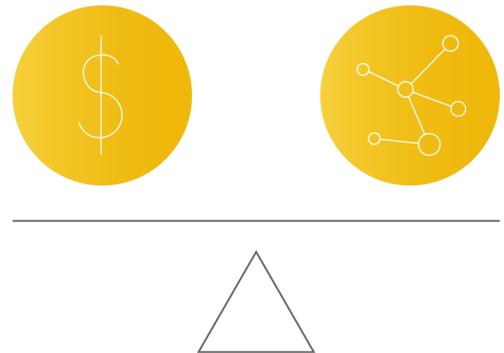


# Can JPM Coin Disrupt the Existing Stablecoin Market?



Binance Research - March 1st 2019

In late 2017, amidst significant media hype surrounding blockchain and distributed ledger technologies, J.P. Morgan CEO Jamie Dimon deemed Bitcoin a fraud<sup>1</sup>. Nonetheless, the company had been extensively researching use cases of blockchain technology since 2015 while building **Quorum**: a private and permissioned version of Ethereum<sup>2</sup>.

On February 14<sup>th</sup> 2019, J.P. Morgan introduced the **first prototype of its blockchain settlement product: JPM Coin, a stablecoin** backed 1:1 by its fiat reserves.

## KEY TAKEAWAYS

- Fiat-collateralized stablecoins have become increasingly popular in cryptoasset markets as they combine the functions of a blockchain, such as transparency and speed, **without the inherent volatility risk of bitcoin** and other cryptocurrencies.
- The primary business model of fiat-collateralized stablecoin issuers **is generating returns through lending collateral** in addition to issuance / redemption fees.
- JPM Coin marks the first experiment of a **new type of stablecoin** that would rely on **private blockchains**, marking a transition from a interest-collecting business model to one that is targeted at improving internal processes (e.g. clearing and settlement).

<sup>1</sup>

<https://www.bloomberg.com/news/articles/2017-09-12/jpmorgan-s-ceo-says-he-d-fire-traders-who-bet-on-fraud-bit-coin>

<sup>2</sup> <https://www.coindesk.com/jpmorgan-ethereum-blockchain-quorum>

- Using Quorum blockchain, the JPM Coin model could serve as a **framework for other financial institutions to issue their own stablecoins**. In a similar fashion to tokens created using the ERC-20 standard (built on the Ethereum blockchain), financial institutions could use & issue a wide range of branded stablecoins backed by various fiat currencies.
- JPM Coin and the **Ripple ecosystem** are currently focusing on improving different aspects of traditional finance. **Minimal direct competition** is expected between the two in the near term, though this could change depending on how JPM Coin develops to venture out of its current closed network.
- While JPM Coin does have the potential to **materially impact traditional financial services** (related to institutional client use cases such as clearing and settlement), **it will not displace liquid, publicly traded stablecoins in the near-term** given its private, permissioned structure.
- Should this pilot project prove successful as a model for driving institutional adoption of private blockchains, it may be **an intermediate stepping stone for crypto mass adoption** as clients move toward private distributed ledgers backed by technology providers of enterprise whitelabel solutions; **however, a global decentralized economy will not appear overnight** with everyone running on public blockchains.

## 1. What are Stablecoins?

Since the inception of Tether in 2014, several stablecoin projects have been launched to address the volatility inherent to cryptoassets. Most existing projects were either established directly (Gemini Dollar) and indirectly (USD Coin, Tether) by cryptocurrency exchanges, or by dedicated companies and foundations (TrueUSD, NuBits). In that regard, JPM Coin represents the first prototype of a stablecoin created by a traditional financial institution.

### Definition of Stablecoins

Stablecoins have several definitions:

*“A stablecoin is a type of cryptocurrency that is designed to maintain a stable value, rather than experiencing significant price changes. Recently, these digital currencies have grown substantially in popularity as an answer to the high volatility associated with the cryptocurrency markets.”*

[Binance Academy: What is a stablecoin?](#)

*“Stablecoin refers to a new class of cryptocurrencies which offer price stability and/or are backed by reserve asset(s). In recent times, stablecoins have gained enough traction as they attempt to offer the best of both worlds – the instant processing and security of payments of cryptocurrencies, and the volatility-free stable valuations of fiat currencies.”*

[Investopedia: Stablecoin](#)

Throughout this report, we will refer to stablecoin as a cryptocurrency whose value is designed to follow the value of a specific fiat currency.

## Functions of Stablecoins

The primary function of existing stablecoins is to transfer value worldwide efficiently and at minimal cost without the price volatility inherent to Bitcoin or other digital assets.

Additionally, stablecoins provide convenience in conducting **arbitrage between trading venues**. Before stablecoins were massively adopted by exchanges, it was a complicated process to arbitrage BTC among exchanges as fiat transfers were slow to process (taking up to several days).

## Timeline of Stablecoins

The **first generation of stablecoins** (Tether) aimed to provide a digital currency relying on blockchain without “*volatile price swings*” (Tether Whitepaper 2014).

While Tether was created as a fiat-collateralized stablecoin pegged to the US dollar, other primitive stablecoins (BitUSD, NuBits) relied on **algorithms and/or non-fiat collateralization mechanisms** to maintain their peg against a fiat currency.

The **second generation of stablecoins** (USD Coin, TrueUSD, Dai) is aimed at **increasing transparency** into the business model of the first generation of stablecoins. It includes the release of audits for stablecoins backed by fiat bank accounts and a clearer collateralization mechanism for non-USD backed collateralized stablecoins, such as Dai.

