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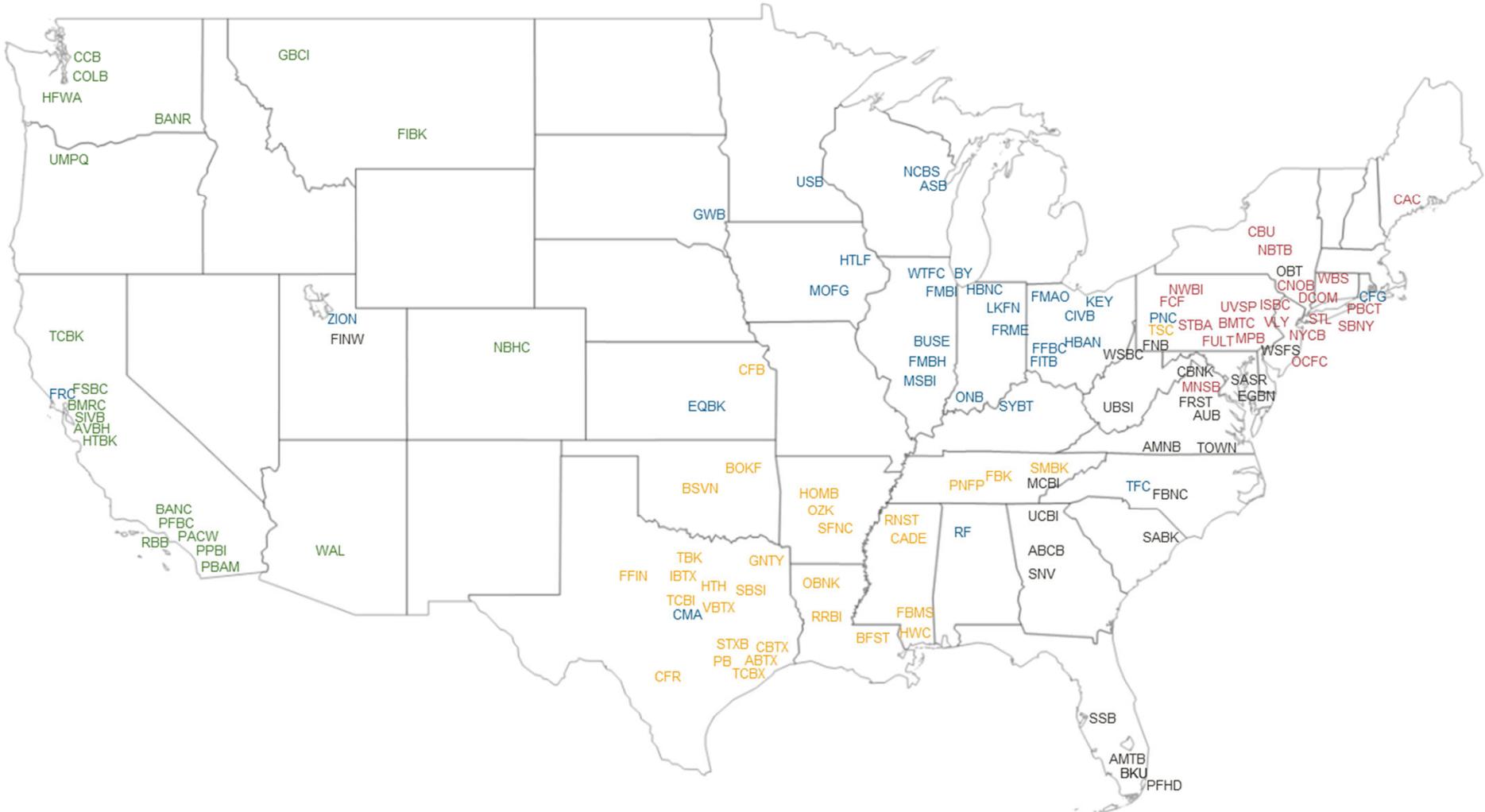


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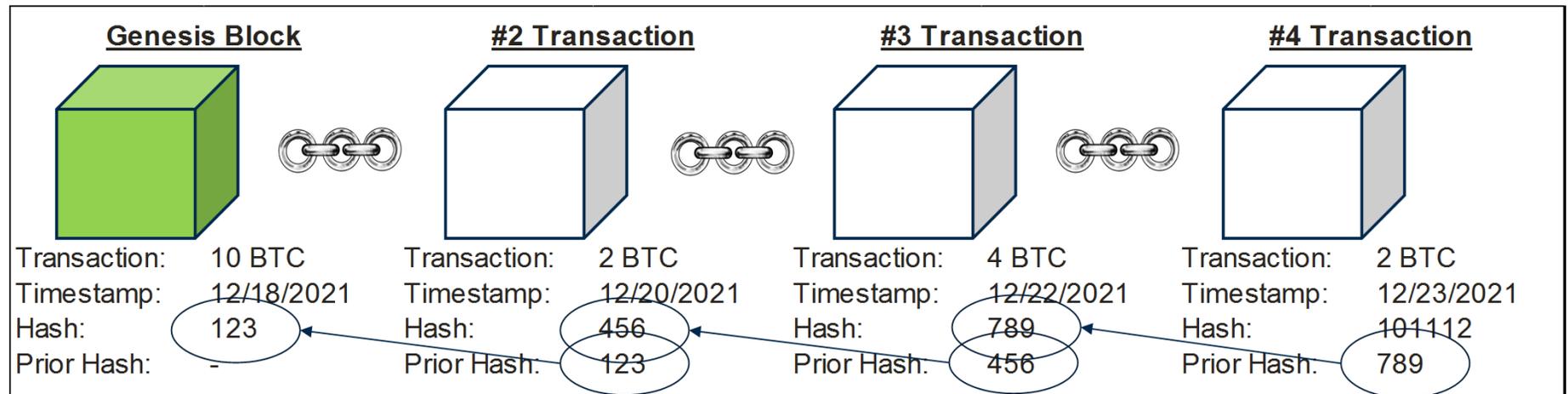
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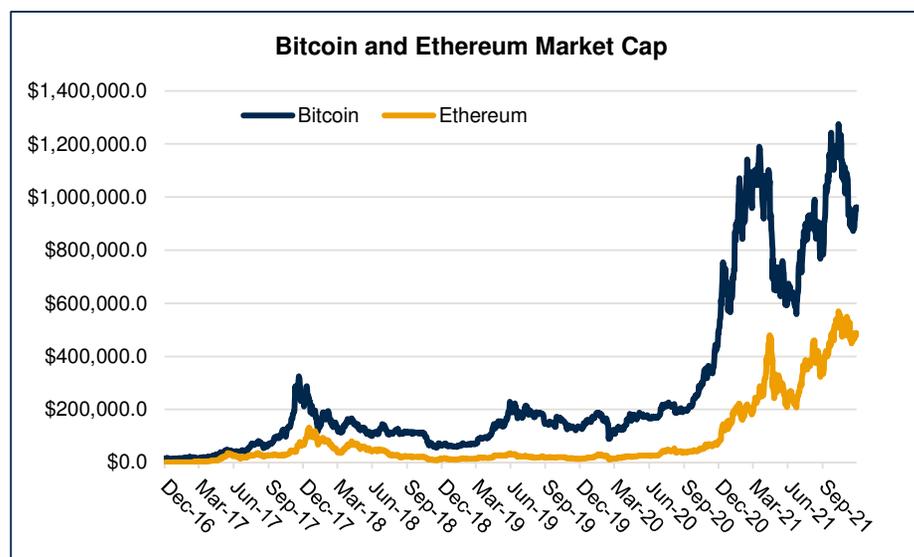
Blockchain

- ❑ **Blockchain** – A blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a network.
 - ❑ The network consists of users (those conducting transactions), regulators (those overseeing transactions within the network), operators (those who have permission to manage the blockchain), and nodes (those verifying transactions and creating blocks).
 - ❑ Each transaction has the data of the transaction, hash (or a unique identifier), hash of the previous block, and are ordered/maintained based on timestamps. Each transaction is agreed on by a consensus of nodes and represents a “block”; linked to all past transactions. As the number of transactions increase, so does the blockchain. The longer the blockchain, the more secure, as longer blockchains are a proxy for CPU power (proof of work) and therefore represent barriers to being hacked. In addition, the chain/ledger is distributed, increasing protection.
 - ❑ Tradable assets can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding). Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.
 - ❑ **Examples:** Ethereum, Hyperledger Fabric, Ripple, Quorum, Provenance
 - ❑ **Primary Purpose:** Exchange and record keeping.



