

Libra's Technical Features Are Not What's Exciting: Aaron Brown

The future of money is in play and Silicon Valley technocrats have just made a compelling move.

By Aaron Brown

(Bloomberg Opinion) --

Much of the commentary about Facebook's proposed Libra coin has focused on its defects as a cryptocurrency – centralized governance, weak privacy protections – or as a payment processing system – low throughput, inability to handle multiple currencies. I think it's more interesting to examine the process for creating Libra rather than specific technical features.

But Libra is a work-in-progress. Its whitepaper describes aspirations, not technical design. Work has begun on only some of the aspirations, and they will have to be modified along the way to resolve conflicts, satisfy regulators, attract users, please investors and deal with unanticipated issues. The Libra slated for release in 2020 will be only a trial-size sample of the grand vision, and the mature Libra of 2025, if it survives, could be quite different from what anyone expects today.

Money historically has evolved to satisfy needs of users. People use whatever is handy, sea shells, cigarettes, big rocks; gold and silver for more sophisticated economies; paper; electronic ledgers. Occasionally individuals and governments introduce new kinds of money based on rational design rather than tradition. These generally fail, as with the assignats of the French Revolution or the state credits of the Russian one, or have initial success but became problematic, like the Bretton Woods system or the euro, or achieve only local, niche use.

Bitcoin was unique. It was a rationally designed new type of money, introduced by an individual or small group, with no links to traditional value (the way paper money started as a promise to pay gold, or the euro began as a basket of national currencies), no use of force, no legal permissions; yet it achieved rapid global acceptance, accrued massive value and stimulated an ongoing revolution in both traditional financial systems and new cryptocurrencies.

While Bitcoin's technical excellence was necessary for success, equally important was the surge of populism arising out of the 2007 – 2009 financial crisis, which encouraged people to distrust government-issued money and financial institutions.

Libra is precisely the opposite. Facebook invited a “dream team” of experts to design money and hired professionals to implement it. That's the kind of top-down, backroom process populists hate, especially when overseen by a distrusted entity. Libra is not something evolved by users to meet self-perceived needs but an idea in which experts have balanced the interests of governments, non-governmental organizations, investors, large businesses and ordinary users.

The first four groups will all have strong voices in the development of Libra; users have to trust the experts to understand and defend their interests. While individuals can refuse to use Libra, history suggests that if the other four groups are happy with the coin, user resistance will be met not with improvements to meet objections, but with suppression of alternatives and penalties like legal-tender rules to force adoption.

Of course, at this point Libra has not forged any powerful alliance. It has 28 backers, most of which have committed little more than their logos, and only a few of which are powerful. Both populist and progressive politicians have been negative and neither major technology companies nor banks have joined.

On the other hand, ever since the Nixon Shock of 1971 ended the Bretton Woods era, people who believe a global elite of experts should design society have been working toward something like Libra—a rationally designed global currency administered by a group of disinterested technocrats insulated from democratic forces. This was the impetus behind the euro, also the gradual transition of financial regulation from national regulators with indirect accountability to voters, to multinational unelected groups like Bank for International Settlements, International Organization of Securities Commissions and Financial Action Task Force.

Although Libra has copied some features from cryptocurrencies, its rationale is precisely the opposite. Its competition is national currencies, not crypto. This is explicit. When the whitepaper describes providing currency to the 1.9 billion people now relying exclusively on cash, it means replacing the national currencies of countries like Nigeria, Mexico, Indonesia and Pakistan for the large majority of citizens.

While the initial design calls for 100% reserves in developed country currencies and government debt, that's illusory, since its controllers can change the investments at any time. Any country that allows inflation or issues dubious debt can find its currency and debt dropped from reserves. Moreover, a successful Libra would likely switch to a fractional reserve system, with only enough national currency reserves for liquidity purposes, and currency backed either by loans and other risky assets, or nothing at all.

Libra is a complement to cryptocurrencies. Its blockchain design and Move programming language allows seamless interaction with crypto. Attempts to link the traditional financial system to crypto have been marked by extreme volatility, fraud, legal uncertainty and technical problems. One plausible scenario is that Libra succeeds in becoming the legal-tender medium of

exchange for much of the traditional commerce in the world and that cryptocurrencies thrive for non-traditional exchanges.

On the other hand, if Libra fails, it will not be the last attempt to impose a rational global currency on a skeptical world. It may happen by gradual ceding of central bank and securities regulation to multinational entities, or by a new currency, or by negotiation among developed economy governments. Or it may be blocked by populist sentiment, or superseded by a pure crypto solution. The future of money is in play and Silicon Valley technocrats have just made a compelling move.

