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Issues Regarding the Protection of Digital Assets in International Investment Law —Focusing on the Determination of the Investment Eligibility of Digital Assets

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Abstract. The deepening development of the digital economy has made data assets a core vehicle of value for cross-border investment; however, traditional international investment law, which originated in the era of tangible assets, faces significant institutional tensions when determining whether digital assets constitute protected investments. Centered on the determination of the investment eligibility of digital assets, this paper focuses on three core legal challenges: the interpretation of investment definition clauses, the application of the Salini objective standard, and the determination of the territorial requirement. Through a systematic review of existing literature and an analysis of recent arbitration cases, such as Nexo v. Bulgaria and Einarsson v. Canada, this study reveals the normative conflict between the traditional treaty framework and the digital reality. This study finds that a balance should be sought between legal certainty and dynamic adaptability. It advocates for a typological approach to distinguishing between operational data assets and purely speculative crypto-assets, while retaining the basic function of the territorial requirement but interpreting it flexibly, replacing the requirement for physical establishment with a substantive economic connection. From a Chinese perspective, incremental experimentation with bilateral and regional rules represents a pragmatic path to participating in the digital transformation of international investment law.

Keywords: digital assets, investment eligibility, international investment law, the Salini standard, territorial requirement

1. Introduction

The deepening development of the digital economy is profoundly reshaping the landscape of international investment. It has become increasingly common for digital multinational corporations to leverage limited tangible overseas assets to generate massive overseas sales, and data assets have emerged as a core driver of their value creation. In 2025, the World Investment Report published by the United Nations Conference on Trade and Development (UNCTAD) dedicated an entire chapter to international investment issues in the digital economy for the first time, signaling an urgent need for institutional responses within the international investment legal framework [1].

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Meanwhile, legal disputes surrounding the protection of digital assets have moved from theoretical discourse to arbitration practice. In 2024, the International Centre for Settlement of Investment Disputes (ICSID) formally registered the Nexo v. Bulgaria case—the first investment arbitration case involving a cryptocurrency trading platform, with claims totaling $3 billion [2]. In the same year, the case of Einarsson v. Canada also addressed core cutting-edge issues, such as whether seismic data constitutes a protected investment and whether data disclosure constitutes indirect expropriation [3]. Theoretical disputes are rapidly transforming into practical disputes.

At the theoretical level, whether digital assets meet the legal requirements for "investment" under international investment agreements is the logical prerequisite for determining whether they are eligible for substantive protection and procedural remedies. Traditional standards for determining "investment" were formed during an era when the real economy was dominated by tangible assets; whether these standards can be applied to digital assets—which are decentralized, intangible, and highly mobile across borders—constitutes a fundamental theoretical question that international investment law urgently needs to address. In practice, as Chinese digital enterprises accelerate their global expansion, securing effective protection for their digital asset investments abroad under the current legal framework directly affects the security and growth of the nation's overseas interests.Chinese academia is currently engaged in discussions centered on three core points of contention: the interpretation of investment definition clauses, the application of the Salini objective standard, and the determination of the territorial requirement; however, a systematic consensus has yet to be reached. This paper aims to systematically review existing research, analyze the core legal challenges, and, on this basis, propose preliminary institutional responses.

2. Literature review

This section reviews existing literature following a logical framework encompassing the interpretation of definitions, the application of essential elements, and the adaptation of rules. Section 2.1 focuses on the main debates within the domestic academic community regarding the interpretation of investment definition clauses, controversies over the application of the Salini standard, and the determination of territorial requirements; Section 2.2 shifts the focus to the international academic community, examining its research priorities on specific challenges such as the overall adaptability of the legal framework and the protection of crypto-assets, thereby outlining the broader academic landscape through comparative dialogue.

2.1. Current state of research in the domestic academic community

Regarding the three major legal challenges arising from the determination of the eligibility of digital asset investments, the domestic academic community has accumulated a wealth of research findings, though consensus and divergence coexist.

On the interpretation of investment definition clauses, scholars' basic positions largely align. The prevailing view holds that, although recent international investment agreements have shifted from a broad enumeration of assets to a model that defines investment by specific characteristics, data assets can still be included within the scope of protection through multiple pathways under an open-ended definition: they may be interpreted as intangible assets, intellectual property, or data property rights; they may be regarded as returns generated by an investment; they may correspond to rights under commercial contracts; or they may be classified as "other forms of investment" in open-ended provisions [4]. However, there are subtle differences of opinion within the academic community regarding specific methods of interpretation. Some scholars advocate for a literal interpretation that

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directly subsumes data assets under the category of "assets," while others argue for an expansive interpretation that takes into account the object and purpose of the treaty [5, 6]. At the same time, scholars generally point out that the territorial requirement constitutes the most prominent institutional obstacle in this regard [3, 7].

Regarding the application of the Salini objective test, there is a significant divergence of views within the academic community. First, concerning the normative effect of the test itself, there is a contrast between the views of "strict application" and "flexible application." The former advocates strictly adhering to the four-element theory—capital contribution, a certain period, risk-bearing, and a contribution to the host country's economic development—to guard against the risk of overbroad interpretation of the investment definition; the latter argues that these elements should be treated merely as reference factors or applied flexibly to avoid unduly excluding emerging forms of investment [5, 6]. Second, scholars also disagree on the extent to which digital assets satisfy each specific requirement. Although most studies acknowledge that digital asset investments pose no substantial obstacles in meeting the "capital investment" and "risk-bearing" requirements, there are significant divergences regarding the assessment of the "specific duration" and "contribution to the host country's economic development" requirements [3]. Critics argue that highly liquid digital assets (such as crypto-assets) may struggle to meet the "duration" requirement, and purely speculative assets are even less likely to demonstrate a substantive contribution to the host country's economy [8].

