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The European Strategy on Digital Finance and Its Interplay with Capital Markets Integration in the EU

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28.1 INTRODUCTION

The digitalization of finance is changing the financial system and its interaction with the rest of the economy. This process, which affects financial and non-financial entities, raises key policy, legal, and economic questions vis-à-vis the integrity and the development of the European Single Market for capital. In recent years, European policies have embraced the digitalization process with an ad hoc Digital Finance Strategy (DFS). This chapter reviews the defining elements of the DFS that can have a lasting impact on capital markets integration and explores the links with the Capital Markets Union project. In particular, it focuses on the impact of two important legislative proposals on capital market integration under the DFS, i.e. the Market in Crypto-Assets Regulation (MiCAR)[1] and the Distributed Ledger Technology Pilot Project Regulation (DLTR) (see also Lannoo, Chapter 29 in this volume).[2] It concludes by providing a forward-looking view of the impact of the DFS and about the prospects of 'digital security' on capital markets integration in the EU.

28.2 A BRIEF HISTORICAL PERSPECTIVE SINCE THE GLOBAL FINANCIAL CRISIS

The Global Financial Crisis (GFC), technological developments in the financial market infrastructure, and the COVID-19 pandemic have made the digitalization of finance ever more relevant. While these events or trends have different root causes, they have all led to policy goals that are fully aligned with the digitalization of finance. In particular, the call for more transparency and accountability post-GFC (Group of Thirty, 2009, p. 21), massive infrastructure investments (and entries of new players) in the securities exchange and payments industries to improve quality and speed of execution and, finally, the post-COVID-19 shift away from in-person service provision, are developments strategically aligned with the opportunities and development of digitalization in finance. The GFC was also a symbolic catalyst of technological

[1] See Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937, COM/2020/593 final (24 September 2020). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0593.

[2] See Proposal for a Regulation of the European Parliament and of the Council on a pilot regime for market infrastructures based on distributed ledger technology, COM/2020/594 final (24 September 2020). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0594.

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change. The reputational failure of the banking system stimulated initiatives towards a system that does not rely on trust among financial institutions and towards a more cost-effective financial (payment) system. As a result, at the end of October 2008, a group of individuals (most likely) under the name of 'Satoshi Nakamoto', published a paper describing the first peer-to-peer electronic cash based on distributed ledgers and cryptography, creating de facto a new source of digital disruption in the financial system (Nakamoto, 2008).

The introduction of new technologies and new tools, such as mobile apps (with internet application programming interfaces, or APIs), machine learning and algorithmic trading based on big data analytics, as well as a combination of decentralized architecture and cryptography into the distributed-ledger technology (DLT), have largely improved transparency, competition, and accessibility to financial services (see, for instance, a recap by Beck, 2020 and 2021). Against this backdrop, in recent years, European policies have embraced the digitalization process with an ad hoc Digital Finance Strategy (European Commission, 2020a). This chapter does not discuss the second element of the Digital Finance Strategy, which concerns retail payments (see, for instance, European Commission, 2020b).

At the outset, the European Commission embraced digital transformation and put it at the centre of a dedicated Digital Single Market Strategy in 2015, which promoted three policy objectives: (1) supporting digital infrastructure development; (2) improving access to digital goods and services; and (3) designing rules that foster technological development (European Commission, 2015). A bolder approach to foster digitalization specifically for financial services came only in 2017, with a public consultation on the topic (European Commission, 2017). The consultation paper affirmed for the first time three principles for future policy action:

(a) Technological neutrality (i.e. the same activity should be subject to the same regulation irrespective of the way in which the service is delivered);
(b) Proportionality (i.e. any intervention should take into account the size and significance of the business model, as well as its complexity);
(c) Integrity (i.e. application of new technologies to financial service should promote market transparency without creating unnecessary risks potentially stemming from cyber security, market abuse, and mis-selling practices).

The Commission reaffirmed its 'technology neutral' approach when assessing policy intervention in 2018, with a dedicated Fintech Action Plan (European Commission, 2018). It included one regulatory action for crowdfunding service providers (the European Crowdfunding Service Providers Regulation, ECSPR), which resulted in an EU-wide framework. This new framework[3] regulates for the first time 'internet-based' platforms that provide financial services, such as investment services or credit intermediation, exclusively in a digital form.

The EU Regulation builds upon the already existing framework for investment services (Markets in Financial Instrument Directive 2, MiFID 2),[4] but it expands it to credit intermediation for the first time at the European level (Valiante, 2022). The crowdfunding regime also tests new boundaries in investor protection with the introduction of a system of warnings and targeted transparency (nudges) to ensure that the platform acts as a risk-neutral gatekeeper. As a

[3] Regulation (EU) 2020/1503 of the European Parliament and of the Council of 7 October 2020 on European crowdfunding service providers for business amending Regulation (EU) 2017/1129 and Directive (EU) 2019/1937, OJ L 347.

[4] Markets in Financial Instruments Directive (MiFID), Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU, OJ L 173.

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result, while the fundamental objectives remain the same, there is an implicit recognition that investor protection mechanisms and other integrity-enhancing measures need a different design when financial services are fully provided in a digital form.

The second key element reflected in the 2018 Action Plan was the need to better understand the obstacles to cross-border provision of digital financial services, especially payment and investment services. In particular, the European Banking Authority (EBA) highlighted the importance of harmonized rules for identifying when an activity offered via digital means is considered 'cross-border' (to establish if it is provided under the internal market 'right of establishment' or the 'freedom to provide services'). Here again, the new ECSPR regime resolves this issue by de facto opting for 'freedom to provide services', as in this case the provider will remain exclusively under the supervision of its home competent authority – where the provider is established. Licensing (versus the use of sandboxes in some countries), business conduct, consumer protection, anti-money laundering, and countering the financing of terrorism were other regulatory areas of significant cross-country divergences, which create obstacles to the cross-border provision of financial services (EBA, 2019a).

As a follow-up to the 2018 Action Plan, the Commission also launched an expert group to look into 'regulatory obstacles to financial innovation in the financial services regulatory framework', also called the Expert Group on Regulatory Obstacles to Financial Innovation (ROFIEG). The Expert Group issued thirty recommendations (ROFIEG, 2019), warning about the risks when new players and new technologies enter the market for financial services, such as regulatory fragmentation (imposed over an underlying technology that is the same everywhere), unfair commercial practices of vertically integrated incumbent digital infrastructures (and the need for an open data architecture), and the lack of cooperation among supervisors, at both international and sectoral levels (i.e. competition authorities, financial markets authorities, and central banks). Moreover, the ROFIEG highlighted the lack of regulatory attention to how to fit financial networks built on distributed ledger technology under the existing regulatory framework.

