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Geopolitical Manoeuvring in Blockchain Standardization: A Comparative Analysis of the EU and U.S. Approaches

Ruochen Qi (Kris)

Dong-Hyu Kim

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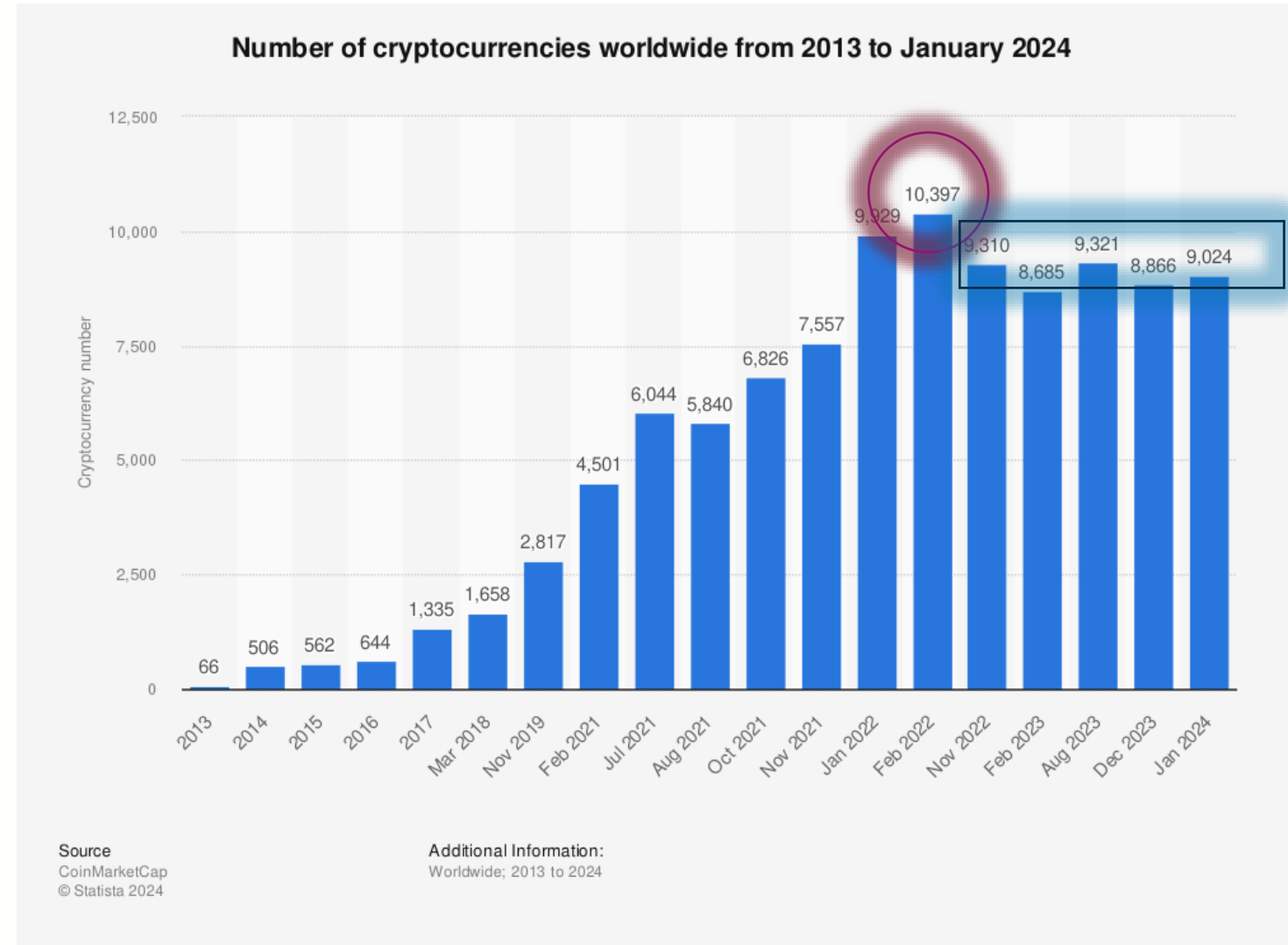
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Introduction

Introduction

Current crypto market trend

- The market now encompasses a total of **9024** distinct types of cryptos, a considerable increase from the **66 cryptocurrencies** recorded in 2013 (Stata, 2024).
- The **first peak** number of cryptocurrencies: 10397, but it dropped slightly **because** ‘White knight’ **FTX fell from grace and sent shockwaves across the industry** in Nov 2022 (Butts and Qin, 2022).
- After COVID-19 and within the current economic recession, the number of cryptocurrencies has also **stayed stable situation** during the recent two years, maintaining around 9k.
- This is a signal to investors risk-averse that stay **conservative** and try to find **stability** in the crypto market. (**Stablecoins**)

