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The Boundaries of Consensus: The Political Logic and Practical Efficacy of the Shanghai Cooperation Organization's Multifaceted Dispute Resolution Mechanism——A Corpus-Based Empirical Study of 2,245 Case Texts

Qiang Yue

yueqiang850510@sina.com

Shanghai University of Political Science and Law

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The Boundaries of Consensus: The Political Logic and Practical Efficacy of the Shanghai Cooperation Organization's Multifaceted Dispute Resolution Mechanism——A Corpus-Based Empirical Study of 2,245 Case Texts

Abstract: The Shanghai Cooperation Organization (SCO) dispute resolution mechanism, characterized by political dominance, consensus-based decision-making, and multifaceted composition, embodies a distinctive model of regional governance that diverges from Western judicial centralism. Based on a self-constructed corpus of 2,245 case texts involving disputes among SCO member states across five typologies—investment, commercial contracts, applicable law, resource utilization, and border affairs—this study employs computational social science methods including word frequency analysis, lexical co-occurrence networks, topic modeling (NMF), and time series analysis to systematically examine the mechanism's operational logic and practical efficacy. The findings reveal four key insights. First, the SCO mechanism exhibits structural characteristics of non-judicialization, multi-level nesting, prevention-orientation, and cultural embeddedness, with its core value lying in constructing an ongoing process for managing differences and building consensus rather than delivering binding rulings. Second, textual narratives consistently present a tripartite structure of "legal procedure—factual narrative—interest expression," with litigation/judicial processes constituting the dominant mechanism pathway (over 80% of cases), arbitration concentrated in commercial and investment fields (38.7% and 20.0% respectively), and multilateral mechanisms appearing exclusively in border disputes (54.5%). Third, issue agendas demonstrate a dual evolutionary trajectory comprising event-driven peaks and the long-term elevation of institutional frameworks, with topics related to the "Shanghai Spirit" showing a significant upward trend (Spearman's $\rho = 0.508$, $p < 0.001$). Fourth, the mechanism faces structural shortcomings including the soft constraint dilemma, insufficient procedural transparency, and weak institutional capacity to respond to complex socio-environmental conflicts. The paper advances a theoretical framework of "multifaceted governance" that integrates insights from international law, international relations, and comparative regionalism, proposing that mechanism efficacy derives from the dynamic coupling of rule legitimacy, relational legitimacy, and gradual institutionalization. These findings contribute to interdisciplinary debates on regional governance, dispute resolution, and non-Western institutional design, while offering policy implications for optimizing the SCO mechanism from a principled framework toward an effective instrument.

Keywords: Shanghai Cooperation Organization; dispute resolution mechanism; multifaceted governance; corpus analysis; comparative regionalism; computational social science

1. Introduction

The Shanghai Cooperation Organization (SCO), established in 2001 as the first permanent intergovernmental international organization named after a Chinese city and headquartered in China, has evolved over more than two decades into a comprehensive cooperative system encompassing 10 member states, 2 observer states, and 14 dialogue partners—totaling 26 countries across Eurasia. Its member states account for nearly half of the global population and approximately one-quarter of the world's economic output (Ministry of Commerce of the People's Republic of China, 2025). Concomitant with the organization's expansion and deepening

cooperation, disputes among member states in areas such as investment, trade, resource utilization, and border affairs have proliferated, posing significant challenges to the existing dispute resolution framework and raising fundamental questions about its design, operation, and efficacy.

Existing scholarship approaches this subject primarily through two theoretical lenses: international law and international relations. The former focuses on normative analyses of SCO legal instruments, emphasizing their "soft law" characteristics and perceived institutional deficits when measured against Westphalian or EU-centric benchmarks (Zhao, 2023). The latter concentrates on the political-philosophical connotations of the "Shanghai Spirit," exploring the regional cultural foundations underpinning the consensus principle and its role in fostering mutual trust among member states (Xia, 2025). However, prevailing studies suffer from a common and fundamental limitation: the absence of genuine interdisciplinary dialogue that bridges legal analysis, political inquiry, and regional governance theory. This deficiency manifests in three interrelated respects.

First, legal and political analyses remain largely siloed, failing to engage with theoretical advancements in comparative regionalism and regional governance studies that have critically examined non-Western models of institutional design (Acharya, 2014; Börzel & Risse, 2016). Consequently, the SCO mechanism is often assessed against inappropriate benchmarks, rather than being understood on its own terms as a distinctive regional governance innovation that prioritizes sovereignty protection, gradual institutionalization, and relational legitimacy over binding adjudication. Second, the field lacks systematic empirical investigation into the mechanism's actual operation, with theoretical construction outpacing factual verification—a gap that could be bridged by adopting computational social science methods now widely used in political science and legal scholarship to analyze large-scale textual data (Grimmer & Stewart, 2013; Wilkerson & Casas, 2017). Third, evaluations of mechanism efficacy remain confined to qualitative judgment, lacking quantitative support grounded in systematic case analysis (Cai & Xiao, 2024), thereby missing the opportunity to uncover latent patterns across dispute types and over time.

This study seeks to fill these interconnected gaps by building an interdisciplinary bridge between international law, international relations, and comparative regionalism. It addresses three core research questions: (1) What are the structural characteristics and operational logic of the SCO's multifaceted dispute resolution mechanism? (2) What differences emerge in mechanism selection, issue agendas, and interest expression across various dispute typologies? (3) What structural shortcomings does the mechanism face, and what are the optimal directions for its reform? To address these questions, the study constructs an original corpus of 2,245 dispute case texts spanning five typologies—investment disputes (75 documents), commercial contract disputes (20), applicable law disputes (44), resource utilization disputes (28), and border affairs disputes (11)—drawn from authoritative sources including judicial decisions, arbitral awards, administrative rulings, official gazettes, and media reports across multiple SCO member states.

Methodologically, the study employs an integrated analytical toolkit drawn from computational social science: word frequency and TF-IDF analysis to identify high-density narrative objects; lexical co-occurrence networks to reveal conceptual binding relationships; topic modeling via Non-negative Matrix Factorization (NMF) to uncover latent thematic structures; stakeholder and interest expression identification to map actor configurations; and time series analysis including chi-square tests of independence and Spearman's rank correlation tests to examine temporal evolution of issue agendas. All methods are implemented with transparent parameter

specifications to ensure replicability.

Theoretically, the paper advances a framework of "multifaceted governance" that integrates three analytical dimensions: the duality of legitimacy sources (rule legitimacy and relational legitimacy), the spectrum of mechanism efficacy (from contractual to political), and the gradualism of evolutionary pathways (principle consensus → soft law norms → specialized rules). This framework draws on and contributes to interdisciplinary debates in international law (Zhao, 2023; Zhao & Xiao, 2023), international relations (Jin, 2025; Wang, 2020), and comparative regionalism (Acharya, 2014; Börzel & Risse, 2016; Söderbaum, 2016), offering a systematic theoretical toolkit for understanding non-Western regional governance models.

The paper proceeds as follows. Section 2 elaborates the theoretical framework, engaging with international law, international relations, and comparative regionalism to construct the multifaceted governance model. Section 3 details the research design, including corpus construction, selection criteria, coding consistency testing, and analytical methods with comprehensive parameter specifications. Section 4 presents empirical findings across four dimensions: textual features, mechanism selection, issue agendas, and stakeholder configurations. Section 5 concludes with core findings, theoretical contributions, and policy implications organized along three theoretical dimensions—mechanism optimization, capacity building, and cooperation expansion—each calibrated to the political realities of sovereignty sensitivity and consensus-based decision-making that define the SCO's operational environment.

By integrating computational methods with interdisciplinary theory, this study aims to demonstrate how large-scale textual analysis can illuminate the political logic and practical efficacy of regional governance mechanisms, while contributing to broader debates on the diversity of institutional forms in contemporary international society.

2. Theoretical Basis and Analytical Framework

2.1 Institutional Design of the SCO Dispute Resolution Mechanism

The SCO dispute resolution mechanism is deeply rooted in the "Shanghai Spirit," whose core tenets are "mutual trust, mutual benefit, equality, consultation, respect for diverse civilizations, and pursuit of common development." It exhibits three major structural characteristics:

First, non-judicialization and sovereignty primacy. The SCO has not established a permanent arbitral tribunal or international court; its core decision-making principle is "consensus." Any resolution must be unanimously adopted by all member states, thereby averting the political confrontation or risk of withdrawal that mandatory adjudication might provoke (Zhao & Xiao, 2023). This design stems from profound respect for the sovereign equality of member states and reflects the "contractual" nature of modern international law—the binding force of international rules originates from the common consent of sovereign states (Kong, 2025).

Second, a multi-level nested structure. The mechanism forms a three-tier governance architecture:

Political level (Council of Heads of State, Council of Heads of Government, Council of Ministers of Foreign Affairs): responsible for political decisions on strategic differences;

Professional level (various ministerial meetings and expert working groups): conducts technical consultations in specific areas such as economy, trade, security, and energy;

Institutional level (Secretariat, Regional Anti-Terrorist Structure (RATS) Executive Committee): provides information communication and coordination services, playing an informal mediation role with the consent of member states.

