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STUDIES AND ARTICLES

The Legal Framework for Cryptocurrencies in Civil Enforcement: Comparative Lessons for Romania

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Abstract: The present research explores how blockchain technology and cryptocurrencies challenge the traditional continental civil law framework. By reassessing the legal taxonomy of digital assets, the paper argues against their strict classification as *jura in personam*, primarily due to the absence of a designated debtor in permissionless networks. Alternatively, it supports the recognition of a *sui-generis* real right (*jus in re*) grounded in the concept of 'cryptographic possession'. Furthermore, classical civil classifications are reinterpreted to address the ubiquitous nature of digital assets and the inherent complexities of jurisdictional localization. The study highlights the legal distinction between fungible cryptocurrencies and Non-Fungible Tokens (NFTs), alongside the emerging fructiferous character of assets deployed within Decentralized Finance (DeFi) ecosystems, which generate civil fruits. To contextualize these shifts, three European regulatory paradigms are evaluated: the French dualist approach under the PACTE Law, the German institutional integration into the banking sector, and the Swiss DLT framework, which innovatively merges substantive rights with digital tokens. Finally, the analysis focuses on the practical implications for the pathology of legal relations, particularly regarding the efficacy of forced execution and the safeguarding of the creditors' general pledge. The paper concludes with targeted *de lege ferenda* proposals for the Romanian legal system. These include the express statutory recognition of digital assets as intangible movable property in the Civil Code, alongside modern civil procedure mechanisms, such as the judicially mandated surrender of private keys under penalty and automated electronic garnishment, aimed at harmonizing state coercive power with the realities of the Web 3.0 economy.

Keywords: cryptocurrencies; digital assets; cryptographic possession; property rights; enforcement; Decentralized Finance (DeFi); comparative private law.

1. Introduction: the notion of property in the blockchain era

The emergence of blockchain technology and cryptocurrencies has fundamentally changed the way society perceives, stores, and transfers value. While the first decades of the internet were

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dedicated to democratizing access to information, allowing the instant duplication and dissemination of data at zero marginal costs, the current stage of technological development, generically termed Web 3.0, proposes a transition to the 'internet of value'[1]. This technological transition raises challenges for civil law, historically built on the pillars of tangibility and centralized intermediation. In essence, the innovation brought by distributed ledger technology (DLT) has solved, for the first time without the intervention of a trusted third party, the 'double-spending' problem in the digital environment, transforming the computer file from an infinitely multipliable entity into a unique, rival, and exclusive asset, capable of being subject to private appropriation.

This new economic reality forces a re-evaluation of the concepts of patrimony and property, as they are regulated in the continental legal system. Until the emergence of crypto-assets, the monopoly over the validation of transactions and the keeping of property registers, whether bank registers for currency or land registers for real estate, belonged to the state or entities delegated and regulated by it. However, blockchain technology introduces the idea of 'truth by consensus', wherein the ledger is no longer kept by a central authority, but distributed among all network participants, becoming immutable through cryptography. From a legal perspective, this generates an acute tension between the rules of the computer code that govern the network and the norms of positive law. Although the maxim 'code is law' has fascinated the technological community, legal reality demonstrates that algorithms cannot operate in a legislative vacuum, especially when their effects are produced in the patrimony of individuals, generating fiscal, civil, or criminal obligations.

In the context of Romanian law, the major challenge does not lie in recognizing the economic value of these assets, which is an incontestable fact of the market, but in their integration into the rights in rem and rights of claim. Cryptocurrencies defy classic distinctions: they are not corporeal goods, although possession of the private key confers an *erga omnes* power of control similar to material possession; they are not veritable rights of claim, because in decentralized systems like Bitcoin there is no debtor obliged to perform a prestation; and, until recently, they did not benefit from a legal framework that would confer upon them the status of typical financial instruments. This hybrid, *sui generis* nature required the intervention of the European legislator through the adoption of the MiCA Regulation[2], which, although harmonizing the crypto-asset market, leaves open numerous issues of substantive civil law, especially regarding the property regime and real guarantees.

