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Regulating Cryptocurrencies:

in the light of the principle of creditor protection

Dissertation to obtain a Master's Degree in Law, in the specialty of Master in Law – Specialization in Business Law and Technology.

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Lisbon, 2023

To my most precious "intangible assets" in life:
Maria Clara and Luiz Felipe

ACKNOWLEDGEMENTS

The dream of studying abroad has inhabited my mind for almost 20 (twenty) years. Since 2003, when I got my degree from the Federal University of the State of Minas Gerais (UFMG) in Brazil, the desire to go overseas in search of knowledge and learning has accompanied me. Even though I completed my academic career in Brazil (with my master's and PhD granted in 2007 and 2013, respectively), the desire remained in me. This present *master's thesis*, therefore, is the consolidation of that dream and for that I must thank, firstly, God; secondly, my family, who followed me on the long journey and on the deeply enriching experience of living in Portugal for a year: it was for you, to us, for us.

I would also like to thank my brother, PhD Frederico Fernandes Ribeiro Maia, an example of an educator and researcher, who, even from far away, was always there with the support and encouragement that I needed to keep moving forward.

I thank my parents, Cristina and Agenor as well, who fought for my education and for being the foundation of my human and professional values, enabling me, years later, to cross the Atlantic.

Finally, I thank Professor PhD Miguel de Azevedo Moura for his cordial, provocative and attentive guidance; and, as well my partners, colleagues and friends at BRITO & MAIA Advogados e Consultores and MANEIRA ADVOGADOS | associado a ECIJA, specially my team during that time, who have always been supportive and loyal to me (André Câmara, Renata Freitas, Marco Aurélio, Paula Salles, Mayra Corrente, Gabriela Balkanski, Daniela Alencar and Luísa Portella).

"This is a monetary revolution."[1]
(Nick Spanos)

"After all, there is an element in the readjustment of our financial system more important than currency, more important than gold, and that is the confidence of the people."[2]
(Franklin D. Roosevelt)

"The future of money looks nothing like its past. It is already apparent that handling physical cash is a lot like sending faxes in the age of email: it works, but it is an incomprehensible, complicated and antiquated process."[3]
(Paulo Alcarva)

[1] In: www.netflix.com/title/80154500, accessed on 2th January, 2018.
[2] Words of President Franklin Roosevelt in 1933, after a severe period of recession. Available at http://www.fdic.gov/bank/historical/brief/brhist.pdf, accessed on May 10th 2012.
[3] ALCARVA, 2018.

Declaração Antiplágio

Declaro por minha honra que o trabalho que apresento é original e que todas as minhas citações estão corretamente identificadas.

As seguintes partes desta dissertação de mestrado foram parcialmente construídas com base em um trabalho apresentado anteriormente por mim (e de minha exclusiva autoria) como parte da avaliação do curso de mestrado "Fintech" (Prof. PhD Miguel Moura), que permanece e permaneceu inédito: capítulos 2 e 3, páginas 17 a 43.

Tenho consciência de que a utilização de elementos alheios não identificados, constitui uma grave falta ética e disciplinar.

De Belo Horizonte/MG (Brasil) para Lisboa, em 04 de dezembro de 2023.

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* * *

Anti Plagiarism Statement

I hereby declare that the work I present, is my own work and that all my citations are correctly acknowledged.

The following parts of this master thesis were partially built on a previously submitted work as part of the evaluation of the master's degree course 'Fintech' (Prof. PhD Miguel Moura), which remained unpublished: chapters 2 and 3, pages 17 to 43.

I am aware that the use of unacknowledged extraneous materials and sources, constitutes a serious ethical and disciplinary offence.

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Declaração Sobre o Corpo Da Dissertação

Para os fins contidos no Regulamento do Mestrado (Regulamento n.º 495/2022) da Faculdade de Direito da Universidade NOVA de Lisboa, item 4 do artigo 21º, declaro que o corpo do texto, assim considerado da Introdução à Conclusão, contém 202.565 (duzentos e e dois mil, quinhentos e sessenta e cinco) caracteres.

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Felipe Fernandes Ribeiro Maia

* * *

Declaration On The Body Of The Dissertation

For the purposes of the Master's Regulations (Regulation 495/2022), Nova School of Law (Universidade NOVA de Lisboa), item 4 of article 21, I declare that the body of the text, from the Introduction to the Conclusion, contains 202,565 (two hundred and two thousand, five hundred and sixty-five) characters.

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ABSTRACT

The aim of this research is to understand the current context in which digital currencies ("cryptocurrencies") are inserted in Brazil and Europe, notably in Portugal, from the point of view of credit and creditor protection. The analysis is focused on Federal Act 14.478 of 2022 and, in the case of Europe, the MiCA Regulation, precisely with regard to cryptocurrencies and the stage of regulation. It was also necessary to understand the legal systems of both countries (Brazil and Portugal), regarding the discipline of Civil Procedure (Execution Procedure), fraud against creditors and execution, as well as asset concealment, from a civil, administrative, tax and criminal point of view. This is a descriptive and comparative study, with content analysis and a literature review as the main methodological tools. Exploratory and empirical methodologies were used to develop the research, structuring the rhetorical content of the dissertation through five main chapters, which can be summarised in the following questions: what are cryptocurrencies (and what are they not) and what is the stage of regulation of crypto-assets in Brazil and Portugal/Europe? Is there a recognized principle of credit and/or creditor protection? If so, does this principle derive from a state duty to create institutions and institutes capable of protecting credit? Realised the existence of the principle and the state duty to organise and institutionalise it, has the regulation of cryptocurrencies in Brazil and Portugal complied with this principle/state duty, especially regarding to the concealment of assets? Is the procedural system (of credit recovery and protection against fraud against creditors or enforcement) in both countries adapted to the reality and new technology of blockchain and cryptos? If the principle of credit and creditor protection has not been observed by the regulation, what would be the *lege ferenda* proposals in order to mitigate or even eliminate (ideal world) the possibility of using cryptoassets to hide assets and defraud creditors? In the end, we conclude that the principle has not been observed by state regulation and that the change would involve state intervention in the economic domain and in the spheres of private autonomy of those regulated, so as to only allow the application/investment/allocation and ownership of cryptocurrencies - above a certain value - through *gatekeepers* (institutional perspective, via brokers/exchanges or investment funds, and through *hot* or *online wallets* only), because the crypto-asset circulation system (decentralised) does not allow these assets to be captured and blocked by the electronic systems of the banking authorities (SISBAJUD in Brazil and PERTO in Portugal). In addition, technology must be adapted somehow to the law in order to enable the forced transfer of cryptocurrencies from a given *online wallet* by the judicial authorities, through the institutes of asset expropriation (attachment/disposal) and/or adjudication, which involves the problem of access to the private key and how operating it.

Keywords:
currency; digital currencies; cryptocurrencies; bitcoin; regulation; MiCA; concealment of assets; fraud against creditors and enforcement (execution action); investor/consumer protection.

RESUMO

A presente pesquisa tem por objetivo compreender o contexto atual em que as moedas digitais ("cryptocurrency") estão inseridas no Brasil e na Europa, notadamente em Portugal, sob enfoque da proteção ao crédito e ao credor. A análise se concentra na Lei Federal n. 14.478, de 2022, e, no caso da Europa, no MiCA Regulation, no que pertine precisamente às criptomoedas e ao estágio da regulação. Fez-se necessário também compreender os sistemas jurídicos de ambos os países (Brasil e Portugal), no que toca à disciplina do Processo Civil (Processo de Execução), da fraude a credores e à execução, bem como da ocultação patrimonial, sob ponto de vista civil, administrativo, tributário e penal. Trata-se de uma pesquisa descritiva e comparativa, tendo a análise de conteúdo e a revisão de literatura como principais instrumentos metodológicos. Foram utilizadas para desenvolvimento da pesquisa as metodologias exploratória e empírica, estruturando-se o conteúdo retórico da dissertação por meio de cinco capítulos, que podem ser resumidos nas seguintes perguntas: qual o objeto do estudo (o que são as criptomoedas e o que não são) e qual o estágio da regulação dos criptoativos em Brasil e Portugal/Europa? Existe um princípio da proteção ao crédito e/ou credor? Se sim, este princípio decorre de um dever estatal de criar instituições e institutos capazes de proteger o crédito/credor? Considerando, então, a existência do princípio e o dever estatal de organizá-lo e o institucionalizar, a regulação das criptomoedas, em Brasil e Portugal, tem observado tal princípio/dever estatal, notadamente no que toca à ocultação patrimonial? O sistema processual (de recuperação de crédito e proteção à fraude contra credores/pauliana ou à execução), em ambos os Países, encontra-se adequado à realidade e nova tecnologia do blockchain e das criptos? Não tendo sido o princípio da proteção ao crédito e ao credor observado pela regulação, quais seriam as propostas *de lege ferenda,* a fim de que seja mitigada ou mesmo eliminada (mundo ideal) a possibilidade de uso dos criptoativos em ocultação patrimonial e fraude a credores/crédito? Conclui-se, ao fim, que o princípio não tem sido observado pela regulação estatal e que a mudança passaria pela intervenção do Estado no domínio econômico e nas esferas de autonomia privada dos regulados, de modo a apenas permitir a aplicação/investimento/alocação e titularidade de criptomoedas – acima de determinado valor – por meio de *gatekeepers* (atuação institucional, via corretoras ou fundos de investimentos, e por meio de *hot* ou *online wallets*), pois o sistema de circulação de criptoativos (descentralizado) não permite a captura e bloqueio desses ativos pelos sistemas eletrônicos das autoridades bancárias (SISBAJUD, no Brasil, e o PERTO, em Portugal). Além disso, é preciso adaptar a tecnologia ao Direito, de modo a viabilizar as transferências forçadas de criptomoedas de uma dada carteira pelas autoridades judiciárias, através dos institutos da expropriação patrimonial (penhora/alienação) e/ou adjudicação; o que perpassa pelo problema do acesso à chave privada.

Palavras-chave:
moeda; moedas digitais; criptomoedas; bitcoin; regulamentação; MiCA; ocultação de activos; fraude contra credores (pauliana) e execução; proteção do investidor/consumidor.

LIST OF ACRONYMS AND ABBREVIATIONS

ABCripto – Brazilian Association of Cryptoeconomy

ALM – Anti money laundering

B3 – Brazilian Security Exchange

BP – Banco de Portugal

BTC – Bitcoin

CASP – Crypto-Asset Service Provider

CBB – Central Bank of Brazil

CFTC – Commodity Futures Trading Commission

CVM – Comissão de Valores Mobiliários (Brazilian "SEC")

CMVM – Comissão do Mercado de Valores Mobiliários (Portugal)

DAO – Descentralized Autonomous Organization

DLT - Distributed Ledger Technology

DMIF II - Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on Markets and Financial Instruments

EBA – European Bank Authority

ECB – European Central Bank

ESA - European Supervisory Authority

ETH – Ethereum

ESMA – European Securities and Markets Authority

EU – European Union

FATF – Financial Action Task Force on Money Laundering

FCA – Financial Conduct Authority (UK)

FIAT – Fiduciary Currency

FSB - Financial Stability Board

IOSCO – International Organization of Securities Commissions

IRS – Internal Revenue Service

KYC – Know Your Client

MICA – The Markets in Crypto Assets Regulation (Regulation (EU) 2023/1114)

NFT – Non-fungible token

OECD - The Organisation for Economic Co-operation and Development

P2P – Peer-to-peer

PoW - Proof of Work

PwC – Pricewaterhouse Coopers

SEC – Security Exchange Commission

STJ – Superior Court of Justice (Brazil)

TJSP – State Court of Justice – São Paulo (Brazil)

UK – United Kingdom

USA – United State of America

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1. Introduction

The transformations of the world in the last decades are notorious and have affected the most diverse economic sectors and segments of society[4]. In 2009, Satoshi Nakamoto published the "white paper" *Bitcoin: A Peer-to-Peer Electronic Cash System*[5], when it brought to public its open-source software for the production of a digital currency without central authority.

Bitcoin is along with Ether the main digital currency in existence[6]. In this report, *bitcoin* will be referred synonymously with *digital currency*[7] or *cryptocurrency*[8]. As a digital currency, is considered private in nature, totally independent from the government[9], and therefore not issued or regulated by a government entity. Its apparent claim is to function socially as a currency - consequently as a means of exchange, as a unit of account and as a store of value - in parallel to the official ("fiat currency") currency issued by the central monetary authority of the Sovereign State.

The revolution occasioned has attracted, for some years now, the "eye" of the regulator[10], to create minimum standards for the exercise of the activity that are both sufficient for the protection and efficiency of the popular economy (and the financial system), without hindering technological advancement and the expected benefits.

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[4] In: https://www.bbc.com/portuguese/geral-37658309, accessed on 5th Jan. 2018.

[5] In https://bitcoin.org/bitcoin.pdf, accessed on 5th January. 2018.

[6] In: https://www.investopedia.com/tech/most-important-cryptocurrencies-other-than-bitcoin/, accessed on 04th June 2022 (10 Important Cryptocurrencies Other Than Bitcoin, by Adam Hayes, updated on march 14, 2022): "Bitcoin has not only been a trendsetter, ushering in a wave of cryptocurrencies built on a decentralized peer-to-peer network, but *has also become the de facto standard for cryptocurrencies*, inspiring an ever-growing legion of followers and spinoffs." (In: https://www.investopedia.com/tech/most-important-cryptocurrencies-other-than-bitcoin/, in: *Op. cit.*).

[7] "What Bitcoin does have is its Bitcoin brand. Bitcoin is the coin by which all others are judged, at least today. Bitcoin futures are traded on the CBOE and numerous Bitcoin stocks (OTCQX:GBTC, RIOT, LFIN, LTEA) are available." (In https://seekingalpha-com.cdn.ampproject.org/c/s/seekingalpha.com/amp/article/4135090-bitcoin-weaker-ever-ripple-good-alternative, accessed on 5th January, 2018).

[8] C*ryptocurrency: "A digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank."* (In: https://en.oxforddictionaries.com/definition/cryptocurrency, accessed on 18th June of 2022).

[9] "Cryptocurrencies are almost always designed to be free from government manipulation and control - although, as they have grown more popular, this foundational aspect of the industry has come under fire." (In: https://www.investopedia.com/tech/most-important-cryptocurrencies-other-than-bitcoin/, accessed on 04th June 2022).

[10] This is the case of the *bitlicense* created by New York State in the spring of 2015: *"*In June of 2015, DFS issued virtual currency regulation [23] NYCRR Part 200 under the New York Financial Services Law. Since then under that "BitLicense" regulation or the limited purpose trust company provisions of the New York Banking Law, DFS has granted numerous virtual currency licenses and charters to ensure that New Yorkers have a well-regulated way to access the virtual currency marketplace and that New York remains at the center of technological innovation and forward-looking regulation."
(In: https://www.dfs.ny.gov/virtual_currency_businesses, accessed on 04th June 2022).

In Europe, since 2020, has been discussed the *Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937*, which was finally approved in 2023. In Brazil, there are also some attempts, especially the Bill n. 2.303/2015 and, recently, Bill n. 3.825, of 2019. More recently, Brazil Congress approved the Federal Act n. 14.478 (2023), which provides *for guidelines to be observed in the provision of virtual asset services and in the regulation of virtual asset service providers.* In The United States of America, in the very beginning, the proposal amendment in S.1241[11] of the Combating Money Laundering Act of 2017, and, more recently, the Presidential Executive Order from March 2022. However, there is no clear regulatory framework in The United States, despite the market having surpassed $50 billion dollars (PwC Global Crypto Regulation Report 2023[12]).

According to official statistics from the Central Bank of Brazil, the volume of cryptocurrency trading in Brazil is already equivalent to 50% of B3's total operations and has raised an alarm at the Central Bank[13]. Data consolidated by the Central Bank in December of 2021 shows that *cryptoactive market in Brazil has reached about R$ 300 billion through centralized cryptocurrency exchanges*, which also means *the equivalent to 27% of the total deposited in savings accounts, the most popular type of investment among Brazilians*[14]. In 2021, investment in crypto-actives reached a record amount, with imports of $6 billion, according to the Central Bank (almost double that of 2020, when transactions of $3.3 billion were recorded)[15].

In 2021, talking about USA and Europe, *around 16% of Americans and 10% of Europeans invested in crypto-assets*[16]. Right now, says the European Central Bank (ECB), *the crypto market is now larger than the sub-prime mortgage market was when – worth USD 1.3 trillion – it triggered the global financial crisis*.[17]. Besides that, and besides the economic

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[11] "Specifically, Bitcoin supporters are focusing on bill S.1241, which has been introduced in Congress under the title "Combating Money Laundering, Terrorist Financing, and Counterfeiting Act of 2017." (in https://bitcoinist.com/bitcoins-next-battlefield-the-u-s-congress/, accessed on 4th June 2022).
[12] In: https://www.pwc.com/gx/en/new-ventures/cryptocurrency-assets/pwc-global-crypto-regulation-report-2023.pdf, accessed on 31 July 2023.
[13] In: https://cointelegraph.com.br/news/cryptocurrency-trading-volume-already-amounts-to-50-of-total-b3-operations-and-financial-authorities-are-on-alert, accessed on 4th June 2022.
[14] Idem, accessed on 4th June 2022.
[15] In https://economia.estadao.com.br/noticias/geral,regulacao-criptomoedas-2022,70003961539, accessed on 4th June 2022.
[16] In: https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html, accessed on 5th June 2022.
[17] Idem, accessed on 5th June 2022.

aspects, as high volatility[18] (which it is not in question here) and financial stability, it is seemed like 23% of the crypto-assets transactions (USD 72 billion per year) is associated with criminal activities[19]. Europe has been recently considered the biggest cryptocurrency economy with €870 billion in crypto around 2020-21[20].

The magnitude of the upcoming market and the simple fact that it touches on an area so sensitive to any national state (currency control, monetary policy and financial stability) demonstrate the relevance of this research. Beyond the examination of regulation - which will be mentioned below - it is worth noting that the problem to be addressed centers on the concealment of assets and the possibility of creditor fraud, increased by the digital environment (including *blockchain*) and its peculiarities.

Indeed, cryptocurrencies are considered digital financial assets that can be used for investment purposes, transactions and storage of value. Because they are "assets", they make up the assets of their holders (natural or legal persons) and can be the object - in theory - of acts of judicial constriction (such as seizures and arrests), in addition to serving as collateral and as capital in companies. However, due to their decentralised nature and the possibility of carrying out transactions relatively anonymously, there are concerns regarding the concealment of assets (fraud) and the misuse of these cryptocurrencies for tax evasion, money laundering and other illicit activities.

Therefore, this report aims, firstly, to understand the current situation and current regulatory efforts especially in Europe and Brazil (Chapter 2). It is a descriptive and comparative study in this early stage, which starts from the general premise that all these States (national or continental, in the case of Europe) intend to favor technological development and economic freedom, but without neglecting the state duty to protect the popular economy[21].

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[18] "For example, between November 2021 and January 2022, bitcoin prices fell from roughly USD 68,000 to about USD 38,000. Their three-month volatility was 60%, almost five times higher than gold and four times higher than US stocks." (In: https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html, accessed on 5th June 2022).

[19] Idem.

[20] In: https://www.euronews.com/next/2021/09/29/europe-is-now-the-world-s-cryptocurrency-capital, accessed on 5th June 2022.

[21] "The objective of financial market regulation is not only to stimulate the accumulation and transfer of wealth (formation of savings and access to resources by deficit agents), but also to promote and ensure security; ensure liquidity, transparency and equitable treatment to all participants; ensure proper risk assessment and control; and curb fraud65. Therefore, regulation plays the role of stimulating the development of the financial market, but it must also fulfill the duty to protect such market and its agents." (footnote n. 65 omitted) (MAIA, 2014, p. 45).

After defined the basic concepts for the research (Chapter 2) and, subsequently, understood the initial stage of regulation of cryptocurrencies and the spectrum of treatment essentially directed in Brazil and Portugal (Chapter 3), the study turns to the aforementioned State duty – to control the currency and economic/financial stability – but also to the State duty of credit protection (Chapter 4). This last-mentioned State duty – of fundamental relevance to the present study and the conclusions reached – is of particular interest from the perspective of asset concealment and fraud against creditors (which will be examined in Chapter 5).

Asset concealment is the act of hiding or disguising the ownership of assets or valuables, with the aim of avoiding the identification or seizure of these assets by tax, regulatory or judicial authorities. Without any naivety, it is well known that cryptoassets can be utilised as a form of asset concealment as, in some situations, it is possible to maintain control and ownership of these assets without revealing their identity or associated transactions. So, it is not just a technically legal problem (procedural), but a technical issue (inherent in IT/technology) that cannot permeate or circumvent the law.

However, it is important to highlight that most jurisdictions are developing regulations and measures to address the issues related to cryptoassets, including preventing asset concealment and combating illegal activities. Tax and regulatory authorities are seeking ways to track and monitor transactions involving cryptocurrencies, implementing reporting obligations and requiring identification of users in certain circumstances.

Moreover, complete anonymity in cryptoasset transactions is not possible. While some cryptocurrencies offer privacy features, many are designed to be transparent and traceable through public transaction records (DLTs), known as blockchains (distributed ledger technology). However, there are already reports in Brazil of cryptocurrencies being used to defraud creditors and hide assets. This concern is presented in other States, such as Spain.

After examining the procedural instrument (enforcement process) made available by the legal regimes of Brazil and Portugal, for the recovery (satisfaction) of defaulted credit (Chapter 5) and its technological mechanisms of patrimonial constriction, as well as studying the institute of patrimonial concealment and creditor fraud, the last part (Chapter 6) is reached. This section discusses the inefficiency of the procedural system in the light of the decentralised digital economy, and then presents possible solutions in the regulatory field.

The concern that drives this dissertation, therefore, centers on – taking as a theoretical assumption the existence of the principle of credit (and investor) protection and the State duty in this sense – discussing (and proposing, in the end) the regulation of cryptocurrencies under this specific aspect. The regulation of cryptocurrencies should observe not only criminal (money laundering, financing terrorism and weapons of mass destruction) and tax aspects (including currency evasion), but also the reality of the inefficiency of public credit recovery systems (due to technical issues) through the courts in the face of the decentralised digital economy.

In this context, it is intended to prove, in the end, that the current stage of regulation has not been concerned and has not paid attention to the principle of credit and investor protection in an adequate manner, deserving reformulation (or, formulation). In view of the objectives outlined above, this study intends to be propositional at the end (and to present a solution *de lege ferenda*).

1.1. Methodology and delimitation

Although the diverse uses (and some of them, improper uses) of cryptocurrencies are well known, this *dissertation* does not intend to examine the advantages[22] or disadvantages[23] of digital currencies, nor will it discuss political or economic interests that may exist in stimulating or restricting the advancement of technological innovation and, consequently, the circulation of credit.

In addition, although the relevance of the discussion about the admission (or not) of the use of cryptocurrencies in a given National State is recognised, the fact that some states and/or jurisdictions that have already taken a position to ban the use of crypto-currencies will not be object of this research[24].