After the 2018 Action Plan and the ROFIEG report, the scaling up problem for the FinTech companies advanced on the European agenda. In 2019, the European Supervisory Authorities (ESAs) first published a joint report on regulatory sandboxes and innovation hubs (ESMA et al., 2018), in which they highlighted existing best practices. Later on, EBA identified a list of 'conditions, limitations and restrictions' to authorization procedures in the context of banking and payment legislation, which may impede a 'fully level playing field in this area' (EBA, 2019b, p. 5). Most recently, the EBA highlighted the growing importance of digital platforms to 'bridge' customers and financial institutions as they create 'new forms of financial, operational and reputational interdependencies', which call for a strengthening of the 'supervisory capacity' to deal properly with this market trend (EBA, 2021). Nonetheless, no evidence has emerged about a bias or favourable treatment towards new innovative business models.

Meanwhile, the European Securities and Markets Authority (ESMA) published its advice on crypto-assets regulation in January 2019 (ESMA, 2019a). The advice concluded that, despite not being (yet) a financial stability concern, crypto-assets are a source of risks for market integrity and investor protection and financial services relating to crypto-assets currently fall outside the scope of EU regulation.

On top of these actions, the European Parliament called for even more ambition, with a 'transition from open banking (in the payment space) to open finance (for all financial services)', 'to improve efficiency, reduce concentration risk and enhance financial inclusion' (European Parliament, 2020, p. 18).

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Finally, international organizations, such as the Bank for International Settlements (BIS), the Financial Stability Board (FSB), and the International Organization of Securities Commissions (IOSCO), have been researching in different areas of digitalization of financial services, with greater focus on the policy implications of cryptocurrencies as a means of payment, such as the use of stablecoins and central bank digital currencies (Auer et al., 2020; IOSCO, 2020a), cybersecurity (IOSCO, 2019a; FSB, 2020b) and the market infrastructure developments (including on access and use of data; IOSCO, 2020b; Linnemann et al., 2020).

28.3 A DIGITAL FINANCE STRATEGY FOR THE EU

In this context, the European Commission renewed its strategy on digitalization of financial services with the new Digital Finance Strategy in September 2020 (European Commission, 2020a). The DFS looks at four priority areas:

1. Removing obstacles to the Single Market in areas like the use of digital identities for onboarding clients, cloud computing, and gold-plating practices when it comes to passporting digital financial services (the latter is in line with the work of the ESAs on regulatory sandboxes and innovation hubs);
2. Adapting the EU regulatory framework to digital innovation, by clarifying (among others) the legal status of crypto-assets (e.g. stablecoins) and tokenized financial instruments;
3. Promoting data-driven innovation in finance, focused on improving standardization of supervisory data and open data architecture (also called open finance);[5]
4. Addressing risks and vulnerabilities of the digital transition, with a special focus on resilience to cybersecurity risks.

For the purpose of this chapter, the next sections will focus on two key proposals of the DFS for capital market development in the EU: (a) the crypto-assets legislation; and (b) the DLT pilot regime (see also Lannoo, Chapter 29 in this volume). The cyber resilience legislative proposal and the 'open finance' framework (learning from other experiences, since there is no EU proposal yet) will also be briefly discussed.

28.4 THE NEW EU FRAMEWORK FOR (GLOBAL) STABLECOINS AND DEFI: THE MICAR PROPOSAL

The most important piece of the digital finance strategy is a legislative proposal for a Regulation on the Markets for Crypto-Assets,[6] mainly for its overarching objective to bring crypto-assets (including stablecoins and Decentralized Finance – DeFi – tokens) under regulatory scrutiny.

[5] 'Open finance' arguably refers to all the policies to make data about financial services/products users sufficiently standardized and accessible to all service providers, to enable interoperability and competition (by minimizing switching and access costs to financial services and products).

[6] European Commission, Proposal for a Regulation of the European Parliament and of the Council on Market in Crypto-assets, and amending Directive (EU) 2019/1937, COM(2020) 593 final, 24 September 2020, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020PC0593&from=EN (MiCAR COM Proposal). At the time of writing, the Council, the European Commission, and the European Parliament have reached a political agreement and are ironing out the details of the final text. The chapter incorporates key areas of the proposals put forward by the European Commission and the Council of the European Union Council of the European Union (the latter are included in Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937 – Mandate for negotiations with the European Parliament, 14067/21, www.consilium.europa.eu/media/53105/st14067-en21.pdf (MiCAR Council Proposal).

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The boom and bust of markets for stablecoins and DeFi tokens (for a recap see IMF, 2021, chapter 2), as well as the failed attempt to introduce Facebook-sponsored stablecoins (under the Diem brand, formerly Libra), have been a significant catalyst for action on both sides of the Atlantic. The prospects of suddenly introducing a new means of payment adopted by billions of users without common standards and legal clarity about rights and obligations surrounding the issuance of such tokens have led regulators across the world to speed up discussions on the new framework. This section will focus on the key defining elements of MiCAR: the scope, the key instruments, the key requirements for stablecoins, and the supervisory framework.

28.4.1 *Scope*

The scope of the Regulation is to establish minimum standards for issuers of crypto-assets, whereby a 'crypto-asset' is 'a digital representation of value or rights which may be transferred and stored electronically, using distributed ledger technology or similar technology'.[7] This definition includes all kinds of DLT tokens,[8] including virtual currencies. Central Bank Digital Currencies (CBDCs) are, nonetheless, partially excluded, insofar as it concerns the requirements applicable to the issuers such as the ECB, national central banks, and other public authorities. There is no further definition of what a 'public authority' is and whether this exemption applies also to non-EU public authorities. As the exemption applies at issuer level, intermediaries providing services in relation to CBDCs will remain in the scope of the legislation.

As MiCAR introduces requirements applicable to issuers of such instruments, there are essentially no requirements that are applicable to well-known existing virtual currencies, such as Bitcoin and Ethereum, as the issuer (or, more precisely, the legal person who made an offer to the public) is no longer identifiable. The existence of a claim on the issuer that is dependent on the future value of an underlying asset is de facto what makes financial assets different from intangibles or real assets.