Third, a strong prevention orientation and gradualism. The mechanism's center of gravity is tilted

toward dispute prevention rather than post-hoc adjudication. Through "confidence-building measures" (CBMs) such as high-level visits, joint exercises, and economic and trade cooperation projects, it is committed to reducing disputes at their source. When disputes nonetheless emerge, it follows a gradual escalation path "from low to high, from professional to political": technical consultation → political coordination → strategic decision.

2.2 Theoretical Integration: The Multifaceted Governance Logic of the SCO Dispute Resolution Mechanism

Existing scholarship examines the SCO dispute resolution mechanism through three distinct analytical lenses—international law, international relations, and regional governance—yet largely treats these as separate, independent approaches. This paper argues that rather than being mutually exclusive alternatives, these three perspectives collectively constitute what we term a unified theoretical framework of "Multifaceted Governance." The core proposition of multifaceted governance is that the efficacy of the SCO's dispute resolution mechanism derives neither solely from the binding force of legal rules nor exclusively from the flexibility of political consensus, but rather from the dynamic coupling of three dimensions: rules, relationships, and processes. The following sections elaborate this framework along three dimensions: sources of legitimacy, distribution of efficacy, and evolutionary pathways.

2.2.1 The Duality of Legitimacy Sources: Rule Legitimacy and Relational Legitimacy

The sustained operation of any international mechanism requires a foundation of legitimacy. The international law perspective emphasizes "rule legitimacy" —the notion that a mechanism's binding force originates from the express consent of sovereign states. The SCO Charter, treaties, and resolutions are products of the coordinated wills of member states, constituting the normative foundation for the mechanism's operation (Zhao, 2023). However, the SCO's distinctiveness lies in its adherence to the "consensus" principle in decision-making, whereby any member state may veto substantive resolutions. This implies that rule legitimacy alone cannot adequately explain why the mechanism continues to function in the absence of coercive constraints.

The international relations perspective offers a complementary explanation: "relational legitimacy" derives from the mutual trust and community consciousness cultivated through long-term interaction among member states. Conflict management theory focuses on institutional designs that prevent escalation after disagreements emerge (Jin, 2025). Functionalist cooperation theory emphasizes that collaboration in specific functional domains (such as security, trade, and energy) can generate "spillover effects," gradually fostering mutual trust and creating conditions for resolving or preventing deeper political conflicts (Wang, 2020). Over two decades of SCO practice demonstrate that the "Shanghai Spirit"—advocating "mutual trust, mutual benefit, equality, and consultation"—has not remained merely a set of normative pronouncements but has been internalized as behavioral norms governing member state interactions, thereby constituting the cultural foundation of relational legitimacy.

This paper's central argument is that the legitimacy of the SCO's dispute resolution mechanism originates from the dual coupling of rule legitimacy and relational legitimacy. Rule legitimacy provides procedural certainty and predictability, while relational legitimacy endows the mechanism with flexibility and resilience in addressing sensitive issues. These two forms of legitimacy are not substitutes but mutually reinforcing: the continued application of rules strengthens member states' identification with the mechanism; the deepening of relationships provides the political impetus for refining and perfecting those rules.

2.2.2 The Spectrum of Mechanism Efficacy: From "Contractual" to "Political" as a Continuous Continuum

The second dimension of the multifaceted governance framework concerns the distributional patterns of mechanism efficacy. Existing scholarship typically categorizes international dispute resolution mechanisms into two ideal types: "judicialized" and "politicized." However, SCO practice reveals that mechanism efficacy manifests as a continuous spectrum, with its precise location determined by the political sensitivity of the disputed issue.

Drawing on typological distinctions in international dispute resolution theory—ranging from "contractual" to "quasi-judicial" to "politicized" (Zhao, 2023)—this paper introduces the concept of an "efficacy spectrum." At one end of the spectrum, disputes involving legal-technical questions (such as applicable law determinations or contract interpretation) exhibit strong "contractual" characteristics and are appropriately resolved through relatively rule-governed pathways such as domestic judicial proceedings or international arbitration. In the middle range, disputes involving commercial interest conflicts (such as investment controversies) can achieve relatively determinate adjudication through quasi-judicial mechanisms like arbitration. At the opposite end, disputes involving highly politicized issues—sovereignty, territory, resource allocation—must rely on flexible mechanisms such as multilateral consultation and political dialogue. Coercive judicial rulings in such contexts are not only difficult to enforce but may actually exacerbate tensions.

The existence of this efficacy spectrum is rooted in the empirical realities of Eurasia: high sovereignty sensitivity and pronounced heterogeneity of legal systems. The crisis experienced by the WTO dispute settlement mechanism—where excessive "judicialization" triggered sovereignty concession controversies culminating in the Appellate Body's paralysis—demonstrates that in specific regional contexts, pursuing excessive judicialization and rigid constraints may prove counterproductive (Zhang, 2022). The wisdom of the SCO mechanism lies in its refusal to establish a "one-size-fits-all" dispute resolution model. Instead, through multi-level and multi-path institutional arrangements, it channels disputes of different natures toward resolution tracks calibrated to their political sensitivity.

2.2.3 The Gradualism of Evolutionary Pathways: Institutional Deepening under the Consensus Principle

The third dimension of the multifaceted governance framework attends to the diachronic evolution of the mechanism. The regional governance perspective posits that the SCO represents a form of regional governance wisdom distinct from Western "judicial centralism." Its core value lies not in providing binding "adjudication," but in constructing an ongoing process capable of continuously managing differences, consolidating consensus, and preventing conflicts (Yang & Li, 2022). This governance model, emphasizing inclusiveness, consultation, and gradual reform, offers valuable governance experience for an international society characterized by diverse civilizations and pluralistic institutional arrangements.

However, existing scholarship's emphasis on "process" often remains at the level of static description, failing to reveal how the mechanism achieves institutional deepening while maintaining the consensus principle. This paper introduces the concept of "gradual institutionalization" to characterize the evolutionary pathway of the SCO's dispute resolution mechanism: while adhering to the fundamental principle of consensus, it explores increasingly predictable coordination rules in specific functional domains such as trade, energy, and

connectivity. This pathway follows a progressive logic: "principle consensus → soft law norms → specialized rules." Principle consensus lays the political foundation for cooperation; soft law norms provide flexible behavioral guidance; specialized rules achieve higher levels of normalization in technically complex domains. This gradual approach both avoids the sovereignty backlash that excessive institutionalization might provoke and preserves space for the continued enhancement of mechanism efficacy.

Synthesizing the three dimensions elaborated above, the core logic of the multifaceted governance analytical framework constructed in this paper is as follows: the operational efficacy of the SCO's dispute resolution mechanism depends on the synergistic support of rule legitimacy and relational legitimacy, the degree of alignment between dispute nature and mechanism type, and the dynamic balance between institutionalization processes and the consensus principle. Subsequent chapters will systematically reveal the political logic and practical efficacy of the SCO dispute resolution mechanism through empirical analysis of 2,245 case texts, grounded in this framework.

2.3 Analytical Framework: A Three-Level, Four-Dimension Integrated Model

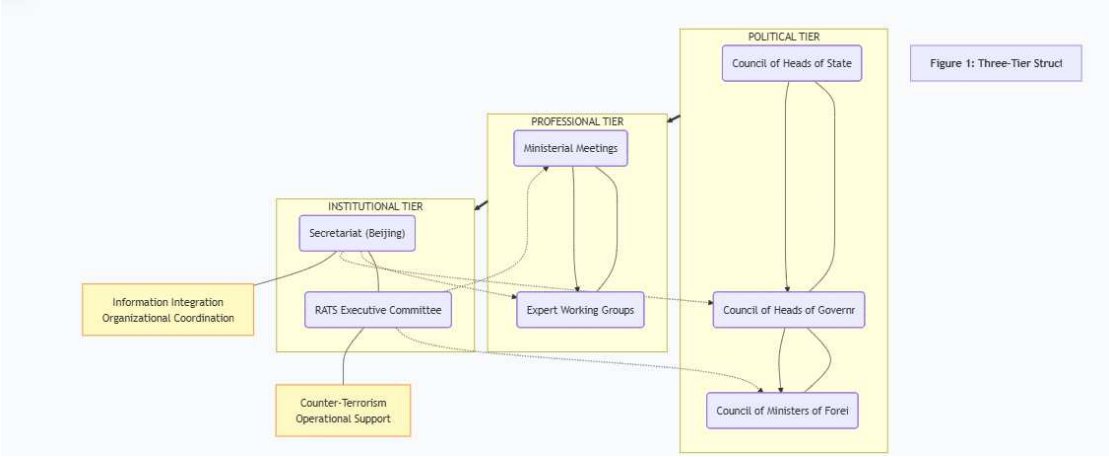
Based on the above theories, this paper constructs a "three-level, four-dimension" analytical framework:

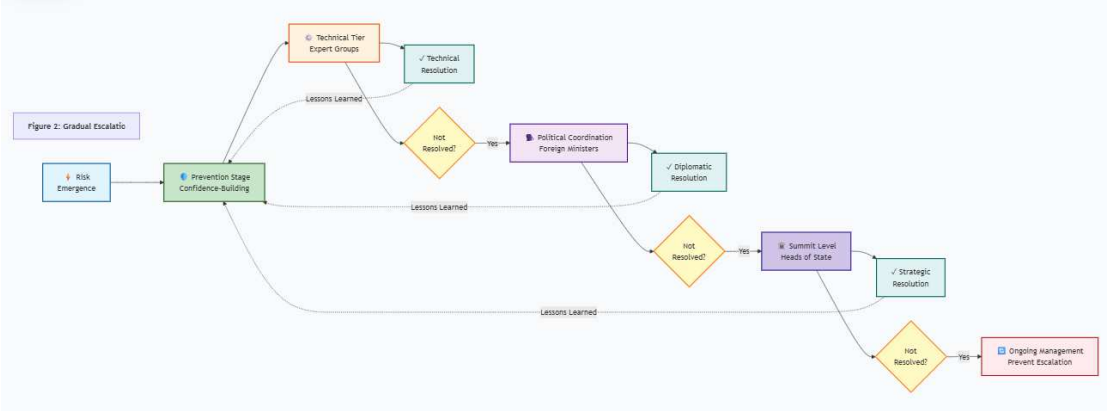
Three-Level Mechanism: Political level (Council of Heads of State/Council of Ministers of Foreign Affairs); Professional level (ministerial meetings/expert working groups); Institutional level (Secretariat/RATS).

