



## **EBI Working Paper Series**

**2023 – no. 154**

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Securitisation in the era of Blockchain: Credit funds,  
CLOs, Tokenisation, and the question of investor  
protection and financial stability

13/09/2023

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## **Securitisation in the era of Blockchain: Credit funds, CLOs, Tokenisation, and the question of investor protection and financial stability.**

Promitheas Peridis, Ph.D.

### **Abstract**

This paper deals with the increasingly popular product of credit funds and their interaction with the securitisation mechanism while adding the complexity that the use of Blockchain technology can cause. The paper starts with setting the scope, namely the facts and elements that will be analysed through the paper and the reasons behind this analysis. The financial crisis and its outcomes created a need for alternative financing sources. This led to the emergence of new alternative lenders with the most popular being credit funds. The securitisation mechanism and its products can also contribute to the alternative financing of the EU markets and the use of tokenisation through Blockchain can create even more financing and risk-spreading channels. After setting the scope and introducing the reader to the topic, the paper continues by introducing the new product of credit funds. The size and the number of credit funds in the EU are presented and the different strategies and structures of credit funds are analysed. Finally, the different risks that are involved in the lending business of credit funds are assessed. The next part covers the securitisation mechanism, and it presents the structure of the securitisation process and the tranching concept. The size of the European securitisation market and its evolution from the Global Financial Crisis era is also presented, while the part closes with the debate on the differences between a credit fund and a Securitisation Special Purpose Vehicle. The next part of the paper deals with some lending products which are pertinent in the lending market, namely the Collateralised Loan Obligations (CLOs), the *Schuldscheine*, and Corporate Bonds. After finishing with the two basic elements of the paper, then blockchain technology and tokenisation as a process is introduced. The main elements of the new technology are analysed and then the paper starts the discussion on the credit fund's role in securitisation and their interplay with tokenisation and its risks. The biggest threat that tokenisation and securitisation pose to financial stability is the risk that if tokenisation is adopted more broadly, it might create the presumption that there might be liquidity in inherently illiquid assets (like loans or real estate). This risk might affect the financial stability due to the liquidity mismatches between the token and the underlying assets, or where investors have limited information and understanding of the underlying products used for the token launch. As with every financial innovation, the risks of the tokenisation of CLOs can be mitigated by regulation. The paper analyses the main regulatory tools, such as the AIFMD, the EU Securitisation Regulation, the MiCAR, the Regulation on

Distributed Ledger Technology (DLT), the Prospectus Regulation and MiFID II. Although AIFMD, the EU Securitisation Regulation and the Prospectus Regulation/MiFID II can apply to the tokenisation of CLOs, this does not appear to be the case for MiCAR and the DLT Regulation. The paper then assessed the regulatory provisions of the applicable legislation and identified some inefficiencies. Finally, the paper closes with some suggestions and proposals on how the regulation of tokenised CLOs and tokenised securities could be more efficient.

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## 1. Introduction and setting the scope.

The Global Financial Crisis of 2007-2009 (GFC) revealed several shortcomings in the regulation of the banking industry. Basel II was mostly a micro-prudential legislation, focusing on the mitigation of internal banking risks and the risks banks faced during their business. Nevertheless, it did not focus on the risks the banks can pose to the whole financial system. In 2011, the Basel Committee published a new Basel framework, the Basel III. Basel III included new capital definitions, new capital buffers (a capital conservation buffer, a countercyclical buffer, and a systemic risk buffer), new risk-weighting rules, a new leverage ratio, liquidity buffers and enhanced transparency rules. This set of rules established a macro-prudential framework to tackle the pro-cyclical behaviour of banks and the build-off of systemic risks in the banking sector which can then be transmitted to the whole financial system.<sup>1</sup> This new set of rules, however, did not come without a huge cost for banks. Banks had to deleverage, recapitalize and increase the quality and quantity of their capital. The new capital requirements forced banks to hold more capital and to reduce their lending activity, while the need for funding, especially for Small and Medium Enterprises (SMEs) is constantly increasing.<sup>2</sup> To cover this financing gap and to create alternative sources of capital for the European Economy, the EU Commission set as a priority the creation of a Capital Markets Union (CMU). The CMU will complement the banking system and will assist to unlock more investment from the EU and the rest of the world; connecting funding to investment projects within the EU; diversifying risks and making the financial system more stable and resilient; and deepening the financial integration and increase the completion.<sup>3</sup> One of the ways to increase the financing of SMEs in the EU is through Loan Origination Funds or Credit Funds. In the last years, the Assets under Management (AUM) of credit funds rose to almost \$700 billion with almost half of

<sup>1</sup> Jeffery Atik, "EU Implementation of Basel III in the Shadow of Euro Crisis," *Review of Banking and Financial Law* 33 (2014 2013): 283–342; Francesco Cannata, ed., *Basel III and beyond A Guide to Banking Regulation after the Crisis* (London: Risk Books, 2011); Juan Ramirez, *Handbook of Basel III Capital: Enhancing Bank Capital in Practice* (Southern Gate, Chichester, West Sussex, UK: Wiley, 2017).

<sup>2</sup> Caroline Roulet, "Basel III: Effects of Capital and Liquidity Regulations on European Bank Lending," *Journal of Economics and Business* 95 (January 2018): 26–46, <https://doi.org/10.1016/j.jeconbus.2017.10.001>.

<sup>3</sup> European Commission, "Action Plan on Building a Capital Markets Union," Text, European Commission - European Commission, 3, accessed August 21, 2019, [https://ec.europa.eu/info/publications/action-plan-building-capital-markets-union\\_en](https://ec.europa.eu/info/publications/action-plan-building-capital-markets-union_en).

this amount being invested in the EU.<sup>4</sup>

The rapid growth of credit funds is a result of the strict banking capital requirements and of the increased yield appetite of institutional investors (e.g. pension funds, insurance companies, and other investment banks), which are looking for higher yields in a low-interest rate environment. The increasing credit intermediation from non-banks and the fact that although credit funds are conducting the same business with banks, they are not subject to the same rules and requirements have created an uneven level playing field between banks and credit funds and they can pose several risks to financial system akin to those posed by banks through their lending activities.<sup>5</sup>

Credit funds are a new financial innovation emerging for various reasons as we will analyze later in this paper, however, a well-known financial innovation is coming again under the spotlight. Securitisation of debt products is an innovation broadly used to increase liquidity and diversify risks. Yet, Securitisation, especially Collateralised Debt Obligations (CDOs) and Collateralised Mortgage Obligations (CMOs) were at the centre of the GFC of 2007-2009. Subprime mortgages were bundled with other debt creating a pool of assets with high credit ratings. Then, bonds were issued whose coupons were paid by the receivables of these underlying mortgages and debt and they were sold to various institutional investors. When the borrowers of the loans (mortgages) were not able to pay back their loans, then the bondholders could not receive their coupon payments spreading panic to the whole market. Bear Stearns got the first hit followed by AIG and Lehman Brothers. In the end, the mortgage crisis evolved into a banking crisis and then a global financial crisis. Nevertheless, securitisation can be beneficial in the CMU project. It can increase the availability of credit and reduce the cost of funding. Securitisation can function as an important risk-transfer mechanism to improve capital efficiency and diversify risks. To enhance the securitisation strategies in the EU and to strengthen investor confidence in the securitisation products, the EU Commission proposed, developed and presented an EU framework for simple, transparent and standardized (STS) securitisation (the Securitisation Regulation) together with new prudential requirements for banks and insurance companies.<sup>6</sup>

The Securitisation Regulation creates a general framework for securitisation and a specific framework for simple, transparent, and standardized securitisation (STS). The general framework includes due diligence requirements, transparency

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<sup>4</sup> AIMA, "Financing the Economy 2018," accessed July 12, 2019, <https://www.aima.org/educate/aima-research/fte-2018.html>.

<sup>5</sup> "Direct Lending in the EU: New Regulations on Loan Origination Create High-Return Opportunities for Asset Managers," Kramer Levin, accessed May 20, 2019, <https://www.kramerlevin.com/en/perspectives-search/direct-lending-in-the-eu-new-regulations-on-loan-origination-create-high-return-opportunities-for-asset-managers.html>; ESMA, "Opinion: Key Principles for a European Framework on Loan Origination by Funds," April 2016, <https://www.esma.europa.eu/press-news/esma-news/esma-publishes-opinion-eu-framework-loan-origination-investment-funds>.

<sup>6</sup> European Commission, "Action Plan on Building a Capital Markets Union," 21.

requirements, and retention requirements. It also includes rules on securitisation repositories and a sanction regime. The STS framework includes two types of STS: long-term STS and short-term STS. To qualify as an STS, the Regulation sets specific requirements on the simplicity of transactions, the transparency of transactions, and the standardization of transactions. Nevertheless, the additional requirements that the banks and insurance companies need to fulfil to comply with the STS Regulation and the new capital requirements (risk-weighting) introduced with the Regulation amending CRR means that the capital charges and the costs for both banks and insurers to hold securitized positions in their balance sheets will be higher than in the previous frameworks, creating another un-even playing field between banks and alternative lenders.<sup>7</sup>

The EU Regulators consider investment funds mainly as investors in securitisation products. However, this is not the case. Credit funds or institutional investors either directly or through credit funds (or Big-Tech companies in the future) are originating a constantly increasing amount of loans to corporations. This can result in the creation of liquidity risks and systemic risks when these funds collateralize their loans through a Special Purpose Vehicle (SPV) or as we will explain later through Blockchain technology, creating the Collateralised Loan Obligations (CLOs), tranches of which are then sold to other investors. Hence, through this process, the liquidity risk is transferred to the end investors and systemic risk is built-up.<sup>8</sup> The increased demand for corporate loans granted by credit funds and the increased demand for debt products (e.g. *Schuldscheine* in Germany) could lead to the concentration of credit in this sector. If the corporates are not able to repay their loans because of the increase in interest rates, profitability issues or other unexpected market events, the investors will lose their faith and trust in other highly leveraged companies and funding will stop in the case of CLOs. Credit funds will bear losses, the corporations will be forced to deleverage fast, leading to fire sales and more investor runs and a huge negative impact on the real economy.<sup>9</sup> This argument was also emphasized by the Chairman of the Federal Reserve, Jay Powell, who pointed out in one of his speeches that corporate debt (leveraged loans) has expanded at a record level of around 35% of corporate assets. A lot of these loans are bundled together and they create collateralized loan obligations (CLOs) which are divided into tranches and sold to other investors, creating therefore similar risks with those the collateralized debt obligations (CDOs) posed during the GFC of 2007-2009. The extra capital buffers the banks hold may protect them from the externalities of a downturn, but the fact that much of this corporate debt (only \$90 billion of the \$700

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<sup>7</sup> Danny Busch, Emiliós Avgouleas, and Guido Ferrarini, eds., *Capital Markets Union in Europe*, First edition, Oxford EU Financial Regulation Series (Oxford, United Kingdom: Oxford University Press, 2018), 471ff.

<sup>8</sup> Jennifer Johnson, "Collateralized Loan Obligations (CLOs) Primer," n.d., 14; "Fed's Powell: Business Debt No Subprime Crisis, but Still Merits...," *Reuters*, May 21, 2019, <https://www.reuters.com/article/us-usa-fed-powell-idUSKCN1SQ2FJ>; Sam Fleming, "Fed Chair Tempers Fears over Corporate Debt Meltdown," *Financial Times*, May 20, 2019, <https://www.ft.com/content/8872ec0e-7b49-11e9-81d2-f785092ab560>.

<sup>9</sup> ESRB, "Macroprudential Policy beyond Banking: An ESRB Strategy Paper," 2016, 10.

of CLOs is held by banks) is financed by alternative lenders (shadow banking) could create threads to the financial system through contagion.<sup>10</sup>

Another important financial innovation which is showing significant growth and importance is the technology of Blockchain and its application in the area of transactions and securitisation. Blockchain or in other words Distributed Ledger Technology, is "blockchain" or in other words a series of data and information entries in a registry (ledger), involving specific transactions, which are part of a block. Transactions are verified using cryptographic methods and more specifically by solving a demanding computational problem (a puzzle).<sup>11</sup> Once the capacity of one block is exhausted the next block is immediately used, creating a continuous chain of entries i.e. a "blockchain". The main difference between a "blockchain" and the existing transaction information storage structures is that there is not a central authority (usually a bank) that verifies all transactions, but the verification is done decentralized by the so-called nodes- that is, users who have installed the necessary software and participate in this blockchain. When a transaction is made, all users simultaneously and anonymously confirm this information, inform the registry of the changes and store a copy of the registry on their computer. That is why we say that the registry is not only decentralised but also distributed to different users. For example, in a bank transaction, the bank confirms the transaction between two parties, while through "blockchain" the transaction is verified by all users by storing the information in a block, verifying the registry, and saving the registry by all users anonymously using specific key codes. Confidence in transactions regarding the correctness of information is achieved through the agreement of two or more users and the reliability of this "blockchain" increases with the participation of more and more users in it. When a large number of transactions are certified and the block capacity runs out, it is added to the chain with the other blocks. The verification of transactions and the addition of the new block is done through the resolution of complex mathematical puzzles undertaken by the "miners" of the "blockchain" who use powerful computers (the "miners" can be users at the same time). But the "miners" do not add the block to the chain without any benefit. And this is where cryptocurrencies or tokens, produced by each blockchain platform, come into play. Cryptocurrencies are nothing but the "reward" that each "blockchain" gives to the "miner" who will first solve the mathematical puzzle and add the new block to the chain. Depending on the type and size of the transaction, the remuneration of each "miner" varies from a few to a few thousand dollars.<sup>12</sup>

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<sup>10</sup> Fleming, "Fed Chair Tempers Fears over Corporate Debt Meltdown"; "Fed's Powell."

<sup>11</sup> It is worth mentioning that some blockchains do not require puzzle resolution to verify the information, but verification is done with other criteria such as the number of cryptocurrencies held by the user. In addition to creating new cryptocurrencies, many blockchains offer miners as a fee some transaction fees.

<sup>12</sup> DiMatteo, L., Cannarsa, M., & Poncibò, C. (Eds.). (2019). *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (Cambridge Law Handbooks). Cambridge: Cambridge University Press. doi:10.1017/9781108592239, Chapter 9; Philipp Hacker et al., eds.,



In a press release in March 2021, the European Commission supports blockchain technology and argues that if used correctly it can bring significant benefits to the European market. That is why the Commission has committed itself to creating a legislative framework for the blockchain and to providing funding for new companies that will conduct research on it or create its products.

Moving to the potential use of Blockchain in securitisation, Blockchain can be used for the programming of smart contracts i.e. automatized actions and the creation of new currencies and tokens by the use of major Blockchains (such as the Ethereum platform). These smart contracts can lead to asset tokenisation, meaning a process where the new token created will represent ownership and/or other rights of real assets in which the security of the ownership will be guaranteed by the Blockchain and the DLT technology. Tokenisation has significant advantages in comparison with standard securitisation. First, it is using smart-contracts and it eliminates the intermediaries since there is no need for any underwriter, SPV, Credit Rating Agencies, Settlement exchange or custodian. It offers also more flexibility, since there is the option of fractionization (18 decimals), meaning selling fractions of tokens to a larger base of retail investors i.e., larger alternative financing sources. Moreover, even if in our research we will focus on CLOs, any kind of asset can be represented by tokens (credit card loans, real estate loans, capital receivables and expenditures of companies and even real assets such as real estate, planes, trains etc.). Further, that tokens may democratize entrepreneurship by creating new ways to raise funding and engaging with stakeholders. Additionally, tokenisation can also reduce costs, by reducing the fees of the intermediaries in a settlement process.<sup>13</sup> In the classical settlement process, there is a broker, an exchange and a custodian. The custodian will hold the securities for the owner, the broker will transmit the orders to the exchange and the exchange will provide a market to match buy and sell orders between various parties. Today this procedure is highly regulated. Yet, in a tokenised assets world the investors can exchange tokens directly with each other through the use of Decentralize exchanges or Crypto-token Exchanges, which are still highly unregulated. This can have a great impact a. on investor protection since there are no harmonized rules on Blockchain, tokenisation and Crypto-Exchanges, b. on Money Laundering Issues since the tokens (e.g. of Amazon CLOs) can be bought anonymously and with no control by retail investors or users from the whole world, and c. if the market grows and more big players participate in it, it can also lead to market failures in case of shocks, high volatility (and fire sales) or massive frauds.<sup>14</sup>

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Regulating Blockchain: Techno-Social and Legal Challenges, First Edition (Oxford, United Kingdom: Oxford University Press, 2019), Chapter 9.

<sup>13</sup> Ralf Wandmacher and Nicolas Wegmann, "Tokenisation and Securitisation – A Comparison with Reference to Distributed Ledger Technology," in *Facetten Der Digitalisierung: Chancen Und Herausforderungen Für Mensch Und Management*, ed. Yvonne Thorhauer and Christoph A. Kexel (Wiesbaden: Springer Fachmedien Wiesbaden, 2020), 168–74, [https://doi.org/10.1007/978-3-658-29870-8\\_8](https://doi.org/10.1007/978-3-658-29870-8_8).

<sup>14</sup> For more on tokenisation see: Desai, Monica (2018). E-ownership: The Next Wave of Securitisation. <https://hackernoon.com/e-ownership-the-next-wave-of-securitisation-747ea15e47be>;

At the EU level, EU Commission has proposed the development of a harmonized framework for crypto-assets and a new proposal for a Regulation on Markets in Crypto-assets (MiCA) was released in September 2020.<sup>15</sup> In June 2022, a consensus was reached between the EU Commission, the EU Council and the EU Parliament and the MiCA achieved a provisional political agreement. The proposal covers several areas such as the public offering and admission to trade tokens and stablecoins, the provision of services in the crypto-assets area by service providers and the prevention of market abuse on crypto-assets.<sup>16</sup> In the proposal, the EU Commission briefly mention the tokenisation of traditional financial assets, but it does not go any further and it does not include in the analysis the tokenisation of securitisation products, which will create an additional layer of complexity in the already complex process of securitisation.

Based on the above, it is important to research the function of credit funds in securitisations as lenders, the tokenisation of CLOs created by credit funds (and also applicable to other alternative lenders) and the benefits/risks that the CLOs and the tokenisation can have as an impact on the investors and the financial system. Hence, in this paper, after we explore the EU alternative lending scene and in particular the credit funds and their risk profile, we will explore the role of alternative lenders in securitisations and the potential securitisation products. In the next part, we will add a complexity level, by exploring the use of Blockchain technology, the tokenisation of the securitisation products and the potential risks involved. Finally, the paper will close the research by analyzing and assessing the regulatory tools available to deal with emerging risks.

## 2. The Alternative Lending Scene in the EU

### a. Credit Funds

Before the GFC of 2007-2009, the main financing source for companies and consumers in the EU was credit institutions. The GFC and its implications changed completely the scenery and brought to the surface alternative financing players, the most important of which are the credit funds. As mentioned, the reasons for the

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Chen, Yan (2018). Blockchain tokens and the potential democratization of entrepreneurship and innovation. In: Business Horizons, no. 64, pp. 567–575. [Google Scholar](#); Alois, JD (2019). Aspencoin Migrates Over to Securitize with \$18 Million Security Token. In: Crowdfund Insider. <https://www.crowdfundinsider.com/2019/01/143318-aspencoin-migrates-over-to-securitize-with-18-million-security-token/>

<sup>15</sup> EU Commission, “Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Markets in Crypto-assets, and amending Directive (EU) 2019/1937COM/2020/593 final”; For more see: <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-blockchain>

<sup>16</sup> AMF, “Crypto-Asset Markets: Agreement Reached on the European Crypto-Assets Regulation (MiCA),” AMF, accessed October 15, 2022, <https://www.amf-france.org/en/news-publications/news/crypto-asset-markets-agreement-reached-european-crypto-assets-regulation-mica>.

growth of credit funds were mostly the reluctance of credit institutions to generate new loans to Small and Medium Enterprises (SMEs) in the EU due to new regulatory obligations, namely the stricter capital requirements, increased liquidity and lower leverage requirements. Another issue that led to the weakness of credit institutions to lend new capital to SMEs was the EUR 1.2 trillion worth of non-performing loans (NPLs) in 2015. NPLs are loans where the borrowers are not able to repay their debt per their contracts, something that affects negatively the ability of credit institutions to originate new loans into the real economy.<sup>17</sup> Other reasons that led to the emergence and growth of alternative lenders were the Capital Markets Union project and the increased appetite of institutional investors for stable yields in a low-interest-rate environment. The Capital Markets Union was a project initiated by Jean-Claude Juncker, the President of the EU Commission at that time to reform the EU capital markets and make them stronger, more attractive for investors, and more liquid. The target is to create an EU capital market which will offer alternative financing sources for SMEs and attractive yields to investors while ensuring the stability and resiliency of the financial system.<sup>18</sup>

In the last decade, the credit funds market in the EU is booming with huge amounts of capital being raised for the financing of big transactions. From \$3.5 billion of capital in 2012, the EU credit funds managed to raise almost \$19bn in 2015, while in 2021 the assets under management of the EU credit funds amounted to EUR 311bn. Meanwhile, the number of credit funds in the EU grew significantly. In 2014, almost 350 transactions were concluded by 36 credit funds, whereas in 2021 there were around 330 transactions concluded by a total number of 585 credit funds. It can be noticed that although the assets under management and the number of credit funds grew significantly, the total transactions in 2021 were less than in 2014. This can be explained by the fact that the transactions in 2021 were greater in size and that due to the pandemic of Covid-19, economic growth slowed down, impacting also the number of deals that occurred.<sup>19</sup> The lowest number of transactions signalizes also the build-up of dry powder or in other words capital which is still not committed to projects. The increased amount of capital means also higher competition among credit funds, weaker terms and conditions and lower returns. Yet, opportunities for credit funds continue to grow due to difficulties that credit institutions continue to face during their lending activities.<sup>20</sup> In particular, the Banking Lending Survey

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<sup>17</sup> EBA, “NPLs,” European Banking Authority, January 30, 2019, <https://www.eba.europa.eu/risk-analysis-and-data/npls>.

