Introduction

The global financial system stands at a critical juncture as digital currencies transform monetary exchange. Innovations like stablecoins and Central Bank Digital Currencies (CBDCs) present unique regulatory challenges that current frameworks cannot address. These technologies disrupt the payment ecosystem, requiring innovative regulatory responses. This research reviews the evolving digital currency regulation, examines the underlying assumptions shaping these approaches, and proposes frameworks that balance financial stability, consumer protection, and technological advancement.

Background

Stablecoins arose to counter the volatility of cryptocurrencies like Bitcoin. They maintain value parity with fiat currencies through stabilization mechanisms, combining blockchain programmability with the stability needed for daily transactions. According to S&P Global Ratings, the stablecoin market has surged, exceeding \$200 billion in global market capitalization by early 2025,² with major tokens like USDC and Tether representing tens of billions in market cap and daily transaction volumes rivaling major payment networks.

Stablecoins utilize three primary stabilization methods: **fiat-collateralized**, backed by reserves of traditional currencies (e.g., USDC, USDT); **crypto-collateralized**, over-collateralized with other cryptocurrencies (e.g., DAI); and **algorithmic**, using automated supply adjustments to maintain parity (e.g., failed Terra/Luna). Each model has unique regulatory implications, especially in reserve verification, risk profiles, and failure modes. The 2022 collapse of Terra/Luna impacted regulatory strategies, exposing systematic risks of algorithmic stablecoins and accelerating global regulatory initiatives.³

CBDCs represent sovereign digital money—a technological form of national currencies. Unlike stablecoins, CBDCs are direct liabilities of central banks, with the same guarantees as cash. According to the Atlantic Council's CBDC Tracker, 134 countries and currency unions representing 98% of global GDP are exploring CBDCs, up from 35 countries in 2020.⁴ As of March 2025, three countries have launched retail CBDCs: the Bahamas (Sand Dollar), Jamaica, and Nigeria (eNaira).⁵ China's digital yuan (e-CNY) is the largest CBDC pilot, with transaction volume hitting 7 trillion yuan (approximately \$986 billion) by June 2024, nearly quadrupling from the previous year, as per the People's Bank of China.⁶

CBDCs involve critical design choices that affect their regulatory implications. They can be for public use or limited to financial institutions, with accounts held directly with the central bank or through intermediaries, based on identity verification or digital possession, and may include automated functions. International CBDC experimentation is increasing through Bank for International Settlements (BIS) Project Aurum (focusing on privacy), 7 Switzerland's Project

¹ Christensen, C. M. (1997). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Harvard Business Review Press.

² S&P Global Ratings. (2025). "Stablecoin Regulation Gains Global Momentum." *S&P Global Ratings Research*. https://www.spglobal.com/ratings/en/research/articles/250210-stablecoin-regulation-gains-global-momentum-13400761

³ Elliptic. (2024). "Regulatory Outlook 2024: Stablecoins will be atop the regulatory and policy agenda." *Elliptic Research*. https://www.elliptic.co/blog/regulatory-outlook-2024-stablecoins-will-be-atop-the-regulatory-and-policy-agenda

⁴ Atlantic Council. (2024). "Central Bank Digital Currency Tracker." https://www.atlanticcouncil.org/cbdctracker/

⁵ Investopedia. (2024). "What Is a Central Bank Digital Currency (CBDC)?" https://www.investopedia.com/terms/c/central-bank-digital-currency-cbdc.asp

⁶ Atlantic Council. (2024). "Central Bank Digital Currency Tracker." https://www.atlanticcouncil.org/cbdctracker/

⁷ Bank for International Settlements. (2024). "BIS Innovation Hub work on central bank digital currency." https://www.bis.org/about/bisih/topics/cbdc.htm

Helvetia III (testing wholesale CBDC for tokenized asset settlements)⁸, and Project mBridge (connecting banks in China, Thailand, UAE, Hong Kong, and Saudi Arabia for cross-border transactions). The financial sector has often resisted fundamental innovation. The rise of stablecoins and CBDCs signals a transformation in monetary systems.

