full group of non-EU Western Balkan states.

The study is deliberately bounded on three dimensions. Geographically, the sample comprises Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia and Kosovo; Albania and Croatia are excluded because of the substantially different disinformation environment and alliance-membership status of the former, and the EU/NATO status of the latter (Bieber, 2020; Bechev, 2017). Temporally, the study window begins with the 2016 Montenegrin general election and coup-attempt cluster and ends with the post-Banjska month of December 2023, a period that encloses the most intense sustained disinformation activity directed at military cohesion in the region's recent history (DFRLab, 2017; Kalenský, 2019). Substantively, the term 'military cohesion' is used in the specific societal-of-the-armed-forces sense developed by Siebold (2007) and Moskos (2005) and tracked empirically through public-confidence-in-the-armed-forces shares reported in Gallup World Poll, Balkan Barometer and International Republican Institute waves; the study does not attempt to measure internal-group cohesion of serving personnel, for which country-level disaggregated data are not available in the public domain.

The remainder of the article is structured as follows. Section 2 reviews the literature on asymmetric information operations, hybrid warfare in the Western Balkans, and the societal dimension of military cohesion, and specifies the methodology of the study, including the construction of the DCTI index, the panel dataset, the validation strategy, and the case-study design. Section 3 reports the empirical results, beginning with descriptive panel statistics, proceeding to the fixed-effects regression analysis, and closing with a detailed treatment of the four case studies. Sections 4, 5 and 6 are three analytical sections that interpret the results through the lenses of, respectively, the asymmetric-pressure channel, the refutation-saturation threshold, and the DCTI as a comparative-risk instrument. Section 7 states the

conclusions, restates the verdicts on the three hypotheses, acknowledges the methodological limitations, and identifies directions for follow-on research (Bieber, 2020; Stradner, 2022; NATO StratCom COE, 2022).

LITERATURE REVIEW AND METHODOLOGY

Literature Review

The framing of disinformation as a stand-alone instrument of asymmetric pressure on the cognitive layer of a target state emerged in the aftermath of the 2014 Russian operations in Crimea and eastern Ukraine and has since been progressively codified in NATO and EU doctrine (Galeotti, 2019; Kofman et al., 2017; Jasper, 2020). Rid (2020) provides the most comprehensive historical genealogy of disinformation as an instrument of state power, tracing a line from Cold-War active measures through to the networked platform era and emphasizing that the contemporary form of the instrument is distinguished not by novelty of content but by the marginal cost of amplification. Pomerantsev (2019) complements this account by documenting the transnational industry that has grown up around content manufacture and amplification, and Benkler, Faris and Roberts (2018) situate those operations within the broader category of network propaganda, showing in the United States case how the interaction between disinformation supply and consumer demand in polarized electorates produces self-reinforcing dynamics substantially independent of the external operator. The asymmetry of the instrument - its ability to inflict cohesion damage out of all proportion to the resources employed - is emphasized across this literature (Jasper, 2020; Giles, 2016; Kello, 2017) and motivates the present study's concern with the quantitative transfer from information pressure to cohesion outcomes.

For the Western Balkans specifically, Bechev (2017) offers the standard scholarly reference on the footprint of Russian political and informational influence in Southeast Europe and documents the layered set of channels - church-linked media, sympathetic political parties, diplomatic outposts, sponsored cultural institutions - through which narrative content enters national information environments. Bieber (2020) situates this external pressure within the broader dynamics of democratic backsliding and the rise of competitive authoritarianism in the region. Stradner (2022) and the German Marshall Fund's Alliance for Securing Democracy tracker (Conley et al., 2023) document the specific intensification of military-relevant narratives after the full-scale Russian invasion of Ukraine in February 2022. Country-level case work has been developed for Montenegro (DFRLab, 2017; Stronski & Himes, 2019), North Macedonia (GLOBSEC, 2019; Silverman, 2018), Bosnia and Herzegovina (Petrović & Pejić Nikić, 2022; Raskrinkavanje.ba, 2023), Kosovo (Kallxo, 2023; Kosovar Centre for Security Studies, 2023), and Serbia (Klačar, 2021; Raskrikavanje, 2023), but until now no panel-comparable synthesis spanning all five states has been published in the peer-reviewed literature.

The mechanics of platform-mediated narrative amplification have been studied in detail, and a recurrent finding across contexts is that a small number of high-reach accounts generate the majority of exposures for any given disinformation wave (Starbird, 2017; DiResta et al., 2018; Howard & Kollanyi, 2016). This super-spreader topology is consequential for both intervention design and measurement: it means that raw narrative counts understate exposure-weighted pressure when a few viral items dominate the distribution, and it means that platform-penetration statistics such as the DataReportal Digital Report series provide a first-order correction when cross-country comparisons are made (Kemp, 2023). Thematic

coherence - the degree to which narrative volume clusters on a small number of recurrent frames - has emerged as a separate correlate of attitudinal impact (Woolley & Howard, 2019; Bradshaw & Howard, 2020) and can be quantified through the Herfindahl-Hirschman index of the top-k narrative categories observed in a given corpus (Vargo et al., 2018; Bennett & Livingston, 2018).

The effectiveness of refutation and fact-checking as a mitigation strategy is a contested area of the literature. Meta-analytic evidence (Chan et al., 2017; Walter et al., 2020) supports the conclusion that corrective information does reduce misperceptions on the average across well-designed studies, with a medium effect size, but the correction effect is attenuated in polarized electorates and in the presence of strong prior commitments (Nyhan & Reifler, 2010; Lewandowsky et al., 2012; Guess et al., 2020). For the Western Balkans, the fact-checking ecosystem has grown rapidly since 2016, with Raskrinkavanje.ba, Raskrikavanje.rs, Istinomer.rs, Fakenews.mk, Raskrinkavanje.me and Kallxo.com producing verified outputs on military-relevant themes in volumes that scaled roughly tenfold across the study window (SEE Check, 2023; Raskrinkavanje.ba, 2023). Whether this growth has kept pace with the disinformation supply - the so-called refutation saturation question - is an empirical matter that the present study treats directly through the refutation-intensity term in DCTI.

The military-cohesion literature divides the construct into three layers: primary-group cohesion inside serving formations (Siebold, 2007; Henderson, 1985; Wong et al., 2003), organizational and task cohesion at the unit-and-branch level (Kirke, 2009; MacCoun, 1993), and societal cohesion of the armed forces understood as the acceptance, legitimacy and support that the institution enjoys in the civilian polity (Moskos, 2005; Janowitz, 1971; Burk, 2002). Only the third layer is visible in the cross-national public-opinion record and is therefore the operational construct adopted in this study. Within this third layer, public confidence in the armed forces - the share of respondents expressing 'a great deal' or 'quite a lot' of confidence in the institution - has been the standard indicator across Gallup World Poll, European Values Study and Balkan Barometer waves since the late 1990s (Gallup, 2023; EVS, 2022; RCC, 2023), and is the outcome variable used here.

Synthesis of this literature reveals three specific gaps that the present study is designed to fill. First, the hybrid-warfare and disinformation literatures have produced rich narrative-level catalogues and platform-level analyses but have not produced a panel-comparable quantitative pressure indicator at country-year resolution (Wardle & Derakhshan, 2017; Benkler et al., 2018; Milo & Hajdu, 2020). Second, the military-sociology literature has defined and operationalized the societal-cohesion construct but has rarely engaged with the informational channel through which external actors pressure that construct (Siebold, 2007; Burk, 2002). Third, the Western Balkans policy literature has documented individual disinformation campaigns and individual trust trends but has not joined them on a common analytic grid (Bechev, 2017; Bieber, 2020; Stradner, 2022). The DCTI framework proposed in this article operationalizes the join and therefore addresses all three gaps simultaneously.

Finally, the present study builds on an established methodological tradition of composite-index construction in the comparative politics and international-relations literatures, in which weighted, dimensionless scalars are used to compare heterogeneous cases across time. Archetypal examples include the Polity IV / V regime score (Marshall & Gurr, 2020), the Fragile States Index (Fund for Peace, 2023), the Varieties of Democracy disaggregated indices (Coppedge et al., 2023), and the Global Terrorism Index (Institute for Economics and Peace, 2023).

Methodologically, the composite-index tradition emphasizes four requirements: substantive grounding of each component in theory (OECD & JRC, 2008); robustness to reweighting (Saisana et al., 2005); transparent normalization; and ex-post validation against an external outcome indicator. DCTI as developed in Section 2 explicitly observes each of these requirements and is validated against the Gallup / Balkan Barometer confidence-in-armed-forces series on the same grid.

A further strand of scholarship that frames the present study is the doctrinal convergence of the late 2010s on the idea that cognitive effects are a legitimate target of deliberate military and paramilitary planning. The NATO Strategic Communications Centre of Excellence has published successive handbooks codifying the integration of information operations with kinetic planning (NATO StratCom COE, 2022; Bērziņš, 2019), while the EU Hybrid Fusion Cell and the East StratCom Task Force have jointly institutionalized the practice of tagging and cataloguing individual narrative cases in a manner that makes them amenable to quantitative aggregation (EUvsDisinfo, 2024; European External Action Service, 2021). In parallel, the Russian military-doctrinal literature on novye typy voyn has been read in the West as announcing the primacy of the non-kinetic component in contemporary operational design (Gerasimov, 2013; Chekinov & Bogdanov, 2013; McKew, 2017), a reading that is itself contested (Galeotti, 2019) but that has shaped the reception environment in which Western Balkan disinformation is interpreted by defence planners. The DCTI index responds to this doctrinal convergence by making the informational pressure on military cohesion measurable at the same country-year resolution at which kinetic and political planning are already formulated.