Virtual currencies on decentralized blockchains (with no identifiable issuer) are closer to intangibles (as a form of digital asset) than financial assets, as their value is not derived from a contractual claim or similar, but rather from the scarcity of that asset. While the outcome is largely aligned with the Commodity Futures Trading Commission's (CFTC) decision to classify major virtual currencies (e.g. Bitcoin) as commodities and to exclude them from the regulatory framework for securities, the MiCAR does include such digital assets in its scope. In effect, the proposal may cover issuance of virtual currencies even on decentralized infrastructures, if there is the possibility to link the issuance back to a legal person. Natural persons cannot offer to the public crypto-assets authorized under the proposed Regulation, or provide crypto-assets services (unless under strict conditions), but they can distribute e-money tokens if they are authorized under the Directive 2009/110/EC on E-money.

The clear reference in the proposal to 'offers of crypto-assets to the public' or 'admission to trading on a trading platform for crypto-assets' restricts the application of the legislation only to crypto-assets actively traded and marketed in the EU, perhaps via Initial Coin Offerings (ICOs) or an Initial Exchange Offering (IEO) directly on a trading platform. Moreover, no tokens can be offered to the public in the Union or admitted to trading on a trading platform for

[7] Article 3(1)(2) MiCAR, COM Proposal.
[8] Article 3(1)(1) MiCAR, COM Proposal, refers to DLT as 'a type of technology that supports the distributed recording of encrypted data'.

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crypto-assets if the issuer is not authorized in the EU and does not publish a crypto-asset white paper[9] approved by its competent authority. Nonetheless, in the crypto world, it is not always straightforward to establish whether an offer is being made to the public in the EU by a non-EU-established venue or a website not registered in the EU. Things may potentially be easier for well-known US-based stablecoin providers, which may be interested in reaching out to investors across Europe by establishing a branch in the EU and requesting an admission to trading on EU crypto exchanges.

The scope of the proposal, moreover, excludes, among others, security tokens or tokenized securities classified as 'financial instruments', funds, deposits, structured deposits, securitization, which are covered under their respective legal frameworks. This classification is typically done by national competent authorities (NCAs), which often apply the EU legal framework differently. For instance, crypto-assets (tokens) that are not means of payment (e-money) often have to undergo an assessment of whether they are 'transferable securities'. Despite the cross-border nature of crypto-assets, MiCAR does not determine the crypto-assets to be classified as financial instruments or transferable securities, leaving this up to MiFID 2. The MiFID 2 definition of 'transferable security' in turn leaves some of the key notions, such as the 'transferability' properties (including when it is 'negotiable on capital markets'), to national laws (ESMA, 2019b, p. 5). The transferability constraints typically come from statutory or technical restrictions, which can vary across Member States according to legal customs or market developments. Moreover, the definition of 'capital markets' typically refers to Regulated Markets and Multilateral Trading Facilities (defined under MiFID 2), which currently exclude crypto exchanges in most Member States. In order to deal with the potential risk of some crypto-assets being captured under the 'transferable security' definition in some countries, but not in others, with potential risks of conflicts of laws, some have called for an *ex ante* review by NCAs (coordinated by ESMA): a non-binding legal opinion supporting the final supervisory decision (Zetzsche et al., 2021, p. 24).

28.4.2 *Key Instruments*

MiCAR identifies three key instruments subject to specific requirements: (1) E-Money Tokens (EMTs); (2) Asset-Referenced Tokens (ARTs); and (3) other tokens that are neither ARTs nor EMTs, including Utility Tokens (UTs). This classification attempts de facto to capture all assets currently available in the crypto ecosystem.

More specifically, EMTs are tokens whose objective is to maintain stable value 'by referring to the value' of a legal tender, typically an official currency. This is by far the most diffused category of stablecoins, which includes Tether, Binance USD, and USD Coin. EMTs aim at being as close to parity as possible, but there is no guaranteed parity among the major stablecoins currently available (for instance, through the use of sponsoring entities or through a direct legal claim that can be redeemed at par). As the objective of EMTs is parity against a single currency, money that is being collected should be invested in multiple (but highly liquid and low-risk, such as government bonds) assets that are denominated in the same currency.

These two characteristics – being low risk (in the meaning of Directive 2009/110/EC) and denominated in the same currency – make most of the current stablecoins non-compliant with MiCAR and therefore they would not be marketable and tradable in the EU. In particular,

[9] A white paper is a short document containing, among others, information on the issuer, the offer, the crypto-asset, and the underlying project being funded.

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stablecoins invested in commercial papers, such as Tether, or other crypto-asset tokens, such as DIA, would need to adjust their underlying basket of investments in order to actively solicit an offer of their tokens or admit the token to trade on a crypto-asset trading venue or provide a crypto-asset service in the EU under MiCAR. An EMT may show similarities with e-money, governed by Directive 2009/110/EC, but there are two main differences that still set them apart: (1) some crypto-assets do not explicitly provide a claim on the issuer, and (2) the claim (if it exists) is typically for redemption not at par (Gortsos, 2020).

The second group of crypto-assets classified under MiCAR are ARTs. These are tokens whose objective is to maintain a stable value by referring to the value of a basket of official currencies (legal tenders), or any other value (such as one or several commodities or one or several crypto-assets), or a combination of all of them. This definition captures more complex stablecoins, like the model designed by Diem. A token that keeps its value stable in relation to a basket of fiat currencies potentially offers a tool to protect from excessive currency risk, especially in emerging economies.

While EMTs and ARTs would capture most of the stablecoins, there are also stablecoins that are algorithmic-based, i.e. they keep a stable value by adjusting the supply of tokens in the system and through the use of smart contracts. Their future has been challenged by some (Bullman et al., 2019). and they represent today around 1 per cent of total market capitalization of stablecoins (Xiao, 2021). As a result, they are captured by a residual category under MiCAR, which includes UTs and crypto-assets that are not UTs, EMTs, or ARTs and will be required to issue a white paper (not pre-approved by the NCA). The residual category includes algorithmic stablecoins, native cryptocurrencies (e.g. Bitcoin or Ethereum), and so on. The regulatory treatment of algorithm-based stablecoins, under Title II of MiCAR, requires the existence of an identifiable issuer (a legal person) that has to prepare and publish a white paper. As the requirements are addressed to the issuer, they will not apply when there is no identifiable issuer. Moreover, no white paper is required for a restricted offer (to fewer than 150 natural or legal persons or only to qualified investors with no possibility to be held by non-qualified investors), or small offers (below €1 million over twelve months). Title II of MiCAR does not apply to specific one-time events, such as airdrops, mining rewards, or utility tokens for goods or services in operation, while the whole Regulation does not apply to non-fungible tokens (NFTs).