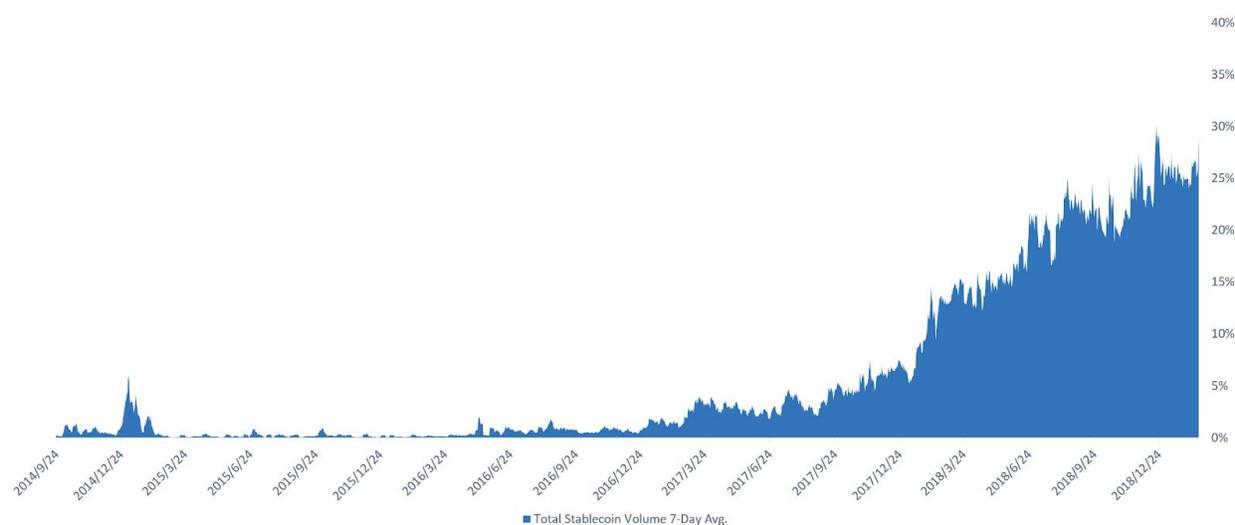
In comparison, **JPM Coin seems to be the precursor of a third generation of stablecoins that targets a particular market segment: financial institutions**. Relying on private blockchains, these stablecoins would only serve specific purposes such as improving settlement times and processes within financial institutions. From this perspective, the business model itself shifts from a pure profit-driven model to a business model designated to solve specific business use cases (e.g. improve the client experience for settlement and clearing operations).

Based on the current information provided by J.P. Morgan, JPM Coin might be a direct competitor to Ripple, which currently has a lead in this industry with over 100 institutional clients<sup>3</sup> for its blockchain-powered alternative to SWIFT<sup>4</sup>.

Fiat-collateralized stablecoins have primarily the following features:

- **Serving as fiat on/off ramps:** for institutional investors, they collateralize their USD assets to stablecoins before transferring on a wide variety of exchanges.
- **Stable prices:** owing to the pegging system, it is convenient to trade stablecoins with other digital assets. Fiat-backed stablecoins are especially popular in OTC trading.
- **Easy to apprehend:** unlike algorithmic stablecoins, investors have more confidence in the fiat-based pegging mechanism as it is more intuitive to apprehend. The break in the peg of some algorithmic stablecoins has made it difficult for institutional investors to consider these assets as low-risk as fiat-pegged stablecoins.

## Ever-increasing Volume: Contribution of Stablecoin Volume to Total Industry Volume



source: coinmarketcap, Binance Research

The total share of stablecoin volume continues to increase relative to total volume across the entire cryptoasset market, which reflects increasing demand to manage volatility inherent in other cryptoassets.

## 2. Stablecoin Market Structure

<sup>3</sup> <https://www.cnbc.com/2017/10/10/ripple-has-over-100-clients-as-mainstream-finance-warms-to-blockchain.html>

<sup>4</sup> <https://www.investopedia.com/articles/personal-finance/050515/how-swift-system-works.asp>

The stablecoin market continues to evolve as new models emerge, with a particular division between collateralized vs. non-collateralized approaches for maintaining a consistent price peg. Within collateralized models, both fiat and crypto backed models exist as a way to minimize volatility. For non-collateralized models, many leverage algorithmic techniques to maintain price stability. While we acknowledge the existence of a variety of price stability models, this overview will focus primarily on the fiat-collateralized stablecoins. Many projects have issued --and will continue to issue -- stablecoins backed by a variety of fiat currencies beyond the US dollar, such as EURS presented in the table below.

## Fiat-Collateralized Stablecoin Snapshot

◆ symbol indicates listing on Binance as of March 1st 2019

NAME	BLOCKCHAIN	INCEPTION	COLLATERALIZED BY	CIRCULATING SUPPLY (FEB. 18)	JURISDICTION	ISSUES
Tether (USDT) ◆	OMNI	April 2013	Banked USD	2,031,129,386	British Virgin Islands	> Failure to produce quarterly audits <sup>5</sup>
TrueUSD (TUSD) ◆	Ethereum	Mar 2018	Banked USD, regular audits	205,590,114	US	-
Paxos Standard Token (PAX) ◆	Ethereum	Sep 2018	Banked USD, regular audits	114,311,518	US	> Recent controversy about discount for clients <sup>6</sup>
Gemini Dollar (GUSD)	Ethereum	Oct 2018	Banked USD, regular audits	76,490,852	US	> Recent controversy about discount for clients <sup>5</sup>
USD Coin (USDC) ◆	Ethereum	Oct 2018	Banked USD, regular audits	244,620,016	US	-
Stasis EUR (EURS)	Ethereum (Stellar is being tested)	Aug 2018	Banked EUR, regular audits	30,979,207	Malta	-
Stable USD (USDS) ◆	Ethereum	Feb 2019	Banked USD, regular audits	5,781,823	US	-
JPM Coin	Quorum (Ethereum fork)	2019?	Fiat currencies on J.P. Morgan deposits	-	-	> Prototype

Source: CoinMarketCap, Mosaic.io, Binance Research, Project Whitepapers

<sup>5</sup> <https://www.coindesk.com/tether-confirms-relationship-auditor-dissolved>

