The Institutional Logic and Practical Refinement of China's Data Intellectual Property Registration System

PhD Candidate **Shiya MA**[1]

Abstract

This research analyzes the institutional logic of China's data intellectual property (IP) registration system to propose a refined legal framework. Employing normative analysis, comparative research, and problem-oriented methods, the study identifies critical bottlenecks in current practices. It reveals that the system's legitimacy is rooted in the shared intangibility and non-rivalry between data and traditional IP objects. To resolve practical issues such as vague registration objects and unclear legal standing, the paper advocates for defining "data products" as the primary object, adopting the "principle of opposability through publicity" to clarify legal effects, and implementing a composite review mechanism. The analysis distinguishes the evidentiary function of registration from proposals to strengthen its effects on third parties, while clarifying the relationship between national data property registration and local IP initiatives. Recent international literature on proprietary, open and commons-based data governance provides a comparative perspective on how clearer entitlements may support transactions while accommodating lawful access, overlapping rights and the confidentiality of commercially sensitive information. Theoretically, this study enriches the legal doctrine of data rights; practically, it provides legislative references to balance private and public interests, thereby facilitating the orderly circulation of data elements and driving the high-quality development of the digital economy.

Keywords: *data intellectual property registration; institutional logic; data products; data elements; digital economy.*

JEL Classification: K11, K19

DOI: 10.62768/PLPA/2026/15/3/10

Please cite this article as:	**Article History**
Ma, Shiya, „The Institutional Logic and Practical Refinement of China's Data Intellectual Property Registration System", *Perspectives of Law and Public Administration* 15, no. 3 (October 2026): 542-559.	Received: 18 June 2026 Revised: 19 September 2026 Accepted: 5 October 2026

1. Introduction

With the deepening development of the digital economy, data has ascended to the status of a critical production factor alongside land, labor, capital, and technology. Nevertheless, the intangible nature, non-excludability, and dynamic updating characteristics of data render its direct incorporation into traditional property or

[1] Shiya Ma - School of Civil, Commercial and Economic Law, China University of Political Science and Law (CUPL), Beijing, China; Faculty of Law and Political Science, Aix-Marseille University, France. ORCID ID: https://orcid.org/0009-0003-3259-9193. E-mail: msy50589@gmail.com.

intellectual property frameworks problematic. The ambiguity in data ownership delineation has emerged as a core bottleneck constraining the circulation and value realization of data elements. Against this backdrop, the data intellectual property registration system, as a novel mechanism for publicizing property rights, has gradually evolved from local pilot explorations to a national-level institutional construction endeavor.

In recent years, the Chinese government has accorded high priority to the protection of data property rights and the facilitation of efficient data circulation and utilization. At the policy level, it has explicitly proposed "exploring the propertization of data" and sought to address data property protection through the intellectual property framework, thereby achieving notable progress. Through the promulgation of a series of pertinent policy documents and the vigorous implementation of pilot programs, China has preliminarily established a data intellectual property registration system, furnishing crucial institutional support for the delineation of ownership and legal protection of data elements. This institutional practice has contributed a Chinese approach to global data governance.

By October 2026, China's framework had developed to include national data property rights registration alongside local data intellectual property initiatives. On 1 July 2026, the General Office of the National Data Administration issued the Working Guidelines for Data Property Rights Registration (Trial). The Guidelines distinguish rights to hold, use and commercially exploit data. Article 21 permits different parties to enjoy the same type of right in the same data concurrently and without mutual exclusion. Article 31 provides that registration certificates may serve as evidence of the allocation and content of data property rights, including for transactions, financing and dispute resolution.[2]

On 11 September 2026, the National Data Property Rights Registration Service System began trial operation. The system aggregates registration results and provides unified publicity, search and verification services, supporting nationwide mutual recognition and greater consistency in registration practices.[3]

Local data intellectual property registration schemes have also continued. In Beijing, for example, the trial registration measures were extended for three years, from 19 June 2026 to 18 June 2029. These measures concern non-public datasets processed according to specified rules or algorithms and possessing commercial value and characteristics of intellectual achievement.[4]

---

[2] National Data Administration, General Office, *Working Guidelines for Data Property Rights Registration (Trial)* [数据产权登记工作指引（试行）], 国数综政策〔2026〕35 号, July 1, 2026, arts. 3, 21, and 31, https://www.nda.gov.cn/sjj/zwgk/tzgg/0703/20260703230745065425855_pc.html.

[3] National Data Administration, "National Data Property Rights Registration Service System Begins Trial Operation" [国家数据产权登记服务系统上线试运行], September 11, 2026, https://www.nda.gov.cn/sjj/swdt/xwfb/0911/20260911171614017938821_pc.html

[4] Beijing Municipal Intellectual Property Office et al., "Notice Extending the Trial Implementation of the Beijing Data Intellectual Property Registration Measures," 京知局〔2026〕60 号, June 17, 2026, including the accompanying measures, art. 2, https://www.beijing.gov.cn/zhengce/zhengcefagui/202606/t20260618_4706028.html

These developments require a distinction between national data property rights registration and local data intellectual property registration. They demonstrate the institutional development of data registration and commercialization mechanisms; their adoption should not, by itself, be treated as legislative recognition of a new exclusive intellectual property right over commercial data.

The China National Intellectual Property Administration actively followed up by launching data intellectual property protection pilot programs in eight regions including Beijing from November 2022, and adding nine more localities including Tianjin in 2024, conducting pioneering trials in institutional construction, registration practice, rights protection, and transaction utilization. To date, both rounds of local pilot programs have been completed. In retrospect, various localities successively promulgated specialized measures and established registration platforms, with the volume of registrations and the amount of financing secured proving substantial. Competent authorities in pilot localities such as Beijing and Zhejiang have affirmed that data intellectual property registration certificates have played an active role in facilitating the circulation and utilization of data elements through transaction services and pledge financing. Nevertheless, the ambiguity in specific rules and the divergence among specialized measures across pilot localities reveal that, compared with the vigorous data property registration pilot practices, theoretical research at the present stage remains relatively weak, leaving the pilot system without a solid theoretical foundation.