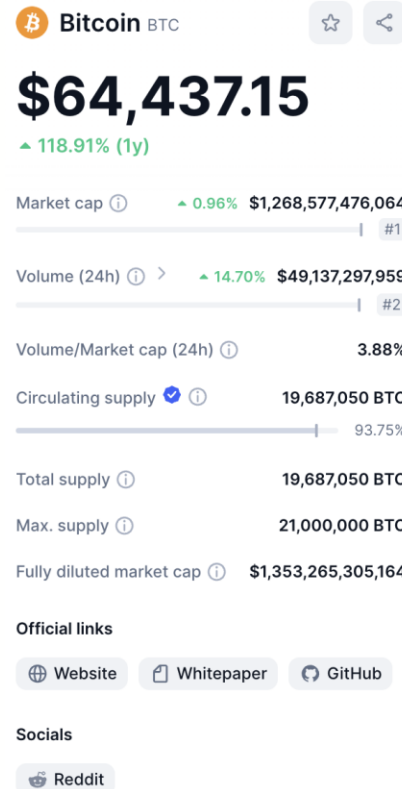




Introduction

Current crypto market trend

- There are total **on-chain trading volume of USD 117.08 billion** accounted within the preceding 24 hours (Coinmarketcap, 2024).
- Bitcoin price has climbed over **65k USD**,
 - **Total market capitalization** surpassed **\$1.2 trillion**
 - **Daily trading volumes** around **\$50 billion**
 - **Bitcoin has the largest trading volume in the whole crypto market, at almost: 50%**
- The U.S. government has increased its bitcoin holdings since the last big dropped market trend in 2021 (Dune, 2024).



Introduction

Research gap in blockchain standardization

Some research focus on blockchain standardization

- Although some articles have compared blockchain technology standardization (Li and Tang, 2022; König et al., 2020):
 - others have focused on organizational studies (Brunsson, Rasche, and Seidl, 2012);
 - cybersecurity (Radanliev, 2023);
 - benefits realization (Enwerem and Chkwudebe, 2021);
 - antitrust laws (Bjorn, 2014);
 - data protection laws (Li, 2020).

- **Research gap:**

There is still a dearth of studies focusing on the **blockchain standardization** based on *geopolitical development*.

Some studies focus on geopolitics

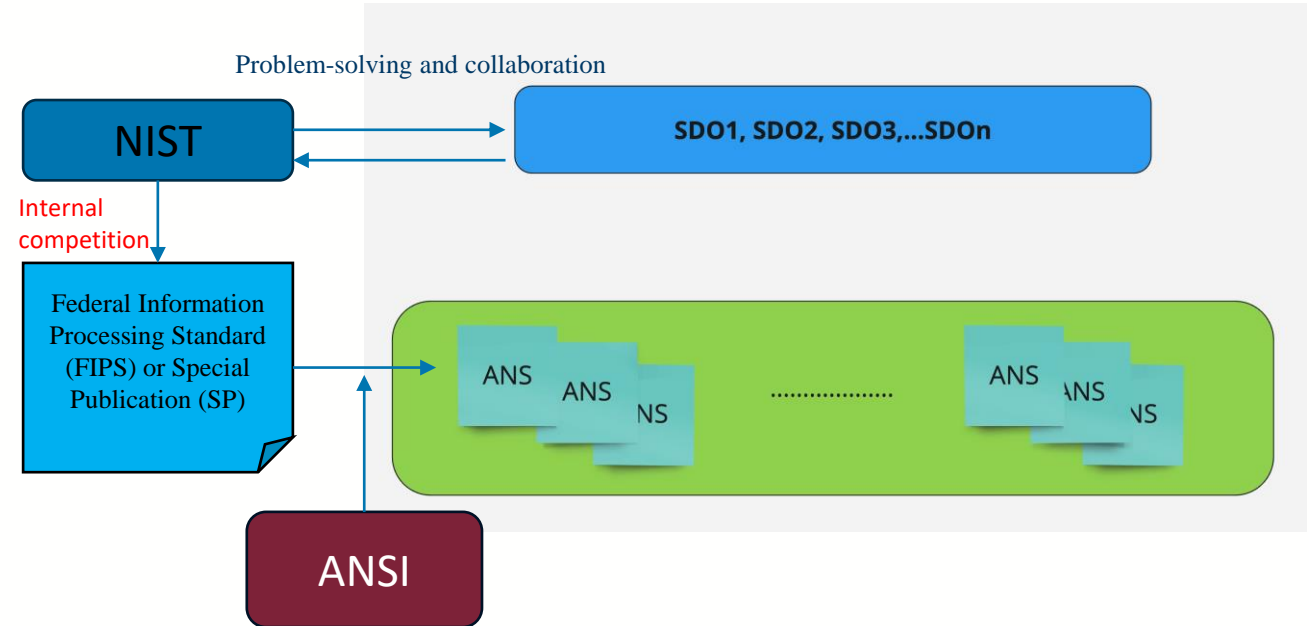
- Despite the contribution of standardization, the risk dimension has been brought to the fore by recent geopolitical developments (Joshi, 2019) in other high technologies, such as IoT (Ahn, 2020), open RAN (Kim, Eom, Lee, 2023), and discussion on technology sovereignty (Edler, et al., 2023).
- However, blockchain and distributed ledger technology are missed in these research and discussions.