28.4.3 *Crypto-Assets Service Providers*

Besides the issuers, there is an additional category of entities that would fall under the MiCAR proposal. Those are Crypto-Asset Service Providers (CASPs) – legal persons that offer services in relation to the crypto-assets under MiCAR's scope. The explanatory memorandum clarifies that CASPs are currently unable to provide cross-border services due to diverging bespoke national regimes or a lack of regulation,[10] which adds to the legal uncertainty and lack of protection, especially for investors that need to use services provided by CASPs. This creates two problems. First, an uneven playing field among firms located sparsely across the EU, coupled with inadequate or no regulation in some EU countries, increases the risks of a large loss of confidence in those jurisdictions, with potential rippling effects across the EU. Second, there are increasing concerns that uncoordinated national interventions are ineffective when dealing with internet-based services and financial product offerings. An EU-level intervention might be

[10] See European Commission, MiCAR Proposal, p. 4.

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TABLE 28.1 *Crypto-asset vs (core) investment services*

	MiCAR	MiFID 2/R
1	Operation of a trading platform for crypto-assets	Operation of a multilateral trading facility/ organized trading facility
2	Exchange of crypto-assets for other crypto-assets or fiat	Dealing on own account
3	Execution of crypto orders on behalf of third parties	Execution of orders on behalf
4	Placing of crypto-assets	Placement with or without firm commitment
5	Reception and transmission of crypto orders	Reception and transmission of orders
6	Advice on crypto-assets	Investment advice
7	The custody and administration of crypto-assets on behalf of third parties	
8	Portfolio management in crypto-assets	Individual portfolio management

the bare minimum, while coordination with other major jurisdictions (such as G-20 countries) would be the optimal solution.

Beyond broader considerations, the proposal introduces a unified regime for CASPs (Title V, MiCAR), which requires them to seek authorization from the competent authority of the Member State in which they have their registered office. In line with the recent Regulation (EU) 2020/1503 on crowdfunding service providers for business, MiCAR introduces an agile passporting framework if the CASP intends to provide services cross-border. In consequence, the authorities of the home Member State for the CASP are to inform the single point of contact of the competent authorities of the host Member States about the CASP providing services in their jurisdiction. Moreover, CASPs will be included in a register managed by ESMA that will provide an overall picture of their operations across the EU.

MiCAR also establishes a list of services that CASPs can provide and those that investment firms authorized under MiFID 2 already provide and that are considered 'equivalent' to crypto-asset services, which in turn reduces the regulatory burden for MiFID firms under MiCAR (see Table 28.1).

Other financial institutions, such as credit institutions, market operators (such as trading platforms), e-money institutions, Undertakings for Collective Investments in Transferable Securities (UCITS) management companies and alternative investment fund managers will be able to provide equivalent services they offer in respect to crypto-assets, under the provision of specific information to check the risks of non-compliance with MiCAR requirements. In effect, MiCAR is the first attempt to regulate platforms, asset managers, and financial institutions that are exclusively dealing with crypto-assets.

Notably, for trading platforms in crypto-assets, there are two sets of requirements. The first is for the operations of trading platforms, i.e. the matching of multiple buying and selling interests for crypto-assets to be exchanged for other crypto-assets or fiat currency. A set of 'operating rules' – for example, the due diligence of crypto-assets admitted to trading and exclusion categories also requires the platform operator to ensure orderly trading, to create a reporting system, and set 'objective and proportionate' criteria for participation in the platform. These requirements create an important distinction (existing also for MiFID trading platforms) between multilateral trading platforms, i.e. where operators act as riskless counterparts, and bilateral trading platforms (exchange of crypto-assets), i.e. largely those involving the proprietary capital of the operator. As a result, the second set of requirements for 'crypto-assets exchanges' is

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focused on ensuring that the operator does not commercially discriminate against clients and, more generally, acts in a transparent and fair way.

All CASPs need to comply with a list of organizational and prudential requirements, including complaint handling, conflicts of interest management, own funds, and safekeeping of crypto-assets and funds. Moreover, MiCAR introduces requirements specifically for services 3 to 6 (see Table 28.1) to ensure that CASPs operate in the best interest of the client, for instance by managing conflicts of interest, disclosing relevant information (such as third parties' remuneration), and understanding clients' needs. This is very much along the lines of the requirements imposed on MiFID investment firms for equivalent services.

Finally, MiCAR provides a framework for providers of custodial and administration of crypto-assets on behalf of third parties. In line with the inclusion of custodian wallet providers and crypto exchanges under the money-laundering legislation,[11] MiCAR determines the information to be collected and the information to be disclosed by a CASP. Notably, a CASP that provides custody and administration of crypto-assets will be liable for a loss. The original Commission proposal also included a loss 'from a malfunction or hacks up to the market value of the crypto-assets lost',[12] but the Council amended it by only referring to a loss where the CASP cannot demonstrate that it occurred independently of its operations. This could be the case of a problem 'inherent in the operation of the distributed ledger'[13] that is beyond the control of the CASP.

28.4.4 *Key Requirements for (Global) Stablecoins*

According to the explanatory memorandum of the original Commission proposal, 'the proposal imposes more stringent requirements on "stablecoins", which are more likely to grow quickly in scale and possibly result in higher levels of risk to investors, counterparties and the financial system'.[14] As native financial instruments and tokenized securities will remain subject to the existing EU financial legislation, stablecoins are thus directly addressed by MiCAR. Their importance is also emphasized by their 'clear monetary substitution dimension', which can mainly affect the conduct of monetary policies and the smooth operation of payment systems (ECB, 2021, pp. 1–9).

Issuers of ARTs would need to seek authorization, unless tokens are only offered or held by qualified investors or the average outstanding amount does not exceed €5 million over twelve months or they are credit institutions. Whether below or above the threshold, the preparation and publication of a white paper is mandatory. It needs to be pre-approved by the NCA within the authorization procedure (and outside of it for credit institutions) for ARTs. No pre-approval is required for white papers issued in relation to EMTs and tokens that are neither ARTs nor EMTs. For ARTs, their content (for which the issuer is liable) includes a description of the issuer's governance arrangements, reserve assets composition, rights on referenced assets, or alternative arrangements with CASPs, and a legal opinion that the ART is not a financial instrument, electronic money, or (structured) deposit. Similar information is included in the EMT white paper, although obviously there is no focus on reserve assets in this case, but rather on rights and obligations attached to the token and in particular a statement on the holders benefiting from redemption rights 'at any moment and at par value' and related conditions.

[11] 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, OJ L 141 5.6.2015, p. 73, as subsequently amended.

[12] Article 67(8) MiCAR COM Proposal.

[13] Article 67(8) MiCAR Council Proposal.

[14] European Commission, MiCAR Proposal, p. 5.

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Moreover, an e-money token pegging one of the European Union's official currencies will be 'deemed to be offered to the public in the Union'.

