

Research on the Coordination of Intellectual Property Legal Norms in Global Trade

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Abstract: Against the backdrop of deepening global economic integration, the position of intellectual property as a core competitiveness is increasingly prominent. However, due to differences in legal systems, economic development levels, and value orientations among countries, intellectual property protection faces serious conflicts and fragmentation issues in international trade. This article aims to explore the coordination mechanism of intellectual property legal norms under the global trade framework, analyze the effectiveness and limitations of current international conventions, and dissect the deep-seated contradictions between developed and developing economies in terms of rights protection and public interest balance. The article proposes that future legal coordination should be based on respecting the diversity of sovereignty, constructing a fairer and more inclusive international rule system, and promoting the stability of the global trade order and the sustainability of innovation-driven development through the benign interaction between multilateral platforms and regional agreements.

Keywords: Intellectual property; Global trade; Legal coordination; Rule system

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1. Introduction

Under the wave of economic globalization and digital transformation, intellectual property has risen to the strategic high ground of global trade competition. However, the heterogeneity of legal systems in various countries and the imbalance of protection standards have led to increasingly severe fragmentation of rules in international trade, restricting the free flow of innovative elements. This article is based on a global governance perspective and aims to explore the coordination path of intellectual property legal norms. By analyzing the operational effectiveness of the current multilateral system, deeply dissecting the leading role of regional trade agreements in institutional innovation, and systematically analyzing the legal lag caused by technological changes and the deep conflicts in the North South economic and trade game, we strive to provide legal support and practical guidance for building a more fair and inclusive new global intellectual property protection order.

2. The practical reasons for the coordination of intellectual property laws in global trade

In the context of deep integration of the globalized economic system, intellectual property has become a core element and intangible asset pillar of international trade. However, due to significant differences in protection standards, rights definition, and relief mechanisms among legal systems in various countries, legal conflicts frequently occur in cross-border trade, increasing compliance costs and market access barriers for enterprises ^[1]. This fragmented legal situation not only restricts the free flow of technological achievements, but also easily triggers the rise of trade protectionism. Therefore, promoting the coordination of intellectual property legal norms globally aims to establish a unified system of rules and discourse, eliminate institutional frictions, provide necessary foresight and legal certainty for international trade, and ensure the stable operation of global supply chains and the sustainability of innovation driven development.

3. Existing models and limitations of the international intellectual property protection framework

The current international intellectual property coordination mainly relies on the standardized framework under the multilateral trading system, which enforces legal obligations on member states by setting minimum protection thresholds. This model has played a significant role in enhancing global protection awareness and strengthening law enforcement, laying a legal foundation for international technology trade ^[2]. That said, its limitations are also becoming increasingly apparent, mainly manifested as the contradiction between unified standards and uneven development stages among countries. Some high-standard rule settings often fail to fully consider the industrial capacity of developing economies, resulting in an imbalance between excessive expansion of rights and protection of public interests in areas such as drug patents and biological genetic resources. This singular path also reveals a lack of flexibility in the face of emerging digital trade challenges, and there is an urgent need for more inclusive mechanisms to supplement it ^[3].

4. Deep evolution and mechanism expansion of regional trade agreements in intellectual property legal coordination

In the contemporary international economic and trade landscape, regional trade agreements (RTAs) have gradually surpassed their simple function of tariff concessions and evolved into a key battlefield for global coordination of intellectual property legal norms. The rise of this coordination model is essentially the inevitable product of countries seeking more targeted and efficient rule protection in the context of the long negotiation cycle and increased difficulty in reaching consensus in the multilateral system. By reaching higher standards of protection agreements within specific regions, members can delve into and address complex legal application issues in cutting-edge fields such as digital copyright, exclusive rights to pharmaceutical patent data, and cross-recognition of geographical indications. Especially in terms of the deep integration of technical standards and legal norms, the regional coordination mechanism has demonstrated strong institutional adaptability ^[4]. By cross-checking industry access technical parameters with compulsory intellectual property licensing procedures, it significantly enhances the transparency of high-tech industries' rights in cross-border trade.

