

## The Legal Status of Cryptocurrencies and the Regulation of Smart Contract-Based Transactions: An International Perspective

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**Abstract:** The rise of cryptocurrencies and smart contracts has fundamentally transformed the financial and legal landscapes. While offering unprecedented opportunities for decentralized transactions, these innovations also present regulatory challenges across jurisdictions. This article examines the legal status of cryptocurrencies, the enforceability of smart contracts, and the regulatory frameworks adopted by various countries. It aims to provide a comparative analysis of international approaches, identify the common legal hurdles, and suggest strategies for harmonizing regulations to foster innovation while ensuring legal certainty.

**Keywords:** cryptocurrencies, smart contracts, legal regulation, international law, blockchain, decentralized finance.

The rapid expansion of cryptocurrencies has significantly influenced the financial and legal realms worldwide. The emergence of digital currencies such as Bitcoin and Ethereum introduces a decentralized and borderless form of value exchange that challenges traditional financial regulation, particularly given their capacity to function outside centralized financial systems. Concurrently, the advent of smart contracts—self-executing agreements encoded on blockchain technology—presents a novel legal paradigm. These technologies raise complex questions regarding classification, regulatory treatment, and enforceability under existing legal frameworks. This article aims to analyze the legal status of cryptocurrencies and the regulation of smart contract-based transactions across different jurisdictions, highlighting the varied approaches to legal classification, regulatory challenges, and potential pathways for international harmonization.

The classification of cryptocurrencies lacks standardization, as different countries adopt varied regulatory approaches based on their unique economic, legal, and technological contexts. There is no unified definition or classification of cryptocurrencies under international law, resulting in different interpretations and legal treatments across jurisdictions.

Cryptocurrencies are classified in multiple ways depending on the regulatory framework of each country:

**Currencies or Means of Payment:** In some countries, like Japan, cryptocurrencies are recognized as legal tender under the Payment Services Act, which expanded the definition of "virtual currency" to include digital assets used for payment. This classification supports Japan's goal of fostering financial innovation while ensuring adequate consumer protections.

**Property or Assets:** In the United States, the Internal Revenue Service (IRS) treats cryptocurrencies as property for tax purposes, meaning transactions involving cryptocurrencies are subject to capital gains tax. Canada adopts a similar approach, where cryptocurrency transactions are treated as barter transactions for tax reporting, requiring the valuation of digital assets at the time of the exchange.

**Commodities:** The U.S. Commodity Futures Trading Commission (CFTC)<sup>1</sup> classifies Bitcoin and other virtual currencies as commodities under the Commodity Exchange Act. This classification

<sup>1</sup> Commodity Exchange Act. Available at: <https://www.cftc.gov/LawRegulation/CommodityExchangeAct/index.htm>

allows the CFTC to regulate derivatives markets and trading activities involving cryptocurrencies, influencing trading platforms and investment products based on digital assets.

**Securities:** In certain cases, cryptocurrencies are regulated as securities. For example, the European Union's Markets in Financial Instruments Directive (MiFID II) and the U.S. Securities and Exchange Commission (SEC) apply securities regulations to some digital assets, particularly those distributed through Initial Coin Offerings (ICOs) or Security Token Offerings (STOs). This classification is based on the "investment contract" test established in *SEC v. Howey Co.*, 328 U.S. 293 (1946), where an asset is considered a security if it involves an investment of money in a common enterprise with an expectation of profits derived from the efforts of others<sup>2</sup>.

These varied classifications lead to regulatory discrepancies, especially in cross-border transactions, where a cryptocurrency may be treated as legal tender, property, a commodity, or a security depending on the jurisdiction. Such differences can create legal uncertainties and pose challenges for global regulatory coordination.

Countries take different approaches to regulating cryptocurrencies, with some opting for strict prohibitions due to perceived risks, while others adopt detailed regulatory frameworks to manage these risks. These divergent approaches reflect varying levels of openness to digital assets and create challenges for harmonizing global cryptocurrency laws, especially in cross-border transactions and investor protection.

For example, China has imposed a comprehensive ban on all cryptocurrency-related activities, including issuance, trading, and transactions. The ban is motivated by concerns over financial stability, fraud, and money laundering, reflecting a conservative regulatory stance that seeks to eliminate potential risks associated with decentralized digital assets.