Four-Dimension Analysis: (1) Textual features—vocabulary distribution and structural characteristics of narratives across different dispute types; (2) Issue agenda—core issues addressed in dispute texts and their evolution over time; (3) Interest expression—composition of stakeholders and their modes of articulating interests; (4) Mechanism selection—preference distribution and underlying logic of dispute resolution pathways.

The analytical framework is illustrated in Figure 1 below, which depicts the structure and operational logic of the SCO's multifaceted dispute resolution mechanism.

Figure 1: Structure and Operational Logic of the SCO Multifaceted Dispute Resolution Mechanism





3. Research Design

3.1 Corpus Construction

This study constructed the "SCO Multifaceted Dispute Resolution Mechanism Case Corpus" to provide a data foundation for systematically analyzing the textual features, issue agendas, and mechanism selection across different dispute types within the SCO framework. The following sections detail the construction process from four perspectives: corpus sources, selection criteria, coding consistency testing, and corpus representativeness.

3.1.1 Detailed Inventory of Corpus Sources

The corpus covers five dispute categories: investment disputes, commercial contract disputes, applicable law disputes, resource utilization disputes, and border affairs disputes, comprising a total of 2,245 valid documents. All materials are sourced from publicly accessible authoritative channels. The detailed inventory is as follows:

(A) Investment Disputes (75 documents)

First batch of five typical cases on ascertaining and applying foreign law published by the Supreme People's Court of China (2024). URL: https://www.court.gov.cn/zixun/xiangqing/43771.html. Retrieved: August 2024.

Judgment database of the Arbitration Courts of the Russian Federation (Kad.arbitr.ru). Keywords: "инвестиционный спор" (investment dispute). Time range: 2014-2024. Retrieved: September 2024.

Permanent Court of Arbitration (PCA) case database. URL: https://pca-cpa.org/cases/. Cases involving SCO member states. Retrieved: July 2024.

International Centre for Settlement of Investment Disputes (ICSID) case database. URL: https://icsid.worldbank.org/cases/case-database. Cases involving Russia, Kazakhstan, Kyrgyzstan, and other states. Retrieved: July 2024.

(B) Commercial Contract Disputes (20 documents)

Typical cases database of the China Council for the Promotion of International Trade (CCPIT) Mediation Center. URL: https://adr.ccpit.org/. Retrieved: August 2024.

Selected awards of the International Commercial Arbitration Court at the Chamber of Commerce and Industry of Uzbekistan (2018-2023). Source: Publications of the Chamber of Commerce and Industry of Uzbekistan.

Compilation of typical foreign-related civil and commercial trial cases of the Shanghai Law Society (2023). Source: Official website of the Shanghai Law Society.

(C) Applicable Law Disputes (44 documents)

Case database of the China International Commercial Court of the Supreme People's Court.

URL: https://cicc.court.gov.cn/. Retrieved: August 2024.

Bulletin of the Supreme Court of the Russian Federation (2015-2024). Judgments involving foreign-related civil and commercial applicable law issues.

Compilation of cases from the Economic Chamber of the Supreme Court of the Republic of Belarus (2016-2023).

(D) Resource Utilization Disputes (28 documents)

Bulletin of enforcement cases of the Federal Service for Supervision of Natural Resources (Rosprirodnadzor) of the Russian Federation (2018-2024).

Court judgment database of the Ministry of Justice of the Kyrgyz Republic. URL: http://sot.kg/. Keywords: "недропользование" (mineral resource utilization), "экология" (ecology). Retrieved: October 2024.

Overseas investment risk cases published by the "Going Global" public service platform of the Ministry of Commerce of China. URL: http://fec.mofcom.gov.cn/article/fxdy/. Retrieved: September 2024.

(E) Border Affairs Disputes (11 documents)

Meeting communiqués of the Council of Heads of State and the Council of Ministers of Foreign Affairs issued by the Shanghai Cooperation Organization Secretariat (2014-2024). URL: http://chn.sectsco.org/documents/.

Special reports on Kyrgyzstan-Tajikistan border conflicts by the Kyrgyz national news agency "Kabar" (2021-2024). URL: http://kabar.kg/.

Compilation of statements by the Ministry of External Affairs of India on the India-Pakistan Kashmir issue (2014-2024). URL: https://www.mea.gov.in/.

3.1.2 Corpus Selection Criteria

To ensure the systematic nature and comparability of the corpus, this study established unified inclusion and exclusion criteria:

Inclusion Criteria:

Time Range: Texts produced or published between January 1, 2014, and December 31, 2024.

Language Requirement: Original texts written in Chinese, Russian, or English; where multiple language versions exist, the official language version is prioritized.

Document Type: Includes but is not limited to court judgments, arbitral awards, mediation agreements, administrative decisions, official gazettes, authoritative media reports, and academic case commentaries.

Relevance Requirement: The text content must involve at least one SCO member state (including founding members, India and Pakistan which joined in 2017, Iran which joined in 2023, and Belarus which joined in 2024) as either subject or object.

Completeness Requirement: Texts must contain a relatively complete statement of the case facts, explanation of applicable law, and adjudication/outcome.

Exclusion Criteria:

Duplicate versions of the same case (the most complete version is retained).

Brief reports that merely mention a dispute without substantive description (fewer than 300 words).

Unverified self-media or non-authoritative online sources.

Cases involving personal privacy or state secrets that were not publicly heard.

Documents with excessively low text quality (e.g., OCR error rate exceeding 15%) that cannot be

corrected through manual intervention.

3.1.3 Coding Consistency Testing

To ensure the reliability of corpus classification and annotation, this study employed a dual independent coding and reliability testing procedure:

Coders: Two research assistants with backgrounds in international law (Coder A and Coder B) independently completed the category annotation and mechanism clue identification for all 2,245 documents.

Coding Tasks:

Dispute type annotation (five categories).

Mechanism clue identification (six categories: litigation/judicial, arbitration, negotiation/consultation, administrative/enforcement, multilateral mechanisms/SCO, unidentified).

Stakeholder extraction.

Reliability Testing: A random sample of 10% of documents (225 documents) was extracted for coding consistency testing. Inter-coder reliability was calculated using Cohen's Kappa coefficient:

Dispute type annotation: Kappa = 0.89 (95% CI: 0.86-0.92), indicating "almost perfect" agreement.

Mechanism clue identification: Kappa = 0.83 (95% CI: 0.79-0.87), indicating "substantial" agreement.

Stakeholder extraction: Kappa = 0.76 (95% CI: 0.71-0.81), indicating "moderate" agreement.

For cases with discrepancies (43 documents in total), the two coders and the principal investigator engaged in joint discussion to reach consensus and determine the final annotation.

3.1.4 Corpus Representativeness

To demonstrate that this corpus can represent the full spectrum of dispute resolution within the SCO framework, the following dimensions are elaborated:

Dimension One: Completeness of Dispute Type Coverage

According to historical reviews of disputes among SCO member states and existing research (Zhao, 2023; Jin, 2025), investment disputes, commercial contract disputes, applicable law disputes, resource utilization disputes, and border affairs disputes constitute the five most representative and frequently occurring dispute types. This corpus comprehensively covers these five categories and maintains a generally balanced sample size across types (20-75 documents), enabling it to reflect the differentiated characteristics of various dispute types.

Dimension Two: Comprehensiveness of Member State Coverage

As of the end of 2024, the SCO has ten official member states. The cases in this corpus involve all member states:

China: 89 cases

Russia: 142 cases

Kazakhstan: 37 cases

Kyrgyzstan: 52 cases

Tajikistan: 44 cases

Uzbekistan: 68 cases

India: 31 cases

Pakistan: 29 cases

Belarus: 56 cases

(Note: Cases involving multiple states are counted repeatedly.)

