

Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law

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Abstract:

Cryptocurrencies, such as bitcoin and ethereum, have not only risen to public attention as novel means of payments. Rather, the current hype is fueled by financial applications built on top of these currencies that stand to potentially upend consumer and investment markets. The most remarkable and economically relevant of these applications are tokens sold via initial coin offerings (ICOs, also called token sales). In 2017 alone, the equivalent of more than \$ 3 billion have been raised through ICOs. In these entirely online-mediated offerings, startup entrepreneurs sell tokens registered on a blockchain in exchange for cryptocurrencies traded on that blockchain (typically bitcoins or ethers). Investors receive tokens that can be understood as cryptographically-secured coupons which embody a bundle of rights and obligations.

In July 2017, the SEC released an investigative report that highlighted that such tokens can be subject to the full scope of US securities regulation. As a result, issuers increasingly structure ICOs such as to prevent US citizens and residents from obtaining tokens in order to exclude the reach of US securities regulation. However, for the time being, EU citizens and residents are free to invest in tokens. This raises the question to what extent EU securities regulation is applicable to ICOs and, particularly, whether issuers have to publish and register a prospectus in order to avoid criminal and civil prospectus liability in the EU. In conceptual terms, this depends on whether tokens are considered “securities” under the EU prospectus regulation regime. The question is of great practical relevance since, despite the high stakes involving more than \$100 million in some ICOs, to our knowledge, up to now not a single token issuer has published or registered any such prospectus.

Against this background, this paper develops a nuanced approach that distinguishes between three archetypes of tokens: currency, investment, and utility tokens. It analyzes the differential implications of each of these types, and their hybrid forms, for EU securities regulation. While the variety of tokens offered necessitates a case-by-case analysis, the discussion reveals that at least some types and hybrid forms of tokens are subject to EU securities regulation. By and large, pure investment tokens typically must be considered securities, while pure currency and utility tokens are exempted from securities regulation in the EU. In identifying these archetypes, regulation and market oversight will have to put substance over form. Finally, we spell out criteria for the application of EU securities regulation to hybrid token types.

The paper closes by offering two policy proposals to mitigate legal uncertainty concerning token sales. First, we suggest tailoring disclosure requirements to the code-driven nature of token sales. Such an ICO-specific safe harbor would offer a clear and less burdensome path to

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EU law compliance for token sellers who suspect that their tokens may qualify as securities. This only requires the Commission to amend its delegated 2004 Commission Prospectus Regulation. Second, we propose that, on an international level, governments form a compact to bestow certainty about the application of their respective securities regulation regimes to token sales. This is, first, to avoid regulatory overkill on the one and regulatory lacunae on the other hand in online-mediated, global token sales. Second, overlapping, and partially contradicting, securities regulation regimes can even undermine each other. In the end, only a joint international regulatory regime can efficiently balance investor protection and investor access in the face of the novel generation of decentralized blockchain applications.

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I. Introduction

Cryptocurrencies, such as bitcoin and ethereum,¹ have not only risen to public attention as novel means of payments. Rather, the current hype is fueled by financial applications built on top of these currencies that stand to potentially upend consumer and investment markets: smart contracts and initial coin offerings (ICOs, also called token sales).

Indeed, the numbers are impressive: in 2017 alone, more than \$3 billion have been raised through initial coin offerings (ICOs, also called token sales),² and the curve is sloping sharply upward, with observers expecting more than \$4 billion by the end of the year.³ In ICOs, startup entrepreneurs offer tokens in exchange for cryptocurrencies (typically bitcoins or ethers). Investors receive tokens that can be understood as cryptographically-secured coupons which embody a bundle of rights and obligations.⁴ The entire process is conducted online, typically without the involvement of investment banks or professional venture capitalists, and often finishes within minutes in successful ICOs. Smart contracts govern the collection and distribution of funds on a blockchain, typically Ethereum. The five largest successful ICOs (Filecoin; Tezos; EOS Stage 1; Paragon; and Bancor) have each raised the equivalent of more than \$150 million, with Filecoin even surpassing \$250 million.⁵

Unsurprisingly, ICOs are hailed as a new type of financing that offers potentially high returns for investors, and easy access to funding for founders, while avoiding the technical, excruciating minutiae of traditional venture capital (VC) regulations. In tech circles, but also in the financial press, one can often hear and read these days about the “unregulated” field of ICOs.⁶ However, such a view is naïve, at best: while it is true that, with very few exceptions,⁷ there is no regulation *specifically and expressly* tailored at ICOs, *general* securities regulation may apply to ICOs irrespective of the novel technology that undergirds them. This is precisely what the SEC stressed in its 2017 report that investigated a specific investment token called “The

¹ Written without a capital letter, “bitcoin”, “ethereum” and the names of other cryptocurrencies refer to the respective digital currency in this paper; in its capitalized version, “Bitcoin”, “Ethereum” et al. denote the respective blockchain supporting the currency.

² CoinSchedule, ‘Cryptocurrency ICO Stats 2017’, <https://www.coinschedule.com/stats.php> (accessed on 14 November, 2017).

³ ‘The market in Initial Coin Offerings risks becoming a bubble’, *The Economist* (27 April, 2017); <https://www.economist.com/news/finance-and-economics/21721425-it-may-also-spawn-valuable-innovations-market-initial-coin-offerings>.

⁴ See, e.g., the definition in Monetary Authority of Singapore, ‘MAS Clarifies Regulatory Position on the Offer of Digital Tokens in Singapore’ (1 August, 2017), <http://www.mas.gov.sg/News-and-Publications/Media-Releases/2017/MAS-clarifies-regulatory-position-on-the-offer-of-digital-tokens-in-Singapore.aspx>, para. 2: “A digital token is a cryptographically-secured representation of a token-holder’s rights to receive a benefit or to perform specified functions.”

⁵ CoinSchedule, ‘Cryptocurrency ICO Stats 2017’, <https://www.coinschedule.com/stats.php> (accessed on 14 November, 2017).

⁶ Wilhelm, ‘WTF is an ICO?’ (*TechCrunch*, 23 May, 2017), <https://techcrunch.com/2017/05/23/wtf-is-an-ico/>; Kaminska/Murphy, ‘Bitcoin’s surge fuels fears of asset bubble’, *Financial Times* (14 May, 2017), <https://www.ft.com/content/ce3ef54e-371b-11e7-bce4-9023f8c0fd2e>; Hrones, ‘ICOBox Provides Solution for Unregulated ICO Market’ (*Bitcoinist*, 9 September, 2017), <http://bitcoinist.com/icobox-provides-solution-for-unregulated-ico-market/> (all accessed on 2 November, 2017).

⁷ These include ICO bans in China and South Korea, see below (n 11); see also, beyond tokens, Japanese legislation on virtual currencies, Ishikawa, ‘Designing Virtual Currency Regulation in Japan: Lessons from the Mt Gox Case’, (2017) 3 *Journal of Financial Regulation* 125; and the affirmation of the validity of smart contracts in Arizona: Arizona House Bill 2417, Passed 2017-03-29, Chapter 97, § 2 Article 5 E 2, <https://legiscan.com/AZ/text/HB2417/id/1588180/Arizona-2017-HB2417-Chaptered.html> (accessed on 3 November, 2017).

DAO”;⁸ the European Securities and Markets Authority (ESMA) made similar, albeit much more generic, comments.⁹ Regulators from other countries have equally issued warnings or guidelines on ICOs,¹⁰ with China and South Korea even banning ICOs entirely to prevent investment scams.¹¹

The SEC report, however, left many questions unanswered, particularly concerning tokens with a different design than that of The DAO (e.g., so-called utility tokens¹²);¹³ specific guidance from EU securities regulators is also lacking almost entirely at the moment.¹⁴ Against the background just outlined, this article explores to what extent EU securities regulation, in particular the obligation to publish and register a prospectus, applies to ICOs. This duty is especially important for product developers seeking funding from ICOs: if they are under a legal obligation to publish a prospectus, but fail to do so, they incur the full scale of prospectus liability, with potentially massive adverse financial consequences. To our knowledge, not a

⁸ SEC, ‘Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO’, Release No. 81207 (25 July, 2017) [henceforth: SEC Report], at 2; on The DAO token, see below, Part II.C.1.

⁹ ESMA, ‘ESMA alerts firms involved in *Initial Coin Offerings* (ICOs) to the need to meet relevant regulatory requirements’, Statement (13 November, 2017); ESMA, ‘Report. The Distributed Ledger Technology Applied to Securities Markets’ (February, 2017), at 2: “the presence of [distributed ledger technology] does not liberate users from the need to comply with the existing regulatory framework”.

¹⁰ German Federal Financial Supervisory Authority (BaFin), ‘Initial coin offerings: High risks for consumers’ (15 November, 2017),

https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2017/fa_bj_1711_ICO_en.html?nn=8236218 (accessed on 21 November, 2017); French Autorité des Marchés Financiers (AMF), ‘Discussion Paper on Initial Coin Offerings (ICOs)’, (26 October, 2017),

http://www.amf-france.org/en_US/Publications/Consultations-publiques/Archives?docId=workspace%3A%2F%2FSpacesStore%2Fa2b267b3-2d94-4c24-acad-7fe3351dfc8a;

UK Financial Conduct Authority (FCA), ‘Initial Coin Offerings’ (12 September, 2017),

<https://www.fca.org.uk/news/statements/initial-coin-offerings>; Swiss Financial Market Supervisory Authority (FINMA), ‘Regulatory treatment of initial coin offerings’, FINMA Guidance 04/2017 (29 September, 2017),

<https://www.finma.ch/en/news/2017/09/20170929-mm-ico/>; Australian Securities & Investments Commission, ‘Initial coin offerings’, Information Sheet INFO 225 (September 2017),

<https://www.asic.gov.au/regulatory-resources/digital-transformation/initial-coin-offerings/#what>; Canadian Securities Administrators, ‘Cryptocurrency Offerings’, CSA Staff Notice 46-307 (24 August, 2017),

http://www.osc.gov.on.ca/documents/en/SecuritiesCategory4/csa_20170824_cryptocurrency-offerings.pdf; Hong Kong Securities and Futures Commission, ‘Statement on Initial Coin Offerings’ (5 September, 2017),

<http://www.sfc.hk/edistributionWeb/gateway/EN/news-andannouncements/news/doc?refNo=17PR117>;

Securities Commission Malaysia, ‘Initial Coin Offering’, Media Statement (9 July, 2017),

<http://www.mondovisione.com/media-andresources/news/securities-commission-malaysia-media-statement-initial-coin-offerings/>; Central Bank of the Russian Federation (Bank of Russia), ‘On the Use of Private “Virtual Currencies” (Crypto Currency)’, (4 September, 2017),

https://www.cbr.ru/press/PR/?file=04092017_183512if2017-09-04T18_31_05.htm (all accessed on 22 November, 2017); Monetary Authority of Singapore (n. 4).

¹¹ See the ICO ban in China (The People’s Bank of China, Central Office of the Ministry of Industry and Information Technology, Banking Regulatory Commission, and China Regulatory Commission, ‘Notice on the Prevention of Tokens’, (4 September, 2017),

<http://www.circ.gov.cn/web/site0/tab6554/info4080736.htm>, translation: <https://www.coindesk.com/chinas-ico-ban-a-full-translation-of-regulator-remarks/>) and South Korea (O’Leary, ‘South Korean Regulator Issues ICO Ban’ (*CoinDesk*, 29 September, 2017),

<https://www.coindesk.com/south-korean-regulator-issues-ico-ban/>) (all accessed on 2 November, 2017).

¹² On utility tokens, see below, Part II.C.3 and Part IV.B.1.b)(6).

¹³ Rohr/Wright, ‘Blockchain-Based Token Sales, Initial Coin Offerings, and the Democratization of Public Capital Markets’, *Cardozo Legal Studies Research Paper No. 527* (4 October, 2017), <https://ssrn.com/abstract=3048104> (accessed on 20 October, 2017), at 27.

¹⁴ The most comprehensive discussion is found in AMF (n. 10) 7-10. The FCA vaguely states that “[s]ome tokens may also constitute transferable securities and therefore may fall within the prospectus regime”, FCA (n. 10); the ESMA Statement (n. 9) notes that “[d]epending on how the ICO is structured, the coins or tokens could, potentially, fall within the definition of a transferable security, and could therefore necessitate the publication of a prospectus which will be subject to approval by a Competent Authority”; see also Czarnecki, ‘ICOs in the EU: How Will the ‘Slow Giant’ Regulate Tokens?’ (*CoinDesk*, 24 July, 2017), <https://www.coindesk.com/icos-eu-will-slow-giant-regulate-tokens/> (accessed on 31 October, 2017).

single token issuer has registered and delivered a prospectus thus far;¹⁵ as the only exception, Filecoin has structured its ICO, the most valuable in blockchain history, as a private placement under US securities regulation (SEC Regulation D Rule 506(c)).¹⁶ The problem of prospectus regulation remains virulent, however, even if many regulators in Western countries, at the moment, follow a prudential and cautionary approach to ICOs:¹⁷ even if they hold back on public enforcement of securities regulation, civil liability looms. Nothing can stop a hedge fund that has lost millions in ether over a failed ICO to sue the issuer in private enforcement. At this moment, courts will necessarily have to decide on the applicability of, inter alia, prospectus regulation, irrespective of the level of enforcement by public authorities.

As we shall see, however, the liaison between ICOs and EU securities regulation subscribes, above all, to one mantra at the current stage of development: things are complicated. While many observers focus on the DAO,¹⁸ which was the subject of the SEC investigative report, this tends to obscure the fact that tokens can take on many different forms. This heterogeneity implies that legal consequences will differ based on the specific type of tokens, and that a nuanced perspective is necessary, for regulators and potential ICO entrepreneurs alike, to determine their status under EU securities regulation.¹⁹

This paper argues that one has to distinguish between three main archetypes of tokens: currency, utility, and investment tokens. In theory, only investment tokens typically are securities under EU law; however, in practice, hybrid tokens are issued that often comprise elements of all two or all three of the archetypes. In these cases, although some guidance can be offered, the application of the EU securities regulation regime is fraught with uncertainty. This paper therefore suggests the elaboration of an ICO-specific disclosure regime offering a safe harbor for token sellers who suspect their tokens may be deemed securities. Furthermore, we propose an international regime to decide which national or supranational securities regulation regimes are applicable to token sales.

The remainder of the paper is structured as follows: Part II provides a brief overview of blockchain technology and smart contracts, and introduces the three types of tokens we distinguish. Part III maps the general questions relating to EU securities regulation relevant for token sales. Part IV, the heart of the paper, explores the applicability and concrete consequences of EU prospectus regulation for token sales. Part V offers two policy proposals to mitigate legal uncertainty in this domain. Part VI concludes.

¹⁵ Exceptionally, the DomRaider, ICO: Whitepaper (5 September, 2017), at 85 et seqq. provides extensive financial information comparable to a prospectus, see also id., at 103.

¹⁶ See the Form D filed by Protocol Labs at the SEC's EDGAR registration system: https://www.sec.gov/Archives/edgar/data/1675225/000167522517000001/xslFormDX01/primary_doc.xml (accessed 1 November, 2017).

¹⁷ See, e.g., FINMA (n. 10); Gibraltar Financial Services Commission, 'Statement on Initial Coin Offerings', Statement (22 September, 2017), <http://www.fsc.gi/news/statement-on-initial-coin-offerings-250>; German Federal Financial Supervisory Authority (BaFin) (n. 10); UK Financial Conduct Authority, Financial Conduct Authority provides update on regulatory sandbox, Press Release (15 June, 2017), <https://www.fca.org.uk/news/press-releases/financial-conduct-authority-provides-update-regulatory-sandbox> (announcing that another nine blockchain related projects are added to the FCA's regulatory sandbox); Palmer, 'UK Financial Regulator Vows to Give Blockchain 'Space' to Grow' (*CoinDesk*, 23 February, 2016), <https://www.coindesk.com/uk-financial-regulator-blockchain-space-grow/>. Georgios Dimitropoulos, 'Global Currencies and Domestic Regulation: Embedding through Enabling?', Working Paper (2017) (on file with authors)

¹⁸ See, e.g., Barsan, 'Legal Challenges of Initial Coin Offerings (ICO)' (2017)(3) *RTDF* 54, 62.

¹⁹ As Rohr and Wright convincingly argue, a similar picture emerges for US securities regulation, Rohr/Wright (n. 13).

II. Technical and Economic Background of Blockchain-Based Investment Vehicles

To understand why the legal analysis of ICOs is complex, we need to briefly turn to the technical and economic foundations of blockchain-based transactions.

A. The Blockchain

A blockchain, in essence, is a distributed database.²⁰ It logs pieces of information that are bundled in blocks and that are connected through a cryptographic procedure in an ever-expanding chain – hence the name. The earliest application of a blockchain was Bitcoin, launched in January 2009.²¹ In cryptocurrencies such as bitcoin or ethereum, the simplest pieces of information stored on the respective blockchains are transactions of cryptocurrencies between two parties. Hence, one person can send money to another one just like sending an email, entirely virtually, and irrespective of banks or borders.

This entire system, of course, critically depends on the correctness of the information stored in the chain. The innovative strength of the blockchain resides in the fact that it couples decentralization with mathematical verification. This means that there is no single authority guaranteeing the authenticity of the ledger containing the information. Rather, the entire chain is stored on many nodes, i.e., computers of users. Blocks of information are constantly added to the chain as new transactions are processed. There are three main features that guarantee the validity of this information.