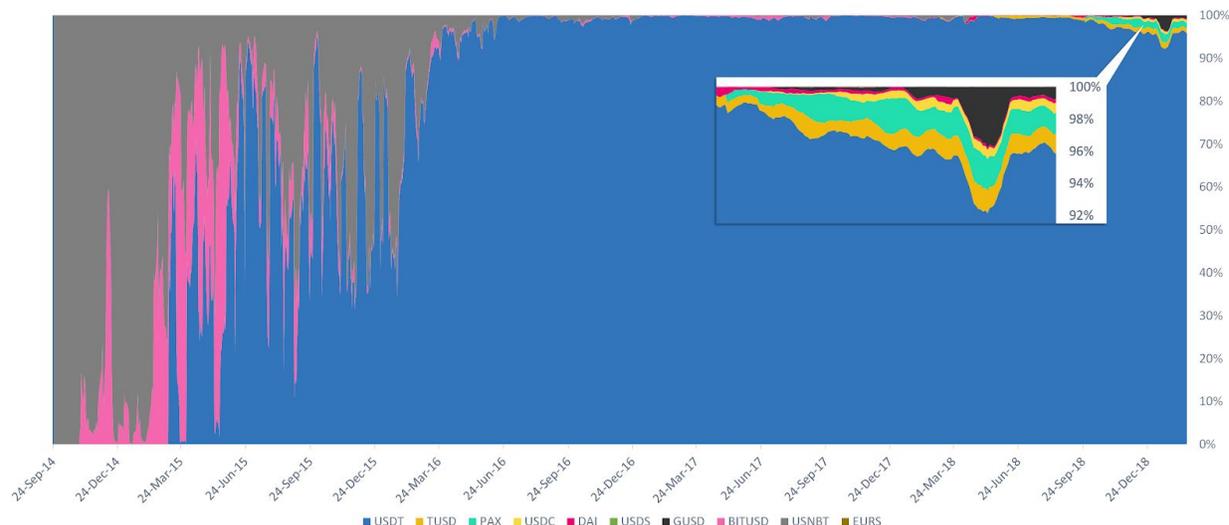
<sup>6</sup> <https://www.coindesk.com/stablecoin-crypto-price-war-paxos-gemini>

In addition to fiat-collateralized stablecoins currently in circulation, many companies and financial institutions are evaluating issuing their own stablecoins as a way to reduce counterparty / settlement risk and enable instant value transfer. Disclosed examples include **GMO Yen, a yen-denominated stablecoin** expected to be issued by Japanese Internet giant GMO in 2019<sup>7</sup>, and Saga<sup>8</sup>, a stablecoin backed by a basket of fiat currencies.

In Japan, Mizuho recently released its prototype of a yen-denominated currency (“J-Coin”); this could impact up to 56 million of clients as a result of its various partnerships with domestic financial institutions<sup>9</sup>. Last year, Mitsubishi UFJ (“MUFJ”) was also reportedly working on its own digital asset backed by Japanese yen<sup>10</sup>.

Despite the increasing number of fiat-collateralized stablecoins in the market, Tether (USDT) is still the dominant asset by trading volume and market cap with a current circulating supply of \$2,031,129,386<sup>11</sup>.

## Global Stablecoin 7-Day Rolling Trading Volume Breakdown



Nevertheless, it appears that new market entrants are slowly gaining share of global trade volume as they continue to be listed on exchanges. Projects also leverage strong industry brands, regulatory approvals, and substantial private investment to bootstrap their networks and initial circulating supplies.

<sup>7</sup> <https://www.gmo.jp/en/news/article/789/>

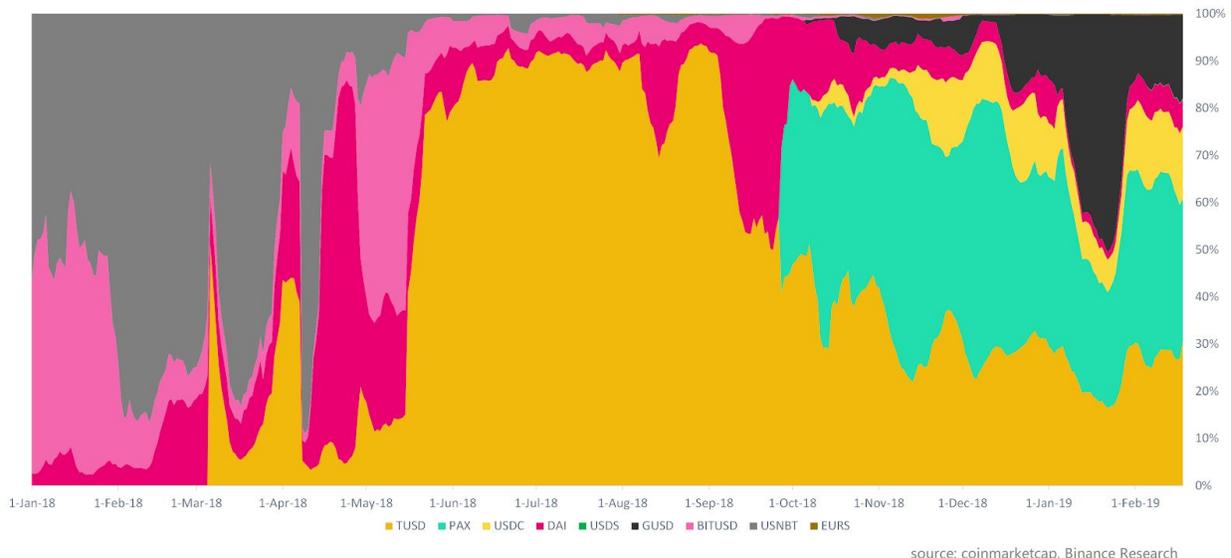
<sup>8</sup> <https://www.saga.org/currency>

<sup>9</sup> <https://asia.nikkei.com/Economy/Mizuho-s-digital-currency-to-take-on-payment-rivals-next-month>

<sup>10</sup> <https://cointelegraph.com/news/worlds-fourth-largest-bank-mufg-to-launch-own-cryptocurrency-in-2018>

<sup>11</sup> Data as of February 18th 2019. It is worth noting that many no-fee (or transaction mining) exchanges use Tether as their primary quote currency for listed pairs. As a result, these may create some upward bias in the Tether volume share displayed in the chart below.