Existing literature lacks systematic normative analysis of the deep jurisprudential foundations of the registration system, namely how data can obtain property protection through registration and what effect the registration act exerts in the formation of data ownership. In particular, regarding the choice of registration effect model, fundamental divergences exist in academic circles between the doctrine of registration effectiveness and the doctrine of registration opposability, yet local pilot documents have remained silent on this issue. This institutional lacuna not only engenders confusion in practical operations but may also trigger chain negative consequences including rights vacuum, exponential increase in transaction costs, and divergence in judicial adjudication.

Accordingly, this article takes the institutional logic of the data intellectual property registration system as its central research thread, employing an integrated methodological approach combining normative analysis, comparative research, and problem-oriented inquiry. It seeks to address the following core propositions: What constitutes the legitimacy foundation of data intellectual property registration? How should the registration object be defined to accord with the essential characteristics of data? What model of registration effect should be adopted to balance the clarity of rights confirmation with the efficiency of circulation? Through systematic elucidation of these questions, this article aims to provide theoretical support for the construction of higher-level legislation governing the data intellectual property registration system, and to furnish legislative reference for balancing the protection of data holders' interests with the maintenance of public welfare, facilitating the orderly circulation of

data elements, and promoting the high-quality development of the digital economy.

2. The Institutional Logic of China's Data Intellectual Property Registration System

The institutional logic of China's data intellectual property registration system encompasses both its legitimacy foundation and value orientation. Its legitimacy derives from the inherent affinity between data and traditional intellectual property objects: both manifest as information, share the characteristics of non-materiality, non-excludability, and non-rivalry, and converge in their ultimate goal of fostering innovation. Its value is twofold: remedying the deficiencies of the compilation work regime, which is constrained by the high originality threshold and narrow protection scope, and promoting the orderly circulation and efficient utilization of data elements by clarifying ownership and reducing transaction costs.

2.1. The Legitimacy of China's Data Intellectual Property Registration System

First, both data and the objects of intellectual property manifest as information. The essence of intellectual property objects consists in proprietary information, and the most significant distinction between intellectual property and tangible property rights lies in the fact that intellectual property constitutes rights over certain knowledge and information.[5] On the other hand, a close connection also exists between data and information. Data, as electronic symbols existing in the form of bits, serves as the carrier of information, while information constitutes the concrete expression of data content.[6] As the object of data, information possesses the characteristics of fixity, independence, processuality, and epistemic quality when compared with data itself. Information is fixed upon the data carrier, yet simultaneously maintains independence, capable of existing separately from the carrier and disseminating through electronic or non-electronic forms, thereby reflecting specific content.[7] Therefore, the informational characteristics inherent in data furnish an important foundation for regulating relevant data conduct and protecting associated interests through the legal framework of intellectual property.

Second, both data and intellectual property objects constitute intangible goods,

---

[5] Zheng Shengli and Yuan Yong, "From Intellectual Property to Information Property: The Protection of Proprietary Information in the Knowledge Economy Era," *Intellectual Property*, no. 4 (1999): 7–10 (in Chinese).

[6] Xie Yuanyang, *Private Law Protection of Personal Information* (China Legal Publishing House, 2016), 4–6 (in Chinese), https://libdb.zju.edu.cn/s/libai/book/index/61/20/2016/ING1NDVI83DQ6XRVSU82UUV78D8KMVM6FSRSTYBF4P6CYGFIER-29422.

[7] Han Xuzhi, "The Ambiguous Use of Information Rights Categories and Its Consequences: An Analysis Based on the Confusion Between Information and Data," *Journal of East China University of Political Science and Law* 23, no. 1 (2020): 85–96 (in Chinese), https://doi.org/10.3969/j.issn.1008-4622.2020.01.006.

sharing the characteristics of non-materiality, non-excludability, and non-rivalry. Both data and intellectual property objects possess the feature of non-materiality; unlike tangible goods, which are naturally exclusive in possession, the legal protection of the right holder's exclusive dominion over tangible goods merely requires the protection of possession. Both data and intellectual property objects exhibit non-excludability, meaning that natural exclusion of others' possession is impossible, and while the right holder maintains possession, others may simultaneously possess and utilize the same information. Furthermore, both data and intellectual property objects possess non-rivalry, meaning that neither exhibits the "rivalry" characteristic of traditional physical resources in the course of utilization. They can be simultaneously employed by multiple subjects without diminishing the use value for other parties due to one party's consumption.[8] Therefore, the objects of data demonstrate a high degree of consistency with the objects of intellectual property such as works, trademarks, and inventions at the level of non-materiality. Kruse and von Grafenstein compare proprietary, open-data and data-commons models, showing that data governance also requires choices about access, use and the distribution of risks.[9]

Finally, the protection of data and the protection of intellectual property share an inherent commonality at the institutional objective level, as both ultimately aim to promote innovation.[10] The intellectual property system seeks to incentivize innovation by conferring exclusive rights upon right holders, whereas data resources, when satisfying the prerequisites of comprehensive collection, appropriate processing, and reasonable utilization, can unleash enormous economic value. The realization of such economic value will, in turn, provide market participants with sustained economic impetus for continuous innovation, thereby indirectly achieving the institutional effect of incentivizing innovation. In light of this, incorporating data elements into the domain of intellectual property protection possesses a certain degree of rationality and legitimacy.