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Comparison of Standardization Across U.S., EU, and ISO

- The *American National Standards Institute (ANSI)*:
 - The *American National Standards Institute (ANSI)* is a private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system.
 - **ANSI facilitates the development** of *American National Standards (ANS)* by accrediting the procedures of *standards developing organizations (SDOs)* and approving their documents as *American National Standards (ANS)* (ANSI, 2024).
 - ANSI is **the sole U.S. representative** to the *International Organization for Standardization (ISO)*, and, through the *U.S. National Committee (USNC)*, to the *International Electrotechnical Commission (IEC)*.
 - ANSI promotes the use of U.S. standards internationally, advocates U.S. policy and technical positions in international and regional standards organizations, and encourages the adoption of international standards as national standards where they meet the needs of the user community.



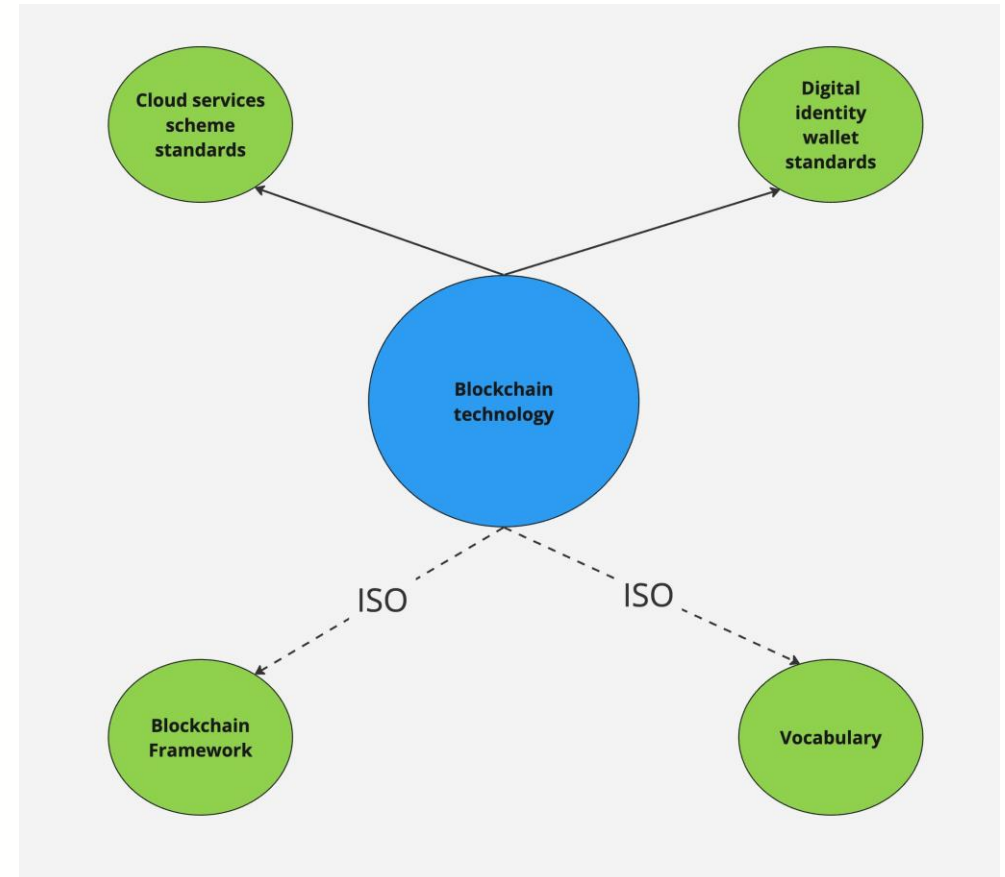
- NIST internal report 7977 (NISTiR 7977) clarifies the principles, processes and procedures that drive **cryptographic standards** for blockchain technology.
- NIST IR 8301 document (Lesavre et al., 2021) indicated the **high-level technical overview and conceptual framework of token designs and protocol management methods** based on the previous NIST IR 8202 documents (Yaga, et al., 2018).