Current Regulatory Landscape

The regulatory approach to stablecoins is fragmented across jurisdictions. In the U.S., the agency regulating cryptocurrency remains unsettled. The Securities and Exchange Commission (SEC) claims jurisdiction over some stablecoins as securities, while the Commodity Futures Trading Commission (CFTC) asserts authority over others as commodities. Banking regulators target stablecoin issuers resembling deposit-taking institutions.⁹

Progress occurred in 2024-2025. President Trump's January 2025 executive order directed regulatory agencies to propose a federal regulatory framework for stablecoins within 180 days to "promote the development and growth of lawful and legitimate dollar-backed stablecoins." The bipartisan Lummis-Gillibrand Payment Stablecoin Act, introduced in April 2024, suggests a framework for issuing through state non-depository trust companies registered with the Federal Reserve or depository institutions chartered by the OCC or state bank supervisors. 11

The European Union leads with its Markets in Crypto-Assets (MiCA) regulation, effective June 2024 for stablecoins. MiCA sets strict reserve requirements, mandates monthly audits, and bans interest payments by stablecoin issuers to prevent their use as stores of value. The United Kingdom enhances its regulatory framework via the Financial Services and Markets Act 2023, categorizing stablecoins as "systemic payment instruments" under FCA oversight.

Recent regulatory approaches focus on Payment Services Regulation, treating stablecoin issuers as payment service providers (EU's MiCA framework); Banking Regulation with banking-like reserve requirements and supervision (U.S. OCC approach); Securities Regulation for certain stablecoins as investment products (SEC approach); and Systemic Risk Management, creating frameworks for "systemically important" stablecoins (FSB recommendations).

While CBDCs are government-issued and face less regulatory uncertainty than stablecoins, they need comprehensive regulatory frameworks for privacy and data protection. This involves balancing transaction monitoring with user privacy, enhancing financial inclusion for unbanked populations, implementing monetary policies with new interest rate mechanisms, establishing rules for private sector participation in two-tier models, and enabling cross-border interoperability for international CBDC transactions.

Recent developments illustrate these challenges. The BIS Innovation Hub launched Project Aurum 2.0 in March 2024 to enhance privacy in retail CBDCs, addressing concerns raised in

⁸ International Monetary Fund. (2024). "Central Bank Digital Currency: Progress And Further Considerations." https://www.elibrary.imf.org/view/journals/007/2024/052/article-A001-en.xml

⁹ Atlantic Council. (2025). "What is next for crypto regulation in the US?" https://www.atlanticcouncil.org/blogs/econographics/what-is-next-for- crypto-regulation-in-the-us/

10 S&P Global Ratings. (2025). "Stablecoin Regulation Gains Global Momentum." *S&P Global Ratings Research*.

https://www.spglobal.com/ratings/en/research/articles/250210-stablecoin-regulation-gains-global-momentum-13400761

¹¹ Latham & Watkins. (2024). "US Senators Introduce Comprehensive Stablecoin Bill." Global Fintech & Digital Assets Blog. https://www.fintechanddigitalassets.com/2024/05/us-senators-introduce-comprehensive-stablecoin-bill/

public consultations. ¹² The IMF has created a CBDC Virtual Handbook to guide central banks using a "5P methodology" (preparation, proof-of-concept, prototype, pilot, production).

Brazil's DREX project addresses privacy and infrastructure challenges.¹³ Kazakhstan's Digital Tenge launched in pilot mode in November 2023, while the Philippines tests wholesale CBDC capabilities with Project Agila for cross-border transfers.¹⁴ Switzerland's Project Helvetia III is one of the most advanced wholesale CBDC tests, enabling tokenized Swiss franc settlement of commercial transactions on the SIX Digital Exchange platform.¹⁵

Structural Challenges in Digital Currency Regulation

The fundamental regulatory challenge starts with **definitional** questions: Are stablecoins money, securities, commodities, or something else? This uncertainty causes regulatory gaps. Courts will play a key role in resolving these questions, determining the jurisdictional boundaries between agencies like the SEC and CFTC. ¹⁶ Unlike traditional financial services, which can be regulated within national borders, digital currencies operate on globally accessible blockchains. This leads to **enforcement and coordination** challenges across jurisdictions, creating regulatory arbitrage as activities move to more favorable regulatory environments. ¹⁷ Effective regulation needs a deep understanding of **technologies**, yet most regulatory bodies lack the necessary expertise in cryptography, distributed systems, and blockchain governance, mirroring historical regulatory lag during technological innovation. ¹⁸ CBDCs pose a competitive threat to traditional banking and private stablecoins. This creates complex dynamics where policymakers must decide whether to view private stablecoins as competitors to constrain or innovations to integrate into broader digital currency ecosystems. ¹⁹

Innovative Regulatory Approaches

Regulation should be innovative for frontier technologies, and emerging approaches show this potential. The choice between **prescriptive rules and flexible principles** is crucial in the evolving digital currency space. While rules offer certainty, they can become obsolete as technology evolves. Principles-based regulation supports innovation while meeting core regulatory objectives.²⁰ For stablecoins, this requires reserve transparency, regular audits, minimum liquidity standards without prescribing specific asset allocations, and clear redemption rights for token holders.