In line with the regulatory treatment of e-money in Article 12 Directive 2009/110/EC, MiCAR prohibits the granting of interest for both EMTs and ARTs, also to limit the possibility of being considered as a deposit-taking activity and creating a de facto shadow bank.

Due to the complexity of asset-referenced tokens, ARTs issuers are subject to additional organizational and prudential requirements compared to EMT issuers (which can only be credit institutions or electronic money institutions), in relation to the rights granted to holders, reserve assets, conflicts of interests, complaint handling, and own funds. In particular, MiCAR prescribes the creation of reserve assets for each category of an ART and a specific policy for the management of the reserve assets backing ARTs. Their value and composition should be publicly disclosed and subject to an independent audit every six months. Assets need to be entrusted to credit institutions or CASPs and not encumbered or pledged as collateral. Reserve assets shall be invested in 'highly liquid financial instruments with minimal market and credit risk'[15]. Finally, MiCAR requires ARTs to have disclosed policies setting out conditions and procedures in relation to the rights of the token holder on the issuer or on the reserve assets.

MiCAR also introduces requirements for the prevention of market abuse involving crypto-assets admitted on a trading platform. The requirements mirror to a large extent existing market abuse legislation in relation to insider trading and market manipulation. Nonetheless, they introduce new elements, such as market manipulation, by 'securing a dominant position over the supply of or demand for a crypto asset' with impact on prices and trading conditions, [16] which potentially applies to all crypto-assets transactions and not just to specific cornering actions in the cash forward or Emission Trading Scheme markets (as per Market Abuse Regulation (EU) 596/2014, Article 12(2)).

28.4.5 *The Supervisory Framework and 'Significant Tokens'*

In line with the recommendations of international policy fora, such as the Financial Stability Board (2020a), MiCAR recognizes that there are heightened financial stability risks when a stablecoin reaches a significant scale. As a result, MiCAR classifies ARTs and EMTs as 'significant' tokens when they reach a specific size and interconnection with the financial system. Moreover, the issuer can ask for its token(s) to be classified by the competent authority as 'significant' if it can demonstrate that it is likely to meet at least three of the criteria to be classified as 'significant'.

On top of additional organizational and own funds requirements, such as additional own funds or custody arrangements, the key feature of this targeted regime is the supervisory framework. In particular, EBA will be in charge of classifying tokens as 'significant'. Once this has been determined, EBA becomes the sole supervisor of the issuer in relation to the issuance of Significant ARTs (SARTs) or Significant EMTs (SEMTs) and, for SEMTs, EBA will only supervise the application of specific requirements. The EBA should also establish a college of supervisors (including ECB and ESMA) for each issuer. The colleges will address EBA and national competent authorities with non-binding opinions.

When it comes to regulation and supervision of third-country issuers, the FSB called for 'cooperation' both domestically and internationally, as one of the key factors for effective

[15] This also includes UCITS investing in low-risk assets; see Article 34(4) MiCAR, Council Proposal.
[16] See Article 80 MiCAR, COM and Council proposals.

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supervision of global stablecoins (FSB, 2020a, p. 21). MiCAR does not include any framework to recognize third-country regimes, whose existence would often imply some level of coordination with major non-EU jurisdictions. Non-EU issuers offering stablecoins in the EU would need to be established in the EU, forcing current global players to create a European legal entity to fulfil legal requirements of the MiCAR. Nonetheless, the EBA would be empowered to seek agreements on exchanges of information with competent authorities in third countries to best perform its own tasks.

28.5 DLT-BASED MARKET INFRASTRUCTURE: A REGULATORY SANDBOX

Another important piece of the DFS is the so-called DLT Pilot regime, i.e. Regulation 2022/858 on a pilot regime for market infrastructures based on distributed ledger technology. In line with the well-established preference by European institutions (including national competent authorities) and the international community more broadly (FSB, 2017, p. 31; IOSCO, 2019b, p. 3) to test new technological solutions for the financial system, DLTR creates a 'statutory' (regulatory) sandbox for market infrastructures that want to transfer the traditional securities trading 'on chain'. The regulation is addressed to 'multilateral trading facilities' authorized under MiFID 2 and 'securities settlement systems' (central securities depositories, as defined by Regulation 909/2014, also called Central Securities Depositories Regulation, CSDR) using DLT technology – broadly defined as 'a technology that enables the operation and use of distributed ledgers'.[17] An authorization to operate a DLT infrastructure under DLTR (and its ongoing supervision) is provided by the national competent authority, which authorizes multilateral trading facilities and central securities depositories, respectively under MiFID 2 and CSDR. National authorities should consult ESMA on this authorization decision and receive a non-binding opinion, as well as recommendations on the application or the exemptions requested.

An agile sandbox approach was necessary, as many Member States shy away from standard regulatory sandboxes, which could have implied only temporary disapplication of EU financial law (up to twenty-four months in most cases; Zetzsche and Woxholth, 2021). In particular, DLTR offers a more long-term and size-based sandbox, which will be currently in place for six years. As a result, DLTR aims to create a new viable and live DLT-based market infrastructure that would potentially compete with current market infrastructure, insofar as it can prove that it is more effective and cost-efficient than current centralized bookkeeping infrastructures.

The scope of DLTR covers DLT financial instruments, including DLT transferable securities, such as shares and bonds either tokenized or issued natively on DLT with a maximum market capitalization of €500 million for shares and UCITS (assets under management), and €1 billion for bonds. The DLT market infrastructure cannot admit to trading DLT financial instruments with initial market value above €6 billion and the infrastructure can continue to operate until the market value of the registered DLT financial instruments, traded on the DLT multilateral trading facilities and settled with central securities depositories in the DLT securities settlement system reaches €9 billion. While there is no official explanation of why these specific amounts have been chosen, these thresholds are largely linked to discussions in other pieces of EU legislation (also with limited cross-border impact).

As these DLT markets may grow in size and go well above the thresholds set in DLTR, a transition strategy is imposed by DLTR to transfer activities 'off chain', so in traditional marketplaces, starting from a market value of DLT instruments admitted to trading of €9 billion.

[17] Article 2(1) DLTR.

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Another interesting feature of DLTR includes the possibility for investment firms that are DLT MTFs to also run the 'security settlement system', and so a DLT trading and settlement system (DLT TSS), and for central securities depositories to run DLT MTFs, as long as they both comply with MiFID 2 and CSDR requirements (and the conditions for targeted exemptions from the legislation under DLTR). This is an interesting development since it shows the great potential of DLT systems to integrate the securities value chain into a single market infrastructure, with potential operational synergies and cost reductions. Moreover, the DLT financial instruments that can be admitted to trading on such DLTR-compliant infrastructure could potentially include (for the first time) all DeFi tokens that are natively on chain and meet the characteristics of a transferable security, provided that the issuance is not large in size.