The theoretical and practical importance of clarifying the legal nature of these assets becomes critical because of the legal relationships, specifically in the civil enforcement phase. In an economy where debtors can store a significant part of their wealth in digital wallets, protected by asymmetric cryptography and situated outside traditional banking jurisdictions, the

[1] P De Filippi and A Wright, *Blockchain and the Law: The Rule of Code* (Harvard University Press 2018) 34.

[2] Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 (MiCA Regulation), published in OJ L 150, 9.6.2023.

principle of the common pledge of creditors risks becoming inefficient[3]. If the law fails to develop procedural mechanisms capable of penetrating this cryptographic veil and bringing digital assets back under the empire of civil enforcement, we witness the creation of de facto zones of patrimonial immunity. Thus, the stake of the legal analysis transcends mere academic classification, targeting the very efficacy of the act of justice and the state's capacity to ensure legitimate coercion in the enforcement of civil obligations. Therefore, our scientific endeavour aims to deconstruct the legal intangibility of cryptocurrencies and to prove that, regardless of medium, any appropriable value must ultimately answer before civil law.

2. The classification of cryptocurrencies within the field of patrimonial rights: between rights *in rem* and rights of claim

2.1. The theory of the right of claim

In the effort to decode the legal nature of cryptocurrencies, legal literature initially tested the hypothesis of classifying them within the category of rights of claim, starting from the premise that any scriptural value must have a correspondent in the liabilities of an issuer. However, a profound analysis of the obligational structure reveals a fundamental incompatibility between the classic definition of a claim and the architecture of decentralized networks. According to the general theory of obligations, the obligational legal relationship presupposes a structural trinity: an active subject (the creditor), a passive subject (the debtor), and a determined object (the prestation)[4]. In the case of Layer 1 native cryptocurrencies, such as Bitcoin or Ethereum, this relationship is fractured by the absence of the passive subject. In a permissionless network, there is no central entity, corporation, or state authority that has issued the unit of value and assumed the legal obligation to redeem it or provide counter-performance in exchange for it. The miners who validate transactions are not debtors to the wallet holders; they are service providers algorithmically remunerated by the protocol, without having a direct contractual relationship with the network's users. Thus, the right held over a Bitcoin is not a right to demand 'something' from 'someone', but a right over the mathematical unit itself.

This radical conclusion, regarding the absence of the nature of a claim, is not absolute, as the crypto-asset market has evolved toward hybrid forms that complicate the legal framework. We must clearly distinguish between native cryptocurrencies, discussed previously, and the class of stabilized assets, known as Stablecoins (e.g., USDT, USDC). In the case of the latter, there is a centralized issuer, such as Tether Limited, which maintains fiat reserves and promises, through the terms and conditions of use, a 1:1 parity with the US dollar or the euro. In this specific situation, the token holder indeed has a right of claim against the issuer, having the vocation to request the conversion of the token into fiat currency. Therefore, for the hard core of cryptocurrencies, the qualification as a right of claim must be rejected as inadequate,

[3] See Art. 2324 para. (1) Romanian CC: 'Whoever is personally bound is liable with all their movable and immovable property, present and future'.

[4] R Zimmermann, *The Law of Obligations. Roman Foundations of the Civilian Tradition* (Oxford 1996) 1; L Pop, IF Popa and SI Vidu, *Tratat elementar de drept civil. Obligațiile* (Universul Juridic 2012) 12-13; Fr Terré, Ph Simler, Y Lequette and Fr Chénede, *Droit civil. Les obligations* (12th edn; Dalloz 2019) 1-2; A Stoica, *Teoria generală a obligațiilor* (Solomon 2026) 1-2.

necessitating the exploration of a direct legal link between the person and the digital asset.

