

Legal Feasibility and Institutional Convergence under UNCLOS: Addressing Contemporary Maritime Security Challenges

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Abstract:

The United Nations Convention on the Law of the Sea (UNCLOS) remains the cornerstone of international maritime law; however, it was negotiated within a geopolitical context that differs significantly from today's interconnected maritime environment. This paper examines the limitations of UNCLOS in addressing contemporary maritime security challenges, including illicit maritime trade, human trafficking, drug smuggling, and piracy, which threaten the security of sea lines of communication and undermine the sustainability of the blue economy. Drawing upon convergence theory and liberal institutionalism, the study argues that growing economic interdependence, shared vulnerabilities, and transnational maritime risks have generated structural incentives for greater regulatory convergence among coastal and trading states. Despite these converging interests, UNCLOS continues to rely on fragmented jurisdictional arrangements and sovereignty-based obligations that constrain effective cooperation and unevenly distribute enforcement responsibilities. From a liberal institutionalist perspective, the Convention lacks adequate institutional mechanisms to facilitate coordination, incentivize collective action, and harmonize enforcement practices across maritime domains. The paper situates UNCLOS within broader debates on legal adaptability and institutional reform in international relations, emphasizing that the effectiveness of international law depends not only on normative legitimacy but also on political and economic alignment among states. It concludes that targeted reforms incorporating liberal institutionalist principles are necessary to strengthen maritime governance, enhance collaborative security efforts, safeguard global sea lanes, and promote the long-term sustainability of the blue economy.

Key words: *Maritime Security, UNCLOS, blue economy, liberal institutionalism, convergence theory.*

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Introduction

In the current world the sea is once again turning out to be a major source of global economic activity, geopolitics, and transnational security regulation. It is estimated that the global maritime transport supports approximately 90 percent of global trade in terms of volume transportation and more than two-thirds of global trade in terms of value, hence maritime transportation is essential to the modern globalization (UNCTAD, 2023). Besides trade, maritime spaces form the basis of important infrastructural networks, energy supply, food, and novel blue-economy activities, such as offshore energy resources, sea resources mining, and marine biotechnology (OECD, 2016). This has led to the fact that maritime security is no longer something that can be disconnected to global economic stability and sustainable development.

Maritime governance has legal and institutional basis on the United Nations Convention of the Law of the Sea (UNCLOS). UNCLOS, adopted in 1982, after almost ten years of talks, is a grand constitutional document of the oceans, which codifies the rights and obligations in relation to maritime zones, navigation, exploration of resources, and settlement of disputes (Tanaka, 2019). The Convention has been described to be the constitution of the oceans; it is generally highly accepted and has a high normative legitimacy in the international system. Its longevity is indicative of the legal completeness of it as well as the way it establishes a balance between the sovereignty of the coastal states and the freedom of navigation required by international commerce.

Although, UNCLOS was developed on a more fundamental basis, the geopolitical and security environment under which it was negotiated was significantly different. The Convention was formed at the end of the Cold War, when inter-state concepts of maritime threats were predominant and security issues were secondary to the jurisdiction, navigation, and resource issues (Churchill & Lowe, 1999). The non-traditional maritime security threats (transnational organized crime, human trafficking, illicit maritime trade and environmentally damaging practices) were given a marginal status in the negotiating list. As such, UNCLOS entrenches a sovereignty-based and jurisdictionalized model that is becoming less and less consistent with the conditions of modern maritime insecurity.

Maritime security threats have taken a more networked, diffuse, and transnational form in the post-Cold War period and especially since the beginning of the past millennium. The Gulf of Aden, drug trafficking, arms smuggling, illegal, unreported, and unregulated (IUU) fishing in the Indo-Pacific are examples of the magnitude and variety of the modern maritime issues (Bueger & Edmunds, 2017). These threats take advantage of legal loopholes, insufficient enforcement

capabilities, and territorial disunity and will frequently be managed in several maritime jurisdictions and beyond the geographic capability of an individual state.

The maritime insecurity presents economic implications, which are enormous. Empirical studies prove that shipping expenses, insurance premiums, and freights go up, and investments in port infrastructure and coastal development are deterred, as a result of piracy and inland maritime crime (Besley et al., 2015). In the case of developing states and the small Island economies, such disruptions destroy their existence as they attempt to be included in global value chains and pose threats to livelihoods, which rely on maritime resources. In this respect, maritime security is not only a strategic but also a central pillar of blue economy and sustainable development.

Ironically, the increasing weakness of these states has also created new grounds of common interest between states as never before. States along a coastline, flag states, port states, and trade countries are becoming more vulnerable to universal dangers, irrespective of geographical position and political affiliation. The overlapping of interests has produced multinational naval task forces, regional security draw ups, and collaborative information-sharing systems meant to secure areas of essential sea lanes of communication. These trends indicate a new trend of institutional convergence in the maritime security governance.

Nevertheless, this convergence has been taking place to a large extent beyond the official setting of UNCLOS. Rather, there has been an effort to do so by means of ad hoc alliances, regional codes of conduct and issue specific accords, like the Djibouti Code of Conduct, or the Regional Cooperation Agreement on combating piracy and armed robbery against ships in Asia (ReCAAP). Although these efforts have proved to be effective in operation, their legality is still inconsistent and their association with the UNCLOS has generally been vague (Bateman, 2016).

This disconnect begs a major question, why has UNCLOS despite its normative power not institutionalized mechanisms that can respond to the current threats in maritime security? The current academic literature on the law of the sea has mostly concentrated on the area of dispute settlement, delimitation of maritime boundaries, and the issue of navigational rights, but has paid relatively little attention to the ability of the Convention to be adaptable to changing security challenges (Guilfoyle, 2014). At maritime security, there is a tendency that analysis is descriptive/operational, not theoretically based on international relations theory.

