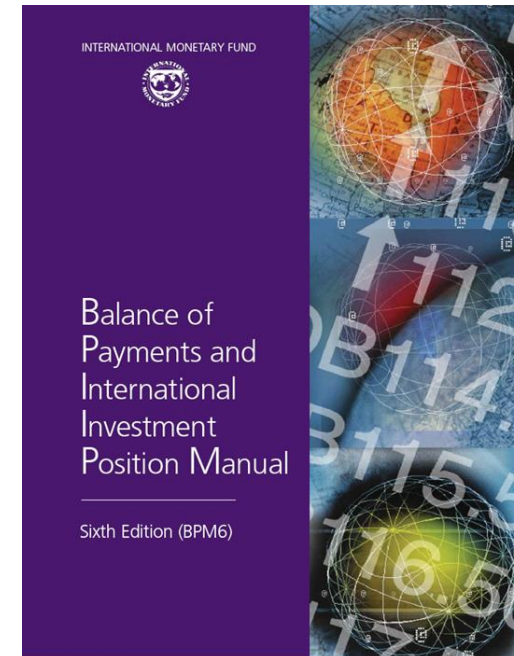
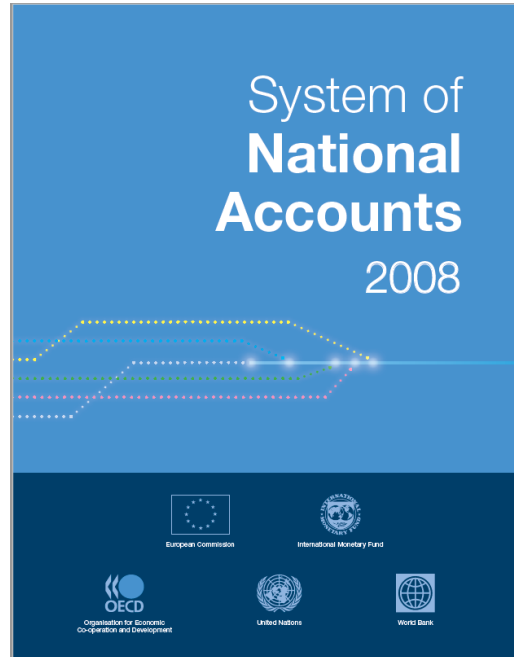


Updates to the SNA and BOP Conceptual Manuals and Recording of Fungible Crypto Assets

Paul Farello and Allison Derrick
Advisory Committee Meeting
November 18, 2022





Update of System of National Accounts 2008 (SNA 2008)

- Led by the Inter-secretariat Working Group on National Accounts (ISWGNA) and the Advisory Expert Group (AEG)

Update of the Balance of Payments and International Investment Manual Sixth Edition (BPM6), 2009

- Led by the Balance of Payments Committee (BOPCOM)

- Introduce new measures to both the standard (“required”) and supplemental (“optional”) items in the reporting frameworks
- Clarify current guidance
- Harmonize terminology across manuals
- Provide guidance for communicating to the public

Update Process and Timelines

Major Components	Target Date(s)
Task Teams established (drafting and review teams)	✓
Guidance notes (research and recommendations for changes)	✓
High-level structure of manuals	✓
Testing Phase I (to finalize guidance note recommendations) Phase II (to assist countries with early implementation)	2022 Q4 2023 – 2025+
Drafting and endorsing annotated outlines of chapters and annexes	2022 Q3–2023 Q1
Drafting and endorsing individual chapters and annexes	2023 Q2 – 2024 Q1
Drafting of complete SNA2025 and BPM7 for global consultation and final endorsements by AEG/BOPCOM	2024 Q2 – 2024 Q4
Final approvals by UN Statistical Commission and IMF Statistics Department Director	2025 Q1

- Digital Economy
- Globalization
- Well-Being and Sustainability
- Finance
- Thematic Accounts (Satellite Accounts)
- Communications **NEW!**
 - Assessment framework to measure alignment with the economic accounting statistical standards
 - Terminology and branding of the economic statistical standards
 - Taxonomy for communicating economic statistics releases, products, and product updates