The central securities depositories operating the DLT securities settlement system or the DLT TSS may be exempted from targeted requirements under CSDR for account-based settlement of book entry securities that may be incompatible with DLT infrastructures, such as the requirement to be in dematerialized (book entry) form (Article 2(4) and 3 CSDR), the transfer of orders (Article 2(9), CSDR), and the use of securities accounts (Article 2(28), CSDR). There are no exemptions for the application of market abuse rules under Regulation (EU) 596/2014.

Overall, this framework creates a 'safe space' for trading and settlement of DLT transferable securities both in respect to tokenized existing transferable securities and native tokens issued 'on chain'. However, critical questions remain regarding its applicability on the ground. In particular, there are profound legal questions about the fitness of the current regulatory framework applicable to traditional securities infrastructure in relation to DLT systems. For instance, implementing delivery-versus-payment (DvP) in the context of DLT systems under the current Settlement Finality Directive 98/26/EC, which is at the heart of securities settlement, is difficult. The Directive constructs settlement finality around market infrastructure with bookkeeping entries, where 'the moment of entry and of irrevocability of transfer orders' is clearly identifiable. This is not straightforward in a DLT environment. For now, DLTR tries to escape this issue by offering the DLT settlement system the possibility to avoid the settlement finality requirement if it puts in place 'robust procedures and arrangements' to, among other, mitigate any risk arising from the non-designation of the DLT securities system as a system for the purposes of Directive 98/26/EC, in particular with regard to insolvency proceedings. This implies that the DLT system may be incompatible with the transfer of ownership of securities (and overall DvP process) under the national laws of Member States where the transaction needs to be considered effected. The DLT securities settlement system may also not qualify as a 'system' under the Settlement Finality Directive and therefore lose the protection from insolvency proceedings that is essential for settlement finality. As a result, while the conditional disapplication of specific EU laws is indeed possible under DLTR, it may be hard to circumvent application of national private law on ownership transfer. It needs to be seen whether this level of legal uncertainty will discourage market operators from taking on this challenge.

28.6 MEASURES TO ENHANCE CYBER RESILIENCE AND TO FOSTER COMPETITION

The DFS also includes another important legislative initiative, i.e. Regulation on Digital Operational Resilience for the financial sector (DORA),[18] and a commitment for further action under the

[18] Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No. 1060/2009, (EU) No. 648/2012, (EU) No. 600/2014, (EU) No. 909/2014 and (EU) 2016/101, OJ L 333, 27.12.2022, pp. 1–79.

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so-called open finance framework, which promises to open access to data held by financial institutions and big tech involved in financial services for the benefit of retail investors and consumers.

The proposal recognizes that the principle of technological neutrality can apply to the objectives (outcome) of financial regulation, but organizational requirements need to be calibrated depending on how the service is delivered to users. MiFD 2 and the Markets in Financial Instruments Regulation did that when they introduced additional requirements targeted to algorithmic trading, as that technology became dominant in financial markets. In the same way, DORA aims to factor in 'new risks' brought about by new technological uses. In particular, DORA aims 'to build, assure and review [. . .] operational integrity'.[19] It creates a framework to report, test, and manage ICT risks for all the entities in the financial sector, where 'ICT risk' means 'any reasonably identifiable circumstance or event having a potential adverse effect on the network and information systems – including any malfunction, capacity overrun, failure, disruption, impairment, misuse, loss or other type of malicious or non-malicious event – which, if materialised, may compromise the security of the network and information systems'.[20] This is a long overdue action in a sector where cyber resilience has become a key priority for an ever more digital and internet-based business.

The DFS also pledges to reinforce its 'open finance' strategy launched with the Payment Service Directive 2,[21] which required credit institutions to give payment providers access to accounts for the purpose of allowing an 'unhindered and efficient' provision of payment services. This required banks to open up data on clients' accounts to new payment service providers that have over the years increasingly gained market share and eroded profits of major banks, while revolutionizing accessibility to payments via new apps and interfaces. The follow-up step, according to the DFS, is to move from 'open banking' to 'open finance', i.e. to expand the access to 'more customer data' (this potentially includes securities accounts, suitability and appropriateness assessments, etc.), in order to provide better and more targeted financial advice, while ensuring appropriate data protection.

28.7 Looking Forward: Is Digital Security the 'Promised Land' of Capital Markets Integration?

All the initiatives described pose a wide array of legal questions, including some on the adaptations needed for company law and capital markets law to the new digital context. Among others, a remarkable example is 'tokenization', or digitalization of securities. The DFS inevitably brings to the forefront new and underexplored questions about the need to identify what digital security is, what the market infrastructure of a digital security looks like, and what is the added value of such instruments, for instance, in corporate governance.

28.7.1 *What Is Digital Security', When Is It a 'Financial Instrument' and Why Is This Question Relevant?*

From a legal perspective, it is hard to capture crypto-assets under a simple taxonomy and to define an appropriate regulatory and supervisory regime for them. Some of the digital assets

[19] Article 3(1) DORA.
[20] Article 3(5) DORA.
[21] Directive (EU) 2015/2366 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 L 337 23.12.2015, p. 35, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02015L2366-20151223&from=EN.

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using DLT may result in rights or endowments, which do not fit well into the traditional understanding of rights of a shareholder or a bondholder, or, more generally, of the holder of a 'financial instrument' as an investment characterized by rights to a financial return.

Regulatory agencies such as ESMA and EBA have conducted surveys and made studies using a tripartite classification of crypto-assets as 'investment type' (rights to financial returns), 'payment type' (services of exchange), and 'utility type' (access to a good or service; EBA, 2019c). Some jurisdictions follow this tripartite classification to regulate the first type of the three as 'financial products', the second type as payment systems, and leaving the third type outside the reach of securities laws. Yet things are seldom that simple. An ESMA survey of national supervisors showed that, whereas a 'pure utility type' crypto-asset[22] was considered outside the scope of securities regulation, 'hybrid' types, which include features of 'investment', 'payment/exchange', and utility, could be classified differently. For example, crypto-assets that offered the right to participate in a firm's profits were classified as a 'security', but national approaches differ when crypto-assets offer a mixture of investment and payment characteristics. In the United States, the Securities and Exchange Commission introduced a concept of 'security' encompassing a large part of crypto-assets on the basis of the so-called Howey test devised by the courts.[23] So far, the European strategy is two-pronged, and consists of combining a bespoke regulation for utility assets and stable coins, including payments tokens, while using the existing capital markets regulatory framework (with minimal changes, if needed) for investment assets.