¹² International Monetary Fund. (2024). "Central Bank Digital Currency: Progress And Further Considerations." https://www.elibrary.imf.org/view/journals/007/2024/052/article-A001-en.xml

¹³ Atlantic Council. (2023). "Central bank digital currency evolution in 2023: From investigation to preparation." https://www.atlanticcouncil.org/blogs/econographics/central-bank-digital-currency-evolution-in-2023-from-investigation-to-preparation/

¹⁴ International Monetary Fund. (2024). "Central Bank Digital Currency: Progress And Further Considerations." https://www.elibrary.imf.org/view/journals/007/2024/052/article-A001-en.xml

¹⁵ Springer. (2024). "Current and Future Central Bank Digital Currency (CBDC) Projects." https://link.springer.com/chapter/10.1007/978-3-031-74889-9 14

Atlantic Council. (2025). "What is next for crypto regulation in the US?" https://www.atlanticcouncil.org/blogs/econographics/what-is-next-for-crypto-regulation-in-the-us/

¹⁷ World Economic Forum. (2024). "Modernizing Financial Markets with Wholesale Central Bank Digital Currency (wCBDC) 2024." https://www.weforum.org/publications/modernizing-financial-markets-with-webdc/

¹⁸ International Monetary Fund. (2024). "Implications of Central Bank Digital Currency for Monetary Operations."
https://www.imf.org/en/Publications/fintech-notes/Issues/2024/10/04/Implications-of-Central-Bank-Digital-Currency-for-Monetary-Operations-555883

⁹ Springer. (2024). "Current and Future Central Bank Digital Currency (CBDC) Projects." https://link.springer.com/chapter/10.1007/978-3-031-74889-9 14

Prates, M. M. (2024). "How the U# Regulatory Frontiers in Digital Money: Stablecoins & Central Bank Digital Currencies

The EU's MiCA regulation balances prescriptive rules with principles-based approaches, setting reserve requirements and mandatory audits every six months while allowing flexibility in the specific instruments qualifying as reserves. New York's stablecoin guidance requires 100% backing by cash or highly liquid investments and independent verification at month-end and randomly, creating a compliance framework with operational flexibility.²¹

Regulatory sandboxes enable controlled testing of new financial products under regulatory supervision. Various jurisdictions have created digital currency sandboxes for live testing with real customers under regulatory waivers, data collection on emerging risks and benefits, regulatory learning alongside industry innovation, and the gradual development of appropriate regulatory frameworks. This fosters regulatory humility by acknowledging that regulators cannot predict all outcomes and must learn through observation and adaptation.²²

Project mBridge connects central banks from China, Thailand, UAE, and Hong Kong for crossborder payments and is expanding to more countries. BIS data shows that cross-border wholesale CBDC projects have doubled since 2022.²³ Singapore and Hong Kong are innovation hubs for stablecoins supported by regulatory frameworks that balance innovation with compliance.²⁴

Rather than viewing CBDCs and private stablecoins as competitors, innovative regulatory approaches acknowledge their complementarity. Emerging models include central bank oversight of private stablecoin issuers, CBDCs that leverage private sector distribution and innovation, regulatory frameworks defining interoperability standards, and hybrid systems where public infrastructure fosters private innovation. A concrete example is the bipartisan Lummis-Gillibrand Payment Stablecoin Act in the U.S., envisioning a regulatory framework that enables private stablecoin issuance with oversight. This bill would legalize stablecoin issuance through state non-depository trust companies registered with the Federal Reserve or chartered depository institutions, creating a public-private partnership model.²⁵

The Brazilian approach to its digital real (DREX) emphasizes collaboration, with the central bank focusing on infrastructure and working alongside private financial institutions to develop applications and distribution channels. The phased implementation plan seeks to expand CBDC functionality across financial services, acknowledging the complementary roles of public infrastructure and private innovation. ²⁶ Recognizing differing risks among digital currencies, tiered regulatory frameworks impose oversight proportionate to systemic importance. This involves baseline requirements for stablecoin issuers, enhanced supervision for larger stablecoins, special resolution regimes for systemically important digital currencies, and tailored requirements based on stabilization mechanisms and risk profiles.