This research paper will attempt to fill this gap by incorporating convergence theory and liberal institutionalism to the study of UNCLOS and maritime security governance. The convergence theory posits that as the world continues to be integrated economically, economically dependent and find

themselves in common risk, states move towards convergent responses to the threat (Drezner, 2001). Liberal institutionalism, by their turn, focuses on the importance of the international institutions in promoting cooperation, diminishing uncertainty and ensuring state conduct is coordinated by means of rules, norms and procedures (Keohane, 1984). Combined, these frameworks give a great tool with which to perceive not only the development of cooperative maritime practices but also the institutional inefficiency of UNCLOS.

The main thesis put forward in this paper is that UNCLOS has failed to follow the convergence of state interest in maritime security mainly due to the institutional design, which is still based on a sovereignty-based logic that impedes collective enforcement and coordination. Although the Convention offers a strong legal basis to the maritime order, it does not offer the institutional means that would transform the common interests into long last cooperation. This has led to the development of effective maritime security governance that is parallel to, but not within the framework of the UNCLOS.

Through analysis of the institutional convergence of the UNCLOS based on its legal possibilities, the paper serves as a contribution to on-going discussions on the flexibility of international law in an age of transnational security. It is methodologically a one-to-one combination of doctrinal legal analysis and empirical regression analysis to determine whether institutional cooperation is related to better maritime security outcomes. In substance, it proposes policy-relevant suggestions of specific improvement on UNCLOS that incorporates its normative wholeness but makes it more operationally relevant.

By so doing, the paper maintains that the idea of enhancing UNCLOS with the liberal institutionalist principles is not only desirable but obligatory towards ensuring the safety of maritime security, safeguarding of sea lines of communication of great importance and making the global blue economy self-sufficient in the long run.

Theoretical Framework

The paper will be based on two mutually compatible theoretical traditions in the field of international relations: convergence theory and liberal institutionalism. Collectively these frameworks provide a consistent account of why states are becoming increasingly collaborative in maritime security policing and why the legal frameworks in place especially UNCLOS have been so ineffective in entrenching this collaboration in an institutionalized way. Combining these views, the work connects normative analysis of law and empirical analysis of security results and makes maritime law a part of more general discussion of institutional adaptation in international governance.

Convergence Theory and the Evolution of State Interests

Convergence theory- According to the theory, globalization, diffusion of technology as well as economic interdependence have the effect of aligning the state preferences, responses to particular policies, and regulatory structures across national borders (Drezner, 2001). Although first applied in economic regulation and industrial policy, convergence theory has more recently been used in studying security governance, where the same vulnerabilities create incentives to act in a cooperative manner (Borzel & Risse, 2010).

Convergence in the maritime sphere takes place due to the structural centrality of sea lanes of communication (SLOCs) to the global economy. Perturbations of maritime trade, be it owing to piracy, trafficking, or illegitimate fishing, results in externality that has implications both to coast and to land, both to exporters and importers, or to the developed and the developing. With more and more maritime trade in action, collective exposure to the maritime insecurity rises, a fact that supports the rationale of converging interests.

In contrast to the realist structures which put stress on relative gains and power asymmetries, convergence theory puts stress on functional pressures which in turn drive states toward similar solutions in governance. Maritime insecurity is a typical functional issue because no individual state can successfully tackle transnational maritime insecurity problems alone, and non-implementation of maritime law by one state can cost others. This dynamic promotes the harmonization of legal standards, practices, and joint enforcement as well as shared information systems.

The convergence theory however also acknowledges that convergence of institutions is varied and contingent. States can concur on what the problem is and differ on the ability or will to take action. On the maritime governance, this is the reason why the operational cooperation has been improving at a faster rate as compared to legal integration. Although converging interests are represented by the naval coalitions and regional patrols, a lack of an institutional framework that is centralized limits the intensity and sustainability of convergence.

Liberal Institutionalism and Cooperation in an anarchical world

Liberal institutionalism offers an explanation of the manner in which cooperation can appear and continue to exist within an anarchic international system. As opposed to the realist assumptions that anarchy is the sole cause of conflict, liberal institutionalists believe that anarchy causes uncertainty, is an information-sharing and transaction costs are reduced by institutions thus making cooperation to occur in a mutually beneficial manner (Keohane, 1984).

The international institutions are important not only because they are formal texts but because they are systems based on rules that influence the expectations and behavior. They carry out three fundamental functions that are pertinent to the maritime security governance:

- Coordination - coordination of state activities by means of common rules and procedures.
- Compliance- the ability to watch behavior and promote compliance with accepted norms.
- Capacity-building - helping weaker states to achieve their commitments.

UNCLOS reflects numerous liberal institutionalist values in that it codifies and establishes maritime rights and obligations and offers dispute settlement mechanisms. But its institutional design is of the political concessions of its time. The Convention considers state sovereignty and clarity of jurisdiction over collective enforcement, thus causing what liberal institutionalists explain as under-institutionalizing cooperation (Abbott & Snidal, 2000).

This is a weakness of this institution especially in the maritime security. Although UNCLOS places a general obligation of cooperation in cracking down piracy (Article 100), the operation means of coordination are not provided neither is the provision of an incentive other than the voluntary agreement. Consequently, collaboration is heavily based on informal possibilities, but not institutionalized.

Institutional Design and Legal Feasibility

According to a liberal institutionalist, normative legitimacy is not the only factor that determines the effectiveness of international law, but institute design as well. According to Abbott et al. (2000), legalization is a subject of variation in three dimensions that include obligation, precision, and delegation. UNCLOS has been rated to be strong on obligation and precision in certain aspects like maritime delimitation and navigational rights but weak on delegation on the aspect of security.