EU Standardization – CEN, ENISA

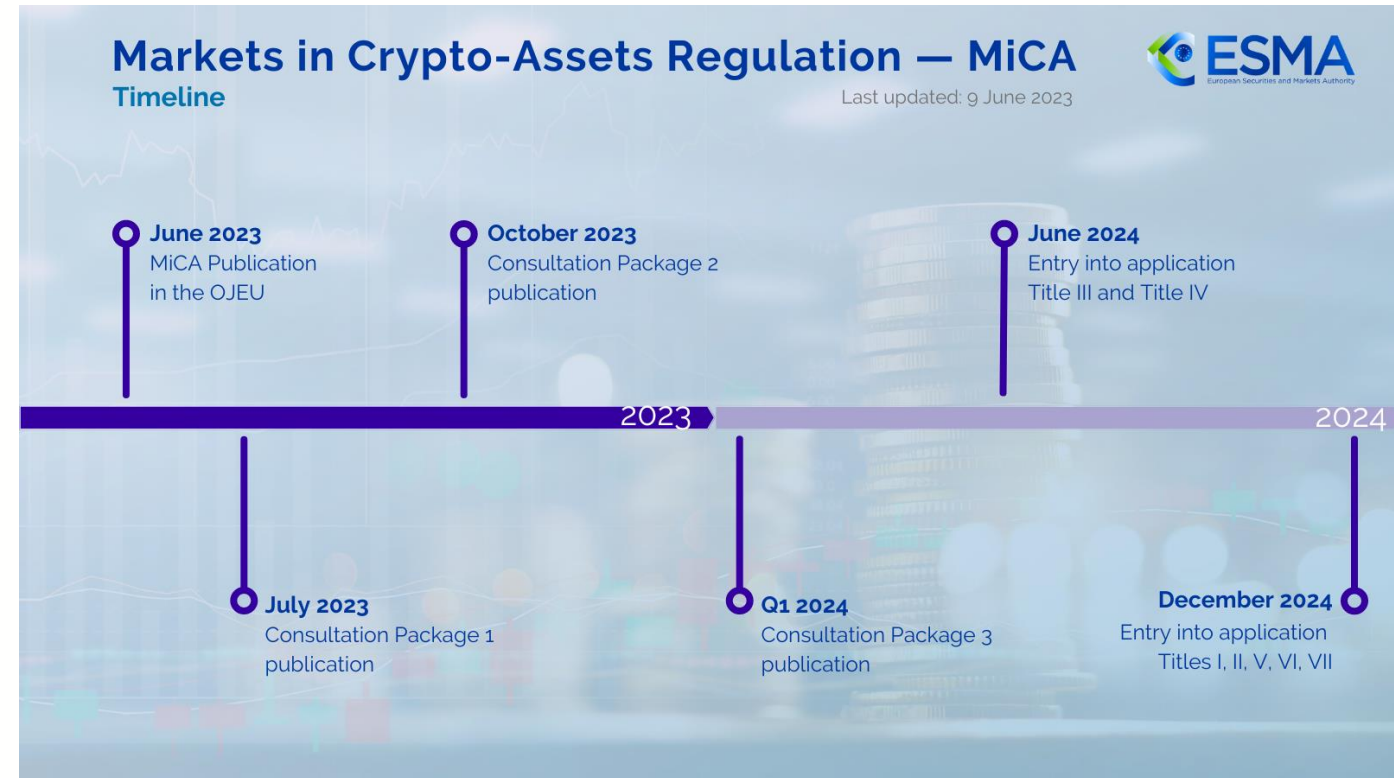
Technology & application Area

- The *European Committee for Standardization* (CEN) employs a pyramid-shaped hierarchical standardization process, leveraging the expertise of **national standardization bodies** across EU members (ENISA, 2023), such as:
 - The Agence nationale de la sécurité des systèmes information (ANSSI) in France
 - The Bundesamt für Sicherheit in der Informationstechnik (BSI) in Germany
- The *European Union Agency for Cybersecurity* (**ENISA**), has formulated two standards directly related to blockchain technology:
 - Digital identity wallet standards
 - Cloud services scheme standards

(These standards refer to existing frameworks from **ISO** or maintain consistency with ISO standards.)



- In June 2023, the *European Securities and Markets Authority (ESMA)* established the *Markets in Crypto-Assets Regulation (MiCA)* as a **new regulation** aimed at harmonizing the rules of the EU crypto-asset market (MiCA, 2023)
- MiCA focuses on regulating products enabled by blockchain technology:
 - Crypto-assets;
 - Crypto- Issuance (ICO);
 - Trading (tokens and digital currency)