<sup>18</sup> EU Commission, “GREEN PAPER: Building a Capital Markets Union,” February 2015, 3f., COM(2015) 63 final.

<sup>19</sup> Kraemer -Eis, Helmut and Block Jörn, “EIF Private Debt Survey 2021: Private Debt for SMEs - Market Overview,” 10, accessed October 17, 2022, [https://www.eif.org/news\\_centre/publications/eif\\_working\\_paper\\_2022\\_79.pdf](https://www.eif.org/news_centre/publications/eif_working_paper_2022_79.pdf); Preqin, “European Direct Lending: Fundraising and Investor Outlook,” accessed October 17, 2022, <https://docs.preqin.com/newsletters/pd/Preqin-PDSL-May-16-European-Direct-Lending.pdf>.

<sup>20</sup> Preqin, “Direct Lending Funds Ready as Europe’s Banks Tighten Lending,” accessed October 20, 2022, <https://www.preqin.com/insights/research/blogs/direct-lending-funds-ready-as-europes-banks-tighten-lending>.

conducted by the European Central Bank (ECB) has shown that, in the aftermath of the Covid-19 pandemic, credit institutions have tightened their credit standards on loans to companies since there was great uncertainty about the economic recovery and creditworthiness of the borrowers. In particular, the tightest credit standards were against SMEs and long-term loans. The risk tolerance of credit institutions is also lower, something also reflected in the overall terms and conditions of the loan contracts with higher levels of requested collateral and wider margins on loans. The rejection rates on new loans have also increased significantly, especially in Germany, France and Spain, although demand for loans is expected to grow. Further, although the stricter regulatory and supervisory provisions have contributed to stronger banks' capital positions, they still have an impact on the tightening of banks' credit standards and margins. Last but not least, the NPLs continue to affect the ability of credit institutions to grant new loans to SMEs by tightening, even more, their credit standards and the overall terms and conditions.<sup>21</sup>

Before analyzing the structure of credit funds and the risks they pose, it would be important to present the credit funds market in the EU in more detail. As mentioned before and pointed out by a Private Debt Survey conducted by the European Investment Fund (EIF), there are around 585 active private debt funds in the European market and 28% of these invest on a global scale. The countries with the most developed credit funds markets are Germany and France and Luxembourg, followed by emerging credit funds markets like Italy, Spain, Belgium, Netherlands, and Nordics. The underdeveloped markets are mostly Eastern European markets. The industries that they focus on also vary. Credit funds from developed markets focus mostly on high-tech, healthcare and industrial/manufacturing industries, while credit funds from emerging markets concentrate their capital on industrial projects and credit funds in underdeveloped markets focus more on real estate, consumer products, media and industrial projects. Loans in developed and developing markets are used mostly for buyouts and expansion, whereas in underdeveloped markets for expansion, working capital and operational expenditure. The average loan size and maturity also vary. In underdeveloped and emerging markets, the average loan size is between EUR 1m and 20m, while in the developed markets is between EUR 21m and 100m. Moreover, the average loan maturity in underdeveloped markets ranges between 2 and 4 years, while in emerging and developed markets between 5 and 7 years. Further, some of the challenges that Credit funds face are the raising of capital from investors, the competition from traditional lenders a.k.a. the credit institutions, the scattered regulatory environment and cultural attitudes towards credit funds, since the financing of SMEs in the EU was historically bank-based. Nevertheless, many companies in developed and emerging markets prefer credit funds over credit institutions due to: certainty and speed of execution; higher leverage ratios than the

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<sup>21</sup> European Central Bank, "The Euro Area Bank Lending Survey – Fourth Quarter of 2020," no. 2020 (January 19, 2021), [https://www.ecb.europa.eu/stats/ecb\\_surveys/bank\\_lending\\_survey/html/ecb.blssurvey2020q4~e89c77d212.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/ecb.blssurvey2020q4~e89c77d212.en.html).

ones banks are willing to maintain; more flexible covenant structures; stable relationships with the SMEs; longest investment horizons; diversification of financing sources; and rejection of bank loan applications.<sup>22</sup>

The investment strategies of a credit fund may vary. The main focus of this paper is the loan origination of credit funds; however, other strategies can be employed by a credit fund, namely the loan participation/acquisition and the co-origination model. The most popular of those strategies is loan origination, in which the manager of the credit fund creates, provides, or extends a loan to a borrower. This process involves all the steps that are also followed by the credit institutions during their lending business, namely the loan application process, the performing of the credit assessment, the borrower selection, the drafting of the loan agreement and the setting of all terms, and finally the monitoring, servicing, and provisioning of the loan. Hence, in the loan origination process, the AIF becomes the original lender. In the loan participation/acquisition strategy, the Manager acquires for the AIF it manages an existing loan or parts of it from other lenders, while in the loan participation, the credit fund participates in a syndicated loan or other lending deals without being the only lender. Last but not least, in the co-originate strategy, a bank and a credit fund agree to originate a loan to a borrower and the bank is performing the screening of borrowers and all other on-boarding procedures, while the fund is providing the capital.<sup>23</sup> Although credit funds can employ the above strategies, not all EU Member States have detailed credit fund regimes which allow all of the strategies to be employed by credit funds. A few countries have more detailed regimes in this respect, i.e. Italy, Germany, France, Ireland, Luxembourg, and Malta. In Italy, credit funds are included in the national legislation, and they can conduct loan origination or loan participation or a combination of those two. Although the activity of granting loans to the public is reserved for the banks, credit funds can provide loans to borrowers other than consumers. In Germany, credit funds are allowed to originate loans or restructure loans following the applicable local investment management rules. In France, to be able to originate loans a fund must be structured either as a professional specialised fund (*fonds professionnels de cialises*), professional private equity fund (*fonds professionnels de capital investissement*) or qualify as a securitisation vehicle. In Luxembourg, an AIF is allowed to conduct all kinds of lending activities and provide credit or participate in other loans. Further, in Ireland, the Loan Origination Qualifying Investor Alternative Investment Funds (LQIAIF) which is supervised by the Central Bank of Ireland can conduct the business of issuing and participating in loans, participating in lending and conducting other

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<sup>22</sup> Kraemer -Eis, Helmut and Block Jörn, “EIF Private Debt Survey 2021: Private Debt for SMEs - Market Overview.”

<sup>23</sup> EIF (Helmut Kraemer-Eis), “Institutional Non-Bank Lending and the Role of Debt Funds” (EIF Research & Market Analysis, 2014), 15.

operations directly linked with the above business. Last but not least, in Malta, funds can originate loans or acquire other loans.<sup>24</sup>

Moving to the structure of a credit fund, a fund of this type has the same structure as an AIF. This means that a credit fund is a set of contractual agreements between the fund, the fund manager or management company, the depositary and the investors. Each of these actors plays a specific role in the functioning of the fund. The investors provide the capital into the fund, the depositary is holding this capital, and the manager is using this capital to invest in various opportunities following a pre-defined investment strategy. The investors are institutional, professional, or high-net-worth individuals.<sup>25</sup> The depositary is a credit institution which has the contractual obligations to safeguard the assets of the fund, monitor the fund's cash flows and perform specific oversight duties (e.g., risk assessments or procedures reviews).<sup>26</sup> Last but not least, the investment manager is the entity or physical person (in the case of internally managed funds) which has as its main duties the portfolio and risk management of the fund. Since in the EU, the credit funds are AIFs, the Alternative Investment Funds Manager Directive (AIFMD) applies to their managers. Hence, each Debt AIF needs to be managed by a single AIFM and the AIFM can be either externally structured as a legal person especially when the fund itself does not have a legal personality, or internal when the fund has a legal personality. The AIF's legal form can vary following the rules of each jurisdiction. In general, a debt AIF can have a corporate form, a contractual form, or a partnership form and it can be either closed-ended (meaning it accepts subscriptions and redemptions on specific periods) or open-ended (meaning it accepts subscriptions and redemptions on more periodical timeframes).<sup>27</sup>

As a new product, credit funds can offer alternative financing sources to SMEs but at the same time, they can be a source of lending risks for the investors and the financial system. The main lending risks include credit risk, interest rate risk, liquidity risk, market risk, operational risk, reputational risk, legal risk, strategic risk, settlement risk and systemic risk.<sup>28</sup> Credit risk is the risk that the borrower will default.<sup>29</sup> Interest rate risk is the risk that the interest rates will change causing the

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<sup>24</sup> Filippo Annunziata, "Credit Funds Regulation in the EU and the Debate on NPLS and AMCS: The Need for Further Harmonization," *European Company and Financial Law Review* 19, no. 1 (February 1, 2022): 6–9, <https://doi.org/10.1515/ecfr-2022-0002>.

<sup>25</sup> Dirk Zetzsche, ed., *The Alternative Investment Fund Managers Directive*, Third edition, International Banking and Finance Law Series, volume 20 (Alphen aan den Rijn, the Netherlands: Kluwer Law International, 2020), 13f.

<sup>26</sup> Sebastiaan Niels Hooghiemstra, *Depositaries in European Investment Law: Towards Harmonization in Europe* (The Hague: Eleven International Publishing, 2018), 173ff.

<sup>27</sup> Annunziata, "Credit Funds Regulation in the EU and the Debate on NPLS and AMCS," 13ff.

<sup>28</sup> The following part is based on my previous work which was updated for the purpose of this paper. Please refer to: Promitheas Peridis, *Alternative Lending: Risks, Supervision, and Resolution of Debt Funds*, EBI Studies in Banking and Capital Markets Law (Cham: Springer International Publishing, 2022), 130ff., <https://doi.org/10.1007/978-3-031-13471-5>.

<sup>29</sup> BCBS, "Principles for the Management of Credit Risk," September 27, 2000, 1, <https://www.bis.org/publ/bcbs75.htm>.

incapacity of the borrower to repay its debt.<sup>30</sup> The same result might also be caused by liquidity risk, which is the risk that the borrower will face liquidity issues and it will face difficulties in repayment.<sup>31</sup> Market risk is the risk of market volatility which might affect the assets of the fund and the financial situation of the borrower.<sup>32</sup> Operational risk is the risk of losses occurring from failed internal processes, people and systems and other external events.<sup>33</sup> Legal risk is the risk occurred due to the legal system and the legal procedures.<sup>34</sup> Moreover, the reputational risk is the risk that an event will damage the reputation of a fund manager and the trust of investors in it.<sup>35</sup> Strategic risk is the risk occurred due to false business decisions and settlement risk is the risk of failed settlement agreement.<sup>36</sup> Finally, the systemic risk, which gained a lot of importance in the years after the GFC of 2007-2009, is the risk that a failure in one fund or fund manager will trigger a sector-wide financial failure.<sup>37</sup> Some risks might be present in the different structures of a credit fund i.e., open-ended or closed-ended. The risk of excessive leverage and liquidity mismatches risk might appear when an open-ended credit fund has long-term assets (loans) and short-term obligations (periodical redemption windows) while using high levels of leverage.<sup>38</sup> The next chapter will assess the risks involved in the lending of credit funds in more detail.

## **b. Securitisation**

Before analysing the role of securitisation in the alternative lending market in the EU, it will be beneficial to mention the basic elements of the securitisation process and its products. Securitisation is the process during which lenders package loans and other debt products, transfer them to a Securitisation Special Purpose Entity (SSPE) which is created to hold those assets, and then "securitise" these assets, namely creating securities (like bonds) which then they sell to other investors. There

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<sup>30</sup> Greenbaum Stuart, Thakor Anjan, Boot Arnoud, *Contemporary Financial Intermediation*, Third Edition (Elsevier, 2015), 90ff.

<sup>31</sup> "BIS, 'Principles for Sound Liquidity Risk Management and Supervision - Final Document,'" September 25, 2008, 1, <https://www.bis.org/publ/bcbs144.htm>.

<sup>32</sup> ESMA, "AIFMD Final Report," 69, accessed October 21, 2022, [https://www.esma.europa.eu/sites/default/files/library/2015/11/2011\\_379.pdf](https://www.esma.europa.eu/sites/default/files/library/2015/11/2011_379.pdf).

<sup>33</sup> Art 3 (10) EU Commission, UCITS Directive 2010/43/EU, July 2010.

<sup>34</sup> Peridis, *Alternative Lending*, 133.

<sup>35</sup> Robert G. Eccles, Scott C. Newquist, and Roland Schatz, "Reputation and Its Risks," *Harvard Business Review*, February 1, 2007, <https://hbr.org/2007/02/reputation-and-its-risks>; FSB, "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities - Financial Stability Board," 28, accessed September 3, 2017, <http://www.fsb.org/2017/01/policy-recommendations-to-address-structural-vulnerabilities-from-asset-management-activities/>.

<sup>36</sup> Amalendu Ghosh, *Managing Risks in Commercial and Retail Banking* (Singapore: John Wiley & Sons Singapore, 2012), 102, <http://site.ebrary.com/id/10538600>.

<sup>37</sup> IOSCO, "Mitigating Systemic Risk - A Role for Securities Regulators," <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD347.pdf>, 10.

<sup>38</sup> "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities - Financial Stability Board," 10ff.

are two main forms of securitisation the traditional one and the synthetic one. In particular, in its basic traditional form, securitisation involves two steps. In the first step, a lender originates loans or other income-producing assets and pools them into a “reference portfolio”.<sup>39</sup> It then sells these assets to an issuing agent (the SSPE) which is an entity created with the sole purpose to purchase these assets through a “true sale” in which all ownership rights, liabilities, and benefits from the underlying assets will be passed to the SSPE. This is happening to protect the assets of the original lender in case the pooled assets become insolvent. The SSPE then issues securities i.e., bonds, notes or even equity securities which are structured into different tranches or classes with different payment priorities and risk/return characteristics. The securities are then sold to underwriters at a discount to compensate them for the risk-taking and the underwriters will finally sell them to institutional investors. The capital raised by the sale of the securities to the institutional investors provides the SSPE with the necessary liquidity to purchase the underlying portfolio from the original lenders. The original lender pays all the other parties involved (such as credit rating agencies, insurance etc.) and the rest of the capital received can be used again to originate new loans. The received cash flow from the pooled assets is used to pay the interest to the holders of the securities and any other fees to the service providers. Synthetic securitisation is not very different from the traditional one. The biggest change is the method of risk transfer. In synthetic securitisation, there is no transfer of the pooled assets to the SSPE, but the transfer of risk is achieved with the use of derivatives. A credit default swap (CDS) is usually used by a swap counterparty to get exposure to the pooled assets. In particular, the swap counterparty agrees to pay to the original lender any damage suffered in case of a default event of the borrowers. In return, the original lender agrees to compensate the swap counterparty with premiums based on the probability of the occurrence of such default events. As a result, the swap counterparty gains exposure to the risks linked with the reference portfolio without a true sale.<sup>40</sup>

The reference portfolio is divided into several layers, named tranches. Each tranche has a different level of risk, and it is sold separately. Both investment return and damages are allocated among the various tranches following their seniority. The least risky tranche has the priority in receiving the income generated by the portfolio, while the riskiest has the last claim on the receivables. The structure usually followed includes three tranches: the senior tranche (less risky – fewer returns); the mezzanine (medium risk-medium returns); and the junior tranche (highest risk- highest returns). This process is called tranching and it is used to distribute the risk of the collateral among different tranches to match better different investor risk and return profiles. To illustrate it, the structure gets the form of a waterfall in which on the top of the

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<sup>39</sup> Jobst Andreas, “What Is Securitisation?,” accessed October 21, 2022, <https://www.imf.org/external/pubs/ft/fandd/2008/09/pdf/basics.pdf>.

<sup>40</sup> European Parliament. Directorate General for Parliamentary Research Services., *Understanding Securitisation: Background – Benefits – Risks : In-Depth Analysis*. (LU: Publications Office, 2016), 9–10, <https://data.europa.eu/doi/10.2861/788633>.



waterfall there are the senior tranches with the highest credit ratings and the lowest risk/return which receive first the cash flows received by the underlying portfolio. When all securities holders of the senior tranche are paid, then the mezzanine tranche holders are getting paid. If there is enough cash left, then the junior tranches are getting paid. Any initial losses though, are absorbed by the junior tranche up to the level where it is depleted, followed by the mezzanine tranche which will take some more of the losses until it is also depleted, followed by the senior tranche.<sup>41</sup> The following figure shows the traditional structure of securitisation (figure 1):

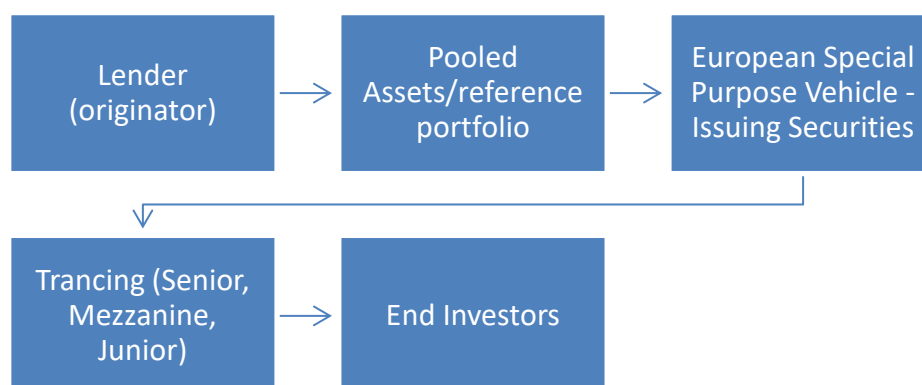


Figure 1 – Traditional Securitisation

The alternative lending scene can also be supported by securitisation structures and products. Securitisation can be a tool to diversify risk and increase the available capital and liquidity for lending to SMEs. In particular, lenders can use securitisation to increase their funding capabilities while complying with the regulatory capital requirements. Eliminating credit risk through risk transferring to investors and increasing the available investor pool are also two benefits of securitisation. Further, a lender who is transferring risk and liabilities from its balance sheet to third parties can also reduce its cost of borrowing, since it will appear financially healthier, and it can achieve higher credit scores. Last but not least, securitisation can create stable financial markets with more financing sources and better risk diversification.<sup>42</sup>

Nevertheless, securitisation is not a panacea. There are many shortcomings and risks involved. This became clear during the GFC of 2007-2009 and the subprime mortgage meltdown. Securitisation played a critical role in the GFC and in spreading risks to the whole financial system. Credit institutions in the US used to grant cheap mortgage loans to borrowers in the US without using tight credit standards or performing thorough due diligence. One of the reasons behind this practice was the securitisation mechanism. The banks were bundling the subprime mortgages with higher-rating loans, and they were securitising these pools of assets

<sup>41</sup> European Parliament. Directorate General for Parliamentary Research Services., 8; Jobst Andreas, “What Is Securitisation?”