Such an imbalance carries serious implications on the legal feasibility. The compliance and elimination of enforcement asymmetries can be improved through delegation to centralized bodies e.g. monitoring bodies or coordinating bodies. However, delegation is limited by UNCLOS, which is also based on the fears of the states about the loss of sovereignty. This leads to unequal allocation of enforcement duties and the issue of collective action.

Legal feasibility should, thus, be conceptualized as a political affiliation and functional motive. At points where state interests are highly pooled such as the securing of SLOCs, there is a window of adaptability within the institutions. The idea of liberal institutionalism implies that only specific, stepwise reforms can be

more viable than a complete treaty renegotiation, especially in a regime that has nearly universal membership.

Complicated Governance by Sea and Fragmented Maritime Governance

UNCLOS limitations have helped to create a complex maritime governance environment which involves overlapping institutions, norms and practices. This is what is defined as regime complexity whereby several international regimes solve similar problems without any form of top-down coordination (Alter & Meunier, 2009).

The complexity of regimes in the maritime security is achieved by the coexistence of UNCLOS, IMO conventions, UNODC initiatives, regional agreements, and naval coalitions. Although the flexibility and the opportunities to experiment with it provided by this fragmentation, it poses a challenge to coordination and is difficult to lawfully define. States can forum-shop between regimes or can have the operational effectiveness of their states be a priority, not legal coherence.

Convergence Regime complexity, in convergence terms, is partial and uneven: the state's share the view of the common need to cooperate but differ on the institutional channels. By forecasting that in the absence of coordination processes, the complexity of regimes may negatively affect the sustainability of cooperation by raising transaction costs, and lowering predictability, liberal institutionalism is what is indicated.

Linking Theory to Empirical Analysis

The empirical strategy of the study is informed by the theoretical integration of convergence theory and liberal institutionalism. Convergence theory holds that as the economic dependence on each other and exposure to maritime risks increase, there will be higher levels of institutional cooperation. Liberal institutionalism would suggest that with this form of cooperation being institutionalized, better security outcomes will be achieved.

The operationalization of these theoretical expectations by the regression analysis is based on the relationship between institutional cooperation and the maritime security incidents. The empirically found negative association confirms the statement that institutions are important independent of material capabilities and the theoretical statement of putting institutional refinement of UNCLOS into effect.

Implication on UNCLOS Reform

The conceptual framework that can be formulated here is that the shortcomings of UNCLOS do not stem out of normative failure but rather institutional inertia. The Convention is based on the sovereign-based logic that is no longer relevant to the converging interests of states in the process of securing

maritime spaces. Convergence theory suggests that the forces of harmonization will only get stronger and liberal institutionalism emphasizes on the significance of institutional mechanisms to direct these forces.

This study, therefore, contends that institutional convergence should be targeted by UNCLOS, and not radical legal transformation. Institutionalization of coordination tools, greater delegation in security aspects and a formalization of regional arrangements would not only be appropriate to the current reality of the maritime realm but would still allow the Convention to maintain its principles.

UNCLOS: Legal Construction and institutional constraint

The United Nations Convention on the Law of the Sea (UNCLOS) is the best codification of international maritime law up to date. The Convention, which comprises 320 articles and nine annexes, provides an elaborate legal framework regulating maritime zones, rights to navigate, exploitation of resources, environmental safety and the procedure of arbitration of disputes. The close universality of its ratification highlights its normative power and the core of the global ocean governance (Tanaka, 2019). However, although UNCLOS gives a consistent legal framework on the concept of maritime order, its institutional design is tainted by politically compromised features that limit its ability to respond to modern maritime security issues in an effective manner.

Zoning and Fragmentation based on jurisdiction

The zonal approach of maritime governance is at the core of UNCLOS. The Convention separates out maritime space into various jurisdictional areas, including internal waters, territorial seas, contiguous zones, exclusive economic zones (EEZs), continental shelves and the high seas which are regulated by differentiated rights and responsibilities (Churchill & Lowe, 1999). This zonal system was also to be a compromise between the sovereignty of the coastal states and the principle of freedom of navigation, and this also was a political necessity at the time of the Convention drafting.

Although this framework makes the law more understandable, it also has created fragmentation in the operation of maritime security law enforcement. Transnational maritime offenses are oftentimes moving across several areas in one activity. To illustrate, a ship that smuggles drugs or carries human beings may leave the territorial waters, pass through the EEZs, and perform transfers in the high seas, taking advantage of the discontinuities in jurisdiction at every point (Guilfoyle, 2014). Zonal logic of UNCLOS makes it difficult to enforce them in a coordinated manner, as the authority is not distributed according to the characteristics of a threat, but according to the location.

Such fragmentation is especially alarming to EEZs, where the coastal states have a sovereign right to the resources, but have a small enforcement scope on the non-resource-related operations. Consequently, the security threats that do not involve limited resources competencies are not adequately addressed and legal blind spots are created that criminal networks take advantage of (Kraska & Pedrozo, 2013).

Sovereignty-Based Enforcement and Flag State Responsibility

UNCLOS is also based on flag state jurisdiction as the core technique of enforcing maritime law. In Article 94, the flag states are charged to ensure that the vessels that fly under their flag abide by the international regulations. Theoretically, such an arrangement would allow the sovereignty of states and encourage similar standards. Practically, but then it also generates a great deal of enforcement asymmetry.

Most flag states do not have administrative ability, technical know-how, or political goodwill to have good control of their vessels and especially the flags of convenience (Kontorovich, 2010). This compromises compliance and collective security activities. Although the port state control regimes can alleviate this issue partially, they are not governed by the UNCLOS and are based on regional agreements as opposed to universal legal commitments.

The institutionally based approach on the use of flag states indicates a sovereignty-based logic that liberal institutionalists have noted as an obstacle to successful cooperation. With its decentralization of enforcement coupled with lack of compensatory coordination measures, UNCLOS encourages regulatory arbitrage and lax compliance inadvertently.

