

**INSTITUTIONAL CHALLENGES AND LAW ENFORCEMENT IN THE REGULATION OF CRYPTO-ASSETS**

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**Abstract**

This article examines the institutional challenges of regulation and law enforcement in the circulation of crypto-assets. It is established that the key constraint on regulatory effectiveness is institutional uncertainty, driven by the absence of unified criteria for the interpretation of legal categories. Contradictions in law enforcement practice are identified, and the relationship between conceptual uncertainty and the asymmetry of legal risks is substantiated. Conceptual models of the formation of institutional uncertainty and law enforcement in the crypto-asset domain are proposed. An approach to ensuring consistency in law enforcement is developed.

**Keywords:** crypto-assets; law enforcement; digital economy; regulation; institutional uncertainty; legal risks; crypto-asset regulation.

**Introduction**

The development of crypto-assets as a structural element of the digital economy is accompanied by the active formation of regulatory frameworks aimed at governing their circulation. Unlike traditional financial instruments, crypto-assets operate under conditions of decentralization, cross-border functionality, and technological autonomy, which significantly complicates both their legal qualification and the application of regulatory mechanisms.

The theoretical and categorical foundations of crypto-assets, including their economic nature and functional classification within the digital economy, have been systematized in prior research (Iminokhunov & Khakimov, 2026). These conceptual positions form the analytical basis for examining the institutional and law enforcement challenges associated with crypto-asset regulation.

In contemporary conditions, the effectiveness of crypto-asset regulation is determined not only by the existence of formal legal norms, but also by the consistency and predictability of their enforcement. However, existing practice demonstrates that the codification of regulatory provisions does not ensure the stability of the legal environment. A significant gap persists between formally established legal norms and their practical interpretation, which leads to heterogeneity in law enforcement decisions and reduces the predictability of regulatory outcomes.

A key source of this problem lies in the absence of unified criteria for interpreting fundamental legal categories applied to crypto-asset transactions. Concepts such as “acquisition”, “sale”, and “exchange” are applied inconsistently in practice, resulting in divergent classifications of similar economic actions. This creates conditions of institutional uncertainty, under which market participants face difficulties in assessing the legal consequences of their behavior.

The lack of unified interpretative criteria is directly linked to the insufficient development of the conceptual apparatus of crypto-assets, which has been previously identified as a key limitation in their theoretical formalization (Iminokhunov & Khakimov, 2026).

The identified institutional uncertainty is not limited to isolated inconsistencies in legal practice, but represents a systemic characteristic of the regulatory environment in the crypto-asset domain. It is closely associated with the imperfection of the conceptual apparatus and manifests itself in the asymmetry of legal risks, variability of law enforcement decisions, and the instability of the institutional framework governing the crypto market.

Despite the growing body of research on crypto-asset regulation, insufficient attention has been paid to the institutional aspects of law enforcement and the mechanisms through which legal uncertainty is formed and reproduced. In particular, there is a lack of a systematic analytical framework that explains the relationship between regulatory ambiguity, interpretative practices, and the resulting asymmetry of legal risks.

In this context, the aim of the study is to identify institutional challenges in the law enforcement of crypto-asset regulation and to substantiate directions for improving regulatory effectiveness based on a systemic analysis of enforcement practices.

The scientific contribution of the study consists in identifying institutional uncertainty as a systemic characteristic of crypto-asset regulation, substantiating its relationship with the asymmetry of legal risks, and revealing contradictions in the interpretation of key legal categories in law enforcement practice.

### Literature Review

The regulation of crypto-assets and the associated challenges of law enforcement have been widely discussed in contemporary academic literature. Existing studies primarily focus on the legal status of crypto-assets, their classification, and the development of regulatory frameworks within the digital economy.

A significant body of research examines the economic and technological nature of crypto-assets, emphasizing their decentralized structure and hybrid characteristics (Böhme et al., 2015; Nakamoto, 2008). These features complicate their integration into traditional legal systems and create challenges for regulators seeking to apply existing financial legislation.