In contrast, other jurisdictions have chosen to regulate cryptocurrencies rather than ban them outright. The European Union, through the proposed Markets in Crypto-Assets Regulation (MiCA), aims to establish a unified legal framework for the issuance and trading of crypto-assets across member states<sup>3</sup>. MiCA seeks to ensure market integrity, protect consumers, and address risks related to financial stability and crime. Similarly, Singapore's Payment Services Act provides a regulatory structure for digital payment token services, incorporating Anti-Money Laundering (AML) and Counter-Terrorism Financing (CTF) requirements to mitigate the associated risks while allowing for the regulated use of cryptocurrencies.

These differing regulatory approaches highlight the challenges in achieving international regulatory consistency, as countries balance the need to protect their financial systems with the desire to foster innovation in the digital economy.

*Smart contracts* are becoming increasingly popular as a means of executing agreements on blockchain networks. However, their legal recognition and regulation vary significantly across jurisdictions, depending on the specific legal and regulatory issues involved. A smart contract is a self-executing digital contract in which the terms of the agreement are written directly into code. These contracts automatically carry out and enforce transactions when predetermined conditions are met, presenting a novel approach that challenges traditional contract law concepts, such as offer, acceptance, consideration, and the formal requirements for written contracts.

While smart contracts can meet the core elements of traditional contract law, their automated and decentralized nature introduces unique legal considerations:

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<sup>2</sup> Directive 2015/849 (EU AML Directive). Official Journal of the European Union, L 141.

<sup>3</sup> Markets in Crypto-Assets Regulation (MiCA) (Proposal). Available at: <https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica>

*Offer, Acceptance, and Consideration:* Legal systems in countries like the United States and the United Kingdom recognize that smart contracts can fulfill the basic requirements of offer, acceptance, and consideration. Courts in these jurisdictions have found that the automated execution of smart contracts does not inherently conflict with contract law principles. If the essential elements of a contract are present, the fact that the agreement is executed through code does not negate its enforceability.

*Electronic Signatures and Records:* Legislation such as the U.S. Electronic Signatures in Global and National Commerce Act (E-SIGN Act)<sup>4</sup> and the European Union's eIDAS Regulation facilitates the enforceability of electronically formed contracts, including smart contracts. These laws grant electronic signatures and records the same legal status as traditional paper-based agreements, thus providing a legal basis for the recognition of smart contracts as valid and enforceable agreements.

*Limitations and Challenges:* Despite their potential to fulfill contract requirements, smart contracts face challenges due to their immutable nature. Once a smart contract is executed on a blockchain, its terms cannot be altered, which can complicate the resolution of disputes, correction of errors, or modification of contract terms after execution. The UK Law Commission's consultation on smart contracts acknowledges these limitations, noting the difficulties in applying traditional legal remedies, such as rescission (canceling the contract) or rectification (correcting errors), to self-executing digital agreements.

The decentralized execution of smart contracts raises further issues, including questions of jurisdiction, liability, and dispute resolution, as well as the need for updated legal frameworks to accommodate these new forms of agreements.

Jurisdictions approach the regulation of smart contracts differently, reflecting varying levels of legal recognition and regulatory focus:

***Pro-Smart Contract Jurisdictions:*** Some countries have explicitly recognized the legal validity of smart contracts, providing regulatory frameworks that promote legal certainty and encourage technological innovation.

For example, Malta is considered one of the pioneers in the legal recognition of blockchain and smart contracts. The country introduced the Digital Innovation Authority Act, along with the Innovative Technology Arrangements and Services Act, which specifically addresses the use of smart contracts and blockchain technology. These laws establish the legal framework for recognizing smart contracts as enforceable agreements and provide a mechanism for certifying technology service providers involved in blockchain applications. Malta's regulations aim to create a "blockchain island" by fostering a business-friendly environment for blockchain-based services while addressing potential legal risks.

Switzerland is also at the forefront of blockchain regulation. The Federal Act on Distributed Ledger Technology (DLT) came into effect in 2021, explicitly recognizing the legal status of smart contracts and creating a framework for trading DLT-based securities. Swiss law now allows the tokenization of assets and enforces smart contracts in financial transactions. Additionally, Switzerland's Financial Market Supervisory Authority (FINMA) provides regulatory guidance for Initial Coin Offerings (ICOs), helping to clarify when tokens issued through smart contracts qualify as securities.