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[22]According to the House of Commons | Treasury Committee (United Kingdon), on Crypto-assets | Twenty-Second Report of Session 2017–19 (https://service.betterregulation.com/document/347713): *financial inclusion, reliance on the net (not a Central Bank), the absence of risky private banks as intermediaries, greater efficiency due to direct transactions* (*peer-to-peer*).

[23]According to the House of Commons (above cited), there are "a number of ways in which consumers may experience economic detriment and not be entitled to redress or compensation", as (i) loses much or all of its initial investment given the price volatility; (ii) having your crypto-assets stolen through a hack on a crypto-asset exchange; (iii) losing access to your crypto-assets when you forget the password to your account (in exchanges or crypto-asset platforms); and (iv) being a part of a scheming (*Op. cit.*).

[24] In: https://www.euronews.com/next/2022/04/27/bitcoin-ban-these-are-the-countries-where-crypto-is-restricted-or-illegal2, accessed on 5th June 2022. This list includes huge countries as China, Russia and India.

Likewise, the technological structure of blockchain (*Bitcoin* DLT)[25] or, in genre, DLT, will not be the object of central concern of this master thesis, and may be referred to only in the specific part in which it is of interest to the present study – of a legal nature and not merely technological aspect[26].

In terms of methodology, especially about citations, it was chosen to use APA 7th Edition to refer to other essays, master or PhD thesis, papers, project works, news, etc. Alongside the text, in footnote, will appear only (Author, Year, page). In the end, section Bibliography References, it will appear the complete reference.

Finally, about quotations, it could be shown in *italic,* without marks. Legislation, in turn, will be cited only by the act/number necessary to its identification, as they are easily accessible sources on the internet.

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[25] Basically, the blockchain "permits that a transaction be done in a person-to-person basis, without any intermediary, turning it suitable to a decentralized currency market from any authority (Nations' Government) or third-party associated to the transaction (f. ex. Payment Industry and banks). In that sense, every user (or node) replicates and settles a mathematical problem and encrypt the present and past transactions made with that virtual currency or crypto asset and saves that information into the permanent, immutable, and public data "chain" as a new block added to it." (Ribola, 2022, p. 18).

[26] For more on the topic (DLT), see: Ribola, 2022, p. 17-18.

2. Digital Currencies

Currency is what society accepts *as an instrument of indirect exchange*[27]. It is what is commonly given or received in economic transactions[28].

As we have already pronounced on this subject[29], digital (or crypto) currencies consist of a *digital representation of value that functions as a medium of exchange, a unit of account, or a store of value, but has no legal status*[30]*. (...) they are sometimes exchanged for U.S. dollars or other currencies around the world, but currently they are not backed or supported by any government or central bank. Their value is completely derived by market forces of supply and demand, and they are more volatile than traditional currencies (...)*. They are social or parallel private currencies, *without forced current and with limited discharging power for those who voluntarily contract them as a means of payment and settlement of obligations*.

The idea is very similar to the European context, according to Directive EU 2018/843, article 1 (amendments to Directive EU 2015/849), which states: *'virtual currencies' means a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically.*

Under European MiCA Regulation (EU) 2023/1114, of 31 May 2023, Article 3 (1), 5, *crypto-asset means a digital representation of a value or of a right that is able to be transferred and stored electronically using distributed ledger technology or similar technology*. In Portugal, through Personal Income Tax Code, as amended by the State Budget Law of 2023[31], Article 10 (17), *cryptoasset is any digital representation of value or rights that can be transferred or stored electronically using distributed ledger technology or similar.*

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[27] OLIVEIRA, 2009, p. 131.

[28] "(…) nothing more, nothing less than it was always thought to be - what is commonly given or received by the purchase or sale of goods, services, or other things." (GALBRAITH, 1977, p. 5).

[29] MAIA; ROCHA, 2019.

[30] More recently, the guide "Bitcoin Basics" from CFTC/USA says: "Virtual currency is a digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value." In: https://www.cftc.gov/sites/default/files/idc/groups/public/%40customerprotection/documents/file/oceo_bitcoinbasics0218.pdf, accessed on 5th June 2022).

[31] Draft Bill n. 38/XV/1 (in: https://app.parlamento.pt/OE2023/corpo.html, accessed on 14th August 2023).

For the purpose of this research, deeper discussions about the true legal nature of cryptocurrencies are not being taken into consideration[32]. It is recognized that several jurisdictions, including Brazil and Europe, the subject of this examination, treat cryptocurrencies as means of payments, similar to *fiat* currency, as well as, on occasion, recognizing them as securities. In this thesis, cryptocurrency it is assumed as a *social currency*[33], just to effectively allow the investigation of the current stage of regulatory initiatives in Brazil and Europe.

Likewise, it is no concern that digital currencies do not possess exactly the traditional characteristics of official currencies. Indeed, as a rule, for a *commodity* (some good, as salt or silver) to *assume the role of currency*, it should possess qualities such as (i) indestructibility; (ii) inalterability; (iii) homogeneity; (iv) divisibility; (v) transferability; and (vi) easy handling[34]. In historical context, what really matters is that the concept of money emerged as currency imposed by the State to function as the official means of exchange that, in addition to the aforementioned qualities, should also fulfill four important roles, functioning as *means of payment, stock of value, standard unit of account, and intermediary between agents*. [35].

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[32] For example, criticism of the conceptualization of cryptocurrencies as currencies is not ignored, due to their high volatility and, consequently, their inability to provide store of value. See: *But do crypto-assets really generate value for the payment system? Unbacked crypto-assets cannot fulfil their original objective of facilitating payments. They are simply too volatile to perform the three functions of money: medium of exchange, store of value and unit of account. (...). Such high volatility also means that households cannot rely on crypto-assets as a store of value to smooth their consumption over time. Similarly, firms cannot rely on crypto-assets as a unit of account for the calculation of prices or for their balance sheet*. (In: https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html, accessed on 5th June of 2022). It should be added that MiCA, itself, points out: *Article 2. (...). 2. However, this Regulation does not apply to crypto-assets that qualify as: (a) financial instruments as defined in Article 4(1), point (15), of Directive 2014/65/EU; (b) electronic money as defined in Article 2, point (2), of Directive 2009/110/EC, except where they qualify as electronic money tokens under this Regulation; (c) deposits as defined in Article 2(1), point (3), of Directive 2014/49/EU of the European Parliament and of the Council; (d) structured deposits as defined in Article 4(1), point (43), of Directive 2014/65/EU; (e) securitisation as defined in Article 2, point (1), of Regulation (EU) 2017/2402 of the European Parliament and of the Council*. In Brazil, the first manifestation by the Central Bank of Brazil (CBB) occurred with Communiqué Nº 25.306, of 2014 (In: http://www.bcb.gov.br/pre/normativos/busca/normativo.asp?numero=25306&tipo=Comunicado&data=19/2/2014, accessed Jan. 29th, 2018). At that time, the CCB classified cryptocurrencies with low systemic risk, given the low volume of transactions at the time. In 2017, through Communiqué Nº 31.379, the BCB alerted the general public again, warning that it does not supervise exchanges companies and that international transactions must observe Foreign Exchange regulations. A similar position was adopted by the CVM (Securities and Exchange Commission, Brazil), by the Circular Letter Nº 1/2018/CVM/SIN which cemented the understanding that cryptocurrencies are not financial assets for the effects (RIBEIRO; PENNA, 2021, p. 318).

[33] Nor is the exclusivity of the State to issue the official/fiat currency a concern, since it is not, as seen, an official currency, but a *social currency*.

[34] PINHEIRO, 2014, p. 13.

[35] PINHEIRO, 2014, p. 13.

So, the notion of money is therefore broader than that of curency: *all money is currency, but not all currency is money*[36]. Therefore, *everything that is not invested with the necessary authority to be recognized as official currency, becomes an 'alternative instrument of payment', something irrelevant to the Law in monetary terms, without liberating power*[37] and *whose treatment will be given by way of contractual private law*[38].

Finally, the fiat currency corresponds to *public money*, but it is not the only money that exists. As the European Central Bank (ECB) explains, *there are actually two types of money*: public money (Central Bank money[39] – which also can be understood as *cash*) and private money (which is the money created by private banks institutions[40]).

Then, as far as this research is concerned, the so-called "private money" (in Brazil and Portugal[41], *electronic currency*) is not the object of the study, and cannot be confused with the concept of digital currency; which will be addressed below.

2.1. What it is and how it works

Bitcoin, developed in 2009 by Nakamoto, is an alternative to the traditional way of doing business and promoting the circulation of credit. As a rule, the classical means provided by financial systems maintained by national states requires transfers to be

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[36] By Professor of the Institute of Economics at UNICAMP, Fernando Nogueira da Costa (in: https://fernandonogueiracosta.wordpress.com/2011/09/12/o-que-e-moeda-e-distinta-de-dinheiro/, accessed Jan. 22, 2018): *Money is the monetary asset (created by market forces and/or state power) with general acceptance - legal and social - to perform all its classical functions*. Whereas, currency *is an asset normally offered or received by buying or selling" and "that which the state receives as a tax payment.*

[37] FOBE, 2016, p. 39.

[38] Idem. Similarly, see: Engrácia Antunes, José. *As Criptomoedas*. In: https://portal.oa.pt/media/133308/jose-engracia-antunes.pdf, accessed on 15th August 2023, p. 151-152.

[39] What is central bank money?
The money that we at the ECB create is called central bank money. The cash in your wallet or purse is central bank money. In fact, banknotes and coins are currently the only kind of central bank money available to the public. Central bank money is also called public money because it is issued by a public institution – the central bank – and is therefore backed by the public sector.
(In: https://www.ecb.europa.eu/ecb/educational/explainers/html/digital_euro_central_bank_money.en.html, accessed on 15th July 2023).

[40] What is private money?
Commercial banks also create money. That's actually what they do *when they grant you a new loan and the money appears in your bank account*. This kind of money is called private money. This also includes the balance you see on your bank statement and the savings in your account. The payments you make with your debit or credit cards, or via an online payment service, are all transfers of private money, *because you are using money created by your bank*.
(In: https://www.ecb.europa.eu/ecb/educational/explainers/html/digital_euro_central_bank_money.en.html, accessed on 15th July 2023).

[41] Article 2, (1), (x), Act 83/2017 (Anti-Money Laundering).

exchanged through intermediaries, in this case, the various financial institutions (essentially banks). On the other hand, as a virtual currency, *bitcoin* exists only on the worldwide computer network (there is no physical representation of the *bitcoin*, nor is it configured as a credit card, or even less as paper money or metallic currency).

Therefore, *bitcoin* is a means of payment whereby the relationship between the parties is directly between the parties without the intermediation of a third party that is part of the financial system. It is thus a decentralized system, without a third-party intermediary (which is not a hundred per cent truth due to the fact that are, in the most of cases, the *cryptoasset exchanges* evolved) enforced with cryptography.

According to the Bitcoin Foundation[42],

> *as you may know, Bitcoin is the first decentralized digital currency and payment system. It is "digital" or "virtual" because it does not exist in physical form. It is decentralized because there is no central repository or administrator. Bitcoin is not legal tender ("fiat currency") in any jurisdiction and is not backed or controlled by any sovereign. But it can be bought and sold on exchanges now for such legal tender. Transactions in Bitcoin are confirmed by cryptography and recorded on blockchain.*

In the same path, by scholars from the University of London[43]:

> *Bitcoin is a decentralised cryptocurrency system which works on a peer-to-peer network, using blockchain technology [8, 18]. Blockchain technology has gained rapid interest due to its decentralised nature and strong security properties [22, 23]. However, blockchains are not limited to decentralised cryptocurrencies, but can also be applied to other innovative ideas such as smart contracts, recording asset ownerships, cross-border payment solutions, trade finance, etc. [21, 22].*

From the seminal White Paper attributed to the codename Satoshi Nakamoto[44], it is simple to infer that an *electronic coin is a chain of digital signatures*. *Each owner transfers the coin to the next by digitally signing a hash of the previous transaction and the public key of the next owner and adding these to the end of the coin.* The operations are anonymous and use proof-of-work to record a public history of transactions in a public and distributed ledger (DLT) which is practically immutable.

[42] In: https://bitcoinfoundation.org/wp-content/uploads/2017/12/Letter-from-Claasen-to-Senate-Judiciary-Committee-11-22-2017.pdf, accessed on 21th January of 2018.
[43] JAYASINGHE; at all, 2017.
[44] In https://bitcoin.org/bitcoin.pdf, accessed on 20th August 2023.

There are two ways to operate, by virtual wallet (inclusive, offline or *cold wallet*, by *software* or *hardware*) or using a broker (an *exchange*):

> *Crypto-assets in most instances do not fall within the scope of the Common Reporting Standard (CRS) developed by the OECD in 2014, which applies to traditional financial assets and fiat currencies. Even where crypto-assets do fall within the definition of financial assets, they can be owned either directly by individuals in cold (i.e. offline) wallets or via crypto-asset exchanges that do not have reporting obligations under the CRS. They are therefore unlikely to be reported to tax authorities in a reliable manner.*[45]

So, any contract – regardless of its nature (purchase and sale, rental, donation) - that is paid for by the delivery of *bitcoin* units is done over the internet and without the intermediation of a financial institution. The transaction can take place, basically, in two ways: each of the parties has a *bitcoin* wallet, created on the internet by means of cryptography (*wallet*)[46]; or it one or both parties uses/use a brokerage house (*exchanges*), through its virtual wallets. The truth is that the latter use, i.e. through exchanges, should not be the rule (however, it is what we see in the market). Basically, a certain number of *bitcoins* will leave the debtor's/contractor's wallet and will enter, by internet remittance, in the contracted party's wallet (P2P system). This transfer occurs by means of cryptographic keys, via internet, as seen.

Thus, the use of *bitcoins* (or other cryptocurrency) as a medium of payment does not require the intermediation of financial institutions regulated and controlled by the Central Bank[47]. They also do not involve an exchange of title over money or electronic (*private*) money. Clearly, the idea of independent virtual currency is linked to the economic anarchy advocated by the Austrian School of Economics, i.e., the ideal of deregulation and broad monetary freedom[48].

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[45] OECD, 2022.

[46] *Open a Bitcoin wallet. In order to start using Bitcoins as a payments method, you would first need to have a Bitcoin wallet. This can be understood as the bitcoin equivalent of a bank account. With a Bitcoin wallet you can receive bitcoin, store bitcoin, pay for an invoice with bitcoin, and send bitcoin to others. There are several options for you to choose from when creating your wallet: Desktop wallets, Mobile wallets, (to learn more about them please go to, Opening a Bitcoin wallet) You also have to option of using a Web wallet such as Blockchain that you can access from both your mobile phone and computer. No matter what is the wallet you choose, the process is quite fast and easy. Simply follow the instructions and your new wallet will be ready to be used in no time.*
(In: https://support.coinify.com/Knowledgebase/Article/View/165/5/how-to-pay-with-bitcoin-guide, accessed on 21st Jan. of 2018).

[47] In: https://www.fca.org.uk/investsmart/crypto-basics, accessed on 30 July 2023.

[48] In this sense, we argued in MAIA, ROCHA, 2019.

Finally, it's worth mentioning that the bitcoin system is anchored to a consensus network [49] (a *blockchain*)[50]. The *blockchain technology* is commonly referred as having the following characteristics: immutability; decentralized; improved security (empowered by encryption); distributed ledger[51]; quicker settlement[52]. In sum, blockchain *allows multitudes of connected computers or servers to maintain a single, safe and unchangeable ledger. A wallet is required for the blockchain to handle user transactions without the help of third-party middlemen. A blockchain wallet is a tool that allows users to spend cryptocurrencies and is secured by public and private keys*[53]*, providing users with access to and control over their transactions.*[54].

To close: as far as this study is concerned, it should be clear that *the use of Bitcoin leaves extensive public records,* but, although this *traceability, blockchain may become increasingly anonymous, making transaction graph analyses and comparable tracing techniques increasingly difficult.*[55]

2.2. What it is not: other virtual assets and tokenization

It is important to highlight that cryptocurrencies are not the only one cryptoasset. The lesson is given by MIGUEL DINIS LUCAS, in his master thesis *Deciphering the European Financial Regulatory Framework of Cryptoassets*[56]:

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[49] *Proof of work is a competition between miners to solve cryptographic puzzles and validate transaction in order to earn block rewards.* (ANTOLIN, 2023).

[50] *In short, the bitcoin blockchain system can be broken down into the following steps:*
1. The transactions made are publicised to all nodes;
2. Each node stores each transaction in blocks;
3. Each node has the task of trying to solve the PoW maths puzzle to validate the transaction and place it in a new block;
4. When a node solves the puzzle, it transmits this information to the other nodes in the network;
5. The nodes accept the new block if all the transactions it contains are valid and do not contain coins that have already been used in other transactions;
6. The nodes express their acceptance by working to create the next block in the chain, using the hash of the accepted block as the hash of the last block. (AMORIM, 2019, p. 22).

[51] SUNYAEV, 2020.

[52] In: https://www.alibabacloud.com/knowledge/tech/what-is-proof-of-ownership-in-blockchain, accessed on 20th August 2023.

[53] *The public key to your wallet is like an email address. It is used to send Bitcoins to your wallet. It is like the NIB or IBAN of your bank account. The private key is what allows you to spend your Bitcoins or send them to other wallets. It is like the secret access code to your bank account or the pin of your ATM* (Antônio Vilaça Pacheco, Bitcoin. Editora Self, Portugal. 6 edition, p. 67, *apud* CONCI, 2022, p. 15).

[54] Idem.

[55] DE FILIPPI, 2018, p. 39.

[56] Dinis Lucas, 2019.

> *In the E.U., the European Securities Market Authority (ESMA) and the Securities and Markets Stakeholder Group (SMSG) have adopted the distinction between payment tokens, utility tokens, asset tokens, hybrids and donation-based tokens:*
>
> > *Payment tokens are a means of payment for acquiring goods or services. The holder has no claim on the issuer. These tokens are virtual currencies in the true sense of the word. The most prominent example is Bitcoin (...) Utility tokens are intended to provide access to a specific application or service but are not accepted as a means of payment for other applications (...) Asset tokens represent assets such as a debt or equity claim on the issuer. Asset tokens promise, for example, a share in future company earnings or future capital flows. In terms of their economic function, therefore, these tokens are analogous to equities, bonds or derivatives. Tokens which enable physical assets to be traded on the blockchain also fall into this category. (...) The above token classifications are not mutually exclusive. Hybrid tokens represent features of different categories (...) Additionally, certain tokens do not seem to represent any entitlement, they will be referred to as donation-based tokens.*
>
> *Others use different names to classify the same cryptoassets. Payment tokens correspond to exchange, cryptocurrencies or currency tokens, utility tokens to work, community or membership tokens and asset tokens to investment, equity or security tokens.*

Exactly the same idea can be extracted from EBA Report on crypto-assets, of 9 January 2019[57]:

> *Crypto-assets are a type of private asset that depend primarily on cryptography and distributed ledger technology as part of their perceived or inherent value. A wide range of crypto-assets exist, including payment/exchange-type tokens (for example, the so-called virtual currencies (VCs)), investment-type tokens, and tokens applied to access a good or service (so-called 'utility' tokens).*

As a *general worldwide consensus (...) digital securities (more commonly known as cryptocurrencies) have been divided into the categories of payment tokens, utility tokens, and asset tokens*[58] (the last one, even called *security tokens*)[59].

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[57] In: https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2545547/67493daa-85a8-4429-aa91-e9a5ed880684/EBA%20Report%20on%20crypto%20assets.pdf, accessed on 5th June 2022.

[58] HINES, 2021, p. 37-38.

[59] "Tokenisation is a process of replacing real data with equivalent data, in the same format and protected by an encryption key. Tokenisation is alreadys contained in a large part of the financial transactions we carry out every day (...). The tokens are generated uniquely and randomly, with no relation to the original data. Thus, to access sensitive data, it is necessary to have permission to access the security key established by the process (...)." (In: https://first-tech.com/conteudo/o-que-e-tokenizacao-e-como-utilizar-na-sua-empresa/, accessed on 15th July 2023). In a similar concept, Tatiana Michaud describes the token as *a digital number, a unique sequence of characters used for each financial transaction, or for operations carried out by the same payment service or digital wallet*. (MICHAUD, Tatiana. What is credit card tokenisation? Published in 18th fev. 2021, *apud* BELANDA, Douglas. A "Tokenização e os cartões de crédito ou débito: uma análise sistemática da nova tecnologia. In: EROLES, Pedro [coord.]. *Fintechs, Bancos Digitais e Meios de Pagamento.* São Paulo: Quartier Latin, 2022, v. 5, p. 122).

About the *payment tokens*, HINES explains as a *simply form of digital currency and act as a medium of exchange and as a store of value. (...). This category was designed to be the simplest of the three types of tokens.*[60]. Further, about *utility tokens*, He says they are *digital assets [which] enables their holders to interact with or gain utility from a platform*. Those digital assets are not created as investments; they are not able to act like collective contracts. In his words, the tokens *do not provide any ownership rights in the underlying project nor do they give any ability to control how decisions around the underlying entity are made*. And, in conclusion, close saying that they *merely enable the holder to interact with the services the entity has stated it will provide*[61]. At least, about *security tokens*, HINES asserts they are *linked to and constitute an economic claim to a real-world asset. Security token holders are entitled to certain rights and privileges of the underlying property. This could include distributions of earnings, proceeds from the asset's sale, dividends, or spin-offs.*

After this explanation, HINES presents a Table created by himself, called "Tokens Categories & Characteristics" (Figure 2.1)[62], which looks quite interesting:

Token Type	**Payment**	**Utility**	**Security**
Examples	Bitcoin, Ethereum	Binance, Chainlink	BitBond, Aspen St. Regis
Characteristics	Provide medium of exchange and store of value. Avoids security-lite features	Avoids security-like features	Exhibit security-like features
Rights	Claim to tokens only	Use of service rights	Establish ownership rights
Regulation	Difficult to regulate by design	Limited regulation	Extensive regulation
Transferability	Virtually no restrictions	Limited restrictions	Subject to Wide Array of Restrictions including AML & KYC requirements, clauses embedded into smart contracts and other rules

Table 01

Similar approach from IOSCO, in its educational paper developed to foster investor education and protection[63]:

[60] HINES… p. 38.
[61] HINES… p. 38.
[62] HINES… p. 40.
[63] In: IOSCO. Investor Education on Crypto-Assets. Final Report. FR12/2020. Dec. 2020. Available at: https://www.iosco.org/library/pubdocs/pdf/IOSCOPD668.pdf , accessed on 31 July 2023.