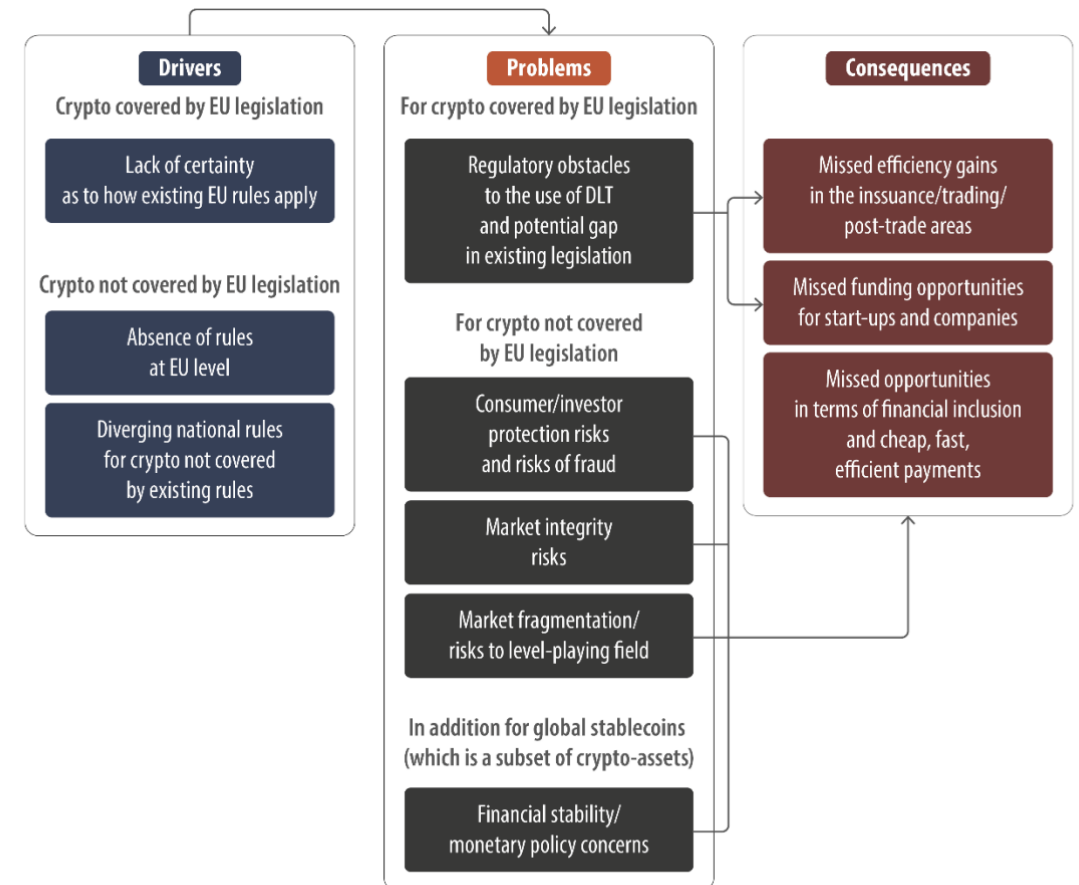
- The Regulation on markets in crypto-assets (MiCA) requires ESMA to submit draft **regulatory technical standards (RTS)** and **implementing technical standards (ITS)** on a variety of topics within the **three packages of consultation** (Regulation(EU), 2023).
- On 12 July 2023, ESMA published a Consultation Paper to seek stakeholders' views on **ESMA's proposals for 5 regulatory technical standards (RTSs) and 2 implementing technical standards (ITSs)**. The consultation period closed on 20 September 2023. **ESMA received 36 responses**, including United Bitcoin Company Netherlands, Coinbase, Italian Banking Association, European Savings and Retail Banking Group. (ESMA, 2024).



Art. 62 of MiCA: Information to be included and authorization for applicants

- Article 62(2) of MiCA sets out the **information** that such as application must contain and which encompasses, inter alia, the following elements:
 - Information about the **identity** of the applicant CASP;
 - **A programme of operations**, setting out the types of crypto-asset services;
 - A description of the applicant CASP's **governance arrangements and internal control mechanisms**;
 - A description of the **procedure** for the segregation of clients' crypto assets and funds;
 - A description of the **execution policy**;
 - A description of the **commercial policy**.

Problem tree





Non-government Standardization – ISO

Technology & application areas



- ISO comprises 11 published standards, 8 incomplete standards in development, and 6 standards pertaining to blockchain technology
- **Covered application sectors:**
 - Finance,
 - Food industry,
 - Traceability platforms,
 - Record systems,
 - E-commerce,
 - Non-Fungible Tokens (NFTs),
- **Covered technology areas:**
 - Vocabulary
 - Identifiers of subjects and objects for the design of blockchain systems
 - Overview of trust anchors for DLT-based identity management
 - Reference architecture
 - Guidelines for governance
 - Overview of existing DLT systems for identity management
 - Taxonomy and Ontology
 - Privacy and personally identifiable information protection considerations
 - Security management of digital asset custodians
 - Overview of and interactions between smart contracts in blockchain and distributed ledger technology systems.