<sup>42</sup> European Parliament. Directorate General for Parliamentary Research Services., *Understanding Securitisation*, 10ff.

by creating new liquid products like Collateralised Debt Obligations (CDOs). These securities were then rated by the credit rating agencies as triple-A securities making them more attractive to investors as low-risk products. Then they were selling these liquid products to investors creating an interconnected financial network. The success of those products was massive with more and more banks and lenders entering the market and granting mortgages and other loans with the sole purpose to securitise them, create CDOs and other complex products and then sell them. From the moment that their target was to securitise the debt, the banks had no incentives to conduct proper due diligence and creditworthiness assessment on the borrowers, since they were removing the loans from the balance sheets almost immediately. Many other entities moved one step further and started securitising the securitisation products, meaning they were using as pooled assets CDOs and other complex products, increasing the complexity and opaqueness of the final products sold to investors. This had as a result the creation of a massive housing bubble in the US and having in mind that the buyers of the securitisation products were also institutions from Europe and other countries globally, it is understandable that the risk of US borrowers' default was spread to many institutions in the whole world. When 2008 the bubble burst, institutions which were massively leveraged and invested in CDOs (like Bear Stearns and Lehman Brothers) took a massive hit and started collapsing. This spread panic to the whole financial system and the stock markets in the whole world almost collapsed.<sup>43</sup>

Moving to the European Market, securitisation in Europe can improve the liquidity and the risk-taking capacity of lenders and reduce financial markets fragmentation in various ways. First, the securitisation of non-liquid loans to the corporate sector allows the sharing of risks between the lenders and the investors; therefore, increasing the availability of capital and enhancing the ability of the lenders to originate more loans to SMEs. Second, securitisation can result in lower capital charges and in an increase in the available assets that can become collateral, improving in this way the efficiency of the monetary transmission mechanism. Third, securitisation products can create cross-border financial flows and risk mitigation from EU countries with stressed financial systems to more stable and developed ones, reducing the fragmentation of the financing system in the EU. Last but not least, the securitisation of the loans will make the lending business activity even more attractive to lenders, with new players entering the lending market leading to greater competition, price reductions and more favourable terms for the borrowers.<sup>44</sup>

The global securitisation market amounts to a total of EUR 11 trillion volume. The EU securitisation market is the second largest market in the world with EUR 0.7 trillion in volume, while the US securitisation market is leading the volume with

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<sup>43</sup> National Commission on the Causes of the Financial and Economic Crisis in the United States, "The Financial Crisis Inquiry Report," 83ff., accessed October 22, 2022, [http://fcic-static.law.stanford.edu/cdn\\_media/fcic-reports/fcic\\_final\\_report\\_full.pdf](http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf).

<sup>44</sup> Tim Bending et al., "Unlocking Lending in Europe," [https://www.eib.org/attachments/efs/economic\\_report\\_unlocking\\_lending\\_in\\_europe\\_en.pdf](https://www.eib.org/attachments/efs/economic_report_unlocking_lending_in_europe_en.pdf), 24.

almost EUR 9.8 trillion. The volume in the US grew from EUR 8.7 trillion in 2012 to EUR 11.3 trillion, while in Europe it has shrunk from EUR 1.2 trillion to EUR 0.7 trillion during the same period. This can be explained by the fact that in US the securitisations play a more important role in market-based financing and that many securitisations are guaranteed by US government agencies i.e., Fannie Mae and Freddie Mac.<sup>45</sup> In the euro area, the credit institutions are the dominant players in the securitisation market. In 2021, euro area banks held EUR 687 billion in securitisation notes issued in the euro area (84% of the total securitisations). A large number of securitisations originated by EU banks were not sold, but instead used as collateral in central bank activities. Investment funds held EUR 58 billion (7% of the total securitisations) and the insurance companies held EUR 38 billion (5% of the total securitisations). Yet, from 2014 until 2021 the securitisation holding in the euro area fell from EUR 902 billion to EUR 816 billion. Moving to the credit ratings of the securitisation holdings in the euro area, in 2021 around 40% of the holdings held by banks and other financial entities had a triple-A rating. In the governmental, insurance and investment funds space, only 21% of the securitisation holdings had a triple-A rating, while more than 27% of the holdings had a medium grade. Last but not least, non-investment grade securitisations were representing 6% and 4% of the holdings of pension funds and investment funds respectively. Furthermore, almost 80% of total securitisations in the EU were backed with loans originating in Spain, France, Italy, and the Netherlands, a fact that shows the dominance of securitisation in these countries. Finally, in 2021, the loan-to-value (LTV) ratio of the loans underlying the EU securitisation products was on average around 80%, meaning that the loan represents 80% of the collateral value, while the debt-to-income (DTI) ratio was on average 5.3 across all loans, a figure that shows how higher was the loan granted in comparison with the annual income of the borrower.<sup>46</sup>

<sup>47</sup>A debate that has emerged in the last few years refers to the difference between a credit fund and an SSPE. The first difference stems from the definition of securitisation in different legal texts, namely the Securitisation Regulation (STSR) and the ECB statistical regulation. Per Art. 2 (1) STSR, a securitisation is “a transaction or scheme, whereby the credit risk associated with an exposure or a pool of exposures is tranching, having all of the following characteristics:

- a. payments in the transaction or scheme are dependent upon the performance of the exposure or the pool of exposures;
- b. the subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme;

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<sup>45</sup> European Systemic Risk Board., *Monitoring Systemic Risks in the EU Securitisation Market: July 2022*. (LU: Publications Office, 2022), 19–20, <https://data.europa.eu/doi/10.2849/93368>.

<sup>46</sup> European Systemic Risk Board., *ibid.*, 21ff.

<sup>47</sup> The following part is based on my previous work which was updated for the purpose of this paper. For more see: Peridis, *Alternative Lending*, 124ff.

c. the transaction or scheme does not create exposures which possess all of the characteristics listed in Article 147(8) of Regulation (EU) No 575/2013”.

The core of this definition is that only a transaction whose payment is linked with the returns of a pool of exposures and which uses the "tranching" mechanism for spreading credit risk can be a securitisation. In the AIFMD though, the securitisation vehicles are exempted from its scope per the definition of Art. 1 (2) ECB Statistical Regulation. The definition of Art. 1 (2) ECB Statistical Regulation is similar to the one of the STSR with the exemption that in the former there is no requirement of "tranching". Another important difference between an SSPE and an AIF is the fact the AIF issues units or shares, while the SSPE issues debt securities (like notes) which cannot be considered shares or units.<sup>48</sup> This approach is also followed by the Central Bank of Ireland which pointed out that SPVs that issue debt securities and which do not provide ownership rights, are not subject to the marketing rules of units or shares of an AIF and, hence cannot be considered as AIFs.<sup>49</sup> Luxembourg adopts a similar approach as Ireland and the CSSF argues that vehicles which issue only debt securities, and which are not managed per a pre-defined investment policy per AIFM Law cannot be classified as AIFs.<sup>50</sup> In Germany, BaFin adds a requirement, namely the collectivity element. An AIF is a scheme in which the capital of investors is collectively invested, and the investors are participating in the risks and the profits of the scheme. This can occur only when the investor does not have an unconditional claim to the repayment of its contribution, something that does not apply to debt securities issued by SSPEs.<sup>51</sup> A similar approach is followed by the Dutch supervisor (AFM).<sup>52</sup> Yet, as Zetsche and Hooghiemstra argue, the differentiation between an AIF and an SSPE in practice remains difficult due to the fragmented regulatory frameworks and the inconsistencies between the definitions. They tried to solve the conundrum by proposing a three-element test based on the qualification of the sponsor; the "tranching" element; and the discretionary management element.<sup>53</sup>

A securitisation product that was very popular before the GFC was the CDO. There are many types of CDOs such as CDOs composed of collateralised bond obligations, or CDOs composed of mortgage obligations or other CDOs. Yet, in recent times in the EU, a type of a CDO which is gaining particular importance is the

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<sup>48</sup> Annunziata, "Credit Funds Regulation in the EU and the Debate on NPLS and AMCS," 16ff.; Zetsche, *The Alternative Investment Fund Managers Directive*, 377ff.

<sup>49</sup> Bank of Ireland, "AIF Q&A | Central Bank of Ireland | Central Bank of Ireland - 41 Edition.," sec. ID 1065, accessed June 9, 2022, <https://www.centralbank.ie/regulation/industry-market-sectors/funds/aifs/guidance/aif-q-a>.

<sup>50</sup> CSSF, "Frequently Asked Questions Securitisation," 14–15, accessed June 9, 2022, [https://www.cssf.lu/wp-content/uploads/files/Titrisation/FAQ\\_titrisation\\_231013\\_eng.pdf](https://www.cssf.lu/wp-content/uploads/files/Titrisation/FAQ_titrisation_231013_eng.pdf).

<sup>51</sup> BaFin, "Auslegungsschreiben zum Anwendungsbereich des KAGB und zum Begriff des Investmentvermögens," BaFin, 2, accessed June 9, 2022, [https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Auslegungsentscheidung/WA/ae\\_130614\\_Anwendungsber\\_KAGB\\_begriff\\_invvermoegen.html](https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Auslegungsentscheidung/WA/ae_130614_Anwendungsber_KAGB_begriff_invvermoegen.html).

<sup>52</sup> Annunziata, "Credit Funds Regulation in the EU and the Debate on NPLS and AMCS," 22.

<sup>53</sup> For more about their argument see: Zetsche, *The Alternative Investment Fund Managers Directive*, 380ff.

Collateralised Loan Obligation (CLO) which is composed of collateralised loans and can be a source of systemic and other risks as we are going to see in the next part. CLOs are important for our research and paper since the credit funds can originate loans and securitise them creating CLOs which then can be further tokenised. Hence the focus of this paper is CLOs, but it will be interesting to see also a few other debt products like *Schuldscheine* and Corporate Bonds which can be part of the CDO reference portfolio and perhaps also tokenised.

### **c. Other Lending product**

#### **i. CLOs**

As discussed, a CLO is a type of CDO which is backed up by loans. Nowadays, the most common type of a CDO is the CLO and the underlying assets are leveraged loans, namely loans to borrowers who are highly leveraged, and the loans are usually rated below investment grade. In Europe, the CLO market grew significantly between 2001 and 2006 and it amount to EUR 35 billion in 2006. The GFC slowed things down for a few years and when the issuance of CLOs resumed in 2013, the market size was about EUR 7 billion. In 2021 though, the new issuance of CLOs reached a record high of EUR 39 billion, while the total outstanding CLOs in Europe amounted to almost EUR 200 billion. Further, the leveraged loans used as a reference portfolio to issue the CLOs amount to almost 70% of all the European leveraged loan markets. The appetite for CLOs is increased because they offer higher returns compared with other assets. Yet, the increased risk-taking from investors may lead to lower credit standards and weak covenants protection of leveraged loans, incentivizing borrowers to take excessive amounts of debt and exposing the investors to high levels of credit risk. This can already be observed since in 2021, almost all leveraged loans in the portfolios of the CLOs were covenant-lite (loans with weak covenants protection).<sup>54</sup>

CLOs can be a source of systemic risk, meaning that the interconnections that they are creating can make the leveraged loan and collateralized loan obligation markets more vulnerable to financial shocks. Further, the growing role of alternative lenders as creditors increases the complexity and opacity of the CLO markets and it can make the investors of credit funds i.e., insurers, pension funds, and other institutional investors exposed to high levels of credit risks and vulnerable to liquidity and macroeconomic shocks. IMF has already raised concerns in its 2019 Financial Stability Report on the risks linked to the increasing level of corporate leverage and

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<sup>54</sup> European Systemic Risk Board., *Monitoring Systemic Risks in the EU Securitisation Market*, 36–38.

alternative lending loans, especially that of systemic risk.<sup>55</sup> Yet, CLOs are a big opportunity for alternative lenders, since the origination and repackaging of high-risk assets can generate higher fees and also they present a way for entities rated below investment grade to get access to credit. CLOs are different from CDOs in the sense that the underlying assets are homogeneous (loans) and that they might present lower levels of default correlation since the loans are provided to entities from different industries (while CDOs in the pre-2008 era were based on subprime mortgages). Moreover, the role of the sponsor has changed (as we will in later chapters) since CLOs are created and managed by private equity firms and credit funds which set up the SSPE and which in a way have taken the role that investment banks had as sponsors of CDOs in the pre-2008 era.

The structure of CLOs can take many forms. In the most common one, the investor proceeds are used to acquire a portfolio of loans whose principal and interest are used to pay the noteholders with any remaining amounts paid out to the equity investors this is called arbitrage CLO transaction and the excess spread between the portfolio of the loans (assets) and the classes of CLO liabilities (tranches), with the equity investors receiving any remaining cash flows after the note holders have been paid in full. Usually, the CLO is structured as a special purpose vehicle (SPV) and an asset manager is appointed. The CLO is comprised of CLO tranches plus an equity tranche which serves as the first loss buffer. The tranches can range from senior to subordinated, meaning that the more subordinated tranches require credit enhancement, while the equity tranche is usually unrated. The principal and the interest on the CLO tranches and all the returns to equity holders are paid following a waterfall structure. In a waterfall structure, the cash flow payments begin with the most senior CLO tranche which receives the highest claim on the cash flows, followed by payments to the lower-rated tranches. Usually upon closing the CLO transaction, there is a ramp-up period, during which the CLO manager can purchase additional collateral. The reinvestment period can follow which can last between two to five years and during which the trading of the loans may occur. Finally, the CLO is also structured with a "non-call" period which lasts 2 years after the closing, after which the majority equity investor can redeem the CLO in full and all debt holders will be paid in full.<sup>56</sup>

A CLO transaction created and originated by a Private Equity Firm and Credit fund can look like the below (figure 2)<sup>57</sup>:

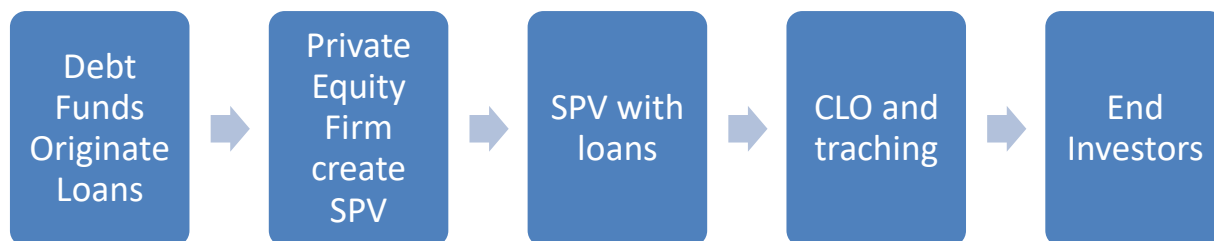
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<sup>55</sup> For more see: IMF, "Global Financial Stability Report, October 2019: Lower for Longer," IMF, accessed October 31, 2022, <https://www.imf.org/en/Publications/GFSR/Issues/2019/10/01/global-financial-stability-report-october-2019>.

<sup>56</sup> Johnson, "Collateralized Loan Obligations (CLOs) Primer," 2–5.

<sup>57</sup> John D. Martin and Akin Sayrak, "An Introduction to Collateralized Loan Obligations," *SSRN Electronic Journal*, 2022, 1ff., <https://doi.org/10.2139/ssrn.4207996>; Peter Brennan, "CLOs Could Pose Systemic Risk If Economy Goes Bad, FSB Says," accessed October 31, 2022, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/clos-could-pose-systemic-risk-if-economy-goes-bad-fsb-says-56213653>.

Figure 2: CLO structure



## ii. Schuldscheine

The Corporate Schuldscheine (CSD) are relatively new lending products which are the equivalent of a private placement, and which have many common characteristics with the loans. They are hybrid financial products combining elements of a syndicated loan, a privately placed bond and a loan participation note. In contrast with a syndicated loan which is a collective loan, the CSD is a collection of bilateral loan agreements, and it is simpler than a bond issuance concerning structure and documentation. The CSD have a maturity of between 3 and 10 years and it ranges between EUR 50 million and EUR 500 million. The CSD can offer different maturities and different returns to cover different investors. The CSD is usually an unsecured loan agreement accompanied by a certificate of indebtedness evidencing the loan agreement, governed by German Law. Although they look like a security, they are not considered as securities by EU law or German law; therefore the issuers do not have the obligation to issue a prospectus or list them on a stock exchange. In a typical structure, an arranging entity agrees to the loan agreement with a borrower and then sells CSD on tranches of the agreed loan to other investors. Hence, it also has similarities with the securitisation structures we discussed earlier. The transfer of the CSD is simple and it can be conducted either by way of assumption of the contract or by assignment of the underlying loan agreement.<sup>58</sup>

The CSD have become very popular with issuances reaching the amount of EUR 25.6 billion in 2016 in Germany and they are increasingly popular across Europe and globally. They have become very popular because they are transactions that can be facilitated very fast, with simple documentation, with no requirement for

<sup>58</sup> Karsten Wöckener et al., "Schuldscheine – a Global Alternative Product of the Future? | White & Case LLP," accessed October 9, 2022, <https://www.whitecase.com/insight-alert/schuldscheine-global-alternative-product-future>.

credit rating assessments and no obligation for a prospectus or listing on an exchange. Further, there are no reporting obligations to the public or regulators. The above reduces a lot the cost and the fees that the issuers and investors have to pay, and it assists also borrowers looking for smaller amounts of loans to avoid high transaction costs. Another advantage is that both the borrowers and the investors can use CSDs to diversify their investor base and loan portfolio respectively. CSDs can connect borrowers with various institutional investors who cannot or who don't want to participate in a syndicated loan. Moreover, a CSD offers through tranching varying maturities and interest rates improving the creditworthiness of the borrower. Additionally, the CSDs are very flexible products which can be tailored to individual investors' needs and financing can be achieved with discretion. Last but not least, the minimum amount of an individual loan agreement can be as low as EUR15 million, while a corporate bond is usually issued in an amount as low as EUR100 million. All the above advantages have made CSD popular also in other European countries including France, Benelux and Scandinavia and South European Countries are following. Nevertheless, the CSD can also be a source of risks. Information asymmetries between the issuers, borrowers and final investors can increase the credit risk and the lack of sophisticated, public credit analyses of the creditworthiness of the borrowers can lead to the wrong classification of the CSD as investment grade products. Additionally, the opaqueness of the market can also deteriorate the ability of the investors to do their due diligence and make the correct choices. Hence, potential defaults of borrowers can also harm the financial viability of the investors. Keeping in mind that Schuldscheine can also be created and dealt with through blockchain technology (the first "end-to-end" blockchain-settled CSD was in 2018), will increase, as we will see later, the opaqueness and the complexity of the market.<sup>59</sup>

### iii. Corporate Bonds

A corporate bond is a debt obligation in which an investor who purchases a corporate bond is lending capital to the corporation issuing the bond. In return, the corporation makes the legal commitment to repay the whole amount of the loan plus interest when the bond matures. When an investor buys a corporate bond, it does not own shares or equity of the company (although there are convertible bonds -CoCos – which can be turned into equity when a trigger event occurs), but the company must repay the debt regardless of its financial situation. Further, the bondholders have priority in an insolvency procedure over shareholders in claims on the corporation's

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<sup>59</sup> European Commission. Directorate General for Financial Stability, Financial Services and Capital Markets Union., The Boston Consulting Group., and Linklaters., *Identifying Market and Regulatory Obstacles to the Development of Private Placement of Debt in the EU*. (LU: Publications Office, 2017), 19ff., <https://data.europa.eu/doi/10.2874/097215>; Connor Lovell, "Investor's Guide: What Is Schuldschein?," Ishka, accessed October 27, 2022, <http://www.ishkaglobal.com/News/Article/5607/Investors-guide-What-is-Schuldschein>; Karsten Wöckener et al., "Schuldscheine – a Global Alternative Product of the Future?"



assets. Bonds can be of short-term (less than 3 years), medium-term (4 to 10 years), or long-term (more than 10 years) and they can also be classified following their credit quality and their credit ratings assigned by credit rating agencies as investment grade or non-investment grade. Non-investment grade bonds, or in other words high-yield bonds, offer higher interest rates since the risk that they might default is greater than that of investment grade. A bond can have a fixed interest rate or a floating interest rate and the payment of the interest rate is called coupon payment. In case of a corporation's default, the terms of the bond dictate the place of the claim of the bondholder in the bankruptcy process. Bonds that are secured with collateral have priority on senior unsecured bonds which in turn have priority upon junior unsecured bonds. The risks that a bondholder can face are like those of a lender. The core is credit risk, or in other words, the risk that the corporation will default. Further, since the bond is linked with an interest rate, there is also the interest rate risk, namely that fluctuations in interest rates will also affect the price and the value of the bond. Moreover, liquidity risk is also pertinent, since the ability of the bondholder to sell the bond to raise its liquidity might be affected by the tradability of the bond, its coupon and the creditworthiness of the company. Last but not least, inflation and market risk, risks which are influenced greatly by the market volatility and prices, can impact the price and value of a bond and finally the possibility of the bondholder to sell the bond at its par value.<sup>60</sup>

Corporate Bonds can be subject to securitisation and be part of CDOs, offering alternative financing to borrowers, but also posing risks to investors and the financial system. Credit funds can play the role of the bondholder and lend through the purchase of corporate bonds to corporations. As investors they can face the risks that we described above, but they can also be involved in the securitisation of the corporate bonds. In the next parts, we will explore the role that credit funds can play in the securitisation of all debt products, with a focus on CLOs, and we will explore the additional complexity that the Blockchain might add to this structure.