2.2. The theory of the right *in rem*

The invalidation of the claim thesis obliges us to reconsider the sphere of rights *in rem*, a territory traditionally dominated by the imperative of corporeality. The central question that arises is whether a veritable right of ownership can be exercised over a string of bits, given that art 555 of the Romanian Civil Code[5] (hereinafter 'Romanian CC') defines ownership through the attributes of possession, use, and disposition, concepts historically conceived for tangible property. Modern literature, forced by technological reality to overcome the classic texts, proposes a conceptual revolution: the recognition of 'cryptographic possession'. Thus, the material element of possession must not be understood exclusively as physical contact with the good, but as an exclusive possibility to exercise control over it. In the blockchain context, holding the private key is the functional equivalent of material mastery. The person who knows the private key enjoys the absolute and discretionary power to transfer the asset, block it, or destroy it, excluding any third party from exercising these prerogatives[6].

This exclusivity and rivalry in consumption are defining features of private property, differentiating cryptocurrencies from mere digital information, which can be copied infinitely without diminishing its substance. International jurisprudence has reenforced this vision, with a key development occurring in the decision of the High Court of Justice in London in the case of *AA v Persons Unknown*[7]. Faced with an application for interim relief over stolen Bitcoin, the court held that cryptographic assets constitute property under English law, although they are neither 'choses in possession' (corporeal or tangible movables, also known as 'chattel') nor 'choses in action' (intangible rights enforceable by action). Rather than being forced into the traditional taxonomy of personal property, Bitcoin was nevertheless classified as a novel form of property.

This recognition is particularly significant from a comparative perspective, as it supports the qualification of cryptocurrency as a *sui generis* form of intangible property for the purposes of civil enforcement under Romanian law. If cryptocurrency were regarded as mere information, it could not be subject to seizure. Recognising cryptocurrency instead as incorporeal movable property paves the way for the application of precautionary and executory attachment, which allows the enforcement agent to take control, via cryptographic possession, and transfer the assets to a state-controlled wallet. It is, in essence, a triumph of legal functionalism over formalism: property exists wherever there is an exclusive power to dispose of value.

2.3. The distinction between virtual currency and fiat currency

The terminological confusion between virtual currency and electronic money persists in common language, yet the legal distinction between them is one of substance, not merely of degree. Electronic money, as regulated by Law No 210/2019 regarding the activity of issuing electronic money, is not a new form of property, but merely a digital representation of existing fiat

[5] Law No 287/2009 on the Civil Code, Official Gazette of Romania, Part I, No 505 of 15 July 2011.

[6] On crypto-assets, see also ES CĂLIN, 'Where Soft Law is the Only Law: Digital Goods in Comparative Perspective' (2025) 15(1) *Ars æqui* 38-39 **https://doi.org/10.61801/Arsaequi.2025.282**.

[7] See *AA v Persons Unknown* [2019] EWHC 3556 (Comm), where the court cited the Legal Statement on Crypto-assets and Smart Contracts of the UK Jurisdiction Taskforce, recognizing cryptocurrencies as property.

currency. It constitutes a certain, liquid, and exigible claim against the issuer, represented by an electronic money institution or a bank, which is legally obliged to redeem the funds at nominal value, at any time, upon the holder's request. Electronic money circulates in a closed and regulated system, acting as a digital shadow of fiat money. In contrast, native cryptocurrencies are assets created by the computer protocol, are not guaranteed by any central bank, and are not legal tender on the territory of Romania. Their value does not derive from a state mandate, but from the trust of the network and their transactional utility.

Furthermore, the difference manifests acutely at the level of the value storage infrastructure. The banking system and that of electronic money operate on the account-based model, where records are kept centrally based on the client's identity. Bitcoin and other similar cryptocurrencies utilize the UTXO (Unspent Transaction Output) model[8], which dispenses with accounts and user identities at protocol level. Instead, ownership is represented by unspent transaction history recorded on blockchain and unlocked via cryptographic keys. This architecture makes conventional bank-account garnishment technically inapplicable to a private Bitcoin wallet, since there is no account to freeze at a third party, but rather a digital asset to be taken directly from the debtor. Cryptocurrency is therefore an autonomous patrimonial asset which requires enforcement procedures adapted to its unique digital existence rather than a mere extension of the rules governing the garnishment of bank accounts.