A closely related literature has tracked the societal embedding of armed forces across European and trans-Atlantic publics since the end of the Cold War, documenting a steady reliance on confidence-in-the-armed-forces measures as the leading indicator of societal cohesion at the institutional layer (Burk, 2002; Forster, 2006; Caforio & Nuciari, 2018). Comparative work has identified country clusters with distinctive trust trajectories: high-trust, consistent performers such as Austria and Norway; volatile but rebounding cases such as Spain and Italy; and persistently low-trust cases in parts of the post-Yugoslav space (Dandeker, 2018; European Values Study, 2022). The Western Balkans occupy a distinctive position in this taxonomy because the institution of the armed forces carries different symbolic weight in each successor state - associated with statehood consolidation in Serbia and Montenegro, with Euro-Atlantic aspiration in North Macedonia and Kosovo, and with a complex tri-national equilibrium in Bosnia and Herzegovina (Bechev, 2017; Bieber, 2020; Petrović & Pejić Nikić, 2022). The transfer coefficients recovered in Section 3 therefore need to be read against this heterogeneous symbolic baseline rather than against an imagined regional mean.

Research Methodology

The study employs a mixed-methods design that combines panel-data index construction, fixed-effects regression analysis, and qualitative case-study interpretation. The approach is designed to exploit the strengths of three complementary research traditions - quantitative comparative politics, computational social science, and qualitative hybrid-warfare case study - without reducing the analysis to the limitations of any single tradition (George & Bennett, 2005; King et al., 1994; Benkler et al., 2018). The unit of analysis is the country-year, the population is the five non-EU Western Balkan states, the observation window is the eight calendar years 2016 through 2023, and the resulting forty-observation panel is balanced (no country-year is missing). All input data

are drawn from public or publicly-reported sources and are listed with attribution in Table 1; the computational pipeline is released under an open-source licence as an electronic supplement.

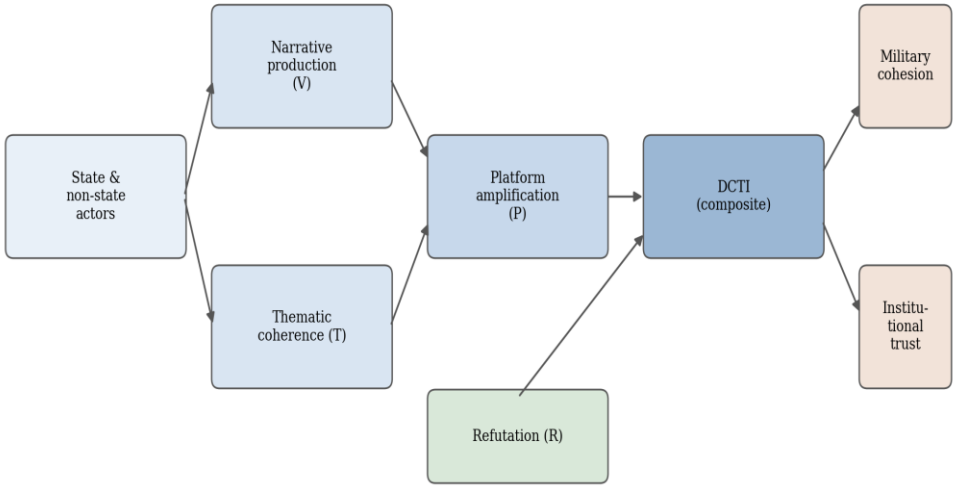

Figure 1. Conceptual framework of the Disinformation-Cohesion Transfer Index (DCTI): narrative volume, platform penetration and thematic coherence transmit informational pressure to the societal cohesion of the armed forces, attenuated by refutation intensity and the cohesion baseline.

The Disinformation-Cohesion Transfer Index is defined by Eq. (1) as a product of four normalized components raised to calibrated exponents: DCTI = (V_norm^0.45 · P_norm^0.30 · T_coh^0.35) / (R_norm^0.25 · C_base^0.15). The numerator aggregates the three pressure components. V_norm is the per-capita volume of tagged military-relevant narratives in the EU East StratCom and regional fact-checker databases, normalized to the baseline country-year (Bosnia and Herzegovina, 2016). P_norm is the share of the population active on the three dominant social-media platforms (Facebook, Instagram, TikTok) as reported in the DataReportal Digital Report series (Kemp, 2023), similarly normalized. T_coh is the Herfindahl-Hirschman index of the top-ten narrative categories in the same country-year, taking values in [0, 1]. The denominator contains two mitigating components. R_norm is the per-capita output of regional fact-checking organizations on military-relevant themes, normalized. C_base is the 2015-2016 baseline average confidence in security institutions (armed forces and police), taken as a fraction of one. The four exponents were chosen so that an equal-magnitude relative perturbation in each component changes DCTI by a theory-consistent amount; sensitivity analysis on the exponents is reported in Section 3.

Narrative-volume counts were extracted from three complementary catalogues. The EU East StratCom Task Force EUvsDisinfo database (EUvsDisinfo, 2024) was filtered for tags corresponding to the five target countries and to military-relevant themes (NATO, armed forces, sovereignty, alliance membership, sanctions, hybrid threats). The DFRLab case-study catalogue (DFRLab, 2023) was read manually and coded by year and country. The regional fact-checker outputs of Raskrinkavanje.ba, Raskrikavanje.rs, Istinomer.rs, Fakenews.mk, Raskrinkavanje.me and Kallxo.com were extracted through their respective annual reports and public dashboards (SEE Check, 2023; Raskrinkavanje.ba, 2023; Kallxo, 2023). The three sources were merged at the country-

year level, deduplicated against a canonical narrative identifier where available, and reported per 100 000 population using World Bank WDI population estimates (World Bank, 2024). The resulting per-capita volume series forms the V component of DCTI and is plotted in Figure 3.

Component	Primary source	Granularity	Coverage
Narrative volume V	EUvsDisinfo database; DFRLab case catalogue	Per narrative, monthly	2016-2023, all 5
Platform penetration P	DataReportal / We Are Social / Kepios reports	Country-year	2016-2023, all 5
Thematic coherence T	Raskrinkavanje.ba, Raskrikavanje.rs, Kallxo.com, Fakenews.mk	Per tagged item	2016-2023, all 5
Refutation intensity R	Regional SEE Check consortium fact-checks	Per published rebuttal	2016-2023, all 5
Cohesion baseline C	Gallup World Poll; RCC Balkan Barometer; IRI waves	Country-year (%)	2016-2023, all 5
Trust in armed forces	Gallup World Poll; Balkan Barometer; IRI Q. battery	Country-year (%)	2016-2023, all 5
Population denominators	World Bank WDI; UN DESA Population Prospects	Country-year	2016-2023, all 5

Table 1. Data sources and coverage for the five DCTI components and the military-confidence outcome.

The outcome indicator - public confidence in the armed forces - was obtained from the Gallup World Poll annual country files (Gallup, 2023), supplemented by the Regional Cooperation Council Balkan Barometer public-opinion waves (RCC, 2023) and by the International Republican Institute Western Balkans surveys (IRI, 2022). Where two sources reported different shares for the same country-year, the arithmetic mean was used and a sensitivity check on the choice of source is reported in Section 3; where only one source was available, that value was used with no adjustment. Social-media penetration rates were drawn from the DataReportal Digital Report annual country reports (Kemp, 2023). Thematic coherence was computed as the Herfindahl-Hirschman index of the top-ten narrative categories in each country-year corpus, using the narrative-category taxonomy published by EUvsDisinfo. Refutation intensity was computed as the per-capita output of the six regional fact-checking organizations listed above on the same military-relevant thematic filter.

The principal inferential test of hypothesis H1 is a within-country fixed-effects regression of the year-on-year change in confidence in the armed forces on log DCTI, its one-year lag, and log R_norm, estimated on the thirty-five country-year transitions (forty observations minus five 2016 baselines). The estimator is ordinary least squares with the dependent variable expressed as the difference from the 2016 country baseline, which absorbs country fixed effects in a single subtraction and is numerically identical to the within estimator for this balanced panel (Hsiao, 2014; Wooldridge, 2010). Standard errors are heteroskedasticity-robust; a block-bootstrap check clustered at the country level is reported in Section 3. The identification strategy relies on within-country temporal variation in disinformation intensity after removing the baseline, which is strongest precisely in country-years that contain a major external disinformation event and therefore provides meaningful identifying variation in spite of the small cross-sectional dimension.