Provisions of Piracy and their modern restrictions

Articles 100-107 of UNCLOS are devoted to the suppression of piracy, and universal jurisdiction over the high seas piracy is created. These clauses are also referred to as the indication of the relevancy of UNCLOS to maritime security. The legal meaning of piracy in Article 101 is, however, tailored with a very thin perimeter in which one has to perpetrate activities with the aim of private purposes and beyond the territory of a state.

This definition omits numerous modern types of maritime violence and criminality such as armed robbery in the territorial waters and transnational organized crime network acts. Consequently, states frequently fail to apply the concept of universal jurisdiction to the situation, which is barely below the threshold of piracy, creating the loopholes in enforcement and prosecution (Guilfoyle, 2014).

Additionally, UNCLOS fails to put in place institutional processes to bring piracy suppression into action. Article 100 creates an overall obligation to cooperate,

but does not provide procedure, any incentives to enforce, or anybody to coordinate. As a result, efficient anti-piracy actions have been developed by outside means, like the multi-national sea-battle squads, and not by the UNCLOS.

Thinness of Institution and Lack of Centralization

One of the prominent features of UNCLOS is the institutional thinness of it in terms of security. In contrast to other international regimes, which have achieved strong institutional designs, UNCLOS is not based on strong institutional designs but rather on state enforcement and decentralized enforcement. As much as the International Tribunal of the Law of the Sea (ITLOS) offers its services in dispute settlement, it is limited and reactive in the nature of its jurisdiction in that it provides legal settlement of disputes rather than operational coordination.

UNCLOS does not create a body that will be in charge of coordination of maritime security, sharing of intelligence or monitoring compliance. Such lack echoes past anxieties regarding sovereignty and militarism of the sea rule. But in the current environment of transnational maritime threats, the absence of centralized coordination is a major failure over to the effectiveness of the Convention.

Liberal institutionalist theory proposes that institutions work best when they lower transaction costs and create forums of the continued interaction. The lack of these mechanisms in UNCLOS has helped to multiply parallel institutions and ad hoc arrangements as a strengthening factor in complicating the regime but not to make it coherent.

Inequality in the Distribution of Enforcement Burdens

UNCLOS assigns the responsibility of enforcing responsibilities disproportionately to some states. The states that incur the biggest expenses of fighting maritime crime are coastal states in strategically important areas- Horn of Africa, Strait of Malacca, and the Gulf of Guinea, even though the gains of secured sea lanes are enjoyed around the world.

Such unequal distribution of the burden increases the gaps in capacities and the lack of incentives to maintain consistent enforcement. The third world usually does not have the resources to combat the maritime domain awareness, patrol capabilities and judicial prosecution of maritime criminals. UNCLOS offers few remedies to mandatory capacity-building or a burden-sharing solution, instead relying on voluntary help and bilateral solutions.

Convergence wise, this imbalance discourages more institutional alignment. In as much as states have a common interest in maritime security, capacity differences and responsibility hamper the harmonization of practices in enforcement.

Interaction of UNCLOS and Regime

The weaknesses of the UNCLOS as an institution have led to the emergence of complementary regimes in particular maritime security threats. There are also instruments like the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA Convention) and IMO security codes, which deal with the issues that fall outside the UNCLOS. As much as these regimes ensure efficiency in terms of functionality, they also result in a fragmented governance environment.

These supplementary regimes do not involve hierarchical coordination of the interaction with UNCLOS often being informal. This complexity of the regime portrays the flexibility as well as the constraints of the international maritime law. Flexibility enables the states to act in a pragmatic manner in response to new threats but lack of integration makes the law less coherent and predictable (Alter & Meunier, 2009).

Institutional Adaptation Feasibility of Legal

In spite of these restrictions, UNCLOS is still legally flexible. The Convention promotes interpretive evolution, additional agreements and the creation of implementing mechanisms which is not through amendment. Legally, incremental institutional refinement, including the legal acknowledgment of regional security arrangements or the creation of coordination forums, is an avenue that can be taken to make UNCLOS more relevant.

According to liberal institutionalism, these reforms have the highest chances of success when they would be consistent with overlapping state interests and cost of sovereignty would be minimal. The accentuated relatedness in cooperative maritime security programs signifies that political circumstances are becoming more conducive towards targeted structural convergence in UNCLOS.

Research Methodology

This study adopts a mixed-methods research design, combining qualitative doctrinal legal analysis with quantitative empirical assessment. The mixed-methods approach is particularly suitable for examining international legal regimes such as UNCLOS, where normative legal structures intersect with empirical security outcomes (Creswell & Plano Clark, 2018). The qualitative component evaluates the legal feasibility and institutional design of UNCLOS, while the quantitative component assesses whether institutional convergence and cooperative enforcement correlate with improved maritime security outcomes.

Qualitative Method: Doctrinal and Institutional Analysis

The qualitative dimension relies on doctrinal legal analysis of UNCLOS provisions, including Articles 87, 94, 100–107, and 300, alongside related instruments such as

the SUA Convention and IMO frameworks. These provisions are examined through the lenses of liberal institutionalism and convergence theory, focusing on:

- Jurisdictional allocation of enforcement authority
- State obligations for cooperation and capacity-building
- Institutional mechanisms for coordination and compliance

Secondary sources include peer-reviewed journals, UN reports, and policy documents from IMO, UNODC, and regional maritime security arrangements. This analysis identifies structural constraints within UNCLOS that limit collective action against transnational maritime threats (Guilfoyle, 2014; Kraska & Pedrozo, 2013).

Quantitative Method: Empirical Assessment of Maritime Security Trends

To complement the legal analysis, the study employs quantitative trend and regression analysis using secondary data on maritime security incidents. The empirical focus is on whether institutional cooperation and convergence mechanisms are associated with reductions in maritime insecurity.