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Stablecoins



Stablecoins

- Stablecoins exhibit a unique feature that serves as a **bridge** between **cryptocurrency** and **fiat currency**.
- **Primary feature and value of stablecoins:** The fundamental premise of cryptocurrency's value lies in its ability to be exchanged for fiat currency denominated in U.S. dollars.



Source: Top 5 Stablecoins – A Complete List; Stablecoins shown above are **DAI**, **USDC**, **Tether**, **BUSD**, **TureUSD**, respectively from left to right

- The United States prioritizes regulating stablecoins credit risk and standardizing innovative pegging techniques.
- The EU has established the crypto market regulatory agency MiCA to formulate new regulations and promote **the creation of a Euro-backed stablecoins to counter the dominance of USD-pegged stablecoins.**

Both major regions have made concerted efforts to regulate and advance the standardization of stablecoins (European parliament, 2022; SEC, 2020). Consequently, stablecoins, serving as the foundational and bridging element of trust, assume significant importance as essential instruments for enhancing the competitive strength of both regions.



Stablecoins Approach – EU:

Geopolitical Perspective

- The European Union is actively exploring strategies to either surpass or align with the standardization efforts of the United States in this domain.
 - In the **European ICT rolling plan**, one of the actions also pointed out: *“ESOs to develop the standards needed for the introduction of a **programmable Euro (CBDC)** and **token economy** (upcoming **MiCA Regulation**). ”* (European Commission, 2024).
 - Radanliev (2023) mentioned: *“Regulations like MiCA might encourage big companies to get involved into crypto, The provisional MiCA bill has caused **Circle (USDC)** to create the **Euro Coin (EUROC)**”*
 - The Chief Strategy Officer of **Circles** Dante Disparte claimed that *“Circle aims to make **Euro Coin** a **MiCA-conforming digital currency**, for which our ongoing engagement with European stakeholders, regulators and policy makers, as well as our direct investments in Europe, are key bridges to the future.”* (Circles, 2022).
- Thus, the EU could leverage successful stablecoins development to establish standards and protect the stability of the EU cryptocurrency market within the region of the EU.



Source: Circle Internet Financial provided by **Bloomberg**



Source: USDC Coin | Image credit: Payments Cards & Mobile



Different Aspects from *European Union Financial Stability Board*

- Following regulation document ESMA50-165-2251, specifically the TRV article focusing on crypto assets and their implications for financial stability, the *European Union Financial Stability Board* (FSB) has consistently **emphasized the need for vigilance regarding the true nature of native tokens and stablecoins**.
- This includes assessing whether they qualify as financial instruments under the *Markets in Financial Instruments Directive* (MiFID) or as *e-money* (ESMA, 2022).
- FSB thinks stablecoins that have **significant risks** to consumers, no matter if it's a kind of financial instrument that is like traditional financial instruments, such as futures and options, or a sort of e-money. However, MiCA's aspects are more **actively to support the establishment of stablecoins**.
- Comparing with the **regulation proposal options** for stablecoins from **MiCA**:
 - Option 1 – bespoke legislative regime aimed at addressing the risks posed by ‘stablecoins’ and ‘global stablecoins’
 - Option 2 – regulating ‘stablecoins’ under the Electronic Money Directive.
 - Option 3 – measures aimed at limiting the use of ‘stablecoins’ within the EU’.
- The Commission considered that **Option 1 was the preferred option** for ‘stablecoins’ in **combination with Option 2**, to **avoid regulatory arbitrage between ‘stablecoins’** that are indistinguishable from **e-money** and the treatment of e-money issued on a distributed ledger.

Stablecoins Approach – U.S.

- The U.S. has **standardized stablecoins** as a use case since the stablecoins framework was designed by Moin (2019) (Lesavre, Varin, Yaga, 2021).
- *U.S. Securities and Exchange Commission* (SEC) created the FinHub, a strategic hub for supporting financial technology innovation. In the section on blockchain and distributed ledger technology, regulatory and supervisory issues regarding stablecoins have been emphasized similarly to legal currency USD (SEC, 2020).
- **SEC statements treat stablecoins as securities under the U.S. federal securities laws**, citing anti-money laundering (AML), countering the financing of terrorism (CFT), and sanctions obligations requirements (SEC, 2020).



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Crypto Assets and Cyber Enforcement Actions



Crypto Assets

Action Name	Description	Date Filed
SEC v. Sanchez, et al.	The Securities and Exchange Commission charged 17 individuals for their roles in a \$300 million Ponzi scheme that involved Houston, Texas-based CryptoFX LLC and targeted more than 40,000 predominantly Latino investors in the U.S. and two other countries. The complaint follows the SEC's successful emergency action in September 2022 that halted the CryptoFX scheme and charged its two main principals, Mauricio Chavez and Giorgio Benvenuto.	3/14/2024
In the Matter of ShapeShift AG	The Securities and Exchange Commission charged ShapeShift AG, a Swiss company that previously operated out of Colorado, with acting as an unregistered dealer in connection with its operation of an online crypto asset trading platform. To settle the SEC's charges, ShapeShift agreed to pay a \$275,000 penalty.	3/5/2024
In the Matter of TradeStation Crypto, Inc.	The Securities and Exchange Commission announced charges against TradeStation Crypto, Inc., based in Plantation, Florida, for failing to register the offer and sale	2/7/2024



Stablecoins Approach – EU vs. U.S.