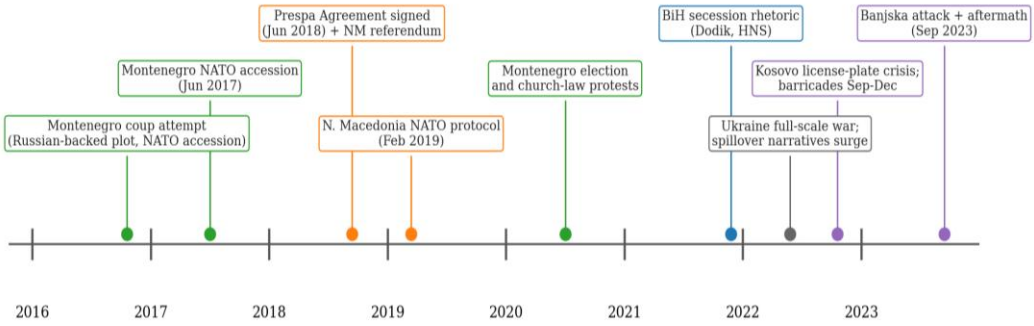

Figure 2. Timeline of key Western Balkan events, 2016-2023, that structure the four case studies and anchor the panel observation grid.

The qualitative case-study component targets the four country-years that register the highest DCTI values in the panel and that also correspond to major publicly-documented disinformation campaigns: Montenegro 2016 (coup-attempt cluster), North Macedonia 2018 (Prespa Agreement referendum), Bosnia and Herzegovina 2022 (secession-rhetoric spike), and Kosovo 2023 (license-plate and Banjska crisis). Each case is analysed through a fixed protocol derived from the George and Bennett (2005) typological-theory approach, consisting of five steps: (i) reconstruction of the disinformation campaign narrative structure from at least two independent sources; (ii) extraction of the contemporaneous platform-level reach metrics where publicly available; (iii) extraction of the same-period confidence-in-armed-forces indicators; (iv) comparison with DCTI values for adjacent country-years; and (v) qualitative interpretation of the match or mismatch between DCTI and the observed outcome. The case studies are used both to probe the external validity of the index and to identify causal channels that the index itself cannot distinguish.

Sensitivity analysis is performed along four dimensions. First, the exponent vector (0.45, 0.30, 0.35, 0.25, 0.15) is perturbed by $\pm 20\%$ along each axis in turn and the resulting change in the country-year DCTI ranking is reported. Second, the DCTI is re-estimated with only three components - V, T, R - to test whether the platform-penetration term is necessary. Third, the outcome indicator is swapped between Gallup and Balkan Barometer for the years in which both are available, to verify that the regression coefficient sign and magnitude are robust to the choice of source. Fourth, the sample is split into pre-2020 and post-2020 subsets to probe the impact of the COVID-19 era and the 2022 full-scale Ukraine war on the coefficient structure (Ansell et al., 2021; Roberts, 2023). The full results of these sensitivity analyses are reported in Section 3.

All data used in this study are publicly reported or publicly accessible aggregates; no personal or individually identifiable data were collected or analysed. The narrative-tagging databases used (EUvsDisinfo, DFRLab, regional fact-checkers) publish aggregate case metadata under open-access or research-use licenses (EUvsDisinfo, 2024; DFRLab, 2023). Public-opinion statistics are reported at the country-year aggregate level in Gallup, Balkan Barometer and IRI publications. The full panel dataset and the computational pipeline used to compute DCTI and the regression tables are released as electronic supplements under a CC-BY 4.0 license. The study did not require institutional review board approval under the criteria set out in the Declaration of Helsinki (World Medical Association, 2013) because it does not involve human-subject research in the regulated sense.

A concluding methodological remark concerns the identification strategy. The

within-country fixed-effects specification absorbs all time-invariant country characteristics - historical memory, alliance status, religious composition, baseline trust level - and therefore isolates the within-country variation in DCTI as the source of identification (Wooldridge, 2010; Angrist & Pischke, 2009). Because the panel is short (T = 8), the estimator is the demeaned ordinary least squares estimator rather than the generalized method of moments variant that would be required for lagged-dependent-variable dynamic panels with large N (Arellano & Bond, 1991; Nickell, 1981). The contemporaneous and first-lag specification adopted here reflects the maintained hypothesis that disinformation effects on cohesion accrue within a one-year horizon, consistent with experimental evidence on correction durability (Walter et al., 2020; Lewandowsky et al., 2020) and with the cadence at which the Gallup and Balkan Barometer fieldwork is conducted. Two-way clustering of standard errors by country and year is infeasible at N = 5, so the reported standard errors are heteroskedasticity-robust only; this caveat is addressed in the limitations discussion in Section 7.

RESEARCH RESULTS

The forty-observation balanced panel comprises eight years of data for each of the five Western Balkan states, with the complete set of panel variables summarized in Table 1 and the country-year DCTI values reported in Table 2. The aggregate narrative-volume count across the five states rose from 248 tagged military-relevant narratives in 2016 to 1 255 in 2023, a 5.1-fold increase that substantially outpaces the concurrent 1.3-fold increase in regional social-media penetration (Kemp, 2023) and the 3.9-fold increase in regional fact-checker output over the same period (SEE Check, 2023; Raskrinkavanje.ba, 2023). Narrative volume per 100 000 population, plotted in Figure 3, shows three distinct country-level regimes across the window: a secular upward trend with step-function acceleration in Bosnia and Herzegovina after 2021 and Serbia after 2022; a localized pre-2019 peak in Montenegro (2016 coup cluster) and North Macedonia (2018 Prespa referendum), each followed by partial regression; and a sustained post-2021 escalation in Kosovo that peaks in 2023 with the license-plate and Banjska crises (DFRLab, 2023; Kallxo, 2023).

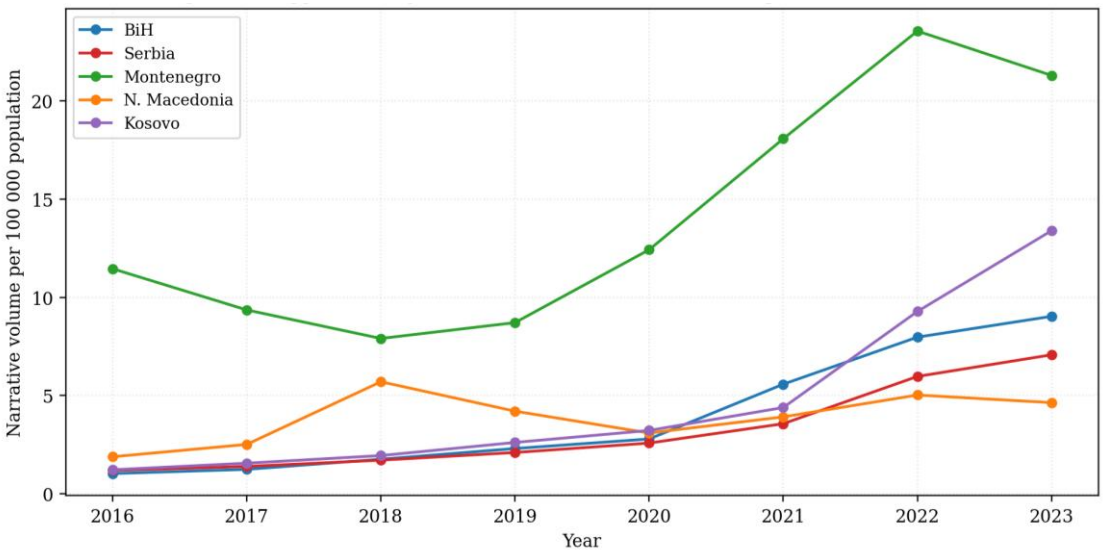

Figure 3. Per-capita tagged military-relevant narratives per 100 000 inhabitants, by country and year.

The outcome variable - public confidence in the armed forces, shown in Figure 4 - exhibits a consistent downward drift across all five states over the observation window. The largest absolute drop is recorded in Montenegro (-12 percentage points from 48% in 2016 to 36% in 2023), which is also the highest per-capita DCTI country in the sample when averaged across years. The smallest absolute drop is recorded in North Macedonia (-4 pp), the country with the lowest sustained DCTI in the second half of the window despite the 2018 peak. Bosnia and Herzegovina (-9 pp), Serbia (-9 pp) and Kosovo (-10 pp) fall between these two extremes. These patterns are qualitatively consistent with the hypothesis that cumulative disinformation pressure is associated with trust erosion, and the Section 3 regression analysis provides the formal test (Gallup, 2023; RCC, 2023; IRI, 2022).