Another important strand of research is devoted to the development of regulatory approaches to crypto-assets. Scholars highlight the increasing role of financial regulation, anti-money laundering frameworks, and supervisory mechanisms in shaping the legal environment of the crypto market (Arner et al., 2017; FATF, 2021). However, these studies mainly focus on formal regulatory provisions and pay less attention to the processes of their interpretation and enforcement.

Recent studies also address the emergence of decentralized finance (DeFi) and its implications for legal regulation. The absence of centralized intermediaries, cross-border transaction structures, and the use of pseudonymous technologies significantly limit the effectiveness of traditional regulatory instruments (Zetsche et al., 2020; De Filippi & Wright, 2018).

Despite these contributions, insufficient attention has been paid to the institutional aspects of law enforcement and the mechanisms through which legal uncertainty is formed in practice. In particular, there is a lack of research examining the relationship between regulatory ambiguity, interpretative variability, and the asymmetry of legal risks in the context of crypto-asset circulation.

Thus, the existing literature does not provide a comprehensive explanation of how institutional uncertainty emerges and reproduces itself within law enforcement practice. This gap determines the relevance of the present study, which focuses on the systemic analysis of institutional challenges in the regulation of crypto-assets.

### Methods

<b>119</b>	ISSN 2277-3630 (online), Published by International journal of Social Sciences & Interdisciplinary Research., under Volume: 15 Issue: 04 in April-2026 <a href="https://www.gejournal.net/index.php/IJSSIR">https://www.gejournal.net/index.php/IJSSIR</a>
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The methodological framework of the study is based on an institutional approach combined with legal analysis, which makes it possible to consider the regulation of crypto-assets not only as a system of formally established norms, but also as a process of their interpretation and application within the digital economy. This approach allows for the identification of systemic discrepancies between regulatory provisions and law enforcement practice.

The research design is structured as a sequential analytical process aimed at revealing institutional gaps in the regulation of crypto-asset circulation and explaining the mechanisms of their formation. The logic of the study is built on the transition from the analysis of formal legal norms to the examination of their practical implementation and further to the identification of systemic institutional constraints.

At the first stage, the method of normative legal analysis was applied. Within this stage, regulatory provisions governing crypto-asset transactions were examined, including key legal categories such as acquisition, sale, and exchange. This made it possible to assess the degree of formalization of the regulatory framework and to identify ambiguities in the conceptual apparatus underlying legal regulation.

At the second stage, the method of law enforcement analysis was employed. This stage focused on the examination of the practical interpretation and application of legal norms. Comparative analysis of different cases of classification of crypto-asset transactions allowed for the identification of heterogeneity in law enforcement decisions and inconsistencies in the interpretation of similar economic actions.

At the third stage, a comparative analytical method was used to assess the relationship between formally established legal norms and their actual implementation. This made it possible to identify discrepancies between the regulatory framework and law enforcement practice, which constitute the basis of institutional uncertainty.

At the fourth stage, an institutional analysis was conducted to identify systemic constraints inherent in crypto-asset regulation. Particular attention was paid to the influence of decentralization, the absence of centralized intermediaries, and the cross-border nature of transactions. This stage allowed for the substantiation of institutional uncertainty as a systemic characteristic of the regulatory environment.

At the final stage, the method of logical and legal modeling was applied. Based on the results of the previous stages, a conceptual framework was developed that explains the mechanism of formation of institutional uncertainty and the emergence of a gap between regulatory norms and their enforcement. This approach makes it possible to systematize the identified contradictions and to propose directions for improving the consistency of law enforcement practice.

The empirical basis of the study consists of regulatory legal acts governing the circulation of crypto-assets, materials of law enforcement practice, and analytical sources reflecting the functioning of the crypto market. The use of this methodological toolkit ensured a transition from the analysis of individual legal provisions to the identification of systemic institutional patterns in the regulation of crypto-assets.