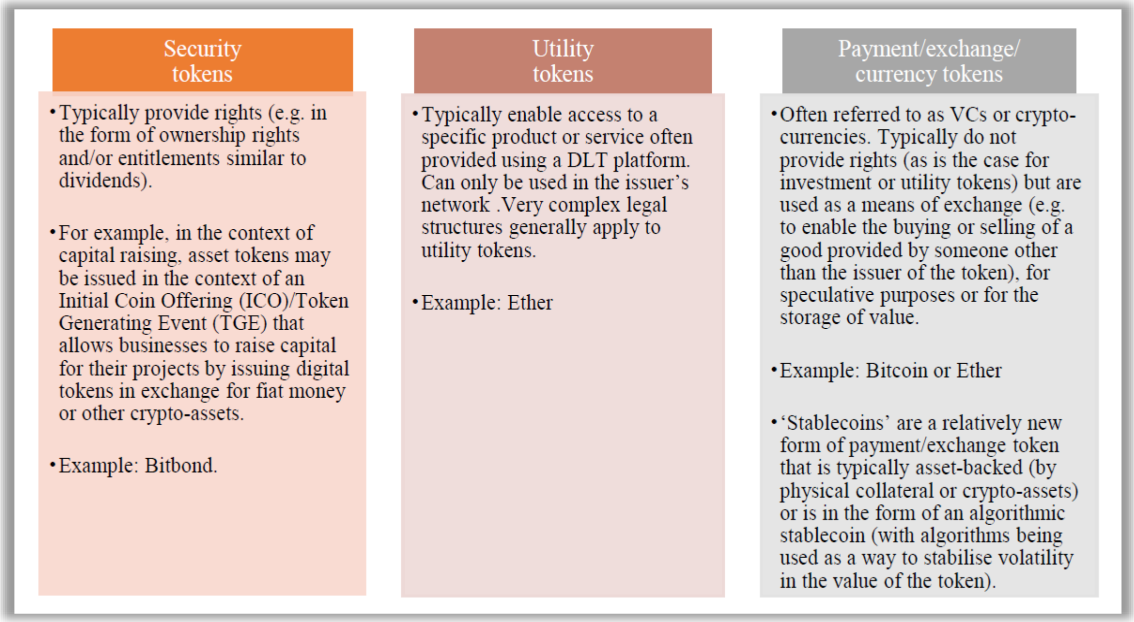

Figure 01

So, as stated by EBA Report, the "VC" or "virtual currency" is the category of crypto-asset that *typically do not provide rights (as is the case for investment or utility tokens) but are used as a means of exchange (e.g. to enable the buying or selling of a good provided by someone other than the issuer of the token) or for investment purposes or for the storage of value*. Remembering that to be a crypto, according to the EBA Report, it must meet certain requirements, as follows:

> *15. In this report, unless otherwise stated, the EBA intends the term 'crypto-asset' to be understood as follows: Crypto-asset means an asset that:*
> ***a.** depends primarily on cryptography and distributed ledger technology (DLT) or similar technology as part of its perceived or inherent value,*
> ***b.** is neither issued nor guaranteed by a central bank or public authority[27] and*
> ***c**. can be used as a means of exchange and/or for investment purposes and/or to access a good or service.* [64]

Those virtual assets that do not meet the above requirements, are configured as *virtual currency*. Sometimes called – in the genre – "Alt-Coin", as explained by HINES[65]: "The term is simply short for 'alternative coin' and means that the token is an alternative to Bitcoin. Because of it's dominant market position and popularity as the first cryptocurrency offered, *Bitcoin* is often used as generic term for all tokens. *Alt-coins* are simply platforms

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[64] In: https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2545547/67493daa-85a8-4429-aa91-e9a5ed880684/EBA%20Report%20on%20crypto%20assets.pdf, accessed on 5th June 2022.

[65] HINES, 2021, p. 39.

that offer tokens on a blockchain like Bitcoin does." Thus, stating that the term *doesn't imply much else*, he concludes that virtual currency can be – in theory – payment, utility or security tokens[66].

The ESA, including EMSA and EBA, in another moment ("warning"), but in the same sense, defines crypto currency as *a digital representation of value or rights which may be transferred and stored electronically, using distributed ledger technology or similar technology*[67]. And completes, clarifying that *there are more than 17,000 different crypto-assets, some of them being sometimes referred to as so-called 'virtual currencies' or digital 'coins' or 'tokens'*[9]. According to the UK House of Commons, Research Briefing named "Cryptocurrencies", by Steve Browning[68], this number is higher right now: 22,000 different digital assets.

Before dealing with so-called "stablecoins", the caveat regarding Central Bank Digital Currencies (CBDC) is worth noting. PAULO ALCARVA[69] explains:

> "Central banks have been slow to look at cryptocurrencies, waiting for the dust to settle, but as this seems far from happening, central banks, notably through the BIS (Bank for International Settlements)[14], are also **defining an electronic form of money that can be exchanged in a decentralized manner (i.e., P2P), meaning that transactions take place directly between the payer and the payee without the need for a central intermediary.**
>
> From Figure 21 some differentiating features stand out: **money is P2P, but not electronic, and is a central bank liability**; commercial bank deposits are a liability of the bank that issues them, and today they are already in electronic form and transfer values centrally both on the balance sheet of a given bank and between different banks through the central bank; **central banks' digital currency are electronic liabilities of that entity, which can be used in P2P exchanges**; however, it cannot ignore an important feature that central banks must permanently guarantee, namely universal accessibility right.
>
> (...).
>
> Central bank digital currencies for retail do not yet exist, but there is already an unofficial proposal in the United States to create a "Fedcoin," generated by the Federal Reserve and functioning in a very similar way to Bitcoin; however, unlike Bitcoin, **only the Federal Reserve would be able to create 'Fedcoins' and there would always be a one-for-one exchange with physical cash and reserves, implying that 'Fedcoins' would only be created (destroyed) if an equivalent amount of cash or reserves were destroyed (created) at the same time**. Like money, 'Fedcoin' would be decentralized in transaction and centralized in supply. (…)."

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[66] HINES… p. 40.

[67] ESMA. EBA. EIOPA. ESA 2022. EU financial regulators warn consumers on the risks of crypto-assets. In: https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Warnings/2022/1028326/ESAs%20warning%20to%20consumers%20on%20the%20risks%20of%20crypto-assets.pdf , accessed on 9th July 2023.

[68] In https://researchbriefings.files.parliament.uk/documents/CBP-8780/CBP-8780.pdf, accessed on 15th July 2023.

[69] ALCARVA, 2018, p. 33-34.

The development of the European CBDC started under preliminary investigation by the European Central Bank (ECB) in October 2021 with a two-year deadline for completion. In his words, the CBDC (or the *Digital Euro*) *would be a central bank digital currency, an electronic equivalent to cash. And it would complement banknotes and coins, giving people an additional choice about how to pay.*[70]. It goes on to reinforce the concept through the characteristics of the *Digital Euro*:

> *What would it be?*
> A digital euro would offer an electronic *means of payment* that anyone could use in the euro area. It would *be secure and user-friendly*, like cash is today. As central bank money issued by the ECB, it would be different from "private money", but you could also use a card or a phone app to pay with digital euro.
>
> *Why might we need a digital euro?*
> We are thinking about launching a central bank digital currency in Europe *to respond to the increasing demand for safe and trusted electronic payments*. Having digital money issued by the central bank would *provide an anchor of stability for the payment and monetary systems*. A digital euro would also strengthen the monetary sovereignty of the euro area and foster competition and efficiency in the European payment sector.[71].

It is expected by the ECB that the Euro Digital will present itself *accessible, robust, safe, efficient and compliant with the law. We [means, ECB] would also ensure the highest level of privacy*[72].

As far as this thesis concerns, the ECB's worries with financial stability and the creation of an efficient and secure means of payment for the use of digital money is clear.

In the USA, *the Federal Reserve is committed to ensuring the continued safety and availability of cash and is considering a CBDC as a means to expand safe payment options, not to reduce or replace them*[73]. With the similar simplicity found at the ECB, the Federal Reserve conceptualises CBDC as *a digital form of central bank money that is widely available to the general public*[74].

And finally, it highlights the principles that should guide the development of the "U.S. CBDC":

> *7. What principles will guide the Federal Reserve's consideration of a CBDC?*
> *Any U.S. CBDC should, among other things:*

[70] In: https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html, accessed on 15th July 2023.
[71] Idem, accessed on 15th July 2023. In another passage (in *report on a digital euro*), ECB adds in a simple way: *A digital euro would be central bank money made available in digital form for use in retail payments.* (*Reasons to issue a digital euro,* idem).
[72] In: https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html, accessed on 15th July 2023.
[73] In: https://www.federalreserve.gov/cbdc-faqs.htm, accessed on 15th July 2023.
[74] In: https://www.federalreserve.gov/cbdc-faqs.htm, accessed on 15th July 2023.

> - provide benefits to households, businesses, and the overall economy that exceed any costs and risks;
> - yield such benefits more effectively than alternative methods;
> - complement, rather than replace, current forms of money and methods for providing financial services;
> - *protect consumer privacy*;
> - *protect against criminal activity*; (…).

Again, as far as this dissertation is concerned, the Fed's concern with financial stability and the creation of an efficient and secure means of payment for the use of digital money is clear[75].

In Brazil, it's no different: the CBB explains that the *Real Digital* (Brazilian CBDC) *will not be a crypto asset in the current sense of the term. The digital Real will be a new expression of the currency issued by the Brazilian monetary authority, and will be guaranteed by the same fundamentals and the same economic policies that determine the value and stability of the conventional Real*[76].

In the document in which it released the general guidelines for a digital currency for Brazil, the CBB presents the foundations of the development of an official digital currency (Real Digital | CBDC), emphasising its *mission* to ensure the stability of the financial system[77]:

> - keep pace with the dynamism of technological developments in the Brazilian economy;
> - increase the efficiency of the retail payment system;
> - contribute to the emergence of new business models and other innovations based on technological advances;
> - favour Brazil's participation in the regional and global economic scenarios, increasing efficiency in cross-border transactions.
>
> In this environment of innovation, it should be emphasised that any developments that occur will be consistent with *the BCB's mission to ensure the stability of the purchasing power of the currency, to ensure a sound, efficient and competitive financial system*, and to foster the economic well-being of society.

In sum, the official digital currency (CBDC) issued by the Central Bank of a country (or a community of countries in the case of the European Union) is nothing more than the digital representation of the official currency that can circulate without the intermediation of the banking system, being an equivalent of money.

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[75] "4. (…). The Federal Reserve is charged with promoting monetary *and financial stability and the safety and efficiency of the payment system* and is studying how a CBDC could improve on an already safe and efficient U.S. domestic payments system." (In https://www.federalreserve.gov/cbdc-faqs.htm, accessed on 15th July 2023).

[76] In https://www.bcb.gov.br/estabilidadefinanceira/real_digital_faq, accessed on 15th July 2023.

[77] In https://www.bcb.gov.br/detalhenoticia/17398/nota, accessed on 15th July 2023.

Given the importance of protecting savings, consumers and maintaining currency and financial stability, the traceability of digital currency will make the market safer and more stable, unlike what happens with digital private currencies; not because cryptocurrencies are not traceable (to some extent, they are), but because they are not reached by the control and supervision systems of a Central Bank. And therefore, they are not reached by the creditors.

For this reason, although it is concluded that CBDC is a species of the cryptoasset genus and bears a close resemblance to cryptocurrencies, its investigation does not require more attention from this research, since concealment and fraud, in the context of the ownership and circulation of CBDC's, seems absolutely unlikely to occur; on the contrary.

Finally, it is important to emphasise that the so-called *stablecoins* are relevant to the present study, as they are *payment* or *exchanges tokens* and undeniably fall within the genre of cryptoassets[78], but are quite similar to *traditional* cryptocurrency (as *Bitcoin*). So, what is a stablecoin?

> Stablecoins are cryptocurrencies with a fixed value that's usually pegged to a leading fiat currency like the U.S. dollar, a basket of fiat currencies or exchange-traded commodity such as precious metals.
> Stablecoins serve as a much-needed antidote to price volatility in the cryptocurrency markets.
> Stablecoin currencies are collateralized by an underlying asset, usually the one it digitally represents, in order to deliver the same price stability as fiat currencies.
>
> Broadly speaking, there are 4 types of stablecoins:
> - Fiat-collateralized stablecoins, like USDT, USDC, BUSD and many others.
> - Commodity-collateralized stablecoins, like DigixGlobal (a "gold" token).
> - Crypto-collateralized stablecoins, such as MakerDAO's Dai token.
> - Non-collateralized stablecoins, which rely on a Seigniorage Shares system and algorithm mechanism to keep their peg.[79]

[78] *1.1 'Cryptocurrencies', 'cryptoassets' or 'exchange tokens?*
The term 'cryptocurrency' itself is open to dispute. This is because it tends to exaggerate their similarity to traditional currencies. Stablecoins try to overcome some of these limitations. But as discussed in section 3, in most cases cryptocurrencies do not meet the three primary functions of money:[3]
• They are generally used in speculative investment rather than as a medium of exchange.
• Their extreme volatility means that they are a poor store of value.
• They do not function as a unit of account, because they must express their own value in other currencies.
In many respects, cryptocurrencies are more akin to assets – such as shares – than to currencies. For that reason governments and regulators tend to call them 'cryptoassets'.[4] But as there are also other types of cryptoasset (see the appendix to this briefing), financial regulators in the UK often refer to cryptocurrencies more specifically as 'exchange tokens' or 'unregulated tokens'.
(In https://researchbriefings.files.parliament.uk/documents/CBP-8780/CBP-8780.pdf, accessed on 23rd July 2023).
[79] In https://coinmarketcap.com/alexandria/glossary/stablecoin , accessed on 23rd July 2023.

According to *Binance* (biggest bitcoin exchange in the world)[80] a stablecoin is, basically, *a cryptoasset pegged to another asset, such as fiat currencies or precious metals*[81].

In Europe, MiCA Regulation[82] established about stablecoin (recital 41):

> (41) Where a crypto-asset falls within the definition of an asset-referenced token or e-money token, Title III or IV of this Regulation should apply, irrespective of how the issuer intends to design the crypto-asset, including the mechanism for maintaining a stable value of the crypto-asset. *The same applies to so-called algorithmic 'stablecoins'* **that aim to maintain a stable value in relation to an official currency, or in relation to one or several assets, via protocols, that provide for the increase or decrease in the supply of such crypto-assets in response to changes in demand**. Offerors or persons seeking admission to trading of algorithmic crypto-assets that do not aim to stabilise the value of the crypto-assets by referencing one or several assets should in any event comply with Title II of this Regulation.

Furthermore, it can be added that the MiCA Regulation has classified cryptoassets, clearly recognising among the defined species the stablecoin with the ART (Asset Referenced Token)[83].

There is no doubt, therefore, that stablecoins are recognised by European regulation as *payment tokens*, which is reinforced and expressly considered by the study provided by the European Parliament at the request of the Committee on Economic and Monetary Affairs (ECON):

> *Currency/payment tokens*, like money, serve as a means of exchange, storage of value, and unit of account.[309] Famously represented by Bitcoin,[310] currency tokens have lately grown more diverse *and now include stablecoins* like the aforementioned USDC. The Libra stablecoin project from Meta (formerly Facebook) has since halted.[84]

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[80] Check at https://www.binance.com/en/about or https://coinmarketcap.com/rankings/exchanges/ .
[81] In: https://academy.binance.com/pt/articles/what-is-a-stablecoin?utm_campaign=googleadsxacademy&utm_source=googleadwords_int&utm_medium=cpc&ref=KU5RISLQ&gclid=Cj0KCQjwtamlBhD3ARIsAARoaEw4q7lkuHpmyoXBJak-EBG1CLtAkt2lB_aPMryM0xCtGG46-NSzufkaAldXEALw_wcB, accessed on 23rd July 2023.
[82] In: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1114, accessed on 23rd July 2023.
[83] *The MiCA gave a broad definition of crypto assets to capture both stablecoins, token coins, utility coins, and cryptocurrencies like Ethereum and Bitcoins.[28] It divides crypto assets under its regulation into three categories: Asset Referenced Tokens (ART), e-money tokens (EMT), and crypto assets in general.[29] ART refers to crypto assets that "purport to maintain a stable value by referring to the value of several fiat currencies that are legal tender, one or several commodities or one or several crypto-assets, or a combination of such assets".[30] This definition has been criticized on the ground that the definition merely requires a crypto asset to "purport to maintain a stable value by referring to the value of several fiat currencies" and not necessarily maintain a stable value to be regarded as an ART.31 Article 3(1) of the MiCA defines an EMT as a type of cryptoasset "the main purpose of which is to be used as a means of exchange and that purports to maintain a stable value by referring to the value of a fiat currency that is legal tender". Utility assets and other assets not falling within ART and EMT are categorized as "other crypto assets* (EDE, 2023).
[84] ZETZSCHE, et all, 2023, p. 80.

Finally, it is worth mentioning that the study also points out that Member States differ on the category of certain cryptoassets, as in the case of stablecoins, which are considered payment tokens, e-money, but also (and eventually) as securities, derivatives, collective investment schemes, among others. It is important, as said, for this research, that stablecoins function as means of payment and store of value; therefore, as assets (goods that make up the assets of their holder).

Under UK perspective, it is highlighted how the element of trust (known to be linked to the financial system, its stability and credit intermediation) migrates from trust in the Government (in the control of fiat currency) to trust in *crypto networks* (algorithms). And it also points out the element of *volatility* known to cryptocurrencies as the challenge of the system to be overcome precisely by stablecoin, getting closer to the characteristics of fiat currencies.[85]

In short, stablecoins are also cryptoassets that can be subject to money laundering, terrorist financing and asset concealment. Although they appear to be more like securities tokens (derivatives), they also serve as a means of payment and exchange, resembling - apart from the absence of volatility - cryptocurrencies. As far as this thesis concerns, the operation with stablecoins, by meaning an exchange of official assets (money or fiat currency) for a cryptoasset with economic value, should also be noted.

They are of interest to the object of study because they are cryptocurrencies. Volatility is not a natural characteristic of cryptocurrencies; it is a market circumstance. Stablecoins are initially intended to overcome the problem of volatility, which does not differ in any way regarding (*i*) the form of securitisation (ownership); (*ii*) the form of circulation (via blockchain, brokers or direct exchanges, via wallet); (*iii*) the possibilities of concealing assets and fraud against creditors or enforcement, putting at risk the stability of the popular economy and of savings.

2.3. Bitcoin and currency: regulatory perspective

According to the Bitcoin's White Paper (NAKAMOTO, 2008), *bitcoin* relays on a *purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital*

[85] In: https://researchbriefings.files.parliament.uk/documents/CBP-8780/CBP-8780.pdf, accessed on 23rd July 2023.

signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending[86]. The main purpose was, for sure, *allowing money or items of value to move the way text messages do between any two people*[87] in order to permit easier, cheaper and faster transactions without any third intermediary.

The question that arises now is: if *bitcoin* is really a currency (even if it is a social and parallel currency, not enforceable by the Government)[88] or a means of payment[89] capable of influencing the financial system of a given nation-state[90], should it be effectively regulated? And what should such regulation look like? Investor protection should be a fundamental principle of regulation and a guiding, alongside financial stability?

According to Professor Arno R. Lodder (Internet Governance and Regulation, University of Amsterdam) in his lectures in the course "Emerging Tech and Regulation" at NOVA School of Law (Lisbon, Portugal) Master's Program (2021), a technology emerges and, so, You have to decide about governance: (*i*) do nothing, just let it (for now); (*ii*) raise awareness, self-regulation, standards, etc.; or (*iii*) use the law that either existed, or, finally, (*iv*) design new law (regulation properly).

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[86] NAKAMOTO, 2008.

[87] HOUGAN, LAWANT, 2021.

[88] Under the European Central Bank point of view, bitcoin, for instance, is nothing more than a typically "Old West" (or, maybe better saying, "far-west") dream: a *digital gold rush outside state control*. Still in the words of the ECB, *almost 15 years later, what everyone is talking about is crypto-assets. (...) But appearances are deceptive. Satoshi Nakamoto's dream of creating trustworthy money remains just that - a dream.* (In: https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html, accessed on 7 June 2022). Going deeper, the ECB says, in the same "speech", (i) crypto-asset transfers can take hours to process; (ii) their prices fluctuate wildly; (iii) supposedly anonymous transactions leave an immutable trail that can be traced; and (iv) a large majority of crypto holders rely on intermediaries, contrary to the stated philosophy of decentralised finance. For the purpose of this present thesis, it is assumed that *bitcoin* is a virtual currency and works as an mean of payment, as unit of account and store of value, although the critics are knowledge and not ignored as well. In the same path, stating about the bitcoin's difficulties in working as unit of account, check YERMACK, David. Is Bitcoin a Real Currency? An economic appraisal. New York University. 1º abr. de 2014. In http://ssrn.com/abstract=2361599. Accessed on 12 November of 2016, p. 14.

[89] "Digital currencies represent a new method for exchange – a payment method with no physical form, made real by the Internet. This new type of currency was created to ease online transactions and to provide greater convenience in making payments." (GAO, et all, 2016).

[90] Paul Vigna, from "The Wall Street Journal" (NY), author of the *best-seller* (co-author Michael J. Case) *The age of criptocurrency,* in the documentary movie Bank or Bitcoin (Christopher Cannucciari, Periscope Enterteinment, 2017, in www.netflix.com/title/80154500, accessed on 02 January of 2018) states that money is basically an accounting system. In his words: "It's a way of recording who owns what, who has what, who ownes what to whom. That is all money really is. And you need somebody who can stand as the central issuer, somebody who was the trusted third party, someone who could guarantee that the money was real. And for hundreds of year now, we have had Governments issue money. Again, *money is basically just an accounting system. That's what bitcoins is."*. There are several conceptual references to the digital currency system, especially to the blockchain network, considering it to be a large and open ledger in which transactions are recorded, validated and evidenced by the computer network interconnected to the system. See: "Bitcoin [44] is a decentralized digital currency proposed in 2008 that relies on the collective work of a distributed peer-to-peer network *to maintain a public ledger of account history for all of its participants and to verify transactions amongst different actors.*" (GAO, et all, 2016).

For ECB, it is time to regulate; the exact question is not whether it should or when, but *how*:

> Policymakers should not allow crypto-assets and the associated risks to proliferate unchecked. *We must decide how to regulate* them, following a rigorous risk-based approach tailored to different instruments.[91]

And it shows different perspectives of *how* and to *where* regulation could go:

> The current regulatory approaches differ across countries. Some countries have banned crypto-assets outright while others have restricted their use [37]. This situation is clearly unsatisfactory, as crypto-assets are a global phenomenon and their underlying technologies can play an important role, not only in finance. We need globally coordinated regulatory action to address issues such as the use of crypto-assets in cross-border illicit activities or their environmental footprint. *Regulation should balance the risks and benefits so as not to stifle innovation* that could stimulate efficiency in payments and broader applications of these technologies.[92]

Despite the ECB's recognition that some progress has been made in Europe and globally, it is not enough to keep up with the emerging challenges. Therefore, the ECB presents four main fronts to draw the attention of policymakers[93]:

> Progress is being made in Europe and worldwide, but not swiftly enough to keep pace with the emerging challenges. We need to see faster progress on many fronts.
>
> Four of these are particularly relevant.
>
> First, we need to hold crypto-assets to the same standards as the rest of the financial system. (…).
>
> Second, we should consider how to adequately tax crypto-assets. (…).
>
> Third, public disclosure and regulatory reporting need to be strengthened. (…).
>
> Fourth, given the crucial unanswered questions on issues such as operational risk, volatility and liquidity, regulators should introduce strict transparency requirements and set out the standards of conduct to be followed by professional operators *in order to protect unexperienced retail crypto-asset investors*.