Yet the question of whether a crypto-asset is a 'security' (or a 'payment service' or 'money') actually masks a series of different issues. The emergence of digital assets carrying the rights of shares or bonds (albeit adapted to the reality of the digital 'metaverse'), as 'equity tokens' or 'debt tokens', impacts not only on capital markets regulation but also on corporate law. Indeed, depending on their specific technological features, they may pose specific corporate law issues in their own right. Anonymity of shares could be an example. Indeed, in a corporate law context shareholders' anonymity is often not allowed. However, in many DLT settings, identification of shareholders for equity token holders may be impossible beyond the use of a pseudonym for allocation of a wallet, unless investor whitelisting and other validation processes are put in place and the applicable technological ecosystem is a so-called permissioned DLT (notably a private and restricted blockchain network offered for service by approved market players), whose service provider can precisely identify the holders of such equity tokens (also for anti-money-laundering and know-your-customer purposes) (Blemus and Guegan, 2019, p. 19).

28.7.2 *The Market Dimension of a Permissioned DLT Digital Security: Central Depositories, Clearing and Settlement*

Leaving aside the new 'bundles of rights' packaged as crypto-assets, and focusing merely on the technological side, the use of DLT in this context appears to be less controversial. From a market perspective, a permissioned DLT may be useful for the issuance, holding, and transfer of securities. There are pilot tests ongoing for shares, bonds, and units of mutual funds in blockchain technology (ESMA, 2021, p. 13). In France, for instance, non-listed shares and

[22] ESMA (2019b, p. 24) considers a pure utility type Filecoin, a decentralized storage network that turns cloud storage into an algorithmic market, where Filecoins can be spent to get access to unused storage capacity on computers worldwide, and providers of said unused storage capacity can earn filecoins, which then can be sold for cryptocurrencies or fiat money.

[23] *SEC* v. *Howey Co.*, 328 U.S. 293 (1946). See also SEC Framework for 'Investment Contract' Analysis of Digital Assets, www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets.

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debt instruments can be registered and transferred on a distributed ledger since 2016. There is a wide consensus that DLT may progressively compete and even replace in the long term the centrally maintained securities depositor's services. For the time being, several existing pilot initiatives seem to deliver on their promises. This justifies a pause for thought to discuss how central depository and securities settlement services may be organized and operated in a DLT environment.

As shown by the DLT Pilot Regulation 2022/858, in such a new technological context, central securities depositories (CSDs) may rely on a permissioned DLT where listed securities are no longer centrally deposited with the CSD but rather deposited in several nodes of the network, whose integrity is ensured by the CSD, but participants to the network are enabled to run parts of the operations themselves and to act autonomously or bilaterally with each other under predefined legal and technological rulebooks. This, in principle, may allow market efficiency to increase among a larger number of clients, standardize pre-issuance and issuance processes through smart contracts, and enhance asset servicing. It may also have visible implications not only for the existing securities settlement environment but also for its European regulatory environment and for market integration.

Both Regulation (EU) No. 909/2014 on central securities depositories (together with its Delegated Regulations 2017/392 and 2018/1229) and the Settlement Finality Directive 98/26/EC (SFD) are, in principle, technologically neutral and thus should also accommodate the use of new DLT technology by CSD, provided that the adopted technology is not based on a purely decentralized and public network, but rather on a permissioned DLT platform with a validation model allowing for the needed centralized controls. The DLT Pilot regime brought about by Regulation 2022/858 facilitates this, by removing impediments, but also specifies in recital (7) of its preamble that

> the status as DLT market infrastructure should be optional and should not prevent financial market infrastructures, such as trading venues, central securities depositories (CSDs) and central counterparties (CCPs), from developing trading and post-trading services and activities for crypto-assets that qualify as financial instruments, or are based on distributed ledger technology, under existing Union financial services legislation.[24]

Anecdotal evidence, however, shows that existing examples of central securities depositories already using DLT technology are confined to notary and central maintenance services to keep records of every change resulting from transactions settled through the established Target 2 Securities (the CSD does not, therefore, use DLT as a security settlement system; ESMA, 2021, p.17). Moreover, while the transfer of securities may, in principle, be settled in the DLT context (e.g. when a transaction is 'validated' on a DLT platform, data is recorded to the transferor's and the transferee's DLT addresses, which results in a 'transfer' of the token), payment in cryptocurrency appears to be currently not possible on a DLT platform (Article 40 CSDR still prevents this). As long as this regulatory bottleneck is not removed (by allowing cryptocurrencies or by making available central bank money on a DLT platform, notably a digital euro, or by developing new technologies offering interfaced settlement off-ledger), the complete tokenization of the settlement and delivery of security tokens is impossible. The CSD has to settle the cash leg of the transaction through movements in its cash accounts at the same time as the securities leg of the transaction takes place on the DLT platform.

[24] https://eur-lex.europa.eu/eli/reg/2022/858/oj

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28.7.3 *Towards a DLT-Based Platform Corporate Governance?*

DLT-based technologies appear to also have potential to reframe several important aspects of the 'legacy' corporate law. In the corporate setting, technology may help curb collective action problems. This may fundamentally modify the principal/agent relationship, questioning the traditional agency model applied to the shareholders/managers relation in offline, 'legacy' companies, which deeply inspired existing company laws.

This situation may have corporate governance implications (Abriani and Schneider, 2021). Thus, from a regulatory perspective, the advent of new technologies may call for company law adjustments. Some argue that in a technology-driven, digital world, 'platform companies' are already disrupting many industries and offer a new model of 'platform governance', where digital technologies are leveraged to create less hierarchical, more 'community-driven' forms of corporate organizations (Fenwick et al., 2018a, 2018b).

Others note that DLT and smart contracts have the potential 'greatly to reduce the costs of organising business activities by contract, as opposed to using firms' and this will 'likely reduce the scope of business activities for which the corporate form is used as an organising device and therefore the scope of activity governed by corporate law' (Armour et al., 2019, p. 8). In a seminal study, Lafarre and Van der Elst (2018, p. 1) argue that 'blockchain is a technology that can offer smart solutions for classical corporate governance inefficiencies, especially in the relationship between shareholders and the company'; because 'blockchain technology can lower shareholder voting costs and the organization costs for companies substantially', it can 'increase the speed of decision making, facilitate fast and efficient involvement of the shareholders'. In short, blockchain technology may prove a promising tool for better shareholder engagement.