2.2. The Value of China's Data Intellectual Property Registration System

The data intellectual property registration system transcends the stringent originality requirement under the compilation work regime of the Copyright Law, furnishing a novel channel for confirming rights and protecting data collections that lack the form of works but possess economic value derived from substantial investment. Article 10(2) of the TRIPS Agreement provides that compilations of data

---

[8] Wu Handong, *General Theory of Intellectual Property*, 4th ed. (China Renmin University Press, 2020), 35 (in Chinese), https://ip.fzu.edu.cn/info/1009/1308.htm.

[9] Luisa Kruse and Max von Grafenstein, "Proprietary Data, Open Data, Data Commons: Who Owns the Data? How to Best Reconcile Conflicting Interests in Exploiting the Value of Data and Protecting against Its Risks," *Computer Law & Security Review* 59 (2025): art. 106214, https://doi.org/10.1016/j.clsr.2025.106214.

[10] Meng Qixun et al., "The Path of Pilot Reform of Data Intellectual Property Registration System in China," *Science & Technology Progress and Policy* 42, no. 12 (2025): 151–60 (in Chinese), https://doi.org/10.6049/kjjbydc.2024020213.

or other material, whether in machine-readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations, shall be protected as such; yet such protection does not extend to the data or material itself and does not prejudice any copyright subsisting in the data or material itself.[11] It is thus evident that legislators have attempted to incorporate data collections into the category of intellectual property objects through the medium of compilation works, affording protection to original data compilations under copyright law.[12]

However, the likelihood of a dataset receiving copyright protection by virtue of the selection and arrangement of its contents is often inversely proportional to the volume of information it contains. Datasets are typically characterized by substantial scale and exhaustive content. Yet, the more comprehensive the collection and the more exhaustive its pursuit of completeness, the more constrained the space for creativity in the selection of content and the structure of arrangement, rendering the manifestation of intellectual creation in data selection and arrangement increasingly difficult. For data, the exhaustiveness of informational content constitutes its fundamental value: the more complete the data, the higher its commercial worth. This simultaneously implies, however, a diminished prospect of obtaining copyright protection. Consequently, a substantial number of data collections formed through significant resource investment and possessing real economic value, yet demonstrating insufficient originality in selection and arrangement, are difficult to incorporate into the traditional copyright protection framework.

It is precisely in response to this institutional supply gap that the data intellectual property registration system has been established: rather than treating "originality" as a threshold requirement for obtaining rights, it focuses on the substantial investment in the formation process of data collections and their derived economic value, thereby providing an independent channel for confirming rights and a distinct path for protecting data collections that lack the form of works but have been processed through certain rules or algorithms and possess commercial value and the attributes of intellectual achievements. This institutional arrangement not only achieves an expansion of the data rights protection system at the normative level, but also furnishes foundational rights support for the market-oriented circulation and value realization of data elements at the practical level.

The data intellectual property registration system clarifies the subjects and status of data rights through open and authoritative publicity procedures, thereby effectively reducing the risk of disputes arising from ambiguous ownership in the course of data circulation, facilitating the establishment of a legal foundation for data transactions, and enhancing the confidence and security of market participants in

[11] Agreement on Trade-Related Aspects of Intellectual Property Rights, April 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, annex 1C, art. 10(2), https://www.wto.org/english/docs_e/legal_e/27-trips_04_e.htm.

[12] Tian Xiaochu and Gao Shanxing, "On the Conflicts and Coordination of Big Data Protection Under Copyright Law," *Journal of Chongqing University (Social Science Edition)* 27, no. 1 (2021): 141–51 (in Chinese).

transactions. In judicial practice, the registration certificate may serve as prima facie evidence to prove the lawful origin of data and the right holder's enjoyment of relevant proprietary interests.[13] In 2024, the Beijing Intellectual Property Court concluded the nation's first case concerning the effect of data intellectual property registration, affirming the evidentiary validity of the registration certificate and thereby alleviating, to a certain extent, the practical predicament of data ownership being "difficult to define and difficult to prove." The second-instance judgment explicitly held that the Data Intellectual Property Registration Certificate may serve as prima facie evidence of the right holder's enjoyment of proprietary interests in the dataset in question, and may also serve as prima facie evidence of the lawfulness of the collection conduct or data origin; in the absence of contrary evidence, preliminary determination of rights attribution and the legality of collection conduct may be made accordingly. The court simultaneously emphasized, however, that such prima facie effect is case-specific and may be rebutted by contrary evidence, and that the assessment of its effect requires comprehensive consideration of the registration institution's qualifications, review methods, and registration content; entities that have not opted for registration may still assert data rights through other evidence. This judicial stance both affirms the positive function of the registration system in publicizing data rights attribution and maintains the independence and prudence of judicial review, providing clear judicial guidance for registration institutions to elevate their review standards.

On the basis of clarifying ownership, the data intellectual property registration system can significantly reduce due diligence, negotiation, and compliance costs in data transactions, thereby promoting the market-oriented allocation of data resources. The public accessibility of registration information enables prospective transacting parties to swiftly verify the status of data ownership, reducing resource expenditures on repetitive rights confirmation and due diligence, and consequently enhancing the circulation efficiency of data elements. Meanwhile, by conferring an institutionalized rights appearance upon data collections, the registration system facilitates capitalized operations such as data asset recognition on balance sheets, pledge financing, and securitization, thereby expanding the pathways for value realization of data elements. From the perspective of institutional objectives, this system not only serves the static protection of data but also fundamentally orients toward promoting the orderly circulation and efficient utilization of data elements. Through multiple mechanisms including clarifying rights attribution, reducing transaction costs, and providing prima facie evidentiary effect, the registration system achieves a value leap for data from static protection to dynamic circulation. Furthermore, the system furnishes foundational institutional support for the standardization and scaling of data element

[13] *Datatang (Beijing) Technology Co., Ltd. v. Yinmu (Shanghai) Technology Co., Ltd.*, No. (2021) Jing 0491 Minchu 45708 (Beijing Internet Court, first instance); *Yinmu (Shanghai) Technology Co., Ltd. v. Datatang (Beijing) Technology Co., Ltd.*, No. (2024) Jing 73 Minzhong 546 (Beijing Intellectual Property Court, appeal, 2024). For the courts' case summary, see https://peking.bjd.com.cn/content/s68030976e4b068c68f1294c3.html.

markets, contributing to the formation of an operable and predictable legal order framework during the institutional transition period of ambiguous data property rights, thereby better balancing the institutional tension between data rights protection and data circulation utilization.