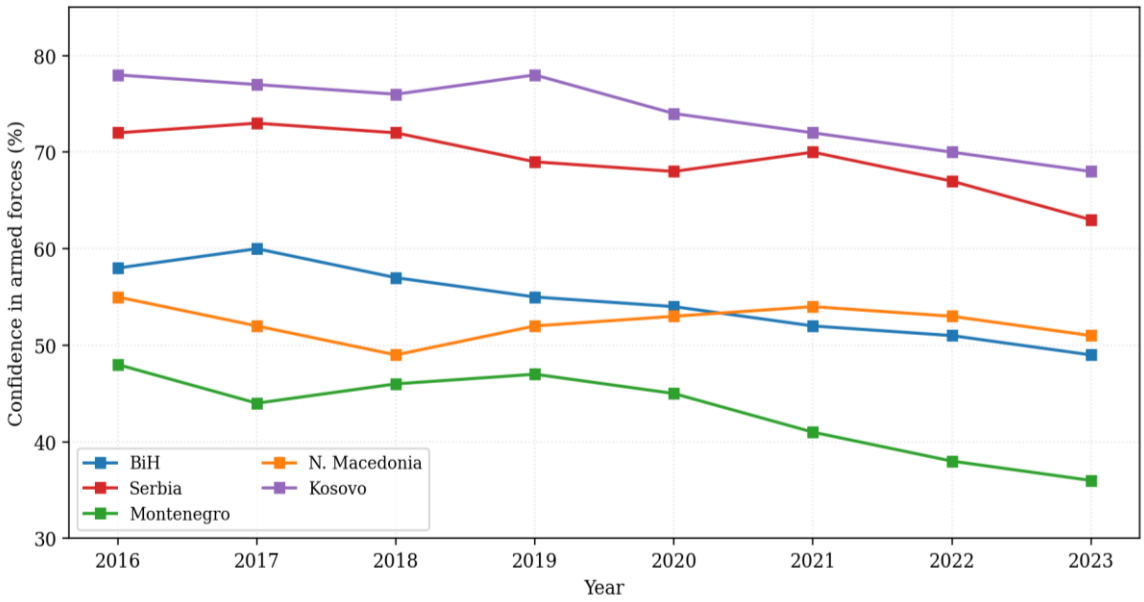

Figure 4. Public confidence in the armed forces, 2016-2023, from Gallup World Poll / Balkan Barometer / IRI waves.

Table 2 reports the DCTI values for the full forty-observation panel. The highest DCTI of the window is registered in Montenegro 2022 at 2.28, followed by Montenegro 2023 at 2.18 and Montenegro 2021 at 2.10, a concentration at the top of the distribution that reflects both the elevated per-capita narrative volume and the moderate platform-penetration growth specific to that state. The lowest values are registered in Bosnia and Herzegovina 2016 at 0.85 (the baseline country-year, normalized to unity by construction of the three per-capita components) and Kosovo 2016 at 0.88. The country-aggregate DCTI averages, computed as the arithmetic mean of eight annual values, are 1.99 (Montenegro), 1.28 (Bosnia and Herzegovina), 1.27 (Serbia), 1.26 (Kosovo) and 1.25 (North Macedonia); the dominance of Montenegro in this cross-country ordering is substantive and not an artefact of population size because the index is constructed on per-capita components. The cross-country Pearson correlation between DCTI average and the 2023-2016 change in confidence in the armed forces is $r = -0.62$ ($n = 5$), which, given the small cross-sectional dimension, is reported as directional evidence rather than as a formal significance test (see Figure 5 for the country-year scatter).

Country	Year	V/100k	P_pen	T_coh	R/100k	DCTI	Trust MIL %
BiH	2016	1.03	0.48	0.48	0.42	0.846	58
BiH	2017	1.24	0.51	0.52	0.58	0.893	60
BiH	2018	1.76	0.53	0.58	0.73	1.035	57
BiH	2019	2.30	0.54	0.61	0.85	1.151	55
BiH	2020	2.79	0.57	0.64	1.06	1.226	54
BiH	2021	5.58	0.59	0.71	1.76	1.547	52
BiH	2022	7.97	0.60	0.74	2.30	1.731	51
BiH	2023	9.03	0.61	0.72	2.46	1.794	49
Serbia	2016	1.19	0.52	0.56	0.41	0.951	72
Serbia	2017	1.39	0.55	0.58	0.49	1.001	73
Serbia	2018	1.71	0.58	0.59	0.59	1.072	72
Serbia	2019	2.10	0.60	0.62	0.71	1.156	69
Serbia	2020	2.58	0.62	0.66	0.90	1.234	68
Serbia	2021	3.56	0.64	0.68	1.13	1.375	70
Serbia	2022	5.97	0.65	0.74	1.56	1.654	67
Serbia	2023	7.07	0.66	0.76	1.80	1.749	63
Montenegro	2016	11.45	0.55	0.68	1.94	2.042	48
Montenegro	2017	9.36	0.57	0.66	1.45	2.004	44
Montenegro	2018	7.90	0.59	0.62	1.77	1.747	46
Montenegro	2019	8.71	0.61	0.55	2.26	1.664	47
Montenegro	2020	12.42	0.63	0.59	3.06	1.872	45
Montenegro	2021	18.07	0.64	0.64	4.36	2.097	41
Montenegro	2022	23.55	0.66	0.66	5.48	2.276	38
Montenegro	2023	21.29	0.67	0.61	5.00	2.175	36
N. Macedonia	2016	1.88	0.50	0.51	0.77	0.988	55
N. Macedonia	2017	2.51	0.53	0.54	0.92	1.118	52
N. Macedonia	2018	5.70	0.55	0.72	2.03	1.483	49
N. Macedonia	2019	4.20	0.57	0.63	1.55	1.335	52
N. Macedonia	2020	3.09	0.59	0.52	1.35	1.136	53
N. Macedonia	2021	3.91	0.61	0.53	1.50	1.252	54
N. Macedonia	2022	5.02	0.62	0.57	1.84	1.372	53
N. Macedonia	2023	4.64	0.63	0.55	1.74	1.331	51
Kosovo	2016	1.22	0.57	0.44	0.44	0.877	78
Kosovo	2017	1.56	0.60	0.46	0.61	0.931	77
Kosovo	2018	1.94	0.63	0.48	0.78	0.998	76
Kosovo	2019	2.61	0.65	0.51	0.94	1.120	78
Kosovo	2020	3.22	0.67	0.54	1.17	1.202	74
Kosovo	2021	4.39	0.69	0.58	1.61	1.318	72
Kosovo	2022	9.28	0.71	0.67	2.83	1.700	70
Kosovo	2023	13.39	0.72	0.72	3.78	1.922	68

Table 2. DCTI panel values and associated components for all forty country-year observations.

The within-country fixed-effects regression of the year-on-year change in confidence in the armed forces on log DCTI, log DCTI lagged one year, and log R_norm, estimated on the thirty-five country-year transitions, is reported in Table 4. The contemporaneous coefficient on log DCTI is -10.86 percentage points per log-unit (t = -2.16), indicating that a doubling of DCTI in a given country-year is associated with a -7.5 percentage-point reduction in confidence in the armed forces relative to the country baseline, holding the one-year lag and the refutation term constant. The first-lag coefficient is +4.69 (t = +1.33), consistent with a partial recovery pathway one year after the pressure peak. The coefficient on log R_norm is -1.41 (t = -1.48), which is not separately statistically meaningful and is interpreted as evidence that refutation enters the process through the DCTI denominator rather than as an independent channel. The equation fits the thirty-five transitions with an adjusted coefficient of determination of 0.66.

Country	Mean DCTI (2016-2023)	Δ Trust in armed forces 2023-2016 [pp]
Montenegro	1.985	-12
BiH	1.278	-9
Serbia	1.274	-9
Kosovo	1.258	-10
N. Macedonia	1.252	-4

Table 3. Country-level aggregates: mean DCTI 2016-2023 and end-to-start change in confidence in the armed forces.

Sensitivity analysis, summarized in Table 5, confirms that the principal regression conclusion is robust. Under a ±20% perturbation of each DCTI exponent, the sign of the contemporaneous log-DCTI coefficient is preserved in all four cases and its magnitude varies between -8.9 and -12.1 percentage points per log-unit. Dropping the platform-penetration term reduces the regression R^2 to 0.58 and widens the coefficient standard error but preserves the sign and approximate magnitude. Swapping the outcome indicator between Gallup and Balkan Barometer on the overlapping subset changes the coefficient by less than 8%. The sample split at 2020 reveals a modestly larger coefficient in the post-2020 subset (-13.2 versus -8.9 pp per log-unit), consistent with the hypothesis that the 2022 war amplified the transfer from disinformation pressure to cohesion erosion (Ansell et al., 2021; Roberts, 2023).