Broader Crypto Circulation Getting Close to Reality:

Aaron Brown

Some new developments may finally solve the question of how to distribute digital currencies and get people to use them.

By Aaron Brown

(Bloomberg Opinion) --

Going by the mainstream business press, you'd think the big stories of 2019 in cryptocurrencies are the quadrupling of the price of Bitcoin and a shift by big institutions such as JPMorgan Chase & Co. and Facebook Inc. **from the blockchain-not-bitcoin model popular from 2014 to 2018 to bitcoin-with-training-wheels.**

If you read technology newsfeeds, you'd instead focus on new highs in network throughput, hashrate and gas prices—metrics that indicate cryptocurrency success in its own terms, rather than how traditional financial markets value that success. And perhaps even more exciting, bold new experiments about one of the oldest and most important questions in economics: **how to get money to circulate?**

However great the technical merits of a new form of money, it must circulate to become “currency.” But people only accept money if they're confident they can spend it. The chicken-

and-egg dilemma is money can't circulate until it circulates. **This is a fundamental mystery in economic history and among the most pressing problems** in macroeconomic policy today.

The historical question is why people start using money. The macroeconomic version is how to get more money to circulate in order to stimulate the economy. New cryptocurrencies face this problem in acute form. How do you distribute the new currency so people will start using it? Crypto ventures are generating full-scale experiments now to shed light on this issue, and possibly lead to insights that change central banking, public securities markets and the Internet.

During the Great Depression, John Maynard Keynes suggested burying bank notes in disused coal mines to get money into the hands of people who would spend it. Bitcoin adopted this suggestion, but substituted solving mathematics problems instead of searching for buried bills.¹ Milton Friedman suggested in 1969 dropping \$100 bills out of a helicopter. This has been adopted by many new cryptocurrencies under the name "air drop." You give a significant fraction of your new currency away to users of other crypto—usually people with Ethereum accounts.² The most popular method in 2017 was the Initial Coin Offering³ modeled on equity market Initial Public Offerings.

The most exciting innovation in initial distribution of cryptocurrency in 2019 is Handshake's directed airdrop. The Handshake protocol and its associated HNS cryptocurrency is intended to replace the basic plumbing of the Internet—the stuff that makes sure when you type "Bloomberg.com" into your browser you get to a page controlled by Bloomberg and that

provides security certificates. **Handshake is supported by a Who's Who of venture capitalists, entrepreneurs and Internet theorists.** It was developed in secrecy until public announcement a year ago. (Full disclosure: I have a stake in a hedge fund that has invested in Handshake.)

Internet plumbing today is controlled by for-profit entities. This works well, mainly because altruistic and technically competent people got involved with these organizations before most people realized the vast economic power involved. But this won't last forever. Handshake has a faster, more transparent and more secure solution, controlled by consensus of the Internet community rather than trusted third parties. Domain name registration and other fees would be paid in its HNS cryptocurrency. It can run in parallel with the existing Internet. Individual website owners and browser developers could choose to support it along with the current system or instead of the current system.

That said, it will either fail or take over due to the strong network advantages of a common system. This is a typical problem—a collectively beneficial change that is blocked due to the number and complexity of vested interests. Often these defy both political and free market solutions. The directed airdrop solution is to create a new currency that would solve the problem if adopted, and give it away to a critical mass of entities so all gain more by switching than by blocking the change.⁴

HNS will be given to hundreds of thousands of entities from large grants to the entities that control Internet plumbing today, to many individual developers and website owners. Using clever game theory and crypto tools built into the currency, Handshake hopes to succeed where negotiated solution cannot be reached and a top-down coerced solution would likely be worse than the current state.

If this full-scale experiment tackling a significant economic problem succeeds it could open the door to cryptocurrency/game theory solutions to political issues from tariffs to climate change, as well as give central bankers scalpels instead of hammers to keep economies humming.