Regarding the determination of the territorial requirement, the divergence in scholars' positions is quite pronounced. Reformists advocate for a revision of the logic underlying the assessment of territorial ties, arguing that the establishment of a physical branch within the host country should not be a prerequisite; rather, the criterion should be whether there is a genuine and substantive economic connection between the digital asset and business operations within the host country [3]. Conservatives, on the other hand, emphasize that as a foundational norm of international investment law, the territorial requirement serves the institutional function of distinguishing international investment from international trade, and this function should not be eroded by technological progress. However, conservatives also acknowledge that existing agreements do not strictly require all elements of an investment to be located within the host country, which leaves room for interpretation regarding intangible assets [7].

2.2. Current state of international academic research

Chinese scholars have also conducted a systematic examination of the obstacles to the application of substantive provisions. The research has identified multiple instances of misalignment across different levels of regulations, including: the conflict between the territorial requirements of the definition of "investment" and the non-territorial nature of data assets; the contradiction between the "substantial deprivation" standard in expropriation provisions and the "non-exclusivity" characteristic of data; the question of whether national security exceptions can encompass risks related to data security and cybersecurity; disputes over the boundaries of application for "adequate protection" and security standards; the ambiguity in determining "reasonable expectations of investors" under the principle of fair and equitable treatment; and the attribution dilemma regarding "state action" in expropriation acts [6, 9]. To address these obstacles, scholars have proposed improvement strategies, including: promoting institutional alignment between the standard of fair and equitable treatment and data regulation; establishing criteria for determining the indirect expropriation of data assets; and establishing rules for the valuation of data assets in investment arbitration [4, 7].

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The focus of international scholarship differs slightly from that of Chinese scholarship. the focus is on the overall applicability of international investment law in the digital age; it is generally believed that the broad definition of "investment" in treaties, when combined with a flexible interpretation of territorial connection requirements, may cover most investments in digital assets [10]. At the micro level, the focus is on the specific challenge of protecting crypto-assets, with the core controversy centered on how to establish a territorial connection for decentralized assets; some scholars advocate a return to the methods of private international law and propose distinguishing between value-creating and purely speculative crypto-assets for different treatment [11].

3. Discussion

Based on the above review of the literature and the shortcomings of existing research, this paper presents the following preliminary insights at three levels concerning the eligibility of digital asset investments.First, regarding the overall approach to determining investment eligibility, this paper argues that a dynamic balance should be sought between legal certainty and adaptability to the times. On the one hand, outright denying the eligibility of digital assets would leave a vast number of digital investments in a regulatory vacuum, contrary to the original intent of international investment law to promote and protect investments; on the other hand, indiscriminately including all digital assets within the scope of protection may unduly expand the host country's treaty obligations and erode its regulatory sovereignty. In comparison, a typological approach is more feasible: explicit investment protection should be granted to operational data assets that constitute intellectual property, trade secrets, or actual control over a business; whereas a cautious stance should be adopted toward crypto-assets, with limited protection considered only for those possessing substantial economic value.

Second, regarding the treatment of the territorial requirement, this paper advocates retaining its fundamental institutional function—namely, serving as one of the key criteria for distinguishing international investment from international trade. However, the application of this standard should be made moderately flexible. Specifically, rather than rigidly requiring investors to establish a physical branch in the host country, the focus should be on whether the data assets have developed a substantive, genuine, and ongoing economic connection to business activities within the host country. This interpretive approach both upholds the normative efficacy of the territoriality principle and addresses the intangible nature of the digital economy.

Third, from China's perspective, the digital transformation of international investment law presents both a formidable challenge and a rare opportunity. While global digital governance rules are still taking shape, a more realistic and feasible strategy—rather than hastily pursuing a comprehensive restructuring of the multilateral framework—may be to first conduct differentiated rule experiments within bilateral investment treaties. Once sufficient practical experience has been accumulated, efforts can be made to promote the development of consensus-based rules at the regional level—for example, by establishing a coordinated and consistent regulatory framework among countries along the "Belt and Road" route. With a solid foundation of regional practice in place, these rules can then be gradually elevated to an international framework suitable for broader adoption, thereby facilitating China's transition from a rule follower to a rule contributor.

4. Conclusion

Determining the investment eligibility of digital assets is a fundamental hurdle facing international investment law in the digital age. By systematically reviewing existing research, this paper identifies

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three central legal challenges and areas of contention in this field: divergent interpretations of investment definition provisions, disputes over the application of the Salini objective standard, and difficulties in determining the territorial requirement. Existing research indicates that the traditional investment legal framework indeed faces significant regulatory tensions when addressing the intangible, decentralized, and highly cross-border liquid nature of digital assets. To resolve these challenges, this paper advocates a typological approach to determination, distinguishing among the practical characteristics of different categories of digital assets to achieve differentiated assessments of investment eligibility, thereby balancing legal certainty with the demands of the digital economy. At the same time, it proposes a flexible interpretation of the standards for applying the territorial requirement, weakening the formal constraints of physical presence and focusing instead on the substantive economic connection between digital assets and the host country; Capitalizing on the current window of opportunity for international digital investment governance, China should participate in shaping international rules through a gradualist approach that prioritizes bilateral agreements and advances regional cooperation. Future research could further analyze the reasoning behind investment eligibility rulings for different types of digital assets by examining specific investment arbitration cases. Future research could also examine, from a comparative law perspective, the practical experiences of various countries in promoting regulatory innovation at the bilateral and regional levels, thereby providing more concrete institutional options for China's participation in international investment governance in the digital age.

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