The protection of inexperienced investors and consumers/users of retail crypto-asset platforms is a truly key point for the development of the regulation. Next to the stability of the financial and monetary system, they constitute inherent state duties to protect the popular economy, as will be seen later, in details.

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[91] In: https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html, accessed on 7th June 2022.
[92] Idem, accessed on 7th June 2022.
[93] Idem, accessed on 7th June 2022.

And, to comply with this duty[94], *regulators eventually intervened to protect their citizenry. In most cases, regulators warned that all tokens were subject to the same laws and regulations as traditional financial instruments*[95]. In a second moment, *regulators realized the need to develop guidelines under which security tokens and all digital assets could function. In turn, statements, rulings, opinions, and procedures were laid out to give clarity as to what was and was not acceptable*[96]*. (...). As a result, the public had to adopt a wait-and-see attitude as to the regulators' next move*[97]. After this, it is no surprise to see the development of self-regulation; *soft law*[98] and, finally, public real intervention in the economy by *hard law*.

In current times, most developed countries are discussing *hard law* proposals, trying to achieve some harmonisation and security, under those main concerns related above, i.e., avoiding AML/CFT; protecting individual investors from cybercrime and financial schemes (market integrity)[99]; taxing properly and ensuring environmental sustainability[100]. Other countries, however, have at some point, already decided to ban cryptos, as China, Taiwan, Colombia, Bolivia, Ecuador, Nigeria, Bangladesh, Vietnam, and Thailand [101].

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[94] *2. Protecting individual investors from cybercrime. Crypto-asset exchange provides various functions such as a market provider, a dealer, custody of crypto-assets. As exchanges keep assets of their customers, they should make every effort for managing financial risk. G20 countries should supervise crypto-asset exchanges to manage their risk appropriately, including cybercrime risk from the viewpoint of investor protection*. (In: https://www.g20-insights.org/policy_briefs/regulation-of-crypto-asset-exchanges-and-the-necessity-of-international-cooperation/, accessed on 08th June 2022).

[95] HINES, 2021, p. 89.

[96] There are several global regulatory initiatives disclosed and organised by IOSCO (International Organization of Securities Commissions) through its website "Regulators' Statements on Initial Coin Offerings" (in´ https://www.iosco.org/publications/?subsection=ico-statements, accessed on 08th June 2022).

[97] HINES, 2021, p. 89-90.

[98] *Crypto Valley Association (CVA), the Swiss-based not-for-profit association supporting the development of blockchain and cryptographic related technologies and businesses, today announced the launch of a Code of Conduct for Initial Coin Offerings (ICO). It is intended that this framework will guide ICOs on proper conduct, taking into account all legal, moral, and security obligations. The ICO Code of Conduct is expected to bring clarity and confidence to the still new, rapidly-growing asset class*. (In: https://cryptovalley.swiss/crypto-valley-association-announces-switzerlands-first-ico-code-of-conduct, accessed on 19th June of 2022).

[99] This is stated by the FSB "Crypto-assets - Report to the G20 on work by the FSB and standard-setting bodies" (July, 2018): *This work is being coordinated among members. Collectively, the work of the FSB and SSBs, including the Financial Action Task Force (which is reporting separately to the G20), should help to identify and mitigate risks to consumer and investor protection, market integrity, and potentially to financial stability*. (In: https://www.fsb.org/wp-content/uploads/P160718-1.pdf, accessed on 08th June 2022).

[100] *The energy spent on mining doesn't create anything useful; it is only wasted. The rise in the price of the Bitcoin means that this waste increases. This is one of the severe problems of crypto-assets*. (Available at https://www.g20-insights.org/policy_briefs/regulation-of-crypto-asset-exchanges-and-the-necessity-of-international-cooperation/, accessed on 08th June 2022).

[101] LUZ, 2017. In https://www.youtube.com/watch?v=6Ut1qqwei9k, accessed on 08th June 2022. See, also, the PwC Global Crypto Regulation Report 2023 (PwC, 2023).

3. REGULATORY CHALLENGES: COMPARATIVE PERSPECTIVE

3.1. Regulation in Europe (MiCA) in a nutshell

On March 23, 2022, the European Parliament published a report by the Economic and Monetary Affairs Committee (ECON) on the European Commission's proposal regarding MiCA Regulation ("Markets in Crypto-Assets")[102]. According to Nicolette Kost De Sèvres and Stavroula Nikolaidou, the draft included *three* main elements around regulating crypto-assets in Europe: *first, having a uniform legal framework for crypto-assets; second, protecting consumers[103] and safeguarding against market manipulation and financial crime; and finally, including crypto-assets mining within the EU taxonomy for sustainable activities[104].*

Those elements can effectively be inferred from the *reasons for and objectives* (*Context of the Proposal*) of the Proposal Regulation, as released on September 24, 2020, by the European Parliament:

> This proposal, which covers crypto-assets falling outside existing EU financial services legislation, as well as e-money tokens, has four general and related objectives. The first objective is one of legal certainty. For crypto-asset markets to develop within the EU, there is a need for a sound legal framework, clearly defining the regulatory treatment of all crypto-assets that are not covered by existing financial services legislation. The second objective is to support innovation. To promote the development of crypto-assets and the wider use of DLT, it is necessary to put in place a safe and proportionate framework to support innovation and fair competition. The third objective *is to instil appropriate levels of consumer and investor protection and market integrity* given that crypto-assets not covered by existing financial services legislation present many of the same risks as more familiar financial instruments. The fourth objective is *to ensure financial stability.* […] This proposal includes safeguards to address potential risks to financial stability and orderly monetary policy that could arise from 'stablecoins'.

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102 In: https://www.mayerbrown.com/en/perspectives-events/publications/2022/03/eu-regulation-of-crypto-assets-mica-eu-parliament-publishes-report-and-votes-on-proof-of-work-in-the-context-of-sustainability, accessed on 16 June of 2022.

103 About the consumer protection, they said: *Uniformity and Consumer Protection Elements Pass. The first two elements were passed and are now part of the latest version of the Proposed Regulation. First, the key provisions cover compliance with transparency, disclosure, authorization and supervision of transactions and follow a growing trend of regulatory oversight of crypto-assets around the world. This Proposed Regulation also would develop measures to combat money-laundering and terrorist financing. Second, the key provisions would create a framework to strengthen supervision to maintain consumer protection and market stability.* (Idem, accessed on 16 June of 2022).

104 Idem.

As clarified by the section 5 of the *Explanatory Memorandum*, the proposal seeks to provide *legal certainty for crypto-assets not covered by existing EU financial services legislation and establish uniform rules for crypto-asset service providers and issuers at EU level.* In the end, the proposal was approved by the European Parliament, REGULATION (EU) 2023/1114 (of 31 May 2023), and its final text is divided into nine Titles, with 149 articles, which main provisions are sumarised below:

Title	Chapter	Subject
Title I		sets the subject matter, the scope and the definitions.
Title II	Chapter 1	regulates the offerings and marketing to the public of crypto-assets other than asset-referenced tokens and e-money tokens.
Title III	Chapter 1	describes the procedure for authorisation of asset-referenced token issuers and the approval of their crypto-asset white paper by national competent authorities (Articles 16 to 19 and Annexes I and II).
	Chapter 2	sets out the obligations for issuers of asset-referenced tokens (Article 27).
	Chapter 3	regulates the reserve of assets regarding asset-referenced tokens (Article 36)
	Chapter 4	sets out the rules for the acquisition of issuers of asset-referenced tokens (Article 41).
	Chapter 5	Article 43 sets out the criteria that EBA shall use when determining whether an asset-referenced token is significant.
	Chapter 6	Article 46 obliges the issuer to have a procedure in place for an orderly wind-down of their activities (*recovery and redemption plans*).
Title IV	Chapter 1	describes the requirements around the issuance of *e-money tokens* (Article 48).
	Chapter 2	significant e-money tokens (Article 56)
Title V	Chapter 1	Chapter 1 defines the provisions on authorisation (Article 59), detailing the content of such an application (Article 62), the assessment of the application (Article 63) and the rights granted to competent authorities to withdraw an authorisation (Article 64).
	Chapter 2	Chapter 2 imposes requirements on all crypto-asset service providers, such as the obligation to act honestly, fairly and professionally (Article 66) prudential requirements (Article 67), information to competent Authorities (Article 69), rules on the safekeeping of clients' crypto-assets and funds (Article 70); complaint handling procedure (Article 71), rules on conflict of interests (Article 72) and rules on outsourcing (Article 73), and orderly wind-down of crypto-asset service providers (Article 74).
	Chapter 3	sets out requirements for specific services: custody of crypto-assets (Article 75), trading platforms for crypto-assets (Article 76), exchange of crypto-assets for fiat currency or for other crypto-assets (Article 77), execution of orders (Article 78), placing of crypto-assets (Article 79), reception and transmission of orders on behalf of third parties (Article 80) and advice on crypto-assets (Article 81).
	Chapter 4	specifies the rules on acquisition of crypto-assets service providers (Article 82).
	Chapter 5	specifies about significant crypto-asset service providers (Article 85)
		prohibitions and requirements to prevent market abuse involving crypto-assets.
Title VI	Chapter 1	provides details on the powers of competent authorities, the EBA and ESMA.
Title VII	Chapter 2	ESMA register (Article 109)
	Chapter 5	EBA's powers and competences (Article 121)
Title VIII		Delegated acts (Article 139)
Title IX		Transitional and final provisions (Article 140)

Two relevant points from Title IV mentioned above are worth highlighting: **(i)** Article 48 describes that no e-money tokens shall be offered to the public in the Union or admitted to trading on a crypto-asset trading platform *unless the issuer is authorised as a credit institution* or as an 'electronic money institution' within the meaning of Article 2(1) of Directive 2009/110/EC. Article 48 (2) also states that 'e-money tokens' *shall be deemed to be electronic money;* and **(ii)** Article 50, which prevents issuers of e-money tokens and crypto-asset service providers from granting any interest to holders of e-money tokens.

Therefore, MiCA Regulation intends to cover all crypto-assets by treating them as (i) E-money tokens (in which category the crytpocurrencies – "VCs" – are included); (ii) asset-referenced tokens and (iii) utility tokens. Issuers of crypto-assets will be subject to several obligations like, but not limited, (a) *the publication of a whitepaper having some similarities with prospectuses published under the prospectus regulation*; (b) *the necessity to be authorised to issue crypto-assets*; (c) *compliance with certain prudential rules when marketing crypto-assets*; and (d) *the obligation to act honestly, fairly and professionally vis-à-vis crypto-asset holders, in particular in relation to conflict management and prevention or maintenance of security access protocols*[105].

Some concepts are important. For the purpose of the MiCA Regulation, under Article 3:

Institute	**Definition**
Distributed Ledger Technology or "DLT"	means a technology that enables the operation and use of distributed ledgers
crypto-asset	means a digital representation of value or rights which may be transferred and stored electronically, using distributed ledger technology or similar technology
asset-referenced token	means a type of crypto-asset that purports to maintain a stable value by referencing another value or right or a combination thereof, including one or more official currencies;
electronic money token or e-money token	means a type of crypto-asset that purports to maintain a stable value by referring to the value of a fiat currency that is legal tender
utility token	means a type of crypto-asset which is intended to provide digital access to a good or service, available on DLT, and is only accepted by the issuer of that token
issuer of crypto-assets	means a natural or legal person who offers to the public any type of crypto-assets or seeks the admission of such crypto-assets to a trading platform for crypto-assets

[105] In https://securities.cib.bnpparibas/markets-in-crypto-assets-regulation/, accessed on 16th June of 2022.

crypto-asset service provider	means any legal person whose occupation or business is the provision of one or more crypto-asset services to third parties on a professional basis
crypto-asset service	any of the services and activities listed below: (a) the custody and administration of crypto-assets on behalf of clients; (b) the operation of a trading platform for crypto-assets; (c) the exchange of crypto-assets for fiat currency that is legal tender; (d) the exchange of crypto-assets for other crypto-assets; (e) the execution of orders for crypto-assets on behalf of clients; (f) placing of crypto-assets; (g) the reception and transmission of orders for crypto-assets on behalf of clients; (h) providing advice on crypto-assets; (i) providing portfolio management on crypto-assets; (j) providing transfer services for crypto-assets on behalf of clients.

Other key points of MiCA Regulation may be referred: the EU Digital Strategy *relies on the existing body of EU financial and securities law*[106], which means Prospectus Regulation, MiFID and AIFMD at its core. The crypto-assets activities, issuances and services are regulated activities subject to licensing. The supervision of significant asset-referenced and e-money tokens will rest mainly with the EBA[107].

The bespoke regulation of MiCA was summarized by the European Banking Institute Working Paper Series n. 2020/77[108] like this:

Figure 1: Concept of MiCA

Token Type	Regulatory Focus	Tool	Supervision
Significant ART & EMT	Systemic Risk	Additional own funds, EBA supervision	EBA
Payment Tokens (ART & EMT)	Market Integrity, Investor / Client Protection	Authorization, Reserve & Safeguarding Rules, Own Funds, Disclosure	NCA (EBA)
Utility tokens (crypto-assets)	Investor / Client Protection	Disclosure	NCA
Investment Tokens	Systemic Risk, Market Integrity, Investor / Client Protection	EU financial law	NCA, ESMA

Figure 02

[106] Available at: Zetzsche, Dirk Andreas and Annunziata, Filippo and Annunziata, Filippo and Arner, Douglas W. and Arner, Douglas W. and Buckley, Ross P., The Markets in Crypto-Assets Regulation (MICA) and the EU Digital Finance Strategy (November 5, 2020). European Banking Institute Working Paper Series No. 2020/77, University of Luxembourg Law Working Paper Series No. 2020-018, University of Hong Kong Faculty of Law Research Paper No. 2020/059, In: https://ssrn.com/abstract=3725395, accessed on 17 June of 2022.
[107] Idem.
[108] Ibidem, p. 10.

As stated by Miguel Diniz Lucas (before MiCA proposal), the regulation should seek (i) legal harmonisation[109]; (ii) regulatory certainty; (iii) ensuring security to investors (also avoiding complexity and confusion) and (iv) creating a clear path for legal compliance to firms[110]. In the European Central Bank (ECB) perspective there is a need to ensure that crypto-assets *are subject to standards in line with those applied to the financial system*[111]. And, doing so, the authorities will have to deal with *balancing the goals of promoting innovation, preserving financial stability and ensuring consumer protection*[112].

It is a very important step that Europe is taking to harmonise the treatment and regulation of crypto-assets for the European Union (a "regulation", as is well known, is *a binding legislative act. It must be applied in its entirety across the EU*[113]*)*, with consumer and investor protection[114] as one of the key points alongside financial stability and fraud prevention, although there is some space to improvements, as suggested by the EBI Working Paper[115].

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[109] This is an ECB's concerning as well: "The United States is taking action on this front,[43] while the Financial Stability Board (FSB) has made progress in advancing a global agenda of work on crypto-assets,[44] in cooperation with other international bodies such as the Committee on Payments and Market Infrastructures, the Basel Committee on Banking Supervision and the FATF." (In https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html, accessed on 16 June of 2022).

[110] Dinis Lucas, 2019, p. 44.

[111] In https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html, accessed on 16 June of 2022.

[112] Idem.

[113] It is quite different from a Directive: "A *directive* is a legislative act that sets out a goal that all EU countries must achieve. However, it is up to the individual countries to devise their own laws on how to reach these goals. One example is the EU consumer rights directive, which strengthens rights for consumers across the EU, for example by eliminating hidden charges and costs on the internet, and extending the period under which consumers can withdraw from a sales contract." A regulation is the proper type of regulation when the EU wants to make sure that there will be "common safe guards on goods imported from outside the EU" (In https://european-union.europa.eu/institutions-law-budget/law/types-legislation_en, accessed on 16th June of 2022). At the end of MiCA Regulation, we can see: *This Regulation shall be binding in its entirety and directly applicable in all Member States.*

[114] On the other hand, i.e., arguing for a different approach, check the Working Paper Series handled by Professor Guido Ferrarini (University of Genoa) and Professor Paolo Giudici (Free University of Bozen-Bolzano): "Accordingly, we offer a preliminary market-based critique of MiCA's white paper regulation, arguing that blockchain startups offering securities or utility tokens should be left free to decide what information to offer to investors, as long as the information provided is free from false or misleading statements, and does not omit any material fact. We also argue, contrarily to the Commission's proposal, that to facilitate private enforcement the burden of proof in liability actions should be on the issuer and not on the investor." (Ferrarini, 2021, in: https://ssrn.com/abstract=3914768, accessed on 17 June of 2022).

[115] "First, the scope of MiCA remains uncertain as the draft MiCA does not clearly delineate between usage tokens subject to MiCA and investment tokens subject to EU securities law. Second, a systematic approach to EU law is absent. Thresholds and concepts known from other EU laws should be firmly embedded in MiCA. Third, a framework for supervisory cooperation with regard to truly global stablecoins is missing." (In https://ssrn.com/abstract=3725395, accessed on 17 June of 2022).

Therefore, this is a huge step forward, as this new regulation will govern this great innovation without neglecting financial stability and consumer/investor protection. The MiCA appears to meet the macro precepts of expected regulation for crypto-actives.

3.2. Regulation in Brazil in a nutshell

The regulatory initiative in Brazil that drew most attention and received the most criticism was the one promoted by Bill no. 2,303/2015[116], notably after the presentation by the Special Commission, reported by Federal Deputy Expedito Netto[117], of the amending text (Substitutive). After some legislative processing, the text was incorporated into Bill No. 4,401/2021 (Substitute of the Federal Senate), which finally became, on December 21, of 2022, a Federal Act nº 14,478.

In the original text, the Bill of Congressman Áureo intended, basically, to include virtual currencies among the payment arrangements described in Law nº 12,865/2013 (contrary to the stance adopted, until then, by the CBB). In the wording of the Substitutive 4,401/2021, the Committee decided to position itself *for the prohibition of issuance in the national territory, as well as to prohibit its commercialization, intermediation and even acceptance as a means of payment for settlement of obligations in the Country*. And, in this sense, it suggested the inclusion of a specific criminal type, by means of an amendment to the Penal Code[118].

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[116] Bill of Law presented by Federal Deputy Aureo - SD/RJ, on 07/08/2015. Comment: Provides for the inclusion of virtual currencies and airline mileage programs in the definition of *payment arrangements* under the supervision of the Central Bank Explanation: Amends Laws No. 12,865 of 2013 and 9,613 of 1988.

[117] In: http://www.camara.gov.br/proposicoesWeb/prop_mostrarintegra?codteor=1632751&filename=SBT+1+PL230315+%3D%3E+PL+2303/2015, accessed on 29th January of 2018.

[118] Art. 1 This law provides for the issuance of digital currencies, virtual currencies and cryptocurrencies; digital tokens representing goods and rights; increased penalties for the crime of pyramid; and regulation of consumer loyalty or reward programs.
Art. 2 For the purposes of this law and those modified by it, the following definitions shall apply:
I - Digital currency, virtual currency or cryptocurrency - digital representation of value that functions as a means of payment, or unit of account, or store of value and that is not legal tender in the Country or abroad; (...).
Article 292 of Decree-law No. 2848 of December 7, 1940 (Penal Code) shall come into force with the following wording:
'Art. 292. Issuing, without legal permission, a note, ticket, token, voucher or security containing a promise of payment in cash to the bearer or to which the name of the person to whom it is to be paid is missing:
Penalty - detention, from one to six months, or a fine.
§ Paragraph 1 Shall incur the same penalty whoever, without legal permission, issues, intermediates exchange, stores for third parties, performs exchange for legal tender in the Country or foreign currency, digital currency, virtual currency or cryptocurrency that is not issued by the Central Bank of Brazil. (...).
§ 3 *Whoever accepts or uses any of the documents referred to in the head of this article as money incurs a detention, from fifteen days to three months, or a fine*'. (NR).

From such legislative modification, incorporated through Substitutive from the Senate nº 4,401/2022, *issuing, retaining and transferring* cryptocurrencies, as well as *using them as a means of payment*, would become a criminal offence in Brazil. At that moment, the innovation would be buried, with technology succumbing to the criminalisation of conduct (issuing, retaining, transferring or using).

So, at the beginning, the Bill 2,303/2015 basically criminalized any conduct related to cryptocurrencies in Brazil. As occurred with the United States, after a few years of debate and advancement of technologies and market development, the Bill was revised and began to be processed together with Bill 3,825/2019, which effectively proposed regulation for cryptocurrency exchanges in Brazil. After, around 2021, such projects were voted in the Brazilian House of Representatives and were approved.

Currently, it stands out from the referred Bills, based on OPINION No. 120, of 2022-PLEN/SF[119], that the Law intends to **(i)** regulate *the services related to transactions performed with cryptoactive assets on electronic trading platforms*; **(ii)** provide for *the virtual assets service provider*; and **(iii)** amend the Brazilian Criminal Code, Decree-Law No. 2. 848, of 1940, as well as the ALM Law, to *include the virtual assets service provider in the list of institutions subject to its provisions*.

That is, unlike what will occur in the US, where the intention is to have a much broader and deeper regulation, the objective in Brazil is more immediate – to directly and objectively regulate the virtual assets service providers (*Exchanges*) and, only indirectly, the operations. The perception, however, of the relevance of the urgent regulation of the crypto-active system also focuses on investor protection:

> *In the Bill's justification, Senator Flávio Arns points out the significant volume of resources that are traded in operations with cryptoactive, without the existence of specific regulation for companies that trade, exchange or custody cryptoactive. According to the author, the lack of regulation and supervision of this new and growing sector poses serious risks to investors and to the soundness of the economic and financial order, given the possibility of using such virtual assets to finance various illegal activities, such as money laundering, currency evasion and drug trafficking, or even to obtain illicit gains to the detriment of the community, such as the creation of financial pyramids and other fraudulent mechanisms.*[120].

[119] In https://www25.senado.leg.br/web/atividade/materias/-/materia/137512, accessed on 15th June of 2022.
[120] In: https://legis.senado.leg.br/sdleg-getter/documento?dm=9134214&ts=1653051117637&disposition=inline, accessed on 15th June of 2022.

The approved legislation (Federal Act nº 14,478, of 2022) also offers concepts relevant to Brazilian Law, regarding *cryptoactive* products (Article 2) and *Exchanges* (which, defined by Article 5, will now, according to Article 3, must obtain specific authorisation to operate):

> Article 2 Virtual asset service providers may only operate in the country with prior authorisation from a federal public administration body or entity.
>
> Article 3 For the purposes of this Law, a virtual asset is considered to be a digital representation of value that can be traded or transferred by electronic means and used to make payments or for investment purposes, not including:
> I - national currency and foreign currencies;
> II - electronic money, pursuant to Law No. 12,865, of October 9, 2013;
> III - instruments that provide their holders with access to specified products or services or to benefits arising from such products or services; and
> IV - representations of assets whose issue, bookkeeping, trading or settlement is provided for by law or regulation, such as securities and financial assets.
> *Sole Paragraph.* It will be incumbent upon an agency or entity of the Federal Public Administration, as defined in an act of the Executive Branch, to establish which financial assets will be regulated for the purposes of this Law.
>
> Article 5 It is considered a virtual asset service provider the legal entity that performs, on behalf of third parties, at least one of the virtual asset services, understood as:
> I - exchange between virtual assets and national or foreign currency;
> II - exchange between one or more virtual assets
> III - transfer of virtual assets;
> IV - custody or administration of virtual assets or instruments that enable control over virtual assets; or
> V - participation in financial services and provision of services related to the offer by an issuer or sale of virtual assets.