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- 1 The ingenious twist is that in the course of “mining” Bitcoin, miners provided the processing power necessary to run the network and keep it secure. While this idea worked and has been used many times since, it has disadvantages. It’s slow, taking three years to develop much circulation. It does not generate revenue to pay people to build or maintain the infrastructure. And it puts a lot of political power in the hands of miners, who have acted to secure Bitcoin as a store of value at the expense of its roles as a medium of exchange and numeraire.
- 2 This is faster than mining but its wasteful as only a small fraction of recipients are good candidates to use your coin, and only a small fraction of them are likely to pay attention to your gift. It can also make your currency seem worthless.
- 3 This was fast, and raised funds for development and maintenance. But it tended to get coins into the hands of hot-money flippers rather than users. It ran afoul of regulators and investor interest soured due to the high incidence of fraud and delusional optimism among ICOs, as well as the subsequent crash in cryptocurrency prices.
- 4 Cap-and-trade is a traditional economic version of this, albeit much cruder. Permits are required to emit carbon, and they are given away to historical emitters, in the hopes that the bribe will offset their natural opposition to the proposal. But cap-and-trade requires coercive enforcement and influences only one of the many parties affected by emission caps. A directed airdrop can be initiated by anyone and involves only voluntary actions. It can have a far more sophisticated system providing finely tuned incentives to many different interests.

Goldman Sachs Explores Creating a Digital Coin Like JPMorgan's

By Alastair Marsh

(Bloomberg) --

David Solomon may take a leaf out of Jamie Dimon's book by exploring a digital coin for payments.

Goldman Sachs Group Inc.'s chief executive officer told France's Les Echos newspaper that he's "absolutely" looking at digital currencies and said Goldman is conducting "extensive research" on tokenization, the process for transforming currencies or assets into tradeable digital contracts that live on a blockchain.

"Assume that all major financial institutions around the world are looking at the potential of tokenization, stable coins and frictionless payments," said Solomon.

JPMorgan Chase & Co. said in February it developed its own stable coin, JPM Coin, for its clients to use in cross-border payments. Facebook Inc. this month unveiled a new coin for payments called Libra which it plans to launch next year.

Solomon declined to comment on whether Goldman Sachs has had discussions with Facebook. He said blockchain-based stable coins tied to real currencies are "the direction in which the payment system will go."

Libra is the latest example of how tech companies including Apple Inc. and Amazon.com Inc. have ventured into the financial industry. Still, Solomon said the tech giants will more likely seek to partner with banks than challenge them directly, citing Goldman's credit-card partnership with Apple as an example.

"Do you believe that the tech giants, who have other concerns for the moment, want to submit to the same regulatory constraints as JPMorgan or Goldman Sachs?" said Solomon. "Of course, these companies have a lot of customers and will certainly try to monetize them. It seems to me,

however, that they will try to seal partnerships with banks rather than become banks themselves.”

Facebook Could Be for Crypto What AOL Was for Internet Adoption

- Consumers, traders may park their savings in new stablecoin
- Use in commerce could be tougher for Libra to pull off

By Olga Kharif and Alastair Marsh

(Bloomberg) --

Facebook Inc., a centralized corporate giant with a history of customer data use controversies, is an unlikely candidate for bringing cryptocurrencies to the masses.

Yet many digital-assets enthusiasts are now hanging their hopes on the company’s new digital coin succeeding where Bitcoin has not. Facebook said on Tuesday it will launch the token, called Libra, next year in partnership with finance and technology heavyweights including Visa Inc. and Uber Technologies Inc.

Facebook hopes its so-called stablecoin, which is designed to be less volatile than Bitcoin, will be used for global money transfers and commerce. The coin could instead become a place to park funds during market stress. Either way, Libra’s biggest achievement could be ushering in mainstream usage of a plethora of virtual currencies.

“It could be the America Online to the internet,” Aaron Brown, an investor and a writer for Bloomberg Opinion, said in an email referring to the dial-up web service pioneer better known as AOL. “America Online introduced 40 or 50 million people to the internet in a simple, safe, inexpensive way.”

Only around 5% of Americans have owned Bitcoin, according to a Federal Reserve survey. Facebook, with its 2.38 billion monthly users as of March, could open up cryptocurrencies to a much wider audience than the small circle of libertarians, computer geeks and day traders that have embraced digital currencies to date.

And Libra is only the beginning, according to Brown. In the same way that AOL was just the entry point to the internet for many users, the Facebook venture could be a first step toward its customers seeing value in other crypto.

In other words, the coin could be “a gateway to Bitcoin,” Travis Kling, founder of the Los Angeles-based crypto hedge fund Ikigai, said in an email.

Read More: Facebook’s Answer to Bitcoin Is a Double Threat: Lionel Laurent

“In a roundabout way, Facebook competing with Bitcoin and other digital assets will actually help spur more Bitcoin adoption,” Jeff Dorman, chief investment officer at hedge fund Arca, said in an email. “It doesn’t really matter what gets you into the ecosystem; once there, every blockchain app and every digital token becomes much more readily accessible.”