Cryptocurrency – “Bitcoin is Not Blockchain”

- ❑ **Cryptocurrency** – A cryptocurrency is a form of digital asset based on a network that is distributed across a large number of computers. This decentralized structure allows them to exist outside the control of governments and central authorities. A key feature is that they are not issued by any central government, are limited in supply, and have no “intrinsic value” other than what’s assigned to it by the market. Cryptocurrencies exceeded a combined market value of \$3 trillion in November, led by Bitcoin (\$925 billion) and Ethereum (\$471 billion).
 - ❑ **Examples:** Bitcoin, Ethereum, Binance Coin, Solana
 - ❑ **Primary Purpose:** Investment/Payments. Acts as a decentralized currency with no central gov’t risk (hedge against sovereign default), inflation hedge (Bitcoin for some is known as “digital gold”), and payments.
- ❑ **Bitcoin is Not Blockchain** – A key misconception is that Bitcoin and Blockchain are synonymous. This is not true. Bitcoin is a cryptocurrency whose records are kept on a blockchain ledger. Many have hypothesized on the uses for blockchain ledger technology, which “. can be programmed to record virtually everything of value and importance to humankind: birth and death certificates, marriage licenses, deeds and titles of ownership, educational degrees, financial accounts, medical procedures, insurance claims... and anything else that can be expressed in code” (*Blockchain Revolution*). These use cases are entirely separate from Bitcoin, whose uses are similar to gold (some call it digital gold) in terms of inflation hedge (store of value) and medium of exchange. Balaji Srinivasan (former CTO of Coinbase) said recently that “Inflation, the idea is this, Bitcoin is short-term volatile but shows immense long-term appreciation. The US dollar is actually the opposite. It is short-term, relatively stable...but over the long term, you can see it has had a huge drop in purchasing power.”



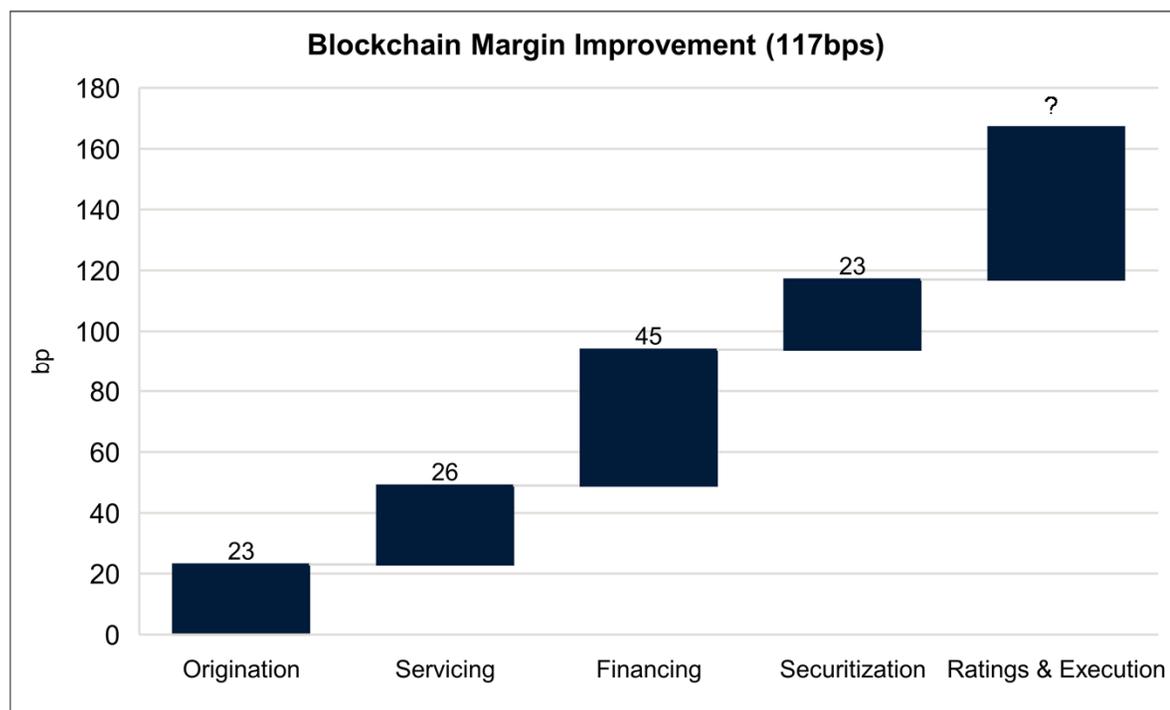
Blockchain Use Cases – Real World Examples

❑ Figure Technologies

❑ **Blockchain-enabled Home Equity and Residential Loans** - Figure originates residential and home equity loans on the blockchain with funding in as little as five days. “Figure uses blockchain to record, share and exchange the data about your loan. Without blockchain, this was all done manually. A.k.a. by people, who sometimes make mistakes. Other people have to find those mistakes, and correct them. Blockchain ensures your loan is recorded and stored accurately creating a more efficient and seamless process.” (*Figure website content*)

❑ **Loan Marketplace** – Figure also offers the ability to buy/sell loans on the Provenance blockchain.

❑ **Securitizations** – In March 2020, Figure issued the first securitization backed by “loans originated, serviced, financed and sold on the blockchain” (*Figure Technologies press release*). The securitization was also completed at a reduced cost vs. traditional securitization paths with over 100bp of cost savings.



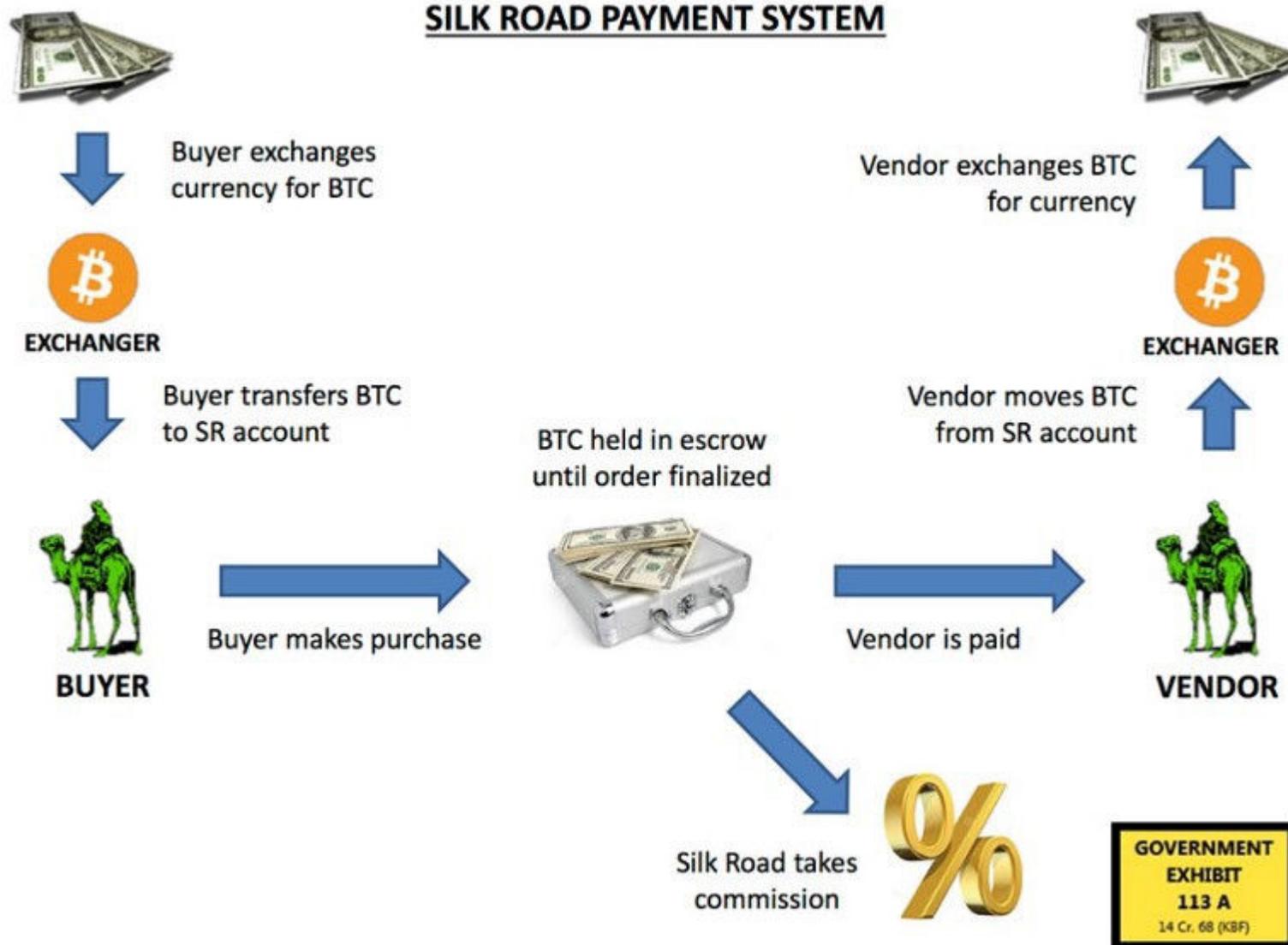
- Origination cost saves from reducing third party expenses and redundant quality control measures.
- Servicing cost saves from automated cash transfers/loan amortization and servicing overhead.
- Financing cost saves from reduced operational expense for originator (less shipping expenses) and warehouse provider, lower auditing costs (smart contracts handle loan auditing)
- Securitization cost saves from less need to do due diligence on data and less third party expenses (holding documents and fund disbursement).