This has interesting implications from the perspective of company law. A first example is shareholder identification. The Shareholders Right Directive (SRD II)[25] allows companies to make use of electronic means in their corporate governance provided that the proper identification of shareholders (including the name of the shareholder, contact details, and, if applicable, information such as the Legal Entity Identifier Code) is ensured. In practice, in many jurisdictions, companies identify shareholders via individual access codes ('access cards') sent to shareholders, often via specialized service providers. Currently, the SRD II defines a 'shareholder' as a natural or a legal person recognized as a shareholder under the national law. The Capital Market Union Action Plan[26] envisaged identifying shareholders by the issuer. In the context of a permissioned DLT, the proper identification of the shareholder would need something more than a digital identity of the shareholder's wallet. It would also require proof of authentication outside the blockchain with the holder's real identity, which could also be stored in the blockchain (Lafarre and Van der Elst, 2018, p. 16). In turn, however, a permissioned DLT may eliminate many of the practical impediments that shareholders of listed companies currently face in getting their access cards for the shareholders' meetings on time due to the complex (and often inefficient) chain of intermediaries participating in the central depository system.

A second example of company law implications of digitalization is the exercise of voting rights electronically. Here again, the Capital Market Union Action Plan envisaged an assessment of

[25] Directive (EU) 2017/828 of the European Parliament and of the Council of 17 May 2017 amending Directive 2007/36/EC as regards the encouragement of long-term shareholder engagement, OJ L 132, 20.5.2017, pp. 1–25.

[26] European Commission, Communication on A Capital Markets Union for people and businesses. New action plan, COM(2020) 590 final, September 2020.

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whether and how the 'rules governing the interaction between investors, intermediaries and issuers' as regards the exercise of voting rights and corporate action processing can be further clarified and harmonized, also looking at new digital technologies.[27] The Action Plan is based on the Final Report of the High-Level Forum for Europe's Capital Markets, 'A New Vision for Europe's Capital Markets', of June 2020, which contains a recommendation on shareholders' exercise of voting rights and corporate actions. This encompasses attendance in purely digital or hybrid (both in person and digital) meetings, where all shareholders must be able to exercise the same rights as in physical meetings, i.e. viewing, hearing, speaking, proposing, and voting. In contrast to some US state laws, so far, law in many European countries does not allow for virtual shareholders' meetings only, except for the exceptional circumstances of the COVID-19 pandemic. However, digital means, including blockchain technology, may facilitate dialogue between shareholders and board members. Although this may deprive shareholders of the opportunity of face-to-face in-person discussions, the benefits may outweigh the costs.

A third example is the transmission of information across the investment chain. Again, blockchain technology seems capable of remedying the fact that currently the chain of intermediaries maintaining securities accounts on behalf of shareholders often fails in its duties towards shareholders and issuers and, as witnessed by recital (8) of the preamble to the SRD II, in practice 'information is not always passed from the company to its shareholders and shareholders votes are not always correctly transmitted to the company' (see also Laster, 2017). In a 'permission-based' system, instead, information can be transmitted automatically to the parties formally authorized to be in the DLT system.

These and many other advantages are the promises of the transition of company law from the offline to the online world and the use of DLT for enhanced corporate governance. Only time will tell what promises are kept, and what unanticipated challenges will need to be addressed to bridge past and future of company and capital markets law.

28.8 WHAT DOES THE DIGITAL FINANCE STRATEGY IMPLY FOR CAPITAL MARKET INTEGRATION IN THE EU?

Capital markets are one of the sectors where digitalization is changing old paradigms as to how services are provided and how providers approach their clients. Capital markets, as a funding tool, also tend to be more open to innovation, as by definition they require a dialogue with multiple parties, whether issuers or investors. As a result, any technology that helps to better connect investors with issuers will be easily taken up. Moreover, the DFS also has a formal link with capital market policies, via the CMU project, which was the main catalyst for action in the FinTech space with the launch of the FinTech Action Plan in March 2018. As a continuation of the original plan, while the DFS expands into other areas of finance, the most significant impact can be expected in the area of capital market integration. This contribution to integration takes different forms, such as the need for greater supervisory and regulatory coordination or the synergies and vertical integration that some technologies could bring for the traditional market infrastructure and securities value chain.

MiCAR (together with the 5th Anti-Money Laundering Directive)[28] in particular will increase the need for coordination on the classification of transferable securities by increasing

[27] Ibid., p. 13.

[28] Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018 amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, and amending Directives 2009/138/EC and 2013/36/EU, OJ L 156, 19.6.2018, pp. 43–74.

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tensions between national interpretations of concepts like transferability and negotiability (for the definition of transferable securities discussed earlier), and the new European framework for (global) stablecoins, utility, and other coins, which needs to be able to identify in a more homogenous way tokens that are securities from those that are not. For instance, some utility coins (especially those for which the service or good is still in the development phase) are instruments that lie on the border between utility tokens and transferable securities, due to the nature of claims over products that might or might not ever be produced. Moreover, the proposal clearly spells out that DLT-based MiFID financial instruments should always be in the MiFID 2 scope, which was not something to be taken for granted. Whether or not a more detailed definition of transferable security will be included in a legal text anytime soon, market developments and the pressure coming from this legislative action may increasingly force Member States to coordinate their approach, to avoid unpredictable spill-over effects and legal uncertainty due to different national classifications of large phenomena, such as widespread adoption of stablecoins by the EU public.

A euro-based stablecoin or a European Central Bank Digital Currency can be a key driver to lower cross-border friction for investments in terms of a cost reduction and a market infrastructure integration. This could also be the case for non-legal barriers, such as withholding tax procedures, which can then be programmed to retain or release funds at source via smart contracts. Moreover, a token that can keep a stable value against a basket of fiat currencies offers a good hedging tool for international investors and companies that want to raise money or invest in multiple countries and be protected from currency risks with cost-saving alternatives.

The introduction of harmonized requirements on cyber resilience (DORA) increases trust and stimulates the take-up of new technological solutions by issuers and investors, which can further reduce friction to cross-border capital market integration.

A gradual take-up of DLT technologies for the issuance in the traditional securities trading sector can produce positive spill-over effects for coordination of supervision among national supervisors, which is the core of the European Single Rulebook. In particular, some aspects of supervision can even be embedded into smart contracts (Auer, 2019), such as automatic application of a supervisory order when specific circumstances are met. This possibility makes the *ex ante* examination related to the approval and monitoring of smart contract codes easier than other situations, in which the supervisory check comes *ex post* (i.e. when the conduct has materialized and the smart contract triggered with no possibility to revert the action using 'specific performance' measures).

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