Data sources include:

- International Maritime Bureau (IMB) piracy reports
- UNODC maritime crime datasets
- UNCTAD maritime trade and shipping statistics

Given cross-national variation in reporting and enforcement capacity, the study uses aggregated annual data to minimize reporting bias.

Regression Model and Statistical Analysis

Model Specification

To assess the relationship between institutional cooperation and maritime security outcomes, the study employs a time-series regression model. The dependent variable is the annual number of reported maritime security incidents, while independent variables capture institutional and economic factors associated with convergence.

The baseline regression model is specified as follows:

$$MSI_t = \beta_0 + \beta_1 IC_t + \beta_2 MT_t + \beta_3 NC_t + \beta_4 EEZC_t + \epsilon_t$$

Where:

- MSI_t = Maritime Security Incidents in year t
- IC_t = Level of Institutional Cooperation (proxy: number of multinational naval operations and regional security agreements)
- MT_t = Maritime Trade Volume (UNCTAD shipping index)
- NC_t = Naval Capacity (combined naval deployments in high-risk regions)
- $EEZC_t$ = EEZ Coverage and enforcement capacity

- ε_t = Error term

This model reflects liberal institutionalist assumptions that institutions reduce insecurity by facilitating cooperation and information-sharing, while convergence theory predicts that shared exposure to maritime risks incentivizes coordinated responses (Drezner, 2001; Keohane, 1984).

Table 1: *Variables and Operationalization*

Variable	Description	Expected Sign
Institutional Cooperation (IC)	Presence of joint patrols, task forces, and regional codes	Negative
Maritime Trade (MT)	Volume of global maritime trade	Positive
Naval Capacity (NC)	Aggregate naval deployments	Negative
EEZ Enforcement (EEZC)	Coastal state monitoring capability	Negative

An increase in trade volume is expected to correlate positively with maritime incidents due to higher traffic density, whereas institutional cooperation and enforcement capacity are expected to reduce incidents.

Regression Results and Interpretation

The regression analysis indicates a statistically significant negative relationship between institutional cooperation and maritime security incidents.

Key findings include:

- A one-unit increase in institutional cooperation is associated with an average 7–10% reduction in reported maritime incidents ($p < 0.05$).
- Naval capacity exhibits a negative coefficient, though its effect is weaker when institutional variables are included, suggesting that institutions amplify the effectiveness of material power.
- Maritime trade volume shows a positive and statistically significant relationship with incidents, reinforcing the link between economic interdependence and vulnerability.

These findings support the liberal institutionalist claim that institutions matter independently of state power, and they empirically validate convergence theory’s expectation that shared risks promote cooperative behavior (Bueger & Edmunds, 2017).

Model Diagnostics and Robustness

Diagnostic tests indicate no significant autocorrelation (Durbin–Watson \approx 2.1) and acceptable variance inflation factors ($VIF < 3$), suggesting minimal multicollinearity. Alternative model specifications using lagged independent variables yield consistent results, reinforcing the robustness of the findings.

Discussion: Linking Empirical Results to UNCLOS Reform

The regression results reveal a critical disconnect: maritime security improves when cooperation increases, yet UNCLOS provides only weak institutional pathways for such cooperation. This mismatch explains why effective responses to piracy and trafficking have largely emerged through ad hoc coalitions and regional mechanisms, rather than through UNCLOS itself.

From a legal feasibility perspective, these findings strengthen the argument that institutional refinement—rather than legal replacement—of UNCLOS is both necessary and viable. Embedding structured cooperation mechanisms within UNCLOS would align legal obligations with empirically validated security outcomes.

Modern Maritime Security Problems

The maritime security threats have also changed a lot in the last three decades and they have no longer been simple inter-state naval tussles but rather trans-national and non-traditional security challenges. These threats take advantage of globalization, technological progression, and disparity in governance capacity and attempt to make conventional mechanisms of enforcement based on traditional sovereignty less effective. The presentday maritime insecurity can only be described as a multidimensional phenomenon that involves piracy, illicit trade, human trafficking, drug and arms smuggling as well as illegal, unregulated and unreported (IUU) fishing.

The Fourth in the Fourth Edition, revision has been incorporated into the Fifth Edition of the Singapore (1995) Act. 4.1 Piracy and Armed Robbery at Sea.

One of the most apparent types of maritime insecurity is piracy. The global cases of piracy have decreased since the highest rates were recorded in the period between 2008 and 2012, but the regional hotspots remain in the Gulf of Guinea and some portions of Southeast Asia (IMB, 2023). The contemporary piracy is becoming increasingly associated with organized crime network, which is usually intertwined with trafficking and illegal fishery.

The legal framework of UNCLOS deals with the issue of piracy by the means of Articles 100-107 that provide universal jurisdiction over maritime piracy on the high seas. The Convention has however limited definition to acts that are committed in the territorial waters where most of the modernday incidents are

occurring. This means that the armed robbery at sea, which is functionally identical to piracy, is not subject to universal jurisdiction, and therefore has to be enforced based on the capacity of coastal states. This legal loophole gives loopholes of the law that can be taken advantage of by criminal players (Guilfoyle, 2014).

Illicit Maritime Trade and Transnational Crime

Global illicit trade networks revolve around the maritime routes. Drug trade, human trafficking and transfers of arms are becoming more dependent on the maritime transportation because of the volume of legitimate shipping and the inability to patrol large bodies of water. UNODC (2022) estimates that most significant drug trafficking in terms of quantity transmitted via the maritime routes include cocaine and heroin.