In concluding, the approval of the suggested alternative text turning to Federal Act 14,478, of 2022, sets as *main lines* **(i)** the definition of regulatory frameworks as *guidelines* for infra-legal regulation; **(ii)** consumer protection and defense; **(iii)** the fight against financial crimes, and **(iv)** the promotion of transparency in transactions, with an eminently principled character (OPINION nº 120, of 2022-PLEN/SF, cited above).

Finally, and in the same line developed by regulatory initiatives in Europe and the USA, Article 4 of Federal Act 14,478, mentions the fundamental principles that structure it, namely *information security and protection of personal data*; the *protection and defence of consumers and users*; and the *protection of popular savings*.

More recently, the Brazilian Federal Government issued Federal Decree No. 11,563 of 13 June 2023, through which the CBB was appointed with the power authority to essentially regulate *the provision of virtual asset services*; and to *regulate, authorise and supervise virtual asset service providers*. In addition, the CBB will be responsible for regulating and supervising the operation of virtual asset service providers (Article 2º). The attribution expressly granted does not extend to *assets representing securities* (Article 3) and does not alter the jurisdiction of the Brazilian Securities Exchanges Commission (CVM).

Finally, it should be commented that Brazilian Tax Authority (Internal Revenue Service)[121] has also issued regulations over the last few years to cover operations from the point of view of collection by the Brazilian state. The Income Tax Regulations[122] in Brazil cover the rules and guidelines related to the taxation of different types of income and assets, including cryptocurrencies. Since 2019, it must be declared to the tax authorities: (i) the purchase and sale of virtual assets; (ii) the original acquisition of currency via *mining*; (iii) transactions with cryptocurrencies above R$35,000 (thirty-five thousand reais) per month; and (iv) exchanges must also provide information to the IRS.

From any angle, the Brazilian Regulator's concern with these central issues is fully recognized, which is in total alignment with the Constitution of the Republic of Brazil and with the objective of the Brazilian State to promote a balanced, fair and solidary society (Federal Constitution of 1988). Brazilian regulators covered prudential and regulatory, tax and criminal areas, as well as regulating the *exchanges* and the operations in Brazil.

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[121] RFB NORMATIVE INSTRUCTION nº 1888, of 3rd May 2019, which *stablishes and regulates the obligation to provide information on cryptoasset transactions to the Brazilian Federal Revenue Service (RFB).*
[122] In: https://www.gov.br/receitafederal/pt-br/centrais-de-conteudo/publicacoes/perguntas-e-respostas/dirpf/pr-irpf-2023/view, accessed on 28th August 2023.

4. THE STATE'S DUTY TO PROTECT CREDIT AND THE CREDITOR

4.1. The control of currency and economic activity by the State

Currency control and financial stability are crucial issues for any economy and are often managed by the state, through its financial institutions and monetary authorities. These measures are essential for promoting sustainable economic growth, minimising inflation, guaranteeing the stability of the financial system and creating an environment conducive to investment and employment.

It is important to note that the balance between currency control and financial stability is not always easy to achieve, and the policies adopted can vary depending on the economic situation and the challenges faced by the country. In addition, the measures taken by the state can have significant impacts on different sectors of the economy and on the population in general, which is why policy formulation must be careful and well-founded.

Among the main tools and approaches that the national state can adopt to exercise control over the currency and guarantee financial stability are (i) Monetary Policy (through which a country's central bank controls the money supply and the interest rate, with the aim of influencing inflation, employment and economic growth); (ii) Financial Regulation and Supervision (the State can create and implement regulations for the financial sector in order to protect systemic and prudential risk); (iii) Fiscal Policy (the government can use fiscal policy to influence the economy through tax collection and public spending); (iv) Foreign Exchange (the State can intervene to control the exchange of currencies); (v) International Reserves (maintaining solid international reserves to face external economic and financial shocks, as well as to guarantee foreign investors' confidence in the national currency); and (vi) Economic Monitoring or Statistical Treatment (economic indicators such as inflation, unemployment, GDP growth, trade balance).

These functions (or mechanisms) are used and coordinated, in general, by a "national financial system" and a national central bank (in case of Europe, there is a supranational central bank as known: European Central Bank – ECB[123], whose main mission is maintaining *price stability: safeguarding the value of the euro*[124]).

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[123] The ECB *and the national central banks together constitute the Eurosystem, the central banking system of the euro area.* In: https://www.ecb.europa.eu/ecb/orga/escb/ecb-mission/html/index.en.html, accessed on 2nd Sept. 2023.

[124] Idem.

These main functions relating to the control of currency, both in terms of issuance and volume and circulation, are carried out in Portugal through its Central Bank, Banco de Portugal, duly authorised by Article 102º of the Constitution of the Portuguese Republic[125]. Portugal also has a Financial and Fiscal System (Article 101 of the Portuguese Constitution), *structured by law in such a way as to guarantee the accumulation, deposit and security of savings, as well as the application of the financial resources needed for economic and social development*.

So, Banco de Portugal *is the central bank of the Portuguese Republic. The nature and tasks of Banco de Portugal are defined in its Statute. Banco de Portugal is a public-law legal person, with administrative and financial autonomy and own property*[126]. The Central Bank of Portugal *is part of the Eurosystem*, as seen above, and part of the European System of Central Banks, whose main missions are *price stability and to promote the stability of the financial system*[127].

To perform those missions, the Bank works in the main fields of (i) monetary policy; (ii) asset and reserve management; (iii) prudential supervision; (iv) macroprudential policy; (v) banking conduct supervision; (vi) payment systems; (vii) foreign exchange authority; (viii) currency issuance; (ix) collection and compilation of statistics; (x) production of economic research and analyses and (xi) relations with the state[128].

Specifically on currency, its control and issuance, considering the central theme of this master's thesis (cryptocurrencies), it is also worth noting that the Bank of Portugal *produces, stores and puts into circulation euro banknotes*[129] (Article 6º, of the Statute).

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[125] *Article 102 (Bank of Portugal)*
The Bank of Portugal is the national central bank and shall exercise its functions as laid down by law and in accordance with the international norms by which the Portuguese state is bound.
(In https://www.parlamento.pt/sites/EN/Parliament/Documents/Constitution7th.pdf, accessed on 2nd Sept. 2023).

[126] Mission and Tasks. In: https://www.bportugal.pt/en/page/the-bank-mission-and-tasks, accessed on 2nd Sept. 2023.

[127] Idem.

[128] Idem. Those main functions are legally posed at Article 12º of the Banco de Portugal Statute (Lei Orgânica n.º 5/98, of 31 January), Chapter IV | Functions (Section I: General Provisions), *in verbis: Article 12º. Without prejudice to the constraints arising from its participation in the ESCB, the Bank shall be particularly responsible for: a) Manage the country's external assets or other assets entrusted to it; b) Act as an intermediary in the State's international monetary relations; c) To ensure the stability of the national financial system, namely by acting as the refinancier of last resort and as the national macro-prudential authority; d) Participating in the European system for the prevention and mitigation of risks to financial stability and in other bodies pursuing the same aim; e) To advise the government on economic and financial matters, within the scope of its remit. * Edited by Decree-Law no. 142/2013, of 18 October.* (Available: https://www.bportugal.pt/sites/default/files/anexos/legislacoes/lei_organica_banco_de_portugal.pdf, accessed on 2nd Sept. 2023).

[129] In: https://www.bportugal.pt/en/page/the-bank-mission-and-tasks, accessed on 2nd Sept. 2023

The Portuguese state therefore has, in its Constitution, the framework for its financial system (organised through the National Council of Financial Supervisors[130]), with the express institution of its duty to control the currency and monetary policy, as well as the means of payment, being priority duties of the State *to develop economic relations with all peoples, while always safeguarding national independence and the interests of the Portuguese people and the country's economy* (Article 81, "g", Constitution)[131].

Brazil is no different. The National Financial System (NFS) is included in Chapter IV of Title VII, the Economic and Financial Order, of the 1988 Constitution of the Republic of Brazil (CR/88), in Article 192. It must be structured in such a way as to *promote the balanced development of the country and serve the interests of the community*. In addition to this guideline, the Financial System must observe the general command of Article 170, according to which the Economic Order must ensure dignified existence for all, in light of the dictates of social justice.

As in Portugal, it is the exclusive competence of the National State ("Federal Government") to legislate on the *monetary system and measures, securities and guarantees of metals* (item VI, Article 22, CR/88) and the attribution of the National Congress (item XIII, Article 48) to dispose of (a) *financial, exchange and monetary matters, financial institutions and their operations,* and (b) *currency, its issuance limits, and the amount of the federal securities debt* (XIV, the same Article 48). And article 164 expressly provides for the exclusive competence of the Central Bank to issue currency.

The duty of the Brazilian state, therefore, to protect the financial market and control the currency (issuance and circulation), is clear from its Constitution. In order to carry out its legal mandate, the Central Bank of Brazil basically follows similar objectives and missions as those mentioned above for the ECBs and the Bank of Portugal. It is governed by Federal Act No. 4,595 of 1964, which provides for Monetary, Banking and Credit Policy and Institutions and creates the National Monetary Council[132].

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[130] In: https://www.bportugal.pt/page/conselho-nacional-de-supervisores-financeiros?mlid=1429, accessed on 2nd Sept. 2023.

[131] Article 165 of the Constitution, in turn, provides for the exclusive competence of the Assembly of the Republic to legislate about *monetary system* (paragraph 'o'), which reinforces the notion of a state duty to protect the economy and its control/regulation/supervision.

[132] The National Monetary Council's policy will aim to: (item II, Article 3º, Federal Act n. 4,595/1964) regulate the internal value of the currency, to this end preventing or correcting inflationary or deflationary outbreaks (i.e. inflation control); coordinate monetary, credit, budgetary, fiscal and public debt policies, both internal and external (item VII, same Article 3º), as well as the efficiency of means of payment, regulate exchange operations, ensure the liquidity and solvency of financial (and similar) institutions. Basically, competence in the (i) monetary; (ii) supervisory/regulatory fields.

From Article 10 of Federal Act n. 4,595/1964, it is clear that the BCB has been given classic functions by Brazilian law, including regulation; inspection and supervision; control of monetary stability (issuing currency and circulating credit) and financial market liquidity. Its own booklet ("What is a Central Bank"[133]) points out the traditional functions of central banks, which are adopted by the BCB: issuing the official currency and controlling monetary volume; being the "bank of banks"; supervising and authorising financial institutions to operate; handling international reserves and dealing with the state; advising the federal government on economic policy; acting in the foreign exchange market.

In terms of cryptocurrencies, it is worth remembering that the recent Federal Decree No. 11,563 of 2023, which regulated Federal Act nº. 14,478 of 2022 (which provides for the virtual asset market), gave the BCB the power to regulate *the provision of virtual asset services, subject to the guidelines of the aforementioned Act* (item I, Article 1º); and *to regulate, authorise and supervise virtual asset service providers* (item II, Article 1º).

Therefore, there is no doubt that Brazil and Portugal have central banks with specific mandates and their own regulation of the financial system that lead to market protection, financial stability, systemic trust and, as will be seen below, investor/consumer protection (cryptocurrency users, in this case) and credit protection. The mandates are in line with the recommendations of IOSCO[134]; FSB[135] and OECD (G-20)[136].

4.2. The principle of credit and investor protection

Overall, investor and credit protection are a multifaceted concept that involves a combination of legal frameworks, regulations, industry standards, and market practices to ensure that investors and creditors are treated fairly, and their interests are safeguarded.

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[133] In: http://www.bcb.gov.br/Pre/educacao/cadernos/bancocentral.pdf, accessed on 2nd Sept. 2023.

[134] *IOSCO believes that fostering innovation should be balanced with the appropriate level of regulatory oversight. Accordingly, while aspects of the underlying technology and operation of CTPs may be novel, if a CTP trades a crypto-asset that is a security and it falls within a regulatory authority's jurisdiction, the basic principles or objectives of securities regulation (investor protection, ensuring fair, efficient and transparent markets and investor confidence in markets) should apply*
(In. https://www.iosco.org/library/pubdocs/pdf/IOSCOPD649.pdf, accessed on 30th July 2023).

[135] One of the pillars of the state's duty is to protect systemic trust: *2.3. Confidence effects. Widespread holdings of crypto-assets by retail investors with limited knowledge of the market functioning including transaction fees, and given the lack of investor protections, or recovery and resolution frameworks, could result in adverse confidence effects. Retail investment in cryptoassets continued to increase in 2020 and 2021, although investment flows are still low compared to other types of financial assets. [...].*

[136] OECD, 2022.

Investor and credit protection are important principles in finance and economics, and there are various mechanisms and regulations in place to safeguard the interests of investors and creditors. For instance, we can relate (i) transparency rules and disclosure; (ii) regulatory oversight; (iii) securities regulation; (iv) banking regulation; (v) bankruptcy and business insolvency rules; (vi) investor education; (vii) insurance (voluntary and/or mandatory); (viii) consumer protection laws; (ix) global standards (soft law); (x) credit rating agencies.

While there isn't a specific "principle of credit protection" in the same way there are well-defined principles in some areas of finance and law, including investor and consumer protection (which are directly related to the present theme), the concept of "credit protection" refers, in the end of the day, to the various measures and mechanisms put in place to safeguard creditors' interests in financial transactions. These measures aim to reduce the risk of borrowers defaulting on their obligations and to ensure that creditors have recourse in case of default. For instance: (i) collateral assets (guarantee); (ii) credit risk assessment; (iii) credit agreements (clear and effective rules governing the credit contracts and operations); (iv) credit insurance (voluntary or mandatory, depending on the case, rule and jurisdiction); (v) credit rating agencies; (vi) consumer and investor protection laws; (vii) debt restructuring (distressed assets); (viii) bankruptcy and insolvency rules; (ix) regulation and supervision; (x) duty to inform the supervisory authority; (xi) civil procedure to recovery debts (enforcement and execution actions); (xii) debtor asset identification systems (as, in Brazil, SISBAJUD, RENAJUD, INFOJUD, among others).

Indeed, the notion of credit protection is almost inherent to the idea of private property. Naturally, a state that favours the market economy and recognises private property as a basic (and minimum) principle/rule to be observed by everyone, including the state, must provide its citizens, companies and institutions with the various mechanisms listed above. Furthermore, expressly recognising the principle and rule of consumer and investor protection only shifts the notion of what credit protection is: after all, of course, protecting investors means protecting their credit.

And, from this perspective, i.e., creditor protection, it is worth noting that *Crypto-asset markets are fast evolving and could reach a point where they represent a threat to global financial stability due to their scale, structural vulnerabilities and increasing interconnectedness with the traditional financial system*[137].

[137] In: https://www.fsb.org/2022/02/assessment-of-risks-to-financial-stability-from-crypto-assets/, accessed on 3rd Sept. 2023.

So, it is also worth mentioning that both the Portuguese Constitution (Article 62 – *right to private property*) and the Brazilian Constitution (CR/88), in Article 170, item II (private property as a general principle of economic activity), recognise private property and, consequently, the market economy (i.e. an economy planned by the state but run by private economic agents under antitrust rules, as stated by item "f" of Article 81 of the Portuguese Constitution, and, Article 174, of CR/88 – Brazilian Constitution).

Going forward, REGULATION (EU) 2019/2175, of 18 December 2019, states that the *overall objective of the ESAs* is to (a) reinforce stability of the financial system and (b) *enhance consumer and investor protection.* In the same path, REGULATION (EU) 1093/2010, of 24 November 2010, established - in recital 11 – that the Authority (ESA) *should act with a view to improving the functioning of the internal market, in particular by ensuring a high, effective and consistent level of regulation and supervision;* and, in recital 37, recognises *the need to confer additional relevant powers to the Authority should be assessed as well as how banks and savings institutions could prioritise the protection of savers*. The protection of market efficiency and the stability of the financial system are also expressly covered by recital 66 (*protecting depositors and investors, protecting the integrity, efficiency and orderly functioning of financial markets, maintaining the stability of the financial system*)[138].

The MiCA Regulation has several previsions relating to investor and credit protection. In addition to the constant concern – easily perceived throughout the text of MiCA – of *ensuring a high level of protection of retail holders and the integrity of markets in crypto-assets* (recital 6), MiCA provides for typical specific measures to protect the market and investors, such as (i) regulation (recital 73); (ii) the registration of CASPs as a protection measure (recital 74); (iii) treating CASP as a financial institution (recital 79); (iv) prudential measures (recital 80); (v) segregation of assets and funds available at a regulated bank or central bank (recital 82); (vi) operating and transparency requirements; (vii) mitigating conflicts of interest (recital 88); and (viii) KYC (recital 89).

[138] Under Article 1, the objective of the Authority shall be to protect the public interest by, among others contributions, *ensuring the taking of credit and other risks are appropriately regulated and supervised*; and *enhancing customer protection*. And, under Article 2, the European System of Financial Supervision (ESFS) should *preserve financial stability* and [to] *ensure confidence in the financial system as a whole and sufficient protection for the customers of financial services.* Finally, under Article 9, which provides for *tasks related to consumer protection,* states that the Authority *shall monitor new and existing financial activities and may adopt guidelines and recommendations with a view to promoting the safety and soundness of markets and convergence of regulatory practice* (item 2) and may *issue warnings in the event that a financial activity poses a serious threat to the objectives laid down in Article 1(5).*

It is also a prudential and systemic protection measure to choose - as public policy - to restrict investments and the allocation of popular savings in a particular sector. The Brazilian Securities and Exchange Commission (CVM) has acted in this direction. In January 2018, it issued its first statement, Circular Letter No. 1/2018/CVM/SIN, prohibiting investment funds from investing in cryptocurrencies. Secondly, in Circular Letter No. 11/2018/CVM/SIN, dated 19 September 2018, it referred to article 98 of IN-CVM 555/14 (in force at the time) - which regulated investment funds - in order to authorise investment in cryptoassets and derivatives via *foreign exchanges or foreign market entities*, provided that such environments *were regulated and supervised by the proper regulator in that jurisdiction*. Only in 2022, when changing the investment fund regime in Brazil (CVM Resolution no. 175), CVM finally authorised the investment of fund resources in cryptocurrencies of only up to 10% (ten per cent) of their net assets (art. 45, item III, point “c”). The limitation on the Fund’s (or its manager or administrator’s) freedom to manage resources is undeniably a systemic and prudential risk mitigation measure, which aims to promote some market safeguard.

Federal (Brazilian) Act 14.478, of 2022, mentioned before, which essentially *provides for guidelines to be observed in the provision of virtual asset services and in the regulation of virtual asset service providers*, listed among the guidelines for the provision of virtual asset services (i) *the protection of consumers and users* (item IV, Article 4) and the *protection of popular savings* (item V, Article 4), as well as, of course, the prevention of money laundering, terrorist financing and the proliferation of weapons of mass destruction, in line with international regulatory standards on the subject (inc. VII, art. 4).

Therefore, credit, in Brazil or Portugal, deserves protection, which is granted to it by the respective Constitutions, as well as by the regulatory framework (including MiCA), which ensures numerous measures and mechanisms to protect the creditor (consumer or investor), with the aim of maintaining the stability and efficiency of the markets and protecting private property and the popular economy.

5. THE JUDICIAL PROCESS OF COLLECTION (EXECUTION ACTION) OF CIVIL DEBT

5.1. The Brazilian procedural discipline and its experience in the pursuit of credit

In a nutshell, the execution process in Brazil is essentially regulated by the Code of Civil Procedure (Federal Act 13,105, of 2015 - hereafter referred to only as CPC/15), in Part II, Articles 771 to 925, and its objective is to satisfy the claim within a reasonable time, by expropriating the assets of the debtor (Article 824, CPC/15). It is a judicial procedure, and the coercive power to seize the debtor's assets and expropriate them (via adjudication or sale, usually by public auction) is an exclusive prerogative of the State, through the Judiciary. The enforcement process "shall always be based on a certain, liquid and enforceable obligation" (Article 783, CPC/15) and is guided by the best interests of the creditor (Article 797, CPC/15). [139].

According to Article 789, CPC/15, *the debtor is liable with all his present and future assets for the fulfilment of his obligations, except for the restrictions established by law*. When summoned, the debtor (executed) has the prerogative to pay, within 03 (three) working days[140] (may, within the same period, indicate sufficient assets to guarantee the case, suspending the enforcement until the legitimacy of the collection is discussed by means of a defence of its own, via an Enforcement Motion [141]). Once this payment deadline has passed, the creditor/executor has the prerogative to attach as many assets from the debtor's estate as are sufficient to satisfy the claim/credit[142].

Brazilian legislation provides for the seizure of a debtor's assets as a measure to reach the assets as a result of a judicial policy that promotes the effectiveness of the public jurisdiction, the mechanisms that make this seizure effective are constantly being developed and updated. Article 835 of CPC/15 lists the assets that can be seized in order of preference, starting with money, public bonds and securities[143].

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[139] This means that the enforcement process "reaches its end (in the dual sense of end and objective) with the satisfaction of the creditor, which represents the realisation of the concrete legal rule applicable to the situation" (MOREIRA, José Carlos Barbosa. O novo processo civil brasileiro. 28 ed. Rio de Janeiro: Forense, 2010, p. 266).

[140] CPC/15, Art. 829: The defendant will be summoned to pay the debt within three (3) days of the summons.

[141] CPC/15, Article 914.

[142] Art. 831. The attachment should be on as many assets as are sufficient to pay the updated principal, interest, costs and legal fees.

[143] In addition, there is an extensive list in the following items of Article 835: IV - land vehicles; V - immovable property; VI - movable property in general; VII - semi-ovable property; VIII - ships and aircraft; IX - shares and quotas in simple and entrepreneurial companies; X - a percentage of the debtor company's turnover; XI - precious stones and metals; XII - acquisition rights derived from promises to buy and sell and fiduciary alienation in guarantee; XIII - other rights..

The fact is, however, that if the debtor fails to pay the debt, the creditor must endeavour to identify the debtor's assets, although its access to assets is limited. To this end, it is necessary, as stated above, to rely on the intervention of the judge so that, with the coercive force of the state, he can order the necessary measures to identify and seize assets (Article 139, item IV, CPC/15) [144]. In addition, the judge can order that the *subjects indicated by the creditor provide information in general related to the object of the execution, such as documents and data in their possession, giving them a reasonable deadline* (Article 772, item III, CPC/15) and also *order the necessary measures to comply with the order to hand over documents and data* (Article 773, CPC/15).

However, before describing the main executive measure available in the Brazilian judicial system (the Central Bank's electronic system – SISBAJUD), which is responsible for electronically freezing bank accounts and financial assets available in the National Financial System, it must be clear if cryptocurrencies are, in fact, assets (or rights) that can be seized, under the terms of Article 835, CPC/15.

5.1.1. The possibility of attachment and liens on virtual assets

The first important notion - in order to consider the attachment and liens on virtual assets, including cryptocurrencies – is to recognise that cryptoassets are economically appreciable goods or rights (*data*) and, therefore, that they fall within the items provided for in Article 835, CPC/15.