<sup>4</sup> <https://nca.gov/regulation-supervision/manuals-guides/federal-consumer-financial-protection-guide/compliance-management/deposit-regulations/electronic-signatures-global-and-national-commerce-act-e-sign-act#:~:text=The%20Electronic%20Signatures%20in%20Global,affecting%20interstate%20or%20foreign%20commerce>

In addition, Wyoming has enacted blockchain-friendly legislation that explicitly recognizes smart contracts. The state's laws treat digital assets as property and provide for the legal enforceability of smart contracts under the Uniform Electronic Transactions Act (UETA). Wyoming also allows companies to register as "Decentralized Autonomous Organizations" (DAOs), giving them a legal structure based on smart contract governance.

***Unclear or Ambiguous Frameworks:*** In many jurisdictions, the legal status of smart contracts remains uncertain due to a lack of specific regulations. Traditional legal principles may not always accommodate the automated and self-executing nature of smart contracts, leading to ambiguity.

As a civil law country, Germany's legal system relies heavily on statutory law rather than case law. This can create challenges for smart contracts, which are not explicitly recognized under German law. While the German Civil Code requires certain formalities for contracts (e.g., written form for real estate transactions), smart contracts executed on a blockchain may not easily meet these requirements. Additionally, legal issues such as liability for coding errors or bugs in smart contracts remain unresolved. However, Germany is gradually adapting its regulatory approach, with initiatives such as the introduction of the Electronic Securities Act, which allows the use of blockchain for electronic securities issuance.

The same in France, while there is no explicit legal recognition of smart contracts, certain aspects of blockchain technology are regulated. The PACTE law (Plan d'Action pour la Croissance et la Transformation des Entreprises) recognizes the registration of securities on a blockchain, but the legal enforceability of smart contracts remains under debate. French courts have yet to develop a consistent approach to the legal treatment of smart contracts, leading to uncertainties in enforcement and dispute resolution.

While China has banned cryptocurrency trading and ICOs, the country has not specifically prohibited the use of blockchain technology or smart contracts for other purposes. However, the legal recognition of smart contracts is ambiguous, as traditional contract law in China may not fully accommodate the automated nature of self-executing digital agreements. Additionally, China's restrictions on cryptocurrencies create challenges for smart contract applications that involve digital assets.

***Token-Based Regulations:*** Certain jurisdictions regulate tokens issued through smart contracts, focusing on compliance with securities laws, anti-money laundering measures, and investor protection.

For example, Singapore has developed a regulatory approach that covers both blockchain-based financial services and token issuances. Under the Payment Services Act, digital payment token services, including exchanges and wallet providers, must comply with Anti-Money Laundering (AML) and Counter-Terrorism Financing (CTF) requirements. The Monetary Authority of Singapore (MAS) also provides guidelines on when a token may be considered a security under the Securities and Futures Act (SFA). For Initial Coin Offerings (ICOs) or Security Token Offerings (STOs), issuers must comply with securities regulations if the tokens are considered securities. This approach allows Singapore to balance innovation with the need for regulatory oversight.

At the same time UK's Financial Conduct Authority (FCA) has issued guidelines on crypto-assets, including tokens issued through smart contracts. The FCA classifies tokens into three categories: *exchange tokens* (e.g., Bitcoin), *utility tokens*, and *security tokens*. If a token issued through a smart contract qualifies as a security, it must comply with existing financial regulations. The UK is also exploring how smart contracts can fit within the framework of the Electronic Communications Act 2000, which provides for the enforceability of electronic signatures.

Similarly, Japan's Financial Services Agency (FSA) regulates token offerings under the Payment Services Act and the Financial Instruments and Exchange Act. If tokens issued via smart contracts are considered securities, they must meet the relevant regulatory requirements. Japan's legal framework

also includes provisions for Anti-Money Laundering (AML) measures that apply to token exchanges and issuers.

These varied approaches demonstrate the differences in how jurisdictions handle the legal recognition and regulation of smart contracts. While some countries explicitly acknowledge their legal status and promote their use through dedicated laws, others remain uncertain or focus on regulating the tokens associated with smart contracts. This regulatory diversity creates challenges for harmonizing laws across borders and establishing consistent legal standards for smart contract-based transactions.