### Results

The results of the study demonstrate that the contemporary system of crypto-asset regulation is characterized by a high degree of institutional fragmentation and the absence of a unified regulatory model. National approaches differ significantly in terms of regulatory strictness, admissibility of transactions, and the role of the state, which leads to the formation of a heterogeneous institutional environment of the crypto market.

The analysis shows that existing regulatory frameworks are primarily focused on the formal establishment of legal norms, including licensing requirements, restrictions on illegal circulation, and measures aimed at ensuring financial security. However, it is established that these regulatory

provisions do not fully reflect the economic and technological nature of crypto-assets, which creates discrepancies between legal norms and their practical application.

This discrepancy can be explained by the fact that regulatory frameworks are often developed without sufficient consideration of the economic and functional characteristics of crypto-assets, which have been systematized in earlier theoretical studies (Iminokhunov & Khakimov, 2026).

A key result of the study is the identification of institutional uncertainty in the law enforcement of crypto-asset regulation. This uncertainty arises from the absence of unified criteria for the interpretation of fundamental legal categories, including acquisition, sale, and exchange. As a result, similar economic actions may be classified differently depending on the interpretative approach applied by competent authorities.

The study substantiates that institutional uncertainty is not a situational phenomenon but a systemic characteristic of the regulatory environment. It is formed through the interaction of regulatory ambiguity and interpretative variability, which together generate heterogeneity in law enforcement practice and reduce the predictability of legal outcomes.

In order to explain this process, a conceptual model of the formation of institutional uncertainty is developed (Figure 1).

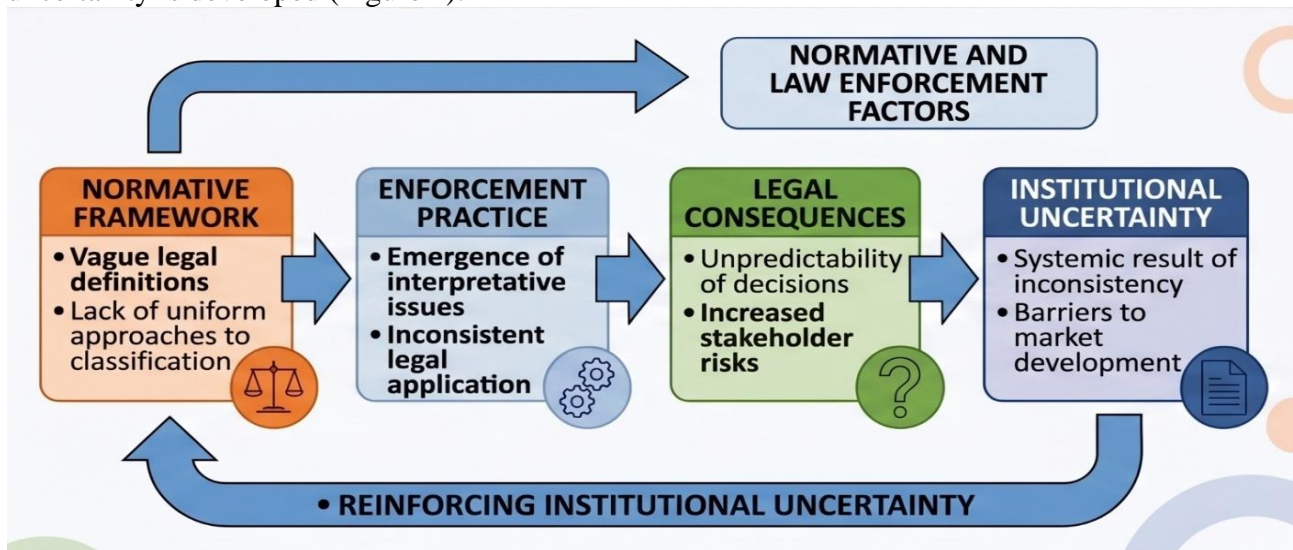


Figure 1. Mechanism for the Formation of Institutional Uncertainty in Crypto-Asset Regulation

Source: developed by the authors based on the conducted research.