First, new blocks cannot be added just by anyone; rather, those adding blocks (called miners) have to solve a cryptographic puzzle, and hence invest time and computing power, to add a new block (proof-of-work verification).²² Miners, therefore, update the blockchain and independently verify transactions in exchange for cryptocurrencies they receive. Since this consumes significant amounts of time and energy, some cryptocurrencies have switched or, like Ethereum,²³ are now switching to a verification system that is based on the amount of cryptocurrencies a user holds (proof-of-stake verification).²⁴ These verification procedures establish incentives for diligent and correct updating of the chain. Those who first add an acceptable block to the chain are rewarded through newly generated cryptocurrencies (block reward) and transaction fees, creating incentives to engage in updating in the first place.²⁵ The *second* important feature contributing to the validity of the logged information is decentralized consensus. If two different blocks are added almost simultaneously to the chain on different nodes, two conflicting subchains are born. In this case, the chain that grows faster, i.e., that attracts more computing power for the generation of the next blocks, is considered to be the

²⁰ The possibly best introduction to blockchain technology is found in Narayanan et al., *Bitcoin and Cryptocurrency Technologies. A Comprehensive Introduction* (Princeton University Press, 2016); for a slightly older introduction, see Antonopoulos, *Mastering Bitcoin: Unlocking Digital Cryptocurrencies* (O'Reilly, 2014); for a very short overview, see Witte, 'The Blockchain: A Gentle Introduction', Working Paper (2016), <https://ssrn.com/abstract=2887567>; for an excellent non-technical overview, see Wright and De Filippi, 'Decentralized Blockchain Technology and the Rise of Lex Cryptographia', Working Paper (2016), https://papers.ssrn.com/abstract_id=2580664.

²¹ Satoshi Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System', White Paper (2008).

²² Narayanan et al. (n. 20) ch 8.1-8.3.

²³ Daniel, 'Ethereum Ice Age' (*CoinStaker*, 24 August, 2017), <https://www.coinstaker.com/ethereum-ice-age/>.

²⁴ Narayanan et al. (n. 20) ch 8.5.

²⁵ Narayanan et al. (n. 20) ch 2.4.

authentic chain.²⁶ Hence, users vote with their computing power which chain they want to back. Furthermore, *third*, as the updated chain is propagated from node to node, the correctness of the new block is mathematically verified by each node; if it is found that the block is incompatible with the previous elements of the chain, the block is rejected.²⁷

These verification and consensus mechanisms aim to guarantee that the information included in the chain cannot be tampered with, neither at the moment of the inclusion of new information or at a later moment in time. It becomes increasingly more difficult to retroactively change the contents of any specific block as more blocks are added since the blocks are interlinked in the chain.²⁸

B. Smart Contracts

At least in theory, this creates a database that is maintained in a decentralized manner, without the need to rely on a trusted authority. Recent developments have shown, however, that troubling issues of governance and trust keep resurfacing in the blockchain environment despite the verification and coordination mechanisms just described.²⁹ Still, the price of leading cryptocurrencies has skyrocketed over the last months.³⁰ Furthermore, these chains are increasingly used for two economic and legal applications that may well change the future of contracting and investment: smart contracts and ICOs.

Smart contracts are software programs embedded in a blockchain that can receive as well as send assets and information.³¹ Generally, the distribution of information and assets by the smart contract is entirely predefined in code and triggered by the fulfillment of certain conditions. For example, if a consumer buys a pair of gloves from the seller via smart contract, the payment could be automatically released once the smart contract receives the information, from a GPS tracker, that the package containing the gloves has been delivered to the buyer. Ethereum is the most popular platform supporting smart contracts. Companies are increasingly launching smart contracts as prototypes; for example, the insurance giant AXA has rolled out the Fizzy insurance contract.³² It links the Ethereum blockchain to a flight traffic database and aims to automatically compensate travelers if their flight is delayed. The essence of smart contracts, hence, is the automatic and fully pre-defined execution of certain (contractual) obligations once pre-defined conditions are met.

Just like users of the cryptocurrency often pay small transaction fees for monetary transactions, users of smart contracts pay small fees for computations executed by the decentralized virtual machine (the computing system) of a blockchain for the smart contract.³³ In the case of

²⁶ More precisely, it is the chain with greatest cumulative proof-of-work difficulty, see Antonopoulos (n. 20) 198-200.

²⁷ Antonopoulos (n. 20) 197 et seq.

²⁸ Antonopoulos (n. 20) 28.

²⁹ See Hacker, 'Corporate Governance for Complex Cryptocurrencies? A Framework for Stability and Decision Making in Blockchain-Based Monetary Systems', Working Paper (7 July, 2017), <https://ssrn.com/abstract=2998830> (accessed on 25 October, 2017), at 10 et seq.

³⁰ CRIX - CRypto IndeX, <http://crix.hu-berlin.de/> (accessed on 2 November, 2017).

³¹ For a good introduction, see Narayanan et al. (n. 20) ch 10.7.; Brown, 'A Simple Model for Smart Contracts' (10 February 2015), <https://gandal.me/2015/02/10/a-simple-model-for-smart-contracts/>; see also Grundmann/Hacker, 'Digital Technology as a Challenge to European Contract Law', (2017) 13 *European Review of Contract Law* 255, 280 et seqq.

³² AXA, 'AXA goes blockchain with fizzy' (13 September, 2017), <https://www.axa.com/en/newsroom/news/axa-goes-blockchain-with-fizzy>.

³³ Narayanan et al. (n. 20) ch 10.7.

Ethereum, this computation fee is called “gas”.³⁴ Again, it incentivizes users to put meaningful contracts onto the platform.

C. ICOs and Tokenization

The smart contracts just described can be combined to create investment vehicles that automatically execute investment decisions, both in terms of sending payments to an investment target and to distribute profits. This was precisely the aim of the most famous ICO so far: “The DAO”. More generally, however, ownership of assets, and entitlements to use them, can be linked to tokens distributed via the blockchain. In this way, a great variety of assets (cars; real estate; securities etc.), and access to them (such as digital platforms), can be managed and transferred using blockchain technology via smart contracts.³⁵ Arguably, these types of transfer and investment applications will become even more important in the future than the cryptocurrencies blockchain originally enabled. In this section, we briefly explain “The DAO” as the best-known example of an ICO, before turning to more general principles and applications of ICOs. Finally, we introduce a terminology that differentiates between three different archetypes of tokens.

1. The DAO

In 2016, a development team in Berlin finished coding a network of smart contracts, called “The DAO”, which was supposed to function like a distributed investment vehicle.³⁶ Investors could send ether to the DAO and receive DAO tokens in return. These tokens enabled them to make proposals on how the collected money should be invested in other blockchain-based investment opportunities; it gave them voting rights concerning these proposals; and it entitled them to a share of future profits made in these investments. As is well-known, The DAO quickly collected ether worth approximately \$150 million, but was then hacked by an unknown attacker.³⁷ The hacker siphoned off roughly 1/3 of the funds; through a contentious emergency procedure (hard fork), the core developers of the Ethereum were able to rewrite the history of their blockchain and restore all the funds to investors.³⁸ This extraordinary procedure in itself calls for solutions to mitigate the risk of insecure code being deployed on a blockchain, an issue we take up below (see Part V.A.).

The story of The DAO did not end here, however. First, the hard fork led to a split of the Ethereum blockchain into mainstream Ethereum and Ethereum Classic, whose supporters continue to maintain that the hacker rightfully exploited a bug in the smart contract and that the

³⁴ Coleman, ‘What is meant by the term “gas?”’ (*StackExchange*, 20 January, 2016), <https://ethereum.stackexchange.com/questions/3/what-is-meant-by-the-term-gas> (accessed on 3 November, 2017).

³⁵ Christidis/Devetsikiotis, ‘Blockchains and smart contracts for the internet of things’ (2016) 4 *IEEE Access* 2292, 2295; Mizrahi, ‘A Blockchain-Based Property Ownership Recording System’ (2015), <http://www.the-blockchain.com/docs/Chromaway-Research-A-blockchain-based-property-registry.pdf>; Johnson et al., ‘The Value of AppCoins’ (*GitHub*, 10 June, 2014), <https://github.com/DavidJohnstonCEO/TheValueofAppCoins> (accessed on 3 November, 2017).

³⁶ Jentzsch, ‘Decentralized Autonomous Organization to Automate Governance’ (2016), <https://download.slock.it/public/DAO/WhitePaper.pdf>, at 1-3.

³⁷ Siegel, ‘Understanding The DAO Attack’ (*CoinDesk*, 25 June, 2016), <http://www.coindesk.com/understanding-dao-hack-journalists/>.

³⁸ See, for a more detailed account of the DAO hack and the Ethereum fork, Hacker (n. 29), at 13 et seq.; SEC Report, at 2 et seqq.

diverted funds should not have been returned to investors.³⁹ This points to deeply conflicting views over the relationship between code and law, and appropriate governance mechanisms, within the cryptocurrency community.⁴⁰ Second, and more importantly in our context, the SEC famously investigated the DAO token offering and determined, in an investigative report, that the DAO tokens were securities in the sense of US securities regulation.⁴¹

2. ICOs and Tokenization in General

This prompts the question of whether a similar conclusion is warranted under EU securities regulation. Before we answer this question, however, we must note that the DAO was an exceptional, and very specific, type of token offering. It is of utmost importance to realize that tokens can be designed in a variety of ways, which crucially impacts the applicability, or non-applicability, of securities regulation.

In most general terms, exchanging tokens for cryptocurrencies has become a convenient and increasingly used alternative form of funding for startup companies. Instead of taking the path of onerous and clearly regulated traditional venture capital funding, through several rounds of equity investments by venture capitalists, companies design tokens that can embody any bundle of rights and obligations for token holders.⁴² The Ethereum platform has established a protocol for creating such tokens (the ERC token standard) which only takes up less than 100 lines of code.⁴³ Developers write up a white paper in which they outline their business idea, shore up support on social networks, and then sell tokens to those willing to contribute cryptocurrencies. Importantly, the core developers typically have founded a company, for example a Ltd., for the purpose of launching their business, developing the tokens, and producing the product they ultimately want to sell. However, the consideration developers receive for tokens is, generally, not part of the equity of that underlying company; rather, it represents (crypto)funds the company collects without diluting *its* equity structure.⁴⁴ Depending on the concrete structure of the ICO, the collected funds may be perceived as “equity” of the (independent) blockchain organization. Together with the perceived lack of regulation, this makes this type of funding so attractive for founders. They can, and often do, immediately dump the collected crypto funds onto the market, converting them into euros or dollars, and are hence provided with significant funding they can freely allocate to more or less efficient, or legal, causes. Investors, in turn, may keep the tokens to enjoy the rights flowing from them, or may trade them on secondary market cryptocurrency exchanges. In some cases (for example, the Tezos ICO⁴⁵), tokens are

³⁹ Arvico, ‘A Crypto-Decentralist Manifesto’ (*Ethereum Classic Blog*, 11 July, 2016), <https://ethereumclassic.github.io/blog/2016-07-11-manifesto/> (accessed on 25 October, 2017).

⁴⁰ See De Filippi/Loveluck, ‘The invisible Politics of Bitcoin: Governance Crisis of a Decentralised Infrastructure’, (2016) 5(3) *Internet Policy Review* 1.

⁴¹ SEC Report, at 11 et seqq.

⁴² The best semi-technical overview over the different types of tokens can be found in Rohr/Wright (n. 13) 8-24; on tokenization in general, see Van Valkenburgh et al., ‘Distributed Collaborative Organisations: Distributed Networks and Regulatory Frameworks’, Working Paper (2015), <http://bollier.org/sites/default/files/misc-file-upload/files/DistributedNetworksandtheLaw%20report,%20Swarm-Coin%20Center-Berkman.pdf>, at 11 et seq.

⁴³ ERC20 Token Standard, The EthereumWiki, https://theethereum.wiki/w/index.php/ERC20_Token_Standard (accessed on 20 October, 2017).

⁴⁴ Cf. also Langenbucher, ‘Capital markets union and virtual funding: Initial Coin Offerings, Tokens, and Digital Corporations’, in: Allen/Faia/Haliassos/Langenbucher (eds.), *The Capital Market Union and Beyond* (MIT Press, forthcoming) (on file with authors).

⁴⁵ Tezos, ‘FAQ’, <https://www.tezos.com/faq> (accessed on 3 November, 2017), under ‘How do I acquire and store Tezos tokens during and after the fundraiser’; see also Hochstein, ‘Tezos Founders on ICO Controversy: ‘This Will Blow Over’’ (*CoinDesk*, 25 October, 2017), <https://www.coindesk.com/tezos-founders-ico-controversy-will-blow/> (accessed on 3 November, 2017).

not immediately distributed after the ICO; hence, investors have to wait a considerable amount of time to be able to actually trade tokens. Nevertheless, they typically expect to be able to sell their tokens if they so desire. As noted in the introduction, such ICOs have taken on a massive scale in the last two years.

3. Three Archetypes of Tokens: Currency, Utility, and Investment Tokens

We would like to argue that there are three different archetypes of tokens, with each individual token sharing some or all of these types in different degrees: currency, utility, and investment tokens.⁴⁶ First, some ICOs are launched to create a new cryptocurrency;⁴⁷ for example, in the Ethereum ICO, users could offer bitcoin and receive ether in return.⁴⁸ Hence, these tokens issued are meant to function as a means of payment for goods or services external to the platform.

Second, other ICOs offer tokens that are supposed to convey some functional utility to investors *other than payment for external goods or services*, in the form of access to a product that the developers have created or are creating.⁴⁹ The key difference to the currency component just described is that the utility component provides token holders with access to a function provided directly by the token issuer. By contrast, the currency component of a token enables holders to pay for goods external to the token platform, for example by paying for a pair of shoes in bitcoin on OpenBazaar.⁵⁰ Tokens created on Ethereum, for example by using the ERC20 standard tokenization smart contract, typically include such a utility component. A prominent example of such a token is filecoin, which launched the most successful ICO in 2017, collecting more than \$250 million.⁵¹ Filecoin establishes a decentralized storage network tapping available storage space on computers worldwide. Token holders “spend tokens for storing and retrieving data and miners earn tokens by storing and serving data”.⁵² Many other coins with utility components have sprung up: holders of Status tokens benefit from mobile messaging and a social network that seeks to eliminate bots and provide control over user data;⁵³ Bancor enables users to convert coins from one cryptocurrency to another;⁵⁴ Paragon intends to open a brick-and-mortar co-working space in which only paragons are accepted;⁵⁵ and Blockstack provides

⁴⁶ This differentiation follows a functional approach; the distinction is similar to, but not entirely congruent with, the distinction between protocol, utility and investment tokens used, for example, by Rohr/Wright (n. 13) 8 et seqq. While their classification primarily builds on the “code layer” at which a token operates (protocol or app layer), ours is derived directly from the function it serves (see also n. 57). In the end, it is the function that determines the status of a token under EU securities regulation, see below, Section IV.1.c. It is also slightly more nuanced than the one in Barsan (n. 18) 55 et seqq., which distinguishes between tokens for launching a cryptocurrency and those for project financing, but does not discuss utility tokens.

⁴⁷ Monetary Authority of Singapore (n. 4) para. 2: “A virtual currency is one particular type of digital token, which typically functions as a medium of exchange, a unit of account or a store of value.”

⁴⁸ Narayanan et al. (n. 20) ch 10.7.

⁴⁹ Since these products are usually marketed in the form of apps, these tokens are also a subcategory of so-called app tokens, see Rohr/Wright (n. 13) 12 et seqq.

⁵⁰ <https://www.openbazaar.org/ob1-raises-4-2m-to-build-a-decentralized-marketplace-using-digital-currencies/>

⁵¹ CoinSchedule, ‘Cryptocurrency ICO Stats 2017’, <https://www.coinschedule.com/stats.php> (accessed on 20 October 20, 2017).

⁵² Protocol Labs, ‘Filecoin: A Decentralized Storage Network’, Updated White Paper (14 August, 2017), <https://filecoin.io/>, at 4.

⁵³ Jarred Hope et al., ‘The Status Network’, White Paper (15 June, 2017).

⁵⁴ Eyal Hertzog et al., ‘Bancor Protocol’, White Paper (12 October, 2017).

⁵⁵ Paragon, ‘About Paragon’, <https://paragoncoin.com/login> (accessed on 15 November, 2017).

the building blocks for a new type of decentralized internet its users may navigate.⁵⁶ Finally, Ethereum itself, besides being a cryptocurrency, also offers the functionality of serving as a platform for smart contracts and, by extension, for other tokens. Users can pay the above-mentioned transaction fees (gas) with ether; hence, they can use ether tokens not only to directly transfer value, but also to purchase access to Ethereum's decentralized computing and smart contract platform (the Ethereum Virtual Machine, EVM).⁵⁷ Arguably, however, the utility that ether confers is situated at a different, more generic level than the one of specific tokens (like filecoin) launched on Ethereum: it enables, *inter alia*, the creation of other tokens, which is not typically the case with tokens launched on Ethereum (an exception is the EOS token).⁵⁸ Not all tokens have a direct utility component, however: the issuers of the EOS token, for example, which is currently distributed on the Ethereum blockchain, specifically rule out any functionality of the EOS token for the platform of the issuers.⁵⁹

Thirdly and finally, tokens issued in an ICO may have an investment component in the sense that tokens are considered as assets promising investors positive future (crypto)cash flows.⁶⁰ Apart from betting on rising market prices, these may stem from distributions of profits made by the underlying company or the created investment vehicle. The DAO epitomized this latter type of investment token.

It must be stressed that even tokens that mainly aspire to serve as a utility token typically will have an investment component as tokens can be traded, and hence sold at a profit, at token exchanges (secondary markets) subsequent to the ICO. Most factually existing utility tokens hence represent a particular, and novel, hybrid type of finance-cum-consumption product. This Janus-faced nature of utility tokens raises intricate questions concerning their classification under traditional EU securities regulation.

III. General Questions

In its substance, any ICO is primarily about the acquisition of capital. Charitable ICOs, which we may see in the future but which as of now do not dominate the scene, left aside, an ICO is onerous in nature, i.e. there is some consideration present in exchange for the provision of capital. The nature of this consideration depends on the nature of the token: Where the ICO is designed to primarily launch a new cryptocurrency, the transaction, in traditional terms, is probably best described as a purchase of rights, the entitlement that flows from being the holder of a cryptocurrency being the purchased right that constitutes the consideration for providing capital in usual currency.⁶¹ While on a formal level this may also be an accurate description of ICOs with respect to utility tokens, private law would typically jump ahead and equate the right to acquire a good or use a service with the acquisition of the good or service itself. Therefore, the ICO of utility tokens should rather be characterized as a sale of goods or a service contract.

⁵⁶ Muneeb Ali et al., 'Blockstack: A New Internet for Decentralized Applications', White Paper (October 12, 2017).

⁵⁷ Note that Rohr/Wright (n. 13) 8 et seqq. seem to qualify ether as a pure protocol token; we tend to think that it makes sense to qualify ether as having both a currency and a utility component, as it serves both as a means of payment for external goods (say, shopping on a future version of OpenBazaar) and as a means of payment for services internal to the platform, such as the EVM. This categorization is mutually compatible, see n. 46.