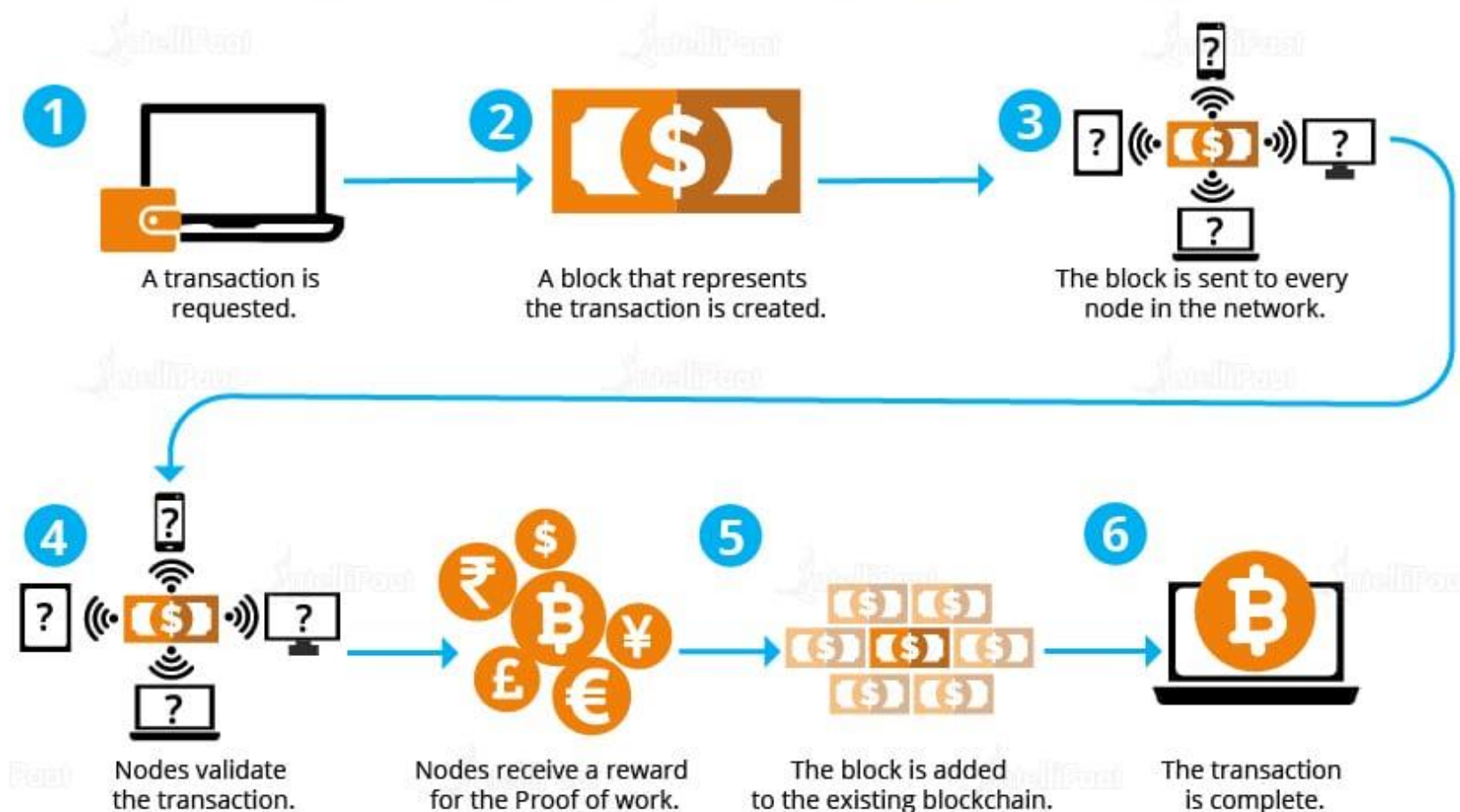
- **Change in boundaries**
 - Data as an asset
 - Recording of depletion of natural resources
- **Proliferation of satellite (“thematic”) accounts / extended modules**
 - Well-being (DHEA, Labor, Education, Human Capital, Health and Social Conditions)
 - Digital SUT, free products
 - GVCs
- **New supplementary (optional) items**
 - Special Purpose Entities; corporate inversions
 - Climate change in external sector statistics (green-labeled bonds in direct investment as a start)
 - Separate class of assets for natural resources
 - Data, AI
- **Clarifications on recording treatment / Definitions / Decision Trees**
 - Economic ownership and recording of intellectual property products
 - Intra-MNE flows; FGPs; fines and penalties; superdividends
 - Valuation of mineral resources; valuation of imports and exports
 - **Cloud computing, non-fungible crypto assets, fungible crypto assets**