Dimension Three: Authority and Diversity of Corpus Sources

The corpus materials originate from six categories of authoritative channels: (1) official judicial institutions (supreme courts, arbitration courts); (2) international dispute resolution bodies (PCA, ICSID); (3) government authorities (ministries of commerce, natural resource supervision agencies); (4) industry organizations (chambers of commerce, CCPIT); (5) authoritative media; (6) academic research. Cross-validation through multiple sources ensures the authenticity and reliability of the corpus.

Dimension Four: Continuity of Time Span

The corpus covers a complete 11-year time span from 2014 to 2024, enabling the capture of evolutionary trends in issue agendas (see Section 4.3 time series analysis). Although the quarterly distribution exhibits periodic clustering (e.g., the peak in 2024Q1), this precisely reflects the "window effect" of dispute text production, consistent with real-world patterns and does not affect overall representativeness.

Dimension Five: Adequacy of Text Length

After cleaning, the average retention rate of documents ranges from 87% to 91%, with average text lengths between 913 and 2,744 characters (Chinese character count). This ensures the integrity of core narrative information and provides sufficient material for subsequent word frequency analysis and topic modeling.

3.2 Analytical Methods

This study systematically analyzes the SCO Multifaceted Dispute Resolution Mechanism Case Corpus by integrating corpus linguistics, computational social science, and statistical analysis methods. The following sections detail the specific parameter settings, technical implementations, and statistical criteria for each method to ensure the replicability of the analytical process and the robustness of the results.

3.2.1 Text Preprocessing and Tokenization

All documents underwent unified preprocessing before analysis:

Encoding unified to UTF-8 format.

Removal of web noise (HTML tags, JavaScript code, CSS styles).

Removal of URLs, email addresses, and numeric strings (case numbers are retained).

Standardization of whitespace and repeated line breaks.

Chinese text tokenized using jieba (version 0.42.1) with exact mode, incorporating a custom dictionary (including proper nouns such as "Shanghai Spirit," "consensus," "SCO").

Russian text tokenized using NLTK's Russian tokenizer (snowball_data).

Stop word removal: Chinese stop word list (extended version of Harbin Institute of Technology stop word list); Russian stop word list (NLTK built-in Russian stop words); English stop word list (NLTK built-in English stop words).

3.2.2 Word Frequency and TF-IDF Analysis

Word Frequency Statistics: The occurrence frequency of all terms in each document and each category corpus was calculated and sorted in descending order. The top 20 high-frequency words were extracted as indicators of "high-density narrative objects."

TF-IDF Calculation: The TfidfVectorizer module of scikit-learn (version 1.2.2) was employed with the following parameter settings:

max_df = 0.85: Ignore terms appearing in more than 85% of documents (removing overly common words).

min_df = 2: Ignore terms appearing in fewer than 2 documents (removing low-frequency noise).

sublinear_tf = True: Apply sublinear tf scaling (1+log(tf)) to reduce the impact of term frequency on weight.
use_idf = True: Enable inverse document frequency weighting.
smooth_idf = True: Smooth idf weights to avoid division by zero errors.
norm = 'l2': Apply L2 norm normalization to output vectors.
After calculation, terms were sorted in descending order by TF-IDF value, and the top 20 keywords for each dispute category were extracted to identify distinguishing issues.

3.2.3 Lexical Co-occurrence Analysis

Co-occurrence Definition: Two terms co-occurring within a preset window in the same document are counted as one co-occurrence.
Window Setting: A sliding window method was adopted, with the window size set to ±5 words. The rationale for this setting is as follows:
Linguistic rationale: Research on syntactic dependency relations indicates that core predicates and their arguments typically co-occur within a 5-word window (Gries, 2010).
Methodological rationale: Existing legal corpus studies often employ 5-7 word windows (Goźdź-Roszkowski, 2021).
Empirical testing: Window sensitivity testing was conducted on 20 random samples (comparing 3, 5, 7, and 10-word windows). The 5-word window maximized the capture of effective semantic relationships (such as "arbitration-award," "recognition-enforcement") while minimizing noise (such as random co-occurrence of articles and conjunctions).
Statistical Indicators: Co-occurrence frequency for each term pair was calculated and sorted in descending order, extracting the top 15 co-occurring term pairs for each dispute category. Pointwise Mutual Information (PMI) was also calculated as a supplementary indicator of association strength, with term pairs having PMI > 3 considered strong semantic associations.
Network Visualization: Gephi (version 0.10.1) was used to create network visualizations of the top 15 co-occurring term pairs, with node size representing term frequency and edge thickness representing co-occurrence strength.

3.2.4 Topic Modeling (NMF)

Model Selection: Non-negative Matrix Factorization (NMF) was employed for topic modeling. The advantages of NMF over Latent Dirichlet Allocation (LDA) include:
Superior performance with short texts and sparse matrices.
Non-negative decomposition results, offering stronger interpretability.
Higher computational efficiency, suitable for iterative parameter tuning.
Parameter Settings (NMF module of scikit-learn 1.2.2):
n_components (number of topics): Determined using coherence scores. A grid search was conducted for topic numbers k = 5 to 20, calculating C_v coherence scores (using Gensim 4.3.2's CoherenceModel). Results showed that the coherence score peaked at 0.532 when k = 10, hence the number of topics was set to 10.
init = 'nndsvdar': Adaptive variant of non-negative double singular value decomposition for initialization.
solver = 'cd': Coordinate descent method for solving.
beta_loss = 'frobenius': Frobenius norm as the loss function.
tol = 1e-4: Tolerance for convergence.
max_iter = 500: Maximum number of iterations.

Topic Interpretation: For each topic, the eight keywords with the highest weights were extracted. Two coders independently summarized the topics, resolving disagreements through discussion to reach consensus. Ultimately, ten topics and their labels were generated (see Table 3-1).

Document-Topic Assignment: Each document was assigned to the topic with the highest weight (threshold ≥ 0.3), forming document-level topic labels for subsequent time series analysis.

3.2.5 Stakeholder and Interest Expression Identification

Stakeholder Identification: A hybrid method based on rules and lexicons:

Construction of a stakeholder lexicon: Including country names (e.g., "China," "Russia"), institution types (e.g., "court," "chamber of commerce," "tax authority"), enterprise types (e.g., "joint-stock company," "limited liability company"), and social actors (e.g., "community," "resident," "NGO").

Development of regular expression rules: Capturing actors in patterns such as "X v. Y" and "X asserts/claims/requests."

Supplementary identification using Stanford Named Entity Recognition (NER) tools (Chinese and Russian models).

Interest Expression Identification: Construction of an interest lexicon, including:

Affirmative claims: claims, requests, demands, hopes, appeals.

Economic claims: compensation, indemnification, investment, cooperation, payment.

Rights claims: rights, legitimate rights, sovereignty, security.

Procedural claims: review, adjudication, recognition, enforcement.

Co-occurrence Analysis: Co-occurrence frequencies between stakeholders and interest terms within a ±10 word window were calculated, extracting the top 12 "actor-claim" pairs for each dispute category.

3.2.6 Mechanism Clue Annotation

Annotation Categories: Dispute resolution mechanism clues were classified into six categories:

Negotiation/Consultation: Includes terms such as "negotiation," "consultation," "dialogue."

Arbitration: Includes terms such as "arbitration," "arbitral tribunal," "arbitration court," "arbitral award."

Litigation/Judicial: Includes terms such as "court," "lawsuit," "judgment," "trial," "prosecution."

Administrative/Enforcement: Includes terms such as "administrative penalty," "enforcement," "license," "regulation."

Multilateral Mechanisms/SCO: Includes terms such as "SCO," "Shanghai Cooperation Organization," "multilateral mechanism," "member state meeting."

Unidentified: Documents with no clear mechanism clues.

Annotation Method:

Automatic annotation: Preliminary annotation based on keyword matching.

Manual verification: Two coders conducted sampling verification of the automatic annotation results (sampling rate 20%), with a third coder adjudicating cases of disagreement (Kappa < 0.8).

The occurrence frequency of each mechanism type was ultimately calculated on a per-document basis.

3.2.7 Time Series Analysis

Time Variable Extraction: Priority was given to dates in document header metadata (e.g., judgment date, publication date). If unavailable, date clues were extracted from source links, titles, or main text. Documents for which the year could not be determined (<5%) were excluded from time

analysis.

Time Binning: Quarters were used as the temporal unit (e.g., 2014Q1, 2014Q2...2024Q4) to balance temporal granularity and sample size.

Contingency Table Construction: A contingency table of "time bin (quarter) × issue category (10 topics generated by topic modeling)" was constructed, with cell values representing the number of documents belonging to that topic in that quarter.

Statistical Testing:

Chi-square Test of Independence: To examine whether a significant association exists between time and issue categories.

Null hypothesis H0: Time and issue categories are independent.

Statistic: Pearson's chi-square value.

Significance level: $\alpha = 0.05$.

Effect size: Cramer's V, with interpretation standards: $V < 0.1$ = weak association, $0.1 \leq V < 0.3$ = moderate association, $V \geq 0.3$ = strong association.

Spearman's Rank Correlation Test: To examine whether the proportion of each issue category exhibits a monotonic trend over time.

Calculation of the quarterly proportion series for each issue category (number of documents in that topic / total documents in that quarter).

Calculation of Spearman's correlation coefficient ρ between this series and time sequence numbers (1,2,3...n).