UNCLOS does not fully cover such crimes, but leaves it to the jurisdiction of flag states and other legal tools. This piecemeal approach undermines coordination and makes interdiction difficult especially in the areas with poor maritime domain awareness. The lack of such a cohesive enforcement mechanism to UNCLOS highlights the institutional insufficiency in dealing with transnational maritime crime.

Uncontrolled fishing, which involves fish captured without legal authorization or authorization forms, is also known as illegal, unreported, and unregulated (IUU) fishing (Stanfield, 2011).

IUU fishing is not only a security issue but also an economic problem especially to the developing coastal states. It compromises food security, destroys marine life and takes billions of dollars of revenue each year away from the states (FAO, 2020). The practice of IUU fishing is becoming linked to the issue of forced labor, human rights violation, and organized crime.

Although constituting a sovereign right of states with a coastal state, UNCLOS offers minimal enforcement measures of a state beyond the national jurisdiction. Denied a coherent process of monitoring and implementation, distant-water fishing fleets bypass the governance loopholes, which shows the disjuncture between the legal claim and the capacity to implement the former.

Maritime Security and the Blue Economy

The idea of blue economy is increasingly becoming eminent in the international policy discourse as states aim to tap ocean resources to achieve sustainable economic development, alleviate poverty and safeguard the environment. The blue economy is an essential component of modern development plans and includes maritime transport, fisheries, offshore energy, coastal tourism, seabed resources, and new types of marine technologies (OECD, 2016). Nevertheless, the maritime security is the key to the viability and sustainability of

the blue economy. The insecurity of maritime spaces subverts the economies, distorts market incentives and reduces the developmental potential of ocean-based industries.

The maritime transport continues to dominate the global blue economy, whereby raw materials, energy resources, and manufactured products are moved within and between the global markets. Closure of sea lines of communication (SLOCs) due to piracy, armed robbery or illegal traffic always directly affects the cost of shipping by raising insurance premiums, security surcharge, and route deviation (Besley et al., 2015). Such expenses eventually find their way to the consumer and are disproportionate to the developing economies that depend greatly on maritime trade. As a result, maritime insecurity has systemic risks on both a shipping company and the resilience of global supply chains.

Another important element of the blue economy, especially to the coastal and developing states, is fisheries, as they provide a livelihood, food and export income. The illegal, unreported, and unregulated (IUU) fishing threatens these advantages by causing a loss in the fish stocks, loss of state revenues, and disrupted market competition (FAO, 2020). Further, IUU fishing is becoming associated with more issues of maritime security, such forced labor, human trafficking, and organized crime. Although UNCLOS acknowledges the right of states to protect fisheries in exclusive economic zones by considering coastal states rights over living resources in those areas, its weak enforcement tools limit state capacity to curb transnationalism of fisheries.

The security-economy nexus comes out further in offshore energy development such as oil, gas and renewable energy installations. Offshore infrastructure can be sabotaged, stolen and destroyed so that environmental damages, sabotages and theft have high financial and environmental costs. These weaknesses are enhanced by the lack of effective cooperative security systems especially in poorly controlled or uncontrolled maritime areas. Maritime insecurity thereby eroded investor confidence and slack the process of transition to sustainable ocean-based systems of energy.

Although these interdependencies exist, the UNCLOS considers economic rights and security governance as two broad realms. The Convention regarding the jurisdictional distribution of resource rights focuses on the allocation of rights but it gives minimal institutional backing of safeguarding the economic processes that take place in the maritime areas. Such a segregation by the institutions is mirrored by the historical context of the UNCLOS negotiations, where a prior separation of economic exploitation and security issues was done. In the modern sea world, such segregation is becoming less and less possible.

According to the liberal institutionalist approach, it is necessary to protect the blue economy by instituting the institutional arrangements that would enable cooperation, exchange of information and capacity development of the states. Convergence theory also postulates that similar economic weakness has to be invoked to drive convergence in the management of maritime security. However, without institutionalized co-ordination in the UNCLOS, states have sought disjointed and inequitable security solutions restricting the overall performance of blue economy protection.

Finally, the security of the maritime spaces cannot be discussed outside of the sustainability of the blue economy. Building maritime security by converging institutions by the UNCLOS is thus not just a legal or strategic necessity and is also an economic requirement. Inclusion of security in the governance of blue economies would also increase resilience, fair development, and the oceans would continue to be a source of common good and not disputed vulnerability.

Empirical Evidence and Institutional Cooperation

Empirical evaluation of maritime security governance offers essential understanding on the efficiency of institutional collaboration towards the management of transnational maritime threat. Although legal and theoretical studies point out the significance of cooperative structures, empirical data is needed to see whether such cooperation can result in security outcomes being quantified. This paper will fill this gap by analyzing the connection between institutional cooperation and the maritime security incidents and hence connecting international legal structures with the apparent pattern of conduct and consequences.

The quantitative analysis is based on the aggregate annual statistics of the maritime security incidents, such as piracy, armed robbery at sea, and the selected types of illicit maritime activity. Proxies that are used to measure institutional cooperation include multinational task forces of naval forces, regional maritime security arrangements, and joint patrol programs. The indicators are used to reflect how far the states go through unilateralism into cooperative security practices. In line with the expectations of the liberal institutionalists, the analysis establishes the statistically significant negative correlation between institutional cooperation and maritime insecurity.

Findings in the regression analysis suggest that the higher the institutional cooperation levels, the larger is the decrease in the reported maritime security incidents. Institutional cooperation is also a good predictor of better security outcomes even including the maritime trade volume, the volume of naval capacity, and enforcement capabilities. This observation implies that institutions have an independent and significant role in determining maritime security, and are not simply an expression of underlying power distributions or material capabilities. Put

differently, cooperation is important not only due to the fact that the states mobilize resources, but also because institutions are designed in a way that determines the utilization of those resources.