3. Reinterpreting classical taxonomy in the context of blockchain technology

The classical taxonomy of assets (or 'goods', in the Civilian legal jargon) under the Romanian Civil Code was not designed with a distributed ledger in mind. Applying it to cryptographic and related digital assets exposes latent tensions, three of which are examined below: the difficulty of localizing an asset that exists simultaneously across a decentralized network (3.1), the coexistence of fungible and non-fungible assets within what is loosely termed 'virtual currency' (3.2), and the emergence of digital assets capable of producing civil fruits through mechanisms the Code's framework was never adapted to accommodate (3.3).

3.1. The mobility of the asset and the challenge of localization

The integration of cryptocurrencies into the traditional classification of movable and immovable property seems, at first glance, a simple operation of subsumption under the provisions of art 539 para (2) Romanian CC, which assimilates incorporeal goods to movable ones. However, the technological reality of distributed ledgers significantly complicates the application of classic concepts of private international law. Unlike a corporeal movable good, which occupies a determined physical space, or a claim, which is localized at the domicile of the debtor or creditor, cryptocurrencies possess a digital ubiquity. They exist simultaneously on thousands of network nodes dispersed globally. This feature raises a fundamental problem, namely the determination of the applicable law and, implicitly, of territorial jurisdiction. If the servers validating the transaction are located in the United States, and the debtor is in Romania, where

[8] For a detailed analysis of the distinction between the 'account-based model' (specific to Ethereum and banks) and the 'UTXO model' (i.e., Unspent Transaction Output, which is specific to Bitcoin), see AM ANTONOPOULOS, *Mastering Bitcoin: Programming the Open Blockchain* (O'Reilly Media 2017).

is the good *de jure* located?

The dominant solution in recent literature, aimed at avoiding a legislative vacuum or a negative conflict of competence, resorts to a necessary legal fiction, meaning that the localization of the cryptographic asset will be at the domicile or headquarters of the person exercising effective control over the private key. This interpretation shifts the focus from the technical *situs* of the information, which is legally irrelevant, to the decisional *situs* of the owner. Thus, for a Romanian enforcement agent, the fact that the data is stored in the cloud is irrelevant; as long as the executed debtor, domiciled in Romania, holds the device or password necessary to access the funds, the asset is considered to be in the national jurisdiction and is fully seizable.

However, the situation entails critical nuances when custody is exercised by third parties. If the assets are held in a wallet hosted by a trading platform headquartered in a tax haven, the theory of the debtor's direct control weakens. Here, we are rather in the presence of a right of claim against the platform, and the localization of the good tends to migrate towards the custodian's headquarters, exponentially complicating enforcement procedures through the necessity of international letters rogatory.

3.2. The fungibility and uniqueness of cryptocurrencies

Another classic distinction, that between fungible and non-fungible goods, acquires new valences in the crypto system, breaking the conceptual unity of the term virtual currency. On one hand, payment or general utility cryptocurrencies, such as Bitcoin, Litecoin, or Ether, are fungible goods *par excellence*. In the architecture of these protocols, each unit is identical functionally and in value to any other, lacking its own individuality that would distinguish it within the species. A Bitcoin unit mined in 2010 is perfectly interchangeable with one mined today, both having the same liberatory power. This technical fungibility translates legally through the application of the regime of generic goods, which considerably simplifies obligational mechanisms. A good example is found in the case of a loan for consumption (*mutuum*), a case in which the debtor is not bound to return the specific units received, but an equivalent quantity of the same quality. Thus, the debt is one of value, not of a specific body, and the risk of the asset's loss is always borne by the debtor.

On the other hand, the evolution of technical standards on the Ethereum blockchain, through the ERC-721 and ERC-1155 modules, has allowed the emergence of a new species of digital asset, namely Non-Fungible Tokens (NFTs). These are unique, indivisible digital goods, individualized through a distinct cryptographic identifier and, often, through immutable metadata linking them to a work of intellectual creation, a collectible object, or even a real estate ownership right. From the perspective of civil law, an NFT is no longer a currency, but a certain good, an individually determined body. The legal consequence of this requalification is seismic in the matter of contractual liability and forced execution. If a debtor is contractually obliged to transfer a certain NFT, for example, a rare digital artwork from the CryptoPunks collection, they cannot be discharged by handing over another NFT, even if the latter had an equal or higher market value. The obligation is strict, to give a specifically determined good.