In David Fox's opinion (University of Edinburgh, Law School)[145], *ownership of tokens (coins representing currencies included) has a truly simple explanation. It is property and can be owned by lawfully possessing it due to the absence of law imposition to register the ownership or any other right to this asset before any authority – although there is a registration of ownership inside the ledger network*[146].

From UK Jurisdiction Taskforce of the LawTech Delivery Panel, the same conclusion can be drawn from the "property" nature of cryptoassets:

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[144] *Art. 139. The judge shall conduct the proceedings in accordance with the provisions of this Code:*
[...]
IV - determine all the inductive, coercive, mandamus or subrogation measures necessary to ensure compliance with a court order, including in actions for the payment of money;
[145] FOX, 2021.
[146] RIBOLA, 2023, p. 33.

> *The UK Legal Statement utter that "crypto assets as property ultimately depends on the nature of the asset, the rules of the system in which it exists, and the purpose for which the questions are asked. In general, however: (a)* ***Crypto assets have all of the indicia of property****; (b) the novel or distinctive features possessed by some crypto assets — intangibility, cryptographic authentication, use of a distributed transaction ledger, decentralisation, rule by consensus —* ***do not disqualify them from being property****; (c) nor are crypto assets disqualified from being property as pure information, or because they might not be classifiable either as things in possession or as things in action; (d)* ***crypto assets are therefore to be treated in principle as property."*** [147]

Similarly, Júlio César Stella[148]:

> *Regarding the reading of the phenomenon of cryptocurrencies under the moulds of the Brazilian legal system, considering the general rules of law, the uses given to these instruments, the regulation of similar institutes and the manifestations of authorities in this regard, it is appropriate to treat them as an incorporeal thing, more specifically, an electronic domain with abstract value to which property rights are attributed.* [149]

Therefore, taking cryptocurrencies as property, we can accept the possibility that they are seizable things (or rights). And the jurisprudence in Brazil courts has already moved in this direction:

> AGGRAVEMENT FOR INSTRUMENT - EXECUTION OF AN EXTRAJUDICIAL TITLE - Appeal against decision refusing to issue a writ of summons to the brokerage houses to attach any amounts invested by the defendants in cryptocurrency - **Cryptocurrency - Possibility of blocking - Asset with financial content that is part of the debtor's assets - No legal impediment** - Assets not covered by the SISBAJUD system search - Need for intervention by the Judiciary to obtain information - Precedents of this Chamber Decision reversed - APPEAL GRANTED.[150]

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[147] UK Jurisdiction Taskforce of the LawTech Delivery Panel, Legal Statement on Cryptoassets and Smart Contracts (2019), p. 7.

[148] STELLA, 2017. In the same understanding, to close: *Despite this, it is incontrovertible that they are intangible assets with economic value, and for this reason, in theory, there is no obstacle to virtual currency being pledged to guarantee debts, as occurred in the judgement of Interlocutory Appeal 2202157-35.2017.8.26.0000, from the São Paulo Court of Justice*. (HASSE, 2022).

[149] In a master's thesis defended before the NOVA School of Law (Universidade NOVA de Lisboa), Henrique Ribola concludes in the same path: *In consequence, this Thesis must adopt the plea of the clear possibility of considering cryptoassets (cryptocurrencies included) as property and advocate for the creation of a new or legal framework to enforce the right of ownership when it is or was shaken up by third parties*. (RIBOLA, 2022, p. 36).

[150] Court of Justice of the State of São Paulo; Aggravement for Instrument n. 2132173-51.2023.8.26.0000; Justice: Ana Catarina Strauch; Chamber: 37ª Private Law Chamber; judgement: 07/07/2023; register: 07/07/2023.

> AGGRAVEMENT FOR INSTRUMENT - EXECUTION - Request to send official letters to cryptocurrency brokers - Rejection - **Crypto-assets recognised by the Federal Revenue Service as financial assets to be declared** to the tax authorities - **Assets subject to attachment, not covered by the Sisbajud system - Admissibility of the measure - Precedents of this Court** - Diligence that cannot be carried out directly by the creditor, without the intervention of the Judiciary - No need to send a letter to the company that has credit with the defendants, in view of the clarifications provided - Decision upheld in part - Appeal upheld in part.[151]

> ATTACHMENT OF CRYPTOCURRENCIES. (1) As a rule, the defendant's liability for assets is unlimited and covers all his assets, present and future, **so that cryptocurrency assets - encrypted digital assets (digital currencies) - are no exception due to their undoubted economic expression**. (...).[152]

Although the possibility of attachment has already been established in Brazilian jurisprudence, the creditor's great challenge, however, is to identify the owner and the thing - the cryptocurrencies[153] - itself. And, having discovered the existence of cryptocurrencies or having, at least, a suspicion of its existence, the challenge - the main issue justifying this study - is to make it possible to effectively seize and liquidate the asset, transforming it into fiat currency to be delivered to the creditor.

To verify this circumstance, we will now return to the issue of the "methods" and tools of pursuing assets in the Brazilian judicial system.

5.1.2. The electronic system "SISBAJUD" operated by the Central Bank in cooperation with the Brazilian Justice

Among the direct mechanisms, which are the responsibility of the judicial authority in line with the legal provisions mentioned above (especially Articles 139, item IV, 772, 773, all from CPC/15), the National Council of Justice (CNJ) has prioritised the use of technology systems that, via electronic court blocking orders, reduce bureaucracy in the process, speed up the demand, improve compliance with the court order and overcome the concealment of assets in favour of the creditor's interests.

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[151] Court of Justice of the State of São Paulo; Aggravement for Instrument n. 2056225-06.2023.8.26.0000; Justice Vicentini Barroso; Chamber: 15ª Private Law Chamber; Judgement: 02/06/2023; Register: 02/06/2023.
[152] TRT-4 (Labor Court of Rio Grande do Sul State. Appeal (AP): 01029001420085040303, Judgement: 31/08/2022, Specialised Execution Section).
[153] *What Is Proof Of Ownership?*
A tokenization technique for storing data form on the blockchain called Proof of Ownership offers unchangeable evidence of who owns the data. It is better than existing record-keeping systems that rely on a central repository and an owner of the data. In: https://blockchainsentry.com/blog/blockchain-and-proof-of-ownership/, accessed on 8th Sept. 2023.

The SISBAJUD (the Judiciary's Asset Search System) is an electronic platform developed by the National Council of Justice (CNJ) in Brazil. The purpose of this platform is to enable the consultation and freezing of debtors' financial assets and values through the banking and financial system. The STJ (Superior Court of Justice) clarifies that SISBAJUD *is the system for sending court orders for the seizure of amounts electronically, which is done by indicating a single account for cash seizure*.[154]

The SISBAJUD is used by judges, in favour of lawyers, to help locate debtors' financial resources and assets, speeding up the debt enforcement process and ensuring that creditors can recover the amounts owed to them. The system makes it possible to freeze debtors' bank accounts, investments, and other financial investments, provided there is a court electronic order to do so.

With SISBAJUD, it is possible to speed up the recovery of judicial credits, increase the efficiency of the judicial system and prevent debtors from trying to conceal their financial assets. The system also contributes to transparency and integrity in the debt enforcement process since transactions are recorded electronically and can be subjected to audits.

The first tool was created in 2001 by the Central Bank of Brazil (BACEN) called BACENJUD, it allowed the judge to request information on bank transactions. Later, a new version of this system expanded the number of partners enrolled and allowed freezing orders to be sent to distributors and exchanges, securities brokers and independent investment agents. In order to adapt the system to the electronic judicial process and to meet new functionalities, the software evolved to become the Judiciary's Asset Search System. – SISBAJUD.

The SISBAJUD is regulated by CNJ Resolution 61 of 7 October 2008 and STJ/GP Normative Instruction 4 of 13 February 2023. There are basically three types of orders issued by Judges: an order to freeze amounts; an order to request information and an order to break bank confidentiality.

The SISBAJUD handbook[155] clarifies that the system is a digital platform for interaction between the Judiciary and the Central Bank, operated directly by the Judge.

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[154] In: https://www.stj.jus.br/sites/portalp/Processos/SISBAJUD#:~:text=%C3%89%20regulado%20pela%20Resolu%C3%A7%C3%A3o%20CNJ,13%20de%20fevereiro%20de%202023, accessed on 12th August 2023.

[155] In https://www.cnj.jus.br/wp-content/uploads/2020/09/SISTEMA-DE-BUSCA-DE-ATIVOS.pdf, accessed on 8th Sept. 2023.

Despite being a very efficient and fast tool, which makes it possible to freeze financial assets directly by electronic order of the Judge, of which the defendant, as a rule, does not become aware beforehand, it is a relevant fact, notably for this research, that SISBAJUD does not reach (i) FINTECH's with less than R$500 million in transactions or R$50 million in payment accounts; and (ii) cryptocurrency exchanges, which is why it has not been possible to block cryptocurrencies - until now[156].

Indeed, several court rulings have also recognised that the system does not apply to cryptocurrencies:

> AGGRAVEMENT FOR INSTRUMENT -- Monitory action - Enforcement of judgement - Decision rejecting the request made by the plaintiff to send a letter to Fintechs and Cryptocurrency Brokers (Exchanges) - Failure to locate assets and financial assets in the name of the defendant - **SISBAJUD system that includes "fintechs", but does not include research and attachment of investments in cryptocurrencies** - Partial viability of the request - Precedents of this Court - Decision partially modified. Appeal partially upheld.[157]

> ATTACHMENT OF CRYPTOCURRENCIES.
> (1) The enforced party's liability for assets is, as a rule, unlimited and covers all of its assets, present and future, so that cryptocurrency assets - encrypted digital assets (digital currencies) - are no exception due to their undoubted economic expression.
> (2) It should be noted, however, **that there are obstacles to the effective satisfaction of the creditor pursuing cryptocurrencies**, ranging from the **actual location of the asset, its appropriation by the State and subsequent conversion into legal tender in the country.**
> (3) In the current context of technology, especially due to the limited and expensive ways in which information on cryptoassets can be obtained, requests for enforcement must pass through the sieve of reasonableness and proportionality, and must be supported by a minimum of indicative evidence, otherwise random searches for cryptocurrencies will make the judicial provision itself unfeasible and jeopardise, in a diffuse manner, the constitutional guarantee of the reasonable duration of the process (art. 5, LXXVIII, of the CRFB).
> (4) A case in which the executor has located ownership of Bitcoins by means of a declaration to the tax authorities, so that a request to the Internal Revenue Service for information on the custody agents of the cryptocurrencies held by the executor may give rise to or enable means of enforcement that result in the creditor benefiting.
> (5) The executor's interlocutory appeal is granted.[158]

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[156] *That's why we haven't been able to freeze cryptocurrencies like Bitcoin and Ethereum, explains CNJ assistant presiding judge Dayse Starling Motta* (In: https://www.cnj.jus.br/inovacao-no-sisbajud-permite-preservacao-de-sigilo-das-ordens/, accessed on 8th Sept. 2023).

[157] Court of Justice of the State of São Paulo; Aggravement for Instrument n. 2155792-78.2021.8.26.0000; Justice José Wagner de Oliveira Melatto Peixoto; 37ª Private Law Chamber, pub. 08/07/2021.

[158] TRT-4 (Labor Court of Rio Grande do Sul State. Appeal (AP): 01029001420085040303, Judgement: 31/08/2022, Specialised Execution Section).

INTERLOCUTORY APPEAL. ENFORCEMENT OF JUDGEMENT. **DISPATCH OF OFFICIAL LETTERS TO CRYPTOCURRENCY BROKERS. POSSIBILITY**. This is an interlocutory appeal for the dispatch of official letters to cryptocurrency brokers. Several unsuccessful attempts to pursue the credit in the execution. The measure is intended to speed up and make enforcement more effective, and may enable future attachment. **Participation of the Judiciary to obtain the information requested is essential. In addition, brokerage houses are not subject to Central Bank control, the data is private and confidential and cannot be accessed directly by the executor**. Appropriate measure. DECISION REVERSED. INTERLOCUTORY APPEAL GRANTED.[159]

AGGRAVEMENT FOR INSTRUMENT - FORECLOSURE ACTION - ISSUANCE OF OFFICIALS - CNSEG - FINTECHS - CENSEC - NOTA FISCAL PAULISTA - CRIPTOCOINS - CCS - **INFORMATION CONCERNING ESTIMATED AMOUNTS AND CREDITS - LOCATION OF PROPERTY**
I - Enforcement carried out in the interest of the creditor - Public interest in the provision of justice - Impossibility for the party to obtain information, given that the institutions (CNSeg, Censec, Secretary of Finance of the Government of the State of São Paulo, Federal Revenue Service) **only comply with the judicial request, due to the secrecy of said information**, under penalty of removing the effectiveness of the State's judicial protection - Safeguarded the possibility, in the future, in the event of any attachment being carried out, of assessing any allegation of unseizability made in the specific case, by the Justice "a quo". Judge "a quo" – II - **Recognition that the search for financial assets via Bacenjud 2.0 does not include institutions known as "fintechs",** in accordance with Resolution No. 4.656 and Communiqué No. 31.506/2017 of the Central Bank of Brazil - Communiqué No. 31. 506/2017 of BACEN which only admits the possibility of blocking by other means, **when possible financial assets were not accessible by the Bacenjud 2.0 system, as is the case here - Issuance of official letter to the institutions which is necessary - Search through the Bacenjud system which is not sufficient** - Intelligence of Bacenjud Regulation 2. 0, of BACEN, art. 13, §5, I, c.c. art. 139, III, of the NCPC
- III - CCS - Notwithstanding the creditor's difficulty in locating assets capable of responding to the enforced debt, there is no exceptional reason in the case file to justify taking such measures - Preservation of banking secrecy must prevail - Art. 5º, X, of the Federal Constitution - Lack of evidence, moreover, of possible fraud, concealment of assets or practice of the criminal conduct typified in Law 9.613/1998 - Precedents of this Court - Art. 835, of the NCPC, which makes other types of attachment available to the creditor, which have not yet been observed - Issuance of official notice unacceptable
- IV - **Issuance of official notices determined**, except to the CCS, as well as the attachment of any amounts located - Precedents - Decision upheld in part - Interlocutory appeal partially granted.[160]

For this reason, the Brazilian judiciary has frequently issued court orders to various cryptocurrency exchanges as related above and below:

[159] Court of Justice of the State of São Paulo; Aggravement for Instrument 2177367-74.2023.8.26.0000; Justice: Alexandre David Malfatti; Judging Body: 12th Private Law Chamber; date of judgement: 15/08/2023; date of registration: 15/08/2023.
[160] Court of Justice of the State of São Paulo; Aggravement for Instrument n. 2198468-70.2023.8.26.0000; Justice Salles Vieira; Judging Body: 24ª Private Law Chamber; date of judgement: 24/08/2023; date of registration: 24/08/2023.

> INTERLOCUTORY APPEAL. ENFORCEMENT OF JUDGEMENT. **DISPATCH OF OFFICIAL LETTERS** TO CRYPTOCURRENCY BROKERS. POSSIBILITY. **This is an interlocutory appeal for the dispatch of official letters to cryptocurrency brokers. Several unsuccessful attempts to pursue the credit in the execution.** The measure is intended to speed up and make enforcement more effective, and may enable future attachment. Participation of the Judiciary to obtain the information requested is essential. In addition, brokerage houses are not subject to Central Bank control, the data is private and confidential and cannot be accessed directly by the executor. Appropriate measure. DECISION REVERSED. INTERLOCUTORY APPEAL GRANTED.[161]

> ENFORCEMENT OF JUDGEMENT. **Request to cryptocurrency brokers to locate assets of the defendant. Admissibility. The measure aims to make enforcement effective and obeys the order of preference for attachment.** Information useful for collecting the debt. **Need for intervention by the Judiciary. The measure is appropriate**. Art. 797 of the CPC. Precedents of the TJSP. Decision reversed. Appeal granted.[162]

It is expected, however, that there will be some future technological evolution of the system once Federal Law 14,478 of 2022 comes into force (which is already underway), which has granted the Central Bank of Brazil the power to authorise and supervise cryptocurrency exchanges. The fact is, however, that at the current juncture, cryptocurrencies - even those held by brokers - cannot be operationally considered to be subject to freezing and seizure.

However, we do believe that technological advances should occur as cryptocurrency exchanges become interconnected with the Brazilian national financial system.

Finally, it should be noted that it is not currently possible to know whether a cryptocurrency exchange can settle a client’s transaction by transferring fiat currency to the courts: to see[163].

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161 Court of Justice of the State of São Paulo; Aggravement for Instrument 2177367-74.2023.8.26.0000; Justice: Alexandre David Malfatti; Judging Body: 12th Chamber of Private Law; date of judgement: 15/08/2023; date of registration: 15/08/2023.

162 Court of Justice of the State of São Paulo; Aggravement for Instrument 2111211-07.2023.8.26.0000; Justice: Gilson Delgado Miranda; Judging Body: 35th Chamber of Private Law; date of judgement: 04/08/2023; date of registration: 04/08/2023.

163 Before conclude, it is worth mentioning that Brazil has other asset search systems that are also carried out in co-operation between the Judiciary and other public institutions, such as, for instance the **RenaJud**, an online vehicle restriction system developed by Denatran (National Traffic Bureau) in partnership with the CNJ, which since 2008 has linked the Judiciary to the National Traffic Secretariat's records and allows restrictions to be placed on the sale of vehicles owned by the debtor. More recently, in August 2022, starts to operate the **Sniper,** an “Asset Investigation and Asset Search System”, the result of a technical cooperation project signed between the CNJ and the United Nations Development Programme (UNDP), which cross-references large data sources - such as the Brazilian Federal Revenue Service’s National Register of Individuals and Legal Entities and the Superior Electoral Court's (TSE) candidate database - with tax (**InfoJud**) and bank (**SisbaJud**) data and *presents the magistrate with a visual and interactive overview of the corporate, property and financial links between individuals and legal entities. The aim of the tool is to promote an asset investigation in seconds to*

5.2 The Portuguese procedural discipline and its experience in the pursuit of credit

In Portugal, the execution action is regulated in articles 703 to 877 of Book IV of the Portuguese New Civil Procedure Code (CPCP), approved by Act 41/2013, which simplified some matters within the scope of the enforcement action with a view to speeding up its processing and which provides mechanisms to avoid the loss of the asset guarantee of your claim, such as the attachment of bank deposits without the prior summons of the defendant (Article 780). This is always the case in summary execution proceedings (Articles 855 and 856), or in ordinary proceedings, when requested by the creditor and facts are proven that justify the risk of the credit guarantee being lost (art. 727) or in the cases referred to in article 812-C of the Civil Code (art. 812-C).

Regardless of the possibility of attachment before the defendant has been summoned, a general procedural rule under Article 726(6) of CPCP, the defendant will be summoned to pay within 20 (twenty) days or to oppose. Once this period has elapsed or the opposition has been dismissed by the Court, the enforcement agent will be notified to begin the attachment procedures (Article 748(1)(b), (c) and (d)), at which point he may consult the databases and public registers of the tax authorities, national security, land registry offices and other similar archives, with the aim of *identifying and localising their assets* (Article 749(1)).[164].

As far as attachable assets are concerned, with a view to the subject of this master's thesis, Article 735 of the CPCP stipulates, in a similar way to the discipline in Brazil, that *all the debtor's assets susceptible to attachment that, under the terms of the substantive law, are liable for the enforceable debt are subject to execution*. There is no clear restriction in the CPCP on the attachment of cryptoassets, although this possibility is not expressly mentioned for.

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discover relationships and links of interest, identify economic groups and increase the possibility of a court order being complied with in its entirety by making it more difficult to conceal assets (In: https://www.cnj.jus.br/sniper-novo-modulo-do-curso-sobre-uso-da-ferramenta-aborda-dados-judiciais-e-sigilosos/, accessed on 9th Sept. 2023).

[164] Article 749

Diligences prior to attachment

1 - The seizure shall be preceded by any steps that the enforcement agent deems useful for identifying or locating attachable assets, with due regard for the provisions of Article 751.2, to be carried out within a maximum of 20 days, and the enforcement agent shall, whenever necessary, consult the databases of the tax administration, social security, land, commercial and vehicle registry offices and other similar registries or archives for all information on the identification of the defendant with these services and on the identification and location of his assets.

Unlikely Brazil, however, in Portugal the diligence (prior and subsequent) for attachment purposes is carried out exclusively by the Enforcement Agent, according to Articles 748 and 749 of CPCP. Article 749, which regulates the electronic search of assets and, in particular, bank deposits, is worth highlighting as it relates directly to this present study:

> Article 749
> Diligences prior to attachment
>
> (…)
> 5 - When it is not possible for the enforcement agent to have electronic access to information on the identification and location of the defendant's assets, the services referred to in paragraph 1 shall provide it by the fastest means and within 10 days.
>
> 6 - For the purposes of attachment of bank deposits, the Bank of Portugal shall make information available electronically to the enforcement agent about the institutions legally authorised to receive deposits in which the defendant holds bank accounts or deposits.

The operation of blocking/ seizing bank deposits is detailed in Article 780 of CPCP:

> Article 780
> Attachment of bank deposits
>
> 1 - Attachment over a deposit held in an institution legally authorised to receive it shall be made by electronic communication by the enforcement agent to the institutions legally authorised to receive deposits in which the defendant has an open account, with express mention of the proceedings, and the provisions of the following paragraphs and article 417(1) shall apply.
> 2 - The enforcement agent communicates electronically to the credit institutions referred to in the previous paragraph that the existing balance or the defendant's share of that balance is blocked from the date the communication is sent, up to the limit established in Article 735(3), subject to the provisions of Article 738(4) and (5).

Ordinance n. 282/2013 of the Ministry of Justice of the Government of Portugal regulates the essential aspects of enforcement action, *in line with simplification and streamlining* (...) *in order to guarantee the recipients of the rules (...) their simple and rapid application*. The Ordinance also emphasises that *a country's attractiveness for domestic and foreign investment in the economy is also measured by its speed and effectiveness in guaranteeing, if necessary by coercive means, the fulfilment of obligations owed. In this context, debt collection is particularly important, and it is essential to guarantee the existence of a system capable of providing a fast and effective response to those who need it, whether for business reasons or not. Efficient enforcement undoubtedly contributes to improving the economic environment and the confidence of agents in the justice system*.

Ordinance n. 282/2013[165] emphasises that - finally - the conditions have been met for the attachment of bank deposits to be carried out quickly and effectively, through the intervention of the Bank of Portugal. See:

> The conditions are finally in place for the swift and effective attachment of bank deposits, with this decree defining both the way in which the Bank of Portugal provides the enforcement agent, by electronic means, with information on the institutions legally authorised to receive deposits in which the defendant holds an open account, and the electronic procedure for attaching bank deposits held by the defendant.
> It is worth emphasising the legislator's choice to dispense with the need for a prior court order for the purposes of attachment of bank deposits, now provided for in article 780 of the new Code of Civil Procedure. In line with this legislative change, this decree simplifies the communication of information from banking institutions to enforcement agents and the attachment of bank deposits, de-judicialising the process and making it lighter and more effective.