From Stigma to Mainstream

- ❑ **Cryptocurrency Stigma** – In the early days of crypto (2009-2015), headlines often purported the asset class was used primarily for illicit, illegal and fraudulent activities. Lael Brainard said as recently as December 2019 “One study estimated that more than a quarter of bitcoin users and roughly half of bitcoin transactions, for example, are associated with illegal activity.” A few standout examples as to why this stigma is attached:
 - ❑ **Mt. Gox** – Launched in 2010, Mt. Gox became the largest bitcoin exchange, handling +70% of transactions by 2013-2014. In 2014 however, the exchange collapsed after ~750,000 bitcoins were lost in a hacking incident leading to the exchange filing for bankruptcy.
 - ❑ **Silk Road** – An online platform known for the sale of illegal drugs and services (everything from drugs and guns to hitmen, per the FBI) in exchange for bitcoin from 2011 until being shut down in 2013. Per Coindesk, Silk Road handled \$1.2 billion worth of illegal goods and services. Silk Road was shut down in 2014 with 144,000 seized Bitcoins auctioned off thereafter.
 - ❑ **Mueller Report** – In the 2018 indictment reports (link [here](#)), Mueller outlined that “Although the Conspirators caused transactions to be conducted in a variety of currencies, including U.S. dollars, they principally used bitcoin when purchasing servers, registering domains, and otherwise making payments in furtherance of hacking activity...The use of bitcoin allowed the Conspirators to avoid direct relationships with traditional financial institutions, allowing them to evade greater scrutiny of their identities and sources of funds... All bitcoin transactions are added to a public ledger called the Blockchain, but the Blockchain identifies the parties to each transaction only by alpha-numeric identifiers known as bitcoin addresses. To further avoid creating a centralized paper trail of all of their purchases, the Conspirators purchased infrastructure using hundreds of different email accounts, in some cases using a new account for each purchase... In addition to mining bitcoin, the Conspirators acquired bitcoin through a variety of means designed to obscure the origin of the funds. This included purchasing bitcoin through peer-to-peer exchanges, moving funds through other digital currencies, and using pre-paid cards. They also enlisted the assistance of one or more third-party exchangers who facilitated layered transactions through digital currency exchange platforms providing heightened anonymity.”

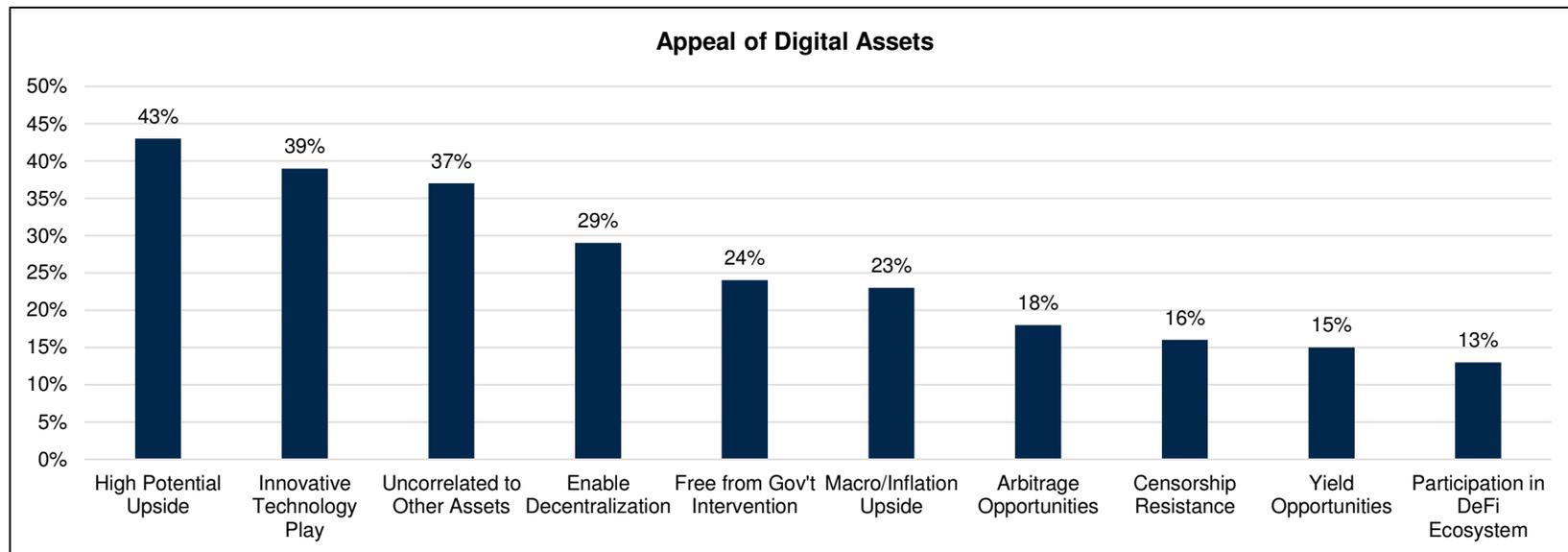
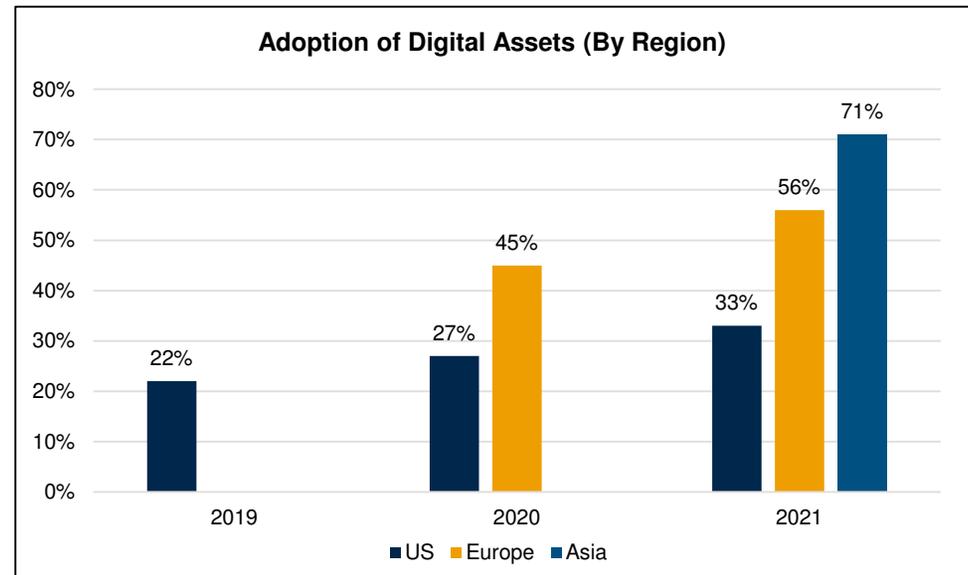