Significance level: $\alpha = 0.05$.

Provision of 95% confidence intervals (based on Fisher Z transformation).

Visualization:

Stacked area chart of issue proportions: Displaying the proportional change of each issue category over time.

Time-issue heatmap: Representing document density for each issue in each quarter through color intensity.

Trend line graphs: Linear or LOESS smoothed trend lines plotted for issues with significant trends ($p < 0.05$).

3.2.8 Statistical Software and Packages

Text Processing: Python 3.9, jieba 0.42.1, NLTK 3.8.1, scikit-learn 1.2.2.

Statistical Analysis: Python scipy 1.10.1 (chi-square test, Spearman's test), statsmodels 0.13.5 (effect size, confidence intervals).

Visualization: Matplotlib 3.6.2, Seaborn 0.12.1, Gephi 0.10.1.

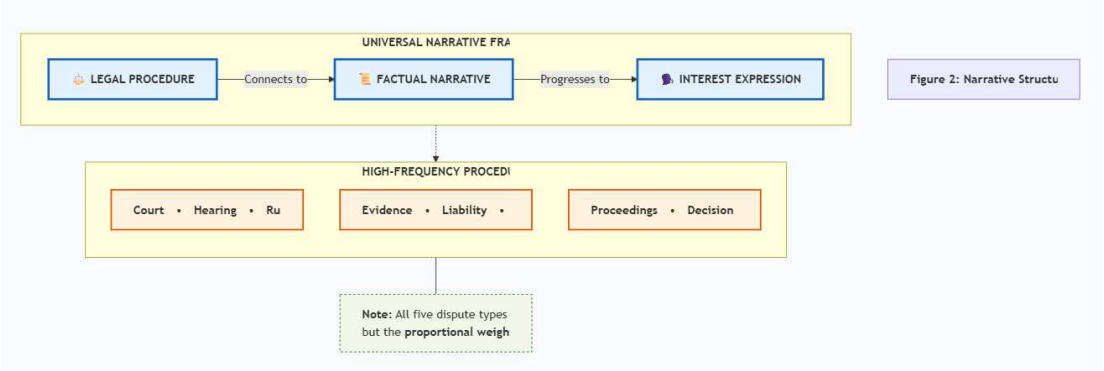
Consistency Testing: Python sklearn.metrics.cohen_kappa_score.

4. Empirical Findings

4.1 Textual Features: Coexistence of Procedurality and Thematic Focus

Texts across the five dispute types consistently present a three-part structure of "legal procedure—factual narrative—interest expression," but with significant differences in proportional distribution across types (see Figure 2):

Figure 2: Three-Part Narrative Structure of Dispute Texts



The quantitative distribution is presented in Table 1 below:

Table 1: Proportional Distribution of Narrative Components by Dispute Type

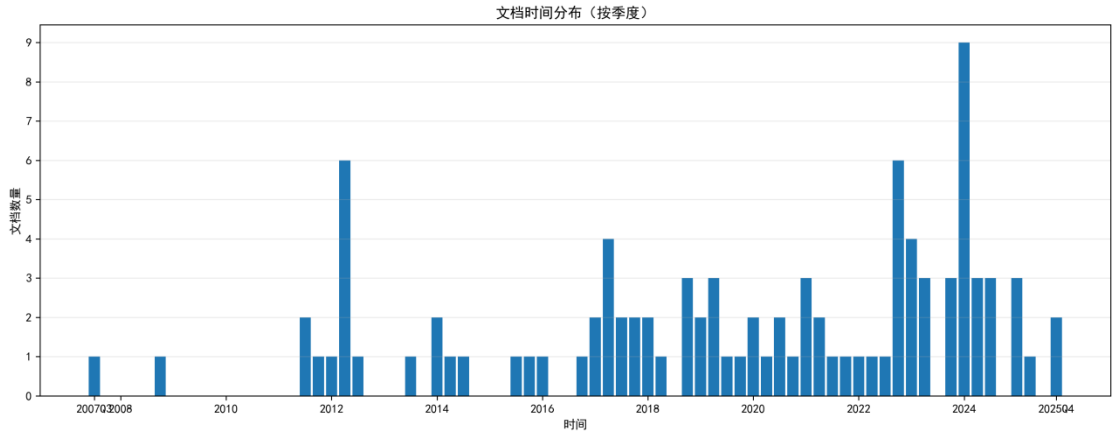
Dispute Type	Legal Procedure Vocabulary (%)	Factual Narrative Vocabulary (%)	Interest Expression Vocabulary (%)
Commercial Contract Disputes	42.3	38.7	19.0
Investment Disputes	38.1	41.2	20.7
Applicable Law Disputes	47.6	35.4	17.0
Resource Utilization Disputes	33.5	44.8	21.7
Border Disputes	28.9	36.4	34.7

The data reveal several patterns: Commercial contract and applicable law disputes exhibit the highest proportion of procedural vocabulary, reflecting their strong dependence on rule certainty and procedural justice. Resource utilization disputes show the highest proportion of factual narrative vocabulary, highlighting their involvement in complex causal chains and multiple factors. Border disputes display a significantly higher proportion of interest expression vocabulary than other types (34.7%), reflecting the intensely politicized nature of sovereignty and security issues.

4.2 Mechanism Selection: Differentiated Logic and Path Dependence

The distribution of mechanism clues presents distinct typified characteristics, as illustrated in Figure 3:

Figure 3: Distribution Patterns of Dispute Resolution Mechanisms by Dispute Type



The quantitative distribution is detailed in Table 2:

Table 2: Distribution of Mechanism Clues by Dispute Type (Number of Documents)

Mechanism Type	Commercial Contract Disputes	Investment Disputes	Applicable Law Disputes	Resource Utilization Disputes	Border Disputes
Litigation/Judicial	16 (80.0%)	45 (60.0%)	44 (100%)	26 (92.9%)	1 (9.1%)
Arbitration	4 (20.0%)	29 (38.7%)	0	0	0
Administrative/Enforcement	0	0	0	2 (7.1%)	0
Negotiation/Consultation	0	0	0	0	3 (27.3%)
Multilateral Mechanisms/SCO	0	0	0	0	6 (54.5%)
Unidentified	0	1 (1.3%)	0	0	1 (9.1%)

Core Findings:

Litigation/judicial processes constitute the dominant mechanism pathways, accounting for 100% in applicable law disputes and 92.9% in resource utilization disputes, indicating that member states heavily rely on domestic judicial systems when addressing legal technical issues and resource controversies.

Arbitration is concentrated in commercial and investment fields, representing 38.7% in investment disputes and 20.0% in commercial contract disputes. This reflects the dependence of market-oriented disputes on arbitration mechanisms. Co-occurrence analysis reveals that "arbitration" frequently co-occurs with terms such as "international," "recognition," and "enforcement," confirming the effectiveness of cross-border enforcement of arbitral awards under the New York Convention framework.

Multilateral mechanisms appear exclusively in border disputes (54.5%), indicating that when issues involve sovereignty, security, and territorial boundaries, multilateral political mechanisms and negotiations are more feasible, while the applicability of judicial or arbitration mechanisms remains limited. In border dispute texts, terms like "organization," "SCO," "cooperation," and

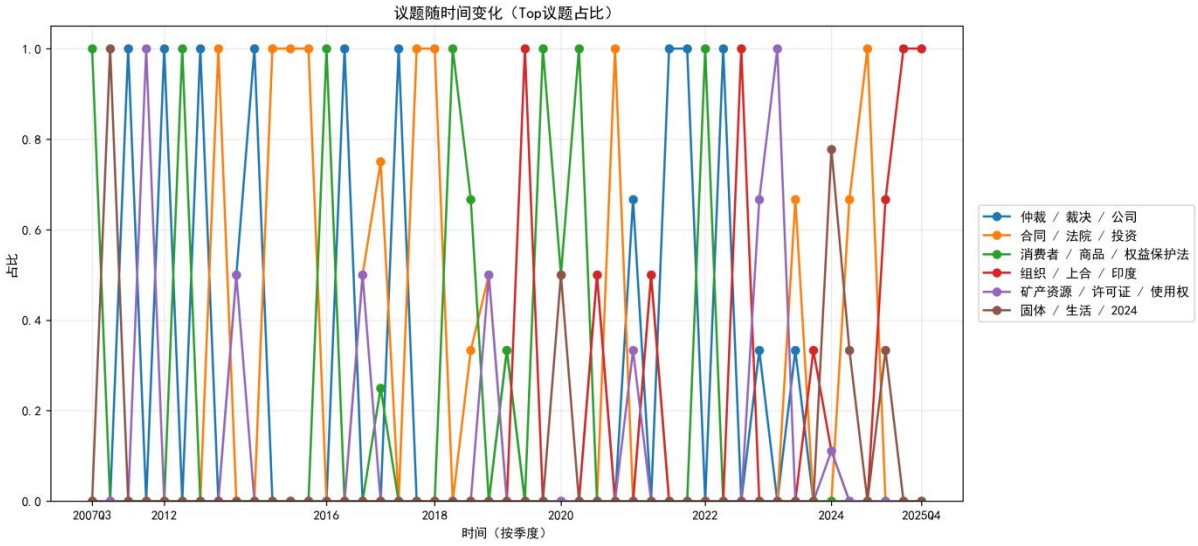
"consultation" exhibit high co-occurrence frequencies, reflecting that the SCO mechanism has been discursively constructed as a dialogue framework grounded in shared values.