## Global Stablecoin 7-Day Rolling Trading Volume Breakdown (Excluding Tether)



In February 2019, excluding Tether (USDT), stablecoin volume was primarily spread across PAX, TUSD, USDC, and GUSD.

*Whereas fiat-collateralized stablecoins represent a fairly straightforward business model with similar characteristics / mechanics, it is instructive to explore their similarities and differences, and if the nature of their business models impacts the magnitude of risks.*

### 3. Fiat-collateralized Stablecoin Business Models and Risks

Fiat-collateralized stablecoins generally share similar business models and, therefore, are susceptible to similar types of systemic and counterparty risk.

Fiat-collateralized stablecoins typically profit in two ways:

- **Issuance / Redemption Fees:** Stablecoin companies charge fees to issue and redeem stablecoins, generating revenue based on fluctuations in demand, as stablecoins often function as fiat on / off ramps<sup>12</sup>.
- **Yield on Short-term Securities:** Issuers often invest collateral in liquid securities (treasuries, money market funds, etc.) to generate yield. Value captured from this revenue stream is therefore driven by total circulating supply and interest rates (and arguably the reserve ratio of the issuer).

<sup>12</sup> Example with Tether: <https://tether.to/fees/>

However, interest-bearing stablecoins are likely to exist in the **near future** (e.g. USDD<sup>13</sup>), and existing companies will be pressed to share at least some of the aforementioned interest payments to their clients and / or offer a discount on face value for new token issuance of new clients. As a result, the entire stablecoin industry **will likely face increasing pressure and extremely tight margins in the coming years.**

Given the mechanics and business models of fiat-collateralized stablecoins, the **key structural risk is stablecoins breaking their 1:1 peg against underlying fiat currencies.**

As fiat-collateralized stablecoins are centralized in nature, several underlying structural and counterparty risks exist, and could potentially break of the 1:1 peg of a stablecoin:

- **Counterparty Risk:** Stablecoin holders are susceptible to both Issuer and Custodian / Bank counterparty risk. Examples of such risk include issuers being unable to prove, via reliable audits, that collateral exists to match the outstanding supply.
- **Macroeconomic Risk:** Any type of macroeconomic risk that could negatively affect depository institutions resulting in insolvency, frozen funds, redemption refusal, etc.
- **Technology Risk:** Centralized issuers are susceptible to technology risk within their own smart contracts (e.g., a smart contract flaw could result in printing excess coins that are not backed by collateral); The blockchain of choice is also susceptible to a variety of hacks (e.g., 51% attack of Ethereum blockchain if token is an ERC-20).
- **Regulatory Risk:** Issuers operating in jurisdictions that have become unfavorable towards digital assets could face significant regulatory / political risk (e.g., characterizing stablecoins as securities).

Furthermore, stablecoin holders could potentially face redemption risk should centralized Issuers decide to reject account KYC, seize funds, or act maliciously.

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## 4. Description of JPM Coin and its Blockchain

### JPM Coin Overview

JPM Coin is a prototype of a stablecoin that aims at **“reducing clients’ counterparty and settlement risk, decreasing capital requirements and enabling instant value transfer”** based on innovations in distributed ledger and blockchain technology.

JPM Coin will be backed by fiat reserves from J.P. Morgan client accounts, and will likely initially be limited with US dollars but could theoretically be **expanded to any currency on their balance sheet.** If the pilot is successful, JPM Coin could conceivably exist in various forms, including JPMUSD (US-dollar backed), JPMJPY (Yen backed) or JPMEUR (Euro backed).

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<sup>13</sup> <https://news.bitcoin.com/pr-debut-of-usdd-a-stable-coin-that-pays-you-interest/>

## Use Cases & Design

For this pilot project, J.P. Morgan is specifically targeting institutional clients such as banks, brokers, dealers and other large corporations primarily for settlement and value transfer use cases within a closed ecosystem. J.P. Morgan has made it clear that the intent of this pilot is to test stablecoins and blockchain technologies to improve internal processes, ultimately resulting in efficiency gains and cost reductions for its global client base.

While the use cases for JPM Coin differ slightly from that of other fiat-collateralized stablecoins, the mechanism by which coins are issued, transferred and redeemed is similar to those in existence. The core functions of JPM Coin is illustrated in the graphic below.

### JPM Coin Core Functions: Issuance, Transfer and Redemption



Source: J.P. Morgan

### JPM Coin Technology - Quorum Blockchain



Quorum

J.P. Morgan, one of the largest members of the **Enterprise Ethereum Alliance**<sup>14</sup>, created its own blockchain, Quorum, which is a fork of Ethereum.

JPM Coin will be issued on the **Quorum blockchain**, a permissioned network that includes a public / private state separation and allows transfer of private data between participants<sup>15</sup>. In contrast to the public Ethereum blockchain that is transitioning to a Proof of Stake

<sup>14</sup> <https://entethalliance.org/members/#j>

<sup>15</sup> <https://github.com/jpmorganchase/quorum/wiki/Security>

consensus from a Proof of Work consensus, Quorum offers the choice of two consensus algorithms, **Raft**<sup>16</sup> and **Istanbul Byzantine Fault Tolerance**<sup>17</sup>.