### **3. Blockchain Technology and Tokenisation**

#### **a. Blockchain and Distributed ledger technology**

Distributed ledger technology (DLT) such as blockchain technology is a technological innovation that can reshape the financial markets. A blockchain is a chain of blocks in which pieces of information are bundled and the different blocks are connected through a cryptographic procedure. The first application of blockchain was Bitcoin in 2009 and since then numerous other blockchains and cryptocurrencies

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<sup>60</sup> U.S. SEC, "What Are Corporate Bonds?," accessed October 28, 2022, [https://www.sec.gov/files/ib\\_corporatebonds.pdf](https://www.sec.gov/files/ib_corporatebonds.pdf); Chen James, "Corporate Bond: Definition and How They're Bought and Sold," Investopedia, accessed October 28, 2022, <https://www.investopedia.com/terms/c/corporatebond.asp>.

were created.<sup>61</sup> Blockchain technology offers a trustless way to facilitate peer-to-peer transactions between different parties without the involvement of an intermediary. This is a result of a distributed database that maintains a list or chain of records or blocks with information secured from tampering and revisions. The confirmation of the correct information is facilitated through a distributed confirmation process. The process involves a network of computers (nodes) which confirm the information transparently by solving mathematical problems that require significant computational power to solve. This hardens potential attackers to change the information on the chain since to change the blocks it is needed 51% of the total computational power of the network, something that is extremely energy consuming and costly to achieve. To put it in other words, a blockchain is a database shared by a network of computers in which all information is stored in smaller datasets called "blocks". Every block contains transactional information, a reference to the previous block and the solution to a complicated mathematical problem which is used to validate the information linked to this block. When the information of the block is confirmed, a copy of the whole blockchain is saved in all nodes in the network.<sup>62</sup> A blockchain is designed based on two well-known cryptography ideas: a. the public key encryption; and b. the hash keys. In the public key encryption concept, there are one private key and one public key. Everyone can see the public key and it can be shared freely with anyone. The public key can be used to encrypt a message or information, but only the person who is also holding the private key can decrypt the message and get the information. Further, a hash key is a function that takes a sequence of letters and numbers of arbitrary length and reduces it to a predefined finite length.<sup>63</sup> Last but not least, the majority decision that needs to be taken from the network on the validity and accuracy of the information inputted in the block, is facilitated through a voting mechanism, the most common of which is the "Proof of Work". The persons who are voting for the blocks solve the cryptographic problem and they get one vote and can add a new block, while mining (that's why they are also called miners) new crypto coins as a reward for the work they do.<sup>64</sup> Today many other alternative voting mechanisms exist, such as the "Proof of Stake", in which the validators stake some capital (in the form of crypto coins) to attest that the information in the block is valid. Then they also have to propose a block, which needs to be attested by other validators. Validators are benefited by both proposing a

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<sup>61</sup> Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," n.d., <https://bitcoin.org/bitcoin.pdf>.

<sup>62</sup> Aaron Wright and Primavera De Filippi, "Decentralized Blockchain Technology and the Rise of Lex Cryptographia," *SSRN Electronic Journal*, 2015, 6–8, <https://doi.org/10.2139/ssrn.2580664>.

<sup>63</sup> Jan Hendrik Witte, "The Blockchain: A Gentle Introduction," *SSRN Electronic Journal*, 2016, 1–2, <https://doi.org/10.2139/ssrn.2887567>.

<sup>64</sup> Philipp Hacker and Chris Thomale, "Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law," *SSRN Electronic Journal*, 2017, 8, <https://doi.org/10.2139/ssrn.3075820>.

block and attesting to the validity of other blocks proposed by other validators. This system demands less computational power and energy.<sup>65</sup>

The first and most well-known application of Blockchain technology is cryptocurrencies. Other applications are getting more and more attention such as smart contracts, decentralised autonomous organisations, the decentralized applications of decentralised finance (DeFi), the non-fungible tokens (NFTs) and the distributed and secure data stores. We will briefly analyze the above applications since in this paper we are focusing on the application of blockchain in securitisation and the interplay with tokenisation. In a nutshell, the first application of blockchain was the establishment of a digital currency, with Bitcoin being the first one in 2009. The digital currency does not depend on any central bank, it is completely decentralized, and it is based on crypto proof instead of trust. The creation of cryptocurrencies and the transactions that can occur has also led to another innovation, the development of smart contracts. Through a smart contract, the parties can use a distributed database to facilitate an agreement or a transaction without any intermediary. In a smart contract, the performance and enforcement of the contractual terms occur automatically, through formalized source code, in a self-executing way without human involvement. For example, a smart contract can be created between two parties for the exchange of goods or between employers and employees for the latter to be paid automatically daily after they have paid all necessary taxes and other contributions to the authorities in real time and without the involvement of any other intermediary.<sup>66</sup> Decentralised autonomous organisations (DAOs) are another interesting innovation. A DAO is a sum of smart contracts which govern the functioning of an organisation or corporation without the need for a centralized executive authority. The decision-making process of a DAO can be a code and the shareholders can participate in the decision-making through decentralized voting. After their launch, a DAO is completely autonomous and self-sufficient, meaning they don't longer need their creators (who also don't have any control over them) or additional capital from them since they can charge directly their users for the services they provide. Hence, organisational or other inefficiency issues that traditional organisations face are eliminated.<sup>67</sup> DeFi is a marketplace of decentralized financial applications which serve as a traditional financial marketplace without the involvement of intermediaries. Some applications serve the trading of crypto-assets, applications that facilitate lending and borrowing, settlements of transactions, depositary services, asset management and tokenisation (which we will see in detail in the next part).<sup>68</sup> Further, the NFTs are virtual assets which have gained significant importance in the last years. NFTs are non-fungible assets which are saved in Blockchain, meaning digital assets which are not interchangeable with other digital

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<sup>65</sup> Campbell R. Harvey, Ashwin Ramachandran, and Joey Santoro, *DeFi and the Future of Finance* (Hoboken, New Jersey: Wiley, 2021), 19–20.

<sup>66</sup> Hacker and Thomale, “Crypto-Securities Regulation,” 8–9.

<sup>67</sup> Wright and De Filippi, “Decentralized Blockchain Technology and the Rise of Lex Cryptographia,” 15ff.

<sup>68</sup> Harvey, Ramachandran, and Santoro, *DeFi and the Future of Finance*, 2ff.

assets. A NFT can be envisioned for example as a unique digital piece of art, which is uploaded as a file onto an NFT auction market and then it can be purchased or sold using cryptocurrencies. The sale of NFTs exploded in 2021, to \$340 million, especially in the market of digital artwork. Yet, the owner of an NFT does not own the original digital folder and it does not become automatic an owner of original objects. Hence, an owner does not have a way to ensure that the file is not reproduced by anybody else and hence questions on the value and scarcity of NFTs remain.<sup>69</sup> Finally, the blockchains can be used for the creation of distributed and secure data stores. Information and data can be shared in a decentralised way, without the involvement of any third party or any other online platform (e.g., Dropbox). The data can be published in an encrypted way and distributed across thousands of computers and only those that are having the necessary private key will be able to have access to it. In these systems, the users of the blockchain are getting paid with cryptocurrencies to allow other users to store data on their computers, while at the same time, they can use the cryptocurrencies earned to store their data on other computers. Hence, users are encouraged to rent their hard drives to gain access to the collective hard drive of the network.<sup>70</sup> In the next part of the paper, we will analyse in detail the tokenisation process and the similarities that it has with the securitisation process.

## **b. Tokenisation**

The Bitcoin protocol was limited in its use, and it can be mostly used for the transfer of payments or more recently for value storage. In 2015 however, the Ethereum protocol proposed the use of programmable smart contracts to create new currencies and tokens by the use of the Ethereum Virtual Machine (VEM). The VEM can develop tokens for various use cases and assets. The process of creating new tokens which will represent ownership and rights of real assets and where their transfer will be guaranteed by the DLT technology is called asset tokenisation. Asset tokenisation also includes the issuance of traditional asset classes in tokenized form while the economic value and rights derived from these assets are embedded into digital tokens. Hence, the tokens created exist on the blockchain and they store the value of the assets they represent. The real assets that are represented through the tokens continue to exist off-chain and in the case of physical real assets, those should typically need to be placed in custody to ensure that the tokens are constantly supported by those assets. Hence, there is a connection between on-chain and off-chain assets. Yet, there is also another category of Tokenisation which includes tokens native to the blockchain, meaning tokens which are built directly on-chain, exist exclusively on the distributed ledger and derive their value from the function

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<sup>69</sup> Usman W. Chohan, "Non-Fungible Tokens: Blockchains, Scarcity, and Value," *SSRN Electronic Journal*, 2021, 2ff., <https://doi.org/10.2139/ssrn.3822743>.

<sup>70</sup> Wright and De Filippi, "Decentralized Blockchain Technology and the Rise of Lex Cryptographia," 12–15.

and utility they bring to their holders. Tokens such as Bitcoin and Ethereum which are built on chain and derive their value from their utility are an example of a native token. Another example is the tokens issued in initial coin offerings (ICOs) which are tokens launched by start-up companies to be sold to investors so that the start-up can raise capital. These tokens are created on-chain and they are not backed by any off-chain asset. Another example is the tokenisation of the equity of a non-listed company, where the shares of the company become digitalized and tokenized and sold to investors on the blockchain.<sup>71</sup> The tokenisation can be applied to many assets, liquid and illiquid. The tokenisation of securities (equity and debt) is considered to be the area with the most growth potential. Security token offerings (STOs) include the issuance of on-chain tokens which comply with the securities regulatory framework at the jurisdiction of issuance and at the jurisdictions where the tokens are marketed. The regulations and other rules applicable to the tokens are coded on the blockchain. There is also the option to tokenize existing securities and bring these securities as a digital form in a secondary on-chain market (tokenized securities). This decentralized offering of tokenized securities together with the ability that the smart contracts offer to transact and settle without any intermediary is one of the greatest potentials of tokenisation and it can also be applied to investment funds like private equity funds or credit funds. Bonds for example can be directly issued on-chain since they are on a "bearer" form i.e., that they carry no ownership information, and their possession signalizes their ownership. Direct issuance of shares is more troublesome, and it will require changes in corporate law legislation. For the moment, equity tokenisation represents in a digital form the rights that a share holds. An example of a tokenized security issued directly on-chain is the bond that Nivaura issued in the Ethereum chain in 2017. The bond was issued, cleared, settled, and registered on a public blockchain using the UK FCA regulatory provisions. Another example is the issuance in 2018, of a "bond-i", namely short-term bonds worth AUD 110 million by the World Bank using a private permissioned DLT as Proof of Concept.<sup>72</sup>

Tokenisation can disturb the financial markets and offer efficiency and cost-cutting through the transfer of value and rights without the need for a trusted centralized intermediary. The use of smart contracts can cut costs linked with the issuance procedure and the administration services and also reduce the transaction fees and the speed of execution. Smart contracts can further be used for the fulfilment of corporate actions (e.g., coupon or dividend payments), escrow services, and the management of collateral. The custody of assets can also be facilitated in a more transparent and cost-efficient way. Further, the cost-efficiency is achieved through the automation that is included in the whole process and the distributed nature of the network ensures the resiliency and safety of the whole infrastructure. Moreover, the

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<sup>71</sup> OECD, "The Tokenisation of Assets and Potential Implications for Financial Markets - OECD," 10–13, accessed October 29, 2022, <https://www.oecd.org/finance/The-Tokenisation-of-Assets-and-Potential-Implications-for-Financial-Markets.htm>.

<sup>72</sup> World Bank, "World Bank Prices First Global Blockchain Bond, Raising A\$110 Million," Text/HTML, World Bank, accessed October 30, 2022, <https://www.worldbank.org/en/news/press-release/2018/08/23/world-bank-prices-first-global-blockchain-bond-raising-a110-million>.

transparency that asset tokenisation can bring can benefit both the investors and the regulators.

In particular, the DLT offers transparency on the transaction data and information on the issuer and the characteristics of the asset. This will bring more clarity to the markets since information is easily available and its accuracy is ensured by the ledger technology also the beneficial ownership of all assets can be recorded and be assessed at any point in time. Transfer agents might have to adapt to the new reality since the decentralized way of information transmission will diminish their use. The increased transparency will also assist regulators to monitor the activities and the transactions since the smart contracts will enable the transmission of information to them in real-time. Furthermore, investors will also be benefited from the direct access that they can enjoy to primary and secondary markets and the fractional ownership of assets. Through tokenisation, the assets can be divided into smaller fractions, like for example in the case of securitisation. Retail investors might then have the opportunity to gain access to assets and risks which otherwise would not be able to, such as participation in a credit fund or a private equity fund. This will assist the investors to diversify their portfolios better and it will create new financing sources for the markets since new smaller players will enter. Limitations on access to these new riskier asset classes should of course be applied since not all investors know to assess effectively the new risks, but the compliance of the issuance of those tokens with existing regulations might mitigate some of these risks (as we will see in later parts).

Nevertheless, the tokenisation of securities might increase the access to capital for SMEs since all kind of investors can directly or indirectly increase their funding something that can also result in a more efficient capital allocation. Investment funds could also be a category of assets that can be tokenised increasing their liquidity and turning their illiquid assets (such as real estate or loans in the case of credit funds) into liquid tokens. The secondary markets which will allow the trading of tokens representing assets will also increase the liquidity for those assets if of course there is enough trading volume. Another benefit of tokenisation is that it might foster the evolution and development of new assets. Since it will be easier, faster, and cheaper to raise funds through tokenisation, it will also assist developers to create new innovative products and offering alternative asset classes to investors. Additionally, an important advantage of tokenisation is the faster and more efficient clearing and settlement of the transactions since the transfer of ownership on-chain is extremely fast and accurate. The increased efficiency and the elimination of a central intermediary may reduce the credit, settlement, counterparty, and operational risks. Last but not least, the tokenisation of assets can also benefit financial stability by reducing the overreliance of the market participants on the financial service providers and also by reducing the need for many intermediaries to channel short-term financing into providing credit; therefore, reducing solvency, credit and liquidity risks.<sup>73</sup>

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<sup>73</sup> FSB, “Decentralised Financial Technologies: Report on Financial Stability, Regulatory and

As an innovation, the tokenisation of assets can have many benefits, but it can also be a source of many risks for the investors, the financial market participants and the financial stability. The first and most important risk is the lack of a coherent and harmonised regulation which will regulate the different activities involved in the tokenisation of assets. Tokenised assets under the supervision of financial markets regulators should comply with the regulatory requirements that safeguard financial stability, consumer protection and market integrity, while giving space to the market to evolve and develop. The regulatory approaches followed in different jurisdictions depend on the stage of development of the market for tokenised assets and its development phase. The main regulatory approaches focus on applying existing financial regulations to tokenised assets or introducing new, tailor-made regulatory frameworks to blockchain applications. At their core though, the regulatory approaches apply a one-size-fits-all approach towards the activities and risks involved in the tokenisation without taking under consideration the different technologies used in the process.<sup>74</sup> As FSB has pointed out, the risks that the crypto markets and hence the tokenisation process face include: a. market liquidity risks; b. volatility risks; c. leverage risks; and d. technological and operational risks.<sup>75</sup> The first risk is the risk of illiquid and fragile crypto assets which will limit the ability of crypto owners to sell their assets or purchase new ones. For the moment the crypto-market depth is limited, and the crypto markets cannot sustain large trading volumes. Further, for a market to work properly it is needed an organized network of exchanges, brokers and dealers, which will connect the market participants. Many crypto-trading platforms globally are unregulated and are experiencing service disruptions or hacking resulting in a lack of confidence and trust from the market participants, and therefore liquidity limitations. The lack of liquidity and market depth leads to the second risk, the volatility risk. Volatility can be pertinent in the case of assets that are not backed by contractual claims or other underlying assets since their value is a product of speculation. A high level of volatility will drive away institutional investors and other sophisticated investors who can offer high amounts of capital and liquidity and make the market more stable. The combination of volatility with high levels of leverage can increase the risks and transmit them to the whole market since investors have less capital than their position indicates. Last but not least, the DLTs which are functioning with limited or no formal governance structure may face technological and operational risks such as hacking, limited bandwidth, mining limitations, or the creation of "hard forks".<sup>76</sup>

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Governance Implications," <https://www.fsb.org/wp-content/uploads/P060619.pdf> (accessed October 2022) n.d., 6.

<sup>74</sup> OECD, "Understanding the Tokenisation of Assets in Financial Markets | En | OECD," 7–8, accessed October 28, 2022, <https://www.oecd.org/digital/understanding-the-tokenisation-of-assets-in-financial-markets-c033401a-en.htm>.

<sup>75</sup> FSB, "Crypto-Asset Markets: Potential Channels for Future Financial Stability Implications," October 10, 2018, 5ff., <https://www.fsb.org/2018/10/crypto-asset-markets-potential-channels-for-future-financial-stability-implications/>.

<sup>76</sup> FSB, *ibid.*, 6–7.

Moving to the channels that can transmit risks and vulnerabilities among the crypto-markets and the traditional financial markets, there are four main channels namely the following: a. the exposures of financial institutions to crypto-assets and to other entities that are financially impacted by crypto-assets; b. wealth effects and market capitalisation; c. confidence effects; and d. the use of crypto-assets for payments and settlements.<sup>77</sup>

The first channel is the exposure of financial institutions to the crypto-assets market. During 2020-2021, numerous institutional investors invested in crypto assets, although the interest in crypto assets remained limited due to high volatility, limited regulatory-compliant products, lack of regulated custody services, and general regulatory uncertainty. Nevertheless, the growing involvement of institutional investors in the crypto market increases the risk of spillovers to traditional markets, for example in case investors need to sell fast other assets to meet margin calls in the crypto world. More and more products which are linking the traditional markets with that crypto are appearing, like the first US-based crypto-asset CME futures ETF, the ProShares Bitcoin futures ETF, which was listed for trading on the New York Stock Exchange in October 2021.<sup>78</sup> Other big companies like Tesla and Microstrategy announced the purchase of a big number of Bitcoins and even countries like El Salvador and the Central African Republic have adopted Bitcoin as national currency.<sup>79</sup> Further, another interlinkage between the traditional financial markets and the crypto markets is the correlation between the changes in the price of crypto-assets and equities that was observed during 2021. The above show that financial institutions are already involved in the crypto market and a further, deeper involvement might affect their balance sheet and liquidity in unpredictable ways. As the GFC has shown a small amount of exposure can be translated into huge amounts of risk due to reputational risk, panic, lack of transparency and insufficient regulatory supervision.<sup>80</sup> The second risk transmission channel is the wealth effect and market capitalisation. The increased market capitalisation and growth of the crypto market have also increased the potential impact of wealth effects. A small number of investors are managing and controlling a very big portion of crypto-assets, meaning that due to the lack of the relevant legislation they can easily manipulate the market and create market volatility. Even if on a global level the impact is for the moment limited, it can be important at a domestic level in which it might affect many retail investors or entities involved in the market.<sup>81</sup>

The third transmission channel is the confidence effect. As more and more

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<sup>77</sup> FSB, "Assessment of Risks to Financial Stability from Crypto-Assets," <https://www.fsb.org/wp-content/uploads/P160222.pdf>, 3.

<sup>78</sup> For more see: Karamfil Todorov, "Launch of the First US Bitcoin ETF: Mechanics, Impact, and Risks," December 6, 2021, [https://www.bis.org/publ/qtrpdf/r\\_qt2112t.htm](https://www.bis.org/publ/qtrpdf/r_qt2112t.htm).

<sup>79</sup> James Vincent, "Second Country to Adopt Bitcoin as National Currency Is the Central African Republic," The Verge, April 29, 2022, <https://www.theverge.com/2022/4/29/23048142/bitcoin-adopted-official-currency-central-african-republic-car-why>.

<sup>80</sup> FSB, "Assessment of Risks to Financial Stability from Crypto-Assets," 4–5; FSB, "Crypto-Asset Markets," 10.

<sup>81</sup> FSB, "Assessment of Risks to Financial Stability from Crypto-Assets," 6–7; FSB, "Crypto-Asset Markets," 10–11.



retail investors with limited knowledge of the market and its risks are becoming owners of crypto-assets the higher the risk of loss of confidence becomes. Further, the lack of investor protection legislation, recovery, and resolution frameworks, as the increased cases of fraud and market abuse can lead to cases of sudden price decreases in a sharp loss of confidence by investors. Finally, the last transmission channel is the use of crypto-assets in payments and settlement. For the moment the use of crypto-assets as a means of payment is not broadly accepted. Only a few companies have announced their intention to accept Bitcoin as a payment method (like Tesla in 2021) and only two countries (El Salvador and the Central African Republic) have accepted Bitcoin as an official currency. A broader adoption of crypto-assets as a payment method with the existing volatility and lack of regulatory supervision can lead to uncertainty in the market, lack of confidence, destabilization of the crypto-currency and huge losses to market participants with potential spill-overs to the real economy.<sup>82</sup>

Of all the above risks, the one that is more linked with tokenisation and securitisation and poses the greatest threat to financial stability is the risk that if tokenisation is adopted more broadly, it might create the presumption that there might be liquidity in inherently illiquid assets (like loans or real estate). This risk might affect the financial stability due to the liquidity mismatches between the token and the underlying assets, or where investors have limited information and understanding of the underlying products used for the token launch.<sup>83</sup> In the next chapter of this paper, we will analyse the interplay between the securitisation process and the tokenisation under the prism of Credit funds and CLOs. Tokenisation and securitisation do not appear to be very different. Yet, differences remain and the role that the Credit funds and CLOs can play and the risks that are involved need to be examined and assessed.