To this end, the Ordinance regulates access by enforcement agents and representatives to the Electronic Enforcement Register[166], through which certain procedural acts are carried out or external steps are recorded (Article 5, items 2 and 3). This register was created by Decree-Law 201/2003 and contains a list of pending, suspended and completed executions, with information on each one, with the aim of speeding up the attachment procedure, making it more effective and guaranteeing the liquidation of assets.

For the purposes of attachment of bank deposits, the enforcement agent *requests the Bank of Portugal to provide information about the institutions legally authorised to receive deposits in which the defendant holds bank accounts or deposits through the computer systems that support the activity of the courts and enforcement agents* (Article 17, item 1). The credit institutions send the information via platform available at https://penhorabancaria.mj.pt (Article 18, item 2) and the Enforcement Agent makes the request to block the existing balance, up to the amount of the attachment (item 3, Article 17).

In order to make communication between the Courts, the Public Prosecutor's Office, Enforcement Agents and others more agile, efficient and secure, in fulfilment of its duty of institutional and procedural collaboration, Banco de Portugal launched a communication channel called PERTO in March 2020. Through this channel, information requested from the Bank of Portugal and entities it supervises is provided, ensuring the completeness and confidentiality of the information.

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[165] In: https://www.pgdlisboa.pt/leis/lei_mostra_articulado.php?nid=1968&tabela=leis&so_miolo=, accessed on 9th Sept. 2023.
[166] In: https://www.citius.mj.pt/portal/execucoes/listapublicaexecucoes.aspx, accessed on 9th Sept. 2023.

From the presentation of PERTO by the Bank of Portugal itself, it appears that cryptocurrency exchanges are not included in the system:

Pelas instituições supervisionadas que aderiram ao Serviço de Difusão de Ofícios, de acordo com o tipo de processo:

- Bancos;
- Caixas económicas;
- Caixa Central de Crédito Agrícola Mútuo;
- Caixas de crédito agrícola mútuo;
- Instituições financeiras de crédito;
- Sociedades financeiras de corretagem;
- Sociedades corretoras;
- Sociedades gestoras de património;
- Sociedades mediadoras dos mercados monetário ou de câmbios;
- Sociedades financeiras de crédito;
- Sociedades de investimento;

Figure 03
https://www.bportugal.pt/sites/default/files/apresentacao_perto.pdf

Pelas instituições supervisionadas que aderiram ao Serviço de Difusão de Ofícios, de acordo com o tipo de processo:

- Sociedades de locação financeira;
- Sociedades de factoring;
- Sociedades de garantia mútua;
- Sociedades gestoras de fundos de invest. mobiliário;
- Sociedades gestoras de fundos de invest. imobiliário;
- Agências de câmbios;
- Sociedades gestoras de fundos de titularização de créditos;
- Instituições de pagamento;
- Instituições de moeda eletrónica.

Figure 04
https://www.bportugal.pt/sites/default/files/apresentacao_perto.pdf

In this respect, it is similar to the situation in Brazil discussed above (subsection 5.1.2). What really differs between the two realities is the lack of manifestation by the Portuguese Courts (especially the Supreme Court of Justice and the Courts of Appeal of Porto, Lisbon, Coimbra, Guimarães and Évora)[167] on the possibility of seizing cryptocurrencies. So far, it doesn't seem to have been an issue to be resolved by the Portuguese Judiciary, which doesn't allow for any more in-depth conclusions. There is, it should be noted, some case law on money laundering, which refers to the practice of trading cryptocurrencies, without, however, dealing directly with the point discussed in this dissertation.

From the Porto Court of Appeal, we extracted the only decision that made indirect reference to the property nature of cryptocurrencies:

> In turn, the etymology of patrimony lies in the Latin word patrimoniu [patri (father) + moniu (received)], giving the idea of everything that was collected and saved by a person. Based on this etymological source and with a contemporary understanding of heritage, as it is increasingly diversified, such as bitcoins (decentralised cryptocurrency, commonly known as "electronic money"), its notion must be intensely broad, encompassing everything that has been "received" and has economic significance. Thus, assets comprise the set of goods, income or values, of a tangible or intangible nature, belonging to a person, individual or collective, and which have economic significance.
>
> To summarise, we can maintain that the typical acts contemplated in Article 186(2)(a) of the CIRE are management acts by company directors that lead to insolvency or its worsening, when they are based on damage (destruction, damage or rendering useless) or misappropriation (concealment or disappearance) of the debtor's assets, in whole or in part, provided that the latter is of a large scale.[168]

However, in some doctrines, it has been possible to identify an understanding that attachment of cryptocurrencies is possible, as Paulo Lona, a member of the Public Prosecutor's Office (Procuradoria Geral da República), summarises well:

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[167] Search undertaken through the website http://www.dgsi.pt/, accessed on 9th Sept. 2023. At the Supreme Court of Justice: a search for the expression “crypto” returned “crypto-argument”; “crypto-union”; “crypto-formal”; “crypto-marriage”. and “crypto bail”. The search with the free expression crypto resulted in 11 judgements, none of which were related to cryptocurrencies. The expression cryptocurrencies resulted in 2 judgements of a criminal nature, with no direct relation to the objectives and focus of this research. The Lisbon Court of Appeal resulted in a single judgement, in the free search "cryptocurrency", relating to money laundering (Case 102/21.0TELSB- A.L1-3, Rapporteur Graça Santos Silva, on 22/09/2021. The plural expression (cryptocurrencies), in turn, resulted in 3 judgements, all of a criminal nature and not directly related to the subject of this dissertation. The Courts of Appeal of Coimbra, Guimarães and Évora did not return any judgements containing the expression cryptocurrencies or crypto. A complementary search on the Superior Council of the Judiciary’s tool (https://jurisprudencia.csm.org.pt/), in turn, resulted in two judgements, also of a criminal nature (money laundering and fraud).

[168] Tribunal da Relação do Porto (3rd Section), Case:2692/19.8T8STS-A.P1, Conventional Nº: JTRP000, Document Nº: RP202110282692/19.8T8STS-A.P1, Date of the decision:28/10/2021, Appeal, Justice Reporter: Joaquim Correia Gomes; Adjuncts: António Paulo Vasconcelos, Filipe Caroço.

> *In Portugal, there is no specific legislation that directly addresses the seizure of cryptocurrencies. However, cryptocurrencies are assets that have financial content and their seizure will follow general enforcement procedures, based on the Code of Civil Procedure. Cryptocurrency exchanges and platforms can be notified to collaborate with the judicial authorities*.[169]

Next, the Public Prosecutor, after reporting on the experiences of other countries in recognising the pledging of cryptocurrencies, deals with the difficulties of materialising the attachment and transforming it into money (liquidation), particularly due to the problem of the private key (without it, it is not possible to execute the transfer or sale of cryptocurrencies):

> But without specific regulations on the matter, it won't be easy for a creditor or the court to first identify that the debtor has a digital wallet with cryptocurrencies, and then to know where it is, what it contains and how to access it (encrypted key).
>
> When a court, as part of a legal enforcement procedure, needs to identify whether the defendant owns cryptocurrencies, if so where, and finally seize them, how will it gain access to them and control that access?
>
> (...)
>
> There are two possible alternatives: virtual storage and hard disc storage.
>
> The lack of detailed information about wallets and transactions can make it very difficult to trace and identify a debtor's cryptocurrency assets.
>
> Possession of private keys is essential for accessing and controlling cryptocurrencies. However, custody of the private keys is often in the hands of the debtor and not the judicial authorities. This can make it difficult to access cryptocurrency assets during the seizure process, requiring the debtor's co-operation or digital forensic techniques to recover the private keys. If the storage is on a hard drive, it is possible to obtain its physical seizure and locate the data needed to access it.
>
> However, the court will have to be assisted in this task by forensic experts who specialise in this field, determine where these digital assets are and gain access to them, since cryptocurrencies operate on decentralised networks and the assets are "stored" in digital wallets that are accessed via encrypted keys.
>
> Access can be gained by obtaining the encrypted keys or by decrypting the digital wallets. What can happen if the holder refuses to grant access to their digital wallet?
>
> The court will need to obtain the necessary passwords or encrypted keys to allow access.
>
> And what do you do if the owner refuses to provide these elements?

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[169] LONA, Paulo. As criptomoedas e a necessidade de regular a sua apreensão. Julho 2023, Sindicato dos Magistrados do Ministério Público. Disponível em https://smmp.pt/smmp-na-imprensa/as-criptomoedas-e-a-necessidade-de-regular-a-sua-apreensao/#:~:text=Em%20Portugal%2C%20n%C3%A3o%20existe%20uma,no%20C%C3%B3digo%20de%20Processo%20Civil, acesso em 9th Sept. 2023.

> The court can draw legal consequences from this refusal and consider that the defendant is not cooperating as required and impose a fine.
>
> And if, even so, the refusal to cooperate continues, the court, having serious reason to believe that the defendant is in possession of the necessary encrypted key, could order a forensic expert to try to decrypt the keys to the digital wallet using specialised software tools.
>
> The situation could be even more complicated if the defendant holds cryptocurrencies on an exchange operating abroad, which could lead to having to resort to the mechanisms of international judicial co-operation.

Therefore, despite the rare case law and the brief doctrinal manifestation found, it must be said that the Portuguese procedural system (CPCP) does absorb the notion of the attachment of movable property, including money and financial assets, as well as credit securities and securities (Article 780, 14), and the attachment of rights, which is why it is believed that the attachment of cryptocurrencies is fully accepted in Portugal.

5.3 The notion of concealment of assets (civil and criminal offense)

Although asset concealment can be classified as a criminal offence in Brazil and Portugal when linked to money laundering, it is relevant to this study from the central perspective of fraud against creditors and/or execution (Brazil) and fraud pauliana in Portugal. The act of concealing, disguising or omitting ownership of assets or values, with the intention of avoiding identification, inspection or seizure by the competent authorities, constitutes the concealment of assets, rights and values.

The concealment of assets can occur by different means, including the use of crypto-assets as a way of concealing property. There has already been some news about the use of cryptocurrencies as a means of dissipating and concealing assets in cases of marital separation (divorce)[170]. About this situation, check the Brazilian Institute of Family Law (IBDFAM)[171] release below:

> The popularisation of cryptocurrencies - and, for a while at least, their rise in value - has attracted the attention of malicious couples who are going through a love meltdown.

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[170] In: https://www.migalhas.com.br/depeso/330256/aspectos-civeis-e-penais-da-fraude-a-partilha-de-bens-no-divorcio, accessed on 10th Sept. 2023.

[171] In: https://ibdfam.org.br/noticias/na-midia/16084/Div%C3%B3rcio:+veja+nova+fraude+para+escapar+da+partilha, accessed on 10th Sept. 2023. This situation is not uncommon (https://economia.ig.com.br/2022-02-14/criptomoedas-partilha-divorcio-bitcoin.html, accessed on 10th Sept. 2023).

> All thanks to a lack of regulation and, consequently, a lack of oversight. Meanwhile, many use this mechanism of buying and selling virtual currencies to mask their assets in order to deceive the Judge.
>
> In this way, the real values are not localised, so that they do not participate in the division of assets.

Check, in complement, the following case report from the United States[172]:

> *A husband hid $500,000 in bitcoin during a divorce — and got busted by a crypto hunter*
>
> A few months into her divorce proceedings, Sarita thought it was suspicious that her spouse, who earned $3 million annually, didn't have many assets. After spending half a year on discovery and enlisting the help of a forensic accountant, the New York housewife eventually tracked down 12 bitcoins - then worth half a million dollars — *in a previously undisclosed crypto wallet*.
>
> Sarita, who was married for a decade and asked to use a pseudonym to protect herself from retaliation, said *she felt blindsided by her husband's cryptocurrency investment.* (…).

However, it is important to emphasise that Brazilian and Portuguese legislation has evolved to specifically cover cryptocurrencies and other transactions with digital assets, seeking to prevent and combat the use of these technologies for illicit purposes, including the concealment of assets.

As said before, Federal Act 9,613 of 1998 (Brazil), treats the concealment of assets, rights and values *for the purposes of money laundering* as a criminal offence (Article 1, item VI). Similarly, Portugal, which, in the meantime, through Law n. 58, of 2020, which amended Law 83, of 2017, enacted under Directive EU 2015/849, include cryptoassets:

> Article 2
> Definitions
>
> 1 - For the purposes of this law, the following definitions shall apply:
> (…).
> j) "Money laundering":
> i) The conduct provided for and punished by Article 368-A of the Penal Code;
> (...)
> mm) "Activities with virtual assets" means any of the following economic activities, carried out in the name of or on behalf of a client:
> i) Exchange services between virtual assets and fiat currencies;
> ii) Exchange services between one or more virtual assets;
> iii) Services whereby a virtual asset is moved from one address or wallet to another (virtual asset transfer);

[172] In: https://www.cnbc.com/2023/05/20/bitcoin-in-divorce-how-spouses-hide-assets-crypto-hunters-find-them.html, accessed on 10th Sept. 2023.

> iv) Safekeeping services or the safekeeping and administration of virtual assets or of instruments that make it possible to control, hold, store or transfer such assets, including private cryptographic keys.

In addition, exchanges have been included in the circuit of entities supervised by the Central Bank and through which the crime of money laundering can be carried out:

> Article 4
> Non-financial entities
>
> 1 - The following entities carrying on business in national territory shall be subject to the provisions of this law, under the terms set out in this article, with the exception of the provisions of chapter XI:
> (...)
> o) Entities that carry out any activity with virtual assets.
> (...)
> 6 - For the purposes of point o) of paragraph 1, the following persons or entities shall be deemed to be carrying on business in national territory:
> a) Legal persons or entities assimilated to legal persons incorporated in Portugal to carry out activities with virtual assets;
> b) Natural persons, legal persons and other entities domiciled in Portugal that carry out activities with virtual assets or that have an establishment located in Portuguese territory through which they carry out activities with virtual assets;
> c) Other natural persons or entities who, due to carrying out activities with virtual assets, must submit a declaration of commencement of activity to the Tax and Customs Authority.

The Banco de Portugal, in turn, issued Notice 03/2021[173], essentially regulating the *application for registration by entities wishing to carry out activities with virtual assets* (Article 1, item "a") and *applications for changes to the elements subject to registration by entities carrying out activities with virtual assets*.

It is worth noting, finally, that in Portuguese law, art. 23 of Law no. 83 of 2017 provides for the need for exchanges to provide information to authorities whenever the amount exceeds 1000 (one thousand) euros:

> Control / information
> Article 23
> [...]
> 1 - Obliged entities shall comply with the identification and due diligence procedures set out in this section when:
> a) [...]
> b) Carry out occasional transactions, regardless of whether the transaction is carried out through a single operation or through several operations that appear to be related to each other:
> (i) of an amount equal to or greater than EUR 15 000; or
> ii) That constitute a transfer of funds or a transaction carried out *as part of a virtual asset activity*, where the amount of the transaction exceeds 1,000 (euro);

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[173] In: https://www.bportugal.pt/sites/default/files/anexos/cartas-circulares/449907302_3.docx.pdf, accessed on 10th Sept. 2023.

In Brazil, as already referred above in this *thesis*, since 2019 tax regulations have required cryptocurrencies to be declared to the Brazilian Federal Revenue Service (. Cryptocurrencies must be declared on the "Assets and Rights" form, using the specific code for each type of crypto-asset[174]. The amount of cryptocurrencies owned, the acquisition value, the date of acquisition and, if any, the acquisition costs, such as fees and commissions, must be reported.

Normative Instruction No. 1,888 of 2019, also issued by the Brazilian Federal Revenue Service, laid down the rules for (i) those who must inform and (ii) what must be informed, according to Articles 6 and 7:

> Art. 6. The following shall be obliged to provide the information referred to in art. 1:
> I - the cryptoasset exchange domiciled for tax purposes in Brazil;
> II - the individual or legal entity resident or domiciled in Brazil when:
> (a) the transactions are carried out on an exchange domiciled abroad; or
> b) the transactions are not carried out on an exchange.§ 1 In the case provided for in item II of the caput, the information must be provided whenever the monthly value of the transactions, alone or jointly, exceeds R$ 30,000.00 (thirty thousand reais).
>
> CHAPTER IV
> INFORMATION ON CRYPTO-ASSET TRANSACTIONS
>
> Art. 7 Information must be provided for *each operation*:
> I - in the cases provided for in item I and item "b" of item II of the caput of Art. 6:
> a) the date of the operation;
> b) the type of transaction, as per §2 of Art. 6;
> c) the holders of the transaction;
> d) the cryptoassets used in the transaction;
> e) (...).
>
> II - in the case provided for in subparagraph "a" of item II of Article 6:
>
> § 1 *In relation to the holders of the transaction*, the information referred to in this article must include:
> I - the name of the individual or legal entity;
> II - the address;
> III - tax domicile;
> IV - the registration number in the Individual Taxpayer Registry (CPF) or in the National Corporate Taxpayer Registry (CNPJ), as the case may be, or the Tax Identification Number (NIF) abroad, if any, in the case of residents or domiciled abroad; and
> V - other registration information.
> (…).
> § 4 The submission of information on the address of the remittance and receiving wallet, if any, is only mandatory in the event of receipt of a summons issued in the course of a tax procedure.

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174 Receita Federal do Brasil. Perguntas e Respostas IRPF 2023. In: https://www.gov.br/receitafederal/pt-br/centrais-de-conteudo/publicacoes/perguntas-e-respostas/dirpf/pr-irpf-2023/view, accessed on 10th Sept. 2023.

In addition, the Brazilian Penal Code was reformed by Federal Act 14,478 of 2022 (which regulated exchanges in Brazil) to include Article 171-A, specific to cryptoassets:

> Art. 171-A. Organising, managing, offering or distributing portfolios or intermediating operations involving virtual assets, securities or any financial assets with the aim of obtaining an illicit advantage, to the detriment of others, by misleading or keeping someone in error, by means of artifice, ruse or any other fraudulent means. (Included by Law 14.478, of 2022) Effectiveness
>
> Penalty - imprisonment, from 4 (four) to 8 (eight) years, and a fine.

The Brazilian Penal Code also contains an important rule on fraud:

> Fraud
>
> Art. 179 - Defrauding execution by disposing of, embezzling, destroying or damaging property, or by simulating debts:
> Penalty - detention, from six months to two years, or a fine.
> Sole Paragraph - Only upon complaint.

In the civil matters, another relevant prevision can be found at Civil Procedure Code of 2015 about personal liability and fraud[175]:

> Article 789. The debtor is liable with all his *present and future assets* for the fulfilment of his obligations, except for the restrictions established by law.
>
> Art. 792. The sale or encumbrance of property is considered fraudulent execution:
>
> (...).
>
> IV - when, at the time of the sale or encumbrance, proceedings were in progress against the debtor capable of reducing him to insolvency;

And according to the Brazilian Civil Code, fraud against creditors:

> Section VI
> Fraud Against Creditors
>
> Art. 158. Transfers of assets free of charge or remission of debts, if carried out by a debtor who is already insolvent or who has been reduced to insolvency by them, even if he is unaware of this, may be cancelled by unsecured creditors as being detrimental to their rights.

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[175] Very similar rules can be inferred from Spain's civil procedural and substantive law: Article 1911. *The debtor is responsible for the fulfillment of the obligations with all his assets, present and future* (Royal Decree of July 24, 1889). And, also from Penal Code of Spain – Organic Law 10/1995, of November 23 (https://www.boe.es/buscar/act.php?id=BOE-A-1995-25444): Article 257. (…). 2nd Who, with the same purpose, performs any act of disposition of assets or obligations that delays, hinders or prevents the effectiveness of an embargo or an executive or enforcement procedure, judicial, extrajudicial or administrative, initiated or foreseeable initiation.
(…).

The Portuguese Civil Code also dealt with the concealment or dilapidation of assets to the detriment of creditors in civil matters, through the so-called "Impugnação Pauliana":

> SUBSECTION III
> Impugnation pauliana
> ARTICLE 610
> (General Requirements)
>
> Acts that involve a *reduction in the patrimonial guarantee* of the claim and are not of a personal nature may be challenged by the creditor if the following circumstances concur:
> a) The claim predates the act or, if it is subsequent, the act was carried out maliciously with the aim of preventing the satisfaction of the future creditor's right;
> b) The act makes it impossible for the creditor to obtain full satisfaction of their claim, or aggravates this impossibility.

As seen, both the Brazilian and Portuguese legal systems are structured in such a way as to recognise the concealment of assets beyond the practice/crime of money laundering. The fact is that concealment or dilapidation (followed by concealment) are typical forms of fraud against creditors or enforcement, imposing damage on the creditor by frustrating judicial recovery.

And, as the doctrine mentions, *we already have billions of reais circulating monthly in virtual currencies in Brazil, yet there is no minimally effective system for searching for and seizing such assets, which will certainly become - or has already become - a great alternative to fraudulent execution, given the ease with which assets can be concealed*.[176].

The author concludes by emphasising that the concealment of assets using cryptocurrencies has become an accessible and cheap alternative to fraudulent debtors:

> In view of the above considerations, we conclude that in the information age, with the emergence of technological innovations with drastic and exponential changes in social relations, more accessible, complex and inexpensive alternatives are emerging for the concealment of assets and, eventually, fraud against execution or creditors. In this context, the legal-technological solutions necessary to assist in the effective satisfaction of creditors' claims should emerge in a much shorter space of time than we have been following, and it is absolutely unsustainable that the solutions to new problems are given with the same delay that we have historically followed. [177]

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[176] MARMO, 2018, accessed on 10th Sept. 2023.

[177] Milena Conci states that *the anonymity of the holders allow crypto-active assets* [to] *serve as tools for concealment of assets, fraud against creditors and the like*. (CONCI, 2022, p. 51). In the same way, Henrique Ribola says that many investors are focused on purchasing crypto-assets *as a way to store value, or to just to fall under the radar of fiat currency's necessity of storing in a financial institution (...)*. (RIBOLA, 2022, p. 11).

Fraudulent activities - given the creativity and daring typical of persistent debtors - are constantly evolving. It is an undeniable fact that the concealment of assets, regardless of whether the crime of money laundering has occurred, by means of cryptocurrencies is proving to be a fertile field. It's almost paradoxical to think that a system resulting from a technological advance would take us back to the time when the "bandits" buried the gold and didn't reveal its existence or location. In the case of cryptocurrencies in particular, because of the wallet holder's private key, it's like thinking of a safe whose location and access password are not revealed by a debtor.

The fact is that the legal system cannot tolerate the creation of a “black hole” for the world of cryptocurrencies. Although the peer-to-peer network was not designed for fraud against creditors or collection action, it is undeniable, as seen above, that it is a favourable environment for it, both because of its anonymous nature and because of the technical difficulty of discovering, reaching and settling cryptocurrencies; a system which is not yet technologically linked to the Financial National System and Central Banks.

6. The Ineffectiveness of the Judicial System in the face of the Digital Economic Decentralization: necessary measures and possible solutions

The regulatory challenges are enormous.

At this point, briefly anticipating the conclusion that has been reached, it is already possible to see that the principle of credit (and creditor) protection has not been observed by regulation in Europe, Portugal and Brazil.