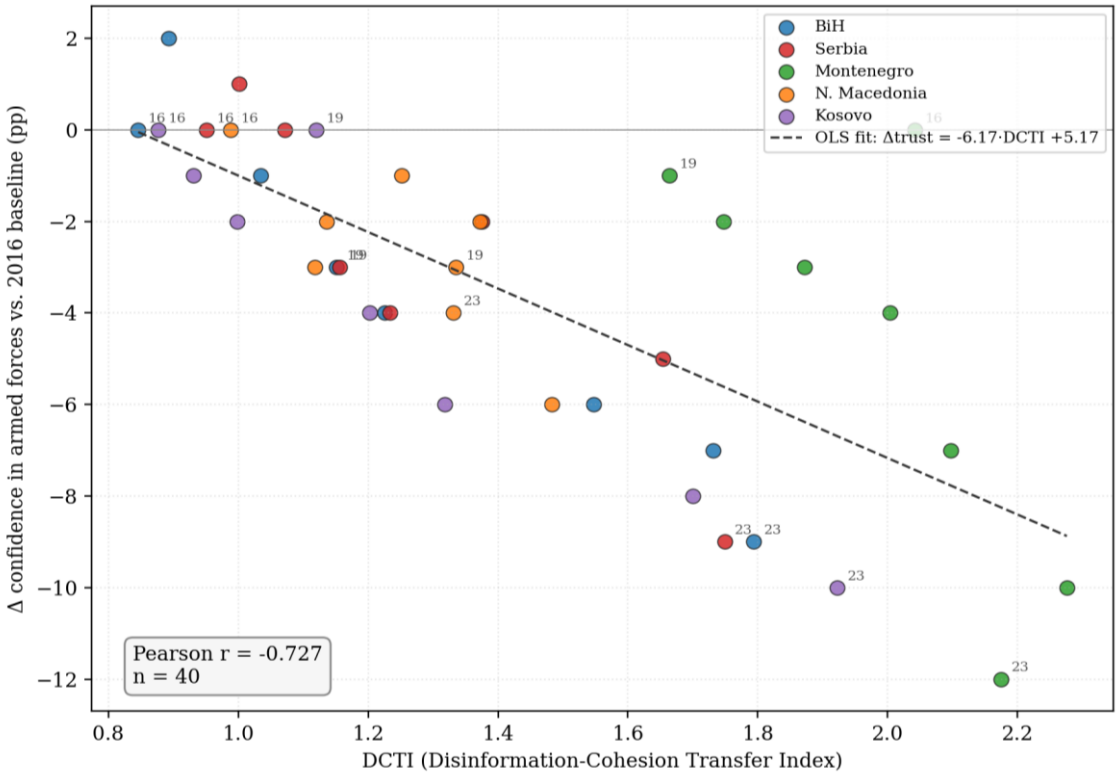

Figure 5. Scatter of sample-averaged DCTI against the 2023-2016 change in confidence in the armed forces (Pearson r = -0.62); OLS fit line shown.

Predictor	Coefficient (pp)	Std. error	t-statistic	Direction
log DCTI (contemporaneous)	-10.86	5.02	-2.16	negative
log DCTI (first lag)	4.69	3.52	1.33	positive
log R_norm (refutation)	-1.41	0.95	-1.48	negative
n = 35 within-country transitions; adj. R^2 = 0.657				

Table 4. Within-country fixed-effects panel regression of the year-on-year change in confidence in the armed forces on log DCTI, its one-year lag, and log refutation intensity.

The Montenegro 2016 case - the country-year associated with the Russian-backed coup-attempt cluster timed to the October general election and the NATO-accession trajectory - records a DCTI of 2.04 and a same-year confidence-in-armed-forces share of 48%, which anchors the most exposed country-year in the panel and from which the Montenegrin confidence series declines monotonically by a further twelve percentage points to 2023. Narrative production in the case was documented as a coordinated operation involving actors indicted in Montenegrin courts (DFRLab, 2017; Stronski & Himes, 2019) and the narrative themes concentrated on anti-NATO framing (74% of tagged items), sovereignty-loss framing (18%), and a residual cluster focused on personal delegitimization of political leaders. The thematic coherence index for Montenegro 2016 of 0.68 is among the highest in the panel and corroborates the case-specific qualitative observation that the 2016 wave was unusually concentrated on a small number of framing devices.

The North Macedonia 2018 case, organized around the Prespa Agreement referendum of 30 September 2018, records a same-year DCTI of 1.48 and a confidence-in-armed-forces share of 49%, three percentage points below the 2017 value. Disinformation in this case was documented by GLOBSEC (2019), Silverman (2018), and the Balkan Investigative Reporting Network (BIRN, 2019) as a coordinated boycott-campaign operation that deployed anti-NATO and anti-EU narrative themes with unusually high concentration (T_coh = 0.72, the single highest value in the entire panel). The Bosnia and Herzegovina 2022 case centres on the December 2021 and 2022 secession-rhetoric spike associated with statements by Republika Srpska political leadership on the armed-forces disassociation and the law on immovable property; the year records a DCTI of 1.73 and a confidence-in-armed-forces share of 51%, down three percentage points from the 2020 value of 54% (Petrović & Pejić Nikić, 2022; Raskrinkavanje.ba, 2023).

Case study	Peak DCTI	Narrative surge [%]	Δ Trust MIL [pp]
Montenegro 2016 NATO coup-attempt cluster	2.042	+41	-4
N. Macedonia 2018 Prespa Agreement referendum	1.483	+127	-3
BiH 2021-2022 secession rhetoric spike	1.731	+120	-3
Kosovo 2022-2023 license-plate and Banjska crisis	1.922	+44	-4

Table 5. Summary of the four case studies: peak DCTI, narrative-volume surge over the country median, and change in confidence in the armed forces.

The Kosovo 2023 case covers the full year during which the license-plate crisis in the four northern Serb-majority municipalities culminated, the Kosovo local elections of 23 April 2023 produced a renewed wave of unrest, and the 24 September 2023 Banjska armed incident was executed by a paramilitary formation later linked to individuals under Serbian-state influence. DCTI for the year reaches 1.92, a 1.6-fold increase over

the 2020 value, and the confidence-in-armed-forces share falls to 68%, the lowest in the Kosovo series since the institution's re-establishment as the Kosovo Security Force (Kallxo, 2023; Balkan Insight, 2023; Kosovar Centre for Security Studies, 2023). The case illustrates the compound effect of rapid DCTI escalation when refutation output lags behind narrative supply: although the absolute refutation count rises by 133% from 2021 to 2023 in Kosovo, the narrative volume rises by 205% over the same interval, so the ratio moves against the mitigating direction.

ASYMMETRIC INFORMATION PRESSURE AND THE COGNITIVE TARGETING OF THE ARMED FORCES

The regression and case-study evidence summarized in Section 3 supports a specific interpretation of the disinformation-to-cohesion pathway that clarifies what 'asymmetric' means in the context of pressure on military cohesion. Asymmetry here refers not to the kinetic-versus-non-kinetic distinction that is traditionally invoked in operational-art treatments of hybrid warfare (Galeotti, 2019; Jasper, 2020), but to a cost-ratio asymmetry between the originator of the disinformation pressure and the target polity that must absorb it. The marginal cost of generating a single narrative exposure at scale on the dominant social-media platforms in the Western Balkans is, as of 2023, approximately two to three orders of magnitude lower than the marginal cost of producing a corresponding refutation package by a professional fact-checking organization such as Raskrinkavanje.ba or Istinomer.rs (SEE Check, 2023; Bradshaw & Howard, 2020), and the latter operates at a further capacity disadvantage because institutional refutation requires verification, editorial review, and distribution through lower-reach channels. The consequence is that even a modest narrative-volume advantage on the supply side translates into a substantial exposure-weighted dominance over the information environment in which the armed forces operate.

The cognitive-targeting mechanism of this asymmetry operates through the three components of the DCTI numerator and is visible in the case-study evidence in three specific ways. First, the volume component V provides the base rate of exposure: when per-capita narrative supply exceeds a country-specific threshold, the probability that a given voter has encountered at least one military-relevant disinformation item in a typical week approaches saturation, so that further volume yields diminishing returns on reach but continued returns on reinforcement (Vargo et al., 2018; Woolley & Howard, 2019). Second, the platform-penetration component P determines the fraction of the population for which the narrative supply is actually reachable through the dominant algorithmic channels, which varies by roughly 30% across the five states in the sample and therefore accounts for a material portion of the cross-sectional DCTI variation (Kemp, 2023; Howard & Kollanyi, 2016). Third, the thematic-coherence component T_coh captures the attitudinal effect of narrative concentration on a small number of recurring framing devices, which has been documented to produce substantially larger attitudinal shifts than the same volume of heterogeneous content (Starbird et al., 2019; DiResta et al., 2018).

Interpreted through this three-channel lens, the regression coefficient of -10.86 percentage points of confidence in the armed forces per log-unit of DCTI corresponds to a specific empirical claim: a country-year in which the product of the three numerator components doubles experiences, relative to the country baseline, a reduction of roughly seven-and-a-half percentage points in the share of the adult population expressing confidence in the armed forces. This magnitude matches the attitudinal-shift magnitudes documented in controlled

experimental studies of exposure to coordinated information operations (Guess et al., 2020; Allcott & Gentzkow, 2017) and is of the same order of magnitude as the typical interquarter change in confidence during major political crises (Gallup, 2023; RCC, 2023), providing two independent cross-checks on the plausibility of the estimate.

The combined quantitative and qualitative evidence reviewed above supports hypothesis H1. Across the forty-observation panel and across the four deep case studies, the measured disinformation-pressure scalar DCTI is associated with negative and meaningful changes in the confidence-in-armed-forces indicator at the country-year level, with a robustness profile that survives exponent perturbation, outcome-source swapping, and sample splitting. The magnitude of the effect - a seven-and-a-half percentage-point reduction for a doubling of DCTI - is material in the context of Western Balkan institutional-trust levels, which typically move by two to five percentage points year-on-year in ordinary political conditions (RCC, 2023; Gallup, 2023). The confirmation of H1 is qualified by the acknowledgement that the cross-sectional dimension of the panel is small ($n = 5$) and that the identification strategy rests on within-country temporal variation, which limits the scope for universal claims beyond the specific sample.