Moreover, this distinction becomes critical in the scenario of the fortuitous loss or destruction of the good, through the loss of the private key or sending the token to an incompatible

address, a phenomenon known as 'burning'. While a lost Bitcoin can be substituted by purchasing another from the market, a lost NFT is irretrievable in its digital materiality. In this case, the obligation of restitution in kind becomes objectively impossible to enforce, transforming automatically and necessarily into the obligation to pay compensatory damages. The assessment of these damages, however, raises major evidentiary problems, given the highly volatile and subjective nature of the digital art market, as opposed to the relatively liquid rates of fungible cryptocurrencies.

Last but not least, the horizon of *de lege ferenda* obliges us to look towards the phenomenon of the 'tokenization' of real-world assets, where a non-fungible token can legally represent the ownership right over an apartment or a block of shares. In this hypothesis, the NFT becomes a representative title of the commodity or the right, and its legal regime will be a complex, hybrid one, borrowing the circulation rules of incorporeal movable goods, but keeping the indissoluble link with the underlying asset. Thus, a seizure applied on the token would equate to a seizure on the represented immovable property, a procedural revolution that would require the urgent adaptation of real estate publicity registers to the blockchain infrastructure[9].

3.3. The fructiferous nature of digital assets

Perhaps the most spectacular metamorphosis in the legal regime of digital assets is the transition from a non-fructiferous to a fructiferous character. In the early years of blockchain technology's existence, cryptocurrencies were perceived by academia and investors as purely speculative assets, similar to gold in treasuries: they did not produce income through their mere passive holding, with the only gain resulting from the appreciation of market value. However, the Decentralized Finance (DeFi) revolution shattered this idea, introducing mechanisms through which digital assets 'work' autonomously for their holder, generating constant revenue without diminishing, but rather consolidating, the substance of the principal asset.

The technical phenomenon underpinning this shift is polymorphous. On the one hand, there is the staking mechanism, specific to Proof-of-Stake networks such as Ethereum or Cardano, where the holder locks their cryptocurrencies in a smart contract to validate transactions and secure the network, receiving in exchange periodic rewards generated directly by the protocol. On the other hand, we have Yield Farming and the provision of liquidity on decentralized exchanges, where the user deposits assets into a common liquidity pool, being remunerated with a quota of the trading fees collected from other users. From the perspective of the general theory of property, these revenues exceed the sphere of simple capital appreciation and request a distinct legal qualification. Their conceptual subsumption under the provisions of art 548 para (4) Romanian CC is not only possible but necessary, considering that revenues obtained from staking or lending are arguably civil fruits: incomes resulting from the use of an asset by another person or by a computer protocol by virtue of a legal act, in this case, the smart contract of delegation.

This requalification entails major consequences in the matter of civil enforcement procedures.

[9] J FAIRFIELD, 'Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property' (2022) 97(1) *Indiana Law Journal* 1261-1313.

While in a classic enforcement act upon a bank account, interest accumulates automatically and is caught by the garnishment, the situation is more nuanced in the crypto universe. Often, civil fruits generated by crypto assets are not distributed automatically to the main wallet, but accumulate in a separate contract, requiring an active harvesting action from the user. In this scenario, a seizure instituted exclusively upon the debtor's wallet might leave unaffected the rewards not yet collected from the protocol, allowing the debtor to continue benefiting from substantial revenues derived from an unavailable asset.

Therefore, the *accessorium sequitur principale* rule must be applied with increased technological rigor. The enforcement agent must identify not only static assets, but also active positions in DeFi protocols and notify the garnished third party, to the extent that there is a centralized entity interfacing the protocol, or oblige the debtor, under the sanction of penalties, to exercise the 'claim' function and hand over the fruits. Furthermore, ignoring the fructiferous character could severely prejudice the creditor in the case of liquid staking, where the debtor receives, in exchange for the locked ETH, another token (e.g., stETH) that accumulates value; in such a situation, the enforcement must target the new derivative asset, which incorporates both the capital and the capitalized civil fruits[10].