#### **4. The interplay between credit funds, securitisation, blockchain and the risks occurred.**

One of the novelties of Blockchain and tokenisation is that it can give retail investors access to traditional complex financial products. This can add a layer of complexity to the financing process, and it can cause additional risks that the corporations and the supervisory authorities have to mitigate from a micro-and macro-management perspective. Before moving to the interplay of Blockchain and the tokenisation of complex financial products can cause with CLOs, we need to assess the risks that the financial innovations can cause to other market participants

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<sup>82</sup> FSB, "Assessment of Risks to Financial Stability from Crypto-Assets," 7–9; FSB, "Crypto-Asset Markets," 9 and 11–12.

<sup>83</sup> Kaminska, Izabella, "FSB Warns Tokenised Liquidity Could Be Illusory," *Financial Times*, June 6, 2019; FSB, "Decentralised Financial Technologies: Report on Financial Stability, Regulatory and Governance Implications," 15.

and the system. In particular, we will assess the risks involved in the activities of Credit funds and the structuring of CLOs using loans originated by Credit funds. Then we will assess the additional complexity and risks that the tokenisation of these CLOs can cause, before moving to the existing regulatory tools that can deal with the above issues.

The main risks that credit funds face and pose to the managers, investors and the financial system are many and they are sourced by the lending activities that the credit funds are conducting. The main risks include the following: a. credit risk; b. liquidity risk; c. market risk; d counterparty risk; e operational risk; and f. structural deficiencies of credit funds.

Since the provision of debt includes a borrowing-lending transaction and the involvement of a debtor, who has the right to receive the capital and the obligation to repay the debt and a lender, who must pay the capital and the right to receive the capital plus the interest rate, the main risk inherent in this transaction is the ability of the debtor to be able to repay his debt or not. The risk that the borrower will be in a position where (s)he won't be able to serve his debt is called credit risk. Credit risk can occur either in case the debtor cannot repay his debt or in case of delays. Credit risk raises also when the borrower's credit quality deteriorates during the lifetime of the loan and the lender faces difficulties to liquidate the loan at the initial price. An important factor in calculating the credit risk of a loan is the assessment of the creditworthiness of the borrower from the lender.<sup>84</sup> The assessment can be done either using internal methodologies or external ratings provided by credit rating agencies. Except for the quantitative criteria for evaluating a loan, like the balance sheet of a company-borrower, there are 5 other criteria that a lender should take under consideration when assessing the creditworthiness of a borrower. The 5 criteria are the following: i. capacity; ii. capital; iii. character; iv. collateral; and v. conditions. These criteria are used to analyse the credit situation of the potential borrower and conclude his ability to repay the loan. By capacity, it is meant the legal and financial ability of the potential borrower to take a loan (e.g. the legal age or constitutive documents in the case of corporations). The capital criterion measures the financial means that the potential borrower has in place or the cash that it has available to repay its loan (e.g. cash flows). Character shows the credit history of the potential debtor, namely whether it has repaid previous loans or has faced financially distressed situations. The collateral plays an important role since it shows whether there are other protective cushions to reduce the credit risk. Last but not least, conditions are the criterion which shows the economic situation of the environment of the borrower which might affect its business.<sup>85</sup> Subcategories of credit risk are the default risk (the situation in which the borrower cannot pay its interest or the final

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<sup>84</sup> Tony van Gestel and Bart Baesens, *Credit Risk Management: Basic Concepts: Financial Risk Components, Rating Analysis, Models, Economic and Regulatory Capital* (Oxford ; New York: Oxford University Press, 2009), 24; BCBS, "Principles for the Management of Credit Risk." <https://www.bis.org/publ/bcbs75.htm> , 1ff.

<sup>85</sup> Greenbaum Stuart, Thakor Anjan, Boot Arnoud, *Contemporary Financial Intermediation*, 144ff.

redemption value), the loss risk, and the exposure risk.<sup>86</sup> A credit fund can be exposed to credit risk either directly (by originating loans directly to borrowers) or indirectly either by purchasing other loans in the secondary market or by purchasing securitisation products which have underlying assets loans.

Liquidity risk is another important risk, inherent in lending activities. In case a loan cannot be sold or liquidated, because of its value and price or because of the financial conditions, then liquidity risk has appeared. In the case of credit funds, liquidity risk rises when the fund does not have enough liquidity to meet its short-term liabilities or when the fund cannot purchase or sell a specific asset at its market price due to volatility or severe market movements. Liquidity risk is particularly important for funds which originate loans since the intrinsically illiquid nature of loans makes the funds vulnerable to liquidity shortages and devaluations. Especially in the case of open-ended structures, in which the investors can redeem their shares or units more often and without many limitations, illiquid assets can cause liquidity risk since the fund will face difficulties to meet its redemption requests if it will not be able to sell loans in the secondary markets or liquidate them at their par value.<sup>87</sup>

Moving to market risk, ESMA defined it as the “liability to fluctuations in the market value of the positions entered into by the AIF, which may vary over time”.<sup>88</sup> Market risk can affect the price of a range of assets and the whole market or the price of a specific asset. As mentioned, loans are illiquid and their price can be affected by many factors like the financial situation of the counterparty or the situation in the secondary market and the sale pressure on the prices. For example, in the case of a financially distressed period like the period of the Global Financial Crisis of 2007-2009 or during the period of Covid restrictions, it was more difficult for credit funds to liquidate their assets.<sup>89</sup> Another important risk is the counterparty risk which appears to be similar to that of credit risk. Counterparty risk is the risk of losses because of a default of the counterparty before the final settlement of the transaction's cash flow.<sup>90</sup> The difference with credit risk lies in the fact that counterparty risk appears on the side of the counterparty(borrower) and not on the side of the lender (like liquidity risk), but it can cause huge losses to the credit funds and it should be taken under consideration in the risk assessment of the asset manager. A very important category of risks is that of an operational nature. Failures in internal processes and failures concerning the people and systems of the investment manager, failures of the legal and documentation procedures, or failures of the settlement and valuation mechanisms fall under the category of operational risks. For assets managers, the operational risks can cause losses and disruptions also to other market participants and investors. Fines imposed on asset managers due to operational failures and continuous operational issues can result in a loss of trust towards the

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<sup>86</sup> Gestel and Baesens, *Credit Risk Management*, 26ff.

<sup>87</sup> Zetzsche, *The Alternative Investment Fund Managers Directive*, 372.

<sup>88</sup> ESMA, “AIFMD Final Report,” 69.

<sup>89</sup> Anthony Saunders and Marcia Millon Cornett, *Financial Institutions Management: A Risk Management Approach*, Ninth Edition (Dubuque: McGraw-Hill Education, 2017), 450.

<sup>90</sup> Art. 3 (7) UCITS Directive.

fund manager by its investors and it can lead to redemptions causing liquidity risks, especially in funds with illiquid assets such as loans.<sup>91</sup> Last but not least, there is a category of risks that arise due to the lending activities and the structure of credit funds. Credit funds can be structured as open-ended or closed-ended, namely, whether they allow regular redemptions during the lifetime of the fund. In both structures, excessive leverage and liquidity mismatches can result in huge losses. Leverage can be built up either through borrowing (traditional leverage) or through using derivatives (synthetic leverage). During a financial distressed period or if the loans cannot be repaid, a highly leveraged fund won't be able to liquidate its loans at their value, but it will have to deleverage fast by selling its assets at lower prices and by taking the damages and losses. This will cause losses to investors and also disruptions to many market participants and even to the whole financial market through systemic risks and channels. This situation can be amplified by the liquidity mismatches of credit funds, especially of open-ended structures, in which the investors might request massive redemptions of their shares in highly leveraged funds. In this case, the managers will be forced to liquidate their assets (loans) fast to be able to pay redemptions and their debt something that can lead to fire sales, meaning selling assets at lower prices since the market will realize the financially distressed situation that the fund will be, and to a vicious circle of liquidity shortages and sales.<sup>92</sup>

Moving to securitisation and especially CLOs, their vulnerabilities are many and they can threaten the financial stability as CDOs did during the GFC of 2007-2009. The first important risk is the concentration risk and the weakness of the Credit Rating Agencies to capture these risks and represent them in their ratings of the CLOs' tranches. CLOs might be exposed to concentration risk as a result of exposure to the same borrowers or loans to the same industry or sector. It is estimated that more than 80% of US CLOs have exposure to the top five borrowers. Further, the combination of CLO tranches with riskier unrated equity into rated notes (i.e., securitisation of a securitisation) may increase the complexity of the system and it will increase the lack of transparency since the tracing of the end investor will become almost impossible.<sup>93</sup> A 2020 study by John Griffin and Jordan Nickerson, has shown that major credit rating agencies (S&P and Moody's) have downgraded almost 25% of the collateral loans in CLOs without an equivalent downgrading of the tranches' values (only a 2% reduction in junior tranches), meaning that CLOs are riskier than they appear to be.<sup>94</sup> Another important vulnerability of CLOs is the nature of the underlying assets. CLOs usually use bundled loans of lower collateral

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<sup>91</sup> Zetzsche, *The Alternative Investment Fund Managers Directive*, 330; Art.3 (10) UCITS Directive.

<sup>92</sup> FSB, "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities - Financial Stability Board," 22ff.

<sup>93</sup> FSB, "Vulnerabilities Associated with Leveraged Loans and Collateralised Loan Obligations," December 19, 2019, 13f., <https://www.fsb.org/2019/12/vulnerabilities-associated-with-leveraged-loans-and-collateralised-loan-obligations/>.

<sup>94</sup> John M. Griffin and Jordan Nickerson, "Are CLO Collateral and Tranche Ratings Disconnected?," *SSRN Electronic Journal*, 2020, <https://doi.org/10.2139/ssrn.3707557>.

quality to achieve higher returns. Hence, CLOs are exposed to higher levels of credit risk. Although the credit rating agencies focus their ratings on credit risk, they fail to capture the systematic risk, because they assess the default risk of a CLO tranche as a single security, and they do not assess the cumulative default risk of the pool of assets whose default might lead to financial distress.<sup>95</sup> Yet, CLOs tranches are better protected in case of a new, more severe financial crisis, the structural protections introduced by market participants have deteriorated and the stress-testing show that more junior CLO tranches are most vulnerable to damages, while the holders of more senior tranches are facing downgrade risk. ECB further argues that severe macroeconomic shocks would result in downgrades in existing tranches, mark-to-market losses and a sharp increase in the capital requirements for the senior tranches held by credit institutions.<sup>96</sup>

Other risks that might be pertinent in the CLOs market are credit risk, market risk, liquidity risk, currency risk, and reputational risk. Credit risk is the risk of the borrower's default and it is inherent in every lending activity. Market risk is the risk of market fluctuations which might deteriorate the credit ratings of CLOs positions. Liquidity risk is the risk that borrowers on the one hand will not have the necessary liquidity to meet their obligations, and the lenders or investors on the other hand, will not be able to meet other obligations that they might have since their investment in CLOs is illiquid. Currency risk might occur when the investors have invested in CLOs denominated in a currency other than the one of their market. Finally, reputational risk is the risk that the reputation and trust of a bank or asset manager might be damaged, if they face liquidity and funding risks (e.g. if they cannot meet their redemption requests or other obligations, because they cannot liquidate their illiquid assets a.k.a. CLOs fast enough) and the investors and other market participants will anticipate this weakness as a trigger for substantial losses on their other investments with the same bank or asset manager.<sup>97</sup>

Last but not least, the lack of clarity of who is the owner of the CLOs tranches, especially when combined, as we will see later with the tokenisation of assets, raise several financial stability concerns. The ultimate holders of CLOs remain unknown as asset managers and hedge funds purchase CLO tranches and invest on behalf of their investors. This creates concerns about whether the ultimate investors can bear losses or how losses will be transmitted through the financial system. The magnitude of this will be higher when and if retail investors hold fractions of the CLOs through tokenisation.<sup>98</sup>

As we have mentioned in the previous chapter, the CLOs can use as underlying assets the loans of Funds. In this scenario, the risks that both Credit funds and CLOs

<sup>95</sup> Martin and Sayrak, "An Introduction to Collateralized Loan Obligations," 30f.

<sup>96</sup> European Central Bank, "Financial Stability Review, May 2019," European Central Bank, 54–57, accessed August 13, 2019, <https://www.ecb.europa.eu/pub/financial-stability/fsr/html/ecb.fsr201905~266e856634.en.html>.

<sup>97</sup> FSB, "Vulnerabilities Associated with Leveraged Loans and Collateralised Loan Obligations," 17.

<sup>98</sup> European Central Bank, "Financial Stability Review, May 2019," 58.

pose to the investors and the system are amplified. The initial investors of a Credit fund have provided the capital to the fund and the manager has invested in loans. These loans, when used as the underlying assets in a CLO, they are transformed into new, fresh, capital for the fund which can be used again to provide new loans to new companies creating a debt-liquidity circle between the debtors of the fund, the fund and the new investors that are purchasing the CLOs. Hence, in this case, we can argue that the CLOs offer additional liquidity to the financial system and credit/counterparty risk diversification since the credit risk of the borrowers of the funds has been transferred to the CLOs' investors.<sup>99</sup> Yet, what the CLOs do is they can increase the complexity of the lending activities of the funds. As we will see later, the AIFs are indirectly supervised by the national authorities of each EU Member State and there is no centralized pan-European Supervisory Authority. The national authorities directly supervise the fund managers and not the funds themselves meaning that, through the use of CLOs, the supervisory data of the exposure, liquidity or leverage of the credit funds might not be accurate. Further, this can increase moral hazard, since the fund managers may have the incentive to provide loans easier to borrowers of lower creditworthiness since they will sell the loans to create CLOs and avoid the increased credit risk which will be transferred to the investors of the CLOs.<sup>100</sup> Last but not least, this increased complexity can lead to increased systemic risk and potential meltdowns of the financial system. More and more institutional investors, like insurance companies, are investing in CLOs which are rated with high credit ratings, although their underlying loans may not be of the same quality. In case of failure of those CLOs, the institutional investors will take a big hit, will have to face massive losses and the risk will be transmitted to the whole financial system.<sup>101</sup>

Schwarz has argued recently that the tokenisation of non-cash assets or as he puts it "non-cash-flow monetisations" can be dangerous to investors and society since the investors buy interests in non-financial assets thinking that these interests are liquid. Yet, these interests are illiquid since they don't have any repayment rights or market liquidity.<sup>102</sup> Schwarz focuses its analysis mostly on the non-cash flow monetisations because they can on one hand assist more small borrowers to get access to illiquid, unaffordable or inaccessible capital since the access to finance is more difficult for smaller SMEs. Further, non-cash monetisation can generate cash from non-financial assets which do not have a broad investor base. On the other hand, the non-cash monetisations of non-financial assets offer no cash flows and the investors cannot expect or force the owners of those assets to sell them to generate

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<sup>99</sup> Andreas A. Jobst, "Collateralised Loan Obligations (CLOs) - A Primer," *SSRN Electronic Journal*, 2003, 14–18, <https://doi.org/10.2139/ssrn.370640>.

<sup>100</sup> Jobst, *ibid.*, 50.

<sup>101</sup> For more on the appetite of insurance companies on purchasing CLOs see: Fringuellotti Fulvia, Santos Joao, "Insurance Companies and the Growth of Corporate Loans' Securitisation," accessed October 28, 2022, [https://www.newyorkfed.org/medialibrary/media/research/staff\\_reports/sr975.pdf](https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr975.pdf).

<sup>102</sup> Steven L. Schwarcz, "Next-Generation Securitisation: NFTs, Tokenisation, and the Monetization of 'Things,'" *SSRN Electronic Journal*, 2022, 5–6, <https://doi.org/10.2139/ssrn.4044101>.

cash. The solution for investors to sell their monetized assets is the extremely volatile secondary market. This is not the case with the monetization of financial assets which offer cash flows and strong, liquid, secondary markets.<sup>103</sup> This ability can give them some precision in value and pricing, while in the case of non-cash flow monetisations the pricing and value will be uncertain. Moreover, the core issue for Schwarz is the illiquidity of non-cash monetisations and the perception of the investors that they are investing in something liquid and in an asset that can hedge their inflation risk. Last but not least, Schwarz argues that investors also face insolvency risk, since the pricing of the cash-flow monetization interests is extremely volatile and the value of the assets that investors hold can fall massively. Schwarz analyses the risks and the regulatory tools of these non-cash monetizations, but he does not explore the risks and possible regulatory tools of the tokenisation of more complex financial assets which offer cash-flows while maintaining risks of their underlying illiquid assets, like the CLOs.<sup>104</sup>

Moving to the interplay between CLOs and Blockchain, in a traditional cash-flow securitisation, the issuer is creating an SPV and then sells the issued securities to the investors, while in a non-cash flow securitisation/monetisation, the issuer might or might not create an SPV, while issuing illiquid interests or tokens which are sold to investors. Hence, as Schwarz argued, a cash-flow monetisation is more ring-fenced and secured, since there are cash-flows, than a non-cash flow monetisation.<sup>105</sup> Yet, in the case of tokenisation of a cash-flow securitisation, namely the use of blockchain technology to tokenise CLOs, potential market failures and risks appear. In this scenario, a CLO which traditionally would be a product sold to institutional or professional investors can be "tokenised" or split in smaller interests and be sold also to retail investors in the whole world. In this scenario, the loans of Credit funds can be pooled in an SPV or any other vehicle and the financing of the purchase of the loans will be conducted by issuing different tranches in a CLO structure. The difference is the tokenisation of the tranches. Each tranche can be broken down into many tokens and then sold to retail investors globally and with these proceeds the SPV or the intermediary will purchase the loans; therefore, the tokenisation adds a layer to the securitisation procedure<sup>106</sup>, which can be illustrated below (Figure 2):

Figure 2: Tokenisation of CLOs

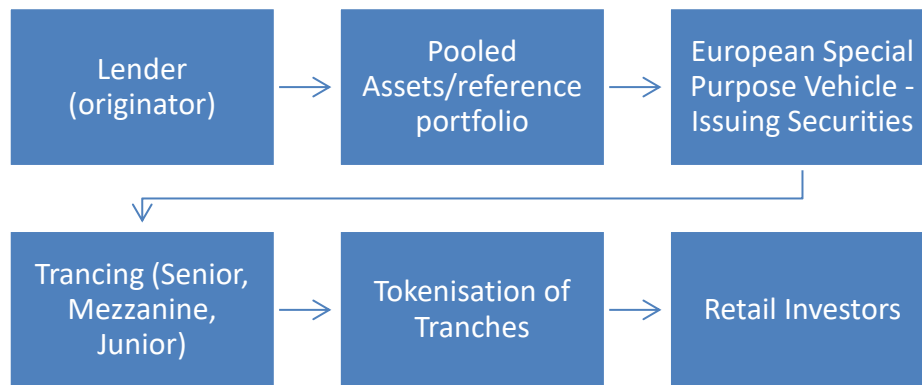
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<sup>103</sup> Schwarcz, 7–9.

<sup>104</sup> Schwarcz, 10–12.

<sup>105</sup> Schwarcz, 13ff.

<sup>106</sup> EU Commission, "Opportunities and Challenges of the Tokenisation of Finance," Text, European Commission - European Commission, accessed May 2, 2023, [https://ec.europa.eu/commission/presscorner/detail/en/SPEECH\\_22\\_5814](https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_22_5814); OECD, "The Tokenisation of Assets and Potential Implications for Financial Markets - OECD," 19ff.



This new structure might benefit the investors and the lenders. In particular, the lenders will manage to broaden their investor base by selling the tokens to retail investors. These asset-backed tokens can offer liquidity to lenders and risk diversification. Further, also the investors will be benefited, since they will get access to financial products which are traditionally available to institutional and professional investors and they will be able to invest in the tokens fast, in a secure way with transparency and guaranteed by the DLT, without the involvement of intermediaries and additional fees.<sup>107</sup> Yet, this new structure will create additional risks to the buyers of the asset-backed tokens, to the lenders and their investors, and the systemic stability. First, the buyers of the asset-backed tokens will purchase tokens of increased opacity and complexity, without understanding the structure of the assets that are backing these tokens. This was also one of the main causes of the GFC of 2007-2009 in which, regardless of the increased opaqueness and complexity of Mortgage-Backed Securities (MBSs), the credit rating agencies continued to grade these MBSs with high ratings, motivating investors, who theoretically were well informed and sophisticated, to invest in them with the catastrophic results that were witnessed later.<sup>108</sup> In the case of the asset-backed tokens, the tokens themselves will not have any credit rating and the investors can retail without any expertise or deep knowledge of the CLOs structure or the way a fund is functioning. The lenders, namely the credit funds, and the investors will face issues in case they use excessive leverage to originate loans to securitise. In case of a liquidity crunch and systemic crisis, excessive leverage might create difficulties in meeting redemption requests from their investors, especially in cases of open-ended structures.<sup>109</sup> Last but not least, adding a level of complexity and the lack of transparency will harden the supervisory capabilities of the authorities, especially in supervising systemic risk build on one hand and the other hand it will also damage investor protection since

<sup>107</sup> OECD, "Understanding the Tokenisation of Assets in Financial Markets | En | OECD," 6; OECD, "The Tokenisation of Assets and Potential Implications for Financial Markets - OECD," 16ff.