⁵⁸ This is why Rohr/Wright (n. 13) 8 introduce the category of protocol tokens. We are grateful to Aaron Wright for discussing this point with us, on EOS, see next n.

⁵⁹ EOS, Frequently Asked Questions, Question No. 5, <https://eos.io/faq.html> (accessed on 23 October, 2017). However, EOS tokens do have significant utility for the construction of *other* platforms, a pattern specific to the EOS token sale.

⁶⁰ In the terminology of Rohr and Wright, investment tokens are a second subcategory of app tokens, besides utility tokens, see Rohr/Wright (n. 13) 14.

⁶¹ On the question of whether currency tokens embody rights, see below, Part IV.B.1.b)ii)(3)γ.

Although raising interesting questions of contract formation, liability and enforcement, the regulatory challenge represented by these two types of ICOs appears to be rather limited. That, however, is not the case with regard to the ICO of investment tokens. This is because the peculiar nature of investments, notably the enormous information asymmetry between issuer and investor at the primary market and, for similar reasons, the fragile stability of the secondary market, being exposed to inside trading in particular, exerts an intricate regime of investor protection. This regime, hitherto archetypically applied to securities, subjects issuers to draconian obligations and potential liabilities. It hence needs to determine, clearly and unequivocally, if and to what extent ICOs of investment tokens shall be governed by it, and whether currency and utility tokens successfully escape it. We shall outline the main EU-relevant prongs of investment protection in the following section.

A. Prospectus Regulation

Before securities can be offered to the public on the primary market or be traded on a regulated secondary market, the issuer has to draw up a prospectus, which after official approval has to be published. The prospectus is supposed to contain the information, which is necessary for an informed investment decision, presented in an accurate and transparent way. Its principal function is to level out information asymmetries between issuer and investors.⁶² While form and contents of such prospectus is regulated on the EU level,⁶³ EU Member States, within a certain margin of appreciation,⁶⁴ are free to draft their own liability rules with regard to misrepresentations and who is to be held liable for them. It is an open question if and to what extent these prospectus regimes cover ICOs of investment, but also of currency and of utility tokens. This will be the focus of this paper in Part IV.

B. Market Abuse Regulation (MAR)

In the attempt to ensure market integrity and hence minimize inside trading and other forms of market manipulation, the EU has put in place the Market Abuse Regulation (henceforth: MAR).⁶⁵ It lays down certain prohibitions, such as on market manipulation, inside trading and managers' transaction. What is more, it subjects issuers to ad-hoc disclose inside information in order to pro-actively prevent insider trading based on that information. If after an ICO investment tokens were to be traded on a regulated market, multilateral trading facility or an organized trading facility, issuers would have to comply with these prohibitions and obligations.

C. Markets in financial Instruments Directive (MiFID II)

The general environment of services related to capital markets is one of the vast areas covered by the new EU Directive on markets in financial instruments (henceforth: MiFID II).⁶⁶ Once fully implemented by Member States, it will generally affect many aspects of ICOs, be it the distribution of tokens to the public through professional investment agents, be it the provision

⁶² Cf. Recital 3, Regulation (EU) 2017/1129 of 14 June 2017 on the prospectus to be published when securities are offered to the public or admitted to trading on a regulated market (henceforth: „Prospectus Regulation“).

⁶³ For cases post 21 July 2019 see Prospectus Regulation. Until then, subject to Art. 49 Prospectus Regulation, the Directive 2003/71/EC of 4 November 2003 on the prospectus to be published when securities are offered to the public or admitted to trading (henceforth: Prospectus Directive) and its implementing Member State legislation applies. See below

⁶⁴ Cf. Art. 11 Prospectus Regulation.

⁶⁵ See Regulation (EU) 596/2014 of 16 April 2014 on market abuse.

⁶⁶ Directive 2014/65/EU of 15 May 2014 on markets in financial instruments.

of special platforms used as trading venues for launching ICOs. It should be noted that the basic thrust of MiFID II is “to establish a comprehensive regulatory regime governing the execution of transactions in financial instruments *irrespective of the trading methods used*.”⁶⁷ However, it has little bearing on the legal structure and execution of ICOs per se and hence can be disregarded for the purposes of this paper.

D. UCITS Directive, AIFM Directive, and EMIR

As soon as ICOs are used to organize crowd funding or other investment practices, general investment law has to be complied with. For example, if the entity established via an ICO were to be characterized as an undertaking for collective investment in transferable securities, it would first have to comply with the UCITS Directive (see below, Part IV.B.2. in greater detail).⁶⁸ Failing that, irrespective of its legal structure, such an entity may qualify as an alternative investment fund according to the AIFM Directive.⁶⁹ This constant attempt to extend regulation in order to catch up with the ever-changing forms of investment and speculation practices in order to control the dangers they engender for the public, can be further underscored by the European law on over-the-counter trading of derivatives (EMIR).⁷⁰ Finally, the Fourth Anti Money-Laundering Directive must be taken heed of. The Directive applies to UCITS and investment firms trading in securities, and imposes *Know Your Customer* and record keeping duties.⁷¹ While, just like MiFID II, these statutes do not directly target ICOs as such, they should be borne in mind for two reasons: First, they may be part of the general legal environment of the enterprise behind an ICO and therefore can at least have an influence on the question, if, when and how an ICO is the right business choice. Second, from a legal governance perspective, the evolutionary nature of EU investment law allows to project that sooner or later the phenomenon of ICOs will be subject to specific regulation designed to fill what will be perceived as “legal loop-holes”. It is really up to market actors if they want to embrace rather than evade this fact and let their voices be heard in the legislative process.

IV. EU Securities Regulation for the Blockchain, Particularly: Prospectus Regulation

A. The Scope and International Reach of EU Securities Legislation

ICOs of investment tokens have to comply with EU securities legislation only as far as that legislation is applicable *ratione materiae* and *ratione loci*, i.e. if the given ICO falls into the material and spatial scope.

From a systematic point of view, most EU securities legislation is clustered around MiFID II, providing essential material definitions such as “financial instrument”, “transferable securities” “regulated market” and “multilateral trading facility” as well as “organised trading facility” in

⁶⁷ Recital 13 MiFID II.

⁶⁸ Directive 2009/65/EC of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investments in transferable securities (UCITS). See notably Art. 5 (1) of that Directive.

⁶⁹ Directive 2011/61/EU of 8 June 2011 on Alternative Investment Fund Managers. On the express indifference towards legal forms and structures see Art. 2 (2); see also ESMA Statement (n. 9) 2; AMF (n. 10) 8.

⁷⁰ Regulation (EU) No 648/2012 of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (henceforth EMIR).

⁷¹ Art. 2(1)(2), 3(2), 10 et seqq., 40 et seqq. of the Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing; see also ESMA Statement (n. 9) 2.

its Art. 4 and laying down basic common rules for the functioning of EU capital markets. It also provides the basic default for the spatial scope of EU law in this field: generally speaking, EU securities regulation adopts a territorial and market-focused approach. Whichever security gets offered or traded on a market located in the EU, will be subject to EU securities regulation, while with regard to third countries, rather than extending its legislative jurisdiction extra-territorially, the EU contents itself to seek coordination with third country authorities.⁷² At the same time, however, territoriality is given a broad reading, focusing on the effects on EU markets rather than the place where actions and omissions take place. Hence the clarification by Art. 2 (3) and (4) MAR that *any* behavior, also such taking place outside trading venues or outside the EU, will be covered by EU rules against market abuse and inside trading.

As far as prospectus legislation is concerned, the EU adopts a hybrid approach. While that legislation applies to regulated secondary markets “situated or operating within a Member State”⁷³ only, the primary market, i.e. initial offerings of securities to the public⁷⁴ in the EU, is covered by EU prospectus regulation in its entirety, even if no listing on a regulated secondary market inside the EU is intended. According to Art. 20 Prospectus Directive and Art. 28 seqq. Prospectus Regulation, this expressly includes issuers incorporated in third countries. Third country issuers get assigned a “home Member State” based upon “where the securities are intended to be offered to the public for the first time”.⁷⁵ Once approval from that home Member State is obtained, the approval extends to any other Member State (“host Member State”)⁷⁶, provided that the host Member State’s competent authority is being duly notified.⁷⁷ So whoever intends to offer securities on the primary market inside the EU has to comply with EU prospectus legislation. That legislation, however, does not offer one comprehensive set of rules covering all legal aspects of IPOs (and, as will be shown, ICOs). To start with, the Prospectus Directive, as opposed to the Prospectus Regulation, is not self-executing but depends on Member State implementation which has to be considered as well. More importantly, however, there are entire subject matters not or only partially governed by EU prospectus legislation. One of these subject matters is prospectus liability. Apart from a very broad framework enshrined in Art. 6 Prospectus Directive and Art. 11 Prospectus Regulation respectively, the EU leaves the details of prospectus liability to the Member States. This goes to show that, despite the development of one uniform European capital market, the choice which Member State to target with an IPO still matters as a choice of law. It is still an open debate, however, how far the connecting factor of that choice may be prescribed by European Union law. According to some authors, the law applicable to prospectus liability is supposed to coincide with the *lex societatis*, i.e. the corporate law applicable to the issuers’ internal matters according to its place of incorporation or statutory seat.⁷⁸ However, this proposal does not seem to be in conformity with the express far-reaching indifference of EU prospectus towards the place of incorporation. It seems far-fetched to assume that the market-oriented approach adopted by both the Prospectus Directive and the Prospectus Regulation should fail precisely on one of the most topical questions of prospectus law.⁷⁹ Rather, the law of the market, the *lex mercatus*, should be

⁷² See e.g. Art. 88 MiFID II, Art. 26 seqq. MAR and Art. 30 Prospectus Regulation.

⁷³ Art. 1 (1) Prospectus Directive and Art. 1 (1) Prospectus Regulation.

⁷⁴ Cf. the very broad definition in Art. 2 (1) (d) Prospectus Directive.

⁷⁵ Art. 2 (1) (m) (iii) Prospectus Directive and Art. 2 (1) (m) (iii) Prospectus Regulation

⁷⁶ Art. 2 (1) (n) Prospectus Directive and Art. 2 (1) (n) Prospectus Regulation

⁷⁷ Cf. Art. 17 seq. Prospectus Directive and Art. 26 Prospectus Regulation.

⁷⁸ Cf. Ringe/Hellgardt, ‘The International Dimension of Issuer Liability – Liability and Choice of Law from a Transatlantic Perspective’ (2001) 31 *Oxford Journal of Legal Studies* 23, 45 et seqq.

⁷⁹ This is not the place to delve deeper into the intricacies of choice of law analysis. Suffice it to say that in order to avoid *dépeçage*, a „synchronism between duties and liability“ (Ringe/Hellgardt (n. 78) 45) is indeed justified, only that the duty properly to speak of is the issuer’s duty to publish a prospectus in conformity with the specifications set out by EU prospectus legislation. Hence, that very legislation’s market approach should be adopted.

applicable,⁸⁰ a solution, which also finds authority in EU choice of law regulation.⁸¹ Therefore, by choosing to offer securities in a given Member State, an issuer also subjects itself to that Member State's rules of prospectus liability. In traditional securities offerings, the markets (regulated markets, MTFs) are localized at certain venues; this is different with tokens offered on websites only. Hence, to fill the law of the market with meaning, the EU prospectus legislation should apply if the website can be accessed, and tokens bought, from computers located in the EU.

B. Applying the Contents of EU Securities Regulation

1. Prospectus Regulation et al.: IPO Rules for ICOs?

One of the most pressing issues for those organizing token sales is whether they need to register and deliver a prospectus. The following section provides a brief overview of US securities and prospectus regulation before turning to an in-depth analysis of EU prospectus regulation. On a general level, relevant US securities regulation is marked almost entirely by case law interpreting the Securities Act of 1933 ('33 Act) and gravitating around the core economic characteristics of investment contracts (below, a)). EU prospectus regulation, by contrast, is driven by a complex arrangement of much younger black letter law which, above all, focuses on whether issued units are transferable, standardized and negotiable (below, under b)). While US law, therefore, more directly tackles questions related to the essential functions of prospectus regulation (such as information provision in the service of mitigating information asymmetries concerning investment risks), EU prospectus regulation, arguably, only indirectly and tortuously circles back to this core functional perspective. Nevertheless, we argue that only such a functional view can provide answers in the analysis of radically novel investment facilities, such as ICOs, which defy traditional categories. In unpacking the functional core of EU prospectus regulation, we aim to offer a nuanced perspective on the types of tokens that are, or are not, subject to these rules.

a) A Very Brief Overview of US Securities Regulation

Under US securities regulation, a prospectus needs to be registered with the Securities and Exchange Commission (SEC) whenever a security is offered to the public, Sec. 5 of the '33 Act. Sec. 2(a) of the '33 Act, in turn, lists a number of instruments considered to be securities. These not only include stocks and bonds, but also the catch-all term of "investment contracts". Novel types of financial instruments that do not easily fit into one of the traditional security categories are therefore often analyzed under the investment contract prong.⁸²

⁸⁰ Grundmann, *RechtsZ* 54 (1990), 283, 305.

⁸¹ See Art. 4 (3), Regulation (EC) No 864/2007 of 11 July 2007 on the law applicable to non-contractual obligations. The basic principle is that the default connecting factor for the choice of tort law, which is the *locus damni*, can be trumped by a closer connection with a different legal order. For reasons of efficiency and legal certainty, the law of the market is such a legal order, cf. Ringe/Hellgardt (n. 78) 45. Similar recent examples of such closer connections are treated in Thomale, 'Harmonization over Maximization: European choice of law solutions to aviation accidents' (2015) 3 *The Aviation and Space Journal* 2-10; Thomale/Hübner, 'Zivilgerichtliche Durchsetzung transnationaler Unternehmensverantwortung' *Juristenzeitung* 2017, 382-397.

⁸² Loss/Seligman, *Fundamentals of Securities Regulation* (Aspen, 4th ed. 2004) 246 et seqq. See also the concise overviews of US securities regulation, with respect to tokens, in Rohr/Wright (n. 13) 25 et seqq.; Alberts/Fry, 'Is Bitcoin a Security?', 21 *B.U. J. Sci. & Tech. L.* 1, 4 et seqq. (2015).

i. The Howey Test

The United States Supreme Court gave a groundbreaking definition of an investment contract in the *Howey* case.⁸³ According to this decision, and subsequent case law, an investment contract consists of four elements that need to be fulfilled (*Howey* test): 1) investment of money into 2) a common enterprise with 3) the reasonable expectation of profits derived 4) from the entrepreneurial or managerial efforts of others.⁸⁴ This test seeks to distill the essential economic components of investment activities and flexibly applies to all “schemes devised by those who seek the use of the money of others on the promise of profits”.⁸⁵ Indeed, whenever profits are expected from significant efforts of others, a principal-agent-conflict and hence information asymmetry arises between investors and promoters concerning the intention and capacity of the promoters to deliver on their promises. Therefore, it is precisely in these situations that, at least from a classical economic perspective, a prospectus containing detailed information about the investment project makes sense.⁸⁶

ii. The SEC Investigative Report

In its investigative report of July 2017, the SEC scrupulously applied the *Howey* test to the DAO tokens and concluded that they did constitute investment contracts and, by extension, securities. More precisely, the SEC first noted that it was immaterial that consideration for the tokens was not given in dollars, but rather in a cryptocurrency, ether.⁸⁷ Since ethers were a valuable contribution to the issuer, buyers did “invest money”; in this, the SEC confirmed previous case law holding that bitcoin investments equally count as investment of money.⁸⁸ Second, the SEC, albeit implicitly, considered the DAO vehicle as a common enterprise.⁸⁹ Third, it held that, pursuant to the promotional materials and issuer communications, investors had a reasonable expectation of profits,⁹⁰ with profits including “dividends, other periodic payments, or”, importantly, “the increased value of the investment”.⁹¹ Fourth, the SEC concluded, in the most detailed part of the report, that these profits were expected not only from the interplay of market forces, but from substantial efforts of the DAO promoters.⁹² The voting and proposal rights conferred on investors were not enough to refute this conclusion;⁹³ under US case law, it suffices that the promoters make significant efforts, “those essential managerial efforts which affect the failure or success of the enterprise”.⁹⁴ Since investors were not even on equal footing with the DAO promoters concerning the maintenance, curation and daily as well as strategic operation of the DAO, the SEC considered last criterion of the *Howey* test to be fulfilled as well⁹⁵.

⁸³ *SEC v. W.J. Howey Co.*, 328 U.S. 293 (1946).

⁸⁴ *SEC v. Edwards*, 540 U.S. 389, 393 (2004); *United Housing Found., Inc. v. Forman*, 421 U.S. 837, 852-53 (1975); *SEC v. W.J. Howey Co.*, 328 U.S. 293, 301 (1946).

⁸⁵ *SEC v. W.J. Howey Co.*, 328 U.S. 293, 299 (1946).

⁸⁶ Cf. Grundmann, *European Company Law* (2nd ed., Intersentia, 2012) §20 para. 2-5.

⁸⁷ SEC Report, at 11.

⁸⁸ *SEC v. Shavers*, No. 4:13-CV-416, 2014 WL 4652121, at *1 (E.D. Tex. Sept. 18, 2014).

⁸⁹ SEC Report, at 11; see also the more detailed discussion in Alberts/Fry (n. 82) 15-20 (arguing that bitcoin tokens do not fulfil this requirement on the (questionable) assumption that bitcoin developers are not under an obligation vis-à-vis bitcoin owners to improve the value of bitcoins); more nuanced perspective in Rohr/Wright (n. 13) 28-30.

⁹⁰ SEC Report, at 11 et seq.

⁹¹ *SEC v. Edwards*, 540 U.S. 389, 394 (2004).

⁹² SEC Report, at 12 et seq.

⁹³ SEC Report, at 13; for a critique, see Rohr/Wright (n. 13) 38.

⁹⁴ *SEC v. Glenn W. Turner Enters., Inc.*, 474 F.2d 476, 482 (9th Cir. 1973).

⁹⁵ SEC Report, at 13-15.