Raft consensus<sup>18</sup>

*The Raft consensus algorithm is a Crash Fault Tolerance ("CFT") consensus, as opposed to Byzantine Fault Tolerance ("BFT"), **as the node leader is assumed to never be malicious**. All followers will then blindly replicate the entries proposed by the leader with no questions asked.*

*If the node leader crashes, the remainder of the network will automatically elect a new leader after a set period of timeout, and the network will continue to function. When the crashed node recovers, it will become a follower and start replicating the blocks it has missed while offline.*

*The Raft consensus only mints blocks when there are pending transactions, resulting in significant savings on storage when transaction load is low. A theoretical advantage of using Raft is faster possible block times compared to Istanbul BFT, as the former assumes that there are no malicious nodes, thus theoretically requiring less time to validate transactions. However, this may pose as a potential security risk to the network if the node leader turns out to be malicious.*

Istanbul Byzantine Fault Tolerance consensus<sup>16</sup>

*Istanbul BFT ("IBFT") is a practical Byzantine Fault Tolerance<sup>19</sup> implementation that allows for greater tolerance in adversarial environments. Thus, banks or counterparties with no previous business relationship can transact freely so long as fewer than 1 / 3 of the nodes are faulty.*

*IBFT utilizes multiple rounds of voting per block, and the voting validators also do not trust that the round's leader or block producer is cooperating. As a result, IBFT has slower block times than Raft as the cost of removing the assumption of a trustworthy block leader.*

*Though the block time may be theoretically slower, it is always constant. This allows more predictability for reaching certain block heights by a certain time, but also comes with the inefficiency of potentially mining empty blocks with no transactions – thus the choice of block time is a key factor to ensuring optimal network usage.*

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<sup>16</sup> <https://raft.github.io/> / Visualization of the Raft consensus mechanism: <http://thesecretlivesofdata.com/raft/>

<sup>17</sup> <https://github.com/ethereum/EIPs/issues/650>

<sup>18</sup> <https://kaleido.io/consensus-algorithms-poa-ibft-or-raft/>

<sup>19</sup> <https://www.binance.vision/blockchain/byzantine-fault-tolerance-explained>

Since Quorum is a fork of the Ethereum blockchain, it does share some core pieces of technology with the Ethereum blockchain:

1. **Core infrastructure** : Quorum, as a fork of Ethereum, shares most of its code with Ethereum.
2. **Future developments**: Quorum can tap into future updates from the Ethereum development community as a fork of Ethereum, potentially adopting future improvements, and bug fixes.
3. **Same standards**: Quorum smart-contracts are written in standard Solidity and are compiled using the Ethereum Virtual Machine (“EVM”), allowing for greater developer familiarity across both Quorum and Ethereum. ERC-20 token equivalents could also be issued on Quorum in a similar structure as those issued on the Ethereum blockchain. These shared standards could lead to the mutualization of resources working on some core functions of Ethereum, thus contributing to **the alignment of interests between Ethereum and Quorum**<sup>20</sup> .

However, as a private, permissioned network, Quorum delivers a value proposition and design that also differ from the Ethereum blockchain in a few notable ways:

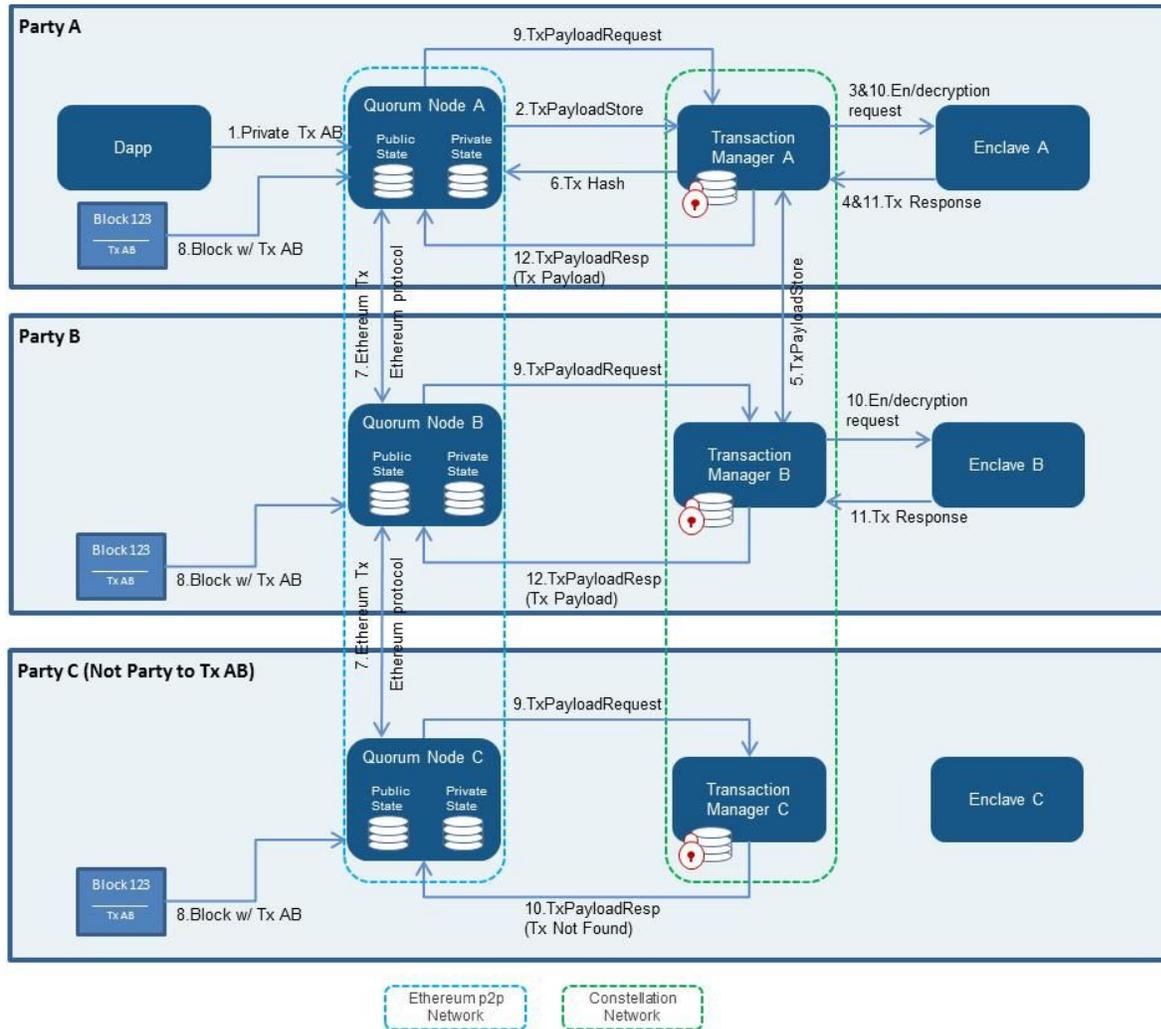
- **Faster Transactions and Improved Scalability**: Quorum is expected to process “dozens to hundreds of transactions per second”<sup>21</sup> with regards to the state of the network and existing smart-contracts.
- **Additional Privacy Features**: there is the ability to select public / private states. Private transactions are encrypted and included in the blocks. However, the data can only be decrypted by members that are a part of a sub-private group. On the other hand, public transactions are included in the blocks, in a similar fashion as Ethereum and could be seen by any trusted participant in the private network.
- **Permissioned Network**: at the initial stage of Quorum, only trusted parties will be accepted into the network and any new party will be manually approved. Yet, J.P. Morgan reportedly is also planning on introducing “smart-contract governance tools” to eventually handle this centralization responsibility / burden.