<sup>108</sup> Daniela M. Prates and Maryse Farhi, "The Shadow Banking System and the New Phase of the Money Manager Capitalism," *Journal of Post Keynesian Economics* 37, no. 4 (May 19, 2015): 572ff., <https://doi.org/10.1080/01603477.2015.1049925>; Peridis, *Alternative Lending*, 60.

<sup>109</sup> FSB, "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities," January 12, 2017, 10, <https://www.fsb.org/2017/01/policy-recommendations-to-address-structural-vulnerabilities-from-asset-management-activities/>.



many investors in the whole world would be completely unprotected. Both the tackling of systemic risk and investor protection are the two main goals of European legislation concerning capital markets; therefore a hit on retail investors through capital markets due to systemic risk and lack of supervision can also create a spillover effect to the other areas of the financial markets in EU and the whole world and result to market failures.<sup>110</sup> In particular, market failures can be caused by tokenisation and Fintech failures, information asymmetries, and the structure of securitisations.

A market failure is a situation where the efficient allocation of resources is blocked by imperfections in the functioning of the markets and of the institutions operating in these markets. Financial innovations, like CLOs and Blockchain, are useful in a financial market because they can contribute to the efficient allocation of capital resources by a. allowing the investors and innovators to hedge risks; b. reducing transaction fees and increasing liquidity, and c. reducing agency costs which are created due to information asymmetries or incomplete supervision by the authorities. Financial innovations function in a pro-cyclical way, i.e. in financially "bullish" markets excessive optimism or irrational exuberance can result in huge investments in non-tested products followed by failures and losses during the "bearish" markets. One example is the cryptocurrency Bitcoin, whose price was \$70 per Bitcoin in 2013, it reached almost \$60,000 in 2022 and then fell again to \$18,000 in 2023. Securitisation and CDOs are other financial innovation which was at the centre of the GFC of 2007-2009, causing a global meltdown. The securitisation failure caused massive regulatory interventions which changed radically the financial market's landscape. The failures due to innovations can trigger regulatory interventions since they prove that the markets cannot self-regulate effectively, and they need governmental supervision and regulations.<sup>111</sup>

Market Failures due to financial innovations can be caused due to three reasons. The first one is information asymmetries, meaning that the investors do not have the same amount of information as the developers of the financial products. This means that the retail investors who are not financially experienced will purchase tokens which will represent a specific risk and specific liquidity without being aware of the risk profile of the borrower of the original loans that are the underlying assets in the CLO, and further they will not be aware that the tokens that they will possess will not be easily tradable since the cryptocurrencies and blockchain secondary markets are not so developed and liquid as the original and traditional secondary markets. The second market failure is the agency cost failure which might occur when the agent or the intermediary, which in this case will be the sponsor creating and tranching the

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<sup>110</sup> Prasanna Gai et al., "Regulatory Complexity and the Quest for Robust Regulation," *SSRN Electronic Journal*, 2019, 20ff., <https://doi.org/10.2139/ssrn.3723328>; "Regulatory Complexity, Uncertainty, and Systemic Risk, SUEF Policy Brief .. SUEF - The European Money and Finance Forum," SUEF.ORG, accessed May 2, 2023, <https://www.suerf.org/suer-policy-brief/51203/regulatory-complexity-uncertainty-and-systemic-risk>.

<sup>111</sup> Peridis, *Alternative Lending*, 53ff.

CLO and then tokenizing might go out of business or default. In this case, it might stop maintaining the blockchain, collecting the payments and cash flows and the purchasers of the tokens will not have the option to sell their tokens or receive cash flows and income from them. Tokens also do not have repayment maturities since they are not debt instruments, but they mostly represent equity security. Hence the investors will also have minimum claims against the sponsor or blockchain creator or tokenisation facilitator. The final market failure is more specific and relates to Fintech failure and in particular failures of the technology. Market failures related to blockchain, recording of ownership and transfer of investor interest and rights can be a result of cyber security breaches and operational failures. The most important cybersecurity risk is that the cryptography which protects the ownership and transfer of investor tokens and ensures the transparency of the blockchain may fail or may be compromised by hacking or other cyber-attacks. In the modern technologically advanced financial sector, cyber-attacks can also heavily impact investors and the financial markets and cause huge damages and losses. For example, in 2021 the cyber-attack on the colonial pipeline disrupted the fuel supply in America and it resulted in a damage of millions of dollars. Operational failures can also be caused by a failure in the electronic maintenance of records which in its turn can disrupt the secure recording of ownership and transfer all of the tokens to the end investors.<sup>112</sup>

As in every case of market failures due to financial innovations, to deal with market failures and the increased risks of asset-backed (CLO-backed) tokenisations, the regulatory framework applicable to those should be robust, effective and efficient. In the next chapter, we will assess the various regulatory regimes applicable to securitisations, credit funds and tokenisation and we will evaluate whether the regulatory network that they create can mitigate the above risks or if there is a need for improvements.

## 5. Regulatory Tools and their assessment

As discussed, market failures from financial innovations can be mitigated with regulatory interventions. Yet, this solution comes with massive costs and financial sector disturbances. A robust regulatory framework which will deal in advance with the risks caused by the financial innovations without "killing the market" would be more effective in enhancing growth while safeguarding the investors and the financial stability. Since there is not a harmonised framework for the interplay between Credit funds, CLOs and tokenisation, it should be assessed whether the regulatory tools available currently individually for each part of the relationship that we have described in the previous parts of the paper suffice in a cumulative way to mitigate the arising risks. Hence, the fund, securitisation and blockchain rules available at an

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<sup>112</sup> For more on Market Failures see: Schwarcz, "Next-Generation Securitisation," 19ff.

EU level will be analysed and reviewed to evaluate their effectiveness in protecting the investors and the financial system.

**a. AIFMD<sup>113</sup>**

The Alternative Investment Fund Managers Directive (AIFMD) is the main EU legislation which regulates the function of credit funds indirectly by regulating their managers. To begin with, there is no harmonized EU legislation for loan origination funds and the AIFMD is also regulating all categories of alternative investment funds (AIFs) including loan origination funds, but it does not contain specific rules and requirements for loan origination funds. To be authorized as an alternative investment fund manager (AIFM) and be able to manage alternative investment funds and market the funds in Europe you need to comply with the specific requirements. The first one is to maintain a specific amount of capital. Art. 9 of the AIFMD lays down the initial capital and own fund requirements for a manager. When an AIF is managed by an internal manager, then the AIFM must have an initial capital of at least €300,000, while the initial capital of an external manager must be at least €125,000. When the fund managed by the manager exceeds €250 million, the manager must hold additional own funds equal to 0.02% of the amount, but if the value of the AIF exceeds 250 million, the total capital amount cannot exceed 10 million euros. Additional own funds are required to cover potential liability risks which might occur due to professional negligence.<sup>114</sup>

Moving to the important liquidity management rules, Art. 16 of the AIFMD deals with the liquidity requirements of the AIFs and AIFMs. In the case of Credit AIFs, liquidity management is important, especially in the case where the AIFM is managing open-ended structures which might result in potential liquidity mismatches in case of massive redemptions. Hence, the framework is designed to limit the impact of liquidity shortages and mismatches and to ensure the consistency between the investment strategy of the fund and its liquidity profile and redemption policy. The AIFMD has introduced liquidity procedures to assist the manager to manage illiquid assets and other valuation issues and to deal with potential redemption requests. In particular, the liquidity measures point out that the manager will hold the necessary liquidity resources to guarantee that the fund will cover its obligations; monitor the liquidity profile of the fund assets; to monitor the liquidity approach of the other funds where the Debt AIF might invest; to create and implement the necessary methodology to measure liquidity risks; to develop and implement tools to manage liquidity risks; to document and review the liquidity management procedures; to develop escalation techniques; to set and maintain sufficient liquid limits according to

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<sup>113</sup> The following section is based on my previous work which was reviewed and amended for the purpose of this paper. Please refer to Peridis, *Alternative Lending*, Chapter 6.

<sup>114</sup> L. D. van Setten and Danny Busch, eds., *Alternative Investment Funds in Europe: Law and Practice* (Oxford, United Kingdom: Oxford University Press, 2014), para. 1.191.

the obligations and investment policy of the fund; and finally to conduct frequently stress tests.<sup>115</sup> To monitor, assess and manage liquidity risk, the AIFM can use liquidity limits and stress testing.<sup>116</sup> The AIFM can also use other tools which are called liquidity management tools such as redemption fees and redemption gates, redemptions notice periods, side pockets and suspension of redemptions. Further, temporary borrowing agreements with credit institutions may also be used as liquidity tools, however this liquidity tool and the capital received can cause risks from a micro-prudential and not macro-prudential perspective, meaning that it does protect the manager and the fund to not get bankrupt, but it doesn't mitigate the systemic risk that might occur.<sup>117</sup> ESRB and ECB have proposed several liquidity management tools which could potentially mitigate system-wide or macroprudential risks and these include mandatory liquidity buffers, capital flow management measures, redemption duration restrictions, suspension and gate redemptions, and countercyclical margin and haircuts for securities financing transactions. Yet, these tools also cannot be a full protective measure against systemic risk, since systemic stress testing, for example, will not be an effective macroprudential liquidity tool, unless all market stress incidents and all structural differences of the funds were taken into consideration. Further, in the case of the usage of blockchain to tokenise loans, there will be ample artificial liquidity created which will make the stress testing results flawed.<sup>118</sup>

The next important risk is the risk of leverage which with the use of securitisation it can be a form of synthetic leverage, especially if the intermediary structure is not insolvency remote. Leverage is expressed as the ratio between the total exposure of the fund and its net asset value. If the funds use a high amount of leverage with short notice periods of redemption requests and a high level of illiquid assets this can lead to a scenario of first-mover advantages and rapid deleveraging. The data show that the AIFs in the EU have a NAV of €4.9 trillion and their gross leverage is around 357% of NAV, so a total exposure of around €17.5 trillion. Moreover, 65% of the EU AIFs are open-ended and investors can redeem up to 69% of the total NAV of AIFs within a week.<sup>119</sup> This shows that in case of an investor run the stability of the market will be severely damaged. The AIFMD does not impose a specific leverage ratio, but it requires the manager to set the maximum level of

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<sup>115</sup> EU Commission, "Commission Delegated Regulation (EU) No 231/2013 of 19 December 2012 Supplementing Directive 2011/61/EU of the European Parliament and of the Council with Regard to Exemptions, General Operating Conditions, Depositaries, Leverage, Transparency and SupervisionText with EEA Relevance," n.d., 95., Art. 47 and 48.

<sup>116</sup> Commission Delegated Regulation (EU) No 231/2013, Recital 61-63

<sup>117</sup> "Liquidity Stress Tests for Investment Funds: A Practical Guide," IMF, 7, accessed May 10, 2019, <https://www.imf.org/en/Publications/WP/Issues/2017/10/31/Liquidity-Stress-Tests-for-Investment-Funds-A-Practical-Guide-45332>.

<sup>118</sup> European Central Bank, "Macroprudential Liquidity Tools for Investment Funds - A Preliminary Discussion," European Central Bank, 6f, accessed August 15, 2019, [https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu201810\\_03.en.html](https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu201810_03.en.html); ESRB, "Macroprudential Policy beyond Banking: An ESRB Strategy Paper," 6 and 16f.

<sup>119</sup> ESMA, "Annual Statistical Report: EU Alternative Investment Funds 2019," *ESMA50-165-748*, March 2019, 6ff.; Peridis, *Alternative Lending*, 255.

leverage which may use in its fund. The managers should take under consideration the sources of leverage, the type of the fund and its investment strategy, the collateral use under the leverage agreement, the fund's asset-liability ratio, the interconnection with other market participants, its overall activity and business in the market and finally they need to avoid the investment concentration to a single counterparty. Further, the reporting framework of AIFMD is detailed and the manager must disclose to the investors regularly for the AIFs it manages and markets in the EU the conditions under which the fund can use leverage, the types and sources of leverage used, all the risks there are on the use of leverage, the maximum level of leverage, the total amount of leverage used, and any potential changes in the use or type or level of leverage. Moreover, the manager needs to inform the national authority of the overall amount of leverage of the funds that it manages, detailed information on the sources of its leverage, the reuse of the assets of the financial collateral, and the leverage agreements, and information on the identity of the five largest leverage sources and the amount received from each one of them.<sup>120</sup> There are two methods to calculate the leverage: a. the gross method; and b. the commitment method. Both methods calculate the sum of the absolute values of the funds' position applying different criteria.<sup>121</sup> Finally, the manager must always show that the leverage limits are reasonable and that it always complies with those limits. The tool that the national authorities have in place is the ability to impose stricter levels of limits on the AIF if they find it necessary to mitigate systemic risks.<sup>122</sup>

Moving to risk management, the AIFMD has developed a comprehensive risk management framework to capture not only operational, liquidity, and leverage risk, but also other potential risks that funds would pose or face. Risk management is very important, since for an AIFM to be authorized to manage and market funds in the EU, it has to provide both risk management and portfolio management services. There are two main obligations in the AIFMD: first the functional and hierarchical separation of risk management from the business units, including portfolio management; and second the implementation of an adequate risk management system to identify, measure, manage, and monitor appropriately the risks relevant to the fund strategy.<sup>123</sup> For example, the staff dealing with the risk management procedures should not be supervised by the same officer who supervises the portfolio management or the remuneration of the staff working in risk management functions should be based on the risk management performance, independently of the performance of the operating units.<sup>124</sup> The AIFM should ensure that there is a permanent risk management function and policies and procedures to mitigate risks associated with the investment strategy

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<sup>120</sup> EU Commission, "Commission Delegated Regulation (EU) No 231/2013 of 19 December 2012 Supplementing Directive 2011/61/EU of the European Parliament and of the Council with Regard to Exemptions, General Operating Conditions, Depositaries, Leverage, Transparency and SupervisionText with EEA Relevance." Art 111.

<sup>121</sup> Art. 7 and 8, Commission Delegated Regulation (EU) No 231/2013.

<sup>122</sup> Setten and Busch, *Alternative Investment Funds in Europe*, para. 1.288.

<sup>123</sup> Art. 6 (5) (d) and Art. 15 (1) and (2) AIFMD.

<sup>124</sup> Art. 42 (1) and (2), Commission Delegated Regulation (EU) No 231/2013

of the fund. A clear risk management procedure should exist which will describe the tools to measure, manage, and monitor constantly all applicable risks. The AIFM should also set clear risk limits applicable to the AIFs it manages and markets.<sup>125</sup> Although the risk management framework is comprehensive, it is a one-size-fits-all framework which does not cover different types of funds and structures and investment strategies. Moreover, the requirement of setting risk limits can be problematic since the different investment strategies of the different fund categories create a diverse and complex landscape whereby there are no harmonized rules at the EU level for the measurements of these risk limits or for the development of methodologies on how to calculate them. Hence every AIFM can have its methodologies of how to calculate risk limits something that makes it tougher for the supervisory authorities to monitor risk concentrations and systemic risks.<sup>126</sup>

Moving the corporate governance regime of the AIFMD includes all the procedures and organizational structures which point out the functions and responsibilities of all the stakeholders in the management of a credit AIF. Corporate governance also includes the topics of conflict of interest, valuation, transparency requirements, internal control mechanisms, and the remuneration policy. The AIFM should always act honestly and fairly and in the best interest of the fund and the investor. There should always be enough human and financial resources available to perform the management of the fund and all the conflicts of interest should be treated effectively. To comply with the requirements, there should be specific internal control mechanisms which include among others: a. procedures to prevent financial crimes, such as money laundering or inside trading or market manipulation; b. detailed and proper due diligence in choosing the correct investments from skilled personnel; c. training programs to ensure that all the personnel have the necessary knowledge to perform their tasks; and d. a compliance permanent function and an internal audit function.<sup>127</sup> There is a need to have an independent compliance function which is going to develop, implement, and monitor all the compliance policies and ensure that AIFM will comply with all regulatory requirements. The compliance officer which is the Head of the Compliance Function must be independent and he should have the authority resources, expertise, and access to all relevant information. The compliance staff should also be independent and should have the authority and access to all documents and any information. Their remuneration should be aligned with their objectives and tasks. Further, an internal audit function should be established. The internal audit function is the third line of defence which will examine and evaluate all internal procedures and controls of AIFM. Really important in the functioning of the manager is the valuation function,

<sup>125</sup> Art. 38, Commission Delegated Regulation (EU) No 231/2013

<sup>126</sup> KPMG, "Report on the Operation of the Alternative Investment Fund Managers Directive (AIFMD) – Directive 2011/61/EU," *Final Report*, 2018, 195; ALFI, "ALFI Q&A 'RM for AIF under AIFMD,'" July 2016, 15, [http://www.alfi.lu/sites/alfi.lu/files/files/Publications\\_Statements/Publications/Q&A-Risk-Management-for-AIFs-Update-July-2016-final.pdf](http://www.alfi.lu/sites/alfi.lu/files/files/Publications_Statements/Publications/Q&A-Risk-Management-for-AIFs-Update-July-2016-final.pdf).

<sup>127</sup> Art. 14, 15, 16, 18, 22-24 and Annex II, AIFMD.

which ensures that for every fund that it manages, there are procedures for the independent valuation of the assets. Moreover, all the models used need to ensure that all assets held by the fund are fairly and effectively valued.<sup>128</sup> Last but not least, the remuneration policy of the manager is detrimental to the mitigation of potential risks since without limits on the variable remuneration, the AIFM could be motivated to take excessive risks. To avoid this, the directive proposed the establishment and implementation of a remuneration policy for the personnel whose activities have an impact on the risk exposure of the fund and this policy should be consistent with the internal controls and the risk management procedures of the AIFM.<sup>129</sup>

The transparency regime is the final part of the directive which can play an important role in the protection of investors and the mitigation of systemic risk through the disclosure to investors and the reporting to the national authorities. The AIFM has obligations to make available, upon request, to investors and the national combating authorities, an annual financial report for each financial year and the report, for every fund, should include all information regarding the fund's balance sheet, the income and the expenses for the financial year, the activity of the fund, any material change in the investment strategy and objectives, and the compensation of the manager's personnel.<sup>130</sup> The disclosure to the funds' investors of information before they invest in the fund is the second transparency requirement and the disclosure should include the following information an overview: a. of the investment strategy and objectives of the fund; b. of the techniques it may use and the risks it may face; c. the process of changing investment strategy; d. the legal structure of the fund; e. a description of the monitoring of its depository and its staff; f. the initial capital that the manager holds; g. a description of all delegated functions; h. an overview of the valuation procedure; i. a liquidity management procedure and redemption policies; j. an analysis of all costs and charges that the manager and the investors should pay; the policy to ensure the fair treatment for investors and the reasons for preferential treatments on investors; k. and the latest financial report.<sup>131</sup> Finally, the third transparency requirement is the obligation to report to national authorities regularly on the markets and products in which the manager trades, on behalf of the fund that manages. The report should include information on the main instruments in which the fund is trading, the investment strategies, the geographical and sectoral investment focus, the markets where the fund is marketed, the structure of the fund's portfolio, and any other information in relation with liquidity and leverage that the supervisory authority may request.<sup>132</sup> Yet, these disclosure requirements do not contain data about loan origination and there is a lack of consistency between the various EU national authorities. Further, the disclosures have increased the cost that the managers have to bear significantly. Finally, the

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<sup>128</sup> Art. 60-66 AIFMD Delegated Regulation.

<sup>129</sup> Recital 24 and Art. 13 AIFMD.

<sup>130</sup> Art. 103-106 AIFMD Delegated Regulation

<sup>131</sup> Art. 23 AIFMD

<sup>132</sup> Art. 24 AIFMD and 110 AIFMD Delegated Regulation

reporting to different regulators, where the funds are registered, has imposed additional reporting templates in different languages and different procedures, making it harder to standardize and centralise reporting processes and mechanisms for all managers. Hence, although the quantity of information has increased, the quality of it and the consistency of the disclosures have decreased. This is the result of the duplication of information provided since the majority of information was already provided. This was a result of disclosures in other EU legislations or due to insufficient standardization in disclosures and consistency of disclosures among the EU member states, because of differences in legal forms and document formats and the blackness and complexity of the managers' fees.<sup>133</sup>

## **b. EU Securitisation Regulation.**

Since the discussion is around the tokenisation of CLO tranches, Regulation (EU) 2017/2402 which lays down a general framework for securitisation and which also creates a specific framework for simple, transparent and standardised securitisation can offer also some regulatory tools in the hands of regulators to monitor and tackle systemic risks generated from the tokenisation of CLOs.