The model demonstrates that ambiguity in the conceptual framework of regulation leads to variability in the interpretation of legal norms, which, in turn, results in inconsistencies in law enforcement decisions and the emergence of legal risks. The proposed model provides a systemic representation of the causal relationship between regulatory provisions, interpretative practices, and enforcement outcomes.

The proposed mechanism is consistent with the theoretical understanding of crypto-assets as multi-functional digital economic instruments, where ambiguity in their classification leads to variability in regulatory interpretation (Iminokhunov & Khakimov, 2026).

The analysis of law enforcement practice reveals significant contradictions in the classification of crypto-asset transactions. In particular, it is established that the categories of “acquisition” and “sale” are often interpreted broadly, including technical operations such as the

transfer of crypto-assets between wallets. This leads to the conflation of economic actions with technological processes and creates a risk of incorrect legal qualification.

Additionally, inconsistencies are identified in the application of qualifying criteria such as “large scale” and “recurrence”. The absence of clear interpretative standards results in divergent assessments of similar actions, depending on the position of the regulatory or enforcement authority.

Another important result of the study is the substantiation of the relationship between imperfections in the conceptual apparatus and the asymmetry of legal risks. Under conditions of institutional uncertainty, market participants are unable to reliably assess the legal consequences of their actions, which leads to the formation of an uneven distribution of legal risks and reduces the incentives to operate within the regulated segment of the market.

To further explain the identified contradictions, a structural model of law enforcement in the circulation of crypto-assets is developed (Figure 2).

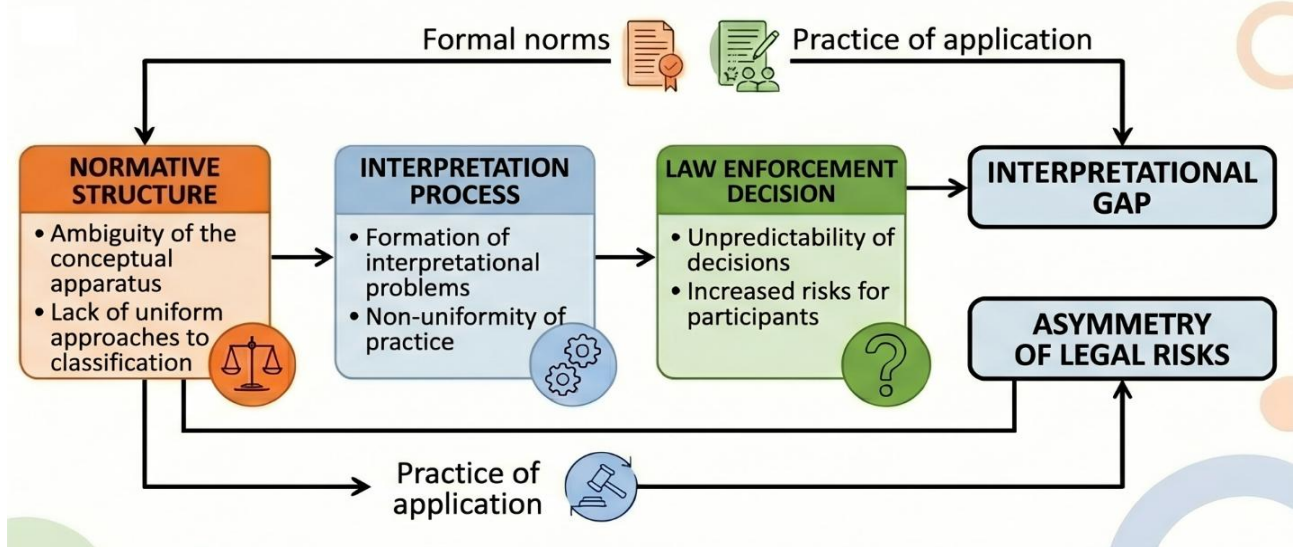


Figure 2 - Law Enforcement Model in the Circulation of Crypto-Assets

Source: developed by the authors based on the conducted research.