Update on the Recording of Fungible Crypto Assets in Macroeconomic Statistics

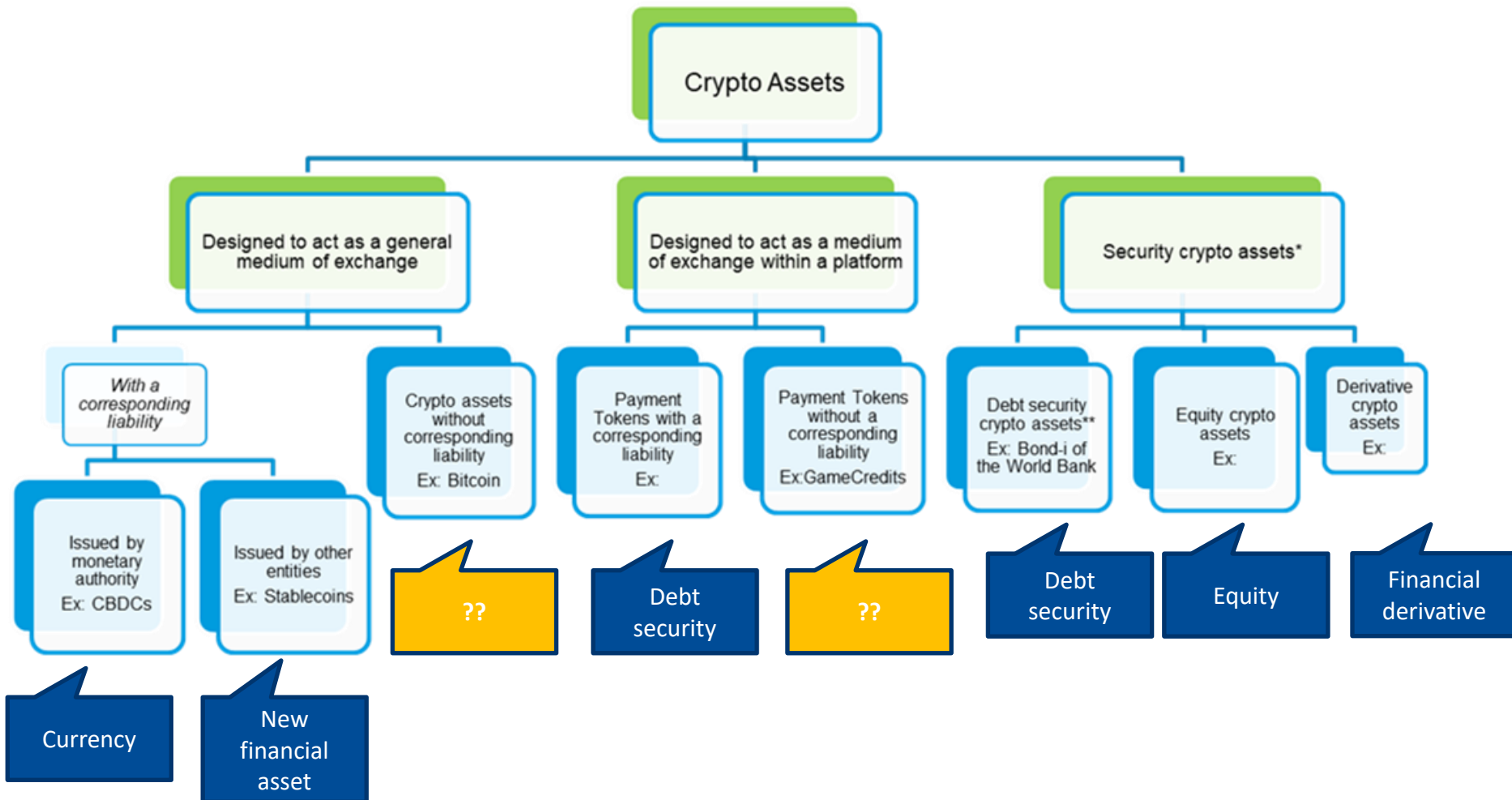
- **Fungible crypto assets** are digital representations of value that rely on cryptography and distributed ledger technology
 - Fungible because they are divisible and not unique
 - We now make the distinction because of the emergence of non-fungible tokens (NFTs), which are addressed in a separate guidance note
- Technology enables two parties to directly transact without the need for a trusted intermediary (e.g., banks)
- Transactions are validated by a network of participants, who are compensated with:
 - Transactions fees
 - Newly minted coin (depending on the blockchain protocol)