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<sup>20</sup> [https://www.jpmorgan.com/global/Quorum#section\\_1320553542030](https://www.jpmorgan.com/global/Quorum#section_1320553542030)

<sup>21</sup> <https://www.jpmorgan.com/country/LU/en/Quorum>

## Blockchain Privacy Architecture



Source: J.P. Morgan Github profile (<https://github.com/jpmorganchase/quorum>)

## Initial Applications

JPM Coin has the potential to dramatically impact both existing financial institutions as well as the broader cryptoasset market given the size of its **balance sheet, industry influence, and extensive global network of partners**.

Broadly speaking, J.P. Morgan's stablecoin project will initially target efficiency gains and risk reduction in clearing and settlement functions, as well as cost reductions across core back office functions.

- **Clearing & Settlement**

- **Greater transparency and faster times:** JPM Coin is expected to cut down processing times for clearing and settlement operations. As transactions occur on the blockchain, they can be cleared and settled regardless of existing business day constraints.
- **Tail Risk Mitigation:** JPM Coin could decrease **tail risks such as system failure events that can occur in a fully centralized settlement system**. As an example in recent news, Wells Fargo, one of America's largest banks, left its customers unable to access their accounts for days due to internal system issues<sup>22</sup>. Blockchain networks are unlikely to experience a complete shutdown as they generally rely upon a large number of nodes for validation. If a node is disabled, all other nodes will still remain functional.
- **Cost Reduction:** JPM Coin has potential to dramatically reduce costs for institutional clients, as transactions between institutional clients can be executed without pre-established trust given the transparency and auditability of transactions that is native to a blockchain architecture.

Accenture, one of the largest global management consulting firms, provides an estimation of some additional sources of cost savings<sup>23</sup>:

1. **Finance-reporting costs could be lowered by 70 percent** as a result of optimized data quality, transparency, and internal processes enabled by a shared and verified database: the blockchain.
2. **Supporting functions of centralised operations** (e.g. KYC, client-onboarding) could bring **50 percent savings** by establishing more efficient processes for managing digital identities and by “mutualizing” or sharing client data on a blockchain across multiple financial institutions.
3. **Business operations expenses** from, for instance, middle office, clearing, and settlement activities could be **lowered by up to 50 percent** by reducing or eliminating the need for third-party reconciliation, confirmation and validation of trades.
4. **Compliance costs could be reduced by 30-50%** owing to higher transparency and easiness to audit financial transactions.

Based on J.P. Morgan’s position as one of the world’s largest banks, even a small portion of total assets locked as fiat collateral for JPM Coin could make the institution the **largest stablecoin issuer on a blockchain** measured by circulating supply and total market cap.

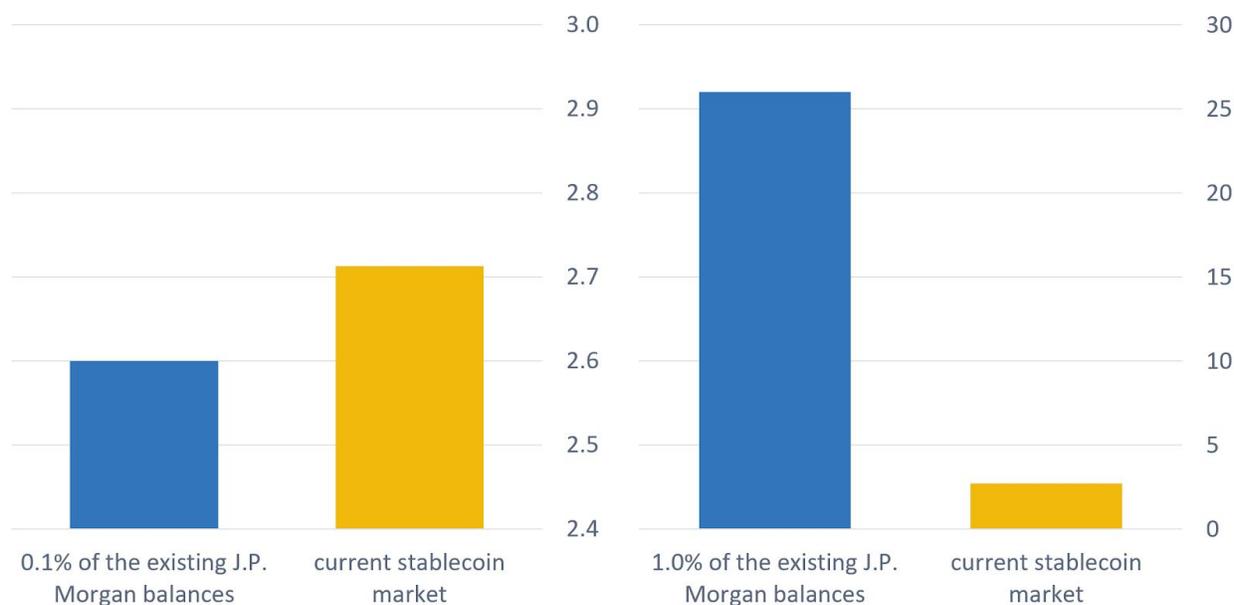
For an illustration of the potential size of JPM Coin circulating supply, two scenarios were established to put in perspective the size of J.P. Morgan’s balance sheet (**USD2.6 trillion**) with the size of the existing stablecoin markets.