As it was said above, the regulation of cryptocurrencies and smart contracts faces several common challenges that cut across jurisdictions:

- *Anti-Money Laundering (AML) and Counter-Terrorism Financing (CTF)*: Cryptocurrencies and smart contracts can facilitate anonymous transactions, raising concerns about their use for illicit activities. The Financial Action Task Force (FATF) has issued guidelines recommending that countries implement AML/CTF measures for cryptocurrency service providers, including requirements for Know Your Customer (KYC) procedures and the reporting of suspicious activities. These guidelines aim to reduce the risks associated with the misuse of digital assets while promoting international regulatory consistency.
- *Consumer Protection*: The self-executing nature of smart contracts can pose risks to consumers, especially if they inadvertently agree to unfavorable terms or lack a clear understanding of the contract's conditions. Given the automation involved, reversing transactions or correcting errors can be challenging. The European Commission's proposed Digital Services Act seeks to enhance consumer protections in digital markets, including provisions that could affect the regulation of smart contracts to ensure that consumers are not unfairly disadvantaged.
- *Taxation*: There is no uniform approach to the taxation of cryptocurrencies. Some countries treat gains from cryptocurrency transactions as capital gains, while others classify them as ordinary income, leading to different tax rates and reporting requirements. The Organization for Economic Cooperation and Development (OECD) has introduced the Crypto-Asset Reporting Framework to address these disparities by establishing a standardized approach to the reporting and exchange of tax information for cryptocurrency transactions.

Efforts are underway to create harmonized regulatory frameworks that address some of the challenges. Organizations like the FATF and the International Organization for Standardization (ISO) are working to develop international standards and best practices for regulating cryptocurrencies and smart contracts. The FATF's AML/CTF recommendations and ISO's blockchain standards provide a basis for aligning national regulations, which could help to foster consistency in legal approaches across different countries.

Moreover, the United Nations Commission on International Trade Law (UNCITRAL) is considering the development of model laws and conventions on electronic commerce, which could include provisions for regulating smart contracts and digital assets<sup>5</sup>. These model laws aim to provide a framework that countries can adopt or adapt, helping to harmonize the legal treatment of digital transactions and reduce regulatory discrepancies on a global scale.

By addressing these challenges and working towards harmonized regulatory frameworks, international efforts can help create a more coherent and legally sound environment for the use of cryptocurrencies and smart contracts.

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<sup>5</sup> United Nations Commission on International Trade Law (UNCITRAL): Model Law on Electronic Commerce. Available at: <https://uncitral.un.org/en/texts/ecommerce>



The European Union, the United States, and Uzbekistan have adopted distinct regulatory strategies for cryptocurrencies, reflecting their legal frameworks and regulatory priorities:

- *The EU* is moving towards a harmonized regulatory framework for crypto-assets through the proposed Markets in Crypto-Assets Regulation (MiCA). MiCA aims to create a comprehensive legal framework that covers the issuance, trading, and custody of crypto-assets across member states, fostering legal certainty and innovation.

Under MiCA, crypto-asset service providers (CASPs) would be required to register with a competent national authority and comply with strict AML/CTF requirements, including customer due diligence and reporting obligations. MiCA also introduces rules for stablecoins, requiring issuers to meet specific reserve requirements and provide investor protections to maintain market stability.

The legal treatment of cryptocurrencies in the EU is also shaped by case law. In the *Hedqvist (C-264/14)* case, the ECJ ruled that Bitcoin transactions are exempt from VAT because they are considered financial transactions involving a form of payment. This decision has helped clarify the tax treatment of cryptocurrencies within the EU, making it easier for businesses and consumers to use digital assets for payments<sup>6</sup>.

The EU is also testing a pilot regime for Distributed Ledger Technology (DLT)-based market infrastructure. This initiative allows for experimentation with blockchain applications in financial services under a controlled regulatory framework, potentially setting the stage for broader adoption of DLT and crypto-assets within the European financial market.

- *The U.S.* regulatory landscape for digital assets is fragmented, with multiple federal and state agencies regulating different aspects of the industry. This decentralized approach results in varying rules and requirements across jurisdictions.

The SEC regulates digital assets that qualify as securities under the Howey Test<sup>7</sup>, which considers whether an asset represents an investment in a common enterprise with an expectation of profits derived from the efforts of others. For example, the SEC has taken enforcement actions against companies conducting unregistered Initial Coin Offerings (ICOs) that it deemed to be securities offerings, such as the cases against *Telegram* and *Block.one*.