Silk Road Payment System



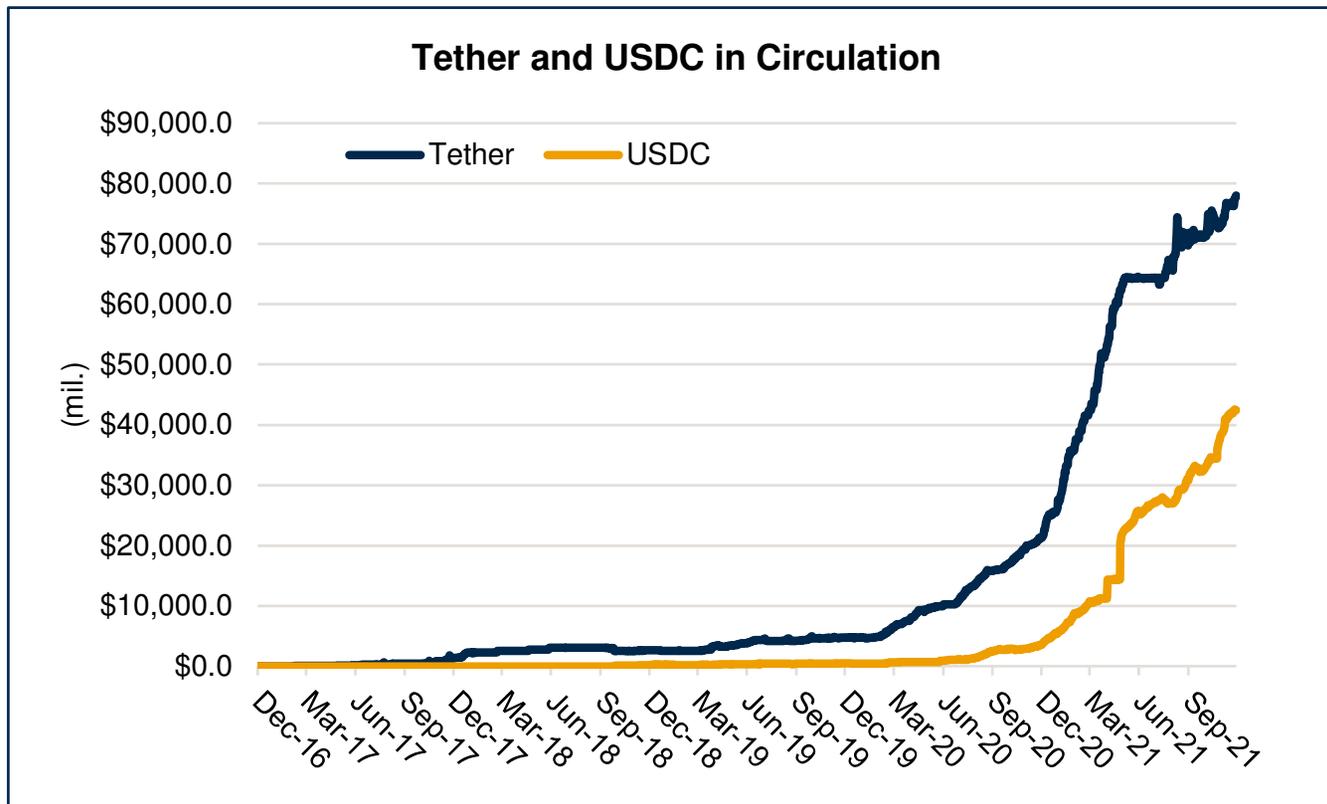
From Stigma to Mainstream

- ❑ Cryptocurrency Going Mainstream** – More recently however, it's been recorded that illicit transactions account for less than 1% of cryptocurrency transactions (messari.io). In addition, per a recent Fidelity study, 52% of investors are invested in digital assets with 70% of investors surveyed having a neutral-to-positive perception of digital assets and 8/10 investors indicating they felt digital assets have a place in a portfolio.
- ❑ Future purchase intent trends** showcase likely continued adoption with 71% of U.S. and European investors indicating intent to buy digital assets in the future vs. 59% last year. Among the highest reasons to own digital assets, investors are choosing: 1.) high potential upside 2.) innovative technology and 3.) uncorrelated asset.



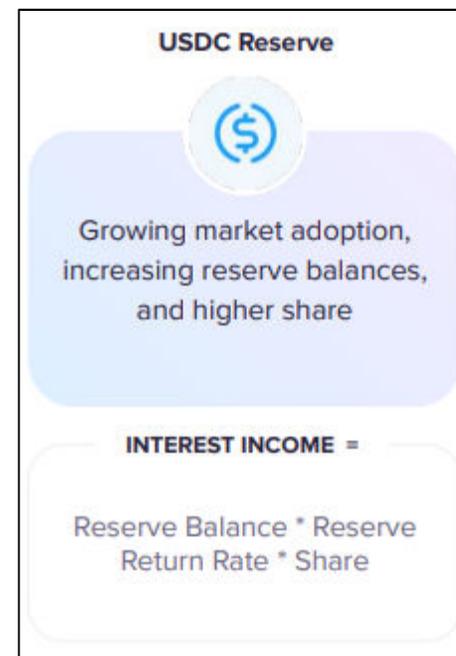
Stablecoins

- ❑ **Stablecoin** – A class of cryptocurrencies that attempt to peg their value to some external reference, like the U.S. Dollar or to a commodity price such as gold. The total stablecoin market is now valued at +\$150 billion, led by Tether, USD Coin (USDC), and Binance USD.
 - ❑ The two primary stablecoins are Tether and USDC (issued by Circle) with ~\$120 billion in circulation.
 - ❑ The most well known “stablecoins” are not bank issued and are under the microscope following the President’s Working Group paper noting that “To address risks to stablecoin users and guard against stablecoin runs, legislation should require stablecoin issuers to be insured depository institutions, which are subject to appropriate supervision and regulation, at the depository institution and the holding company level.” (*Report on Stablecoins (Nov 2021): US Treasury*)
- ❑ **Examples:** USDC, Tether, TrueUSD, USDP
- ❑ **Primary Purpose:** Payments and facilitating trading, lending and borrowing of other digital assets