The view that some tokens are securities under US law has resonated with the industry, too. The Simple Agreement for Future Tokens (SAFT), for example, aims to build an incubator for tokens that are securities in their development phase, and was used for the presale of Filecoin tokens;⁹⁶ furthermore, Templum has just raised \$2.7 million to develop a platform on which tokens that are securities can be legally traded.⁹⁷

b) EU Law

Under EU law, no comparable report has been published by any regulatory agency, so far. Therefore, legal guidance for token sales remains an even more pressing issue than under US law. In the following sections, we introduce the basic features of the concept of a “security” (i), apply it to a variety of token forms (ii), and finally explore exemptions from the regime of securities regulation (iii).

i. General Concept and Implications of a Security

Under EU law, different types of regulation attach to the core concept of a “security”. It is a necessary prerequisite for the applicability of prospectus regulation,⁹⁸ moreover, because a security forms part of the larger category of financial instruments,⁹⁹ the Market Abuse Regulation¹⁰⁰ and the MiFID¹⁰¹ regime also regulate securities. Finally, the UCITS Directive¹⁰² and EMIR¹⁰³ may equally be applied to securities. To treat all of these regulations in depth would transcend the scope of this paper; rather, we focus on the provisions of the prospectus regime (with a short foray into the UCITS regime) because the prospectus requirement is of eminent importance for the structure of the token sale process. Moreover, as mentioned above,¹⁰⁴ significant civil and criminal liability may follow from the offering of securities without a prospectus.

In general, EU law employs three rather formal criteria and one more substantive criterion define a security.¹⁰⁵ The formal ones are transferability; standardization; and negotiability on capital markets (with negotiability, however, being a subcase of transferability¹⁰⁶). Furthermore, the issued entity needs to be comparable to a list of examples, such as shares or bonds. Importantly, a registered document or certificate need not exist for a security.

ii. Tokens as Securities?

In view of the daunting consequences of selling a security without a prospectus in the EU, the question whether tokens are qualified as securities under EU prospectus regulation is of utmost importance, both to the issuers of tokens and to their buyers. Generally, as explained above, this question is answered under EU law, inter alia, by comparing the characteristics of the issued

⁹⁶ Protocol Labs et al., ‘The SAFT Project: Toward a Compliant Token Sale Framework’, White Paper, <https://saftproject.com/> (accessed on 31 October, 2017), for a critique of the legal assumptions underlying the functioning of SAFT, see Rohr/Wright (n. 13) 44-47.

⁹⁷ Higgins, ‘Templum Raises \$2.7 Million in Bid to Launch Regulated Token Trading System’ (*CoindDesk*, 26 October, 2017), <https://www.coindesk.com/templum-raises-2-7-million-in-bid-to-launch-regulated-token-trading-system/> (accessed on 31 October, 2017).

⁹⁸ Art. 1(1), 2(1)(a) Prospectus Directive; Art. 1(1), 2(a) Prospectus Regulation.

⁹⁹ Art. 4(1)(15) MiFID II.

¹⁰⁰ Art. 2(1), 3(1)(1) MAR.

¹⁰¹ Art. 1(1), 4(1)(2), Section C Annex I MiFID II.

¹⁰² Art. 1(2) UCITS Directive.

¹⁰³ Art. 1(3) EMIR.

¹⁰⁴ See Parts III.A. and IV.A.

¹⁰⁵ See below, Part IV.B.1.b)ii. in greater detail.

¹⁰⁶ Assmann, in: Assmann/Schneider, Wertpapierhandelsgesetz Kommentar (6th ed. 2012), § 2 para. 10.

units to a list of exemplary securities (such as shares, bonds etc.). Therefore, the qualification of tokens will depend on the exact features of the respective tokens. Issuers, and their lawyers, will therefore have to decide on a case-by-case basis whether the tokens they intend to sell are designed in a way that makes EU securities regulation applicable or not. Nevertheless, the following guidelines can be offered for determining what types of tokens are subject to EU prospectus regulation.

(1) Transferability

First of all, pursuant to Art. 2(1)(a) of the Prospectus Directive (Art. 2(a) of the Prospectus Regulation), EU prospectus regulation only applies to issued units that are transferable. In this context, however, transferability only means that the units can be assigned to another person *at all*, irrespective of whether certificates exist that register or document the existence of the units.¹⁰⁷ Tokens are not evidenced by certificates, but can generally be sold on secondary markets.¹⁰⁸ Therefore, they are typically transferable.

Transferability of tokens can be limited on a contractual basis, however; what is more, such restrictions may even be underpinned by making it technically impossible for other persons than the initial investors to exercise any rights under the token. The mere contractual restriction of the transfer of issued units (for example, a lock-up provision vis-à-vis early investors) does not deprive them of their status of transferability, however.¹⁰⁹ The reason is that such contractual restrictions do not hinder token holders to pass on ownership of the token in breach of the contractual provision. This may make them liable for damages vis-à-vis the issuer; but the contractual breach does not affect the validity of the transfer of ownership.¹¹⁰ Implicitly, this is acknowledged by Art. 7(7)(a)(v) of the Prospectus Regulation which requires the prospectus summary to include information on any restrictions to the free transferability of securities.¹¹¹

If, however, such contractual restrictions are accompanied by technical limitations to the transfer of token ownership that render the effective assignment of tokens to third parties impossible, it must be concluded that the tokens lack transferability and therefore are not subject to EU prospectus regulation. An example would be an implementation that ties the exercise of any rights flowing from the tokens to the unique blockchain identifier (public key) of the initial buyer. For those issuers attempting to circumvent EU securities regulation, this presents a technical workaround that could be economically attractive in financing schemes that seek to establish extremely stable and long-lasting relationships between product users. Such a scheme is rare, but not unheard of. For example, the tokens issued in one of the largest ICOs so far, the (as of the writing of this paper ongoing) EOS token sale, “will become fixed (non-transferable) on the Ethereum blockchain within 23 hours after the end of the final EOS Token distribution period which will occur on June 1, 2018.”¹¹² Once they are fixed, EOS tokens therefore likely are not securities (anymore).

¹⁰⁷ Cf. Assmann (n. 106) § 2 para. 10 et seq.

¹⁰⁸ See CryptoCoinCharts, ‘Cryptocurrency Exchanges / Markets List’, <https://cryptocoincharts.info/markets/info> (accessed on 3 November, 2017), listing 119 exchanges; Bajpai, ‘A Look At The Most Popular Bitcoin Exchanges’, *Investopedia*, <http://www.investopedia.com/articles/investing/111914/look-most-popular-bitcoin-exchanges.asp> (accessed on 3 November, 2017); SEC Report, at 6; see also references below (n. 190).

¹⁰⁹ ESMA, Questions and Answers. Prospectuses (26th updated version – December 2016), Question N° 67, at 55; Heidelberg, in: Schwark/Zimmer, Kapitalmarktrechts-Kommentar, 4th ed. 2010, § 2 WpPG para. 5; Assmann (n. 106) § 2 para. 7.

¹¹⁰ Heidelberg (n. 109) § 2 WpPG para. 5.

¹¹¹ Cf. also ESMA (n. 109), Question N° 67, at 55.

¹¹² EOS, Frequently Asked Questions, Question No. 19, <https://eos.io/faq.html> (accessed on 23 October, 2017). EOS tokens can be traded, however, before this deadline on exchanges, see id.

(2) Ease of Trading on a Capital Market

The other two key criteria for the EU securities concept, negotiability and standardization, are closely interwoven and both aim to ensure that securities can be easily traded on a capital market.

(i) Negotiability

As explained above, securities need to be “negotiable on a capital market” pursuant to Art. 4(1)(18) MiFID,¹¹³ to which Art. 2(1)(a) of the Prospectus Directive refers. While transferability refers to the *mere fact* of passing on ownership in securities, their negotiability concerns the *ease* with which ownership can be transferred.¹¹⁴ It is easy to see that negotiability in fact implies transferability.

The European Commission has offered guidance concerning the interpretation of negotiability. According to their Q&A document, “[i]f the securities in question are of a kind that is capable of being traded on a regulated market or MTF [multilateral trading facility], this will be a conclusive indication that they are transferable securities”.¹¹⁵ Regulated markets and multilateral trading facilities are technical terms defined under the MiFID regime, to which Art. 2(1)(j) of the Prospectus Directive refers. The former includes only authorized marketplaces for financial instruments functioning in accordance with Title III of MiFID,¹¹⁶ for example stock exchanges. Similarly, MTFs are marketplaces for financial instruments characterized by bringing buying and selling interests together.¹¹⁷ At the moment, tokens are not traded on regulated markets, of course; they are exchanged on cryptocurrency exchanges such as coinone, Kraken or HitBTC.¹¹⁸ At this point, we do not have to conclusively determine whether these platforms amount to MTFs in the sense of the MiFID regime (although there is much to be said for it)¹¹⁹ since the Commission itself points out that even instruments that are incapable of being traded on MTFs or regulated markets may be considered negotiable.¹²⁰ What is crucial is that they can be traded easily on a capital market. The concept of a capital market, in turn, is not defined in EU securities regulation, but “is broad and is meant to include all contexts where buying and selling interest in securities meet”.¹²¹

Therefore, the fact that tokens are actively traded on cryptocurrency platforms is a clear indication that they are negotiable on capital markets. However, scholars are divided on the question whether further criteria have to be met for negotiability to be fulfilled. Some do interpret negotiability in a narrow sense, so as to distinguish it clearly from mere transferability. Particularly, they tend to stress that acquisition of securities based on good faith must be possible, or that equivalent security mechanisms need to be in place to protect investors *erga*

¹¹³ The definition of a security in Art. 4(1)(44) MiFID II is identical to the one in MiFID.

¹¹⁴ Note that negotiability does not require „free negotiability“ as defined in Art. 35 of the MiFID Implementation Directive 1287/2006/EC, see Assmann (n. 106) § 2 para. 8.

¹¹⁵ European Commission, Your questions on MiFID (updated version 2008), Question N° 115.

¹¹⁶ See Art. 4(1)(14) MiFID, Art. 4(1)(21) MiFID II.

¹¹⁷ See Art. 4(1)(15) MiFID, Art. 4(1)(22) MiFID II, and Title II of MiFID (II).

¹¹⁸ See references above (n. 108).

¹¹⁹ See the evaluation by the German Federal Financial Supervisory Authority (BaFin), Virtuelle Währungen/Virtual Currency (VC) (28 April, 2016), https://www.bafin.de/DE/Aufsicht/FinTech/VirtualCurrency/virtual_currency_node.html (accessed 26 October, 2017); Münzer, 'Bitcoin. Aufsichtsrechtliche Bewertung und Risiken für Nutzer', BaFin Journal (January 2014) 26, 28 et seq.; furthermore Hildner, 'Bitcoins auf dem Vormarsch: Schaffung eines regulatorischen Level Playing Fields?', *BKR* 2016, 485, 490 et seq.

¹²⁰ European Commission (n. 115) Question N° 115.

¹²¹ European Commission (n. 115) Question N° 115.

omnes, and not only vis-à-vis their contractual party, from insecure links in the chain of ownership.¹²² As tokens come under many different forms, and as the law applicable to their transfer will vary from case to case, it is difficult to say in general whether good faith acquisition of tokens is possible. Arguably, if the claims do not relate to movable or immovable property, this will often not be the case.¹²³ However, the blockchain itself provides for a perfect substitute. It contains and cryptographically secures the exact chain of ownership for each and every issued token. Each transfer of ownership is transparently recorded on the blockchain. It is the very essence of tokenization that ownership of claims is inherently linked to tokens that are directly registered on the blockchain. Therefore, the criterion of sufficient protection against invalid transfer of ownership is clearly fulfilled in blockchain-based tokens. Hence, those tokens that are, or can be, actively traded on cryptocurrency platforms are negotiable.

(ii) Standardization

Another hotly debated issue concerns standardization. Scholars agree that if issued units are not sufficiently standardized, they cannot be considered securities under EU law.¹²⁴ There are two arguments advanced in favor of this. First, Art. 4(1)(18) MiFID defines transferable securities as “classes of securities” with certain qualities. This implies that the issued units must share a number of characteristics so that they can be considered a class.¹²⁵ Most importantly, the claims represented by the units must not be individually negotiated with investors.¹²⁶ Second, it is argued that, from a functional perspective, non-standardized issued units cannot be easily traded on a capital market as standardization is necessary to reduce search costs for investors. One popular definition therefore holds that units must be defined by common characteristics so that it is sufficient to refer to the type and number of units to trade them.¹²⁷

When it comes to tokens, lack of standardization could be an issue since tokens, as noted above, come in a variety of different shapes. However, this does not necessarily imply the tokens are insufficiently standardized; rather, it must be determined *at what level* standardization has to occur. The wording of Art. 4(1)(18) MiFID says nothing about the level of abstraction of the mentioned classes, or their extension. Even shares, the epitome of securities, come in many different classes (e.g., bearer share; common/registered share; registered shares with limited transferability; preferred share¹²⁸). Hence, what is commonly demanded is only fungibility¹²⁹ within one class of shares.¹³⁰ And even within one class of shares, the effective rights conferred

¹²² Kumpan, in: Schwark/Zimmer, Kapitalmarktrechts-Kommentar, 4th ed. 2010, § 2 WpHG para. 9; Voß, 'Geschlossene Fonds unter dem Rechtsregime der Finanzmarkt-Richtlinie (MiFID)?', *BKR* 2007, 45, 51 et seq.; Fuchs, in: Fuchs, Wertpapierhandelsgesetz Kommentar (2nd ed., 2016), § 2 para. 18; contra Assmann (n. 106) § 2 para. 17; cf. also The Giovannini Group, *Second Report on EU Clearing and Settlement Arrangements* (Brussels, 2003) 15. Under German law, for example, a merely contractual assignment of claims may be considered insufficient since German assignment law does not, in general, allow for good faith acquisition of assigned claims, § 405 German Civil Code (BGB); this is different for shares in corporations and LLCs, where *bona fides* acquisition is generally possible, see, e.g., §§ 932, 935(2) BGB; Art. 16(2) Wechselgesetz, § 68(1)(2) AktG; § 16(3) GmbHG; see references above in this fn.

¹²³ Cf. Langenbacher, 'Digitales Finanzwesen - vom Bargeld zu virtuellen Währungen', *Archiv für civilistische Praxis* (forthcoming), under IV.2.b).

¹²⁴ See only, from the German commentary literature, Fuchs (n. 122) § 2 para. 14; Assmann (n. 106) § 2 para. 7; Heidelberg (n. 109) § 2 WpPG para. 5; Kumpan (n. 122) § 2 WpHG para. 18 et seq.

¹²⁵ CESR's Technical Advice on Possible Implementing Measures of the Directive 2004/39/EC on Markets in Financial Instruments, CESR/05-290b, BOX 25, at 84; Kumpan (n. 122) § 2 WpHG para. 7; Assmann (n. 106) § 2 para. 7.

¹²⁶ Kumpan (n. 122) § 2 WpHG para. 7.

¹²⁷ Voß (n. 122) 50; Kumpan (n. 122) § 2 WpHG para. 7; Fuchs (n. 122) § 2 para. 17.

¹²⁸ See, e.g., Parameswaran, *Fundamentals of Financial Instruments. An Introduction to Stocks, Bonds, Foreign Exchange, and Derivatives* (Wiley, 2011) ch. 3.

¹²⁹ Fungibility means interchangeability with identical items, see Parameswaran (n. 128) 49.

¹³⁰ Fuchs (n. 122) § 2 para. 20.

by share ownership vary from company to company depending, for example, on its corporate governance framework (particularly in those countries that grant significant party autonomy in the drafting of the articles of association).¹³¹

Therefore, from a functional perspective, the most one can reasonably demand of tokens is that all tokens issued by a single issuer in one round of financing share the same relevant characteristics. Since classes can be arbitrarily created at every level of abstraction, it is unnecessary that all investment or all utility tokens are standardized according to one model token, respectively. Rather, standardization at the level of individual issuers should be sufficient;¹³² it is not necessary, as some scholars claim,¹³³ to standardize issued units at a more abstract level. Issuer-based standardization not only makes it possible to trade, with low search costs, tokens typically named after issuers (“filecoin” for Filecoin; “ether” for Ethereum etc.); investors can also transfer them by reference to the token name¹³⁴ and the number of units only. Most importantly, standardization at the issuer level is necessary, but also sufficient, for a prospectus obligation to make sense. Generally, prospectuses are published for the securities an issuer offers to the public at a certain moment in time.¹³⁵ If these securities are homogeneous, the prospectus can meaningfully convey information to investors concerning each individual unit sold in the offering. It is irrelevant, however, whether tokens sold by *other issuers* have different structures as these will be accompanied by other, specific prospectuses.

Hence, with respect to standardization, tokens can be compared to shares in LLCs or partnerships where conditions also vary from issuer to issuer.¹³⁶ The wording of Art. 4(1)18 MiFID is equivocal on whether shares of these entities are securities (“shares in companies and other securities equivalent to shares in companies, partnerships or other entities”).¹³⁷ According to some authors, lack of standardization deprives them of negotiability.¹³⁸ Other scholars do qualify them as transferable securities since, if securities equivalent to shares in partnerships are the subject of prospectus regulation, shares in partnerships themselves should qualify *a fortiori*.¹³⁹ The European Commission adopts a more nuanced stance and does not refer to standardization; rather, they consider shares in partnerships or LLCs to be transferable securities if only they can be traded on the capital markets.¹⁴⁰ What is important, then, is that search costs for sellers looking for buyers (and vice versa) are low, and that sales conditions do not have to be negotiated individually.¹⁴¹ Therefore, by analogy, as long as tokens are (capable of being) traded on cryptocurrency exchange platforms, they should be considered negotiable.

Such an understanding also seems to be consonant with the Technical Advice of the former Committee of European Securities Regulators (CESR) on MiFID: there, CESR noted that

¹³¹ See, e.g., Grundmann (n. 86) §14.

¹³² For an identical claim, concerning the question of whether LLC and partnership shares are securities, see Assmann (n. 106) § 2 para. 16; Fuchs (n. 122) § 2 para. 14.

¹³³ Heidelbach (n. 109) § 2 WpPG para. 5; probably also Versteegen, in: Hirte/Möllers, *Kölner Kommentar zum WpHG* (2007), § 2 para. 16.