The CFTC oversees digital assets classified as commodities, such as Bitcoin and Ethereum. The agency regulates derivative products like futures and options based on these assets. For example, the CFTC brought enforcement actions against BitMEX, a cryptocurrency derivatives trading platform, for failing to comply with U.S. AML laws and operating without proper registration.

At the same time, Wyoming is known for its blockchain-friendly laws, having introduced a comprehensive legal framework for digital assets. The state has enacted legislation that recognizes cryptocurrencies as property, enables the chartering of Special Purpose Depository Institutions (SPDIs) for digital asset custody, and allows companies to form as Decentralized Autonomous Organizations (DAOs). Wyoming's Blockchain Regulatory Sandbox offers companies a space to test innovative blockchain products and services with relaxed regulatory requirements for a limited time.

On the other hand, New York's Department of Financial Services (NYDFS) has implemented stringent requirements for cryptocurrency businesses through the BitLicense regime, which mandates strict AML/CTF compliance, cybersecurity standards, and capital requirements for licensed firms. This

<sup>6</sup> *howeyHedqvist (C-264/14)* [2015] ECLI:EU:C:2015:718, European Court of Justice. Available at: <https://curia.europa.eu/juris/liste.jsf?num=C-264/14>

<sup>7</sup> Securities Act of 1933 and Howey Test (SEC v. W. J. Howey Co., 328 U.S. 293 (1946)). Available at: <https://www.govinfo.gov/content/pkg/COMPS-1884/pdf/COMPS-1884.pdf>

approach has been criticized for being burdensome, leading some companies to avoid doing business in New York.

- *Uzbekistan* has taken a progressive approach by establishing a legal framework that regulates cryptocurrency exchanges, mining, and other digital asset-related activities.

In 2019, Uzbekistan introduced a licensing regime for cryptocurrency exchanges and required mining activities to be registered with the National Agency for Perspective Projects (NAPP)<sup>8</sup>. Licensed exchanges must comply with regulations regarding AML/CTF measures, data protection, and reporting obligations. For example, UzNEX, a government-licensed exchange, operates under these rules, providing a regulated platform for trading digital assets.

While Uzbekistan initially encouraged cryptocurrency mining by offering favorable electricity rates, recent regulations have introduced a registration requirement and imposed higher electricity tariffs for mining farms. The goal is to regulate the energy-intensive mining industry while maintaining some level of governmental control.

Despite these efforts, Uzbekistan faces challenges in fully aligning its regulations with international standards for AML/CTF. Compliance with the FATF's recommendations remains a work in progress, as the country strives to enhance transparency and prevent the misuse of digital assets for illicit activities.

These examples illustrate the diverse regulatory approaches adopted by the EU, the U.S., and Uzbekistan. While the EU aims to create a unified framework through MiCA, the U.S. employs a fragmented approach with varying federal and state regulations, and Uzbekistan adopts a progressive yet cautious stance with licensing requirements. This diversity reflects the differing priorities and regulatory philosophies of each jurisdiction.

Regulators need to balance protecting consumers and preventing illegal activities with promoting innovation in digital finance. This involves establishing regulatory frameworks that address the risks associated with cryptocurrencies and smart contracts while supporting technological advancements.

To achieve consistency, countries should collaborate to develop international standards for regulating cryptocurrencies and smart contracts, potentially through organizations like UNCITRAL or FATF. Such collaboration would help create a unified approach to addressing issues such as Anti-Money Laundering (AML), consumer protection, and market integrity.

Additionally, legislation should be updated to account for the unique characteristics of smart contracts, including their automated execution and immutability. Legal frameworks should focus on establishing clear rules for dispute resolution and clarifying liability in cases of coding errors or unforeseen outcomes, ensuring that smart contracts can be effectively integrated into the existing legal system.

By prioritizing regulatory consistency and collaboration, a solid foundation can be created for the broader adoption of decentralized technologies, ensuring they can thrive within a supportive and legally sound environment.

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<sup>8</sup> Resolution Of the President of the Republic of Uzbekistan On measures to devolep the digital economy and the sphere of crypto-assets turnover in the Republic of Uzbekistan. Available at: <https://lex.uz/docs/6054367>

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