To begin with, the securitisation regulation applies to CLOs where the originator sponsor or original lender of this product is located in the EU. Since CLOs allow investors to choose between several available tranches which represent different levels of risks and returns with the payments in respect of each tranche being dependent upon the performance of the underlying assets (loans), this has as a result that the CLOs falls within the definition of a securitisation included in the Regulation. The securitisation regulation has also developed a new framework for simple transparent and standardized securitisations (STS) which provide preferential regulatory capital treatment to certain credit institutions and investment firms. Yet, CLOs do not qualify for the STS label and only the general criteria of the securitisation regulation will be assessed.<sup>134</sup> The regulation defines securitisation and establishes due diligence, risk-retention, and transparency requirements for the parties involved in the securitisation, criteria for credit granting, requirements for selling securitisations to retail clients, a ban on re-securitisation, requirements for securitisation special purpose entities (SSPE), as well as continuous and procedures for securitisation repositories (Art. 1 of Securitisation Regulation). The SSPE is a corporation or other entity, other than an originator or sponsor which is established to carry out the securitisations and its structure serves the isolation of the obligations of this entity from those of the originator (Art. 2 (2)). The other parties involved in the securitisation is the originator which is an entity which itself or through other parties, directly or indirectly, is involved in the original agreement that created the underlying

<sup>133</sup> Peridis, *Alternative Lending*, 287–89.

<sup>134</sup> David Quirolo and Alexander Collins, “CLOs and the Securitisation Regulations,” *Leading The Way*, n.d., 341, [https://www.cadwalader.com/uploads/media/CLOs\\_and\\_the\\_Securitisation\\_Regulations.pdf](https://www.cadwalader.com/uploads/media/CLOs_and_the_Securitisation_Regulations.pdf).



assets or loans or the party that purchases third parties' loans and securitises them (Art. 2(3)). Further, a sponsor is a credit institution or an investment firm other than the originator which establishes and manages a securitisation structure which purchases the loans from the originator (Art. 2 (5)). Last but not least, an investor is any natural or legal person who can hold a securitisation position (Art. 2 (11)). In our case, a credit fund can play the role of both an investor and an originator; therefore, the relevant securitisation rules apply.

To sell securitisation positions to retail clients, the seller of the positions should comply with a few requirements. First, the seller must perform a suitability test per Article 25 (2) of the MiFID II Directive. Second, the seller must be satisfied based on the test that it performed that the securitisation position is suitable for that retail client. Third, the seller must communicate immediately to the retail client a report with the outcome of the suitability test (Art. 3 (1)). Last but not least, in case the financial instrument portfolio of the retail client does not exceed €500,000, the seller must ensure that the retail client does not invest more than 10% of its portfolio in securitisation positions (Art. 3 (2)).

Moving to the general requirements applicable to all securitisations, institutional investors should undertake due diligence on the originator, and sponsor or other lenders and they should verify that, where the originator is not a credit institution or an investment firm, the originator or original lender originates all the underlying loans based on sound and well-defined criteria and that the originator has in place procedures to apply those criteria (Art. 5 (1)). This is also laid down in Article 9 of the regulation which points out the criteria for credit-granting by originators, sponsors, and other original lenders. The above shall apply sound and well-defined criteria for credit-granting to all exposures regardless of whether there will be securitized or not. Hence, every originator or the other lenders should have an effective system in place to ensure that the origination of loans is based on an extensive assessment of the debtor's creditworthiness while taking into account all the factors that might affect the ability of the debtor to meet his obligations.

The securitisation regulation also introduced the risk retention rule which obliges the originator, sponsor original lender for securitisation to retain on an ongoing basis a material net economic interest in the securitisation of not less than 5%. This interest should be measured at the origination and should be determined by the notion of value for off-balance sheet items. There should not be any multiple application of retention requirements and the originator, sponsor or other lender should agree which entity will retain than economic interest. In case of no agreement, the originator should comply with this requirement. There are many options for retaining risk in securitisation transactions, but for CLOs, it is typically held as either a "vertical interest" or a "horizontal/first loss" interest. Last but not least, the risk retention rule does not apply where the securitized exposures are guaranteed by central governments and central banks, national promotional banks, regional governments, and other local authorities or public sector entities (Art. 6 (1) and (5)).<sup>135</sup>

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<sup>135</sup> Quirolo and Collins, 342.

Art. 7 of the Regulation points out that the originator, sponsor, and SSPE of a securitisation must make available to investors, national authorities and upon request to potential investors, specific information concerning the securitisation positions. Information on the underlying exposures (i.e. loans) must be disclosed quarterly, while all underlying documentation that is essential for the understanding of the transaction should also be provided. The documentation includes: i. the final offering document or the prospectus; ii. for traditional securitisation the asset sale agreement, the assignment novation or transfer agreement and the relevant declaration of trust; iii. the derivatives and guarantee agreements; iv. agreements on servicing or administration and cash management, any existing trust deed, or any other account bank agreement, agency agreement, or guaranteed investment contract; and v. any relevant inter-creditor agreement such as a liquidity facility agreement. If a prospectus has not been developed following the prospectus regulation, a transaction summary or overview of the main features of the securitisation, including information on the structure of the deal, the exposure characteristics, any voting rights of the holder's possessions, or any list with events that might have a material impact on the performance of the securitisation positions, should be provided to investors (and potential ones) and national authorities. The investors must be quarterly informed on all data on the credit quality and performance of the underlying exposures, on any event which might trigger changes in the priority of payments, on the cash flow generated by the underlying exposures and on the risk retained. Further, concerning non-EU CLOs, namely CLOs that have a non-EU issuer, manager or sponsor, but will be marketed to EU investors, the retention requirement of 5% will indirectly also apply. Yet, this does not also apply to the disclosure requirements of Art. 7. An express statement in Art. 7 that non-EU CLOs are included in its scope is not included, however, the fact that Art. 5 distinguishes between EU and non-EU sponsors, originators, or original lenders and also the fact that the Regulation designates which competent authorities will be responsible for supervising compliance with Art. 6-9, without mentioning the equivalent supervisory authority for non-EU CLOs, shows that only originators, sponsors, original lenders and other issuers established in the EU will be required to comply with Art. 6-9. Hence, a direct application of the disclosure requirements to non-EU CLOs is not the case, but the EU entity in the transaction with the non-EU sponsors, originators, managers or lenders will have to comply with the transparency requirements of Art. 7 and the investors must verify that the sell-side parties (irrespective of their location), comply with the respective obligations of the Securitisation Regulation before investing in this CLO.<sup>136</sup>

To be able to tackle systemic risk, the European Systemic Risk Board is

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<sup>136</sup> Milbank LLP, "Securitisation Regulation: Application of Disclosure Requirements to Non-EU CLOs," Milbank LLP, accessed May 1, 2023, <https://www.milbank.com/en/news/securitisation-regulation-application-of-disclosure-requirements-to-non-european-clos.html>; EU Commission, "REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL On the Functioning of the Securitisation Regulation," 18–20, accessed May 1, 2023, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0517&from=EN>.

responsible for the macroprudential oversight of the EU securitisation market. To avoid the build-up of systemic risks which might threaten the financial stability of the EU while taking also into consideration macroeconomic developments, the ESRB should continuously monitor developments in the securitisation markets and when it considers it necessary or at least every three years, it should highlight financial stability risks by publishing, in collaboration with the EBA, a report on the financial stability implications of the securitisation market. If material risks are observed, the ESRB will provide warnings and where appropriate issue recommendations for remedial actions, including modifications on the risk retention levels or other macroprudential measures (Art. 32 Securitisation Regulation). To achieve this goal, the ESRB needs the necessary information. The source of this information can be the securitisation repositories which can be registered with ESMA to assist investors with their due-diligence requirements in case of securitisation where a prospectus has to be drawn up or in other words public securitisations (Art. 7 (3) Securitisation Regulation). Information on securitisation subject to risk retention requirements should be reported by the originators, sponsors and SSPEs two securitisation repositories including information on the risk retention methods used, the type of securitisation, and the parties involved. Further, when a securitisation issues securities to the public, the originators, sponsors and the SSPEs should report information on the type of securities issued the securities characteristics and the parties involved to the repository. Information on securitisations which are backed by residential mortgage exposures should also be notified to the repository and the repositories should store the reported data on securitisation transactions for a specified period and they should make it accessible to relevant competent authorities and European authorities like ESMA and ESRB. ESMA has published technical standards specifying the information and the details of a securitisation that should be made available to a repository.<sup>137</sup>

Moreover, the national competent authorities should supervise the compliance of originators, original lenders and SSPEs with the obligations set out in the Securitisation Regulation and the competent authorities should have the supervisory investigatory and sanctioning powers necessary to fulfil their duties. They should regularly review the procedures, arrangements, and mechanics that the originator sponsors and SSPEs are having in place and they should monitor the reputational risks that might arise from securitisation transactions and also specific effects that the participation in securitisation markets might have on the stability of the financial institution that operates as a lender or originator or investor while taking under consideration the size of their capital buffers, the size of their liquidity buffers, and

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<sup>137</sup> EU Commission, “Commission Delegated Regulation (EU) 2020/1224 of 16 October 2019 Supplementing Regulation (EU) 2017/2402 of the European Parliament and of the Council with Regard to Regulatory Technical Standards Specifying the Information and the Details of a Securitisation to Be Made Available by the Originator, Sponsor and SSPE,” accessed April 22, 2023, [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2020.289.01.0001.01.ENG&toc=OJ:L:2020:289:TOC](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2020.289.01.0001.01.ENG&toc=OJ:L:2020:289:TOC).

the liquidity risk for investors due to a maturity mismatch between the funding and investments (Art. 30 Securitisation Regulation).

Since the EU securitisation regulation also covers securitisations offered to the public and retail investors in the form of securities, without distinguishing between technological ways to make this offer, it might also cover securitisations that are tokenized and offered to retail investors in the form of a token and through blockchain. In this case, the credit fund which will be the originator (in the case of a CLO) will have to retain a 5% economic interest in the securitisation. Yet, this scenario is accurate when the tokens offered in the specific jurisdiction can be classified as securities. In many jurisdictions in the EU, a tokenised CLO will be considered a security and then the offering will be a Security Token Offering and the securities laws like the Prospectus Regulation and the MiFID II Directive will kick in. For example, France, Germany, and Luxembourg consider that the usual regulatory framework for securities can be applied to a Security Token Offering - always on a case-by-case assessment- while the Czech Republic, Poland, and the Slovak Republic consider that security tokens do not constitute securities. There is still no harmonised framework for categorizing or defining crypto assets although in 2020 the EU Markets In Crypto-assets (MiCA) Regulation was proposed which provides a legal framework for the treatment of crypto-assets that are not covered by existing financial services legislation. MiCAR, as we will analyse in the next part, provides a framework for the issuance and provision of services related to crypto-assets. The proposal has formally been approved by the EU Parliament in April 2023 and its main provisions will start to apply over 12 months after publication in the EU's official journal.<sup>138</sup>

### **c. MiCAR**

The markets in crypto assets regulation is a part of the EU initiative to develop digital finance in the EU. The European Commission adopted in 2020 a new digital finance package which comprises a new digital finance strategy combined with a renewed retail payment strategy. The digital finance strategy has as objectives to remove the fragmentation in the digital single market, to develop a regulatory framework to facilitate digital innovation, to promote data-driven finance, and to mitigate risks and challenges which can be caused by digital transformation. The core of the EU digital finance package comprises the proposals for the creation of an EU regulatory framework on crypto assets. This includes the proposal for a new regulation in markets in crypto assets (MiCAR) as well as a proposal for a regulation in the pilot regime for market infrastructures based on Distributed Ledger Technology. While MiCAR handles crypto assets, the DLT pilot resume is

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<sup>138</sup> Clifford Chance, "SECURITY TOKEN OFFERINGS – A EUROPEAN PERSPECTIVE ON REGULATION," 4ff., accessed April 23, 2023, <https://www.cliffordchance.com/content/dam/cliffordchance/briefings/2020/10/security-token-offerings-a-european-perspective-on-regulation.pdf>.

introducing regulatory sandboxes which will allow temporary derogations from existing rules to assist the regulators to gain experience in distributed Ledger technology and also allow the developers of DLTs to test their ideas.<sup>139</sup> We will analyze the pilot regime in the next part of this paper to evaluate whether it can apply to tokenised CLOs and whether it can mitigate systemic risks.

MiCAR regulates on one hand the crypto assets and their issuers and on the other hand the crypto-asset service providers. In Title I of MiCAR, the scope and the definitions are described, namely the definitions for crypto-assets, asset-reference tokens and e-money tokens. Titles II to IV provide the rules on issuers of crypto assets and they deal with the asset-reference tokens which is the EU term for stablecoins (Title III) and also the rules for e-money tokens (Title IV). Title V deals with the crypto-asset service providers and the Title VI introduces the rules to prevent market abuse involving crypto assets. Title VII deals with the powers of the competent authorities and the cooperation between EBA, ESMA, and the competent authorities and the final two Titles (Title VIII and IX) deal with the delegated acts and the final and transitional provisions.

The long debate between ESMA<sup>140</sup>, EBA<sup>141</sup> and the ECB<sup>142</sup> have led to a classification of tokens in the EU. The different categories of tokens are the following: i. utility tokens which give the right of access to a specific service or product often provided by a specific platform or company and which is not a traditional security or financial asset; ii. Security tokens which also are called investment and financial tokens grant rights in the form of ownership similar to dividends and are linked to an underlying asset which can be in the scope of other financial regulatory regimes, like securities regimes or investment fund regimes; and iii. payment tokens which are used as an exchange mechanism, meaning to enable the purchase or the selling of assets. In the third category, a sub-category can also be included, the so-called stablecoins which are asset-back or algorithmically structured tokens which maintain a stable volatility and price. In MiCAR, the EU Commission has included: i. the asset-referenced tokens (ARTs), a category used to describe stable coins; ii. the e-money tokens, which refer to payment tokens not included in the ARTs category; and iii. crypto assets other than ARTs or e-money tokens, which include utility tokens. To capture also a better systemic risk, MiCAR adds additional prudential requirements and thresholds, above which a specific ART or e-money token can be considered a systemic threat to the market. This led to two additional categories, namely the significant ART and the significant e-money token. The category of security tokens is not included in the scope of MiCAR because the

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<sup>139</sup> Dirk Andreas Zetzsche et al., “The Markets in Crypto-Assets Regulation (MICA) and the EU Digital Finance Strategy,” *SSRN Electronic Journal*, 2020, 2–4, <https://doi.org/10.2139/ssrn.3725395>.

<sup>140</sup> ESMA, “Advice on Initial Coin Offerings and Crypto-Assets,” accessed April 23, 2023, <https://www.esma.europa.eu/document/advice-initial-coin-offerings-and-crypto-assets>.

<sup>141</sup> EBA, “EBA Reports on Crypto-Assets,” European Banking Authority, January 9, 2019, <https://www.eba.europa.eu/eba-reports-on-crypto-assets>.

<sup>142</sup> ECB, “Opinion of the European Central Bank of 19 February 2021 on a Proposal for a Regulation on Markets in Crypto-Assets, and Amending Directive (EU) 2019/1937 (CON/2021/4) 2021/C 152/01” (2021), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021AB0004>.

security tokens are already covered by existing EU financial regulations. In particular, Art 2(3)(a) MiCAR set outside of its scope crypto assets which qualify as i. financial instruments as defined in Article 4 (1) point 15 MiFID II; ii. Deposits and structured deposits (Art. 4 (1) (43) MiFID II); iii. Funds (Art. 4 (25) PSD2); iv. Securitisation positions (Art 2 (1) Securitisation Regulation); v. non-life or life insurance products falling within the classes of insurance listed in Annexes I and II of the 2009/138/EC Directive; vi. Pension products which have as a primary purpose the provision of income to the investor in retirement; vii. individual pension products for which a financial contribution from the employer is required; and viii. social security schemes. Concerning the regulated activities, MiCAR applies On the one hand to the issuance offering to the public and admission to trading of in-scope crypto assets and on the other hand to the provision of services related to crypto assets in the EU. In a nutshell, MiCAR introduces a public supervisory regime without touching the private law sphere. MiCAR is leveraging key elements from the MiFID II framework, namely the governance requirements; prudential requirements; organizational requirements; and authorization or licensing requirements. This model applies to both entities issuing in-scope crypto-assets and to entities offering crypto-asset services. In accordance with their importance for the systemic stability and the protection of investors, the issuers of crypto-assets and the service providers of crypto-assets have to follow different authorization requirements and they are supervised differently. Hence, the issuers of other crypto assets are exempt from prior authorization, the issuers of ARTs and e-money tokens and also the crypto-asset service providers, require authorization and are supervised by the equivalent national authority, the significant crypto-asset service providers are indirectly supervised by the ESMA, and the issuers of significant ARTs and significant e-money tokens are supervised by EBA and are subject to licensing.<sup>143</sup>

From the above, it is clear that in the case of the tokenised CLOs, these are not captured in the scope of MiCAR, since as it is described in the previous part, they fall under the scope of the STS Securitisation Regulation and the tokenised CLOs could also be classified as financial instruments (e.g. transferable securities) per MiFID II. Hence, MiCAR token rules are not applicable in this case.<sup>144</sup> Yet, this classification and limitations of MiCAR's scope can create issues in the interpretation and implementation of the relevant rules, since many EU Members define differently what is a transferable security to the financial instrument definition. Many tokens will be classified as transferable securities since this is typically an issue of identifying whether a token is functionally similar to a share, bond, or any other instrument. Further, one of the requirements of being transferable is to be able to be negotiable; therefore, the interpretation of what is negotiable and what is similar to shares of bonds may be different under the corporate law of the different member states. This

<sup>143</sup> Filippo Annunziata, "The Licensing Rules in MiCA," *SSRN Electronic Journal*, 2023, 108ff., <https://doi.org/10.2139/ssrn.4346795>.

<sup>144</sup> Christos Gortsos, "The Commission's 2020 Proposal for a Markets in Crypto-Assets Regulation ('MiCAR'): A Brief Introductory Overview," *SSRN Electronic Journal*, 2021, 21, <https://doi.org/10.2139/ssrn.3842824>.

can result in divergences from one member state to another and a lack of full harmonization.<sup>145</sup>

#### **d. Regulation on Distributed Ledger Technology Market Infrastructure**

As it was analyzed before, the EU digital finance package comprised of the MiCAR and the Regulation on a pilot regime for market infrastructures based on distributed ledger technology (DLT Regulation)<sup>146</sup> which in 2022 was published in the Official Journal of the European Union and it is applicable since March 2023. The DLT Regulation covers specifically crypto-assets falling under the MiFID II definition of financial instruments which are out of the scope of MiCAR; therefore, it complements MiCAR. The DLT Regulation tries to mitigate the challenges arising from the tokenisation of financial instruments concerning investor protection, market integrity, financial stability, and energy consumption. The aim of the DLT Regulation is twofold; first to establish the conditions under which crypto-assets can be traded and settled using DLT; and second to enable regulators to increase their knowledge on DLT-based solutions to remove regulatory constraints which will limit the development of DLT. To achieve the latter, the DLT Regulation introduces an initial “sandbox approach” (pilot regime) which allows the experimentation with DLTs in a secured, control space with temporary derogations (exemptions) from existing financial services rules.

The DLT Regulation is developed to solve the issue that the financial services legislation in the EU was not designed to be compatible with DLT and crypto-assets. Thus, there might be limitations in the issuance, trading, and settlement of crypto-assets qualifying as financial instruments through the use of DLT. The regulation lays down requirements for DLT market infrastructures and their operators with the grounding or withdrawing of permissions to operate DLT market infrastructures, with the exemptions and their conditions related to specific permissions, with the operation and supervision of DLT market infrastructures, and with the cooperation between operators of these infrastructures, national authorities and ESMA (Art 1 of DLT Regulation). Further, according to Art. 2 of the Regulation a distributed ledger means “an information repository that keeps records of transaction and that is shared across, and synchronised between a set of DLT network nodes using a consensus mechanism” and a DLT financial instrument is a financial instrument (per definition of Art (4) (1) (15) MiFID II) “that is issued, recorded, transferred, and stored using distributed ledger technology”. Article 2 is further specified by Article 3 of the DLT regulation which introduces the conditions under which DLT financial instruments may be admitted to trading or recorded on DLT market infrastructures. In accordance

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<sup>145</sup> Zetzsche et al., “The Markets in Crypto-Assets Regulation (MICA) and the EU Digital Finance Strategy,” 21–22.