This coordination is not only a static docking at the level of articles, but also solves the procedural obstacles faced by developing members in fulfilling high-standard obligations through the establishment of joint technical

review committees and legal mutual assistance funds, thereby preventing trade barriers caused by technical barriers at the institutional source. This multidimensional interactive model extends intellectual property protection from a single legal framework to a strategic level of coordinated industrial development, providing a valuable legal paradigm for the flexible handling of global trade rules. This “bottom-up” coordination path not only significantly exceeds the minimum protection threshold of traditional multilateral conventions in substantive provisions, but also achieves significant institutional breakthroughs in deep cooperation in administrative law enforcement, mutual recognition mechanism of judicial evidence, and flexibility in dispute resolution^[5]. This deep legal integration can effectively eliminate the hidden institutional barriers formed between member parties due to differences in industrial structure and legal traditions, significantly reduce the institutional compliance costs of multinational enterprises, and provide a highly predictable legal environment for the free flow of technological achievements and optimized capital allocation in the region. At the practical level, regional legal coordination emphasizes more on “precise governance” by refining regulations on intellectual property protection for specific industries, so that legal provisions can more directly serve the industrial upgrading needs of member parties.

From the perspective of deep cooperation mechanisms, regional trade agreements greatly enhance the enforcement effectiveness of intellectual property norms by constructing a legal loop of “institutional reciprocity”. This mechanism is not only limited to legislative convergence, but also solves the stubborn problems of difficult evidence identification and inconsistent legal application in cross jurisdictional rights protection by establishing cross-border administrative supervision linkage and specialized judicial talent exchange^[6]. In this collaborative model, the legal mutual trust between member parties is transformed into quantifiable law enforcement efficiency, which is achieved through the establishment of joint inspections, customs intelligence sharing, and dispute resolution channels, forming a tight coverage of cross-border infringement behavior. This transformation from “static text coordination” to “dynamic law enforcement linkage” not only provides multi-dimensional relief options for innovation entities within the region, but also provides an important reference dimension for the evaluation system of intellectual property law enforcement effectiveness on a global scale, thereby consolidating the legal foundation of the global trade order at the micro level.

In addition, regional trade agreements increasingly focus on procedural innovation and rule spillover effects in dispute resolution mechanisms when coordinating legal norms. Compared with traditional multilateral mechanisms, arbitration and mediation procedures within the region place more emphasis on timeliness and professional depth. By introducing expert review groups and temporary preservation measures, the risk of technological depreciation caused by long litigation cycles is effectively prevented. Especially in the coordination process of digital trade rules, regional agreements have filled the institutional gap in traditional international law regarding the confirmation of virtual space ownership by refining the standards for the acceptance of electronic evidence, establishing boundaries between algorithm protection and anti-monopoly regulation. This institutional innovation not only enhances the cross-border operational security of data-driven enterprises, but also promotes deep consensus among members in the construction of e-government and network rule of law. By establishing a digital copyright collective management organization and a cross-border payment dispute warning mechanism, an adaptive and scalable flexible governance network is constructed. The benign operation of this mechanism not only protects the legitimate rights and interests within a specific region, but also invisibly sets a certain “higher standard industry practice”, which forces non-member parties to actively connect or refer to relevant legal norms to reduce access risks when conducting trade with it. This diffusion model of rules from point to surface not only accelerates the homogenization evolution of legal concepts on a global scale, but also provides market tested legal

materials for rule reconstruction under multilateral systems, thereby promoting the benign interaction and gradual unification of intellectual property norms in global trade at the institutional level.

At the same time, the deepening of regional legal coordination has also had a profound impact on the global intellectual property governance pattern, and its function as a “rule pilot zone” is increasingly prominent. It not only provides a more modern and forward-looking reference template for rules, but also forces the multilateral system worldwide to undergo institutional self-correction and rule evolution through this segmented promotion model. However, this coordination is not simply a legal transplant or patchwork of provisions, but involves a precise game between the transfer of national sovereignty, the preservation of public policy space, and market access considerations. In this process, the boundaries of legal coordination are not limited to the strengthening of private rights protection, but also extend to institutionalized compensation for biodiversity, traditional knowledge, and public health rights. Regional rules attempt to establish a dynamic hedging mechanism between incentivizing original innovation and ensuring public access to knowledge by introducing cross licensing and benefit sharing agreements, thereby alleviating the north-south opposition caused by the imbalance of protection intensity at the legal level.