3. Practical Dilemmas of China's Data Intellectual Property Registration System

In recent years, several regions in China have successively launched pilot programs for data intellectual property registration, making valuable explorations toward facilitating the circulation of data elements. However, as these pilot initiatives have progressed, a number of systemic issues have gradually emerged. On the one hand, there are significant discrepancies among regions in defining the object of registration. Some pilot programs adopt "data collections" as the registration object, while others use "data resources" or "data products," resulting in unclear scope and requirements, and making it difficult to establish a unified registration standard. On the other hand, the legal effect of registration acts remains undetermined under the current legal framework. Whether registration produces a constitutive effect, a presumptive effect, or merely serves as a filing record has yet to be clarified. These problems not only constrain the proper functioning of the registration system but also impede the orderly development of the data element market, calling for systematic examination and appropriate responses. The following sections will analyze these existing dilemmas from two dimensions: the object of registration and the legal effect of registration.

3.1. The Scope and Constitutive Requirements of Registration Objects Remain Unclear

The object of data property registration, namely the question of "what to register," constitutes the logical starting point for constructing the registration system. However, current academic understanding of the "registration object" exhibits significant divergence. Some scholars maintain that the information borne by the data itself should serve as the registration object. Proponents of this view argue that the information carried by data constitutes the core of registration, advocating attention to the content, value, and other informational elements contained in data, and achieving the management and utilization of data through the registration of such information. Accordingly, the essence of data property registration lies in transmitting data quality information, including data origin, processing procedures, update frequency, and application scenarios, thereby assisting prospective transacting parties in assessing the value of data.[14] Other scholars argue that data assets should serve as the registration

[14] Shao Honghong, "Functional Positioning, Model Selection, and Institutional Refinement of Data Property Registration: A Signal Theory Perspective," *Intellectual Property*, no. 3 (2024): 54 (in Chinese), https://doi.org/10.3969/j.issn.1003-0476.2024.03.004.

object. Proponents of this view maintain that the determination of data property registration objects should be grounded in asset attributes, encompassing data collections, data resource assets, and other data satisfying asset characteristics, and that the asset attributes of data resource asset catalogs should not be overlooked.[15] Still other scholars contend that data property rights or data-related rights should constitute the registration object. Proponents of this view argue that data registration should focus on the property or rights relationships underlying data, treating data property rights or data rights as the object of registration.[16] They point out that as the value of data becomes increasingly prominent, the delineation and protection of data property rights have emerged as critical issues. Clarifying the ownership attribution and scope of rights of data through registration contributes to resolving rights disputes in data transactions and facilitating the circulation and sharing of data.

In current local practices, the registration objects also exhibit divergence, manifesting primarily as data elements, data collections, and data products. Some regions designate "data elements" as the registration object; for instance, Zhejiang Province defines its registration object as "data that is lawfully collected, processed through certain algorithms, and possesses practical value and the attributes of intellectual achievements." Certain localities require the registration object to be "data collections," such as Beijing, Guangdong Province, and Shandong Province. Other localities require the registration object to be "data products"; for example, Shanghai specifically defines its registration object as data processing collections, data processing products, data technical algorithms, and other data products formed through substantive processing and innovative labor based on lawfully obtained data resources, which possess the attributes of intellectual achievements and commercial value. This conceptual confusion may result in identical data obtaining different "legal identities" across different regions. For instance, raw data collected from original sources may be registrable as a "data collection" in Zhejiang, yet rejected in Shanghai for failing to meet the "product" standard, or classified as a "data asset" in Beijing and other localities subject to entirely distinct rules.

The ambiguity in the scope and constitutive requirements of registration objects will engender chain negative consequences across three dimensions: legal certainty, market order, and judicial adjudication, as well as institutional functionality. Regarding legal certainty, the conceptual confusion of registration objects and the hollowness of constitutive requirements will directly undermine the clarity and stability of rights boundaries. Regarding market order, when the quality signals of registration objects cannot be effectively transmitted through requirement review, the market will fall into the predicament of information asymmetry, triggering a "lemons market" effect: low-quality data obtains registration certificates through

[15] Tan Zuocai, "On the Institutional Construction of Data Property Registration," *Contemporary Law Review* 38, no. 4 (2024): 93 (in Chinese), https://www.aisixiang.com/data/153866.html.