<sup>146</sup> EU Commission, “Regulation (EU) 2022/858 of the European Parliament and of the Council of 30 May 2022 on a Pilot Regime for Market Infrastructures Based on Distributed Ledger Technology, and Amending Regulations (EU) No 600/2014 and (EU) No 909/2014 and Directive 2014/65/EU (Text with EEA Relevance),” 151 OJ L § (2022), <http://data.europa.eu/eli/reg/2022/858/oj/eng>.

with Art. 3 DLT Regulation, DLT financial instruments should only be admitted to trading on a DLT market infrastructure or be recorded on the DLT market infrastructure if, at the moment of admission to trading or the moment of recording on a distributed Ledger, the DLT financial instruments are either: a. Shares, the issuer of which has a market capitalization, or a tentative market capitalization, of less than €500 million; b. bonds or other forms of securitized debt, including depository receipts in respect of such securities or money market instruments, with an issue size of less than €1 billion, excluding those that embed a derivative or incorporate a structure which makes it difficult for the client to understand the risk involved; or c. units in collective investment undertakings covered by Article 25 (4), point (a)(iv) of Directive 2014/65/EU, the market value of the assets under management of which is less than €500 million. Last but not least, the aggregate market value of all the DLT financial instruments that are admitted to trading on a DLT market infrastructure or that are recorded on a DLT market infrastructure shall not exceed €6 billion at the moment of admission to trading, or initial recording, of a new DLT financial instrument.

Moving to the DLT market infrastructures, the DLT Regulation leverages structures and concepts from the MiFID II and Central Securities Depositories Regulation (CSDR). In particular, the DLT Regulation introduces three DLT Market infrastructures which include: a. DLT multilateral trading facilities (DLT MTFs); b. DLT settlement systems (DLT SS); and c. DLT trading and settlement systems (DLT TSS). A DLT MTF is a multilateral trading facility that only admits to trading built financial instruments (MTF as per MiFID II), while a DLT SS is a settlement system that settles transactions in DLT financial instruments against payment or delivery (SS i.e. Settlement System which is a definition contained in CSDR). The DLT TSS should be either a DLT MTF that combines services performed by a DLT MTF and buy a DLT SS, operated by an investment firm or a market operator that has received this specific license to operate a DLT TSS, or a DLT SS that combines the services performed by a DLT MTF and by DLT SS operated by a central securities depository that has received the necessary permission to operate at DLT TSS. The operation of DLT market infrastructures it's subject to specific permission and supervision by the competent authority of each member state. This permission can be granted to authorized investment firms, central securities depositories, or other regulated market operators and the application should contain the following: a. the applicant's business plan and the rules of the DLT market infrastructure; b. a description of the functioning of the DLT used; c. a description of the applicant's overall IT and cyber arrangements; d. proof that the applicant has in place sufficient prudential safeguards to meet its liabilities and to compensate its clients and a description of the safekeeping arrangements for clients; e. a description of the arrangement for ensuring investor protection; f. the applicant's transition strategy; and h. exemptions that the applicant has requested by the pilot regime. (Art. 8-10 DLT Regulation). The introduction of the DLT market infrastructures supports the trading of DLT financial instruments, creating a hook secondary market it would be able to provide liquidity and enable investors to buy and sell such assets. Hence the financial regulation



regimes that govern the crypto-primary markets, namely the issuance storing and transferring of crypto assets which can qualify as financial securities are linked with the DLT regulation which is regulating the secondary market and the trading venues. The traditional market infrastructures cannot be used because they might pose limitations in the use of DLT due to their structure and functioning. For example, the traditional MTFs are allowed as members-only investment firms, credit institutions, and other entities that have an extensive level of trading ability and specific organizational structure and resources, while many crypto platforms offer access directly to retail investors. Hence, this obligation of intermediation that the traditional MTFs impose could be an obstacle to the use of DLT in trading tokenized securities. Concerning the transparency requirements, a recent report from ESMA showed that although DLT MTFs can be exempted from pre-and post-trade transparency and data reporting requirements, there are no key differences between DLT and standard instruments and the transparency regime applicable to all other financial instruments should be also applicable to DLT financial instruments. The DLT Regulation is not automatically extended to all DLT infrastructures, but only to those falling within its scope, meaning that when a financial instrument using DLT is not within its scope, it will be covered by the existing MiFID II framework.<sup>147</sup> Last but not least, the DLT Regulation offers also an EU Passport to operate a DLT market infrastructure throughout the Union for up to six years.<sup>148</sup>

Concerning tokenised CLOs, it seems initially that their issuance, trading and settlement can be governed by the DLT Regulation since securitized debt is within the scope of the DLT Regulation. Yet, the Regulation also mentions that debt instruments which incorporate a structure making it difficult for the client to understand the risk are not subject to the DLT Regulation. Following ESMA Guidelines, the instrument the return of which is dependent on the performance of a defined asset pool is included in the category of the instruments whose structure makes it difficult for the client to understand the risk. Hence, securitisations and tokenised CLOs whose return is dependent on the asset pools are not within the scope of DLT Regulation, meaning that the regulation of tokenised CLOs continues to be the traditional financial regulations, namely the Securitisation Regulation, the Prospectus Regulation and MiFID II.<sup>149</sup>

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<sup>147</sup> Filippo Annunziata, Anna Chiara Chisari, and Paolo Roberto Amendola, “DLT-Based Trading Venues and EU Capital Markets Legislation: State of the Art and Perspectives under the DLT Pilot Regime,” *SSRN Electronic Journal*, 2023, 9 and 13–17, <https://doi.org/10.2139/ssrn.4344803>.

<sup>148</sup> Dirk Andreas Zetsche and Jannik Woxholth, “THE DLT SANDBOX UNDER THE EU PILOT REGULATION,” *SSRN Electronic Journal*, 2021, 22, <https://doi.org/10.2139/ssrn.3833766>.

<sup>149</sup> ESMA, “Guidelines on Complex Debt Instruments and Structured Deposits,” n.d., 5ff., [https://www.esma.europa.eu/sites/default/files/library/2015-1787\\_-\\_guidelines\\_on\\_complex\\_debt\\_instruments\\_and\\_structured\\_deposits.pdf](https://www.esma.europa.eu/sites/default/files/library/2015-1787_-_guidelines_on_complex_debt_instruments_and_structured_deposits.pdf).

## e. Prospectus Regulation and MiFID II

As it was analyzed above, the offering of tokenised CLOs can be classified in many EU jurisdictions as offering of securities, while in a few other member states the tokenised CLOs are not considered securities at all. Before the securities can be offered in a primary market or traded in a secondary market, the issuer has to develop a prospectus which would be published upon its approval from the relevant competent authority. The prospectus contains all the information which is necessary for informed investors to understand the risks, the nature of the product, the structure of the product, any potential conflicts of interest, their rights and obligations and all other information that will assist them to take an informed investment decision.<sup>150</sup> In the EU, the Prospectus Regulation<sup>151</sup> covers the primary market, namely initial offerings of securities to the public in the EU. Whoever intends to offer securities on the primary market inside the EU must comply with the EU Prospectus Regulation and be approved by a national competent authority (Art.1). The core of the EU prospectus regulation is the concept of a “security” which is a subcategory of the broader concept of financial instruments. The MiFID II creates the general environment of services related to capital markets including the issuance of securities and the definition of what is a financial security. It also offers a framework for the creation of an environment for the trading of securities in the secondary market namely by the establishment of trading venues. Although it is not applicable *per se* for the tokenisation of securities and tokenised CLOs, it is affecting with its definitions the classification of the tokenised CLOs as securities that require the publication of a Prospectus in accordance with the Prospectus Regulation. In accordance with Art 2(a) of the Prospectus Regulation and Art. 4 (1) (44) of MiFID II, the criteria for an instrument to be a security are: a. transferability; b. standardization; and c. negotiability on capital markets. For example, shares, bonds and respective derivatives can be considered as transferable securities. Tokenised CLOs can be considered transferable securities, since a. they can first be assigned to another person (transferred); b. they are negotiable on a capital market, namely either through the use of a MiFID II trading venue (since DLT trading venues cannot be used) or through cryptocurrency exchanges which can be considered capital markets; and c. the tokens, although they can come in different forms, they have a level of standardisation (e.g. code, issued by same issuer, name, number of available units). Further, tokenised CLOs could be equated with securitised debt, and subject to a

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<sup>150</sup> Hacker and Thomale, “Crypto-Securities Regulation,” 14–15.

<sup>151</sup> EU Commission, “Regulation (EU) 2017/1129 of the European Parliament and of the Council 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, and Repealing Directive 2003/71/EC Text with EEA Relevance.,” 168 OJ L § (2017), <http://data.europa.eu/eli/reg/2017/1129/oj/eng>.

case-by-case analysis tokenised CLOs could be considered as securities by some EU Member States, while by others not.<sup>152</sup>

The Prospectus Regulation offers also a passporting regime which allows securities to be marketed throughout the EU if they have been probably approved by the whole member state (Art. 24 Prospectus Regulation). This might raise some issues especially when one member state does not recognize tokenised securities as securities. Moreover, according to Art. 7, the prospectus needs to contain sufficient information on the issue of the securities and the issuer's financial information including a selection of historical key financial information for the financial year of the period covered by the key financial information, information on other risk factors, and financial statements.<sup>153</sup> These transparency rules, the approval of the prospectus from the national authority and its publication have as a target the protection of investors. Yet, the Regulation does not have as a target to mitigate or tackle systemic risks directly which might lead to the spread of systemic risks through tokenised securities, especially tokenised CLOs.

## **6. Assessment, Proposals and Concluding Remarks.**

### **a. Assessment**

As discussed above, there are a few legislative acts which govern the tokenisation of CLOs. The AIFMD regulates the managers of the Credit funds which securitise their loans. The EU Securitisation Regulation governs the securitisation of the loans into CLOs and the Prospectus Regulation and MiFID II kick in when the securitised CLOs are offered to the public. The question which remains is whether the above legislations protect the investors and mitigate systemic risks which might harm the financial system. First of all, the AIFMD contains rules on leverage and liquidity management, but these rules cannot capture the systemic impact that the failure of a fund can cause, since the rules are of a micro-prudential and not of a macro-prudential framework.<sup>154</sup> The reputational risk that is linked with the failure of the fund, can transmit the contagion to the other funds of the manager or the manager itself, causing the failure of many entities and a financial impact and damage to the investors and in the end to the whole financial market. Further, the fact that the

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<sup>152</sup> Hacker and Thomale, "Crypto-Securities Regulation," 19–25; Philipp Maume, "INITIAL COIN OFFERINGS AND EU PROSPECTUS DISCLOSURE," n.d., 9–12, <https://ssrn.com/abstract=3317497>.

<sup>153</sup> Philipp Maume, "INITIAL COIN OFFERINGS AND EU PROSPECTUS DISCLOSURE," 22ff.

<sup>154</sup> European Central Bank, "Macroprudential Liquidity Tools for Investment Funds - A Preliminary Discussion," European Central Bank, 3, accessed August 15, 2019, [https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu201810\\_03.en.html](https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu201810_03.en.html); ESRB, "Macroprudential Policy beyond Banking: An ESRB Strategy Paper," [https://www.esrb.europa.eu/pub/pdf/reports/20160718\\_strategy\\_paper\\_beyond\\_banking.en.pdf](https://www.esrb.europa.eu/pub/pdf/reports/20160718_strategy_paper_beyond_banking.en.pdf), 10.

investors of those credit funds are usually big institutional players, like pension funds and insurance companies or other credit institutions means that a collapse of a credit fund or manager can cause panic to the market and contagion.<sup>155</sup> Moreover, the AIFMD contains rules for transparency like the disclosures to investors and the national authorities, and the annual report. Yet, the data that are contained in these disclosures do not always cover the loan origination and the tokenisation of the loans using tokenised CLOs and the data cannot capture the systemic risks at an EU level since the reporting to regulators is conducted at a national level. Since in the case of tokenised CLOs, some jurisdictions won't even need any data because they are not considering CLOs as securities, it means that the transparency is fragmented, and the risks are not captured in a holistic and pan-European way. Another issue arises due to the lack of a consistent understanding of the reporting requirements across jurisdictions and among the AIFMs and regulators. In a recent report, ESMA pointed out as issues: a. the lack of information reporting on AIFM's investment strategies and its legal and operational issues to the national authorities regularly; b. the lack of reporting on both EU and non-EU AIFs that are not marketed in EU; and c. the data that ESMA received from national authorities were not reliable and complete, making it harder for ESMA to compare them and assess them.<sup>156</sup>

The Securitisation Regulation offers the risk retention rule and the provision of information to investors and national authorities. Yet, some EU Member States do not consider tokenised securities as securities. This can create gaps in the transparency of the Securitisation information which are available and will make investor protection more difficult and the monitoring of systemic risk by the ESRB and the national authorities harder. Further, the templates for the reporting of the CLO transactions cover the constituents of the CLOs but not whether those are tokenised and there is no obligation of the original lenders, originators or sponsors of the non-EU CLOs to comply with the transparency requirements of the Securitisation Regulation. Moreover, in accordance with the EU Commission Report, the reporting templates are difficult to complete with unnecessary fields and they do not fully align the data with the investor's needs.<sup>157</sup> Last but not least, the Prospectus Regulation and MiFID II Directive regulate the provision of securities to investors, but they are tools which serve mostly the protection of investors and not directly the tackling of systemic risk. As discussed, since there is not a common approach among EU Member States on whether tokenised securities are considered financial securities, this creates a risk of lack of information for both investors and regulators and the fact

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<sup>155</sup> Melanie Gasperi, "Managing Reputational Risk in Asset Management," 2017, 1; Laurent Clerc et al., "Indirect Contagion: The Policy Problem" (ESRB, January 2016), 4ff., [https://www.esrb.europa.eu/pub/pdf/occasional/20160126\\_occasional\\_paper\\_9.pdf?4e2c080fcc9a6f3af8f1e095fc62f3ff](https://www.esrb.europa.eu/pub/pdf/occasional/20160126_occasional_paper_9.pdf?4e2c080fcc9a6f3af8f1e095fc62f3ff); Ian Tower et al., "How the Financial Crisis Affects Pensions and Insurance and Why the Impacts Matter," *IMF Working Papers* 09, no. 151 (2009): 4ff., <https://doi.org/10.5089/9781451872989.001>.

<sup>156</sup> KPMG, "Report on the Operation of the Alternative Investment Fund Managers Directive (AIFMD) – Directive 2011/61/EU," 152ff.

<sup>157</sup> EU Commission, "REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL On the Functioning of the Securitisation Regulation," 9.

that the Prospectus Regulation and MiFID II allow authorized securities to be marketed across EU will ease the transmission of systemic risks.<sup>158</sup> Finally, the monitoring of systemic risks is left with the national competent authorities and there is a lack of a European Supervisory Authority which will specifically monitor the risks created by the tokenisation of securities, including CLOs.

## **b. Proposals**

Although the investor protection and the systemic risk targets are not fully achieved, there are a few tools that might assist the regulators towards this direction. In general, crypto-assets pose a threat to systemic stability and they could have contagion effects on the financial system. There is an analysis by the Financial Stability Board and the ECB argued that crypto assets can't pose a risk to financial stability and that the crypto asset markets need to be effectively regulated and supervised. Further, the cross-border and global nature of the crypto and blockchain universe demands a holistic and coordinated approach among authorities.<sup>159</sup>

In relation to AIFMD<sup>160</sup>, the first tools that should be developed and used by the regulators are macro-prudential leverage and liquidity tools. A single measure cannot identify calculate and monitor the systemic implications of leverage risk across the fund universe, but a chain of different measures should be used to mitigate leverage risk. The development of a comprehensive and common leverage limit and the design of common EU-wide methodologies to calculate the leverage exposures and limits are important to ensure coordination among national authorities and the effective monitoring of the systemic risk caused by credit funds. The limits should be set at a level which will allow the fund managers to use leverage for their benefit without creating additional risks.<sup>161</sup> In relation to liquidity risk, the first tool that could be applied at an EU level is to define the structure of credit funds, meaning if they can be structured as open-ended, closed-ended, or both and the alignment of the liquidity policy of the funds following their structure and investment policy. Another tool could be the use of market-wide macroprudential stress testing to measure the impact of redemption shocks and liquidity shortages on the credit funds, and finally, a third measure could be the use of liquidity buffers, which can be used by the fund managers to meet redemption requests in case of financially distressed periods.<sup>162</sup> Moving to the transparency regime, the reporting AIFMD template does not contain

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<sup>158</sup> Hacker and Thomale, "Crypto-Securities Regulation," 40–41.

<sup>159</sup> Alexandra Born and Josep M. Vendrell Simón, "A Deep Dive into Crypto Financial Risks: Stablecoins, DeFi and Climate Transition Risk," July 11, 2022, [https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu202207\\_1~750842714e.en.html](https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu202207_1~750842714e.en.html).

<sup>160</sup> This AIFMD section is based on my previous work which was reviewed and amended for the purpose of this paper. Please refer to: Peridis, *Alternative Lending*, 359ff.

<sup>161</sup> ESRB, "Recommendation of the European Systemic Risk Board of 7 December 2017 on Liquidity and Leverage Risks in Investment Funds (ESRB/2017/6)," n.d., 52, Recommendation E.

<sup>162</sup> ESRB, "Macroprudential Policy beyond Banking: An ESRB Strategy Paper," 18ff.; Peridis, *Alternative Lending*, 362–66.

the data on leverage, liquidity, loan origination or securitised positions and the reporting of this data should be done following common methodologies across the EU in order also for ESMA to be able to assess them. ESMA should develop guidelines on the information that the national authorities should ask from the AIFMs or the other parties included in the securitisation process and it should also develop an EU-wide template which will also capture tokenisation information.<sup>163</sup>

Moving to the Securitisation Regulation, the EU Commission has provided some proposals, but still, some flaws remain and should be faced by the regulators. ESMA should review the transparency templates and delete fields which do not assist investors with their investment decisions. Further, EU Commission, proposes that investors must invest only in securitisations that comply with all requirements of the Regulation regardless of the location of the parties and if any of the originator, sponsor or SSPE is EU-based, then it should comply with the reporting and disclosure requirements. This will create an additional administration burden to the CLOs providers and additional compliance costs, and it might lead them out of the market leaving fewer options for investors and higher concentration risk. Last but not least, EU Commission identified macroprudential concerns concerning securitisation products and asked the Joint Committee of the ESAs to assess whether the securitisation prudential framework has met its objective. Although, the Joint Committee argued that there is ground for improvement of the efficiency and risk sensitiveness of the securitisation framework, it considered only Credit Institutions, Insurance and re-Insurance undertakings and not AIF/AIFMs which can also have a macro-prudential impact.<sup>164</sup> The picture is completed with the Prospectus Regulation which should impose the disclosure of specific information on the code underlying the blockchain-based vehicle used, on the token sale, specific information on any blockchain or crypto-entities involved (such as information on the core developers), on the entity that it is issuing the tokens, on any mining issue and in general any other blockchain/crypto related information which will help the investor having a more clear image on the investment.<sup>165</sup>

Moreover, the role of ESMA and ESRB should also be reassessed, and it should be explored whether any of those could play the supervisory role at an EU level. Finally, it should also be explored by the regulators whether there is a need for a delegated regime of the MiCAR or the future DLT Regulation, which will make clearer how to deal with tokenised securities at an EU level and the disclosures and reporting that the parties should do to protect more efficiently the investors and to tackle any arising systemic risk since overlapping regulatory regimes and a fragmented regulatory landscape can excessively burden the developers of tokenised

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<sup>163</sup> Barbara Novick et al., “Macroprudential Policies and Asset Management,” n.d., 2ff.

<sup>164</sup> EU Commission, “REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL On the Functioning of the Securitisation Regulation,” 18–25; Joint Committee of ESAs, “Joint Committee Advice on the Review of the Securitisation Prudential Framework,” 1ff., accessed May 1, 2023, [https://www.eiopa.europa.eu/publications/joint-committee-advice-review-securitisation-prudential-framework\\_en](https://www.eiopa.europa.eu/publications/joint-committee-advice-review-securitisation-prudential-framework_en).

<sup>165</sup> Hacker and Thomale, “Crypto-Securities Regulation,” 42f.

securities, it can increase sources of information and the complexity making it harder for investors to assess all available information and decide on their investments (i.e. undermining investor protection), and also tougher for the authorities to monitor the risks build up in the financial ecosystem.<sup>166</sup>

### c. Concluding Remarks

This paper deals with the upcoming trend of the tokenisation of securities and it focuses especially on the CLOs as an instrument which might also contribute to alternative lending by involving alternative lenders like credit funds. First, the paper set the Alternative Lending Scene in the EU by presenting the different alternative lending methods, like the use of credit funds or securitisations. Since the question is around the tokenisation of those products and the use of the Blockchain technology, in its next part the paper analysed the main concepts and applications of the Blockchain technology and introduced the tokenisation of assets and its use. The fourth part introduced the tokenisation of CLOs which are funded by loans originated by Credit Funds and explained the risks arising from this relationship. The fifth part presented the regulatory tools available in the EU to deal with these risks and the final part offered some proposals to increase the efficiency of those tools and assist the regulators to achieve the targets of investor protection and systemic risk mitigation.

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<sup>166</sup> Hacker and Thomale, 44.

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