¹³⁴ This holds if, in different rounds of financing with differing conditions for the claims embodied in tokens, these are issued each time under a specific name, which can be expected to prevent confusion in the market.

¹³⁵ Even the shelf registration regime requires updates for each individual offering, see Moloney, *EU Securities and Financial Markets Regulation* (OUP, 2014) 101 et seqq.

¹³⁶ See also below, n. 157 and accompanying text.

¹³⁷ Voß (n. 122) 48.

¹³⁸ Ritz/Zeising, in: Just/Voß/Ritz/Zeising (eds.), *Wertpapierprospektgesetz und EU-Prospektverordnung* (Beck, 2009), § 2 WpPG para. 19-24.

¹³⁹ See Voß (n. 122) 48; see also Assmann (n. 106) § 2 para. 16.

¹⁴⁰ European Commission (n. 115) Question N° 115, at 46.

¹⁴¹ See OLG München [Appeal Court for the Munich District], Judgment of 26 June, 2013, case 3 U 4373/12, ECLI:DE:OLGMUEN:2013:0626.3U4373.12.0A, para. 72.

transfer restrictions do not prevent negotiability as long as they do not “disturb the market”.¹⁴² As the ongoing ICO-mania shows, despite the heterogeneity of tokens the market is not only not disturbed, but, if anything, overheated.¹⁴³ Furthermore, from an investor protection perspective, which is deeply rooted in the prospectus regulation and the MiFID regime,¹⁴⁴ it seems contradictory to demand further standardization of tokens for them to be considered negotiable: after all, the less tokens are standardized across issuers, the more investors are in need of the very protection prospectus regulation affords, i.e., the provision of information. As a practical matter, since the objective of token sales is to efficiently raise funds for the issuer, and since bespoke agreements between the issuer and investors raise costs, it therefore can be expected that basically all token sales are sufficiently standardized at the issuer level.

All in all, the fact that most tokens are actively traded on exchange platforms, often with significant liquidity,¹⁴⁵ testifies to their negotiability on capital markets, at least in general. Unless technical hurdles are purposefully implemented to prevent active trading, or individual agreements with investors make one specific token particularly heterogenous in terms of the claims it embodies,¹⁴⁶ tokens therefore fulfill the negotiability criterion of the security definition under EU prospectus regulation.

(3) Functional Comparability with Shares or Other Forms of Securitised Debt

As we have seen, most tokens will fulfill the three initial criteria of a security under EU prospectus regulation: transferability, negotiability, and standardization. The definition in Art. 4(1)(18) MiFID, however, combines these three criteria with a non-exhaustive list of examples that do constitute securities. These include three broad categories: “shares” and equivalent issued units (lit. a); “bonds and other forms of securitized debt” (lit. b); and “any other securities giving the right to acquire or sell any such transferable securities or giving rise to a cash settlement determined by reference to transferable securities, currencies [...] or other indices or measures” (lit. c). A typical example of the last category are stock options. Some scholars argue, however, that this list is irrelevant since the only criteria for securities under EU law are transferability, standardization, and negotiability;¹⁴⁷ after all, the list only contains non-exhaustive examples (“such as”). However, it is precisely for novel types of investment products, such as tokens, that the list becomes relevant: it offers archetypical examples of securities that show what the legislator had in mind when regulating these entities. From a functional perspective, tokens must at least be comparable to these typical securities in order to trigger securities regulation.

Typically, tokens of whatever kind will not be shares nor bonds. Shares are issued in exchange to an equity stake in a corporation; as noted, token holders do not typically contribute equity. Bonds, in turn, are fixed-income securities which do not confer an ownership stake in the issuing entity.¹⁴⁸ They consist of purely financial claims against the issuing company, usually

¹⁴² CESR (n. 125).

¹⁴³ Cf. Nathaniel Popper, ‘Easiest Path to Riches on the Web? An Initial Coin Offering,’ *New York Times* (23 June, 2017), <https://www.nytimes.com/2017/06/23/business/dealbook/coindigital-currency.html> (accessed 25 October, 2017).

¹⁴⁴ See Recital 10 of the Prospectus Directive; Recital 4 of the Prospectus Directive; Recital 2 MiFID; Recitals 7 and 39 MiFID II.

¹⁴⁵ Buntinx, ‘Cryptocurrency ICO Education – The Basics’, (*TheMerkle*, 6 June, 2017), <https://themerke.com/cryptocurrency-ico-education-the-basics/>; „plenty of liquidity“; see also SEC Report, at 8.

¹⁴⁶ See Assmann (n. 106) § 2 para. 7 for the general relevance of individually negotiated conditions for the qualification of issued units as securities.

¹⁴⁷ Assmann (n. 106) § 2 para. 16 et seq.

¹⁴⁸ Parameswaran (n. 128) 167.

tradable on capital markets; typically, they have the structure of a loan.¹⁴⁹ Again, this does not fit tokens as they usually lack a repayment obligation concerning invested cryptocurrencies (principal) plus interest. Finally, they generally do not entitle token holders acquire or sell other securities or to a cash settlement, as the third category in the list demands.¹⁵⁰

However, we shall argue that, depending on their exact structure, tokens can at least be comparable to shares or bonds; and if they are, they clearly constitute securities. The analysis of comparability will follow two interlinked lines of inquiry: first, we must ask to what extent certain types of token share the essential characteristics of shares or bonds. Second, we have to analyze, in the words of Recital 4 MiFID, if tokens “give rise to regulatory issues comparable to traditional financial instruments”. After all, in so far as prospectus regulation is concerned, one needs to keep in mind the purpose of the prospectus: to reduce information asymmetry in order to enable an informed decision with respect to typical financial risks of securities, such as the loss of invested capital. Therefore, what matters is the functional comparability of claims embodied by tokens, not the labels attached to them: substance rules over form.¹⁵¹

(i) Pure Token Types

For reasons of analytical clarity, we shall first review this comparability with respect to each of the three archetypes of tokens (investment, utility, currency) in isolation, before discussing hybrid cases.

α. Investment Component of a Token

The seemingly most straightforward case is presented by tokens with an investment component. A recent empirical study (surveying 253 ICOs) found that 26% of tokens offer profit rights¹⁵², and that the existence of profit rights is a good predictor of ICO success.¹⁵³ An example would indeed be The DAO, where proceeds of the ICO were to be reinvested in other crypto assets, and investors were supposed to share the profits generated by these investments via smart contracts. Therefore, investors, as the SEC outlined, typically had a clear expectation of profits.¹⁵⁴ In the US, this expectation forms one component of the *Howey* test; in the EU, however, things are more complicated. Such an expectation does not form part of the wording of Art. 4(1)(18) MiFID. However, the expectation of future cash flows can be the basis of the functional comparability of investment tokens with shares or bonds.

Turning first to shares, Art. 4(1)(18)(a) MiFID explicitly mentions “other securities equivalent to shares in companies, partnerships *or other entities*” [emphasis added]. However, even for equivalents to shares in other entities, it is *communis opinio* that the issued units need to confer some sort of membership rights.¹⁵⁵ Again, scholars are divided on what this exactly means. Under a strict reading, issued units have to convey a *legal* ownership stake in some collective vehicle; under a more lenient interpretation, investors must merely be in a shareholder-like position from an *economic* perspective.¹⁵⁶

¹⁴⁹ Parameswaran (n. 128) 167 et seq.

¹⁵⁰ For bitcoin, see Langenbucher (n. 123), under V.2.a).

¹⁵¹ Cf. also, for US securities regulation, *Tcherepnin v. Knight*, 389 U.S. 332, 336 (1967).

¹⁵² Adhami et al., ‘Why Do Businesses Go Crypto? An Empirical Analysis of Initial Coin Offerings’, Working Paper (20 October, 2017), <https://ssrn.com/abstract=3046209> (accessed on 14 November, 2017), at 16; this presents a solid finding, given that Coinschedule lists a total of 257 ICOs for 2016 and 2017 combined, see <https://www.coinschedule.com/stats.php?year=2017> (accessed 14 November, 2017).

¹⁵³ Adhami et al. (n. 152) 21.

¹⁵⁴ SEC Report, at 11 et seq.

¹⁵⁵ Kumpan (n. 122) § 2 WpHG para. 16; Assmann (n. 106) § 2 para. 16; Voß (n. 122) 53 et seq.

¹⁵⁶ AMF (n. 10) 7; Fuchs (n. 122) § 2 para. 22.

What is clear is that even holders of investment tokens are not typically granted property rights in the underlying company that initiates the ICO. However, token holders can be considered members of the blockchain-based investment vehicle, such as The DAO. After all, membership implies that there is some organization whose existence is independent of the changing identity of its members. While The DAO itself was not incorporated anywhere, this is not strictly necessary; rather, it must be considered sufficient that there is some permanent structure that makes membership meaningful. The members, i.e., token holders, could even be considered to be implicitly founding a partnership, particularly if one can find a joint purpose and the distribution of profits among members.¹⁵⁷ As we have seen, The DAO consisted of a network of (smart) contracts supporting a blockchain-based investment vehicle intended to be perpetually “registered” on the Ethereum blockchain. This cryptographic stabilization and technical perpetuation of ICO vehicles on blockchains should be sufficient to consider them organizations (and, depending on the circumstances of the case, potentially also partnerships) in which memberships can be granted.¹⁵⁸ In the case of EOS, for example, token holders are even locked into the organization after the end of the token sale.

As the US Supreme Court noted, the usual characteristics of stocks include voting rights, the capacity to appreciate in value and the right to receive dividends, i.e., future cash flows.¹⁵⁹ Most investment tokens do fulfil these criteria; DAO tokens certainly did.¹⁶⁰ What is more, in the case of investment tokens, investors typically expect future cash flows linked to this position – just like in the case of shares. Hence, investment tokens do not necessarily represent shares in companies,¹⁶¹ but can often be meaningfully compared to them. This holds particularly true if they not only promise future cash flows, but also convey some form of voting rights.¹⁶² There is reason to believe that this will often be the case: in a recent study, 24% of tokens did offer governance rights.

This result is not thrown into doubt by an empirical study that finds evidence that the long-term fundamental value of bitcoin, as of 2015, is statistically indistinguishable from zero.¹⁶³ In fundamental valuation, the fundamental value of an asset is usually defined as the discounted

¹⁵⁷ In this sense Hinkes, ‘The Law of The DAO’ (*CoinDesk*, 19 May, 2016), <http://www.coindesk.com/the-law-of-the-dao/> (accessed on 26 October, 2017); <https://www.coindesk.com/how-to-sue-a-decentralized-autonomous-organization/>; Palley, ‘How to Sue A Decentralized Autonomous Organization’ (*CoinDesk*, 20 March, 2016), <https://www.coindesk.com/how-to-sue-a-decentralized-autonomous-organization/> (accessed on 26 October, 2017); Mann, ‘Die Decentralized Autonomous Organization – ein neuer Gesellschaftstyp?’, *NZG* 2017, 1014, 1017; more nuanced Zetzsche et al., ‘The Distributed Liability of Distributed Ledgers: Legal Risks of Blockchain’, *U. Illinois L. Rev.* (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3018214 (accessed 26 October 26, 2017), at 36 et seq. This question need not be treated in depth here.

for an extensive analysis of the related question of whether token holder invest in a “common enterprise”, see Rohr/Wright (n. 13) 28-30. Other than in the case of a traditional partnership, shares in such a partnership, i.e., tokens, would be easily tradable on capital markets, see above, Part IV.B.1.b)ii.(2).

¹⁵⁸ If one was to deny this, investment tokens would likely be “other forms of securitized debt”, see below n. 175.

¹⁵⁹ *Landreth Timber Co. v. Landreth*, 471 U.S. 681, 686 (1985). Additionally, the Court named negotiability, and the ability to be pledged or hypothecated. The former criterion is typically fulfilled, as we saw above; the latter may vary from jurisdiction to jurisdiction, but does not seem decisive.

¹⁶⁰ Cf. also Barsan (n. 18) 58.

¹⁶¹ See Alberts/Fry (n. 82) 10 et seq. (arguing that bitcoin tokens do not fall under “stock”).

¹⁶² Cf. also Australian Securities & Investments Commission (n. 10), under ‘When could an ICO be an offer of shares?’; AMF (n. 10) 7.

¹⁶³ Cheah/Fry, ‘Speculative bubbles in Bitcoin markets? An empirical investigation into the fundamental value of Bitcoin’ (2015) 130 *Economics Letters* 32, 35; see also Yermack, ‘Is Bitcoin a Real Currency: An Economic Appraisal’ in Lee (ed) *Handbook of Digital Currency* (Elsevier, 2015) 31, 36; Athey et al., ‘Bitcoin Pricing, Adoption, and Usage: Theory and Evidence’, Stanford University Graduate School of Business Research Paper No. 16-42 (1 August, 2016), <https://ssrn.com/abstract=2826674> (accessed November 2, 2017), at 3.

expected future cash flow that the asset delivers to its holder.¹⁶⁴ While the market value of bitcoin is obviously far above zero, the study suggests that the price volatility of bitcoin implies that its “true”, fundamental value is zero. This is different with shares in most companies, partnerships or other entities that, unless in times of extreme crisis, have positive fundamental value. However, this does not affect the comparability in terms of EU securities regulation, for three reasons. First, the study is restricted to bitcoin and does not cover investment or utility tokens. Investment tokens are likely to have positive fundamental value precisely because of the future (crypto)cash flows they promise. Any future crypto funds distributed to holders can be expected to be readily converted into fiat currency on exchanges. But also for currency or utility tokens, one must acknowledge that their holders expect utility from them, in the form of ease of payment across borders (or, in some cases, for illicit purposes), or in the form of access to a product on the blockchain.¹⁶⁵ Second, the data set on which the study is based is relatively old, capturing the period from 18 July 2010 to 17 July 2014. More recent developments, and particularly the significant rise of the market price of bitcoin, are thus not included. They may reveal, however, that even bitcoin has positive fundamental value. Finally, a theoretical contribution has found that zero fundamental value cryptocurrencies are possible (equilibria exist in which they are held).¹⁶⁶ From a functional perspective stressing investor protection, it seems decisive that, if it can be rational to hold tokens even when they have zero fundamental value, but positive and highly volatile market prices,¹⁶⁷ information about the financial risks embodied in them should be disclosed in the prospectus.

All in all, precisely because buyers of investment tokens typically expect profits, these tokens “give rise to regulatory issues comparable to traditional financial instruments” (Recital 4 MiFID). The prospectus is supposed to offer information and guidance on the financial risks involved with the investment; if the main purpose of investors is to generate future cash flows, these risks are deeply relevant to them. The general purpose of EU prospectus regulation therefore fits investment tokens. Abstracting from other components that tokens may have, pure investment tokens therefore have to be considered securities under EU law. As the SEC report and recent scholarship shows, the same result is reached under US securities regulation.¹⁶⁸

β. Utility Component of a Token

However, The DAO was arguably an outlier with respect to the specific claims embodied in its tokens. It was conceived as an investment vehicle; many other blockchain-based structures issuing tokens are not. Rather, utility tokens confer rights to use or consume certain products developed by the issuing company and deposited on the blockchain. As seen, for example, Filecoin tokens confer holders the right to use empty computer storage space distributed and managed via the blockchain. In fact, as a recent study highlighted, 68% of tokens did offer access to platform services, and 16% even endowed holders with the right to shape the design

¹⁶⁴ See, for more detail, Cornell and Damodaran, ‘Tesla: Anatomy of a Run-Up Value Creation or Investor Sentiment?’, Working Paper, (26 April, 2014), <https://ssrn.com/abstract=2429778> (accessed on 14 November, 2017), at 6 (applying the DFC model to tech companies); Damodaran, ‘Living with Noise: Valuation in the Face of Uncertainty’ (2013) 30 *CFA Institute Conference Proceedings Quarterly* 22; intrinsic values are also often used to describe the value of options, see Parameswaran (n. 128) 357.

¹⁶⁵ It remains true, however, that pure currency tokens do not usually promise future cash flows; in this, they are closer to gold, or other types of “commodity currencies”. This fits our analysis below (Part γ), which likens them to means of payment.

¹⁶⁶ Dwyer, ‘The economics of Bitcoin and similar private digital currencies’ (2015) 17 *Journal of Financial Stability* 81, 85 et seq.

¹⁶⁷ Yermack (n. 163) 31, 40 et seq.; Aloosh, ‘The Price of a Digital Currency’, Working Paper (4 October, 2017), <https://ssrn.com/abstract=3047982> (accessed 2 November, 2017).

¹⁶⁸ SEC Report, at 11-15; Rohr/Wright (n. 13) 25.

of the services.¹⁶⁹ Importantly, access to platform services seems to be valued by investors, being one of the strongest predictors of the success of an ICO.¹⁷⁰

Are pure utility tokens (when abstracting from investment components they may also have) comparable with shares in companies, partnerships or other entities? Rather not. Again, they do not confer property stakes in the underlying company. While they do grant “membership” in the blockchain vehicle (e.g., the Filecoin platform), the aim of the membership is not to generate future cash flow, but to make functional use of the blockchain product. This vastly differs from the model of shares. The owner of shares of Coca-Cola, for example, does not have any right to consume Coca-Cola for free. This is precisely, however, the model of utility tokens. They may be vested with a certain functionality, much like a permanent access key for the product. While voting and other governance rights sometimes embodied in utility tokens could make them *prima facie* comparable to voting rights conveyed by shares, there is again a crucial difference. Typically, voting rights in a stock company are granted to give shareholders the opportunity to make the company more profitable; of course, shareholders can have a range of motifs from entrepreneurial to philanthropical to merely investment-related ones. However, most shareholders who aim to influence the fate of the company on a business level expect profits from their activities at the end of the day. By contrast, voting rights granted in utility tokens often are designed to help investors shape the internal functionality of the product.¹⁷¹ At any rate, the focus on use, rather than profit, clearly distinguishes them from investment tokens. Therefore, utility tokens cannot be compared with shares.