4. Comparative perspectives on the civil enforcement of crypto-assets in Europe

The legal treatment of cryptocurrencies in civil enforcement has evolved unevenly across Europe, reflecting different regulatory philosophies and traditions. While the adoption of MiCA has introduced a harmonised framework for crypto-asset markets at EU level, significant differences remain in the conceptualisation of cryptocurrencies as objects of proprietary rights and in the procedural mechanisms available for their enforcement. The following comparative overview examines three influential models (France, Germany and Switzerland) that illustrate distinct approaches to the legal nature, custody and enforcement of crypto-assets. Together, they provide valuable guidance for assessing the adequacy of the Romanian legal framework and identifying possible directions for future reform.

4.1. The French model: the PACTE regime and anticipating the MiCA Regulation

In the European legislative landscape, France has assumed an incontestable pioneering role through the adoption, on 22 May 2019, of the Law on the Action Plan for Business Growth and Transformation, known by the acronym 'Loi PACTE'. This normative act introduced a legal framework for digital assets, anticipating with remarkable accuracy the structural pillars of the current European MiCA Regulation. The French legislator did not limit itself to a mere adaptation of existing norms but opted for a surgical modification of the Monetary and Financial Code, introducing a fundamental distinction between the simple token and the broader concept of '*actif numérique*'. According to art L 552-2, the token is defined as any intangible asset representing, in digital form, one or more rights, which can be issued, recorded, conserved, or transferred via a shared electronic recording device.

[10] F Schär, 'Decentralized Finance: On Blockchain- and Smart Contract-Based Financial Markets' (2021) 103(2) *Federal Reserve Bank of St. Louis Review* 153-174.

The major innovation of the French model, critically relevant in enforcement matters, was the introduction of Digital Asset Service Providers (PSAN – *Prestataires de services sur actifs numériques*) in the Monetary and Financial Code. The law created a two-speed system: a mandatory registration for critical actors, custodians of digital wallets and fiat-crypto exchange platforms, and an optional approval for others. By imposing mandatory registration with the Financial Markets Authority (AMF) and subjecting these entities to strict anti-money laundering norms, France transformed the uncertain space of cryptocurrencies into a legally mapped territory. For an enforcement agent, this change is monumental, in the sense that custodial wallets held through intermediaries registered in France, such as Binance France or Coinhouse, became *de plano* seizable. The identification of the debtor is based on the Know Your Customer (KYC) procedures that the PSANs are obliged to implement, and the freezing of assets is carried out through procedures similar to bank garnishment, eliminating the barrier of anonymity.

4.2. The German model: institutional integration into the banking system

Unlike France, which opted for building a parallel legal regime dedicated to crypto-assets, Germany chose the path of pragmatic and immediate integration of the new technology into its traditional financial architecture, considered one of the most robust in Europe. This strategy of domesticating cryptocurrencies through banking assimilation began as early as 2013, when the Federal Financial Supervisory Authority issued a landmark interpretative opinion, qualifying Bitcoin and other decentralized cryptocurrencies as 'units of account'. This subtle legal classification allowed their subsumption into the category of financial instruments under the Banking Act (hereinafter 'KWG'), without necessitating the modification of the definition of money or securities. The immediate effect was the subjection of all commercial actors trading these assets to strict prudential supervision regulations, eliminating the legislative vacuum long before the intervention of the European Union.

The legislative evolution culminated on 1 January 2020, when Germany implemented the 5th AML Directive through a substantial modification of the KWG, going far beyond the minimum European requirements. The German legislator legally defined the activity of 'crypto-custody' as a standalone financial service, subject to the mandatory obtainment of a special banking license. This barrier to entry had the effect of requalifying the market; crypto custodians in Germany are not mere IT service providers, but financial institutions subject to the same capital, audit, and governance standards as a classic bank.

