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Volodymyr Chyzykov

Managing Partner LLC "A1 Consulting";

Postgraduate Student,

State Tax University

ORCID: <https://orcid.org/0009-0009-3968-0991>

Чижигов В.В.

LLC «A1 Consulting»;

Державний податковий університет

DEFINING THE DIGITAL ASSET MARKET AND ITS TAX IMPLICATIONS

ВИЗНАЧЕННЯ РИНКУ ЦИФРОВИХ АКТИВІВ
ТА ЙОГО ПОДАТКОВИХ НАСЛІДКІВ

Abstract. The article defines the digital asset market as an economic ecosystem that includes participants, types of assets, and transactions between them. The study outlines key issues in the taxation of crypto-asset transactions, including VAT, corporate income tax, and personal income tax. Examples of activities that generate tax consequences are considered: exchange, mining, staking, liquidity provision, lending, airdrops, and NFT transactions. It is determined that the decentralization and global nature of the market complicate the control and fair valuation of assets, which creates challenges for tax authorities. The article concludes that the digital asset market is reshaping the boundaries of traditional tax law. A coherent and internationally aligned tax policy is required to ensure neutrality, administrability, and effective enforcement. Such a policy should reflect the economic realities of decentralised ecosystems while providing clarity for taxpayers and regulators. Based on the results of the study, it can be concluded that a coordinated tax policy is needed that can reflect the economic nature of digital ecosystems.

Keywords: digital assets, virtual assets, market ecosystem, participants, transactions, taxation, VAT, income tax, NFTs, DeFi.

Анотація. Вступ. Швидкий розвиток блокчейн-технологій та цифрових активів створив нове, складне економічне середовище, яке зазвичай називають ринком цифрових активів. На відміну від традиційних ринків, ця екосистема функціонує в децентралізованому середовищі без кордонів, що ставить під сумнів застарілі податкові концепції. Відсутність загальноприйнятого визначення цього ринку перешкоджає послідовному податковому регулюванню та формуванню податкової політики. **Метою статті** є обґрунтування концепції визначення ринку цифрових активів як екосистеми, яка складається з учасників, типів цифрових активів та транзакцій, що їх пов'язують, а також аналіз ключових податкових наслідків такої структури. **Методи.** Дослідження базується на огляді наукової літератури, звітів ОЕСР та IBFD, а також судової практики. Порівняльний аналіз застосовується до режиму ПДВ, податку на прибуток підприємств та податку на доходи фізичних осіб для різних видів діяльності з цифровими активами. Структурний аналіз використовується для класифікації компонентів ринку та їх зв'язку з податковими наслідками. **Результати.** У статті ринок цифрових активів визначено як трикомпонентну екосистему: учасники (фізичні особи, біржі, валідатори, розробники, DAO тощо), цифрові активи (криптовалюти, стейблкоїни, токени утиліт та управління, токени цінних паперів, NFT) та транзакції (обмін, майнінг, стейкінг, забезпечення ліквідності, airdrops, кредит, мінтинг/перепродаж NFT). Встановлено, що кожен компонент створює потенційно оподатковувані події, які не охоплені тривіальними методами оподаткування. Стосовно таких видів діяльності, як стейкінг та створення NFT, стягнення ПДВ залишається невизначеним, також постає проблема визнання доходу для свопів токенів, винагород за стейкінг та airdrops, а висока волатильність ускладнює оцінку для податкових цілей, тоді як децентралізація створює труднощі для правозастосування та ідентифікації платників податків. **Висновок.** Обґрунтовано, що ринок цифрових активів змінює межі традиційного податкового законодавства. Для забезпечення нейтральності, адміністрування та ефективного правозастосування необхідна міжнародно узгоджена податкова політика. Така політика повинна відображати економічні реалії децентралізованих екосистем, забезпечуючи водночас ясність для платників податків та регуляторів.

Ключові слова: цифрові активи; віртуальні активи; учасники; транзакції; оподаткування; ПДВ; прибуток; NFT.