- MiCA regulates stablecoins as a sort of **assets**.
 - Based on the document from European Parliament that focus on the **regulation** of MiCA (2022), MiCA consider the proposal definition of crypto-asset and sub-type in:
 - An '**asset-referenced token**' (**ART**) is a type of crypto-asset which is **meant to maintain a stable value by referring to the value of several currencies** that are legal tender (**fiat currencies**), one or several commodities, or one or several crypto-assets, or a combination of such assets.
 - An '**e-money token**' (electronic money token, **EMT**) is type of crypto-asset which is meant to be a **means of exchange** and **maintains a stable value by referring to the value of a fiat currency that is legal tender**.
 - **Asset-referenced tokens** and **e-money tokens** are often described as '**stablecoins**'.
 - Purpose: legal certainty, support innovation, investor protection and market integrity, financial stability (European commission, 2020).
- **Standards of stablecoins are still under-developing** within MiCA's standardization plan (5RTSs, 2ITSs).
- **Regulation approach** from the U.S.
 - SEC statements is on the position of considering stablecoins as one of **securities**.
 - So, stablecoins are under the U.S. federal securities laws.
- **Standardization approach** from the U.S. (Lesavre, Varin, Yaga, 2021).
 - The U.S. has standardized stablecoins as a **use case** since the stablecoins framework was designed by Moin (2019).
 - NIST officially categorized stablecoins into **three types**: redeemable, convertible, and synthetic.
 - The standard includes:
 - Stablecoins protocol mechanisms,
 - Collateralization cryptographic utilities
 - Smart contracts,
 - Token mint and burn operations at the algorithmic level.

The importance of stablecoins for DeFi

- Despite stablecoins performing as the bridge between crypto-asset and fiat currency, providing a relatively safe “parking space” in crypto market (Adachi et al., 2021), stablecoins also have gained new uses, with the rise of decentralized financial institution (DeFi) applications. Such as, hedge the risk for unbacked crypto-assets, generate interest, and liquidity pool provision (Lyons and Viswanath-Natraj, 2020).
- The largest existing stablecoin, Tether.**
 - Based on the report from European central bank (2022), Tether dominates trading volumes within the crypto-asset ecosystem (Figure A), and stablecoins provide **most of the liquidity** for decentralized trading and lending (Born, et al., 2022).
 - Stablecoins provided around **45% of the liquidity** in decentralized exchanges (DEXes) in May 2022 (Figure B)

Figure A: Trading volume of bitcoins and ether vs. other crypto-assets, official currencies, and stablecoins

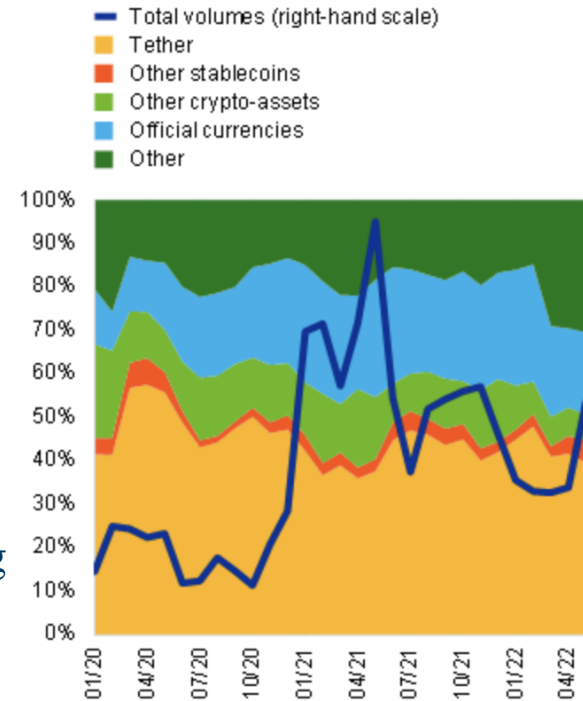
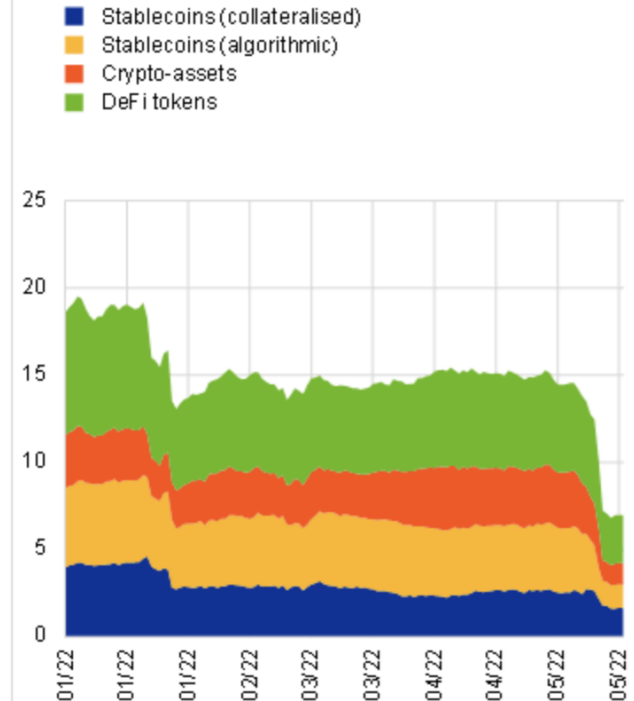