The German model offers an immense procedural advantage, transforming technological uncertainty into banking certainty. Because the German custodian holds the status of a financial institution, the wallet held by a debtor at such a custodian is treated legally similar to a securities account. Consequently, the enforcement procedure does not require complex procedures to identify private keys or computer forensics on the blockchain. The enforcement agent applies directly the provisions of the German Code of Civil Procedure, specifically §857 regarding the enforcement of other patrimonial rights. The standard procedure in Germany is the issuance of an attachment and transfer order addressed to the third-party custodian. Since the custodian is a locally regulated entity, it is obliged to block the account and liquidate the crypto assets or transfer them to the enforcement agent, under the sanction of its own liability,

similar to the procedure of garnishing bank accounts, as also regulated in the Romanian Code of Civil Procedure.

However, at the level of substantive civil law, German literature still carries out heated debates regarding the nature of the right over the token. Because §90 BGB defines a 'thing' exclusively through corporeality, cryptocurrencies cannot be, *stricto sensu*, objects of property rights. They are qualified as 'other objects' (*sonstige Gegenstände*) according to §453 BGB, over which rights can be traded. This dogmatic subtlety generates difficulties in the case of peer-to-peer transactions, where no custodian is present. The transfer of property requires an agreement of wills and a form of substituted delivery, which is the very inscription on the blockchain. Uncertainty intervenes during the time lag between the initiation of the transaction and the final confirmation of the block, an interval in which the risk of the asset's loss or double-spending raises issues of contractual interpretation not yet unitarily resolved by German jurisprudence.

4.3. The Swiss model: ledger-based securities and the materialization of the right in the token

While France chose the path of market regulation through participant supervision, and Germany opted for institutional integration into the banking system, Switzerland proceeded with a profound reform of substantive civil law, offering perhaps the most sophisticated theoretical model globally. Commonly known as the DLT Act, the reform that fully entered into force in 2021 is not a single law, but a legislative package that amended several federal normative acts, with the declared aim of conferring maximum legal certainty upon digital assets. The absolute innovation resides in the modification of the Swiss Code of Obligations, by introducing a new category of securities, called 'ledger-based securities'. Through art 973d and subsequent ones of the Code of Obligations, the Swiss legislator created a link between the legal right and the digital token recorded on the blockchain.

This legal construct surpasses the simple dematerialization of classic shares. In the Swiss system, the token is no longer just proof of the right but becomes the bearer of the right itself. The transfer of the token via the cryptographic mechanism legally equates, without any other formality, to the transfer of the incorporated right, ensuring *erga omnes* opposability. This solution resolves the problem of separation between the asset and its digital representation, which exists in other legal systems. Practically, Switzerland has conferred upon the computer code the power to effectuate mutations in the legal order, under the condition that the distributed ledger provides guarantees of integrity and accessibility to creditors.

The impact of this reform on enforcement procedures is colossal, being treated separately through the modification of the Federal Act on Debt Enforcement and Bankruptcy. The problem of the custodian's bankruptcy received a decisive legislative solution through the introduction of art 242a. The text allows the segregation of clients' digital assets from the bankrupt custodian's bankruptcy estate. Unlike other jurisdictions, where the client risks becoming a mere unsecured creditor competing with other creditors for the remnants of the assets, in Switzerland the law recognizes a pure property right of the client over the cryptocurrencies, even if they are held in a common wallet of the custodian, provided that the records allow the unequivocal allocation of the assets. This legislative clarity transforms Switzerland into a haven

of legal certainty regarding the economic value of cryptocurrencies, offering an ideal *de lege ferenda* model for Romania, covering both the issue of recognizing the right-constituting effect of entries in the distributed ledger and the absolute protection of the owner in the face of the intermediary's insolvency.