- **Protocols** refer to the method of validating transactions on the blockchain network
- **Proof of work:** Sophisticated computing equipment races to solve puzzles and earn the reward of a newly minted coin and transaction fees, e.g., Bitcoin
 - Resource intensive, requires large amounts of electricity and expensive computing equipment
- **Proof of stake:** Participants stake a certain number of coins for a chance to validate a block of transactions, e.g., Ethereum
 - Not resource intensive, requires ownership of a certain number of coins
 - Ethereum recently switched from proof of work to proof of stake

How Do Blockchains Work?



Typology of Fungible Crypto Assets



Source: Zwijnenburg et al., “F.18 The recording of fungible crypto assets in macroeconomic statistics.”

Unresolved Issue:

Crypto Assets Without a Corresponding Liability



- Two types of **crypto assets** without a corresponding liability:
 - Designed to act as a general medium of exchange (CAWLM)
E.g., bitcoin, ether
 - Designed to act as a medium of exchange within a platform or network (CAWLP) *E.g., GameCredits*

- Debate arranged around two questions:
 1. Are these financial or nonfinancial assets?
 2. If they are nonfinancial, are they produced or non-produced?

- Three options:
 1. Produced nonfinancial asset
 2. Non-produced nonfinancial asset
 3. Financial asset

Option 1: Produced Nonfinancial Asset

- Consistent with **counterpart liability criterion** for financial assets (except monetary gold)
- Should only be recorded as financial assets when they qualify as **money**
 - CAWLM are rarely used as a medium of exchange, possibly because of their high volatility
- Mainly act as store of value similar to **valuables** (e.g., fine art, precious metals and minerals)
- **Mineable coins** appear for the first time in the wallet of miners
- Leads to **barter trade** if they are used as medium of exchange

Option 1: Produced Nonfinancial Asset

	Stocks of assets
AN	Nonfinancial assets
AN1	Produced nonfinancial assets
AN11	Fixed assets
AN12	Inventories
AN13	Valuables
	of which: crypto assets designed to act as medium of exchange without a corresponding liability
AN2	Non-produced nonfinancial assets

Option 2: Non-produced Nonfinancial Asset

- Consistent with **counterpart liability criterion** for financial assets (except monetary gold)
- They should only be recorded as financial assets when they qualify as **money**
 - CAWLM are rarely used as a medium of exchange, possibly because of their high volatility
- Miners/validators are providing **validation services**; remuneration via new coins is way to keep fees low and bring new coins into circulation
- Leads to **barter trade** if they are used as medium of exchange

Option 2: Non-produced Nonfinancial Asset

	Stocks of assets
AN	Nonfinancial assets
AN1	Produced nonfinancial assets
AN2	Non-produced nonfinancial assets
AN21	Natural resources
AN22	Contracts, leases and licences
AN23	Goodwill and marketing assets
AN24	Non-produced valuables: Crypto assets designed to act as medium of exchange without a corresponding liability

Option 3: Financial Assets

- Do not meet the definition of nonfinancial assets
- Not all financial assets represent a claim, e.g., monetary gold and (arguably) fiat currency
- These crypto assets are **designed** to act as medium of exchange
- But their main role is currently as an investment, so they should be classified in a **separate instrument category**
- Could lead to inconsistencies between world-wide financial assets and liabilities since CAWLM do not have a corresponding liability
- For users, this approach means **consistency** with recording for all other fungible crypto assets as financial assets

Option 3: Financial Assets

	Stocks of assets
AF	Financial assets
AF1	Monetary gold and SDRs
AF2	Currency and deposits
	of which: Central Bank Digital Currencies (CBDCs)
AF3	Debt securities
	of which: debt security crypto assets
AF4	Loans
AF5	Equity and investment fund shares
	of which: equity crypto assets
AF6	Insurance, pension and standardized guarantee schemes
AF7	Financial derivatives and employee stock options
	of which: derivative crypto assets
AF8	Crypto assets designed to act as medium of exchange
	AF81 with a corresponding liability e.g., stablecoins
	AF82 without a corresponding liability e.g., bitcoins
AF9	Other accounts receivable/payable