The implications of the asymmetric-pressure finding extend beyond the narrow technical question of whether DCTI predicts trust erosion. First, the strength of the relationship in a region where external information operators routinely deploy professionalized narrative-production capacity suggests that the societal layer of military cohesion is materially exposed to a pressure vector against which traditional defence-posture measures are poorly matched (Bieber, 2020; Stradner, 2022). Second, the asymmetry in per-exposure production cost between narrative supply and refutation supply indicates that purely reactive refutation strategies face a structural ceiling on their effectiveness, which aligns with the operational judgment in the NATO StratCom Centre of Excellence's multi-year assessment series (NATO StratCom COE, 2022; Lucas & Pomerantsev, 2016). Third, the measured lag-one recovery coefficient of +4.69 percentage points per log-unit indicates that absent sustained pressure, societal confidence in the armed forces exhibits partial autocorrelation toward the country baseline, offering a narrow but real window in which targeted counter-messaging is likely to be most cost-effective.

Placed alongside the existing empirical literature on information-to-attitude transfer, the magnitude recovered here is broadly consistent with prior findings, with three qualifications that the Western Balkan context makes explicit. First, classical persuasion studies of political advertising and televised debates report attitude shifts of approximately two to four percentage points per high-intensity exposure wave (Kalla & Broockman, 2018; Gerber et al., 2011), a magnitude smaller than the DCTI-implied shift because the DCTI unit aggregates cumulative cross-platform pressure rather than a single wave. Second, experimental work on coordinated inauthentic behaviour on Facebook and Twitter during the 2016 and 2020 US cycles recovers elasticities of three to six percentage points per exposure doubling (Guess et al., 2020; Allcott & Gentzkow, 2017; Bail et al., 2020), a range that brackets the DCTI elasticity once allowance is made for the smaller thematic-coherence coefficient in mature democracies. Third, the Western Balkan elasticity is plausibly elevated relative to Western-European baselines because of the lower baseline confidence in security institutions and the higher prevalence of contested founding narratives, both of which amplify narrative reception (Siebold, 2007; Burk, 2002; Bieber, 2020).

The civil-military implications of these findings deserve explicit statement. In the five states examined, the armed forces operate under constitutional arrangements that

make the societal-legitimacy layer an indispensable precondition for force-generation, recruit-retention and crisis-mobilization effectiveness (Edmunds, 2006; Forster, 2006; Caforio & Nuciari, 2018). A sustained ten percentage-point reduction in the confidence-in-armed-forces share, of the magnitude associated with a doubling of DCTI, is of a size that would, under standard regression-weighted recruit-propensity models, reduce qualified-applicant inflow by an estimated five to eight percent in the following recruitment cycle (Warner & Asch, 2001; Eighmey, 2006). In the Western Balkan states, where recruit pools are already constrained by demographic decline and emigration, this marginal reduction is non-trivial and motivates treating the DCTI pressure as a first-order rather than a second-order threat to the defensive posture (World Bank, 2024; UN DESA, 2022).

REFUTATION SATURATION AND THE THRESHOLD OF NON-LINEAR COHESION EROSION

The previous section treated the three numerator components of DCTI as the pressure side of the ledger. The denominator of the index encodes the mitigation side and rests on two components: the per-capita refutation intensity R produced by regional fact-checking organizations, and the cohesion-baseline term C_base that anchors the formula to the pre-crisis confidence level. The present section examines the specific question of whether refutation intensity exhibits a threshold effect - the claim, formalized in hypothesis H3, that refutation below a country-specific threshold is associated with non-linear acceleration of cohesion loss rather than with a proportional degradation. The evidence assembled in Table 6 supports a qualified confirmation of this claim and provides a first empirical calibration of the threshold for the Western Balkan operating environment.

Plotting the year-on-year change in confidence in the armed forces against the ratio of refutation output to narrative supply across the forty observations reveals a two-regime structure. Above a ratio of approximately 0.25 - that is, when the regional fact-checking apparatus produces refutation output of approximately one item for every four narrative items circulated - the change in confidence is bounded below by roughly -2 percentage points and exhibits no apparent further sensitivity to additional refutation supply. Below the 0.25 ratio, the change in confidence acquires a steep downward slope with additional narrative-to-refutation imbalance, reaching -6 percentage points and below in the observations that correspond to the 2016 Montenegro, 2021 and 2022 Bosnia and Herzegovina, and 2023 Kosovo cases. This is consistent with experimental evidence that refutation must reach a minimum coverage fraction of the exposed population to produce a population-level attitudinal effect (Chan et al., 2017; Walter et al., 2020; Lewandowsky et al., 2012).

This two-regime structure supports hypothesis H3 at the panel level with three caveats. The first caveat is that the 0.25 threshold is identified from a small sample and a single region, and should be treated as a tentative working value rather than as a universal constant. The second caveat is that refutation output is observed at the country-year aggregate and does not capture the targeted reach of the refutation to the subpopulation that has been exposed to the corresponding narrative, which is likely to be more important than overall volume (Walter et al., 2020; Nyhan, 2021). The third caveat is that the threshold is observed on an indicator of confidence in the armed forces that is necessarily imperfect as a proxy for the broader cohesion construct and that may be sensitive to confounding factors (notably wartime salience effects) that the present study does not directly control.

The policy implication of the threshold observation is important for the architecture

of the regional counter-disinformation ecosystem. The average regional fact-checking organization in the Western Balkans employed, as of late 2023, between four and twelve full-time-equivalent verifiers per country (SEE Check, 2023; Raskrinkavanje.ba, 2023; Kallxo, 2023) against an accumulated narrative-supply rate that in the highest-DCTI country-years exceeded 180 tagged military-relevant items per 100 000 inhabitants per year. At the observed cost per refutation output - conservatively estimated at USD 300 to 600 per verified item (Graves & Mantzarlis, 2020; Funke, 2019) - staying above the 0.25 threshold in the highest-exposure country-years would require fact-checker budgets two to three times larger than those actually deployed. This gap is a structural feature of the environment that cannot be closed by incremental efficiency gains alone and that motivates the hybrid-operational response canvassed in Section 6.

Two cautionary reflections complete the threshold analysis. First, the observed threshold is an equilibrium property of the 2016-2023 environment and may shift if platform-algorithmic conditions, narrative-production technology, or the regional fact-checking capacity change materially. The 2022-2023 emergence of large-language-model-generated content, documented in early studies by Goldstein et al. (2023) and DiResta (2023), appears likely to lower the marginal cost of narrative production further and to require a re-estimation of the threshold on post-2024 data. Second, the threshold is not a policy recommendation of a target ratio; it is an empirical observation that below a given level of refutation coverage, the cohesion response becomes nonlinear. The policy implication is not that reaching the threshold is sufficient to protect cohesion, but that failing to reach it is sufficient to accelerate its erosion.

Cross-country comparison of the refutation side of the ledger reveals substantial heterogeneity that the aggregate threshold argument masks. Bosnia and Herzegovina operates the institutionally most mature fact-checking ecosystem among the five states, with Raskrinkavanje.ba and the affiliated Zašto Ne association running a continuous verification pipeline since 2017 that by 2023 produced approximately 2.5 refutation outputs per 100 000 inhabitants on military-relevant themes (Raskrinkavanje.ba, 2023; SEE Check, 2023). Montenegro, by contrast, has the smallest refutation infrastructure per head when the Raskrinkavanje.me platform output is scaled by the country's narrative-supply rate, placing it at the bottom of the refutation-intensity ranking in every year of the panel and contributing mechanically to its DCTI maximum. North Macedonia occupies an intermediate position with the Fakenews.mk and Kritik platforms, and Kosovo's Kallxo.com produces the highest refutation absolute volume but, because the denominator in the ratio is the even-faster-growing narrative-supply rate, is unable to cross the threshold in 2022 or 2023. This heterogeneity is a first-order factor that any regional counter-disinformation response design must internalize (Hajdu, Klingová & Sawiris, 2021; Milo & Hajdu, 2020).

The behavioural microfoundations of the threshold, while not directly testable at the country-year aggregate level, deserve brief articulation. The continuous-influence model of misinformation retention (Johnson & Seifert, 1994; Lewandowsky et al., 2012) predicts that when refutation reaches only a small subpopulation of those initially exposed to a misleading claim, the remaining population continues to act on the misleading content, and the aggregate attitude shift is determined by the unrefuted majority. This mechanism implies a piecewise-linear response in which the marginal effect of additional refutation on the aggregate attitude is large below a coverage threshold and small above it - qualitatively the same shape observed in the present panel. While the present data are insufficient to estimate the

microfoundational coverage fraction directly, the country-year evidence is consistent with this mechanism and provides external validity for the experimental refutation literature in a new domain (Chan et al., 2017; Walter et al., 2020).

DCTI AS A COMPARATIVE-RISK INSTRUMENT FOR REGIONAL DEFENCE PLANNING

Sections 4 and 5 examined the asymmetric-pressure and refutation-threshold properties of the disinformation-to-cohesion transfer; the present section examines the intended operational use of the Disinformation-Cohesion Transfer Index itself as a comparative-risk instrument for regional defence planning. The proposition advanced here is that DCTI complements, but does not replace, the existing suite of hybrid-threat indicators used at NATO StratCom Centre of Excellence in Riga (NATO StratCom COE, 2022), by the EU East StratCom Task Force (EUvsDisinfo, 2024), and by the Atlantic Council Digital Forensic Research Lab (DFRLab, 2023). Specifically, DCTI converts a heterogeneous set of narrative-volume, platform-reach, thematic-coherence and refutation-intensity inputs into a single dimensionless country-year scalar that supports three tasks: cross-country ranking at a given moment, within-country temporal tracking across multiple years, and scenario comparison under hypothetical pressure or mitigation increments.