The model reveals the existence of an interpretative gap between formally established legal norms and their practical application. This gap leads to inconsistencies in enforcement decisions and contributes to the formation of an unstable institutional environment.

The study also identifies a number of structural factors limiting the effectiveness of crypto-asset regulation, including the decentralized nature of storage and circulation, the absence of centralized intermediaries, the cross-border character of transactions, and the use of anonymous or pseudonymous instruments. These features significantly reduce the effectiveness of traditional regulatory mechanisms, which are primarily designed for centralized financial systems.

It is established that regulatory approaches focused on controlling licensed market participants do not provide sufficient coverage of transactions conducted through decentralized platforms and informal channels. This further amplifies institutional uncertainty and complicates the implementation of enforcement measures.

Based on the results obtained, it is substantiated that improving the effectiveness of crypto-asset regulation requires not only the expansion of the regulatory framework, but also the development of mechanisms ensuring consistency in the interpretation and application of legal norms. In this context, the study proposes an approach aimed at systematizing legal categories and

establishing unified interpretative criteria, which allows for reducing institutional uncertainty and increasing the predictability of law enforcement practice.

Thus, the results confirm that institutional uncertainty in law enforcement is a systemic consequence of the inconsistency between regulatory provisions and their practical implementation, and represents a key factor constraining the development of the regulated segment of the crypto market.

**Discussion**

The results obtained in the study confirm that the institutional challenges of crypto-asset regulation are systemic in nature and are determined by the inconsistency between formally established regulatory provisions and their practical enforcement. Unlike traditional financial markets, where legal categories are embedded within stable institutional frameworks, the regulation of crypto-assets operates under conditions of rapid technological change and the absence of unified interpretative standards.

The findings are aligned with earlier theoretical conclusions regarding the complexity and hybrid nature of crypto-assets, which complicates their integration into traditional legal frameworks (Iminokhunov & Khakimov, 2026).

From the perspective of the institutional approach, the identified contradictions can be interpreted as a manifestation of a structural gap between normative regulation and its application. This gap is not limited to isolated inconsistencies in law enforcement, but reflects a deeper problem related to the inadequacy of the conceptual apparatus used to regulate crypto-asset transactions. The findings demonstrate that the effectiveness of regulation is critically dependent not only on the content of legal norms, but also on the consistency of their interpretation.

Particular importance is attached to the established relationship between conceptual ambiguity and the asymmetry of legal risks. The study shows that the lack of clear and unified interpretative criteria leads to a situation in which similar economic actions are subject to different legal assessments. This creates an uneven distribution of legal risks among market participants and significantly reduces the predictability of the regulatory environment. Thus, institutional uncertainty becomes not only a legal, but also an economic factor influencing the behavior of agents in the crypto market.

The proposed conceptual model of the formation of institutional uncertainty expands the understanding of regulatory processes in the digital economy by demonstrating the causal relationship between regulatory ambiguity, interpretative variability, and law enforcement outcomes. In contrast to existing approaches that consider legal uncertainty primarily as a consequence of incomplete regulation, the study substantiates that uncertainty is reproduced at the stage of interpretation and application of legal norms.

The developed structural model of law enforcement further deepens this analysis by revealing the existence of an interpretative gap between formal legal provisions and their practical implementation. This model allows for a systemic explanation of inconsistencies in law enforcement decisions and highlights the role of interpretation as a key element of the institutional environment of regulation.