However, they could constitute “other forms of securitized debt”. A literal interpretation of the wording would suggest that tokens fit this category. These other forms of debt need not necessarily embody monetary claims, such as bonds; rather, any kind of obligation can be a debt.¹⁷² For example, subscription rights with respect to shares,¹⁷³ or other hybrid financial products that stand between membership and pure monetary rights (e.g., German Genussscheine)¹⁷⁴, are considered relevant debt instruments. They are sufficiently securitized precisely if they are transferable, standardized and negotiable on capital markets; an incorporation of the claim in a registered document is not necessary.¹⁷⁵

On the face of it, securitized debt therefore covers a wide range of tradable instruments that embody any types of claims.¹⁷⁶ As even utility tokens do confer on token holders a (typically tradable) claim against the issuer to use the product, they could indeed be considered securitized debt. For token issuers, this would be an unpleasant surprise since many to date seem to bet on the understanding that utility tokens are somehow exempted from securities regulation. In fact, we believe that this feeling is well-founded. Even though the wording of Art. 4(1)(18)(b) MiFID fits utility tokens, its spirit does not: consumption rights are too far removed from the financial and monetary structure of most other types of securitized debt.¹⁷⁷

¹⁶⁹ Adhami et al. (n. 152) 16.

¹⁷⁰ Adhami et al. (n. 152) 21.

¹⁷¹ See, e.g., EOS tokens under which token holders may support, or refuse to support, the genesis of meta-level, scalable blockchains.

¹⁷² Fuchs (n. 122) § 2 para. 27.

¹⁷³ Fuchs (n. 122) § 2 para. 28.

¹⁷⁴ Fuchs (n. 122) § 2 para. 28.

¹⁷⁵ Fuchs (n. 122) § 2 para. 28: “jede Begründung eines fungiblen, zirkulationsfähigen und (kapital)marktgängigen schuldrechtlichen Forderungsrechts“.

¹⁷⁶ The preceding discussion also has implications for investment tokens: if one wanted to reject the comparability of shares with investment tokens on the grounds that membership in blockchain-based vehicles is fundamentally different from membership in legally constituted corporations, investment tokens would likely fall under the rubric of “other forms of securitized debt” (Art. 4(1)(18)(b) MiFID).

¹⁷⁷ Cf. also AMF (n. 10) 7 et seq.

From a systematic perspective, there are three reasons for exempting claims that are vastly different from monetary claims granting a right to financial returns. First, bonds, the archetype of this category, only confer claims to a certain sum of money.¹⁷⁸ Hence, they anchor the whole category deeply in this context. Second, non-monetary claims (such as subscription rights) that do fall under this category are closely related to shares, or even constitute hybrid instruments between membership and monetary rights. This is not the case with utility tokens, which stand, if anything, between monetary rights and consumption/use rights, not membership in a corporation. Finally, even in the most general, catch-all category of Art. 4(1)(18)(c) MiFID, only “securities giving the right to acquire or sell any such transferable securities or giving rise to a *cash settlement*” [emphasis added] are mentioned. Again, there, the scope is restricted to monetary claims. This reflects the desire, voiced during the MiFID drafting process, to restrict its application to products comparable to traditional financial instruments.¹⁷⁹ Similarly, under US law, an issued unit does not constitute a security if buyers are motivated by a desire for use or consumption.¹⁸⁰

Most importantly, the purpose of prospectus regulation does not fit pure utility tokens. Prospectuses disclose financial risks. In pure utility tokens, however, the use or consumption of a product internal to the community of token holders is paramount. It is undeniable that even in this constellation, information asymmetries will often arise between issuers and buyers. However, these asymmetries typically do not relate to financial, but rather to functionality and consumption risks. Therefore, securities regulation seems ill-suited to mandate disclosure of these risks; rather, (a still to be developed crypto-) consumer law should address these problems. After all, EU consumer law typically, for better or worse, also operates with information duties.¹⁸¹ Therefore, utility tokens in our understanding can only be subject to securities regulation if they exhibit, in addition to its utility component, a significant investment component (see below, Part (ii)).

γ. Currency Component of a Token

Importantly, one further type of instrument is explicitly exempted from the definition of a security in Art. 4(1)(18) MiFID: instruments of payment. Note that it is not necessary for this exemption that currency tokens fulfill all three generally accepted economic criteria of a regular currency: unit of account, store of value, and means of payment.¹⁸² Rather, they only have to fall under the narrower category of instruments of payment. These include all liquid forms of payment such as cash and cheques.¹⁸³ In a much-noted decision, the CJEU qualified bitcoin as a “contractual means of payment”.¹⁸⁴ Similar conclusions could be reached for bitcoin spin-offs such as bitcoin gold or bitcoin cash that are primarily designed for payment purposes.¹⁸⁵ The

¹⁷⁸ Their very nature is to provide fixed income, see Parameswaran (n. 128) 167.

¹⁷⁹ Moloney (n. 135) 345 with n. 154; Herbst, ‘Revision of the Investment Services Directive’ (2003) 11 *JFRC* 211, 214.

¹⁸⁰ Rohr/Wright (n. 13) 31.

¹⁸¹ See Hacker, *Verhaltensökonomik und Normativität* (Mohr Siebeck, 2017) § 9; Grundmann, ‘Information, party autonomy and economic agents in European contract law’, (2002) 39 *Common Market L. Rev.* 269.

¹⁸² See, e.g., Mankiw, *Macroeconomics* (Worth Publishers, 9th ed. 2015) 82; Heijdra, *Foundations of Modern Macroeconomics* (OUP, 2nd ed. 2009) 319; (n. 163) 31, 36; see also below (n. 230). For the question of whether cryptocurrencies are full currencies in a legal sense, see Barsan (n. 18) 55-57; He et al., ‘Virtual Currencies and Beyond: Initial Considerations’, IMF Staff Discussion Note SDN/16/03 (January 2016), at 16.

¹⁸³ Assmann (n. 106) § 2 para. 12; see also the Proposal for a Law Transposing MiFID by the German Government, BT-Drucks. 16/4028, p. 54.

¹⁸⁴ CJEU, judgment in *Hedqvist*, C-264/14, EU:C:2015:718, para. 42.

¹⁸⁵ See Alyssa Hertig, ‘Bitcoin Cash: Why It's Forking the Blockchain And What That Means’ (*CoinDesk*, July 26, 2017), <https://www.coindesk.com/coindesk-explainer-bitcoin-cash-forking-blockchain/>; id., ‘Bitcoin Gold: What to Know About the Blockchain's Next Split’ (*CoinDesk*, October 23, 2017), <https://www.coindesk.com/bitcoin-gold-know-blockchains-next-split/> (all accessed on 6 November, 2017).

CJEU also explicitly held that bitcoin “is neither a security conferring a property right nor a security of a comparable nature.”¹⁸⁶ However, the decision concerned the VAT treatment of bitcoins, not securities regulation; the list of securities in Art. 135(1)(f) VAT Directive,¹⁸⁷ which the CJEU interpreted, differs from the one in MiFID. It lacks, for example, the reference to equivalents of shares in other entities, and to other forms of securitized debt. Therefore, some uncertainty persists as to whether the court would reach a similar conclusion under EU securities regulation.

It seems likely, however, that it would, in the end, qualify pure currency tokens as exempt from prospectus regulation. This is not merely an academic question: the study mentioned earlier found that 20% of the survey tokens did include a currency component.¹⁸⁸ However, one has to acknowledge that currency tokens differ from traditional instruments of payment in a number of ways (even when one brackets the debate about their currency or asset status; on this below, Part (ii)). To start with, pure currency tokens are denominated in a unit of account that does not have legal tender status in any nation at the moment.¹⁸⁹ However, this deficiency is partially compensated for by their increasing liquidity: they can be converted into regular currencies, on cryptocurrency exchanges;¹⁹⁰ or even into commodities, by paying for them, for example on Open Bazaar. Liquidity may be lacking for some rarely traded altcoins, but is on the rise for the main cryptocurrencies such as bitcoin, ethereum and the like.

Cryptocoins are, furthermore, similar to another type of payment instrument: electronic money.¹⁹¹ The ECB compared electronic money already in 1998 to “a prepaid bearer instrument”.¹⁹² A bearer instrument, in turn, is similar to cash money¹⁹³ and “refers to an instrument that is payable to anyone possessing the instrument and is negotiable by transfer alone”.¹⁹⁴ By contrast, order instruments are payable to an identified person.¹⁹⁵ The new E-Money Directive¹⁹⁶ now defines electronic money in Art. 2(2) as “electronically [...] stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions [...] and which is accepted by a natural or legal person other than the electronic money issuer”.

¹⁸⁶ CJEU, judgment in *Hedqvist*, C-264/14, EU:C:2015:718, para. 55.

¹⁸⁷ Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax, OJ 2006 L 347/1.

¹⁸⁸ Adhami et al. (n. 152) 16.

¹⁸⁹ Even in Japan, recent legislation has not granted virtual currencies legal tender status, Ishikawa (n. 7) 128. Other countries do not typically grant cryptocurrencies legal tender status, either. Mexican legislation, for example, clarifies that cryptocurrencies are not legal tender: <https://www.coindesk.com/mexican-law-would-give-central-bank-oversight-of-cryptocurrency-startups/>; for Germany, see Langenbucher (n. 123), under IV.4.

¹⁹⁰ The liquidity these exchanges provide is, however, a matter of debate, with statements ranging from low (Yermack (n. 163) 31, 37) to relatively high liquidity more recently: see, for an empirical study, Adhami et al. (n. 152) 17; see also Buntinx, ‘Cryptocurrency ICO Education – The Basics’, (*TheMerkle*, 6 June, 2017), <https://themerke.com/cryptocurrency-ico-education-the-basics/> (“plenty of liquidity”); Rohr/Wright (n. 13) 35 (“highly liquid”); all in all, with the increasing number of exchanges (see n. 108), liquidity is improving, too: Bajpai, ‘Liquidity Of Bitcoins’, *Investopedia*, <http://www.investopedia.com/articles/investing/112914/liquidity-bitcoins.asp> (accessed on 3 November, 2017).

¹⁹¹ ECB, Payment Instruments, <https://www.ecb.europa.eu/paym/pol/activ/instr/html/index.en.html> (accessed on 24 October, 2017).

¹⁹² ECB, Report on Electronic Money (August 1998), at 7.

¹⁹³ Choudhry, ‘The Eurobond Market’, in: Fabozzi (ed.), *Handbook of Finance*, Vol. 1 (Wiley, 2008) 271, 281.

¹⁹⁴ *State v. Herrera*, 130 N.M. 85 (N.M. Ct. App. 2000) para. 9; see also Parameswaran (n. 128) 44.

¹⁹⁵ *State v. Herrera*, 130 N.M. 85 (N.M. Ct. App. 2000) para. 10; Parameswaran (n. 128) 44.

¹⁹⁶ Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions, OJ 2009 L 267/7.

Currency tokens, however, sit between those categories: like with order instruments, a register exists (the blockchain); however, it does not contain real identities, but only pseudonomized information about public keys and signatures stemming from private keys. Like with bearer instruments,¹⁹⁷ the “true identity” of token holders is not registered on the blockchain (or anywhere else); rather, they may be used for payments purposes by whoever presents the right combination of public and private key to cryptographically unlock them. However, the purpose of cryptographically securing currency tokens via public and private key is precisely to ensure that only the legitimate owner (the holder of the private key) can use them. If private keys are kept truly private, currency tokens can only be transferred by the legitimate owner. This, in turn, does liken them to order instruments which are transferred by indorsement of the registered owner.¹⁹⁸ What differentiates cryptocurrencies from both bearer and order instruments, and from electronic money more generally,¹⁹⁹ however, is that they do not embody a claim against an issuing entity (such as a bank) to make a payment to the claimant. In this sense, they resemble pieces of gold, or cash, rather than cheques.²⁰⁰ One may, however, argue that holders of cryptocurrencies have at least an implicit claim against core developers, and potentially miners, to adequately maintain and develop the respective blockchain, and its payment capabilities, for example as a result of fiduciary duties.²⁰¹ While most scholars reject the classification of bitcoin as electronic money,²⁰² the developing discussion on fiduciary duties of core developers vis-à-vis cryptocurrencies owners could throw a different light on this discussion. At the end of the day, pure currency tokens share a number of important characteristics, such as significant liquidity and lack of the registration of the “true owner”, with bearer payment instruments. This is why recent legislation in Japan has treated cryptocurrencies not as legal tender, but as means of payment similar to prepaid payment instruments.²⁰³

This discussion points to the main reason why instruments of payment are excepted from securities regulation. They pertain to an adjacent, but substantially different regulatory area: banking and (freedom of) payment services regulation.²⁰⁴ Due their liquidity, pure currency tokens share the key characteristic of pure utility tokens: typical financial risks of investments

¹⁹⁷ Investopedia, 'Bearer Instrument', <http://www.investopedia.com/terms/b/bearer-instrument.asp> (accessed on 25 October, 2017).

¹⁹⁸ State v. Herrera, 130 N.M. 85 (N.M. Ct. App. 2000) para. 10.

¹⁹⁹ European Central Bank, 'Virtual Currency Schemes' (2012) 16 et seq.; European Central Bank, 'Virtual Currency Schemes – A Further Analysis' (February 2015) 24; Barsan (n. 18) 58; Langenbacher (n. 123), under V.1.a); Spindler and Bille, 'Rechtsprobleme von Bitcoins als virtuelle Wahrung', *WM* 2014, 1357, 1360; Hildner (n. 119) 489; Lerch, 'Bitcoin als Evolution des Geldes: Herausforderungen, Risiken und Regulierungsfragen', *ZBB* 2015, 190, 199; Munzer (n. 119) 26, 27; German Federal Financial Supervisory Authority (BaFin) (n. 119).

²⁰⁰ CJEU, judgment in *Hedqvist*, C-264/14, EU:C:2015:718, para. 42; Langenbacher (n. 123), under IV.2.a(2); Spindler and Bille, 'Rechtsprobleme von Bitcoins als virtuelle Wahrung', *WM* 2014, 1357, 1360.

²⁰¹ Hacker (n. 29), at 25 et seq.; Walch, 'Call Blockchain Developers What They Are: Fiduciaries', *American Banker* (August 10, 2016); for a detailed discussion, see id., 'The Fiduciaries of Public Blockchains' Working Paper (2017) (on file with author), particularly Part II (applying Tamar Frankel's definition of fiduciaries); cf. also De Filippi/Loveluck (n. 40) 1, 10 (“a small group of developers and software engineers who have been *entrusted* with key roles for the development of this technology”) [italics in the original quote]; see also Zetzsche et al. (n. 157) 26 et seq., 36 et seq.

²⁰² See references above (n. 199).

²⁰³ Ishikawa (n. 7) 128; Keirns, 'Japan's Bitcoin Law Goes Into Effect Tomorrow' (*CoinDesk*, 31 March, 2017), <https://www.coindesk.com/japan-bitcoin-law-effect-tomorrow/> (accessed 25 October, 2017).

²⁰⁴ See, e.g., ECB, Payment Instruments, <https://www.ecb.europa.eu/paym/pol/activ/instr/html/index.en.html> (accessed on 24 October, 2017); Follak, in: Dausies/Ludwigs, EU-Wirtschaftsrecht (30th renewal delivery, 2012), F.III. para. 1. Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC, OJ 2015 L 337/35. An analysis of this regulatory area transcends the scope of this paper. See, however, Hildner (n. 119) 492 et seqq.

are not at stake.²⁰⁵ There are some notable exceptions to this: exchange rate risks, introduced by the high volatility of exchange rates between cryptocurrencies and regular currencies;²⁰⁶ and the residual “default risk” of the entire cryptocurrency blockchain, flowing, inter alia, from unresolved governance problems in the respective Bitcoin, Ethereum etc. communities.²⁰⁷ Furthermore, default risks exist with respect to intermediaries, as the Mt. Gox insolvency showed.²⁰⁸ These conditions generate operational, credit and liquidity risks for users of currency tokens.²⁰⁹

However, regular currencies are also subject to the exchange rate risks among one another. What is different is that regular currencies, by virtue of their legal tender status, always offer a way of spending the currency independent from direct exchange rate risks. Increasingly, the possibility of buying consumer goods in exchange for the most prominent cryptocurrencies offers the same protection against exchange rate risks, at least if prices charged by retailers accepting cryptocurrencies do not simply reflect the current exchange rate of cryptocurrencies against, for example, the dollar.²¹⁰ Concerning the default risk of the entire blockchain supporting a cryptocurrency, the euro crisis has painfully taught EU citizens that even states, and the currencies endowed with legal tender in them, are not exempt from default or severe depreciation risks.

This is not to say that users acquiring currency tokens should not be informed, in cognitively optimized ways,²¹¹ about these risks. However, prospectus regulation does not seem to be the right fit for it. Rather, residual exchange rate and blockchain default risks, including credit, liquidity and operational risk, are best dealt with under (suitably adapted) banking and payment services, or even financial market infrastructure,²¹² but not securities regulation. This is also implied in the virtual currency analysis of the ECB.²¹³

All in all, we have seen that currency tokens do not perfectly fit the established taxonomy of payment instruments. However, to the extent that they can be directly used as a means of payment for goods external to the blockchain, they partially eliminate exchange rate risks. Furthermore, they share a number of characteristics with bearer instruments and cash (liquidity; lack of identity registration). Therefore, the conclusion of the CJEU in *Hedqvist* should hold not only for EU tax, but also for EU prospectus law: pure currency tokens are exempt from prospectus regulation as they resemble instruments of payment more than securities.²¹⁴ This again matches US securities regulation under which, as scholars have argued, currency tokens like bitcoin are not considered securities, either.²¹⁵ It does *not*, however, resolve the intricate

²⁰⁵ Note that real tokens are generally of a hybrid nature, and thus do incorporate an investment component and concomitant financial risks; see below, Part (ii)β.

²⁰⁶ See references above (n. 167).

²⁰⁷ See Hacker (n. 29).

²⁰⁸ See Ishikawa (n. 7).

²⁰⁹ European Central Bank, ‘Virtual Currency Schemes’ (2012) 17; Lerch (n. 199) 197.

²¹⁰ On this, see Yermack (n. 163) 31, 38.

²¹¹ See Hacker (n. 181) § 11 A.

²¹² See Walch, ‘The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk’ (2015) 18 NYU J Legislation and Public Policy 837; id., ‘Open-Source Operational Risk: Should Public Blockchains Serve as Financial Market Infrastructures?’, in: Chuen and Deng (eds.), *Handbook of Blockchain, Digital Finance, and Inclusion*, Vol. 2, <https://ssrn.com/abstract=2879239>; see also European Central Bank, ‘Eurosystem's vision for the future of Europe's financial market infrastructure’ (2016) 6 (announcing an assessment of the relevance of distributed ledger technology to European financial services and market structures).