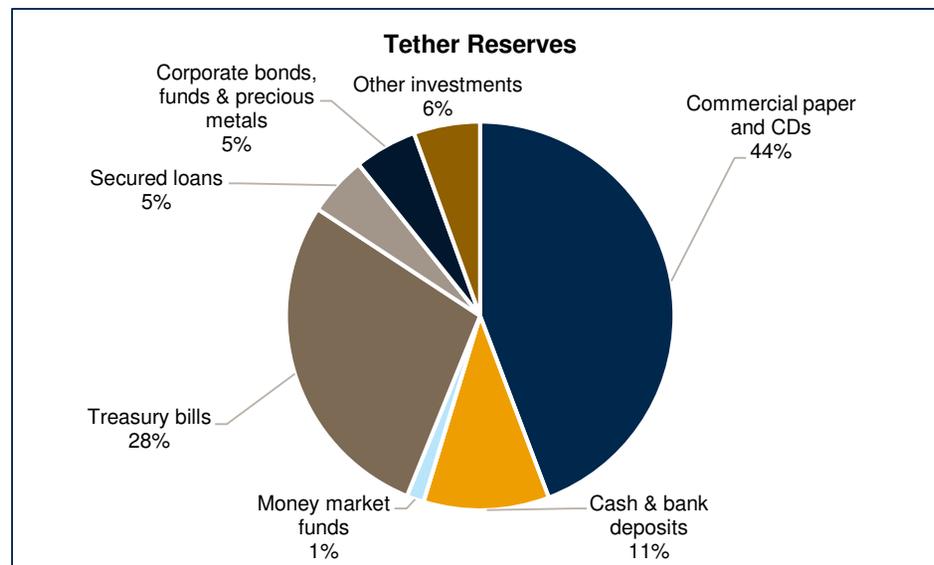
Stablecoins and Banks

- ❑ **Banks Accepting Stablecoin Reserve Deposits** - Recently, we've seen a handful of banks announce partnerships with stablecoin issuers, where the bank acts as the depository for stablecoin reserve deposits. Examples include SBNY announcing its partnership with Circle (USDC) and TrueUSD, and Silvergate announcing its partnership with Facebook's Diem.
- ❑ **Be Aware of the Risks – Deposit Betas** - For banks considering acting as a reserve bank for stablecoins, we think these partnerships could be a double-edged sword. On the one hand, given the size of the stablecoin market, now +\$100 billion among just the top three players, the ability to tap into a new and fast-growing source of deposits may be enticing. However, we think the devil is in the details on both sides of the balance sheet. For instance, for banks looking to benefit by bolstering their deposit base, we have concerns with how sensitive stablecoin related deposits may be to interest rate fluctuations. Why? Take Signature's partner, Circle, the issuer of the second largest stablecoin, USDC. In a recent presentation, the company highlighted that a portion of their anticipated revenue will come from interest income on reserve deposits, implying above average deposit betas.
- ❑ **Be Aware of the Risks – Limited Yield** - On the opposite side of the balance sheet, we are seeing a growing trend of stablecoins mandating reserve deposits be invested in cash and/or safe, highly liquid assets. Specifically, below is from Centre, a consortium founded by Circle and Coinbase to develop the USDC stablecoin:
 - ❑ "Centre requires that Centre-approved stablecoins be issued by regulated and licensed financial institutions that maintain, at a minimum, full reserves of assets denominated in instruments of the equivalent fiat currency, held in segregated accounts for the benefit of USDC holders... Circle reserves expanded beyond cash and cash equivalents in May, 2021, and the company provided a more detailed breakdown of reserve composition in July, adding clarity and insight into the funds backing USDC. Mindful of community sentiment, our commitment to trust and transparency, and an evolving regulatory landscape, Circle, with the support of Centre and Coinbase, has announced that it will now hold the USDC reserve entirely in cash and short duration US Treasuries. These changes are being implemented expeditiously and will be reflected in future attestations by Grant Thornton." (*Circle website content*)



Stablecoins - Tether

- ❑ **Tether vs. USDC** – While Circle has welcomed transparency in terms of how their reserve deposits are held (posting monthly attestations by Grant Thornton and mandating that reserve deposits be held in cash & short-term treasuries by the banks), Tether has been more reluctant.
- ❑ Despite Tether’s market position as the #1 stablecoin with \$78 billion of stablecoin in circulation, we know relatively little about how/where these dollars are invested. Per Moore Caymen (an independent accounting firm), roughly 44% of Tether’s reserve dollars are in commercial paper and CDs, followed by 28% in Treasury bills and 10% in cash/bank deposits as of September 30th, 2021.
- ❑ Questions remain around the types of entities the commercial paper is held against, what countries the money market funds are held in, whether reserve deposits are tied to digital assets, and to what countries, overall, reserve deposits are exposed to (media articles suggest some consternation around Evergrande or China-related exposures).
- ❑ The key underlying concern with the vague disclosures is “that the coin, used to facilitate trades in the crypto market, wasn’t backed one-to-one with dollars as claimed.” (Bloomberg)
- ❑ In our view, one driving force behind the President’s Working Group paper on stablecoin is the size of the stablecoin market (+\$100 billion) coupled with the unregulated nature and wide range of disclosures (more on this later).



President's Working Group Paper

- ❑ **Key Takeaways** – In November 2021, the President's Working Group published a report on stablecoin, outlining the benefits, risks and potential solutions.
- ❑ **Benefits** – Stablecoins have the ability to serve as an effective payments system. “If well-designed and appropriately regulated, stablecoins could support faster, more efficient, and more inclusive payment options.” (*Report on Stablecoins (Nov 2021): US Treasury*)
- ❑ **Notable Risks**
 - ❑ **Loss of Value and Subject to Runs** – This is of particular concern if reserve assets prove illiquid and funds are not redeemable at par.
 - ❑ **Illicit Finance Risk - BSA/AML/KYC/CFT (countering financing of terrorism)** – “Stablecoin participants and arrangements must meet all applicable anti-money laundering and countering the financing of terrorism (AML/CFT) and sanctions obligations before bringing products to market.” (*Report on Stablecoins (Nov 2021): US Treasury*)
 - ❑ **Systemic Risks** – Rapid adoption, scalability and concentration of economic power could raise additional issues related to systemic risks.
- ❑ **Solution** – Limit stablecoin issuance, and related activities of redemption and maintenance of reserve assets, to entities that are insured depository institutions. Legislation should also ensure that supervisors have authority to implement standards to promote interoperability among stablecoins.

President's Working Group on Financial Markets,
the Federal Deposit Insurance Corporation,
and the Office of the Comptroller of the Currency

[Link here](#)

Digital Coins

- ❑ **Digital Coins** – Digital representation of deposits/cash, typically single use in nature, that are usually limited to the internal use in closed loop payment systems. These are very similar to stablecoins but work on a closed loop system (customer to customer) vs. Tether and USDC which can be used in an open-loop system.
 - ❑ **Examples** - Signet, CBIT, JPM Coin
 - ❑ **Primary Purpose** – Real-time payments



Banks & the Blockchain

❑ **Growing adoption and usage of cryptocurrency has created the opportunity for banks to be involved. We see two distinct paths:**

- ❑ Path 1.) Act as a traditional depository (take on deposits from cryptocurrency-focused accounts)
- ❑ Path 2.) Custodying cryptocurrency-related assets

❑ **Path 1.) Servicing Crypto as a traditional depository.** The current landscape of traditional depositories servicing the crypto industry, headlined by the two big players, SBNY (+\$20 billion in on-balance sheet crypto deposits) and SI (\$11.7 billion of crypto deposits), is evolving. Newcomers include PVBC and CUBI, explicitly identifying the crypto-industry as one they too can service, and both have real time payments capabilities, as well as MCB. Given the wealth of low-cost deposits SBNY and SI have been able to accumulate in the digital asset vertical, we expect the number of banks offering depository services and real time payments to this ecosystem to expand even beyond these five. Of note, NYCB recently announced a strategic partnership with Figure Technologies with an aim to leverage blockchain to support financial inclusion and support “a faster and less expensive payments system” and has subsequently conducted a blockchain-enabled secondary trade of digital shares of Figure Technologies. In addition, NBHC in August announced their collaboration with Finstro Holdings and Figure Technologies “on a range of blockchain related initiatives to drive innovation, speed and convenience for payments, investments and other financial transactions” (*NBHC press release*). Whether these two banks take faster, blockchain enabled payments to the crypto-ecosystem remains to be seen, but given it’s a key aspect to those already servicing the industry, we wouldn’t be surprised.

❑ **Path 2.) Custodying Crypto – National Trust Bank Charters and Wyoming SPDI Charters** – Besides those noted above looking to service crypto through deposit taking, there are other “banks” looking to service the industry from a custody standpoint with charters or licensures from the OCC, the State of Wyoming and/or the New York Department of Financial Services. While these institutions were given “bank” charters, or licenses (if from the NYDFS), the product set is more akin to a State Street or Northern Trust vs. a traditional commercial bank with revenues stemming mostly from custody, exchange, and trading vs. spread lending.