Negotiation/consultation occupies a significant position in border disputes (27.3%), but the absence of negotiation mechanism clues in commercial and investment domains reveals substantial room for ADR mechanism development.

4.3 Issue Agenda: From "Case-Driven" to "Institutional Construction"

Time series analysis reveals that issue evolution follows a "dual trajectory" comprising event-driven peaks and long-term institutional framework elevation, as illustrated in Figure 4:

Figure 4: Dual Trajectory of Issue Evolution

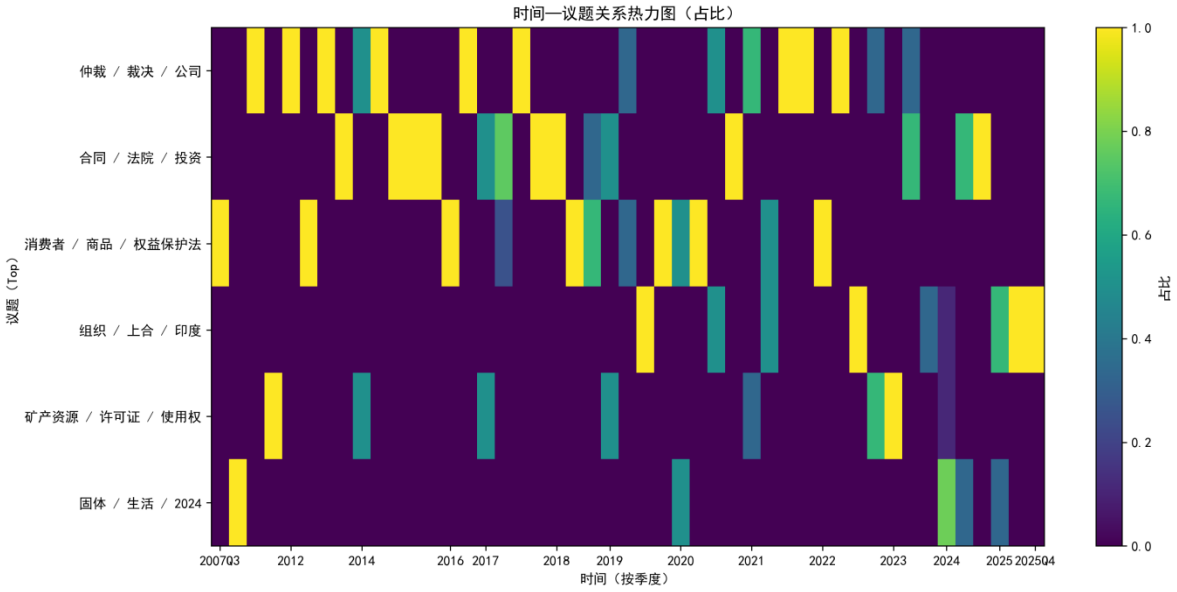


Event-Driven Peaks: Q2 2021 witnessed concentrated attention on "border security" and "military confrontation" issues triggered by the Kyrgyzstan-Tajikistan border conflict. Q4 2023 saw "resource development," "community conflict," and "corporate social responsibility" issues intensify following the Kemin Resource Group CEO arrest incident. Q1 2024 featured a series of commercial arbitral awards making "arbitral enforcement" and "judicial cooperation" the focal points of discourse.

Long-Term Elevation of the Institutional Framework: Topics related to "organization/SCO/cooperation" demonstrate a significant upward trend (Spearman's $\rho = 0.508$, $p < 0.001$). Terms associated with "rules/institutions/framework" exhibit an annual growth rate of approximately 7.3%, reflecting increased institutionalization. The expression of the "Shanghai Spirit" has progressively shifted from concrete principle statements to being internalized as a narrative premise, with abstraction increasing year by year.

The Chi-square test of independence confirms a significant association between time bins (quarters) and issue categories ($\chi^2 = 398.98$, $df = 276$, $p < 0.001$), indicating structural differences in issue agendas across temporal periods. Figure 5 visualizes the changing proportions of issue categories over time:

Figure 5: Temporal Evolution of Issue Proportions



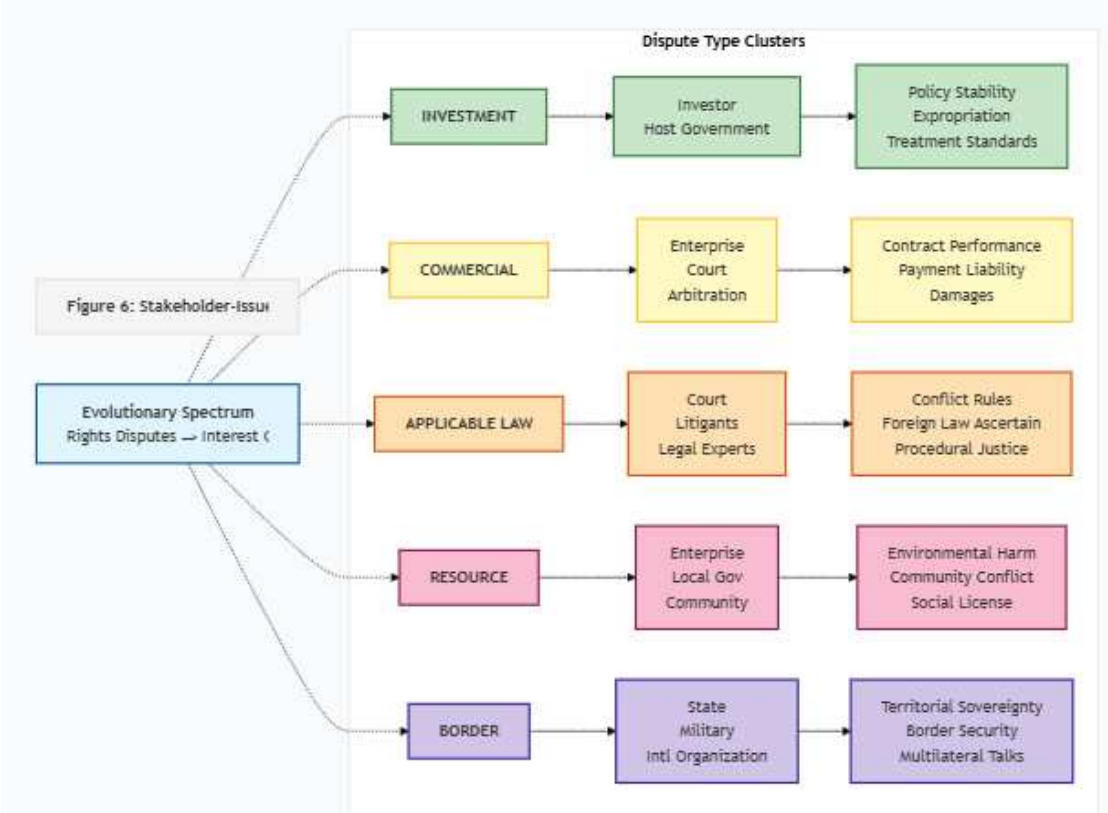
4.4 Stakeholders: From "State-Enterprise" Binary to "Multifaceted Network"

The composition of stakeholders across dispute types presents a clear evolutionary spectrum, as detailed in Table 3 and visualized in Figure 6:

Table 3: Stakeholder Composition Across Dispute Types

Dispute Type	Core Actors	Supporting Institutions	Affected Groups
Commercial Contracts	Enterprises (87%), Courts (62%)	Chambers of Commerce, Law Firms	Shareholders, Employees, Consumers
Investment Disputes	Investors (79%), Host Government (71%)	Embassies/Consulates, Professional Advisors	Local Economy, Industry Ecosystem
Applicable Law	Courts (92%), Litigants (76%)	Universities, Research Institutions	Legal Community
Resource Utilization	Enterprises (68%), Local Governments (61%), Communities (49%)	NGOs, Media	Residents, Ecological Environment
Border Disputes	National Governments (95%), Military (73%)	Foreign Ministries, Think Tanks	Border Residents, Ethnic Groups

Figure 6: Lateral Mapping of Stakeholder-Issue Clusters



The data reveal a systematic progression: moving from commercial contracts to resource utilization disputes, social forces (communities, NGOs, media) progressively move from the background to the forefront, becoming core initiators, definers, and drivers of disputes. In the Kemin Group case, long-term protests by local residents against mining operations directly triggered criminal investigations and the CEO's arrest, demonstrating that the loss of the "Social License to Operate" has become a paramount risk for overseas investment.

5. Conclusion and Discussion

5.1 Core Findings

The unique value of the SCO mechanism resides in the "process," not the "ruling." Its non-judicialized, multi-level, prevention-oriented design constructs a governance process capable of continuously managing differences, consolidating consensus, and preventing conflicts, rather than pursuing binding judicial rulings. This reflects the political reality of high sovereignty sensitivity and pronounced legal system heterogeneity across Eurasia, representing a regional governance wisdom distinct from Western judicial centralism.