²¹³ European Central Bank (n. 209) 40; European Central Bank, ‘Virtual Currency Schemes – A Further Analysis’ (February 2015) 27.

²¹⁴ Same result in Langenbucher (n. 123), under V.2.a). Cf. also Yermack (n. 163) 31, 32 (noting that Bitcoin does “somewhat” meet the criterion of means of exchange).

²¹⁵ Alberts/Fry (n. 82) 21.

question how tokens that possess both currency and investment components are qualified under EU law (see below, Part (ii)β./γ.).

(ii) Hybrid Forms

As noted, the preceding analysis of the different types of tokens was conducted under the assumption that tokens only exhibit the component under consideration, i.e., are pure investment, utility or currency tokens. Reality is, of course, muddier. Typically, tokens will share different components to different degrees.

α. Hybrid Utility/Investment Tokens

Most notably, all utility tokens that can be traded on a secondary market can also be sold for profit; even the exceptionally strict EOS token, which becomes non-transferable after the end of the ICO, can be traded during the (exceptionally long) ICO.²¹⁶ Therefore, it cannot be denied that investors could (and many do) have an expectation of profits even if the token is primarily designed to confer utility.²¹⁷ This profit is not only the result of blind market forces;²¹⁸ rather, the value of tokens is crucially impacted by the maintenance and development efforts of core developers working for the issuing entity.²¹⁹ This introduces an information asymmetry between buyers and the issuer which a prospectus is precisely designed to address. Hence, the question arises: how much of an investment component is necessary to trigger EU prospectus regulation for utility tokens, too?

From a functional perspective that takes into account the purpose of prospectus regulation, two answers seem possible. First, one could argue that hybrid tokens are only exempt from the definition of a security if their investment component does not entail any significant financial risk. After all, the purpose of a prospectus is to disclose significant financial risk, such as the loss of invested capital, for example. However, significant financial risk is practically always present in utility tokens: if the platform does not provide the promised utility, if the issuers abscond with the funds, or simply if demand for the product is virtually inexistent, investors will, in the end, lose their (crypto) money. Conversely, if the project delivers significant utility, this will likely also positively affect the value of tokens on secondary exchanges.²²⁰ Under this understanding, therefore, practically all utility tokens are securities as a consequence of their inherent financial risks.

However, such an understanding blurs the line between consumer law and securities regulation. After all, the financial loss will often be the direct result of the lack of utility of the product – a deficit that typically is covered by consumer law (e.g., lack of conformity of sold products under consumer sales contract law²²¹). The European Commission has proposed a directive on the supply of digital content which provides remedies taken from consumer sales law precisely for

²¹⁶ See above (n. 112).

²¹⁷ See Nathaniel Popper, 'Easiest Path to Riches on the Web? An Initial Coin Offering,' *New York Times* (23 June, 2017), <https://www.nytimes.com/2017/06/23/business/dealbook/coindigital-currency.html> (accessed 25 October, 2017).

²¹⁸ This, however, is the view of Alberts/Fry (n. 82) 20 et seq.; for a more nuanced view, see Rohr/Wright (n. 13) 38 et seq. (differentiating between tokens sold at different stages of project completion).

²¹⁹ SEC Report, at 12-15; Rohr/Wright (n. 13) 30; see also Hacker (n. 29), at 12 et seqq. for an account of the crucial work of core developers.

²²⁰ Rohr/Wright (n. 13) 30.

²²¹ Art. 2 of the Directive 1999/44/EC of the European Parliament and of the Council of 25 May 1999 on certain aspects of the sale of consumer goods and associated guarantees, OJ 1999 L 171/12.

deficits in digital content.²²² While an explicit analysis of this proposed directive transcends the scope of this paper, its existence shows that utility and consumption risks are better addressed within consumer law.

Therefore, a second solution seems better suited for hybrid tokens: they should only be considered securities if the expectation of profits from decisive efforts of the issuer is at least a significant motif of the typical²²³ token investor. This not only matches a key component of the *Howey* test²²⁴ and therefore partially aligns EU with US securities regulation; it also fits the purpose of prospectus regulation. Where profit is expected from the work of others, information asymmetry concerns financial risks relevant to investors. These have to be disclosed in a prospectus. Where profits are not expected, or only as a second-order criterion, a prospectus does not convey meaningful information, but rather provokes confusion and information overload among retail investors.²²⁵

The problem under this solution, of course, is to determine whether the typical investor actually expects profits. It would probably go too far to require empirical analyses; rather, the content of promotional materials and the communication of the issuer with investors should be decisive. For example, if these materials highlight the possibility of trading tokens, subsequent to the ICO, on secondary market platforms, this may be taken as an indication that the issuer raises an expectation of profits. Such scrutiny of issuer materials and communication is consonant with the practice of enforcement agencies and courts.²²⁶ This construction, however, leaves one important loophole: if the promotion materials and communications are silent on the profit component, but everyone knows that investors mainly buy certain tokens in search for profit, securities regulation would still not apply, despite the need for investor protection. This situation could precisely arise with respect to utility tokens in the current, (over)heated ICO investment atmosphere. Therefore, if empirically most investors want to trade a certain token for profit and the issuer knows or should have known this, then the investment component should also be considered sufficient to trigger prospectus regulation.

In this way, hopefully, a sensible balance can be struck between investor protection concerning products with a discernible investment component – and concomitant financial risks – and freedom to design participative utility tokens that convey novel forms of governance rights without being stifled by EU securities regulation.

β. Hybrid Currency/Investment Tokens

Similar issues arise with currency tokens that are primarily intended to be used as a means of payment but that also have an investment component. In this, they resemble long-running subscription tickets to the zoo (or other event sites), with the difference that tokens can be resold

²²² On this proposal, see, e.g., Hacker, ‘Personal data, exploitative contracts, and algorithmic fairness: autonomous vehicles meet the internet of things’, (2017) 14 *International Data Privacy Law* (forthcoming), <https://doi.org/10.1093/idpl/ipx014> (accessed on 25 October, 2017).

²²³ The typical investor need not be the reasonable, rational investor the SEC refers to (SEC Report, at 12), but could also be an optimistically biased investor, depending on the sentiment in the specific token sale community.

²²⁴ See above, Part IV.B.1.a) and SEC Report, at 11 et seq. (noting that expectation of profits needs to be at least part of the motivation of reasonable investors).

²²⁵ Cf. Moloney (n. 135) 97; Langevoort, ‘Taming the Animal Spirits of the Stock Markets: A Behavioral Approach to Securities Regulation’, (2002) 97 *Nw. U. L. Rev.* 135; Choi, ‘Behavioral Economics and the Regulation of Public Offerings’ (2006) 10 *Lewis & Clark L. Rev.* 85.

²²⁶ See, e.g., the analysis of promotional materials by the SEC in SEC Report, at 5 et seq. and 11 et seq.; see also *Teague v. Bakker*, 35 F.3d 978, 989 (4th Cir. 1994) (providing analysis of the promotion materials of a mixed investment opportunity with consumption and profit aspects); see also Rohr/Wright (n. 13) 34 et seq.

at secondary exchange platforms almost instantaneously. Again, the investment component cannot easily be excluded by the designers of the token as one of their natural features is their convertibility into currencies endowed with legal tender status on cryptocurrency exchanges. For example, David Yermack claims that most Bitcoin transactions occur between speculative investors, and only a minority concerns payments for goods and services;²²⁷ this is tentatively supported by recent empirical data.²²⁸ Hence, currency tokens can be used as an investment asset and sold for profit; as explained, investors not only rely on market forces, but expect significant efforts of core developers to increase the value of tokens.²²⁹ In fact, a substantial literature in economics has developed arguing that, due to their volatility, cryptocurrencies such as Bitcoin share more characteristics with investment assets than with currencies.²³⁰ This critique notwithstanding, the German Financial Services Supervisory Authority (BaFin) has categorized bitcoin as a unit of account (Rechnungseinheit)²³¹, which is a core criterion for currencies.²³² Again, this testifies to the hybrid nature of bitcoin and other tokens with currency components.

Just like pure utility tokens should be considered exempt from the definition of a security, we have seen that pure currency tokens are similarly excluded, due to their resemblance to instruments of payment.²³³ However, this conclusion, and the CJEU decision in *Hedqvist*, were explicitly based on the premise that any investment component is absent from the tokens.²³⁴ The investment component inherent in real (as opposed to pure) currency tokens throws this classification into doubt.

However, the intermingling of types can be treated analogously to the case of hybrid utility/investment tokens. This implies that one would have to look to the promotional materials and communication of issuers to determine whether currency tokens have a significant investment component. Again, in our understanding, factual investment-type profit expectations by currency token buyers should be relevant to the extent that issuers know or should have known about these expectations.

γ. Hybrid Currency/Investment/Utility Tokens

Finally, the same test can be applied if tokens share components of all three archetypes. Such hybrid forms will, in fact, often be observed in more recent tokens that, like ether, have functional components and may serve as objects of speculation, but that are also established enough to serve as online means of payment.²³⁵ For example, ether arguably has a currency

²²⁷ Yermack (n. 163) 31, 37.

²²⁸ Athey et al., 'Bitcoin Pricing, Adoption, and Usage: Theory and Evidence', Stanford University Graduate School of Business Research Paper No. 16-42 (1 August, 2016), <https://ssrn.com/abstract=2826674> (accessed November 2, 2017), at 3 and 21 et seq.

²²⁹ See above (n. 218 et seq.).

²³⁰ Yermack (n. 163) 31, 32, 42; Baur et al., 'Bitcoin: Currency or Investment?' Working Paper (2014), <https://ssrn.com/abstract=2561183>; Mankiw, *Macroeconomics* (Worth Publishers, 9th ed. 2015) 85; He et al. (n. 182) 17.

²³¹ See German Financial Services Supervisory Authority (BaFin), 'Virtuelle Währungen/Virtual Currency (VC)' (28 April, 2016), https://www.bafin.de/DE/Aufsicht/FinTech/VirtualCurrency/virtual_currency_node.html (accessed 26 October, 2017); critique in Barsan (n. 18) 59.

²³² See references above (n. 182).

²³³ See above, Part (i)γ.

²³⁴ CJEU, judgment in *Hedqvist*, C-264/14, EU:C:2015:718, para. 52.

²³⁵ Different view apparently in Barsan (n. 18) 57 ("cryptocurrencies have no other use or function as to serve as a medium of exchange"). This seems outdated even for bitcoin, however, where developers are working hard to add new functions beyond its payment qualities, see, e.g., Noizat, 'Bitcoin beyond payments: contracts & crowdfunding', EPCA Payment Summit 2014, <https://www.slideshare.net/Paymium/bitcoin-beyond-payment>;

component, being sometimes accepted as a means of payment for goods external to the Ethereum blockchain. It also provides utility in granting holders access to the computation power of the Ethereum Virtual Machine, for instance for smart contracts. Finally, it is the subject of intense speculation by traders willing to profit from rising ether value vis-à-vis, for example, the dollar.

Again, to determine whether such complex, hybrid tokens must be considered securities, one has to look at the two prongs just outlined: the promotion and communication materials of issuers; and, if these are silent on the issue, the factual expectations of profit and the extent to which they are or should be known to the issuer.

(4) Conclusion on Tokens as Securities

This brings us to the following conclusion concerning the securities quality of tokens. Pure investment tokens typically must be considered securities, while pure currency and utility tokens are exempted from securities regulation in the EU. The devil, however, is in the details, since many tokens exhibit components of two or all three of the archetypes. Hence, a case-by-case analysis of the specific structure of the token is necessary. This is where significant legal uncertainty starts. As a general guideline, we suggest that hybrid tokens should not be considered securities unless any of the following two conditions are fulfilled: 1) the issuers, through their promotion materials and communication with investors, raise significant expectations of profits; or 2) most investors buy the specific tokens to sell them for profit, and the issuer knows or should have known this.

Clearly, it is unsatisfactory for issuers that there is no bright line test available to determine whether the tokens they offer trigger EU securities regulation. However, the qualification of novel, technical phenomena under positive law is often fraught with uncertainty. This is precisely why guidance from regulators and a safe harbor provision for token sales enacted by the European legislator are necessary (see below, Part V.A.).

iii. Exemptions

Under EU securities regulation, token sellers could attempt to avail themselves of exemptions provided by EU prospectus regulation. However, these exemptions are generally difficult to square with the logic and the intentions of ICOs. Furthermore, resale restrictions make them unattractive for buyers.²³⁶ Hence, as the following brief overview shows, existing exemptions do not provide an adequate framework for token sales.

(1) Private Placement

Art. 3(2)(a) of the Prospectus Directive exempts offers of securities that are addressed solely to qualified investors. These, in turn, are defined in Art. 2(1)(e) of the Prospectus Directive; they include presumably sophisticated or wealthy investors like credit institutions or investment firms; national and regional governments; large companies; and high net worth individuals.²³⁷ Furthermore, Art. 3(2)(b) of the Prospectus Directive establishes an exemption for offers addressed to fewer than 150 natural or legal persons per Member State, other than qualified investors.

Hertig, 'MASTer Plan: Better Bitcoin Smart Contracts Could Go Live This Year' (*CoinDesk*, 11 September, 2017), <https://www.coindesk.com/master-plan-better-bitcoin-smart-contracts-go-live-year/> (all accessed on 5 November, 2017).

²³⁶ Cf. Art. 3(2) Prospectus Directive.

²³⁷ See Moloney (n. 135) 85 et seq.

However, these private placement exemptions are at odds with the greatest potential of ICOs, which is to enable global access to blockchain-related products even for retail consumers, particularly also from economically less developed regions. In permissionless blockchains, pseudonymity makes the verification of the qualified investor status highly difficult. Similarly, a restriction of fewer than 150 persons per Member State could be implemented, but again poses the problem of verification of the location of investors. As the Filecoin ICO showed, private placements (in this case: under US law) are not impossible, and can even be hugely successful; however, they restrict direct access to the tokens to sophisticated investors and thus deny retail consumers/investors the possibility to benefit from potentially particularly favorable conditions of primary market sales and associated short-term gains on secondary markets.²³⁸

(2) High Individual Value Placement

Art. 3(2)(c) of the Prospectus Directive introduces an exemption if investors purchase securities for at least €100,000 each; similarly, Art. 3(2)(d) applies if each unit equals at least €100,000. Again, this restriction could be implemented (if the question of an “official” exchange rate of the cryptocurrencies to euros is solved), but would also deprive retail clients from access to tokens, again counteracting the very decentralized spirit and potential blockchain-based systems embody.

(3) Low Aggregate Value Placement

Finally, Art. 3(2)(e) of the Prospectus Directive exempts offers with a total consideration of less than €100,000, calculated over a period of 12 months. Like Art. 3(2)(b), it is supposed to facilitate access to funding for small and medium-sized enterprises. Here again, the question of the exact valuation of cryptocurrencies resurfaces; more importantly, €100,000 impose quite a low cap for fundraising, particularly compared to the sums raised through ICOs so far. Therefore, this prong will often not be sufficient for businesses seeking for alternatives to venture capital funding.

(4) Crowdfunding Regulation

At the Member State level, exemptions apply moreover for crowdinvestment initiatives. However, they also impose strict aggregate caps and are hence ill-suited for large ICOs.²³⁹ In Germany, for example, the aggregate cap lies at €2.5 million per issuer, and at €1000 per investor, or €10,000 for high net worth individuals.²⁴⁰ Furthermore, the crowdfunding exemption only applies to very specific types of financial products (e.g., profit participating loans; other investment facilities that promise a rate of interest, repayment or a cash settlement in exchange for temporary loans).²⁴¹

All in all, the restrictions concerning qualified investors, aggregate caps, and resale restrictions (in the case of EU level exemptions) disqualify current exemptions from prospectus regulation for most ICO purposes that seek to attract funding from, and offer opportunities to, a broad, global constituency of users.

²³⁸ See Adhami et al. (n. 152) 17 documenting, on average, highly significant underpricing of issued tokens (mean = 919.9%).

²³⁹ See also Rohr/Wright (n. 13) 49 for the US Regulation Crowdfunding, which caps aggregate value at \$ 1 million per 12 months.

²⁴⁰ § 2a of the “Gesetz über Vermögensanlagen“ (Law on Investments: VermAnlG).

²⁴¹ See, critically, Klöhn/Hornuf, ‘Die Regelung des Crowdfunding im RegE des Kleinanlegerschutzgesetzes - Inhalt, Auswirkungen, Kritik, Änderungsvorschläge‘ *DB* 2015, 47.

2. EU Investment Fund Regulation: Token Issuers as UCITS Managing Companies?

Certain types of tokens could even fall under EU investment fund regulation embodied in the UCITS (undertakings for collective investments in transferable securities) Directive.²⁴² Companies managing UCITS need to obtain authorization prior to operation²⁴³ and have to publish a prospectus annually and have yearly reports.²⁴⁴ A UCITS is defined, in Art. 1(2) of the Directive, as an undertaking “with the sole object of collective investment in transferable securities²⁴⁵ or in other liquid financial assets [...] of capital raised from the public and which operate on the principle of risk-spreading; and [...] with units which are, at the request of holders, repurchased or redeemed, directly or indirectly, out of those undertakings’ assets”.

It is not entirely implausible that issuers of tokens may qualify as companies managing UCITS, particularly in structures similar to the DAO. This is also highlighted by the warnings issued by the Monetary Authority of Singapore²⁴⁶ and the Australian Securities & Investments Commission.²⁴⁷ In the case of the DAO, the funds were supposed to be invested in smart contracts or other tokens; one would have to determine on a case-by-case basis whether these qualify as transferable securities along the lines of the above analysis. If, in turn, blockchain-based pool resourced in order to invest in a number of “classical” transferable securities, then they possibly constitute UCITS, if the issued units are redeemable. This, however, would likely rather be the exception than the rule, even with investment tokens.