Figure B: Liquidity provision for DeFi trading by type of asset (liquid pairs data is from Curve, Uniswap, Sushiswap)



Source: European central bank, IntoTheBlock, CryptoCompare and ECB calculations

The U.S. ecosystem has developed in Defi and utility of stablecoins, comparing with the EU, the Defi ecosystem is weaker. This might be one of the **significant reasons of development of stablecoins** to the EU **geopolitical development for Defi ecosystem**.



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Key Findings



The Comparison of Standardization for Technology and Application Across U.S., EU, and ISO.

		US	ISO	EU
Technologies				
Vocabulary			√	√
Blockchain systems	Blockchain base layer	√	√	
	Blockchain second layer	√		
	Blockchain application-	√		
	Wallet integration	√		
	User account data	√		
	External data feeds	√		
Trust anchors for			√	
Architecture	System architecture	√	√	
Governance	Decentralized protocol	√	√	
Identity			√	
Taxonomy and			√	
Identifiable info			√	
Security management of digital asset custodians	Token data model	√		
	Protocol management	√	√	
	Account-level operation	√		
	Self-contained tokens	√		
Smart contracts	Smart contract vaults	√	√	
Wallet and key management	Self-hosted wallets	√		
	Custodial wallets	√		
Transaction management	Off-chain scaling	√		
	Token exchange	√		
	Bridge	√		
	Meta transaction	√		
	Smart contract-based	√		
	Blockchain node	√		
	Monitoring and analysis	√		
	Privacy-enhancing	√		
Off-chain privacy	√			
Cryptographic and blockchain	Block ciphers	√		
	Hash algorithms	√		
	Key establishment	√		
	Post-quantum	√		
	Lightweight	√		
	Privacy-enhancing	√		

		US	ISO	EU
Applications				
Data provenance			√	
FinTech	Governance	√		
	Cryptocurrencies	√		
	Stablecoins	√		
	Fiat currencies	√		
	Bank deposits	√		
	CBDC	√		
	Exchanges	√	√	
	Lending Defis	√	√	
	Aggregators	√		
	ICO	√	√	
	Synthetic assets	√		
	Supply chain	Supply chain	√	√
Smart energy			√	
Uniquely identifiable things	Proofs of ownership	√	√	√
	Proofs of collateral	√		
	Proofs of transfer	√		
	Proofs of participation	√		
	Proofs of origin	√	√	



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Research Implication



Discussion and Conclusion for the EU Standardization of Blockchain Technology

- Based on prior comparative studies, the EU's approach to blockchain technology standardization **relies heavily on ISO standards**, which may not be compatible with the volume and context of U.S. standardization efforts.
- The EU recognizes the crucial role of stablecoins as a significant link between the fiat currency and cryptocurrencies, and endeavors to compete with USD-pegged stablecoins by **introducing EUROCC**.
- Based on the fact of different aspects from FSB and regulation MiCA, the EU might have the internal **debate** for stablecoins regulation by the risk-based consideration. The EU tries to find an aligned statement and category method for stablecoins to protect customers and investors in crypto market.
- This observation gives rise to the hypothesis of **fragmented standardization** within the EU's blockchain technology initiatives. The EU tends to develop its own distinctive blockchain standards systematically.
- This fragmented standardization strategic approach enables the EU to leverage its own blockchain standards to support the competitiveness of EU decentralized applications in comparison to those originating from the U.S.
- The EU views standardization as a significant tool to challenge U.S. **technological sovereignty**, particularly in high-tech domains such as blockchain technology.
- The development of EUROCC epitomizes the EU's ambitions and **geopolitical strategies** aimed at bolstering its influence in the ongoing development of blockchain technology standards.



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Thank you!