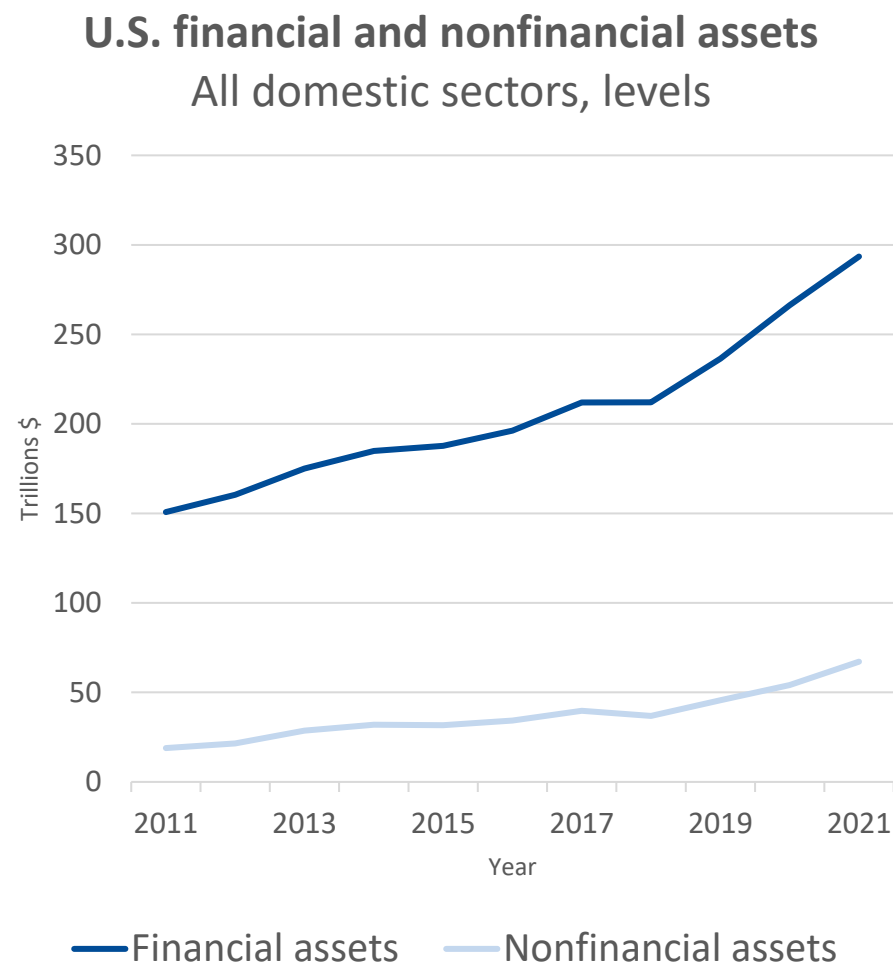
- Most reflective of **reality**: CAWLM play a role in financial markets and derive their value from the belief that they will become a medium of exchange in the future
- Monetary gold is already an exception to the counterpart liability criterion for financial assets—introducing another exception for CAWLM **would not be unreasonably disruptive** to the SNA or BPM

- Can address concerns about **inconsistencies** between world-wide financial assets and liabilities (and thus interpretation of some macroeconomic statistics)
 - Any differences between financial assets and liabilities can be addressed with the same balancing item for nonfinancial assets in the SNA, i.e., net worth
 - Countries can record “**nonfinancial net worth**” and “**financial net worth**” so that differences can be easily understood
- If it must be nonfinancial, then it should be **non-produced**, as this reflects the ways through which CAWLM are created and enter circulation

- The Advisory Expert Group on National Accounts (AEG) and the Balance of Payments Committee (BOPCOM) met last month
- Members were **equally split** between the financial asset option and nonfinancial options
- The members agreed that all options had advantages and disadvantages, so whatever classification is decided, CAWLM and CAWLP should be recorded in a **new, separate category**
- The members agreed to **consult users**
 - **Tables** will show how data will appear under each recording option
 - User views will **inform future decisions** by the AEG and BOPCOM
- A decision will likely be made **in the course of 2023**

How Might Crypto Assets Affect BEA's Statistics?