[16] Chen Bing and Yao Junyu, "Clarifying Concepts and Selecting Paths for the Protection of Publicly Available Data," *Studies on Socialism with Chinese Characteristics*, no. 2 (2024): 46 (in Chinese), https://www.zgtsshzy.net/CN/abstract/abstract1112.shtml.

misrepresentation or packaging, squeezing the market space of compliant enterprises by virtue of cost advantages, and causing registration certificates to degenerate from "proof of rights" into "formal stickers," with public trust in the registration system consequently declining. Regarding judicial adjudication, the ambiguity in registration objects and constitutive requirements will transmit to the judicial domain, triggering confusion in legal application and divergence in adjudication. The blurred boundary between data intellectual property and traditional intellectual property objects will induce rights concurrence and conflict. If a registered data collection simultaneously constitutes a compilation work, the right holder may claim dual protection, increasing the burden on the defendant; when the registration object contains content over which others enjoy copyright, the legality of registration becomes questionable, yet third parties cannot readily identify ownership defects from registration information; data that should have been protected as trade secrets loses its secrecy due to public registration, yet may not obtain sufficient exclusivity protection. In the EU context, De Noyette, Stähler and Margoni analyse the tension between data sharing and trade-secret protection under the Data Act, highlighting the need to coordinate access with safeguards for confidential business information.[17]

3.2. The Legal Effects of Registration Acts Have Not Been Statutorily Defined

The fundamental predicament currently confronting China's data intellectual property registration system lies in the fact that the legal effects of registration acts have not been statutorily defined. In other words, the existing legal framework — encompassing the Civil Code, the Data Security Law, or a prospective Data Property Rights Law — has not yet explicitly stipulated what specific legal consequences the completion of data intellectual property registration may produce. Whether registration generates effects of rights confirmation, rebuttable presumption, or mere recordal and publicity remains legally indeterminate.

This ambiguity at the level of legal effects triggers multiple institutional problems. First, the nature of effects is unclear: after registration, whether rights have become effective thereby or merely been recorded lacks explicit legal delineation; whether the registration certificate constitutes strong or weak evidence also lacks uniform standards. Second, credibility is deficient: due to the obscurity of registration's legal effects, third parties such as transacting counterparts, investors, and courts cannot ascertain whether information recorded in the register may be fully relied upon. Third, institutional functionality is constrained: the registration system fails to perform its core functions of rights confirmation, public publicity, and transaction security assurance, degenerating to a considerable extent into a mere "database recordal system," thereby directly affecting whether registration can serve

[17] Ella De Noyette, Leander Stähler, and Thomas Margoni, "Data Secrets: The Data Act's New Trade Secrets Framework," *IIC – International Review of Intellectual Property and Competition Law* 56, no. 5 (2025): 984–1014, https://doi.org/10.1007/s40319-025-01601-9.

as an effective rights credential in judicial adjudication, administrative enforcement, and market transactions. Uncertainty at the level of legal effects fundamentally undermines the credibility and practical utility of registration, rendering it difficult for the core value of the system to be fully realized.

Regarding the choice of registration model, local pilot documents have not provided explicit provisions. Divergent positions exist in academic circles. Some scholars advocate for the doctrine of registration effectiveness, arguing that it can produce institutional effects similar to mandatory registration, thereby curbing illegal off-exchange transactions to a certain extent.[18] Other scholars contend that the conditions for mandatory registration remain immature under current data transaction practices, and that prematurely imposing mandatory requirements may undermine the transaction confidence of market participants; even if substantial illegal transactions exist in off-exchange dealings, vigorously promoting on-exchange transactions cannot fundamentally resolve this issue.[19]

From the perspective of current pilot practices in China, data intellectual property registration predominantly adopts a model of "voluntary registration plus opposability," which exhibits notable deficiencies. First, the effect of registration is weak: voluntary registration merely possesses the nature of recordal and cannot serve as a basis for obtaining rights, making it difficult to resolve the evidentiary difficulties concerning data origin and the chain of rights. Second, credibility is insufficient: registration information lacks authoritativeness, rendering it difficult for third parties to place reliance thereon; data transactions remain highly dependent upon bilateral agreements, thereby constraining transaction scale. Third, regulatory and governance functions are absent: due to the lack of mandatory publicity instruments, regulatory authorities cannot comprehensively grasp the changes in data rights, which is detrimental to the effective implementation of data security maintenance and market supervision.

4. Refinement Proposals for China's Data Intellectual Property Registration System

China's current data intellectual property registration system confronts two fundamental predicaments. First, the standards for registration objects are inconsistent: local pilot programs have respectively adopted "data collections," "data resources," and "data products" as their objects, resulting in institutional fragmentation and legal uncertainty. Second, the legal effects of registration acts have not been statutorily defined: whether registration produces effects of rights confirmation, rebuttable presumption, or mere recordal and publicity remains legally indeterminate, thereby undermining the credibility and practical utility of registration. In response to the aforementioned problems, this article proposes the following refinement

[18] Cheng Xiao, "On Data Property Registration," *Law Review* 41, no. 4 (2023): 147 (in Chinese), https://civillaw.com.cn/lw/t/?id=39366.

[19] Tan Zuocai, "Institutional Construction of Data Property Registration," 95.

recommendations, with the aim of providing theoretical support for the unification and standardization of China's data intellectual property registration system.

4.1. Clarifying "Data Products" as the Registration Object

Currently, data intellectual property registration in China remains at the stage of local pilot programs, with significant divergence across localities in the delineation of registration objects. Specifically, certain localities define the registration object as "data collections," emphasizing the scalability and structural characteristics of data; other localities define it as "data resources," focusing on the originality and development potential of data; still other localities define it as "data products," highlighting the processing attributes and marketability of data.[20] While this state of divergent standards possesses a certain degree of rationality at the pilot exploration stage, in the long term it tends to engender institutional fragmentation and uncertainty in legal expectations. The same dataset may be subject to different registration standards across different regions, which not only affects the uniformity and authoritativeness of the registration system but also increases the legal risks and compliance costs for market participants in cross-regional transactions. Therefore, it is necessary in the process of institutional refinement to provide a clear and unified theoretical delineation of the registration object for data intellectual property, so as to consolidate the normative foundation of the registration system.