Crypto Deposit Breakdown

figures in mil. unless otherwise noted

Company Name	Ticker	Total Deposits	Digital Currency-related Deposits	
			Total Deposits	% of Total Deposits
Silergate Capital Corporation	SI	\$11,662.5	\$11,468.0	98.3%
Signature Bank	SBNY	\$95,566.3	\$23,000.0	24.1%
Customers Bancorp, Inc.	CUBI	\$16,971.0	\$1,500.0	8.8%
Metropolitan Bank Holding Corp.	MCB	\$5,457.0	\$368.0	6.7%
Provident Bancorp, Inc.	PVBC	\$1,361.0	\$63.2	4.6%
Mean		\$26,203.6		29%
Median		\$11,662.5		9%

Crypto and Digital Asset Bank Charter Applications

Company	City, State	Bank Charter
Conditional Approval		
Paxos National Trust	New York, NY	OCC
Anchorage Digital Bank NA	Sioux Falls, SD	OCC
Protego National Trust	Olympia, WA	OCC
Full Approval		
Avanti Bank & Trust	Cheyenne, WY	State (SPDI)
Kraken Bank	Cheyenne, WY	State (SPDI)
Wyoming Deposit & Transfer	Cheyenne, WY	State (SPDI)

Source: Company data, S&P Global, OCC.gov

Off the Shelf – How to Become Involved

- ❑ **Real Time Payments** – Most, if not all the banks, servicing the crypto ecosystem as a traditional depository are also offering their customers real time payments. This is mostly being done in a “closed loop” system, although there are signs of interbank payments with Tassat showcasing a demo in December between WAL and CCB. While Silvergate’s SEN network is proprietary, Tassat is a third party provider that is onboarding new clients. In addition, Figure Technologies is offering a similar product.
- ❑ **Custody** – There are several non-traditional banks offering custody service for crypto customers including Paxos National Trust, Anchorage Digital, Protego National Trust, Avanti Bank & Trust, Kraken Bank and Wyoming Deposit & Transfer. However, we’re seeing more traditional depositories use third party players to offer similar custody solutions including NYDIG and Fireblocks. NYDIG’s product allows banks/credit unions to offer their customers the ability to buy and hold Bitcoin through their cold storage solutions. NYDIG bank-related partners include USB, MVBF, NCR, FIS, and FISV. Fireblocks, on the other hand, offers hot wallet custody solutions to institutional investors and banks, including BNY Mellon.

Real Time Payment Providers



Crypto Custody Solutions



Off the Shelf – How to Become Involved – Custody Example

- Custody and Profitability** – Anchorage is the only recent crypto-focused bank (OCC chartered or SPDI) to have a publicly available call report. We think the summary model to the right showcases a balance sheet-light model (no loans or deposits), heavily focused on fees from fiduciary activities, and custody and safekeeping account growth (said another way, growing crypto-related assets under custody). We are impressed by the ROA/ROTCE thus far and find the 43bp margin on custody accounts notable, and we are eager to compare these metrics to others crypto-focused institutions once/if call reports are filed. For reference, the median margin on fiduciary accounts for the industry over the last four quarters has been about 55bp.

Anchorage Digital Bank National Association			
<i>Call report summary, figures in \$000s</i>			
Summary Income Statement	1Q21	2Q21	3Q21
Net Interest Income	3	2	2
Provisions for Credit Losses	0	0	0
Nil less LLP	3	2	2
Income from fiduciary activities	4,554	7,108	6,381
Other noninterest income	94	525	173
Total Noninterest Income	4,648	7,633	6,554
Total Noninterest Expense	1,411	4,586	2,567
Net Income before Income Taxes & Discontinued Ops	3,240	3,049	3,989
Income Taxes	0	0	0
Net Income	3,240	3,049	3,989
Summary Balance Sheet	1Q21	2Q21	3Q21
Total Cash & Bal Due Dep Inst	13,351	14,136	17,964
Total Securities	0	0	0
Tot Fed Funds & Reverse Repos	0	0	0
Loans & Leases Held for Sale	0	0	0
Total Loans & Leases (Excl HFS)	0	0	0
Total Reserves	0	0	0
Net Loans & Leases (Excl HFS)	0	0	0
Total Trading Assets	0	0	0
Premises & Fixed Assets	0	0	0
Total OREO	0	0	0
Invest in Unconsolidated Subsid	0	0	0
Direct and Indirect Inv in Real Estate Ventures	0	0	0
Total Intangible Assets	0	0	0
Total Other Assets	4,362	3,293	3,941
Total Assets	17,713	17,429	21,905
Total Deposits (Incl Dom & For)	0	0	0
Total Fed Funds & Repos	0	0	0
Total Trading Liabilities	0	0	0
Total Other Borrowed Money	0	0	0
Subordinated Notes & Debentures	0	0	0
Oth Liabilities (Excl Min Int)	4,094	1,105	1,493
Tot Liabilities (Excl Min Int)	4,094	1,105	1,493
Total Equity	13,619	16,324	20,412
Balance	0	0	0
Custody and safekeeping accounts	NR	6,613,860	NR
Summary Metrics	1Q21	2Q21	3Q21
ROAA	73.2%	70.0%	72.8%
ROTCE	95.2%	74.7%	78.2%
Efficiency	30.3%	60.1%	39.2%
Margin on Custody/safekeeping accounts	-	0.43%	-