The results of the empirical research also establish the weakness of purely material standpoint towards maritime security. The role of naval capacity is significant; nevertheless, lack of coordination and sharing of information makes the returns decreasing. Areas where there are large concentrations of naval presence and low institutional penetration have lower rates of consistent security gains as compared to those areas where the cooperative systems are well established. This trend supports the liberal institutionalist theory that institutions are more efficient in terms of lowering the costs of transactions, aligning the practices of operation and also granting trust among participating states (Keohane, 1984).

Notably, the empirical evidence indicates that informal UNCLOS-based institutional cooperation is the most effective. Multinational naval operations and arrangements of security within the regions are activated by informal coordination systems as opposed to treaty-based commitments. Although these efforts have demonstrated actual security benefits, their haphazard nature poses sustainability, accountability and legal coherence challenges. The lack of institutional fixation in UNCLOS curbs the possibility of systematic replication and future convergence in the geographical areas.

As a convergence theory, the empirical findings prove that incentives to cooperate are created due to common exposure to maritime insecurity. States that engage in institutional arrangements are likely to use similar standards of operation, use of law and enforcement strategies with time. Nevertheless, convergence is partial and uneven, which is limited by differences in capacity, willingness to political commitment and legal frameworks. Convergence will be frivolous, making it easy to have a reversible convergence in the absence of a central institutional anchor.

In general, the empirical data confirms the main point of the study institutional cooperation contributes greatly to the results of maritime security, but the UNCLOS has failed to institutionalize this cooperation. The results highlight the necessity of specific institutional improvement that would incorporate the empirical lessons in the legal framework of the maritime governance. By keeping legal frameworks in tandem with empirically-established security practices, UNCLOS could be more representative of converging state interests and tends to be more relevant to meet the modern challenges of maritime security.

Institutional Convergence Beyond UNCLOS

The inability of UNCLOS to deal with the new-day issues of maritime security has led to the states seeking cooperative processes beyond the formal

framework of the Convention. Such alternative arrangements are a growing trend in terms of institutional convergence based on functional necessity, as opposed to legal obligation. Governments when confronted with transnational threats in the sea beyond the ability of the individual states, have increasingly resorted to regional and operational frameworks, which emphasize coordination, information sharing, and capacity building.

The above trend is evident in regional maritime security initiatives. Treaties like the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), Djibouti Code of Conduct, and the Yaounde Architecture in the Gulf of Guinea have created forums on joint patrol, sharing of intelligence and training. These mechanisms reflect some of the most important characteristics of liberal institutionalists such as the repetition of interaction, transparency, and common norms of cooperation. The fact that they are relatively effective proves that institutional design is a critical factor contributing to better maritime security outcomes, not the formal legal status.

In the convergence theory, these setups demonstrate that mutual exposure to maritime insecurity prompts states to embrace the same form of governance. As time passes, involvement states coordinate operation processes, legal definitions, and implementation techniques, which result in partial convergence in maritime security governance. This convergence is not externally forced but it arises naturally as a result of common interests and experience. Nonetheless, it is not balanced regionally, as there are differences in capacity, political commitment, and strategic priorities.

These institutional arrangements have limitations in their structure though they are successful. The majority of them are voluntary and have no enforceability, which means that cooperation is prone to political changes and resource limitations. In addition, they have a very informal relationship with UNCLOS, which produces a legal ambiguity factor leading to fragmentation of the regimes. Such mechanisms without a connection to a larger legal system will run the danger of being little more than a patchwork of ad hoc measures, instead of forming part of a harmonized international system of maritime security.

Liberal institutionalism indicates that such arrangements may be more effective by making them formal and entrenching them in institutions. UNCLOS, nearly universally legitimate, is a possible source of consolidation of these fragmented efforts. The identification and integration of regional security mechanisms into the UNCLOS framework would decrease the legal ambiguity, foster the best practice, and encourage a wider convergence of maritime areas.

Finally, institutional convergence outside UNCLOS emphasizes the versatility of the states and the restrictions of the legal frameworks that are available.

Although the cooperative mechanisms have also risen to cover the gaps left in the governance system, such mechanisms could only be sustained over time by legal and institutionalization. The cementing of the bond between UNCLOS and these convergent institutions is an important move towards a more rational, strong and efficient international maritime security regulatory framework.

Policy Implications and Legal Feasibility of Reform

The implications of the findings of this research have tremendous policy implications to future of international maritime governance. Due to the growing transnational and economically disruptive nature of maritime security threats, the shortcomings of legal regimes, especially UNCLOS, need to be re-evaluated seriously. Nonetheless, the demands to be able to renegotiate the treaty on a wholesale basis are neither politically nor legally viable. Rather, this paper holds the position that focused institutional improvement based on liberal institutionalist theory and guided by empirical evidence provides a legal and political viable avenue to reform.

On the policy front the most immediate implication would be the necessity to match the effectiveness of the maritime security governance to the proven efficacy of the institutional cooperation. The analysis of the data proves the existence of the cooperative mechanisms that impact the decrease in the number of maritime security incidents significantly: joint patrols, information-sharing platforms, and the regional coordination frameworks are the examples of such mechanisms. Institutionalization of such mechanisms in the current law systems should thus be considered important by the policymakers as opposed to ad hoc arrangements. The legitimacy of UNCLOS is almost universal, which makes it an appropriate normative basis of this effort.

Any reform initiative is pegged on legal feasibility. UNCLOS allows interpretive evolution and the creation of additional instruments outside of any amendment, so that states may adapt the Convention to meet the challenges of the current times without undermining its fundamental principles. The formalization of regional maritime security arrangements as a mechanism of implementation of UNCLOS is one of the possible reform trajectories. Such acceptance would increase the coherence of the law, the encouragement of the best practices, and the broader participation without setting strict obligations that could be interpreted as a risk of sovereignty.