This deep consideration of the dimension of public interest not only enhances the fairness of regional rules, but also provides a legal path for addressing the ethical legitimacy of intellectual property protection in global trade, prompting the international community to re-examine the legal balance between exclusive rights and the interests of a community with a shared future for mankind. In practical operation, it is necessary to be highly vigilant about the “rule jungle” effect that may arise between different regional agreements due to inconsistent protection standards, that is, excessive regional rule overlap may increase the complexity of the global trade environment. Therefore, the future coordination direction should focus more on building an open and inclusive access system, by establishing a normalized legal information sharing platform, law enforcement interoperability system, and technical assistance framework, to ensure that countries at different stages of economic development can benefit from innovation dividends under a unified and fair rules and discourse system. This deep level of institutional integration requires countries to not only pay attention to the convergence of provisions in the process of legal revision, but also to the synchronization of judicial practice and administrative execution, in order to lay a solid institutional foundation and empirical data support for the ultimate realization of higher-level global rule unification.

5. Multiple deep challenges and conflicts of interest faced by intellectual property legal coordination in global trade

Although legal coordination has become a universal consensus in the international community, multiple deep-seated obstacles still severely constrain the actual effectiveness of coordination mechanisms in the process of promoting and implementing it in reality. The first and foremost challenge lies in the fundamental imbalance of interests and value conflicts between developed and developing economies in setting protection standards. Developed economies, as the top players and rule makers in the global technology chain, tend to lock in excess profits in the pharmaceutical, high-end manufacturing, and core technology fields by constructing strict and highly exclusive rights protection systems (such as TRIPS plus standards), attempting to transform high-standard domestic legal rules into global mandatory norms^[7]. Developing economies, on the other hand, advocate for granting more social welfare attributes and policy exemptions to intellectual property rights from the perspectives

of technology import costs, public health security, food sovereignty, and biodiversity conservation, among others, in order to improve people's livelihoods. The structural contradiction between the "high-intensity protection of private rights" and the "moderate exemption of public interests" based on the huge differences in economic development stages makes it easy to fall into a zero sum game deadlock in multilateral legal negotiations, resulting in many coordination work often only being procedural matters of consensus, and it is difficult to touch the deep integration of the core intellectual property protection system.

At the meso level of institutional operation, the competition among countries for the power to interpret international treaties and the estrangement of the rule of law culture further exacerbate the hidden obstacles to legal coordination. Due to the fact that current international norms often adopt principled expressions to balance the positions of all parties, this leaves a huge "interpretive discretion" for countries when transforming them into domestic laws, resulting in substantial deviations in the legal effect and remedies of the same treaty in different jurisdictions. This phenomenon not only stems from the inherent differences in procedural rules such as evidence disclosure and attribution principles between the written legal system and the common legal system, but also reflects deeper the game of multiple value orientations such as innovation ethics and information sovereignty among countries. Especially in the process of legal transplantation, the forced implementation of unified rules often triggers serious "institutional exclusionary" reactions, resulting in some member states being stalled in specific judicial operations due to the lack of localized legal support, even though they have completed legislative compliance in form. This substantial deviation from rules not only poses vastly different enforcement standards for multinational corporations in different markets, but also invisibly builds an invisible administrative barrier, turning the originally intended coordination mechanism to reduce transaction costs into an institutional burden that rights holders must repeatedly play games with. The heterogeneity of this legal ecosystem determines that simple text convergence is difficult to bridge the gap of institutional inertia, and it is urgent to introduce more cultural mutual understanding and flexible mediation mechanisms in the coordination process^[8]. When legal coordination attempts to cross sovereignty boundaries and enter the substantive implementation stage, it often encounters negative resistance from local protectionism and administrative inertia, resulting in the fragmentation of the so-called "unified standards" in specific judicial practices. This superficial convergence, lacking a consensus on the underlying rule of law, is difficult to generate stable rule expectations and may instead trigger more complex jurisdictional conflicts in cross-border dispute resolution, becoming a deep institutional shackle that restricts the free flow of global innovation factors.