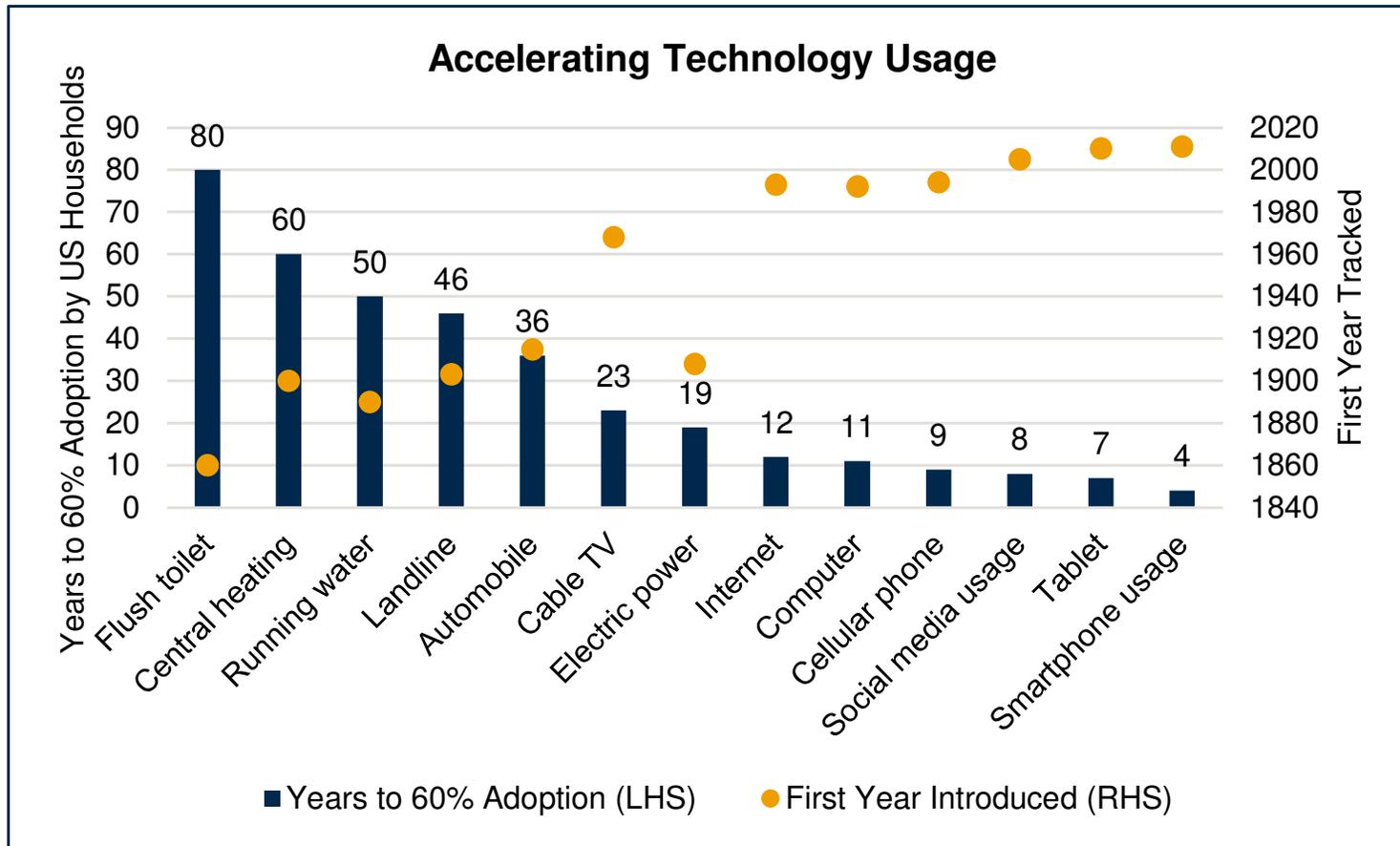
Source: FFIEC.gov

Off the Shelf – How to Become Involved – RTP Interbank Networks

- ❑ **Interbank Networks – USDF Consortium and the Tassat’s Interbank Network** - We’re keeping a close eye on two companies pushing towards creating a broader network of banks sharing stablecoins/digital markers and allowing for real-time payments across depositories. On the one hand, we have Figure Technologies and the USDF Consortium; creating “a syndicate of banks being organized in accordance with anti-trust law, by JAM FINTOP, and the Provenance Blockchain Foundation, that will operate under a common set of compliance standards to engage customers and mint USDF digital markers for use in a broad variety of DeFi transactions” (*NYCB press release*) – allowing for the ability for RTP across bank institutions.
- ❑ On the other, Tassat is working on a similar network called “The Digital Interbank Network” or “The Network” for short. On their site ([here](#)), Tassat reported that recently the company held a demonstration showcasing “an instantaneous real-time transfer of Digital Dollars between two banks using blockchain technology” (*Interbank Network press release*). The two participating banks included WAL and CCB (both covered by Andrew Terrell).
- ❑ Tassat’s Digital Bank Network is slated to go live in 2022 and “will be owned and governed by member banks, enabling member banks to execute secure, instantaneous real-time payments and other banking services 24 hours a day and 365 days a year” (*Tassat press release*). Tassat, to date, has officially announced partnerships with SBNY, CUBI, and WAL, however given CCB’s involvement in the demonstration, we wouldn’t be surprised if they aren’t far behind (see demo [here](#)). How widely adopted these networks will be remains to be seen, but we think it is worth watching Tassat and Figure, two first-movers in this race, in our view, work towards bank interoperability of stablecoin/digital markers.

Why This Matters to You - Technology Adoption Accelerating

- ❑ **US Technology Adoption Accelerating** – A continuing theme is that US households continue to adopt new technologies at an accelerating rate. Below we showcase that it took less than 10 years for more than 60% of US households to adopt the smartphone, tablets, social media and the cellphone, vs. +45 years for the landline, +35 years for cars and ~50 years for running water. As evidenced by the Fidelity study noted previously, it appears US investors are on the fast track to adopting/investing in crypto currency.



Why This Matters to You – Performance of Banks Involved

- Performance of Banks Involved** - Over the last three years, banks involved in the digital asset space (some more recent than others) have outperformed. In addition, these banks currently trade at premium P/E and P/TBV ratios vs. the NASDAQ Bank Index and KRE Regional Bank Index. Per our coverage of SBNY, we believe outperformance is tied to some combination of growth in areas of niche expertise that is not dependent on the shape of the yield curve. Since 2018, SBNY has managed to grow digital asset deposits by \$23 billion, now representing 24% of total deposits.

Crypto Deposit Breakdown				
<i>figures in mil. unless otherwise noted</i>				
Company Name	Ticker	Total Deposits	Digital Currency-related Deposits	% of Total Deposits
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Customers Bancorp, Inc.	CUBI	\$16,971.0	\$1,500.0	8.8%
Metropolitan Bank Holding Corp.	MCB	\$5,457.0	\$368.0	6.7%
Provident Bancorp, Inc.	PVBC	\$1,361.0	\$63.2	4.6%
Mean		\$26,203.6		29%
Median		\$11,662.5		9%

Participating Banks							
Company Name	Ticker	Stock Performance				P/E	
		2018	2019	2020	2021	2023	P/TBV
Customers Bancorp, Inc.	CUBI	-30%	31%	-24%	261%	10.0x	187%
Metropolitan Bank Holding Corp.	MCB	-27%	56%	-25%	187%	15.9x	210%
Signature Bank	SBNY	-25%	33%	-1%	137%	18.8x	280%
Silvergate Capital Corporation	SI	-	-	367%	100%	42.5x	449%
Provident Bancorp, Inc.	PVBC	-18%	16%	-4%	52%	18.3x	141%
Mean		-25%	34%	63%	147%	21.1x	253%
Median		-26%	32%	-4%	137%	18.3x	210%
KBW Regional Bank Index	KRE	-20%	24%	-11%	37%	13.4x	175%
Nasdaq Bank Index	BANK	-18%	21%	-11%	40%	14.1x	183%

Source: S&P Global, Company data and FactSet Research Systems

Defining Blockchain and It's Use Cases in Financial Services

The Golden Eight		
Blockchain Transformations of Financial Services		
Function	Blockchain Impact	Stakeholder
Authenticating Identity and Value	Verifiable and robust identities, cryptographically secured	Rating agencies, consumer data analytics, marketing, retail banking, wholesale banking, payment card networks, regulators
Moving Value - make a payment, transfer money, and purchase goods and services	Transfer of value in very large and very small increments without intermediary will dramatically reduce cost and speed of payments	Retail banking, wholesale banking, payment card networks, money transfer services, telecommunications, regulators
Storing Value - currencies, commodities, and financial assets are stores of value. Safety deposit box, a savings account, or a checking account. Money market funds or Treasury bills	Payment mechanism combined with a reliable and safe store of value reduces need for typical financial services; bank savings and checking accounts will become obsolete	Retail banking, brokerages, investment banking, asset management, telecommunications, regulators
Lending Value - credit card debt, mortgages, corporate bonds, municipal bonds, government bonds, asset-backed securities, and other forms of credit	Debt can be issued, traded, and settled on the blockchain; increases efficiency, reduces friction, improves systemic risk. Consumers can use reputation to access loans from peers; significant for the world's unbanked and for entrepreneurs	Wholesale, commercial, and retail banking, public finance (i.e. government finance), microlending, crowdfunding, regulators, credit rating agencies, credits core software companies
Exchanging Value - speculating, hedging and arbitraging. Matching orders, clearing trades, collateral management and valuation, settlement and custody	Blockchain takes settlement times on all transactions from days and weeks to minutes and seconds. This speed and efficiency also creates opportunities for unbanked and underbanked to participate in wealth creation	Investment, wholesale banking, foreign exchange traders, hedge funds, pension funds, retail brokerage, clearinghouses, stock, futures, commodities, exchanges; commodities brokerages, central banks, regulators
Funding and Investing in an Asset, Company, Start-up - capital appreciation, dividends, interest, rents or some combination	New models for peer-to-peer financing, recording of corporate actions such as dividends paid automatically through smart contracts. Titles registry to automate claims to rental income and other forms of yield	Investment banking, venture capital, legal, audit, property management, stock exchanges, crowdfunding, regulators
Insuring Value and Managing Risk - protect assets, homes, lives, health, business property, and business practices, derivative products	Using reputational systems, insurers will better estimate actuarial risk, creating decentralized markets for insurance. More transparent derivatives	Insurance, risk management, wholesale banking, brokerage, clearinghouses, regulators
Accounting for Value - new corporate governance	Distributed ledger will make audit and financial reporting real time, responsive, and transparent, will dramatically improve capacity of regulators to scrutinize financial actions within a corporation	Audit, asset management, shareholder watchdogs, regulators