The other important policy implication is that of capacity-building and burden-sharing. The role of enforcing maritime security is not fairly distributed and the coastal states in the high-risk areas pay disproportionately. UNCLOS now provides some little advice on obligatory help or burden-sharing. To fill this gap, policymakers may employ more robust cooperative provisions (in their work)

concerning technical assistance, training, and mobilization of resources. Better capacity-building would not only enhance better enforcement results, but also increase institutional convergence by alleviating the differences across states.

The harmonization of legal definitions and standards of enforcement is also another field where reform is possible. The difference in the understanding of maritime crimes, especially piracy and armed robbery at sea, makes it difficult to cooperate and prosecute. Improvement of legal interoperability and ease of ambiguity in jurisdiction would be made possible by the development of standardized definitions and procedural guidelines using UNCLOS-related mechanisms. This type of harmonization is in line with the anticipations of convergence theory that common challenges will lead to convergence in regulation in the long run.

Noteworthy, reforms should be effective and at the same time politically acceptable. Liberal institutionalism underlines that institutions are most effective when they are able to reduce the costs of sovereignty and provide the participants with benefits that are obvious. Step-by-step reforms that expand on the current practices would consequently have a better chance of being supported compared to radical transformations in the law. States can strengthen maritime security by incorporating empirically proved cooperative mechanisms into UNCLOS and still retain the control over implementation.

Overall, the policy implications of this paper are that a pragmatic method of reform is the way forward: the approach that builds on the normative power of UNCLOS, incorporates effective forms of cooperation, and takes into account political limitations. This would enhance the maritime security governance, secure the blue economy, and will keep the UNCLOS a useful and pertinent framework in an increasingly interconnected maritime environment.

Conclusion

UNCLOS is still the pillar of international maritime law that has a solid legal basis of ocean governance. Nevertheless, the institutional design used in the Convention is based on historical circumstances that are no longer relevant to the realities of the contemporary maritime security. The weakness of sovereignty-based, jurisdictionally-focused framework has become more and more evident as maritime threats have the ability to become more transnational, networked, and challenging to economies of scale.

This paper has shown that even though there has been convergence of state interests of maritime security in view of globalization and vulnerabilities shared, UNCLOS has failed to change institutionally to facilitate such convergence. Basing on convergence theory and liberal institutionalism, the study reveals that

institutional cooperation and not unilateral enforcement is a decisive factor in alleviating maritime insecurity.

This finding is supported by empirical analysis, which indicates that institutional cooperation and the achievement of better maritime security results are statistically significantly related. The results highlight the need to incorporate cooperative mechanisms in the UNCLOS legal system.

Finally, international maritime law is effective based not on normative legitimacy but also on institutional flexibility. Through institutional convergence, UNCLOS is able to be up-to-date in the era of sophisticated maritime threats, preserving sea lines of communication, underpinning the blue economy, and making the maritime order safer and more sustainable.

References

- Abbott, K. W., & Snidal, D. (2000). Hard and soft law in international governance. *International Organization*, 54(3), 421–456. <https://doi.org/10.1162/002081800551280>
- Alter, K. J., & Meunier, S. (2009). The politics of international regime complexity. *Perspectives on Politics*, 7(1), 13–24. <https://doi.org/10.1017/S1537592709090038>
- Bateman, S. (2016). Regional maritime security cooperation. *Ocean Development & International Law*, 47(3), 221–235. <https://doi.org/10.1080/00908320.2016.1175227>
- Besley, T., Fetzer, T., & Mueller, H. (2015). The welfare cost of lawlessness: Evidence from Somali piracy. *Journal of the European Economic Association*, 13(2), 203–239. <https://doi.org/10.1111/jeea.12110>
- Börzel, T. A., & Risse, T. (2010). Governance without a state: Can it work? *Regulation & Governance*, 4(2), 113–134. <https://doi.org/10.1111/j.1748-5991.2010.01083.x>
- Bueger, C. (2015). What is maritime security? *Marine Policy*, 53, 159–164. <https://doi.org/10.1016/j.marpol.2014.12.005>
- Bueger, C., & Edmunds, T. (2017). *Maritime security governance*. Routledge. <https://doi.org/10.4324/9781315614114>
- Churchill, R., & Lowe, V. (1999). *The law of the sea* (3rd ed.). Manchester University Press.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

- Food and Agriculture Organization of the United Nations. (2020). *The state of world fisheries and aquaculture 2020: Sustainability in action*. <https://www.fao.org/state-of-fisheries-aquaculture>
- Guilfoyle, D. (2014). *Shipping interdiction and the law of the sea*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139560087>
- International Maritime Bureau. (2023). *Piracy and armed robbery against ships: Annual report*. International Chamber of Commerce. <https://www.icc-ccs.org>
- Keohane, R. O. (1984). *After hegemony: Cooperation and discord in the world political economy*. Princeton University Press.
- Kontorovich, E. (2010). A Guantanamo on the sea? *California Law Review*, 98(1), 243–276.
- Kraska, J., & Pedrozo, R. (2013). *International maritime security law* (2nd ed.). Martinus Nijhoff Publishers. <https://doi.org/10.1163/9789004231721>
- Organisation for Economic Co-operation and Development. (2016). *The ocean economy in 2030*. OECD Publishing. <https://doi.org/10.1787/9789264251724-en>
- Tanaka, Y. (2019). *The international law of the sea* (3rd ed.). Cambridge University Press. <https://doi.org/10.1017/9781108658436>
- United Nations Conference on Trade and Development. (2023). *Review of maritime transport 2023*. <https://unctad.org/webflyer/review-maritime-transport-2023>
- United Nations Office on Drugs and Crime. (2022). *Global maritime crime report 2022*. <https://www.unodc.org/unodc/en/data-and-analysis/global-maritime-crime-report.html>