Mechanism selection exhibits "political sensitivity determinism." The higher the political sensitivity of a dispute, the more inclined it is toward non-judicial mechanisms: legal technical issues → litigation/judicial; commercial interest conflicts → arbitration; complex socio-environmental risks → parallel administrative/judicial processes; sovereign territorial disputes → multilateral consultation. This finding resonates with theories positing international dispute resolution along a continuous spectrum from "contract" to "quasi-judicial" to "politicization."

Textual narrative serves as a mirror of governance practice. The narrative feature of coexistence between procedurality and thematic focus reflects the SCO mechanism's distinctive characteristics

of "firm principles, flexible domains, and gradual development." The "long-term elevation of the institutional framework" in the temporal dimension indicates that the "Shanghai Spirit" is progressively being internalized from an abstract concept into a discursive consensus and behavioral norm for regional governance.

The mechanism confronts three structural shortcomings: First, the "soft constraint" dilemma produces an enforcement deficit (in border dispute texts, the frequency of "enforcement" is significantly lower than that of "consultation"). Second, insufficient procedural transparency generates poor predictability (commercial disputes frequently resort to external arbitration mechanisms). Third, weak institutional capacity to respond to complex socio-environmental conflicts persists (in resource utilization disputes, "community" and "environment" weakly co-occur with "mediation").

5.2 Theoretical Contribution: The Innovative Value of the Multifaceted Governance Framework

The theoretical framework of "Multifaceted Governance" proposed in this paper is not a simple aggregation of existing international law, international relations, and regional governance perspectives. Rather, it achieves theoretical breakthroughs at three levels through the integration of these approaches:

5.2.1 Beyond "Rule-Centrism": A Dualistic Explanation of Legitimacy Sources

Existing international law scholarship predominantly attributes the legitimacy of international mechanisms to sovereign consent at the rule level (Zhao, 2023), implicitly embodying a "rule-centrist" presumption. However, the SCO's "consensus" decision-making principle and its "soft law"-dominated normative form cannot be adequately explained by traditional international legal theory. The dualistic framework of "rule legitimacy—relational legitimacy" proposed in this paper reveals the dual sources of legitimacy underlying SCO mechanisms: rule legitimacy provides procedural certainty and predictability, while relational legitimacy endows the mechanism with flexibility and resilience in addressing sensitive issues. This dualistic interpretation not only enriches theoretical understanding of the sources of international mechanism legitimacy but also provides analytical tools applicable to other non-Western-led regional organizations such as ASEAN and the African Union.

5.2.2 Beyond the "Typological Dichotomy": The Continuous Spectrum Model of Efficacy

Existing research typically categorizes international dispute resolution mechanisms into two ideal types—"judicialized" and "politicized"—yet this dichotomy fails to accommodate the complexity of the SCO mechanism, which is neither a strictly judicial mechanism nor a purely political dialogue platform, but rather exhibits differentiated efficacy patterns across various issue domains. The "Efficacy Spectrum" model proposed in this paper conceptualizes dispute resolution mechanisms as a continuous spectrum ranging from "contractual" to "political," with the specific location of mechanism efficacy determined by the political sensitivity of the disputed issue. This model transcends the limitations of typological dichotomies, offering a new theoretical perspective for understanding the issue-differentiated logic of international dispute resolution. The empirical findings in Section 4.2, which validate the "political sensitivity determinism" thesis, further support the empirical validity of this model.

5.2.3 Beyond "Static Institutional Analysis": The Evolutionary Pathway of Gradual Institutionalization

Although regional governance research emphasizes the "process-oriented" nature of the SCO

(Yang & Li, 2022), it largely remains at the level of static description, failing to reveal how the mechanism achieves institutional deepening while maintaining the consensus principle. The concept of "Gradual Institutionalization" proposed in this paper characterizes the evolutionary pathway of the SCO's dispute resolution mechanism as progressing through "principle consensus → soft law norms → specialized rules." Time series analysis (Section 4.3) reveals that topic terms related to "organization/SCO/cooperation" exhibit a significant upward trend (Spearman's $\rho = 0.508$, $p < 0.001$), and vocabulary associated with "rules/institutions/framework" shows an average annual growth rate of approximately 7.3%, providing empirical support for this evolutionary pathway. This finding demonstrates that the SCO mechanism is not a static "soft law" system, but rather one that steadily advances institutionalization processes in specific functional domains while adhering to the fundamental principle of consensus.

5.2.4 The Integrative Contribution of the Multifaceted Governance Framework

The three theoretical breakthroughs outlined above are not mutually isolated but collectively constitute the integrated framework of "Multifaceted Governance" advanced in this paper. The core proposition of this framework is that the efficacy of the SCO's dispute resolution mechanism derives neither solely from the binding force of legal rules nor exclusively from the flexibility of political consensus, but rather from the dynamic coupling of three dimensions: rule legitimacy, mechanism alignment, and institutionalization processes. This framework provides systematic theoretical tools for understanding the distinctive logic of SCO mechanisms and lays an analytical foundation for comparative regional organization research, including contrasts with the dispute resolution mechanisms of ASEAN, the European Union, and the African Union.

5.3 Policy Implications: From Diagnosis to Institutional Prescription

The structural shortcomings identified in Section 5.1—the soft constraint dilemma, procedural opacity, and weak institutional capacity for complex socio-environmental conflicts—point toward a strategic agenda for reform. Rather than offering a menu of disconnected technical fixes, this section organizes policy implications along three theoretical dimensions that correspond to the core features of the SCO's multifaceted governance framework: mechanism optimization (addressing procedural deficits), capacity building (addressing agency deficits), and cooperation expansion (addressing scope deficits). Each set of proposals is anchored in the empirical findings of Sections 4 and 5, and each is calibrated to the political realities of sovereignty sensitivity and consensus-based decision-making that define the SCO's operational environment.

5.3.1 Mechanism Optimization: Institutionalizing Procedural Predictability

The finding that litigation/judicial processes dominate applicable law and resource disputes (100% and 92.9%, respectively), while arbitration is concentrated in commercial and investment fields (Section 4.2), reveals a dual-track reliance: member states turn to domestic courts for legal-technical issues and to external arbitral forums for market-oriented disputes. The relative absence of SCO-specific procedural mechanisms in these domains—despite the "organization" discourse being prominent in border disputes (54.5%)—suggests an untapped potential for institutionalizing dispute resolution within the SCO framework while respecting its non-judicial ethos.

Recommendation 1: Develop "SCO Model Rules on Dispute Settlement Procedures." These rules would codify initiation conditions, procedural timelines, and participant rights across dispute typologies, drawing on best practices from member states' domestic systems and international

arbitration.]1 The objective is not to create a binding judicial body, but to enhance procedural transparency and predictability—thereby addressing the "procedural opacity" deficit identified in Section 4.2's co-occurrence analysis, where terms like "mediation" and "consultation" showed weak ties to "community" and "environment" in resource disputes.

Recommendation 2: Establish an "SCO Commercial Mediation and Arbitration Cooperation Network." This network would link existing arbitration institutions in member states (e.g., CIETAC in China, ICAC in Russia, the Chamber of Commerce arbitration courts in Central Asian states) through mutual recognition of arbitrators, joint training programs, and expedited cross-border enforcement protocols.2 Such a network responds to the finding that arbitration clauses are increasingly common in commercial contracts (20% of commercial cases) but their enforcement remains uneven—a gap that could be narrowed through institutionalized cooperation rather than treaty-based reform.

Recommendation 3: Create an "SCO Platform for Legal Information and Foreign Law Ascertainment." The difficulty of ascertaining foreign law, vividly illustrated in the China-Tajikistan shareholder liability case (Section 3), imposes significant transaction costs on cross-border economic activity. A centralized, multilingual platform compiling member states' core commercial laws, judicial precedents, and certified legal experts would reduce these costs and enhance the predictability of dispute outcomes. 3This platform operationalizes the "legal infrastructure" dimension of multifaceted governance, providing a public good that benefits all member states without requiring sovereignty concession.

5.3.2 Capacity Building: Strengthening Agency for Multifaceted Governance

The empirical analysis reveals a systematic expansion of stakeholder networks as disputes move from commercial to resource utilization contexts (Section 4.4). In resource disputes, social forces—communities, NGOs, media—emerge as "core initiators, definers, and drivers," yet the SCO's institutional toolkit remains predominantly state-centric. This mismatch between stakeholder complexity and institutional capacity constitutes a fundamental agency deficit. Addressing it requires investments in three complementary domains.

Recommendation 4: Enhance Judicial and Legal Professional Capacity in Member States. The high proportion of litigation in applicable law and resource disputes (100% and 92.9%) underscores the centrality of domestic judiciaries in the SCO's de facto dispute resolution ecosystem. Strengthening these institutions through regular judges' training programs, moot court competitions, and secondments would improve the quality and consistency of legal outcomes across the region.4 Such capacity building aligns with the "relational legitimacy" dimension of

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[1] The Model Rules would specify, for example, that disputes involving technical legal questions (such as applicable law) should default to domestic judicial processes, while commercial contract disputes may be channeled to arbitration if both parties so agree. Procedural timelines would be calibrated to dispute complexity: simple commercial claims (under $100,000) could be resolved within 90 days, while complex investment disputes might allow up to 18 months. These benchmarks are drawn from comparative analysis of CIETAC (China), ICAC (Russia), and UNCITRAL arbitration rules.