Source: Blockchain Revolution (Tapscott and Tapscott) page 64

Companies Mentioned

Companies Mentioned			Companies Mentioned			Companies Mentioned		
Company Name	Ticker	Price 1/2/2022	Company Name	Ticker	Price 1/2/2022	Company Name	Ticker	Price 1/2/2022
Ameris Bancorp	ABCB	\$49.68	First Financial Bancorp.	FFBC	\$24.38	Nicolet Bankshares, Inc.	NCBS	\$85.75
Allegiance Bancshares, Inc.	ABTX	\$42.21	First Financial Bankshares, Inc.	FFIN	\$50.84	NCR Corporation	NCR	\$40.20
American National Bankshares Inc.	AMNB	\$37.68	First Interstate BancSystem, Inc.	FIBK	\$40.67	Northern Trust Corporation	NTRS	\$119.61
Amerant Bancorp Inc.	AMTB	\$34.55	FinWise Bancorp	FINW	\$13.79	Northwest Bancshares, Inc.	NWBI	\$14.16
Associated Banc-Corp	ASB	\$22.59	Fidelity National Information Services, Inc.	FIS	\$109.15	New York Community Bancorp, Inc.	NYCB	\$12.21
Atlantic Union Bankshares Corporation	AUB	\$37.29	Fiserv, Inc.	FISV	\$103.79	Origin Bancorp, Inc.	OBNK	\$42.92
Avidbank Holdings, Inc.	AVBH	\$25.55	Fifth Third Bancorp	FITB	\$43.55	First Citizens BancShares, Inc.	OBT	\$40.58
Banc of California, Inc.	BANC	\$19.62	Farmers & Merchants Bancorp, Inc.	FMAO	\$32.83	OceanFirst Financial Corp.	OCFC	\$22.20
Banner Corporation	BANR	\$60.67	First Mid Bancshares, Inc.	FMBH	\$42.79	Old National Bancorp	ONB	\$18.12
Business First Bancshares, Inc.	BFST	\$28.31	First Midwest Bancorp, Inc.	FMBI	\$20.48	Bank OZK	OZK	\$46.53
The Bank of New York Mellon Corporation	BK	\$58.08	F.N.B. Corporation	FNB	\$12.13	PacWest Bancorp	PACW	\$45.17
BankUnited, Inc.	BKU	\$42.31	First Republic Bank	FRC	\$206.51	Prosperity Bancshares, Inc.	PB	\$72.30
Bank of Marin Bancorp	BMRC	\$37.23	Century Bancorp, Inc.	FRME	\$41.89	Private Bancorp of America, Inc.	PBAM	\$26.95
Bryn Mawr Bank Corporation	BMTC	\$45.01	Primis Financial Corp.	FRST	\$15.04	People's United Financial, Inc.	PBCT	\$17.82
BOK Financial Corporation	BOKF	\$105.49	Five Star Bancorp	FSBC	\$30.00	Preferred Bank	PFBC	\$71.79
Bank7 Corp.	BSVN	\$23.00	Fulton Financial Corporation	FULT	\$17.00	Professional Holding Corp.	PFHD	\$19.16
First Busey Corporation	BUSE	\$27.12	Glacier Bancorp, Inc.	GBCI	\$56.70	The PNC Financial Services Group, Inc.	PNC	\$200.52
Byline Bancorp, Inc.	BY	\$27.35	Guaranty Bancshares, Inc.	GNTY	\$37.58	Pinnacle Financial Partners, Inc.	PNFP	\$95.50
Camden National Corporation	CAC	\$48.16	Great Western Bancorp, Inc.	GWB	\$33.96	Pacific Premier Bancorp, Inc.	PPBI	\$40.03
Cadence Bank	CADE	\$29.79	Huntington Bancshares Incorporated	HBAN	\$15.42	Provident Bancorp, Inc.	PVBC	\$18.60
Capital Bancorp, Inc.	CBNK	\$26.20	Horizon Bancorp, Inc.	HBNC	\$20.85	PayPal Holdings, Inc.	PYPL	\$188.58
CBTX, Inc.	CBTX	\$29.00	Heritage Financial Corporation	HFWA	\$24.44	RBB Bancorp	RBB	\$26.20
Community Bank System, Inc.	CBU	\$74.48	Home Bancshares, Inc. (Conway, AR)	HOMB	\$24.35	Regions Financial Corporation	RF	\$21.80
Coastal Financial Corporation	CCB	\$50.62	Heritage Commerce Corp	HTBK	\$11.94	Renasant Corporation	RNST	\$37.95
CrossFirst Bankshares, Inc.	CFB	\$15.61	Hilltop Holdings Inc.	HTH	\$35.14	Red River Bancshares, Inc.	RRBI	\$53.50
Citizens Financial Group, Inc.	CFG	\$47.25	Heartland Financial USA, Inc.	HTLF	\$50.61	South Atlantic Bancshares, Inc.	SABK	\$15.44
Cullen/Frost Bankers, Inc.	CFR	\$126.07	Hancock Whitney Corporation	HWC	\$50.02	Sandy Spring Bancorp, Inc.	SASR	\$48.08
Civista Bancshares, Inc.	CIVB	\$24.40	Independent Bank Group, Inc.	IBTX	\$72.15	Signature Bank	SBNY	\$323.47
Comerica Incorporated	CMA	\$87.00	Investors Bancorp, Inc.	ISBC	\$15.15	Southside Bancshares, Inc.	SBSI	\$41.82
ConnectOne Bancorp, Inc.	CNOB	\$32.71	JPMorgan Chase & Co.	JPM	\$158.35	Simmons First National Corporation	SFNC	\$29.58
Coinbase Global, Inc.	COIN	\$252.37	KeyCorp	KEY	\$23.13	Silvergate Capital Corporation	SI	\$148.20
Columbia Banking System, Inc.	COLB	\$32.72	Lakeland Financial Corporation	LKFN	\$80.14	SVB Financial Group	SIVB	\$678.24
Customers Bancorp, Inc.	CUBI	\$65.37	Metropolitan Bank Holding Corp.	MCB	\$106.53	SmartFinancial, Inc.	SMBK	\$27.36
Dime Community Bancshares, Inc.	DOOM	\$35.16	Mountain Commerce Bancorp, Inc.	MCBI	\$30.75	Synovus Financial Corp.	SNV	\$47.87
Eagle Bancorp, Inc.	EGBN	\$58.34	MainStreet Bancshares, Inc.	MNSB	\$24.59	SouthState Corporation	SSB	\$80.11
Equity Bancshares, Inc.	EQBK	\$33.93	MidWestOne Financial Group, Inc.	MOFG	\$32.37	S&T Bancorp, Inc.	STBA	\$31.52
Meta Platforms, Inc.	FB	\$336.35	Mid Penn Bancorp, Inc.	MPB	\$31.74	Sterling Bancorp	STL	\$25.79
FB Financial Corporation	FBK	\$43.82	Midland States Bancorp, Inc.	MSBI	\$24.79	State Street Corporation	STT	\$93.00
The First Bancshares, Inc.	FBMS	\$38.62	MVB Financial Corp.	MVBF	\$41.52	Spirit of Texas Bancshares, Inc.	STXB	\$28.78
First Bancorp	FBNC	\$45.72	National Bank Holdings Corporation	NBHC	\$43.94	Stock Yards Bancorp, Inc.	SYBT	\$63.88
First Commonwealth Financial Corporation	FCF	\$16.09	NBT Bancorp Inc.	NBTB	\$38.52	Triumph Bancorp, Inc.	TBK	\$119.08

Companies Mentioned

Companies Mentioned			Private Companies Mentioned
Company Name	Ticker	Price 1/2/2022	Company Name
Texas Capital Bancshares, Inc.	TCBI	\$60.25	Anchorage Digital Bank National Association
TriCo Bancshares	TCBK	\$42.96	Avanti Bank & Trust
Third Coast Bancshares, Inc.	TCBX	\$25.98	Bloomberg LP
Truist Financial Corporation	TFC	\$58.55	Circle Internet Financial, Inc.
TowneBank	TOWN	\$31.59	CoinDesk LLC
TriState Capital Holdings, Inc.	TSC	\$30.26	ConsenSys Inc.
United Bankshares, Inc.	UBSI	\$36.28	Figure Technologies, Inc.
United Community Banks, Inc.	UCBI	\$35.94	Finstro US Inc.
Umpqua Holdings Corporation	UMPQ	\$19.24	Fireblocks Inc.
U.S. Bancorp	USB	\$56.17	FMR LLC
U.S. Bancorp	USB	\$56.17	Hyperledger
Univest Financial Corporation	UVSP	\$29.92	JAM FINTOP
Veritex Holdings, Inc.	VBTX	\$39.78	Kraken Bank
Valley National Bancorp	VLY	\$13.75	Messari, Inc.
Western Alliance Bancorporation	WAL	\$107.65	Moore Global Network Limited
Webster Financial Corporation	WBS	\$55.84	Mt Gox Bitcoin Exchange Ltd
WesBanco, Inc.	WSBC	\$34.99	New York Digital Investment Group LLC
WSFS Financial Corporation	WSFS	\$50.12	Paxos National Trust
Wintrust Financial Corporation	WTFC	\$90.82	Protego Trust Bank, N.A.
Zions Bancorporation, National Association	ZION	\$63.16	Provenance Blockchain, Inc.
			Ripple Labs Inc.
			Silk Road
			Tassat Group LLC
			Tether Inc.
			TrustToken, Inc.
			Wyoming Deposit & Transfer

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	%	(Past 12 Months)
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HOLD	37.4	18.95
SELL	0.49	0

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