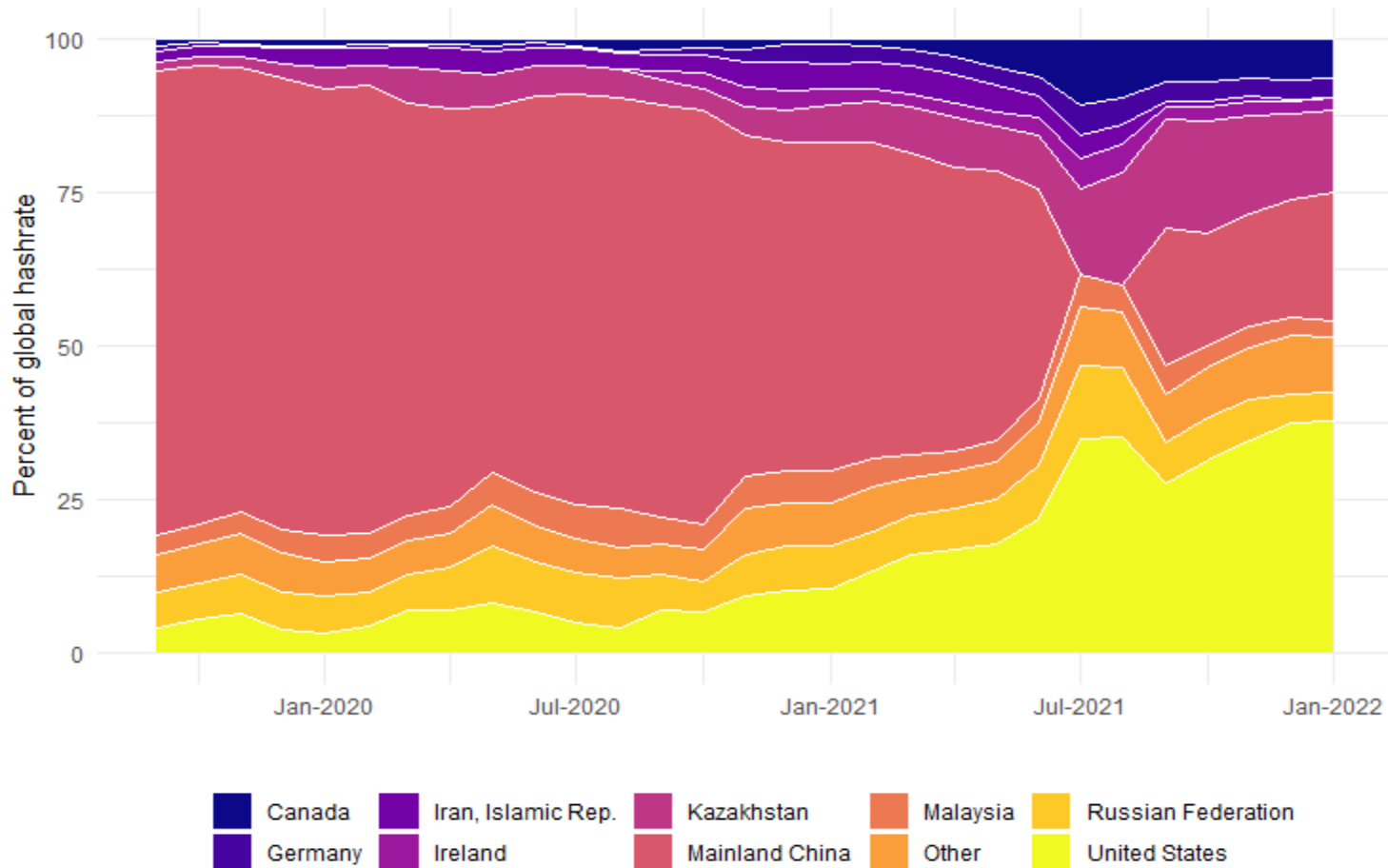
- The “market capitalization” of all crypto assets (including CAWLM, CAWLP, and stablecoins) is currently about \$1 trillion (CoinMarketCap)
- The U.S. share *might, possibly*, be around **\$160 billion**
 - Approximated by U.S. share of global GDP (15.78% in 2022)
- Bitcoin would be about **0.05%** of current U.S. financial assets and **0.24%** of nonfinancial assets
- Does not include some crypto-related economic activities like crypto exchange services



Source: Board of Governors of the Federal Reserve System, <https://fred.stlouisfed.org/>