[2] A pilot phase (2026-2027) could involve China, Russia, and Kazakhstan, establishing a "Joint SCO Commercial Mediation Center" with rotating secretariat functions. Evaluation metrics would include case processing time, enforcement success rates, and user satisfaction surveys. The goal is to reduce the current reliance on extra-regional arbitration centers (e.g., Singapore, Stockholm) for intra-SCO commercial disputes.

[3] The platform's development would follow a phased approach: Phase 1 (2026) establishes a basic legal database covering core commercial laws of all member states; Phase 2 (2027-2028) adds a searchable case law repository and expert network; Phase 3 (2029-2030) introduces AI-assisted legal research tools. Expected outcomes include reducing foreign law ascertainment time from an average of 3-6 months to under 30 days, and cutting related costs by at least 50%.

[4] A concrete target: by 2030, establish an annual "SCO Judicial Training Program" hosted by the Shanghai

multifaceted governance, as sustained professional interaction fosters mutual trust and shared interpretive frameworks.

Recommendation 5: Formulate "SCO Guidelines on Corporate Social Responsibility and Community Communication." The Kemin Group case (Section 3) starkly illustrates the consequences of "social license to operate" loss: a dispute triggered by community grievances escalated into criminal prosecution, asset seizure, and diplomatic friction. Guidelines codifying best practices in environmental impact assessment, local hiring and procurement, transparent community consultation, and grievance mechanisms would help prevent such escalations.[5] These guidelines would operationalize the "prevention orientation" of SCO governance, shifting the center of gravity from post-hoc adjudication to ex-ante risk mitigation.

Recommendation 6: Build an "SCO Roster of Multifaceted Dispute Mediators." The absence of mediation mechanisms in commercial and investment disputes (Section 4.2) represents a missed opportunity for interest-based, relationship-preserving dispute resolution. A roster of pre-approved mediators—drawn from former senior officials, technical experts, and civil society representatives across member states—would provide a flexible, culturally attuned resource for facilitating dialogue in complex, multi-stakeholder conflicts.[6] This responds directly to the finding that "community" and "environment" co-occur weakly with "mediation" in resource dispute texts, indicating a gap between problem diagnosis and solution infrastructure.

5.3.3 Cooperation Expansion: Leveraging External Synergies and Domestic Innovations

The SCO does not operate in an institutional vacuum. Its dispute resolution mechanisms intersect with, and could be strengthened by, other regional and global frameworks. Moreover, innovations developed in domestic contexts—particularly China's experience with foreign law ascertainment and arbitration-friendly judicial review—could be scaled into regional public goods. This final dimension addresses the scope deficit identified in Section 4.2, where multilateral mechanisms appear exclusively in border disputes, leaving other domains under-integrated.

Recommendation 7: Promote Docking between the Belt and Road Initiative (BRI) and SCO Mechanisms. The BRI's extensive infrastructure investments in SCO member states generate disputes that currently fall outside any dedicated regional framework. Establishing a "BRI-SCO Legal Service Center" would create a dedicated channel for mediating investment and contract disputes arising from BRI projects, combining the BRI's development finance leverage with the SCO's political consultation infrastructure.[7]This institutional innovation responds to the finding

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Cooperation Organization Judicial Training Base (as designated by China), training at least 200 judges from all member states annually. The curriculum would cover international investment law, cross-border commercial dispute resolution, foreign law ascertainment techniques, and comparative constitutional law. Success would be measured through pre- and post-training assessments and participant satisfaction surveys.

[5] The guidelines would address the four conflict dimensions identified in the Kemin case: (1) Economic distribution: requiring transparent local hiring targets (e.g., 50% local workforce within three years of operation) and community development fund contributions; (2) Environmental impact: mandating independent environmental impact assessments and public disclosure of monitoring data; (3) Cultural rights: requiring consultation with indigenous and local communities regarding sacred sites and traditional livelihoods; (4) Governance: establishing community liaison officers and regular public meetings. Compliance would be voluntary but monitored through annual CSR reporting.

[6] The roster would comprise three categories: (a) former heads of state/government (20%)—for high-level political mediation; (b) international law and regional experts (40%)—for technical-legal facilitation; (c) civil society leaders and cultural mediators (40%)—for community-level dialogue. Mediators would be nominated by member states and approved by the SCO Secretariat, serving renewable three-year terms. A dedicated mediation fund, supported by member state contributions, would cover costs for qualifying disputes.

[7] The Center would be co-located with the SCO Secretariat in Beijing, with liaison offices in key investment destinations (Astana, Tashkent, Minsk). Its core functions would include: (a) providing legal information and advisory services to BRI project participants; (b) facilitating mediation of disputes before they escalate to

that "event-driven peaks" in issue agendas (Section 4.3) often stem from large-scale projects whose disputes exceed the capacity of existing mechanisms.

Recommendation 8: Establish an "SCO Rapid Crisis Response Mechanism." The 2021 Kyrgyzstan-Tajikistan border clashes (Section 3) exposed the SCO's limited capacity for real-time conflict management. A standing mechanism—comprising senior officials from member states, supported by the Secretary-General's office—could be activated within 72 hours of a crisis to facilitate communication, propose confidence-building measures, and coordinate humanitarian responses.8This mechanism would address the "response speed" deficit identified in Section 1.3, operationalizing the preventive diplomacy function that currently exists only in nascent form.

Recommendation 9: Transform "Chinese Experience" into Regional Public Goods. China's judicial innovations—particularly its mechanisms for foreign law ascertainment (e.g., the Shanghai Cooperation Organization Judicial Training Base's foreign law 查明 platform) and its arbitration-friendly judicial review standards—offer valuable templates for regional cooperation.9 Systematizing these experiences into shareable knowledge products (best practice guides, model procedures, training curricula) and offering them through SCO channels would accelerate institutional learning across member states without imposing one-size-fits-all solutions. This approach embodies the "gradual institutionalization" logic articulated in Section 5.2: building common rules from demonstrated practice rather than abstract principle.

5.3.4 Sequencing and Governance: A Realistic Pathway for Reform

The recommendations above vary in their political sensitivity, institutional complexity, and resource requirements. A realistic reform pathway would sequence them accordingly. Short-term (2026-2027) priorities should focus on capacity building and information sharing—areas where consensus is easiest to achieve and quick wins are possible: launching the foreign law platform, initiating judicial training programs, and formulating CSR guidelines. Medium-term (2028-2029) goals could include establishing the mediation roster and commercial arbitration network, building on the relationships and trust cultivated in earlier phases. Long-term (2030-2031) aspirations—such as the rapid crisis response mechanism and BRI-SCO docking—would require deeper institutional commitment but offer correspondingly greater payoffs in terms of regional stability and integration.

Throughout this process, governance should remain firmly grounded in the SCO's foundational principles: consensus-based decision-making, respect for sovereignty, and gradual institutionalization. The proposed reforms are not intended to transform the SCO into a judicial body, but to equip it with a richer toolkit for managing the diverse disputes that accompany deepening regional cooperation. In this sense, they represent an evolution, not a revolution—a

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arbitration or litigation; (c) maintaining a roster of BRI-experienced mediators and arbitrators; (d) collecting and analyzing dispute data to identify systemic risks. A pilot phase (2026-2028) would focus on transport and energy infrastructure projects, with expansion to other sectors thereafter.

[8] The mechanism's design draws on the ASEAN Regional Forum's crisis management protocols and the OSCE's Conflict Prevention Centre. Activation would require consent of the concerned member states but could also be triggered by the Secretary-General with support of at least two other members. Initial response would focus on information sharing and fact-finding; if the crisis persists, the mechanism could recommend mediation by a troika of former senior officials or refer the matter to the Council of Foreign Ministers.

[9] Key "Chinese experience" elements for regional diffusion include: (1) The "entrusted institution 查明" model for foreign law ascertainment, where courts delegate research to specialized academic centers; (2) The "arbitration-friendly" judicial review standards developed in cases like *Uzbekistan Art Mosaic v. Hongguan Company* (Section 3); (3) Online dispute resolution platforms pioneered in China's e-commerce courts; (4) The "mediation-first" approach to commercial disputes institutionalized in the China International Commercial Court. These could be adapted into SCO-wide guidelines through multi-stakeholder workshops and pilot projects.

pragmatic enhancement of the multifaceted governance framework that has sustained the SCO through two decades of expansion and challenge.

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Data Availability Statement

The corpus constructed for this study is derived from publicly available sources, including judgments published by the Supreme People's Court of China, mediation cases from the China Council for the Promotion of International Trade (CCPIT), and decisions from the Arbitration Courts of the Russian Federation, the Permanent Court of Arbitration (PCA), and the International Centre for Settlement of Investment Disputes (ICSID). All source documents are accessible through their respective official websites. The annotated dataset and analysis code are available from the corresponding author upon reasonable request.

Ethics statement

This article does not contain any studies with human participants performed by any of the authors.