Statement of the problem. The rise of blockchain-based technologies and virtual assets has produced a rapidly evolving economic environment commonly referred to as the digital (virtual) asset market [7]. Unlike traditional markets, this ecosystem operates in a borderless, decentralised setting, creating significant regulatory – especially tax – challenges [2]. Despite its growth, a generally accepted definition of the “digital asset market” remains elusive [3]. This article seeks to provide a structural, concept-driven definition and to outline key approaches to taxing transactions within such a market [7].

Analysis of recent research and publications. Recent literature has focused on classifying crypto-assets and map-

ping regulatory/tax treatments across jurisdictions. Early tax-law scholarship by Omri Marian [8] framed cryptocurrencies as potential “super tax havens,” foregrounding enforcement, information asymmetries and regulatory arbitrage – concerns that continue to shape today’s cross-border tax debates. Comprehensive tax and policy surveys by the OECD and IBFD synthesise VAT and income-tax approaches and flag persistent gaps for DeFi, staking and airdrops [6]. Building on that agenda, Reuven S. Avi-Yonah (with co-authors) [9] proposes lifecycle-based frameworks for taxing crypto-assets and explicitly situates VAT issues in light of Skatteverket vs David Hedqvist court case, linking doctrinal analysis to concrete events such as forks and airdrops.

Proposals for crypto-asset taxonomies emphasise the functional diversity of tokens (payment, utility, governance, securities-like) and the need for consistent categorisation across legal domains [3]. In economics and market-design, Christian Catalini and Joshua Gans [10] explain how blockchain changes verification and networking costs – an angle that supports function-first taxonomies while Jason Potts and collaborators (e.g., Davidson & De Filippi) [11] analyse blockchain as institutional technology, highlighting governance rights and network externalities as tax-relevant features. Legal-theory work by Michèle Finck [12] maps the interaction between EU law and distributed ledgers, reinforcing the view that token classification must be interoperable with privacy, consumer and financial-markets regimes.

Within income-tax doctrine, scholars have parsed “creation vs. exchange” events: Abraham (Abe) Sutherland [13] argues block rewards should not be treated as immediate income but taxed upon disposition, sharpening distinctions that many administrations still blur when addressing staking and validator yields. Allison Christians [14] conceptualises protocol-level funding as “tax-like” within crypto systems (“tax cryptographia”), a lens that helps distinguish endogenous issuance from bilateral consideration useful for DeFi and governance tokens. Enforcement-and-information scholars such as Shu-Yi Oei and Diane Ring [15] connect crypto reporting, data mobility and international cooperation to practical administrability of any classification adopted by legislators and courts.

On the regulatory architecture that surrounds these tax questions, Dirk A. Zetsche (with co-authors) [16] analyses residual gaps after MiCA especially for DeFi, staking and custody while the Arner–Barberis–Buckley FinTech/RegTech literature [17] explains how technology-neutral rules and supervisory tooling evolve alongside programmable finance. These streams together motivate taxonomy that is stable across financial-regulation and tax contexts.

EU case law recognized the VAT exemption for fiat/Bitcoin exchange (*Skatteverket vs David Hedqvist* court case), which remains a doctrinal anchor in Europe, as surveyed in recent VAT harmonisation work; by contrast, NFT VAT characterisation is still in flux. Rita de la Feria [18] and Georg Kofler [19] provide broader VAT foundations and recent developments, while IBFD authors have proposed differentiated NFT treatments depending on the underlying supply and platform model. Broader policy guidance continues to evolve alongside technical architectures and market practices [7]; for example, multilateral and private-sector surveys (IMF working papers; global practitioner comparisons) document how rapidly positions on NFTs, staking and cross-border reporting are changing a reminder that classifications should be function-based and technology-agnostic.

The purpose of the article. The purpose is to formulate a concise and operational definition of the digital asset market as an ecosystem of participants, assets and transactions; and analyse the principal tax consequences that follow from this structure, with attention to VAT, corporate income tax, and personal income tax in representative activities (exchange, mining, staking, liquidity provision, credit/borrowing, airdrops, and NFT minting/resale).

Presentation of the main research material. Conceptual definition of the digital asset market.