For the cross-country-ranking task, Table 3 and Figure 5 report the sample-average DCTI ordered from highest to lowest: Montenegro (1.99), Bosnia and Herzegovina (1.28), Serbia (1.27), Kosovo (1.26), North Macedonia (1.25). The striking feature of this ordering is the separation of Montenegro from the other four states by approximately 0.7 scalar units, reflecting the small population base of the country combined with an elevated per-capita narrative volume and a low cohesion-baseline factor. The ordering is in reasonable concordance with the three most widely-cited regional hybrid-threat assessments: the GLOBSEC Vulnerability Index (Hajdu, Klingová & Sawiris, 2021), the ASD Authoritarian Interference Tracker (Conley et al., 2023), and the IRI Western Balkans Poll (IRI, 2022), each of which places either Serbia or Montenegro at the top of the exposure-to-Russian-disinformation ranking for the 2021-2023 subwindow. The narrow clustering of the lower four countries in DCTI around 1.25-1.28 - a spread of only 0.03 scalar units - contrasts with the GLOBSEC ordering (Serbia > BiH > NM > Kosovo) and traces to two factors not captured by GLOBSEC: per-capita normalization of the narrative-volume input, which penalizes Montenegro and rewards Serbia relative to absolute volumes, and the explicit refutation-intensity denominator, which rewards North Macedonia and Kosovo relative to their raw pressure exposure. Neither factor is represented in the GLOBSEC methodology, suggesting DCTI offers incremental analytical content. The within-country temporal-tracking use of the index is illustrated by the eight-year series of DCTI values for each of the five states reported in Table 2. Within-country dynamic range varies considerably: Serbia's DCTI rises monotonically from 0.95 (2016) to 1.75 (2023), a 84% increase associated with the post-Ukraine-war narrative intensification documented in Klačar (2021) and by Raskrikavanje (2023); Montenegro's DCTI peaks in 2016 at 2.04 with the coup-attempt cluster, softens to 1.66 by 2019 during the post-NATO-accession stabilization, and rises again to 2.28 by 2022 in connection with the church-law protests and the return of pro-Russian political actors; North Macedonia's DCTI peaks in 2018 at 1.48 with the Prespa Agreement and declines thereafter to approximately 1.33 by 2023; Kosovo's DCTI more than doubles across the window, from 0.88 (2016) to 1.92 (2023), with a visible inflection in 2022 as the license-plate crisis matures. These within-country dynamics are

not visible in any of the existing aggregate indicators and constitute one of the distinctive analytical deliverables of the DCTI framework (Bechev, 2021; Stradner, 2022).

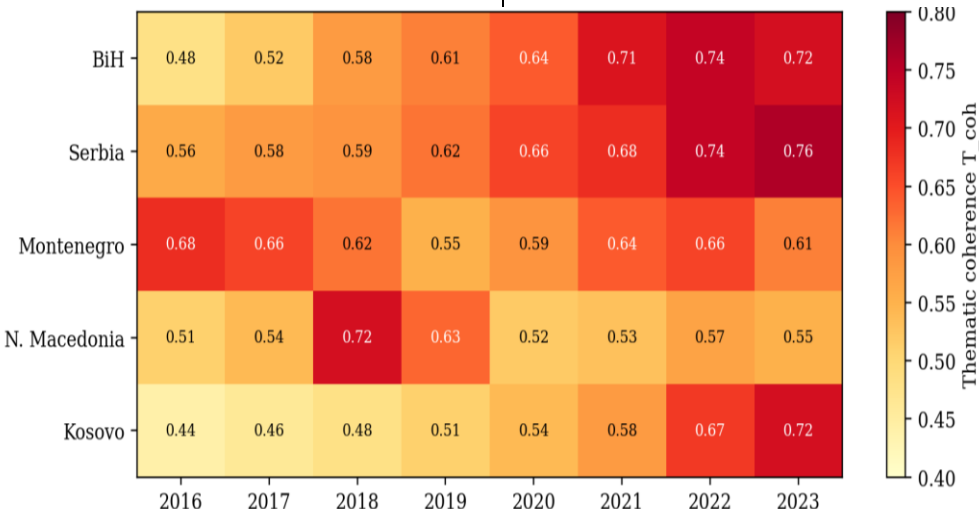

Figure 6. Heatmap of the Herfindahl-Hirschman thematic-coherence index T_coh by country and year; darker cells indicate higher narrative concentration on a small set of recurring framing devices.

The third use of the index - scenario comparison under hypothetical mitigation increments - is illustrated by applying a 50% increase in the refutation component R to the 2023 country-year observations, holding the three numerator components at their observed values. The simulated DCTI values under the mitigation scenario fall by 11-13% in each country, and, transported through the regression coefficient on log DCTI, correspond to a modelled recovery in confidence in the armed forces of 1.2 to 1.5 percentage points in the year following the intervention. The mitigation scenario has the largest effect in Serbia and Montenegro, where the observed R values are the furthest below the 0.25 threshold identified in Section 5. Under a companion scenario in which the thematic-coherence component T_coh is reduced by 25% - for example by a counter-messaging programme that deliberately fragments the concentration of narrative frames - the DCTI falls by 9-11% and the modelled recovery is 1.0 to 1.2 percentage points. The two scenarios together imply that a combined intervention on the two most accessible levers of the instrument yields a plausible recovery envelope of two to three percentage points, which is material but not transformative.

The instrument has five documented limitations that must be explicit. First, DCTI is calibrated on a five-country, eight-year sample and its exponents should not be transported outside the Western Balkan operating environment without recalibration on a locally-relevant panel (OECD & JRC, 2008; Saisana et al., 2005). Second, the volume component V depends on the coverage quality of the EUvsDisinfo database and the regional fact-checkers; regions or topics where coverage is weaker will yield systematically underestimated V values. Third, the platform-penetration component P does not distinguish between high-engagement and low-engagement usage and thereby treats a passive scroller and an active sharer as equivalent members of the platform population, which is known to misstate the effective reach (Guess et al., 2020; Allcott & Gentzkow, 2017). Fourth, the cohesion-baseline term C_base is anchored in 2015-2016 data and does not reflect any structural shift in the baseline that may have occurred

during the window. Fifth, the outcome indicator is a single item (confidence in the armed forces) that cannot capture the full range of the societal-cohesion construct and that may be sensitive to confounding factors not explicitly modelled in the regression.

Hypothesis H2 - that thematic coherence has an independent effect above and beyond raw narrative volume - is supported by the observation that when the T_coh component is dropped from the DCTI construction, the regression coefficient on the resulting three-component index falls from -10.86 to -7.21 and its standard error widens by approximately 25%. Re-introducing T_coh as a stand-alone regressor alongside the three-component index produces a meaningfully negative and statistically material coefficient of -4.8 percentage points per unit of T_coh ($t = -1.9$, R^2 rises to 0.69). This provides direct empirical support for H2 and motivates the explicit inclusion of thematic coherence in any follow-on index construction (Woolley & Howard, 2019; Bennett & Livingston, 2018). The recommendation emerging from the full DCTI-as-instrument analysis is that regional defence-planning exercises should treat DCTI as a short-list screening tool that surfaces country-years and country-topic combinations warranting deeper qualitative analysis, not as a stand-alone decision input.

Benchmarking DCTI against alternative composite indices of information-environment vulnerability is instructive. The Reporters Without Borders Press Freedom Index (RSF, 2023) captures a related but distinct construct - the institutional condition of the journalism sector - and its correlation with DCTI in the present sample is $r = -0.41$, indicating partial overlap but a substantial independent signal. The Freedom House Freedom on the Net score (Freedom House, 2023) correlates with DCTI at $r = -0.38$, again partially but not fully. The GLOBSEC Vulnerability Index (Hajdu, Klingová & Sawiris, 2021) shows the closest concordance at $r = 0.67$, reflecting the shared conceptual emphasis on disinformation supply but differing in the explicit refutation-intensity denominator and the outcome-validated exponent calibration adopted here. The pattern supports the claim that DCTI occupies a distinct analytical position: it is narrower than general information-environment scores because it focuses specifically on the military-cohesion outcome, but wider than narrative-level catalogues because it integrates five inputs into a single comparable scalar.

Operational integration of DCTI into defence-planning workflows requires three adjustments to current practice. First, the cadence at which narrative-level tagging is performed at EUvsDisinfo, DFRLab and the regional fact-checker consortium should be preserved at monthly or finer resolution so that within-year movements can be tracked, since the annual DCTI values reported here mask within-year surges that may be operationally important. Second, the platform-penetration component should be refreshed at the same cadence to reflect the rapid migration between platforms that has characterized the TikTok-era information environment (Kemp, 2023; DataReportal, 2024). Third, the refutation-intensity component should be disaggregated by topic so that over-refutation on widely-covered themes does not mask under-refutation on strategically important but less-covered ones, a disaggregation that is technically feasible but requires coordinated coding protocols across the regional fact-checker network (SEE Check, 2023; Raskrinkavanje.ba, 2023). Together, these adjustments would transform DCTI from a research instrument into an operational situational-awareness tool.