The findings also indicate that traditional regulatory approaches, focused on controlling licensed intermediaries, are not fully applicable to crypto-assets due to their decentralized nature. The absence of centralized actors, the cross-border character of transactions, and the use of anonymous technologies significantly limit the effectiveness of conventional enforcement mechanisms. As a result, a substantial share of economic activity remains outside the scope of direct regulatory control.

An important implication of the study is that increasing the number of legal norms does not necessarily lead to improved regulatory effectiveness. On the contrary, in the absence of unified interpretative standards, the expansion of the regulatory framework may increase the level of

uncertainty. This suggests that the key direction for improving regulation lies not only in the development of new legal provisions, but in the formation of mechanisms ensuring consistency in their application.

In this context, the proposed approach based on the systematization of legal categories and the development of unified interpretative criteria can be considered as a necessary condition for reducing institutional uncertainty. The implementation of such an approach contributes to increasing the predictability of law enforcement decisions and to the formation of a more stable institutional environment for the functioning of the crypto market.

At the same time, the study has certain limitations. The analysis is primarily conceptual in nature and does not include a quantitative assessment of the level of institutional uncertainty or its impact on market development. In addition, the absence of a unified empirical database on law enforcement practice limits the generalizability of the results. These limitations define directions for further research, which may include the development of quantitative models and the empirical testing of the proposed theoretical framework.

Thus, the discussion confirms that institutional uncertainty in law enforcement is a key factor limiting the development of the regulated segment of the crypto-asset market and highlights the necessity of shifting the focus of regulatory policy from the expansion of legal norms to the improvement of their interpretation and application.

### Conclusion

The study demonstrates that the key challenge of crypto-asset regulation lies not so much in the absence of a regulatory framework, but in the insufficient development of mechanisms ensuring its consistent interpretation and enforcement. The results confirm that institutional uncertainty in law enforcement is a systemic phenomenon arising from the inconsistency between formally established legal norms and their practical application.

This conclusion further develops the theoretical propositions regarding the nature of crypto-assets and their role in the digital economy, previously substantiated in the authors' earlier research (Iminokhunov & Khakimov, 2026).

A central finding of the study is the identification of institutional uncertainty as a structural characteristic of the regulatory environment in the crypto-asset domain. It is shown that this uncertainty is caused by the absence of unified criteria for the interpretation of key legal categories and manifests itself in the heterogeneity of law enforcement decisions and the asymmetry of legal risks faced by market participants.

The study substantiates the relationship between imperfections in the conceptual apparatus and the uneven distribution of legal risks. It is demonstrated that ambiguity in the interpretation of categories such as acquisition, sale, recurrence, and large-scale leads to inconsistencies in the legal qualification of similar economic actions and reduces the predictability of regulatory outcomes.

An important contribution of the research is the development of a conceptual model of the formation of institutional uncertainty, which explains the causal relationship between regulatory ambiguity, interpretative variability, and enforcement outcomes. In addition, a structural model of law enforcement is proposed, revealing the existence of an interpretative gap between formal legal norms and their practical implementation.

The obtained results also show that traditional regulatory approaches focused on controlling centralized intermediaries are not fully applicable to crypto-assets due to their decentralized and cross-border nature. This limits the effectiveness of existing enforcement mechanisms and contributes to the persistence of institutional uncertainty.

Based on the findings, it is substantiated that improving the effectiveness of crypto-asset regulation requires a shift in focus from the expansion of legal norms to the development of mechanisms ensuring consistency in their interpretation and application. In this context, the proposed

approach based on the systematization of legal categories and the establishment of unified interpretative criteria can be considered as a necessary condition for reducing institutional uncertainty and increasing the stability of the regulatory environment.

The results of the study can be used in the development of institutional models of crypto-asset regulation and in improving law enforcement practice. They also provide a theoretical basis for further research aimed at the quantitative assessment of institutional uncertainty and the development of applied regulatory mechanisms in the digital economy.

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