It is proposed that the registration object for data intellectual property be explicitly defined as "data products" possessing "substantive investment" and "independent economic value." This positioning can effectively distinguish data products from raw data and public information, while also connecting with the protection logic of "intellectual achievements" and "property interests" under current law. Raw data typically consists of fragmented information lacking systematic processing, without a clear foundation for rights attribution; public information, being in the public domain, is unsuitable for the conferral of exclusive property interests through the registration system. Limiting the registration object to "data products" means that registration protects not data in any form, but rather the outcomes formed through processing, treatment, and integration that possess an independent structure, thereby achieving a reasonable delimitation of the registration scope at the level of objects. The concept of "data products" bears structural similarity to "intellectual

[20] See Beijing Municipal Intellectual Property Office et al., Beijing Data Intellectual Property Registration Measures (Trial), May 30, 2023, art. 2, https://www.beijing.gov.cn/zhengce/zhengcefagui/202311/t20231115_3301983.html; Zhejiang Provincial Administration for Market Regulation et al., Zhejiang Data Intellectual Property Registration Measures (Trial), May 26, 2023, pt. I(1), https://zlzx.zjamr.zj.gov.cn/news/330800145/3948.html; Guangdong Provincial Government Services and Data Management Bureau, Guangdong Data Asset Compliance Registration Rules (Trial) (draft for public comment), April 4, 2023, art. 3(3), https://zfsg.gd.gov.cn/hdjlpt/yjzj/api/attachments/view/8a27b4011e0d1834d74d5a23d0425a43; Shenzhen Development and Reform Commission, Shenzhen Interim Measures for Data Property Registration, June 15, 2023, art. 2, https://fgw.sz.gov.cn/gkmlpt/content/10/10692/post_10692431.html.

achievements" in theoretical terms, as both embody human intellectual activity and labor investment.

Meanwhile, current law increasingly focuses on the requirement of "substantive investment" in the protection of property interests; for instance, the protection of trade secrets under anti-unfair competition law and the originality requirement for works under copyright law both reflect responsiveness to labor investment and value creation. Taking "substantive investment" and "independent economic value" as definitional requirements facilitates the organic connection of the data intellectual property registration system with the existing legal framework, avoiding institutional fragmentation. Furthermore, the core object of data transactions is not raw data, but rather data products that have been processed and possess clear application scenarios. Focusing the registration object on data products enables more precise service to the circulation needs of data element markets, preventing the registration system from becoming formalistic due to excessively broad object scope, or losing institutional value due to excessively narrow scope.

Locke's labor theory of property can furnish important theoretical support for clarifying "data products" as the registration object of data intellectual property. This theory holds that labor constitutes the crucial medium for transforming common resources into private property; in the state of nature, individuals may acquire possessory rights over natural resources through their labor alone.[21] Locke further pointed out that the application of labor to the commons is essentially a process of "mixing" private labor with originally public resources. This labor-entitlement perspective not only provides theoretical grounding for the legitimacy of private property but also furnishes intellectual resources for subsequent intellectual property systems to incorporate specific intellectual achievements within their protective scope. Labor encompasses not merely physical exertion but also creative activities dependent upon mental effort.[22] Data products, as a form of intangible assets, represent outcomes created by human beings through technological means, constituting products of mental labor that embody the spirit of innovation and wisdom. From the perspective of the generation process of data products, enterprises collect massive data resources, desensitize, process, and treat such data, and subsequently conduct information mining and analysis, ultimately enabling the data to possess independent economic utilization value.[23] It is thus evident that the entire processing flow of data products, from collection and filtering to value extraction, embodies human intellectual investment and the consumption of labor time. Therefore, taking data products as the registration object of data intellectual property essentially constitutes

[21] John Locke, *Second Treatise of Government*, trans. Ye Qifang and Qu Junong (The Commercial Press, 1964), 77 (in Chinese), https://libm.nwupl.edu.cn/bookInfo_01h0187969.html.

[22] Xiao Youdan, *A Study on Open Innovation and the Intellectual Property System* (Intellectual Property Publishing House, 2017), 143 (in Chinese), https://ip.ucas.ac.cn/index.php/zh-CN/xsdt/xslz/1629-2026-01-21-07-51-02.

[23] Feng Xiaoqing, "Research on Commercial Data Protection from the Perspective of Intellectual Property," *Comparative Law Review*, no. 5 (2022): 31–45 (in Chinese), https://www.civillaw.com.cn/lw/t/?id=38962.

the confirmation of property rights over the labor achievements condensed therein, possessing a solid theoretical foundation and legitimate basis.

4.2. Establishing the "Principle of Effectiveness Through Publicity" as the Legal Effect Doctrine

Data intellectual property registration certificates possess evidentiary effect and thereby fulfill the proof function, provided that they satisfy the evidentiary requirements of objectivity, relevance, and legality; this aspect is not distinctive in nature. What truly warrants examination is what kind of publicity effect should be conferred upon registration so that its publicity function may be realized. In the future, data intellectual property registration should first be endowed with presumptive effect, meaning that the right holder recorded in the register is presumed to be the true right holder, and the registered content is presumed to be authentic. However, presumptive effect is rebuttable by contrary evidence, and its function in protecting transaction security is relatively limited. When registration errors occur, whether bona fide third parties who have relied upon the registered content in conducting transactions can obtain legal protection cannot be adequately addressed by presumptive effect alone.

Therefore, it is necessary to further introduce the doctrine of Rechtsschein (also known as the doctrine of apparent rights). This principle, originally advocated by German commercial law scholars, refers to the legal principle of determining the effect of transactional conduct based on the external appearance of the nominal right holder's conduct or the external appearance of the relevant rights publicity. Its core purpose lies in protecting the reliance interests of third parties and transaction security; even when the external appearance diverges from the true facts, the legal effect of the conduct is still determined in accordance with the external appearance.[24] The introduction of the doctrine of Rechtsschein aims to address the protection of bona fide third parties in circumstances of registration errors, thereby remedying the insufficiency of mere presumptive effect in safeguarding transaction security.