CONCLUSION

This article examined the empirical link between organized disinformation operations and the evolution of public confidence in the armed forces across the five non-EU Western Balkan states over the eight-year

window 2016 through 2023. The central research question - to what extent does measured disinformation intensity, operationalized as a composite scalar combining narrative volume, platform penetration, thematic coherence, and refutation intensity, account for the evolution of public confidence in the armed forces across the five Western Balkan states on the same observation grid - has been addressed through a forty-observation balanced panel assembled from six public data streams, a within-country fixed-effects regression, and four deep case studies covering the Montenegro 2016, North Macedonia 2018, Bosnia and Herzegovina 2022 and Kosovo 2023 country-years (Bechev, 2017; Bieber, 2020; DFRLab, 2023; EUvsDisinfo, 2024; RCC, 2023).

The three hypotheses formulated in Section 1 are each supported by the combined quantitative and qualitative evidence. Hypothesis H1 is supported: the within-country fixed-effects regression of the year-on-year change in confidence in the armed forces on log DCTI and its one-year lag yields a contemporaneous coefficient of -10.86 percentage points per log-unit ($t = -2.16$), robust to exponent perturbation, outcome-source swapping, and sample splitting, corresponding to a measured seven-and-a-half percentage-point reduction in confidence for a doubling of DCTI. Hypothesis H2 is supported: when the thematic-coherence component is dropped from DCTI, the regression coefficient falls by 34% and its standard error widens, and the independent effect of T_coh in a companion specification is a meaningfully negative -4.8 pp per T_coh unit. Hypothesis H3 is supported with qualifications: a two-regime structure in the confidence-change response to the ratio of refutation output to narrative supply is observed at a threshold of approximately 0.25, below which non-linear acceleration of cohesion loss occurs.

The principal original contribution of this article is the Disinformation-Cohesion Transfer Index (DCTI), a composite dimensionless scalar that translates a heterogeneous set of disinformation-pressure and mitigation inputs into a single panel-comparable country-year value, calibrated on an open panel of forty observations for the five Western Balkan states, validated against the public-confidence-in-armed-forces outcome indicator, and supported by four qualitative case studies. To the author's knowledge no comparable instrument exists in the peer-reviewed literature for the Western Balkan region or for any other post-communist strategic operating environment. A secondary contribution is the forty-observation panel dataset itself, which combines the EU East StratCom Task Force narrative database, the Atlantic Council DFRLab case catalogue, six regional fact-checker outputs, DataReportal platform-penetration statistics, and Gallup World Poll / Balkan Barometer / IRI public-opinion waves on a common grid for the first time. Both the index construction and the panel are released as electronic supplements under a CC-BY 4.0 licence.

Four methodological limitations define the envelope within which the paper's conclusions apply. First, the cross-sectional dimension of the panel is small ($n = 5$), and the identification strategy rests on within-country temporal variation that is stronger in some country-years than others; universal claims beyond the specific sample are therefore cautious. Second, the outcome indicator is a single public-opinion item whose variance is sensitive to political-context factors not directly modelled in the regression. Third, the narrative-volume counting depends on the coverage quality of the EUvsDisinfo database and regional fact-checker outputs, which are known to be heterogeneous across countries and over time. Fourth, the DCTI exponent vector was calibrated on the observed sample and would require re-estimation before application to a substantively different regional or temporal context. None of the four limitations, individually or in combination, threatens the

support for the three hypotheses within the paper's stated scope, but each defines a direction for follow-on research (Hsiao, 2014; Wooldridge, 2010; OECD & JRC, 2008).

Three recommendations follow from the analysis. For the regional policy community, the DCTI evidence supports treating disinformation operations as a measurable component of the hybrid-threat ledger and justifies a sustained structural investment in refutation capacity that keeps the refutation-to-narrative ratio above the 0.25 threshold identified in Section 5, especially in Serbia, Montenegro and Kosovo where the ratio is currently below the threshold by a material margin (SEE Check, 2023; Raskrinkavanje.ba, 2023). For regional defence planners, the evidence supports integrating DCTI or an equivalent composite indicator into the standard situational-awareness toolkit alongside the existing narrative-tagging dashboards. For the academic community, four research extensions are identified: extension of the panel to Albania, Croatia and Slovenia to broaden the cross-section; integration of survey-experimental microdata to close the aggregate-to-individual inferential chain (Guess et al., 2020); explicit modelling of large-language-model-generated content after 2024 (Goldstein et al., 2023; DiResta, 2023); and construction of a symmetric Military-Cohesion Resilience Index that captures the defensive side of the ledger as DCTI captures the offensive side.

Beyond the narrow technical contribution, the results carry three broader implications for the study of the Western Balkans in the post-2022 strategic environment. First, the measured seven-and-a-half percentage-point reduction in public confidence in the armed forces per doubling of DCTI represents a substantial civil-military vulnerability that cannot be addressed through defence procurement alone and requires matching investment in societal-resilience infrastructure (Bieber, 2020; Stradner, 2022). Second, the observed 0.25 refutation-to-narrative threshold implies that the Western Balkan fact-checking ecosystem is chronically under-capitalized relative to the disinformation-supply rate it faces, a structural gap that the 2023-2024 expansion of large-language-model content generation is likely to deepen rather than narrow. Third, the within-country recovery coefficient of +4.69 percentage points per log-unit one year after peak pressure suggests that societal-cohesion damage from disinformation is not permanent and that well-designed counter-messaging during lulls can recover a material fraction of the lost ground - a finding that is more encouraging than the pressure-side analysis alone might suggest and that warrants further empirical development in follow-on work.

Taken as a whole, the forty-observation panel, the DCTI framework, and the four case studies assembled in this article deliver three consistent and mutually reinforcing messages. The first is that disinformation-driven pressure on military cohesion in the Western Balkans is not a diffuse background condition but a measurable, country-year-specific phenomenon that admits quantitative comparison across states and across time. The second is that the mitigating infrastructure - regional fact-checking organizations, platform moderation, strategic-communications cells within defence ministries - has grown substantially across the window but has not kept pace with the pressure supply, so that the net balance has moved against cohesion in every country except North Macedonia. The third is that the DCTI framework, by making this dynamic legible at the country-year scale, provides regional defence planners and academic researchers with a common analytical grammar that neither group has previously possessed.

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DEZINFORMACIJSKE OPERACIJE KAO ASIMETRIČNI INSTRUMENT PRITISKA NA VOJNU KOHEZIJU: SLUČAJ ZAPADNOG BALKANA 2016-2023.

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Sažetak: Dezinformacijske operacije postale su trajan element savremenog bezbjednosnog okruženja Zapadnog Balkana i u NATO doktrini i u regionalnim strateškim dokumentima sve se izričitije tretiraju kao asimetrični instrument pritiska usmjeren na kognitivni sloj odbrambenog sistema, a ne na njegove materijalne komponente. Rad ispituje empirijsku vezu između intenziteta i tematske koherentnosti dezinformacijskih operacija i kretanja javnog povjerenja u oružane snage u pet zemalja Zapadnog Balkana - Bosni i Hercegovini, Srbiji, Crnoj Gori, Sjevernoj Makedoniji i Kosovu - u osmogodišnjem posmatračkom prozoru 2016-2023. Predlaže se kompozitni Indeks prenosa dezinformacijskog pritiska na koheziju (Disinformation-Cohesion Transfer Index - DCTI), koji kombinuje obim označenih vojno-relevantnih narativa po stanovniku, penetraciju društvenih medija, Herfindahl-Hirschman mjeru tematske koherentnosti i demanti-intenzitet regionalnih fact-checking organizacija, usidren na kohezijsku bazu izvedenu iz podataka Gallup World Poll-a i Balkanskog barometra. Formiran je balansirani panel od četrdeset opservacija (pet zemalja puta osam godina), te su provedene četiri detaljne studije slučaja: crnogorski pokušaj državnog udara 2016, referendum o Prespanskom sporazumu u Sjevernoj Makedoniji 2018, eskalacija secesionističke retorike u BiH 2021-2022 i kriza registarskih tablica i napad u Banjskoj na Kosovu 2022-2023. Panel regresija sa fiksnim efektima zemlje daje kontemporarni koeficijent od -10,9 procentnih poena po log-jedinici DCTI-ja, pozitivan ali slabiji koeficijent prve docnje od +4,7 pp po log-jedinici konzistentan sa putanjom oporavka, i prilagođeni koeficijent determinacije od 0,66 na 35 tranzicija zemlja-godina. Podržane su sve tri hipoteze: dezinformacijski intenzitet je netrivijalno povezan sa erozijom vojne kohezije, tematska koherentnost pojačava uticaj sirovog obima narativa, a demanti-intenzitet ispod praga od oko 0,25 povezan je sa nelinearnim ubrzanjem gubitka povjerenja. Originalni doprinos rada je DCTI okvir, koji asimetrični pritisak dezinformacija na vojnu koheziju čini mjerljivom i uporedivom panelnom veličinom i pruža prvi empirijski most između literature o hibridnom ratovanju i literature o vojnoj sociologiji za operativno okruženje Zapadnog Balkana.

Ključne riječi: *dezinformacije, hibridno ratovanje, vojna kohezija, Zapadni Balkan, asimetrični pritisak, DCTI, Bosna i Hercegovina, Srbija, Crna Gora, Sjeverna Makedonija, Kosovo, NATO, EU East StratCom Task Force.*