In Brazil, it's true, there is already some initiative in the National Congress. Underway is Bill 1600/2022, by Federal Rep. Paulo Martins, which aims to reform the CPC/15 to include the express possibility of cryptocurrency attachment, lien, and their procedures. Interestingly, it categorically prohibits the State from breaking or having access to the private key of the holder of virtual assets. See it:

> Article 835. (..)
>
> XIV – cryptoassets, understood as digital representations of value that are not currency but have their own unit of measurement, traded electronically through the use of cryptography and within the scope of distributed recording technologies, used as a financial asset, means of exchange or payment, instrument of access to goods and services or investment.
>
> §4º. In the event that the assets described in item XIV are offered or forcibly seized, the following rules shall be observed:
> *I - the Judiciary is prohibited from accessing users' private keys;*
> II - the foreclosed party may offer cryptoassets as collateral provided that:
> a) promotes the transfer of its crypto-assets *to the virtual wallet of the competent Court*, which will be responsible for the integrity of the transferred assets; or
> b) assumes the status of trustee, as recognised by the competent court, of the cryptoassets presented as collateral;
> III – - in the event that the debtor's assets are not located, the creditor may request the competent court to send a letter, by electronic means, to the intermediaries involved in cryptoasset transactions, in order to block assets corresponding to the amount enforced, alternatively::
> a) *the transfer by the intermediary of the cryptoassets owned by the debtor;*
> *b) to the virtual wallet of the competent court, which will be responsible for the integrity of the assets transferred*;
> IV – In order to enable the blocking of cryptoassets referred to in item III of this provision, the debtor shall not be notified of the act in advance;
>
> §5º. As soon as the cryptoassets are received in the virtual wallet of the competent court or the condition of trustee is formalised, either by the holder of the cryptoassets or by the intermediary, a writ of attachment will be drawn up stating the number of cryptoasset units and their respective protocol.
>
> §6º. The Public Treasury may request that the attachment be supplemented in the event that the volatility of the cryptoassets no longer corresponds to the executed amount, in which case, after hearing the debtor, the court will determine:
> I - *the conversion of the cryptoassets into fiduciary currency, formalising the judicial deposit*; or
> II - summoning the debtor to reinforce or replace the guarantee.

The Bill under discussion in the Brazilian National Congress has three very interesting and, at the same time, challenging points: (i) the Judiciary is forbidden access to the private key of the debtor/executor (holder of the wallet); (ii) the Court itself (an expression which, in Brazilian procedural science, is understood as each body-judge - "vara") should have a wallet - which brings numerous risks for the Judiciary as the "depositary" of cryptocurrencies; and (iii) the bill intends to authorise the judge to order the transfer, by the Exchange, of the crypto-assets held by the debtor to the *virtual wallet of the competent court* (which, apparently, is not possible from a technical-computer point of view).

In addition to this Bill - the most relevant currently underway - we highlight Bill 462 of 2022, authored by Federal Rep. Geninho Zuliani, Rapporteur Federal Rep. Laura Carneiro, which aims to amend the CPC/15 to include Article 438-A. In the wording under discussion, the text proposed for Article 438-A authorises the judge to request, by official letter, from the Exchanges, information about *the existence of crypto-assets of the digital currency type (altcoins) and crypto-assets not considered to be cryptocurrencies (payment tokens).*

Despite this progress, we need to move forward with the limits and freedoms regarding the ownership, possession and circulation of cryptocurrencies. There are those who argue that the best course of action is complete prohibition. These include[178]:

> 120. David Gerard, author of **Attack of the 50 Foot Blockchain**, shared this view and argued that "it would be appropriate to put in place strong consumer protection against mis-selling crypto-asset enterprises as investments to retail-level investors." (David Gerrard (DGC0052) para 33)
>
> Executive summary:
> • Bitcoin and similar cryptocurrencies are inefficient payment systems, because they were constructed to fulfil fringe political aims.
> • Blockchain and Distributed Ledger Technology are terms used to market mundane technologies as fulfilling the spectacular promises of Bitcoin – promises at which it has already failed.
> • The cryptocurrency and blockchain space is rife with at best unrealised claims, and at worst outright fraud.
> • The present Know Your Customer/anti-money-laundering regulation is appropriate.Cryptocurrency products should not be marketed to consumers or retail investors;
> • ***Cryptocurrency products should not be marketed to consumers or retail investors***.
> • US regulatory agencies are tightening regulation, in an appropriate manner.

[178] In: http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/treasury-committee/digital-currencies/written/82206.pdf, accessed on 13th Sept. 2023.

According to the International Monetary Fund[179], when dealing with the challenge of raising regulation to the global level, proposes that three central elements should be taken into account: (i) authorisation for intermediaries (*Crypto-asset service providers… should be licensed or authorized);* (ii) the operating requirements should be customised to treat crypto-assets in the nature of securities in the same way as securities themselves are treated by the Securities Commission, and crypto-assets that are payment tokens as if they were bank deposits (controlled and supervised by the Central Bank); and (iii) regulating the exposure of traditional financial institutions to cryptos.

In Portugal, and in Europe as a whole, the MiCA Regulation has addressed pertinent investor protection issues in numerous recitals, with express concern for retail investors. Among the main "institutes" of protection, the right to withdraw from a transaction stands out: *in order to further ensure protection of retail holders of crypto-assets* (...) *of the offeror, should be provided with a right of withdrawal during a period of 14 days after their acquisition* (recital 37). And also, the express provision for civil liability (recital 39); the duty of information – recital 47) *complete, fair, clear and not misleading* that should be provided by the offeror; and the duty of conservatism regarding the investment of reserves, in the case of asset-referenced tokens (recital 56).

Still about Portugal, it is worth mentioning that Law 92/2017 is in force, which requires *the use of a specific means of payment in transactions involving amounts of €3,000 or more.* In the case, the payments *should be made by means of payment that allows the identification of the respective recipient, namely bank transfer, nominative cheque or direct debit* (Article 2). Cash payments above €3,000 are prohibited (Article 1).

In Brazil, a similar rule issued by the Monetary Authority (CMN) and published by the CBB, Resolution No. 4,648 of 28 of March 2018, prohibited bank payment notes ("boleto"[180]) above R$10,000.00 (ten thousand reais) from being paid in cash. In addition, Circular n. 3.978/2020 of CBB requires that any deposit in a bank of more than R$2,000 (two thousand reais) must be made with the identification of the depositor; a measure created as part of the fight against money laundering and concealment of assets. And, above R$50,000 (fifty thousand reais), the bank must, in addition identifying the depositor, collect

[179] In: https://www.imf.org/en/Blogs/Articles/2021/12/09/blog120921-global-crypto-regulation-should-be-comprehensive-consistent-coordinated, accessed on 29th July 2023.
[180] The concept of "boleto bancário" (boleto) in Brazil is like the "MULTIBANCO" payment system in Portugal, whereby the debtor receives a specific code to make that payment electronically through the banking network. In case of Brazil, could be a bar code or a QR Code. It is merely a payment instrument, and cannot be confused with credit instruments or securities.

information - by declaration of the depositor - on the origin of the funds and their ownership (Articles 33 and 34).

Would cryptocurrencies be exempt from these regulations? The fact is that regulations could at least be a solution to mitigate the misuse and fraudulent use of cryptocurrencies.

The really worrying issue, however, which is the subject of this master thesis, is that it is not possible to identify the ownership of cryptocurrencies due to the anonymity and cryptography of the transactions. The decentralisation and absence of a link between the "crypto-system" and the traditional "financial system" (and its central authority) prevents an interested creditor from discovering the existence of digital assets as the property of their debtor.

The OECD[181] has seen this risk that such crypto's features pose, given the lack of visibility, making supervision and enforcement by the (tax) authority difficult:

> 4. (…). Furthermore, the ability of individuals to hold Relevant CryptoAssets in *wallets unaffiliated with any service provider and transfer* such Relevant Crypto-Assets across jurisdictions, presents the risk that Relevant Crypto-Assets are used for illicit activities or to evade tax obligations. Overall, the characteristics of the Crypto-Asset sector have reduced tax administrations' visibility on tax-relevant activities carried out within the sector, *increasing the difficulty of verifying whether associated tax liabilities are appropriately reported and assessed*.

The OECD also states that *the Crypto-Asset market has given rise to a new set of intermediaries and other service providers, such as Crypto-Asset exchanges and wallet providers, which may currently only be subject to limited regulatory oversight*[182]. As seen before, the wallets could be "hot" (online, via *exchanges*) or "cold" (in applications – software – or in hard devices). As OECD report explains, the concern lies in the fact that the whole system of information and cooperation between countries to combat currency evasion is based on fiat currency and obligations (of information and compliance) by financial institutions authorised to operate and supervised by a central banking authority. If this is not the case, as we are dealing with cryptos that can be traded directly (P2P) or via exchanges which, in turn, can be located anywhere in the world. Those wallets are not assessable by the authorities.

[181] OECD, 2022, p. 09.
[182] Idem.

It's almost paradoxical to think that the concealment of assets is such a perverse and undesirable effect of the development of technology. Created for a financially anarchic world and aimed at lowering the costs of financial operations, cryptocurrencies have become a “black hole” that, in theory, allows assets to be hidden. It's paradoxical, because a century ago it was not uncommon to hear, at least in Brazil, of money or gold being hidden in walls or buried, especially those resulting from corruption or money laundering. In the same context, one could cite the cases of forgotten bank safes or equate a wallet whose private key is unknown to a (physical) safe whose secret (password) is also not revealed. The safe, however, can still be opened by physical-chemical means; the wallet, so far, cannot be accessed by anyone who does not have the private key.

In practice, if the owner of cryptos does not disclose to the authorities, especially via declaration to the tax authority (in the case of Brazil, this is done through the Individual Income Tax Return), the ownership of cryptos, it is practically impossible to discover their existence. And without being able to prove their existence, it is likely that neither the offence of concealment of assets nor money laundering will be established.

If we think – again – in comparison to bitcoin in gold, it is curious to note that its possession and transport, in Brazil, is only allowed accompanied by a purchase invoice from an institution authorised to operate by the Central Bank. Why should bitcoin transactions be treated differently? Look at Brazilian Federal Act 12.844 (2013):

> Art. 37: The *purchase, sale and transport of gold* produced in mining areas authorised by the Federal Government, under the terms of this Law, is permitted.
>
> Art. 39: *Proof of the regularity of the first acquisition* of gold produced under any utilisation regime shall be based on:
> I – (…).
> II - *an acquisition invoice* issued by *the institution authorised by the Central Bank of Brazil to purchase the gold*.
>
> § Paragraph 1. For the purposes of this article, the institution legally authorised to purchase gold shall register the seller's identification data, such as *name, registration number in the Ministry of Finance's Individual Taxpayer's Register - CPF or the Ministry of Finance's National Register of Legal Entities - CNPJ*, and the registration number in the trade registry of the seller's head office.
>
> Art. 40. Proof of the regularity of possession and transport of gold to any destination, after the first acquisition, shall be made by presenting the respective invoice, in accordance with the provisions of § 1 in Art. 3 of Law No. 7.766, of 11 May 1989.

And, if crypto can be kept "directly by individuals in cold wallets or via Crypto-Asset exchanges that do not have reporting obligations" (if they are not Financial Institutions), and are "unlikely to be reported to tax authorities in a reliable manner.". (OECD, Op. cit., p. 11). Against this background, the OECD has indicated the way forward under three headings: (i) communication should be done by the State that has jurisdiction over the crypto user; (ii) IT solutions should be developed to technically enable the exchange of information; and (iii) regulations should be adapted to reach CASPs, extending the rules already applied to financial institutions.

In this order of ideas, that is, considering both the OECD/G20 recommendations and the Brazilian experience reported regarding the possession and transactions of gold (physical metal), the conclusion reached is that it is necessary to restrict the freedom of the user of cryptos (whether consumer, investor or speculator). In fact, it is essential that the maintenance of crypto ownership/ownership takes place through gatekeepers, in particular by exchanges. These are the ones that, when authorised to operate, can connect with the central authority to provide information and respect minimum compliance rules.

The notion of gatekeepers is familiar to the financial system which already has them in such a form for being – precisely - the consumer/investor gateway to the market (for all, check the use of them in AML[183] and the lessons from Harvard[184]). The concept was also adopted by the Digital Markets Act[185], which considered the large online platforms as *gatekeepers* for the digital marketplace, giving them some obligations and duties to comply with.

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[183] The Gatekeeper Initiative is an effort by governmental authorities to impose stringent anti-money laundering ("AML") and counter-terrorist financing obligations on "gatekeepers" to the domestic and international monetary systems, such as lawyers, civil law notaries, trust and company service providers, real estate agents, accountants and auditors. (In: https://www.americanbar.org/content/dam/aba/publications/criminaljustice/gatekeeper_faq.pdf, accessed on 05th August 2023).

[184] Gatekeepers in financial markets have the power to provide the institutional stability, fortitude and direction necessary for the development and the smooth functioning of capital markets. (Srinivasan, Suraj, and Sugata Roychowdhury. *The Role of Gatekeepers in Capital Markets*. Journal of Accounting Research 57, no. 2 (May 2019): 295–322). Available at https://www.hbs.edu/faculty/Pages/item.aspx?num=56001, or https://ssrn.com/abstract=3352046, accessed on 05th August 2023. In another remarkable passage, emphasises the risk for the investor: "A failure to fulfill gatekeeping duties can lead to significantly adverse consequences for investors (Law and Mills 2019)." (Op. cit., p. 02). The same relevance is noted by the World Bank when treating about gatekeepers in AML: https://star.worldbank.org/publications/role-and-responsibilities-gatekeepers-fight-against-illicit-financial-flows-unifying, accessed on 5th August 2023.

[185] See more about it in https://digital-markets-act.ec.europa.eu/index_en. Accessed on 05th August. 2023.

That being said, the general principle of reasonableness, which is universal in nature, cannot be ignored, since it stems from the general theory of law itself and is reproduced in the constitutions (both in Brazil and Portugal, incidentally). Nor should one ignore the fact that these are countries with democratic regimes, which respect individuality (freedom of initiative) and private property.

It is clear, therefore, that the regulation currently proposed, whether by the MiCA in the European Union or by the Law in force in Brazil (Law n. 14.478, of 2022, which only dealt with intermediary companies and attributed competence to the CBB for authorisation, supervision and inspection[186]), does not fall under the principle of investor (creditor) protection. In this context, the feasible solution that presents itself is to limit the ownership and transaction of crypto to a certain sum; above which the individual can only operate through gatekeepers, be they investment funds or brokers.

So, what criteria should be adopted so that regulation observes the principle of credit protection?

About the regulation, Primavera De Fillippi, in her seminal work (Blockchain and the Law: the Rule of Code, Harvard Press, 2018, p. 175)[187], reminds that "after all, blockchains are nothing more than a decentralized network, *just like the Internet*.". Then, the possible parameters of regulation (Law, government acts, market, and technological architecture), proposed by Lawrence Lessig, would be a starting point.

It concludes that even the most autonomous decentralised systems will still be caught up by state regulation, however technology could try to ignore it. As those systems rely on code (or *architecture*), *their operations are ultimately dictated by market dynamics and subject to social norms*. So, *Laws can influence all three of these forces to regulate the technology*. (Op. cit., p. 175).

And the most effective way to do this is by regulating *end users*, as Lessig pointed out followed by De Fillippi[188]. Depending on the greater or lesser degree of freedom practised in a given State, greater or lesser intervention in the economy by the State is expected, respectively, through the legal norm. However, the need for regulation is inevitable when it is necessary to protect the user himself, who may qualify as a consumer or investor, depending on the case.

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[186] Check as well, Federal Decree n. 11.563 of 2023.
[187] DE FILIPPI, 2018.
[188] Op. cit., p. 175.

It is therefore to be hoped that the anarchy proclaimed by Timothy May (1992)[189] will be reasonably addressed by the State, since, in view of its duties to maintain monetary and financial stability, as well as to protect investors and consumers, it cannot remain silent or inert. It is incumbent upon the State to enact administrative and legislative measures to remove market failures, notably information asymmetry and negative externalities[190].

A second focus of regulation is on intermediaries; a concern already addressed by Europe (MiCA) and Brazil (Federal Act n. 14,478 of 2023). For this reason, the following measures are primarily aimed at *end users* and were intended as a *lege ferenda* solution, based on consideration of the risk of containing or harming regulated innovation[191]:

(i) Up to a maximum value, you can hold cryptocurrencies in your own virtual wallet, cold or hot (online);

(ii) In the case of Brazil, this maximum amount must correspond to the 40 minimum salaries considered by the CPC/2015 (Article 833, item X) as unseizable or R$ 35,000 (thirty-five thousand reais), criteria adopted by the IN 1,888 of Brazilian Federal Revenue Service;

(iii) In the case of Portugal, Law 92/2017 of 22 August is in force, which requires the use of a specific means of payment in transactions involving amounts of *€3,000* or more. In this case, it seems advisable to adopt this amount as the maximum for direct ownership via wallet (cold or online ones)*;*

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[189] MAY (1992).

[190] *Regulation Provisions have a vital role in balancing informational asymmetries and critical externalities. When the market is prone to potential deficiencies, regulation can help to improve acceptability (Gurguc and Knottenbelt, 2018).* (TECLE, 2020).

[191] Without losing sight of the doctrine on the regulation of new technologies: *Regulation in theory follows these three preliminary requirements in order to evaluate if it is needed at all. First of all, regulators should assess the existence of a market failure and its nature. After all, there is no need to fix anything that isn't broken. This first step ensues from the premise that in an economic system based upon market economy, public regulatory interventions needs justification or in other words: "if it ain't broke don't fix it". If however there is a problem and something is broken, the second step is identifying the appropriate regulatory responses or instruments available to regulators in order to deal with the given market failure. Finally and most importantly the regulators have to weight the costs and benefits of any intervention and evaluate the worthiness of any of the possible actions, which should only be implemented if the benefits outweigh the inherent cost of the measure or multiple measures* (TAVARES, 2022, p. 20).

(iv) Above this value, given the decentralised nature and lack of interconnection between the “technological system” (various blockchains) and traditional financial system, as well as the need to protect popular savings, it should only be allowed to hold cryptocurrencies, under penalty of violating the state’s duty to protect credit, (a) with a *brokerage/service provider* (CASP) duly registered and authorised with/by the Central Bank; or (b) via *intermediaries* in the national financial system, such as investment funds, with both (brokers or funds) acting as *gatekeepers for users/consumers*;

(v) Regulation must also focus on preventing the concealment of assets, fraud and currency evasion, since it is not possible or legitimate, in the current regulatory and legislative context, for cryptocurrencies to be sent internationally without banking intermediation (violation of foreign exchange regulations);

(vi) CBDCs are not included in those conclusions, due to, being fiat currency and created/controlled by the central authority (Central Bank), can be held and maintained in their own virtual wallet, regardless of the limit;

(vii) Concealment, including failure to declare the existence/ownership of cryptocurrencies by a particular holder/owner to the tax authorities, should be treated as a serious offence/felony, in order to discourage the practice;

(viii) The use of systems that “mix” cryptoassets - in order to facilitate or promote the concealment of assets - should be banned and their use considered a crime with serious repercussions;

(ix) Every year (or when requested by the courts), operators must send the IRS a list of users who have downloaded a virtual wallet application, so that it can cross-check the data during inspections;

and,

(x) System operators (digital platforms) and wallet service providers must develop a system for blocking “virtual wallet” applications in order to comply with a court order for the prosecution of property (civil) or criminal offences.

As Paulo Alcarva[192] mentioned, *it took around 1100 years to go from paper money to plastic, 50 years to go from plastic to digital and only 10 years to go from digital to mobile*. However, this technological advance cannot be allowed to promote fraud and violate the principle of credit and creditor protection.

192 ALCARVA, 2018, p. 38.

7. Conclusion

The virtual currency it is *a digital representation of value that functions as a medium of exchange, a unit of account, or a store of value, but it does not have legal tender status*[193]. As seen, it operates like real currency, but *it does not have legal tender status*[194]. Finally, *is a type of virtual currency that utilizes cryptography to validate and secure transactions that are digitally recorded on a distributed ledger, such as a blockchain. (...). Virtual currency that has an equivalent value in real currency, or that acts as a substitute for real currency, is referred to as "convertible" virtual currency. Bitcoin is one example of a convertible virtual currency*"[195].

This research aimed to understand the current situation and current regulatory efforts in Europe, specially in Portugal, and Brazil. As a descriptive and comparative study, presented how those nations are concerned to favor technological development and economic freedom, but without neglecting the state duty to protect the popular economy, the credit and the creditor/investor. As stated in the ECB's opinion, it is time to regulate and the real question is not *what* or *when*, but *how*, *following a rigorous risk-based approach tailored to different instruments* (see above footnote 91). The protection of inexperienced consumers/end users of retail crypto-asset platforms is a truly key point for the development of the regulation in all nations examined. Next to the stability of the financial and monetary system, they constitute inherent state duties to protect the popular economy, and this concern could be seen in Brazil and Portugal/Europe initiatives.

It was also easy to realize that it is time for *hard law*. Europe and Brazil have already overtaken this movement, despite Brazil initially tried to ban the crypto-assets for its markets. Brazil enacted a national rule (Act 14,478, of 2022) to govern the market from *Exchanges* perspective (specific and reduced legislation which will not cover all the crypto system). Europe, on the other hand, is a few steps ahead, consolidating a huge and pretty complete Regulation (MiCA) with more than a hundred articles and covering all important issues and topics around the subject of crypto-assets.

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193 U.S. Commodity Futures Trading Commission (In http://www.cftc.gov/Bitcoin/index.htm, accessed on 17th June of 2022.

194 In https://www.irs.gov/businesses/small-businesses-self-employed/virtual-currencies, accessed on 17th June of 2022.

195 In https://www.irs.gov/businesses/small-businesses-self-employed/virtual-currencies, accessed on 17th June of 2022.

Efficient regulation to allow technological advancement will certainly contribute to the consolidation of the alternative system of virtual currencies. The State, however, must combine this reality with the duty to protect the popular economy, while respecting technological neutrality[196]. It must focus on identifying the risks (leverage, settlement of transactions, absence of a central counterparty, theft, technical failures, concealment of assets, crimes, terrorism, etc.) and create instruments to mitigate them, without affronting, however, the supposed technological neutrality. Illegal acts in any sphere (administrative, criminal or civil) should be repudiated and fought against, regardless of the technology (same risk, same rule).

In conclusion, the current state of regulation in Europe and Brazil does not observe the principle of creditor and credit protection, and there is no concern or measure regarding the concealment of assets, which leads to fraud against creditors or the enforcement process. Aiming to change this reality, as a *de lege ferenda* conclusion, it was presented items (i) to (x) in Chapter 6 above, from which we can basically infer the need to direct cryptocurrency activity and operations towards an institutionalised environment, via gatekeepers, and interconnected with the traditional Financial System, notably through the central authority.

[196] About the principle of technological neutrality, see: EBA, 2020. Importantly, the MiCA Regulation address this subject, making express reference to the Principle of Technological Neutrality in the recital (9): *Union legislative acts on financial services should be guided by the principles of 'same activities, same risks, same rules' and of technology neutrality*.

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