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<sup>22</sup> <https://www.vox.com/the-goods/2019/2/8/18217171/wells-fargo-power-outage-direct-deposit>

<sup>23</sup> <https://www.accenture.com/us-en/insight-banking-on-blockchain>

0.1 % and 1 % of J.P. Morgan’s existing balance sheet (in \$bn) relative to current stablecoin market size:



source: Coinmarketcap, Binance Research

## Future Applications

Beyond the aforementioned use cases, JPM Coin (or a similar concept) will also possess additional applications beyond traditional institutional banking clients.

### 1. Clearing house in the derivatives industry

A clearing house is “a financial intermediary responsible for settling trading accounts, clearing trades, collecting and maintaining margin money, regulating delivery of the bought/sold instrument, and reporting trading data.”<sup>24</sup> For instance, they are typically responsible for managing margin calls in the largest segment of the financial industry: derivatives markets.

In the existing system, the **clearing process is fairly slow and includes a lot of intermediaries**. On top of that, the clearing industry is currently concentrated toward a few entities. As a result, the overall industry is quite obscure, which leads to a lack of public information for market participants.<sup>25</sup>

The advantages of utilizing blockchain in the clearing process might include:

<sup>24</sup> <https://www.investopedia.com/terms/c/clearinghouse.asp>

<sup>25</sup> <https://www.fnlonon.com/articles/central-bankers-warn-again-on-clearing-house-contagion-20180809>

- **Regulatory oversight:** The use of a decentralized ledger, seen and monitored by regulators, could help to prevent future financial crises, since a shared ledger would make it easier for regulators to determine systemic risks (and by extension to create required policies to mitigate them).<sup>26</sup>
- **Faster redemption / deposit times:** clearing houses could improve their own margin call system through the use of a permissioned blockchain such as the one offered by J.P. Morgan's Quorum. Near-instant withdrawal / deposits could help clients to deposit additional collaterals to increase their current margins (i.e. matching margin requirements).
- **Increase in transparency:** audit of transactions would become easier owing to the distributed ledger, and the overall linkage between institution positions would become simpler to determine (e.g. allow for new possibilities on how financial institution calculate risk exposures)

In this scenario, the deployment of a blockchain such as Quorum could help the industry **to reduce systemic risks** and make the overall clearing and settlement segment in **the derivatives industry more efficient** with lower costs, faster redemption/withdrawal time & increasing transparency.

## 2. Stablecoin providers through public-private cross-chain atomic swap

Stablecoin entities (e.g. Trust Token, Circle) could work hand in hand with JPM coins (e.g. JPMEUR, JPMUSD), employing public-private cross-chain atomic swaps to issue their own stablecoins running on public blockchains, with key features such as:

- **Tokenization through atomic swap:** a stablecoin entity with a J.P. Morgan corporate account may rely on the JPMUSD token in more efficiently managing deposits and withdrawals with the bank. Once a client is approved by the stablecoin entity, he would transfer funds to the USD bank account of the stablecoin entity, and the stablecoin issuer could then subsequently tokenize its newly received USD funds to JPMUSD coins.
- **Private proof of reserve:** in the process of placing JPMUSD in reserves, a cross-chain public-private atomic swap could be executed such that the exact amount of JPMUSD in reserve would be created as a public ERC20 token on the Ethereum blockchain that would then be transferred to the client. Because the JPMUSD amount would be locked in the public smart contract, it could serve as a proof of reserve for external auditors.
- **Redemption risk remaining on the stablecoin provider:** when the client wants to redeem his funds, he can simply transfer his tokens back to the stablecoin entity's Ethereum wallet. The stablecoin issuer would then be able to apply its AML procedures and evaluate where the money comes from. If approved, the issuer **would burn the tokens, triggering the release of the equivalent amount of JPMUSD from the smart contract.** Eventually these funds would be returned to the client bank account.

In this scenario, **J.P. Morgan would enjoy benefits from the increased use of public blockchain technology while transferring some of the risks and time costs (e.g. AML policies) associated with public blockchains to its corporate clients (stablecoin providers).** An extra layer of auditing would also enable the bank to audit the fund origins (thanks to the swap between Quorum's JPMUSD and

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<sup>26</sup> <https://www.finder.com/cftc-cryptocurrency-could-have-prevented-the-2008-financial-crisis>

Ethereum's stablecoins) through public blockchain analysis. However it is yet to be seen whether atomic swaps could be implemented and if compliance costs outweigh the benefits.

*While JPM Coin is still in its early days, Ripple has been developed for several years. It would be instructive and beneficial to discuss the differences and similarities between JPM Coin and its perceived direct competitor, Ripple.*

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## 5. How does JPM Coin Compare to Ripple (XRP)?

Ripple is the company known for creating the XRP token, currently sitting at the No. 3 spot (USD 13.3 billion) amongst all existing crypto assets in terms of circulating market cap<sup>27</sup>, behind only Bitcoin and Ethereum. This company has been building a payment and exchange network called **RippleNet**, which relies on a distributed ledger database called the **XRP Ledger**.

This network is an "exchange system for fiat currencies that focuses on global payment solutions for banks and other financial institutions"(Binance Academy).