From the perspective of cross-border regulatory compliance, the opacity and information asymmetry of administrative adjudication standards between different jurisdictions have become another major pain point that restricts the effectiveness of legal coordination. In actual trade transactions, due to the lack of a transnational mechanism for sharing rights information, rights holders often need to face completely different administrative approval logic and time limit requirements when applying for approval and safeguarding rights in multiple countries. This administrative island phenomenon not only increases the management costs of enterprises, but also objectively creates a vacuum period for rights protection, allowing malicious infringers to use the time difference in regulation for cross-border money laundering or market penetration. Especially in the cross-border infringement evidence collection process, the differences in the authenticity verification of electronic evidence and the notarization and authentication procedures of evidence outside the jurisdiction in various countries' laws directly lead to the inability to achieve cross jurisdictional translation of evidence effectiveness. When one country emphasizes the principle of original evidence under procedural justice, the other may have turned to the digital

evidence storage mode. This rule mismatch makes it easy for rights holders to lose their relief opportunities in the long judicial game, and even face the risk of losing the case due to the inability to meet the evidence disclosure threshold of specific jurisdictions. This substantive injustice caused by procedural barriers not only weakens the accessibility of legal coordination at the micro level, but also exacerbates the trust crisis of multinational operators in the effectiveness of international rules, reflecting the fragility of the global coordination mechanism in the connection of underlying procedural law. At the same time, due to the overlapping of trade secret protection and national security review mechanisms in various countries, the originally simple issue of intellectual property compliance can easily transform into a complex political game. The heterogeneity of this administrative regulatory system not only weakens the rigid binding force of multilateral legal coordination, but also presents a pathological feature of standardized and fragmented enforcement in the global trade environment of intellectual property governance system, greatly interfering with normal international scientific research cooperation and technology authorization.

In addition, the exponential growth and breakthrough applications of contemporary science and technology have posed unprecedented institutional impacts on the current relatively static legal framework. With the popularization of generative artificial intelligence, decentralized applications of blockchain, and large-scale cross-border collaborative innovation, the traditional principle of intellectual property confirmation and protection with “natural persons” as the creative core and “territoriality” as the jurisdictional boundary is facing logical dissolution. In the dimension of digital rule of law, the dilemma of legal coordination is also manifested in the legal rift between data resource empowerment and intellectual property legalism. Due to the non-exclusivity and high-frequency circulation of data assets, the traditional static ownership structure is difficult to accurately cover the value contribution in cross-border data exchange, resulting in serious ambiguity in the judgment criteria for substantive similarity and data conversion use among countries in legal coordination practice. This ambiguity is particularly prominent in cross-border algorithm auditing and model training infringement determination, which greatly undermines the predictive function of the law and even triggers excessive jurisdictional remedies in some jurisdictions, thereby interfering with the interconnectivity of global digital infrastructure.

How to accurately define the ownership of artificial intelligence generated products in legal norms, how to handle cross-border infringement evidence and liability determination in a distributed network environment, and how to achieve efficient global circulation of innovative information while safeguarding data sovereignty, are currently in a stage of intense exploration and debate at the international legal level. The obvious lag of this legal system not only leaves a vacuum for malicious speculators to evade legal supervision, but also poses significant legal uncertainty risks for legitimate cross-border innovation activities due to the lack of clear and unified rule guidance. In addition, the current fluctuations in the international geopolitical situation have given too much non-economic color to the originally pure legal coordination work. Some countries tend to use intellectual property protection as a bargaining chip in implementing trade interventions, which seriously weakens the objectivity and impartiality of international legal norms, leading to severe procedural obstacles and political interference in the formation of cross-border judicial cooperation and law enforcement forces. At the level of law enforcement, the differences in the effectiveness of administrative enforcement resources and judicial relief procedures among countries result in serious “execution gaps” in specific case enforcement and rights protection practices, even if consensus is reached at the legal text level. The long cycle, high cost, and difficult evidence collection of cross-border rights protection remain the core bottlenecks hindering the optimization of the global fair trade order.

6. Conclusion

In summary, in the current era of profound changes in the global trading system, the coordination of intellectual property legal norms has become a necessary path to building a fair, orderly, and efficient international economic and trade environment. Through the review and analysis of existing coordination mechanisms, it can be found that true legal unity is not the imposition of a single standard, but rather the search for the optimal balance between rights protection and public interests through the optimization of multilateral rules and innovation of regional agreements, while respecting the differences in development among countries. In the future, the international community should continue to deepen mutual trust in the rule of law, actively respond to the institutional impact brought by digital technology, and build a more inclusive, flexible, and forward-looking legal coordination framework to resolve trade frictions, stimulate global innovation vitality, and provide solid institutional guarantees and legal support for achieving sustainable growth of the global economy.

Disclosure statement

The author declares no conflict of interest.

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