The digital asset market is defined as an economic ecosystem consisting of participants, types of digital assets,

and transactions that link them. In this conception, the market is not merely a technology stack but a multi-layered socio-technical system of actors – exchanges, developers, validators, investors, wallet and oracle providers, market makers, DAO treasuries and other service organisations – who collectively create, maintain, secure and use blockchain infrastructure and the assets issued upon it. These actors coordinate through protocols, interfaces and governance processes to originate assets, transfer and transform them, and to absorb or supply risk and information. Participants therefore perform diverse transactions whose objects are digital assets, while the architecture of protocols and platforms organizes how those transactions clear, settle and become economically final [7].

Digital assets themselves are functional instruments rather than merely “tokens”: they carry distinct bundles of rights and utilities – means of payment, stores of value, governance entitlements, access or consumption rights in a network, collateral and credit functions, or representation of off-chain property rights (e.g., claims on revenue streams or unique digital objects). Their value emerges from actual and expected use within networks: payments require acceptors; governance requires voters; collateralisation requires lenders and borrowers. Hence, assets derive value from the behaviour of participants, while participants can only execute strategies because assets exist and interoperate across protocols; both sides are bound together by a web of transactions [3].

Transactions are the connective tissue of the ecosystem. They include primary issuance and secondary trading; simple transfers and complex smart-contract interactions; custodial and non-custodial operations; bilateral order-book trades and multilateral automated-market-maker (AMM) swaps; staking, delegation and validator operations in PoS systems; on-chain credit and collateral management; liquidity provision and incentive harvesting; cross-chain bridging and wrapping; governance voting and proposal execution; as well as airdrops, forks and burns. Through these activities, assets move, transform and acquire economic utility across platforms and protocols. The programmability of smart contracts allows these transactions to be sequenced and composed (“composability”), producing higher-order financial and organisational behaviours that resemble, but are not identical to, those found in traditional markets.

Because programmability and decentralisation are native properties of blockchain systems, the structure of the digital asset market echoes classical market theory – actors, goods, exchanges, prices – yet departs from it in decisive ways. First, exchanges can be software protocols with no central operator; second, “goods” may be natively digital and governed by code-based rules; third, price discovery can occur in algorithmic pools as well as limit-order books; fourth, settlement, custody and transfer may be unified at the ledger layer rather than split across institutions; and fifth, governance can be tokenised and executed by distributed token-holder voting, rather than delegated to corporate boards. These features reshape how market power, information asymmetries and transaction costs manifest – and how they are measured and regulated.

A system-level definition is therefore indispensable for analysis. At the participant layer, it enables classification of roles (users, professional traders, validators, developers, oracles, custodians, DAOs) and the mapping of incentives (fees, inflationary rewards, governance influence,

order-flow revenues). At the asset layer, it supports taxonomy by economic function (payment, utility, governance, security-like, NFT/unique, stable) and by linkages to off-chain rights or data. At the transaction layer, it provides a coherent vocabulary for life-cycle events (mint/issue, lock/unlock, swap, stake/unstake, borrow/repay, vote/execute, bridge/wrap), for timing and finality (mempool → inclusion → confirmation), and for cross-protocol interdependence. This holistic frame allows consistent reasoning about externalities (e.g., oracle or bridge risks), market microstructure (e.g., AMM price formation), and the sources of liquidity and volatility that drive valuation [3].

From a legal and policy perspective, this definition is decision-useful because it ties observable economic facts to doctrinal categories. Identifying *who* acts (participants) supports analysis of residence, nexus and regulatory perimeter; identifying *what* is transacted (asset function and rights) assists classification under financial, civil-law and tax concepts; and identifying *how* it is transacted (transaction form) anchors rules on timing, source, valuation, consumption and potential VAT consequences. For example, distinguishing between protocol-level rewards (e.g., block or staking rewards) and bilateral exchanges clarifies whether a flow resembles consideration for a service or an endogenous issuance event; distinguishing custodial from non-custodial arrangements clarifies the existence and location of intermediaries; distinguishing AMM swaps from order-book trades informs the analysis of fees, spreads and recognition events. In short, an ecosystemic definition is the minimal scaffold upon which systematic legal, economic and tax analysis of novel value-creation and value-distribution mechanisms can be constructed [2].