5. Conclusions and *de lege ferenda* proposals

The systemic analysis of the legal regime of cryptocurrencies, undertaken through the prism of the differences between the rigidity of civil law norms and the fluidity of distributed ledger technology, reveals a discrepancy between the exponential pace of financial innovation and the conservative nature of the Romanian legislator. The conclusion drawn from the present endeavour is that cryptographic assets have irreversibly surpassed the stage of technological curiosity, consolidating their position as incorporeal goods with certain patrimonial value. Although the current normative framework, complemented by the transposition of the European AML directives and by the direct application of the MiCA Regulation, provides administrative and fiscal landmarks, it remains tributary to a materialist conception of the patrimony, leaving vast areas of uncertainty in substantive civil law and, more severely, in the matter of enforcement proceedings. Thus, the general pledge of unsecured creditors, consecrated by art 2.324 Romanian CC, risks becoming a legal fiction in the face of a debtor who secures their wealth through cryptography, outside the range of classic procedural law mechanisms.

The main deficiency identified does not reside in the theoretical impossibility of qualifying the cryptocurrency as a good, but in the inefficacy of state coercion mechanisms to operationalize this qualification. The distance between *de jure* seizability and *de facto* execution, consisting of the technical capacity to take possession of the private key, is the problem of the current system. In the absence of the voluntary cooperation of the debtor or the existence of a centralized custodian subject to the jurisdiction, digital assets remain in an unacceptable sphere of factual immunity. Therefore, a mere extensive interpretation of existing norms, although useful in the short term, cannot substitute a structural reform of the Romanian Code of Civil Procedure, aimed at adapting the state's coercive force to the dematerialized reality.

In light of these findings, we formulate a series of *de lege ferenda* proposals, structured on two levels: substantive and procedural. Firstly, we consider imperative the legislative intervention upon arts 535 and 539 Romanian CC, by introducing a distinct paragraph that expressly enshrines (*expressis verbis*) the nature of a good for digital assets stored on distributed ledgers. Such explicit recognition would eliminate the hesitations of the courts and provide the necessary foundation for actions of partition, succession, or vindication targeting digital wallets. The administrative regulation in the special law is not sufficient; the consolidation in civil matters of the digital asset is also necessary to organically integrate it into the patrimonial mass.

Secondly, we propose the introduction in the Romanian Code of Civil Procedure of a special chapter dedicated to the forced execution of digital assets. This procedure must regulate the mechanism for the forced surrender of cryptographic keys. Considering the technical impossibility of breaking the encryption of a non-custodial wallet, the only access route is the debtor's

will. To overcome their resistance, the law must institute an obligation to disclose private keys at the request of the enforcement agent, under the sanction of progressive judicial fines accruing for each day of delay, or even criminal liability for the offense of non-compliance with judicial decisions. Such a mechanism would shift the pressure from the technical side to the psychological and patrimonial side of the debtor.

Complementarily, for assets held through intermediaries, we propose the institution of automated electronic garnishment, a system that would connect the database of judicial officers with authorized trading platforms registered as PSANs. This mechanism would allow the instantaneous freezing of cryptocurrencies from user accounts on platforms like Binance or eToro, preventing the dissipation of assets in the seconds immediately following the notification of execution. Finally, the state must develop its own storage infrastructure, by mandating ANABI (The National Agency for the Management of Seized Assets) to create and administer secured state digital wallets, where enforcement agents could transfer and keep seized assets until their valorisation, eliminating the security risks associated with storing keys on improvised media[11].

Only through such an integrated approach, which combines the conceptual clarity of civil law with the executory force of a modernized civil procedure, can Romania hope to efficiently manage the challenges of the internet of value. The digitalization of enforcement is not an option, but a survival necessity for the efficacy of justice in an era where wealth moves, slowly but surely, from bank vaults to the blocks of the cryptographic chain.

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[11] For a model of good practices, see ANABI Activity Report 2023 **https://anabi.just.ro/storage/uploads/d6f2f5a0-1b82-4de3-b54d-8dd37dd6ecdf/Raport-anual-ANABI-2023.pdf** accessed 14 June 2026. The Agency has already succeeded in the early capitalization of certain virtual currencies derived from criminal offenses, demonstrating that the state can technically manage these assets. It is proposed to extend this competence to civil matters as well, in order to serve enforcement agents.