²¹ International Monetary Fund. (2024). "Implications of Central Bank Digital Currency for Monetary Operations." https://www.imf.org/en/Publications/fintech-notes/Issues/2024/10/04/Implications-of-Central-Bank-Digital-Currency-for-Monetary-Operations-

²² International Monetary Fund. (2024). "Central Bank Digital Currency (CBDC) - Virtual Handbook." https://www.imf.org/en/Topics/digital- money-and-fintech/central-bank-digital-currency/virtual-handbook

23 Atlantic Council. (2024). "Central Bank Digital Currency Tracker." https://www.atlanticcouncil.org/cbdctracker/

²⁴ Elliptic. (2024). "Regulatory Outlook 2024: Stablecoins will be atop the regulatory and policy agenda." *Elliptic Research*. https://www.elliptic.co/blog/regulatory-outlook-2024-stablecoins-will-be-atop-the-regulatory-and-policy-agenda

²⁵ Latham & Watkins. (2024). "US Senators Introduce Comprehensive Stablecoin Bill." Global Fintech & Digital Assets Blog. https://www.fintechanddigitalassets.com/2024/05/us-senators-introduce-comprehensive-stablecoin-bill/

²⁶ Atlantic Council. (2023). "Central bank digital currency evolution in 2023: From investigation to preparation." https://www.atlanticcouncil.org/blogs/econographics/central-bank-digital-currency-evolution-in-2023-from-investigation-to-preparation/

The EU's MiCA regulation distinguishes between e-money tokens (EMTs) pegged to a single currency and asset-referenced tokens (ARTs) backed by multiple currencies or assets. Each category faces different regulatory requirements based on its risks. MiCA limits growth for systemically important stablecoins until regulatory frameworks are adopted.²⁷

The UK's Financial Services and Markets Act 2023 classifies stablecoins as "systemic payment instruments," with the Bank of England focusing on systemic stablecoins and the FCA overseeing smaller issuers. This tiered strategy helps regulators allocate resources to entities with the most financial stability risks.²⁸

Conclusion: Toward Innovative Regulation of Digital Currencies

The regulation of stablecoins and CBDCs poses a challenge for financial authorities globally. Effective regulatory frameworks must overcome cognitive biases, address structural challenges, and embrace innovative regulatory approaches. True innovation requires challenging fundamental assumptions.²⁹

Digital currencies are not adaptations of traditional financial instruments; they demand groundbreaking innovations and new regulatory frameworks. Regulators should establish international coordination mechanisms to tackle the borderless nature of blockchain technology, fostering innovation through regulatory sandboxes, principles-based policies, and adaptive frameworks that evolve with technological advancements. Strengthening technical expertise within regulatory bodies is key for informed oversight and protecting financial stability and consumer rights.

The discussion on whether stablecoins should be regulated like traditional banks highlights the need for innovative regulatory thinking. Though stablecoins resemble bank deposits in their stable value promise and redemption rights, they differ fundamentally in their technical infrastructure, operational models, and risk profiles. Policymakers should craft tailored approaches for these instruments that address the unique risks and opportunities they present instead of forcing them into existing frameworks.³⁰

Legal experts contend that regulation should vary by issuer type: "Stablecoins should be regulated by issuer, with non-bank issuers being regulated as issuing commodities or securities, and bank issuers being regulated as issuing a banking product like a tokenized deposit." This nuanced approach recognizes that different entities pose different risks and leverages existing regulatory structures while adapting them to new technological realities.

By applying a similar innovative spirit that drives the technologies to digital currency regulation, regulators can realize the benefits of this transformation while managing associated risks. The

²⁷ S&P Global Ratings. (2025). "Stablecoin Regulation Gains Global Momentum." *S&P Global Ratings Research*. https://www.spglobal.com/ratings/en/research/articles/250210-stablecoin-regulation-gains-global-momentum-13400761

²⁸ Linklaters. (2024). "2024 promises to be a landmark year for stablecoin regulation in the UK."

 $[\]underline{https://www.linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters.com/en/insights/blogs/fintechlinks/2024/april/2024-promises-to-be-a-landmark-year-for-stablecoin-regulation-in-the-uk-linklaters-year-for-stablecoin-regulation-in-the-uk-linklaters-year-for-stablecoin-regulation-regulation-regulation-regulation-regulation-regulation-regulation-regulation-regulation-regulation-regulation-regulation-regulatio$

²⁹ Christensen, C. M. (1997). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Harvard Business Review Press.

³⁰ Prates, M. M. (2024). "How the U.S. Should Regulate Stablecoins." *CoinDesk*. https://www.coindesk.com/opinion/2024/05/09/how-the-us-should-regulate-stablecoins

³¹ Global Legal Insights. (2024). "The regulation of stablecoins in the United States." https://www.globallegalinsights.com/practice-areas/blockchain-cryptocurrency-laws-and-regulations/the-regulation-of-stablecoins-in-the-united-states/

courts will play a vital role in shaping this regulatory landscape, defining the boundaries and methods of digital currency regulation in the years ahead.³²

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 $^{^{32} \} At lantic \ Council. \ (2025). \ "What is next for crypto regulation in the \ US?" \ \underline{https://www.atlanticcouncil.org/blogs/econographics/what-is-next-for-crypto-regulation-in-the-us/"$