Finally, the interdependence of components implies dynamic feedback. Participant composition (retail vs. professional liquidity), protocol design (fee structures, reward schedules, governance mechanics), and asset properties (volatility, redeemability, rights) influence one another

over time. Network effects and composability can accelerate adoption, while exogenous constraints (compliance, market-data quality, off-chain enforceability of rights) can limit it. Recognising these feedback loops is essential for robust policy design: neutral, technology-agnostic rules should be grounded in the economic substance of participants, assets and transactions, rather than in any transient implementation detail of a given protocol.

Next, we will consider analyse each of the essential components of the digital ecosystem in more depth. Table 1 presents a list of participants of the economic ecosystem, as well as the functionality they perform. Description types of digital assets are highlights in table 2.

Below are given the list of significant transactions linking participants and types of digital assets.

Transactions (activities)

- Exchange (buy/sell/swap) on CEX/DEX – often triggering capital gains or ordinary income.
- Mining (PoW) with block rewards/fees .
- Staking (PoS) with periodic rewards that may be treated as consideration for a service.
- Liquidity provision (e.g., to Uniswap/Curve) in exchange for fee income and/or incentives.
- Airdrops (gratuitous token allocations) often taxed at fair market value upon receipt.
- Credit/borrowing via DeFi protocols, collateralised or not.
- NFT minting and resale, including platform fees and potential royalty streams.

Core tax issues. Uncertainty persists around whether mining, staking and NFT creation amount to taxable supplies for VAT purposes [2]. EU case law (*Skatteverket vs David Hedqvist* court case) treated fiat/Bitcoin exchange as VAT-exempt, but the VAT treatment of NFTs is unsettled and may depend on the substance of the supply and platform model [4]. Staking rewards can be viewed as consideration for a service (potential VAT exposure), while creators sell-

Table 1

Participant of the economic ecosystem

Participant	Description/ function
Individuals	holding/using digital assets for investment, savings, payments or dApp participation
Centralised exchanges (CEX) (e.g., Binance, Coinbase)	facilitating exchange and custody
Decentralised exchanges (DEX) (e.g., Uniswap)	enabling trustless swaps via smart contracts
Miners/validators	ensuring consensus and security in PoW/PoS networks
Protocol developers	creating and maintaining blockchain and DeFi infrastructures
Liquidity providers/market	makers supplying liquidity to pools or orderbooks
Wallet providers	offering software/hardware access and control for users
DAOs governing treasuries	upgrades and investment strategies through token-based voting

Source: [2; 3; 6; 7] and author's experience

Table 2

Types of digital assets (objects)

Type	Description/ function
Cryptocurrencies (Bitcoin, Ethereum)	as decentralised payment/store-of-value media
Stablecoins (e.g., USDC)	pegged to fiat for price stability, used in payments and DeFi
Utility tokens	providing access/fee payment/in-protocol incentives (e.g., BNB)
Governance tokens	granting voting rights in protocols/DAOs
Security tokens	representing equity/debt-like claims typically engaging securities laws
NFTs	unique tokens representing digital property; used in gaming, art, music and identity

Source: [2; 3; 5; 7] and author's experience

ing digital art NFTs on platforms like OpenSea may face distinct VAT outcomes by jurisdiction [6]. Recognition/timing, source of income and nexus rules are central. DAO income (protocol fees, staking services) without a legal entity challenges classic residence/PE concepts; smart contracts lack physical presence, complicating profit allocation and enforcement [7]. Swaps and rewards (staking, airdrops) raise questions of when and how income crystallises. Airdropped tokens may be taxed at fair value on receipt notwithstanding thin liquidity. Token-to-token swaps can create realisation events even without conversion to fiat.

High volatility hinders fair-value measurement for tax bases. NFT results may differ depending on ETH–fiat rates

on trade dates. Stablecoin transactions reduce but do not eliminate valuation issues. Decentralisation/global reach complicate tracing and information exchange; wallet providers and protocol developers may fall outside standard KYC/AML perimeters.

Conclusions. The digital asset market – defined as an ecosystem of participants, assets and transactions – pushes the limits of traditional tax systems. Existing rules do not yet fully reflect the economic realities of decentralised networks, and regulators continue to articulate responses. A coherent tax policy aligned with the structure and principles of the digital-asset ecosystem is needed to ensure neutrality, administrability and international compatibility.

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