United States' Share of Bitcoin Mining Increased in 2021

Estimated shares of bitcoin mining capacity by country



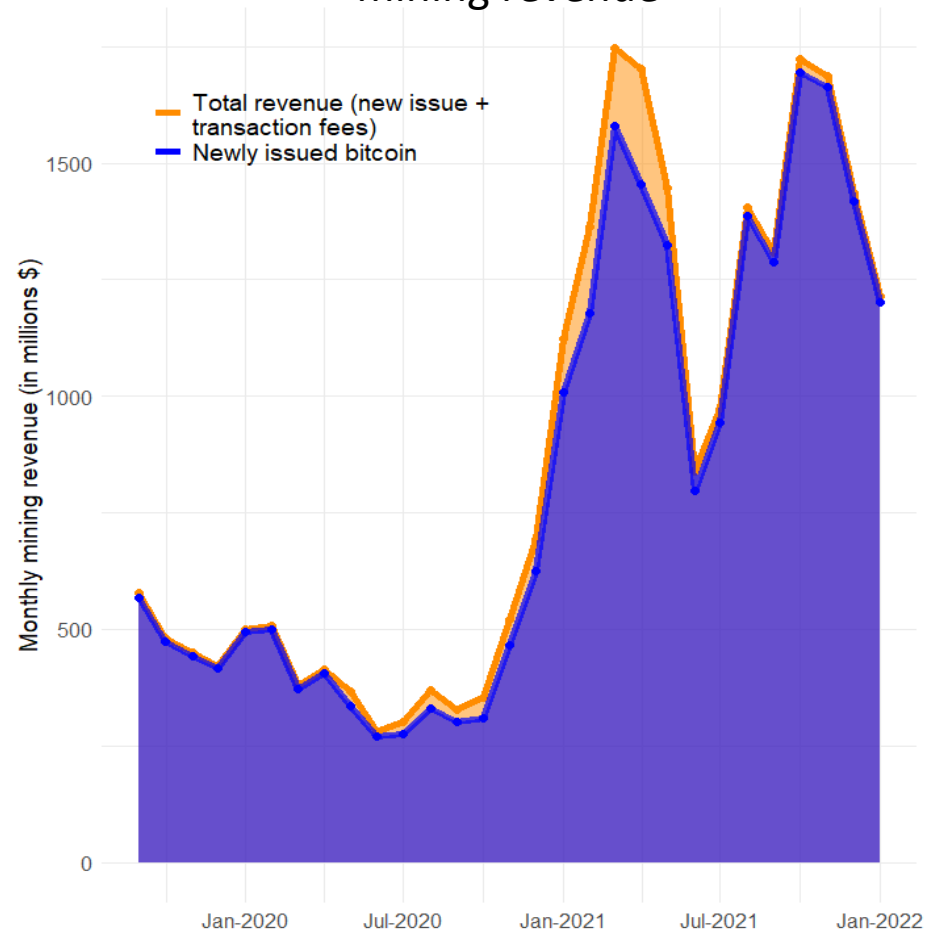
Hashrates approximate computing power on the bitcoin network and can approximate a country's share of newly minted bitcoin and transaction fees.

Source: Cambridge Centre for Alternative Finance

Bitcoin Mining Revenue in the United States

- Data used:
 - Historical bitcoin data on miner's revenue from the public Bitcoin blockchain (Messari)
 - Estimated monthly country shares of bitcoin mining (see previous slide)
- Total estimated revenue was **\$5 billion in 2020**; \$4.7 billion was from newly minted coins
- Increased to about **\$16.7 billion in 2021**; \$15.7 billion was from newly minted coins
- Miners' costs include electricity consumption and computing equipment

Estimated monthly U.S. bitcoin mining revenue



Option 1 **Produced nonfinancial assets**

- Mining activity contributes to capital formation
- Introduces volatility into nonfinancial assets
- Would be consistent with current IMF policy

Option 2 **Non-produced nonfinancial assets**

- Mining activity adds to consumption/trade in services
- Introduces volatility into nonfinancial assets

Option 3 **Financial assets**

- Mining activity adds to consumption/trade in services
- Consistent with current Financial Accounting Standards Board guidance for companies in reporting value of crypto asset holdings

Discussion Questions



- Does the Advisory Committee agree with BEA's current preference for the financial asset option?
- Does the Committee agree BEA should continue exploring data sources for the ownership, creation, and flows of crypto assets?
- Does the Committee agree crypto assets are important to capture in BEA's statistics? What sort of statistics would be important to users?
- Thoughts later on?

Email paul.farello@bea.gov and allison.derrick@bea.gov

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