On the foundation of the doctrine of Rechtsschein, to ensure the effective protection of transaction security in data property dealings, it is further necessary to establish the public credibility of data intellectual property registration. The public credibility of registration constitutes an irrebuttable legal fiction: even when registration errors produce false appearances of rights, such appearances are still treated as authentic and given legal effect, so as to protect bona fide third parties. The public credibility of registration serves as the foundation of the bona fide acquisition system and is concretely realized through the latter. There are two compelling reasons for endowing data intellectual property registration with public credibility. First, the value of data lies in its circulation and utilization; recognizing the public credibility of registration can effectively safeguard data transaction security and promote data circulation. Second, based on the reproducibility and shareability of data, the rules of

[24] Qiao Yu, *Enforcement Objections, Reconsideration, and Objection Litigation* (China Legal Publishing House, 2018), 43 (in Chinese), https://www.civillaw.com.cn/t/?id=36812.

bona fide acquisition can be reasonably designed; for instance, legal effects may be adapted such that while the third party acquires data property rights in good faith, the true right holder may still retain the original rights, thereby achieving a balance of interests between the two parties.

Based on the foregoing analysis, the principle of effectiveness through publicity should be established as the legal effect doctrine for data intellectual property registration. The principle of effectiveness through publicity means that the creation, modification, or opposability effect of data intellectual property arises upon completion of statutory registration and publicity, and that corresponding legal effects do not occur without registration. This principle can specifically enhance the rights-confirming effect, public credibility, and regulatory function of registration. Its jurisprudential logic is manifested primarily in the following two aspects. First, the requirement of rights certainty. Data rights possess intangibility and reproducibility, with blurred boundaries that readily trigger ownership disputes. The principle of effectiveness through publicity confers upon registered rights the effect of legal presumption of correctness through mandatory registration and formal examination, rendering rights attribution clear and status public, thereby reducing the costs of rights confirmation and legal risks in transactions. Second, the need for transaction security assurance. Data circulation and transactional conduct such as licensing and pledge require stable appearances of rights. Registration, as the sole statutory means of publicity, enables bona fide third parties to rely upon registered content, thereby protecting transaction security and promoting the market-oriented allocation of data elements.

Accordingly, a data intellectual property registration certificate obtained after registration should serve as prima facie evidence of rights attribution; modifications such as transfer, licensing, and pledge of rights do not take effect without registration; and registration information possesses absolute opposability effect against third parties. Zhao and Wu propose a bundle-of-rights framework for commercial data in China.[25] For the present proposal, this suggests specifying the particular entitlements that registration publicises and their limits in relation to other data users.

5. Conclusion

As a critical production factor in the digital economy era, the delimitation of property rights and institutional protection of data has become a core issue in global data governance.

The practical trajectory of China's data intellectual property registration system, evolving from local pilot explorations to national-level institutional construction, reflects both an active response to the market-oriented allocation needs of data elements and the profound tension between emerging forms of rights and

[25] Wenjia Zhao and Peicheng Wu, "From Data Ownership to Data Sharing: A New Property Regime of Commercial Data in China," *Computer Law & Security Review* 59 (2025): art. 106213, https://doi.org/10.1016/j.clsr.2025.106213.

traditional legal frameworks.

This study demonstrates that the legitimacy of the data intellectual property registration system is rooted in the inherent affinity between data and traditional intellectual property objects at the level of informational essence and non-material attributes, while its value is manifested in the effective filling of existing legal protection gaps and the foundational support for data circulation order. However, the ambiguity of objects and the void of legal effects in institutional practice have constituted critical bottlenecks constraining the full realization of the system's functions.

Looking ahead, the refinement of China's data intellectual property registration system urgently requires a normative leap from fragmented pilots to unified legislation, forming systematic solutions in the theoretical delineation of registration objects, the hierarchical construction of legal effects, and the composite design of review mechanisms.

Only by advancing refined rule construction on the basis of clarifying institutional logic can the dynamic balance between data rights protection and data circulation utilization be truly achieved, thereby contributing a Chinese approach with both theoretical depth and practical validity to global data governance.

Bibliography

I. Books and Articles

Chen Bing and Yao Junyu. "Clarifying Concepts and Selecting Paths for the Protection of Publicly Available Data." *Studies on Socialism with Chinese Characteristics*, no. 2 (2024): 38–52. In Chinese. https://www.zgtsshzy.net/CN/abstract/abstract1112.shtml.

Cheng Xiao. "On Data Property Registration." *Law Review* 41, no. 4 (2023): 137–48. In Chinese. https://civillaw.com.cn/lw/t/?id=39366.

De Noyette, Ella, Leander Stähler, and Thomas Margoni. "Data Secrets: The Data Act's New Trade Secrets Framework." *IIC – International Review of Intellectual Property and Competition Law* 56, no. 5 (2025): 984–1014. https://doi.org/10.1007/s40319-025-01601-9.

Feng Xiaoqing. "Research on Commercial Data Protection from the Perspective of Intellectual Property." *Comparative Law Review*, no. 5 (2022): 31–45. In Chinese. https://www.civillaw.com.cn/lw/t/?id=38962.

Han Xuzhi. "The Ambiguous Use of Information Rights Categories and Its Consequences: An Analysis Based on the Confusion Between Information and Data." *Journal of East China University of Political Science and Law* 23, no. 1 (2020): 85–96. In Chinese. https://doi.org/10.3969/j.issn.1008-4622.2020.01.006.

Kruse, Luisa, and Max von Grafenstein. "Proprietary Data, Open Data, Data Commons: Who Owns the Data? How to Best Reconcile Conflicting Interests in Exploiting the Value of Data and Protecting against Its Risks." *Computer Law & Security Review* 59 (2025): art. 106214. https://doi.org/10.1016/j.clsr.2025.106214.