The company has three core products: xRapid (relying on XRP and its distributed ledger), xCurrent, and xVia.<sup>28</sup>

	JPM Coin	Ripple XRP
Blockchain	Quorum ** Private	XRP Ledger Public
Tradable on exchanges	No	Yes
Settlements	Internal clients (current)	Partner institutions
Collateralized by an asset	Yes	No
Smart contracts	Yes (Ethereum fork)	Not yet (but proposed <sup>29</sup> )

*\*\* The news release from J.P. Morgan mentions potential use of other blockchains.*

Ripple is building a "**frictionless**" ecosystem aimed at improving the efficiency in settlement, exchange of currencies, and remittance worldwide. They are attempting to build an entire ecosystem revolving around its products, in which **XRP would be a prominent component**.

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<sup>27</sup> Data as of Feb 28, 2019 <https://coinmarketcap.com/currencies/ripple/>

<sup>28</sup> <https://www.binance.vision/economics/what-is-ripple>

<sup>29</sup> Codius: <https://codius.org/>

On the other hand, J.P. Morgan seems to be inclined in developing an enterprise whitelabel solution relying on its Quorum blockchain to help financial institutions to improve settlements.

However, while JPM Coin does have significant worldwide reach based on J.P. Morgan's existing client base, the network is currently restricted to these internal clients only. It is highly unlikely that clients of a large competing bank such as Citigroup will be able to settle transactions using JPM Coin, especially if a Citigroup Coin is released in the near future.

As such, JPM Coin does not actually improve the speed or efficiency of transactions **between the larger traditional banks**, which currently rely on SWIFT. To add to this sentiment, it appears that **Ripple has already dismissed the idea of a bank issued stablecoin**<sup>30</sup>.

A recent tweet by Ripple's CEO Brad Garlinghouse<sup>31</sup> **confirms this view**:



*"As predicted, banks are changing their tune on crypto. But this JPM project misses the point – introducing a closed network today is like launching AOL after Netscape's IPO. 2 years later, and bank coins still aren't the answer."*

Looking back at the Ripple ecosystem and the **xRapid infrastructure**, XRP works in a similar manner as USD in the traditional financial system: it acts as the **mediator currency** between both fiat / crypto currencies and any fiduciary product (e.g. commodity, points, miles, etc.). This allows various closed system networks (such as JPM Coin) to interact with each other, with XRP acting as a bridge between these networks.

Overall, the two projects appear to have **different focuses and potential applications** in the short term. While there is currently no direct overlap on the functionality of the two initiatives, future developments on the reach of JPM Coin outside of its existing closed network will determine to what degree Ripple and JPM Coin will compete.

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## 6. What Implications does JPM Coin have for the Existing Stablecoin Market?

Stablecoins are used by both retail and institutional investors as an initial on-ramp for entering the cryptoasset markets through a fiat-to-crypto exchange. Institutional investors in crypto markets are typically comprised of asset management firms, venture capital funds and proprietary trading firms investing in digital assets who need a way to exchange fiat currencies for cryptoassets, or the other way around.

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<sup>30</sup> <https://www.linkedin.com/pulse/case-against-bankcoin-brad-garlinghouse/>

<sup>31</sup> <https://twitter.com/bgarlinghouse/status/1096118363506434048>

Large banks and financial institutions such as J.P. Morgan have a distinct set of advantages in issuing fiat-collateralized stablecoins, but **these offerings will not displace liquid, publicly traded stablecoins in the near-term** given their closed ecosystems built on private blockchains.

While JPM Coin does have the potential to materially impact traditional financial services (particularly in institutional client use cases such as clearing and settlement), **it will have minimal impact on public stablecoins used by investors as a gateway to trade and interface with cryptoassets.** Until JPM Coin's availability extends to a larger set of commercial institutions beyond J.P. Morgan's own clients and, more importantly, expands the offering to public blockchains and trades on liquid exchanges (which could provide access to retail investors), it will have limited impact on cryptoasset markets.

Nevertheless, **over the long term it is possible** for JPM Coin (along with similar projects created by other banks) **to have a disruptive impact on the entire stablecoin industry** as they continue to expand its access and use cases.

## 7. Stablecoins and Private Blockchains: An Illustration of the Industry Change

Should JPM Coin turn into a successful experiment, corporations might consider private blockchains as a viable and attractive solution for their transactional needs. This could result in a shift of institutional investments from public digital tokens & currencies to technology providers of enterprise whitelabel solutions (such as a Quorum-tailored blockchain for their uses).

It is worth mentioning that today, **it is unlikely that companies would rely solely on a public blockchain to manage their sensitive internal data.** Hence pitting public and private blockchains head-to-head is somewhat of an artificial matchup that is less relevant than the broader discussion on whether **centralized IT systems** are to be **replaced by private blockchain solutions** within companies & industries.

The rise of this third generation of stablecoins may only be an intermediate stepping stone for cryptocurrency mass adoption. Stablecoins running on private blockchains will contribute to increasing awareness of the rest of the blockchain and cryptoasset industry in the long run.

Bitcoin was created to allow *"online payments to be sent directly from one party to another without going through a financial institution."*<sup>32</sup> Ten years later, the landscape of the cryptocurrency industry has undoubtedly changed dramatically and financial institutions have become one of the key prominent players in the future of blockchain - be it private or public.

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<sup>32</sup><https://bitcoin.org/bitcoin.pdf>

## 8. Conclusion

It is very unlikely that JPM Coin will disrupt the existing stablecoin industry in the near term owing to its permissioned, private nature. Currently, stablecoins issued by banks are designated to serve a specific purpose and as a result, do not directly compete with the existing stablecoins.

While JPM Coin will be built on a private blockchain and initially restricted to use within the J.P. Morgan network, the initiative could cause other financial institutions to follow suit by creating their own stablecoin running on a proprietary blockchain. However, if banks were to work together to align their interests in the development of interbank settlement solutions, Ripple may suffer from increasing competition as these banks come up with their own syndicated blockchain solutions.

In conclusion, banks already are a main component of the fiat-collateralized stablecoin model as these financial institutions provide custody for the funds of stablecoin issuers. Given their size, scope and strategic network, large banks such as J.P. Morgan could potentially leverage both their large asset bases and partnerships to broaden the influence and impact of their stablecoin offerings.

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