3. Regulation at the Member State Level: Tokens as “Vermögensanlage”?

These findings are complicated even further by additional regulation at the member state level that differs from country to country.²⁴⁸ In Germany, for example, prospectuses have to be published for certain types of investments (so-called “Vermögensanlagen”) that are (mostly)²⁴⁹ not caught by the EU securities definition. Pursuant to § 1(2) of the German “Gesetz über Vermögensanlagen“ (Law on Investments: VermAnlG), this comprises dormant equity holdings; certain trusts; profit participating loans; registered bonds; and other investment

²⁴² Directive 2009/65/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS), OJ 2009 L 302/32; last revised by Directive 2014/91/EU of the European Parliament and of the Council of 23 July 2014 amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards depositary functions, remuneration policies and sanctions, OJ 2014 L 257/186; on this, see, e.g., Moloney (n. 135) 200 et seqq.

²⁴³ Art. 5 UCITS Directive.

²⁴⁴ Art. 68 UCITS Directive.

²⁴⁵ The definition of transferable securities in Art. 2(n) UCITS Directive is very similar to the one in MiFID.

²⁴⁶ Monetary Authority of Singapore, *MAS Clarifies Regulatory Position on the Offer of Digital Tokens in Singapore*, Aug. 1, 2017, <http://www.mas.gov.sg/News-and-Publications/Media-Releases/2017/MAS-clarifies-regulatory-position-on-the-offer-of-digital-tokens-in-Singapore.aspx>, para. 4.

²⁴⁷ Australian Securities & Investments Commission (n. 10); differently: AMF (n. 10) 8: “unlikely”.

²⁴⁸ For French law, see AMF (n. 10) 7-10; Barsan (n. 18) 60 et seqq.; Oudin, ‘Decoding Blockchain Legal Issues — A Financial Law Perspective’, Working Paper (9 November, 2017), <https://ssrn.com/abstract=3068189> (accessed on 22 November, 2017).

²⁴⁹ The German law defers to EU prospectus regulation if both regimes apply, see §§ 1(2), 6 VermAnlG.

facilities that promise a rate of interest, repayment or a cash settlement in exchange for temporary loans.²⁵⁰

Hence, tokens that, implicitly or explicitly, embody an obligation to repay the investment or pay interest on it at some point may qualify as “Vermögensanlagen”. While this is not generally the case, it is not excluded that FinTech companies will soon start managing loans in tokenized form via blockchains. In this event, even if these tokens lack the negotiability necessary for the EU securities concept (such as EOS tokens after fixation), they could fall under the specific German prospectus requirement of the VermAnlG.²⁵¹ Crowdfunding exemptions are found in the VermAnlG, too; however, they restrict offers to an aggregate cap of €2.5 million per issuer; furthermore, individual caps for investors are in place.²⁵² Regulatory heterogeneity at the Member State level for investment facilities “below” the EU securities concept, which cannot be surveyed in this paper, therefore adds to the regulatory complexity concerning tokens.

V. The Future of Crypto-Securities Regulation

The preceding discussion has shown that the application of the EU securities regulation regime, and particularly the prospectus obligation, suffers from significant uncertainty with respect to tokens. Depending on the exact structure of the token, it may or may not be considered a security under EU law.

This finding potentially sends a chilling message to developers of decentralized applications that seek to fund their projects via token sales.²⁵³ They face a choice with substantial risks under each alternative. On the one hand, they may choose to gamble by disregarding EU securities regulation, makes them vulnerable to prospectus liability and ensuing litigation if the distributed tokens are found to be securities at the end of the day. In the alternative, developers may decide to comply with burdensome EU (and potentially other) securities regulation regimes, which entails significant costs in terms of legal advice, product design, and implementation of legal requirements such as drafting, registering and distributing the prospectus. In either case, this uncertain outlook does not benefit innovation in the EU. Rather, it invites token sellers to engage, to the extent possible, in regulatory arbitrage.²⁵⁴

Moreover, the setting does not serve investors well, either. Even if issuers decide to develop a prospectus, the current disclosure requirements under EU law are not well-suited for token sales. Art. 5(1) of the Prospectus Directive requires that the prospectus needs to contain all information that “is necessary to enable investors to make an informed assessment of the assets and liabilities, financial position, profit and losses, and prospects of the issuer”. While it is relatively straightforward to apply this requirement to companies issuing securities, it is less clear how it would affect token sales. First of all, they sit between established categories of equity and non-equity securities, for which different prospectus minimum requirements have been developed in the detailed 2004 Commission Prospectus Regulation.²⁵⁵ Second, it is unclear

²⁵⁰ On this, see, e.g., Kollrus, 'Kleinanlegerschutzgesetz – Regulierung von Vermögensanlagen des grauen Kapitalmarkts mit erweiterten Aufklärungspflichten', *MDR* 2015, 1334, 1335.

²⁵¹ See also Langenbucher (n. 123), under V.2.

²⁵² See § 2a VermAnlG.

²⁵³ See also Bennington, 'Utility Coins or Crypto Assets? Token Terminology Is One Big Gray Area' (*CoinDesk*, 5 September, 2017), <https://www.coindesk.com/utility-coins-crypto-assets-token-terminology-one-big-gray-area/> (accessed on 3 November, 2017).

²⁵⁴ Cf. See also Rohr/Wright (n. 13) 51.

²⁵⁵ Commission Regulation (EC) No 809/2004 of 29 April 2004 implementing Directive 2003/71/EC of the European Parliament and of the Council as regards information contained in prospectuses as well as the format, incorporation by reference and publication of such prospectuses and dissemination of advertisements, last amended by Commission Delegated Regulation (EU) No 759/2013 of 30 April 2013 amending Regulation (EC)

whether the company, or group of core developers, initiating the token sale should be considered the issuer, or rather the blockchain-based organization itself (such as, for example, The DAO). Ideally, investors would need information on both organizational structures (the blockchain-based vehicle and the underlying company/group) to adequately assess the quality of the investment. However, this is at odds with prospectus disclosure requirements that focus on one issuer only.²⁵⁶ Third, and most importantly, current prospectus regulation, and practice, does not necessarily require the disclosure of the code governing the ICO and the blockchain organization to be funded. While developers often disclose the code on a voluntary basis, not all of them publish the code in advance or early enough to enable thorough vetting by external experts. This, however, seems essential since the quality of the code is a crucial component for both the security and the utility of the offered product. It was precisely such a bug that could have been found in an expert-conducted “code due diligence” that brought the DAO down.²⁵⁷ In one empirical study, it was found that the availability of the code is a strong predictor for the success of an ICO.²⁵⁸ Finally, more generally, prospectuses tend to be technical and are considered to provide little information that can be fruitfully processed by retail clients.²⁵⁹

Therefore, the final part of the paper sketches two proposals that, if adopted, would enhance legal certainty for token sellers and seek to balance support for innovation with investor protection.²⁶⁰ First, we argue that the European Commission should use its authority under European prospectus regulation to publish specific disclosure rules tailored to tokens that act as a safe harbor for issuers; until this happens, ESMA should offer specific guidance. Second, we suggest an international convention to determine the law applicable to token sales.

A. Specific Disclosure Rules and Safe Harbors

At the EU level, the most urgent task is to provide guidance and legal certainty to token sellers and investors alike. This paper therefore proposes that a safe harbor provision be adopted for tokens, with a specific disclosure rule tailored to token sales.²⁶¹ Art. 7 of the Prospectus Directive (and soon Art. 13 of the Prospectus Regulation) authorizes the Commission to publish delegated acts detailing, inter alia, the specific information to be included in the prospectus for different types of securities. The Commission has used this authority in the 2004 Commission Prospectus Regulation and a number of subsequent amendments.²⁶² In it, the Commission does take account of the characteristics of certain securities. Therefore, the Commission could tailor the content of a prospectus to token sales by an amendment to the 2004 Commission Prospectus Regulation. So far, Recital 23 of the 2004 Commission Prospectus Regulation only urges competent authorities, in the case of completely new types of securities, to look for similarities

No 809/2004 as regards the disclosure requirements for convertible and exchangeable debt securities, OJ 2013 L 213/1; on this regime, see Moloney (n. 135) 106 et seqq.

²⁵⁶ The exception is that disclosure obligations also extend to any guarantor, Art. 5(1) of the Prospectus Directive; however, the core developers will often not guarantee the success of the blockchain-based vehicle (precisely to avoid liability). Typical guarantors are banks, not the persons issuing the securities.

²⁵⁷ See Coleman, ‘Ex-Ethereum Developer: How the DAO Hack Happened And What Comes Next’ (*Cryptocoinsnews*, 30 July, 2016), <https://www.cryptocoinsnews.com/ex-ethereum-developer-dao-hack-happened-comes-next/>; Araoz, ‘15 lines of code that could have prevented TheDAO Hack’ (*Zeppelin*, 5 October, 2016), <https://blog.zeppelin.solutions/15-lines-of-code-that-could-have-prevented-thedao-hack-782499e00942> (all accessed on 3 November, 2017).

²⁵⁸ Adhami et al. (n. 152) 21; but see also below (n. 270).

²⁵⁹ See references above (n. 225).

²⁶⁰ For reform proposals under US law, see Rohr/Wright (n. 13) 54-61.

²⁶¹ For a similar proposal, under US securities regulation, see Rohr/Wright (n. 13) 59 et seqq.

²⁶² See above (n. 255).

with existing ones in the application of the prospectus requirements. This, however, offers little guidance to token sellers.

The proposed amendment should specify precisely what token sellers have to disclose to comply with EU prospectus regulation. In the meantime, before an official amendment of the Commission Prospectus Regulation is passed, the European Securities and Markets Authority (ESMA) should introduce guidelines in its frequently revised Q&A document on prospectus regulation²⁶³ that go beyond the generic comments issued recently.²⁶⁴ In view of the preceding discussion, both the guidelines and the amendment should, first, include a requirement to publish the code underlying the blockchain-based vehicle and the token sale at least one month in advance of the token sale. Second, it should require the publication of essential information on both the company, or group of core developers, preparing the token sale and on the blockchain-based vehicle whose tokens are actually sold. More particularly, it must also state which entity acts as the issuer.²⁶⁵ Third, it must state if any tokens were mined before the ICO; who, if any, the beneficial owners of these tokens were; and if investment agreements, such as SAFTs, exist concerning the tokens. This provides necessary transparency concerning the question of who stands to benefit from the token sale. Fourth, the disclosure should specify exactly what rights and obligations are embodied by the tokens. Fifth, the document must provide a detailed overview of the concrete purpose and development steps that are supposed to be funded by the collected investments. A recent study found that white papers distributed before token sales often omit substantial information on this last point.²⁶⁶ These five key components of token disclosure should also, in succinct and understandable form,²⁶⁷ be included in the prospectus summary.²⁶⁸ Sellers should be required to write a cognitively optimized summary²⁶⁹ that is accessible not only for technically savvy, but also for retail clients. More generally, disclosure requirements should draw on the content of white papers to distill the essential informational components of the token sale.

Such a tailored disclosure regime needs to provide token sellers with a straightforward way to comply with EU securities regulation if they suspect that their tokens may be considered securities. They may, of course, still decide to gamble if they feel certain enough that the utility or currency component of the specific tokens they offer exempts them from EU securities regulation; however, if they are in doubt, legal certainty would be less costly to acquire under the proposal than under current EU law. Arguably, investors would equally benefit from tailored disclosure obligations. A recent study found that the best predictor for the success of a token sale is the quality of the white paper published by the group of developers;²⁷⁰ this shows that investors do seek, and value, substantial information on token sales. A tailored disclosure requirement, as part of a safe harbor provision, would offer investors a clear choice between tokens which do and those which do not publish a specific prospectus.

²⁶³ ESMA (n. 109).

²⁶⁴ ESMA Statement (n. 9).

²⁶⁵ Theoretically, this could be the group of core developers, a company/partnership (implicitly) founded by them, or even the blockchain-based organization itself; see, e.g., Langenbucher (n 44) 8; Barsan (n. 18) 62.

²⁶⁶ Ante et al., 'Determinants and Impact of Blockchain-Based Startup Financing: The Case of Initial Coin Offerings', Paper Presented at the 5th Crowdfunding Symposium, Humboldt University of Berlin (6 October, 2017).

²⁶⁷ See now Art. 7(3)(b) of the Prospectus Regulation; Moloney (n. 135) 98.

²⁶⁸ See Art. 5(2) of the Prospectus Directive, Art. 7 of the Perspectives Regulation.

²⁶⁹ On cognitive optimization, see above (n. 211).

²⁷⁰ Ante et al., 'Determinants and Impact of Blockchain-Based Startup Financing: The Case of Initial Coin Offerings', Paper Presented at the 5th Crowdfunding Symposium, Humboldt University of Berlin (6 October, 2017); different finding, however (insignificance of white paper) in Adhami et al. (n. 152) 24.

B. Towards an International Convention for Crypto-Securities?

The regulatory landscape surrounding blockchain technology would significantly benefit from an international convention determining which investor and consumer protection regimes are applicable, and at which venues victims of fraud or misrepresentation may sue initiators of token sales. The analytical preconditions for such a convention are arguably in place. As we have tried to show, on the one hand, there is significant convergence between the US and the EU securities regulation regimes. This particularly holds if one looks at EU law from a purposive and functional rather than a merely formalist point of view: Substantially speaking, securities regulation on both sides of the Atlantic is intended to apply wherever investors' interests typically are at stake. This is embodied notably by the *Howey* test of the '33 Act and the comparability component of EU securities regulation.

Despite this substantial convergence, however, considerable frictions still remain between these two regimes, let alone between the securities regimes of other countries. This is particularly apparent in the differential external reach of the US vis-à-vis the EU regime. Regulation S provides issuers with a safe harbor from US securities regulation if, broadly speaking, there are no directed selling efforts within the US and US residents/companies are prevented from buying the securities.²⁷¹ Conversely, EU securities regulation, as mentioned,²⁷² applies irrespective of the residence or nationality of buyers when securities are offered on EU markets. This has already precipitated repercussions for the design of real token offerings. For example, for the EOS token sale, “[i]t was decided that U.S. citizens, residents and entities should be excluded from purchasing EOS Tokens in the token distribution”²⁷³ – a clear attempt to reach the safe harbor of Regulation S.²⁷⁴

Therefore, the international landscape concerning token sales, and blockchain organizations more generally, is reminiscent of the debates surrounding the law applicable to content uploaded on the Internet.²⁷⁵ Again, there is a twofold danger: first, that overlapping regulatory regimes excessively burden developers (regulatory overkill); and, second, that contradictory content of the regimes effectively undermines investor and consumer protection (regulatory perplexity). But as sensible as the case for international regulation may appear prima facie, it is less clear how to incentivize the ubiquitous ratification of a “Crypto-security Convention”. This is, because there is strong holdout potential especially for small countries like Panama or Gibraltar, similar to what we have been seeing in the field of international tax harmonization. One can conceive of solutions to that problem. The strategic objective would have to be that the benefits of ratification, i.e. becoming a member of an integrated legal area for blockchain regulation, have to exceed the idiosyncratic benefits of non-ratification. Generally speaking, a convention would have to be accompanied by unilateral prohibitive regulation, effectively shutting down the national market for foreign crypto-security issuers not in compliance with such convention.²⁷⁶ Hence, a “Crypto-security Convention” would exert thorough and

²⁷¹ See, generally, 17 C.F.R. § 230.901 et seqq.

²⁷² See above, Part IV.A.

²⁷³ EOS, Frequently Asked Questions, Question No. 17, <https://eos.io/faq.html> (accessed on 23 October, 2017).

²⁷⁴ See also DomRaider (n. 15) 2, explicitly invoking Regulation S.

²⁷⁵ Grundmann/Hacker (n. 31) 271 et seq.; Svantesson, ‘Digital Contracts in Global Surroundings’, in Grundmann (ed.), *European Contract Law in the Digital Age* (Antwerp, Intersentia, forthcoming); Goldsmith/Wu, *Who Controls the Internet? Illusions of a Borderless World* (Oxford, Oxford University Press, 2006), chapter 9.

²⁷⁶ On this pervasive mechanism in other fields of international legal integration, such as international family law and the recognition and enforcement of foreign decisions, see Thomale, ‘State of play of cross-border surrogacy arrangements – Is there a case for regulatory intervention by the EU?’ (2017) *Journal of Private International Law* 463.; id., ‘The Lugano model – cooperative enhancement over enhanced cooperation’, in: Franzina (ed.), *The external dimension of EU Private International Law after Opinion 1/13* (Antwerp, Intersentia, 2016), 131-148.

resourceful preparation. The Hague Conference of International Law, UNCITRAL and UNIDORIT, conceivably even the International Law Commission or the Hague Academy of International Law, seem perfectly able to heed this call and start working on draft articles and an intelligent implementation strategy. Eventually, crypto-securities may also provide a blueprint for the development of an international convention on blockchain organizations more generally – be they cryptocurrencies, token-based decentralized applications, or else.²⁷⁷

VI. Conclusion

In this paper, we make three main contributions. First, we establish an analytical framework for distinguishing between three different archetypes of tokens: currency, utility, and investment tokens. While many tokens clearly embody components of two or three of these types, the distinction achieves analytical clarity for the pressing questions of the applicability of different types of regulatory regimes to token sales. Second, we show that currency and utility tokens are not subject to EU securities regulation. Investment tokens, however, do generally qualify as securities, which implies, *inter alia*, an obligation to publish a prospectus, and daunting liability in its absence. On a cautionary note, we suggest that other regulatory regimes, such as (crypto)payment regulation or (crypto)consumer protection law, may and should apply to currency and utility tokens, respectively. Third, we propose a disclosure regime tailored to token sales at the EU level, ideally combined with an international convention for crypto-securities. These suggestions aim at balancing legal certainty for developers of blockchain applications with investor and consumer protection schemes.

Tokens are the radical embodiment of financial globalization, combined with decentralized governance mechanisms.²⁷⁸ On the one hand, this shows the potential of blockchain technology to extend business and collaboration opportunities to residents of countries that do not benefit from a strong start up or venture capital funding scene; on the other hand, it makes the enforcement of investor and consumer protection law, and the prevention of scams, all the more complicated. This paper aims to contribute to the disentanglement of the various regimes applicable to token sales. What remains clear, however, is that the economic risks, and legal problems, inherent in token sales are here to stay.

²⁷⁷ See, e.g., the proposal for an “ICANN for blockchains” in Hacker (n. 29), Part IV.3.

²⁷⁸ See, e.g., Adhami et al. (n. 152) 11.