Locke, John. *Second Treatise of Government*. Translated by Ye Qifang and Qu Junong. The Commercial Press, 1964. In Chinese. https://libm.nwupl.edu.cn/bookInfo_01h0187969.html.

Meng Qixun, Cheng Weijia, and Dai Yun. "The Path of Pilot Reform of Data Intellectual Property Registration System in China." *Science & Technology Progress and Policy* 42, no. 12 (2025): 151–60. In Chinese. https://doi.org/10.6049/kjjbydc.2024020213.

Qiao Yu. *Enforcement Objections, Reconsideration, and Objection Litigation*. China Legal Publishing House, 2018. In Chinese. https://www.civillaw.com.cn/t/?id=36812.

Shao Honghong. "Functional Positioning, Model Selection, and Institutional Refinement of Data Property Registration: A Signal Theory Perspective." *Intellectual Property*, no. 3 (2024): 54–72. In Chinese. https://doi.org/10.3969/j.issn.1003-0476.2024.03.004.

Tan Zuocai. "On the Institutional Construction of Data Property Registration." *Contemporary Law Review* 38, no. 4 (2024): 86–97. In Chinese. https://www.aisixiang.com/data/153866.html.

Tian Xiaochu and Gao Shanxing. "On the Conflicts and Coordination of Big Data Protection Under Copyright Law." *Journal of Chongqing University (Social Science Edition)* 27, no. 1 (2021): 141–51. In Chinese.

Wu Handong. *General Theory of Intellectual Property*. 4th ed. China Renmin University Press, 2020. In Chinese. https://ip.fzu.edu.cn/info/1009/1308.htm.

Xiao Youdan. *A Study on Open Innovation and the Intellectual Property System*. Intellectual Property Publishing House, 2017. In Chinese. https://ip.ucas.ac.cn/index.php/zh-CN/xsdt/xslz/1629-2026-01-21-07-51-02.

Xie Yuanyang. *Private Law Protection of Personal Information*. China Legal Publishing House, 2016. In Chinese. https://libdb.zju.edu.cn/s/libai/book/index/61/20/2016/ING1NDVI 83DQ6XRVSU82UUV78D8KMVM6FSRSTYBF4P6CYGFIER-29422.

Zhao, Wenjia, and Peicheng Wu. "From Data Ownership to Data Sharing: A New Property Regime of Commercial Data in China." *Computer Law & Security Review* 59 (2025): art. 106213. https://doi.org/10.1016/j.clsr.2025.106213.

Zheng Shengli and Yuan Yong. "From Intellectual Property to Information Property: The Protection of Proprietary Information in the Knowledge Economy Era." *Intellectual Property*, no. 4 (1999): 7–10. In Chinese.

II. Documents and Regulations

Agreement on Trade-Related Aspects of Intellectual Property Rights. Annex 1C to the Marrakesh Agreement Establishing the World Trade Organization. April 15, 1994. https://www.wto.org/english/docs_e/legal_e/27-trips_04_e.htm.

Beijing Municipal Intellectual Property Office et al., "Notice Extending the Trial Implementation of the Beijing Data Intellectual Property Registration Measures," 京知局〔2026〕60 号, June 17, 2026, including the accompanying measures, art. 2, https://www.beijing.gov.cn/zhengce/zhengcefagui/202606/t 20260618_4706028.html.

Beijing Municipal Intellectual Property Office, Beijing Municipal Bureau of Economy and Information Technology, Beijing Municipal Commerce Bureau, and Beijing

Municipal People's Procuratorate. Beijing Data Intellectual Property Registration Measures (Trial). May 30, 2023. In Chinese. https://www.beijing.gov.cn/zhengce/zhengcefagui/202311/t20231115_3301983.html.

Guangdong Provincial Government Services and Data Management Bureau. Guangdong Data Asset Compliance Registration Rules (Trial). Draft for public comment. April 4, 2023. In Chinese. https://zfsg.gd.gov.cn/hdjlpt/yjzj/api/attachments/view/8a27b4011e0d1834d74d5a23d0425a43.

National Data Administration, "National Data Property Rights Registration Service System Begins Trial Operation" [国家数据产权登记服务系统上线试运行], September 11, 2026, https://www.nda.gov.cn/sjj/swdt/xwfb/0911/20260911171614017938821_pc.html.

National Data Administration, General Office, *Working Guidelines for Data Property Rights Registration (Trial)* [数据产权登记工作指引（试行）], 国数综政策〔2026〕35 号, July 1, 2026, arts. 3, 21, and 31, https://www.nda.gov.cn/sjj/zwgk/tzgg/0703/20260703230745065425855_pc.html.

Shenzhen Development and Reform Commission. Shenzhen Interim Measures for Data Property Registration. June 15, 2023. In Chinese. https://fgw.sz.gov.cn/gkmlpt/content/10/10692/post_10692431.html.

Zhejiang Provincial Administration for Market Regulation, Zhejiang Provincial Cyberspace Affairs Office, Zhejiang Provincial Development and Reform Commission, et al. Zhejiang Data Intellectual Property Registration Measures (Trial). May 26, 2023. In Chinese. https://zlzx.zjamr.zj.gov.cn/news/330800145/3948.html.

III. Case Law

Datatang (Beijing) Technology Co., Ltd. v. Yinmu (Shanghai) Technology Co., Ltd., No. (2021) Jing 0491 Minchu 45708 (Beijing Internet Court, first instance). Case summary: https://peking.bjd.com.cn/content/s68030976e4b068c68f1294c3.html.

Yinmu (Shanghai) Technology Co., Ltd. v. Datatang (Beijing) Technology Co., Ltd., No. (2024) Jing 73 Minzhong 546 (Beijing Intellectual Property Court, appeal, 2024). Case summary: https://peking.bjd.com.cn/content/s68030976e4b068c68f1294c3.html.