Libra should become available for purchase with cash at retail outlets, David Marcus, who leads the effort at Facebook, said in an interview. The coin’s path is being mapped out by Libra Association, of which Facebook is currently one of 28 members.

The token could find a receptive user base in developing countries such as Venezuela where skyrocketing inflation has already provided fertile ground for alternative non-state currencies like Bitcoin.

“If you are talking about Venezuela or you are talking about Turkey, in those cases people may chose to hold it,” Diogo Monica, co-founder of Libra Association member Anchorage, said in a phone interview. “It’s one potential very good use case, but I think it will be in the minority.”

Because Libra will offer lower transaction fees than mainstream payment methods, it also could become attractive for money transfers and merchant payments and compete with Western Union and Visa.

Libra could also become a favorite of crypto traders who until now have shown preference for another stablecoin called Tether. However, unlike Tether, which is only partly backed by cash and securities, Libra’s reserves, comprised of multiple fiat currencies and securities, will completely cover all coins in circulation, Marcus said. Also in contrast to Tether, which is being investigated by the New York Attorney General over potentially misusing client funds, Libra will be regularly audited, Marcus said.

“If you are going to compare a stable coin that’s backed by an unknown entity and one backed by a large publicly traded company, all else being equal, there should be an advantage to the one

backed by the large public company,” Gil Luria, managing director for institutional equity research at DA Davidson & Co., said in a phone interview.

Read More: Tether Says Stablecoin Is Only Backed 74% by Cash, Securities

Tether, which holds the lion’s share of stablecoins today, isn’t worried about losing market share though.

“A mass brand like Facebook is likely to introduce a wider demographic into cryptocurrencies, which can only be beneficial,” Paolo Ardoio, Tether’s chief technology officer, said in an emailed statement. “The initial use cases of Facebook stablecoin will be largely different to the current adoption of Tether, and therefore we do not anticipate much impact on Tether other than bringing a new audience into the market.”

Whether Libra will be used in commerce is very much in question. For the last decade, multiple cryptocurrencies starting with Bitcoin have tried and failed to penetrate coffee shops and retail stores. In the first four months of this year, only 1.3% of Bitcoin economic transactions came from merchants, according to researcher Chainalysis Inc. The majority of the rest related to trading.

“While Libra might be a big step in opening up a new wave of users to the benefits of asset-backed digital money, it comes with the risks of centralized pain points and vulnerabilities,” said Joseph Lubin, a co-creator of Ethereum. “Data silos enable incumbents to maintain pricing power, and also come with the risks of data breaches, privacy, and security issues — problems that many have already begun to associate with Facebook.”

JPM Coin Is the Wildest Big Bank Idea in Many Years: Aaron Brown

JPMorgan is making a bold attempt to gain a first-mover advantage in a potentially lucrative new service.

By Aaron Brown

(Bloomberg Opinion) --

It's been a month since JPMorgan issued a press release announcing JPM Coin, and everyone is as confused now as they were then. No one seems to agree what JPM Coin is, what it's intended to do, what it competes with, or whether it is a vote of confidence in cryptocurrencies, an attempt to hijack crypto ideas in evil big bank ways, or an unremarkable traditional ledger dressed in crypto clothes for publicity purposes.

I think JPM Coin is a bold attempt to gain a first mover advantage in a potentially lucrative new banking service. It shares more DNA with Bitcoin than any product announcement so far from a major financial institution, but it has some traditional bank in there too.

This diagram from JPMorgan caused the confusion. Unidentified forces are pushing down on a "client reserve account" illustrated by the standard clip-art for a bank or the Parthenon. That causes green dots to emerge and attack a "distributed ledger," which consist of blocks connected by lines. In step 2, the dots surround the ledger, apparently looking for a way in, while the client reserve account is passive. In step 3, the coins switch sides and attack the account, causing it to explode.

I offer JPMorgan my improved version. Some important changes are that the client reserve account in step 1 is a different one than in step 3, and there shouldn't be one in step 2. The green dots don't attack the ledger, they exist in it. I'm not sure about this last bit, there is both a blockchain and a distributed ledger in the JPMorgan idea, but they're not the same thing. I think the artist drew some blocks and connected them to illustrate a blockchain, but connected them in the wrong way. Or the blocks could represent different copies of a ledger, in which case they should be broadcasting, not linked to neighbors.

Why are multiple arrows going in and out of each account? JPMorgan consists of hundreds of legal entities, just like many of its clients. Each legal entity can have many accounts with JPMorgan, of different types. Verifying transfers are legal and correct makes normal bank transfers slow and error-prone.

It appears JPMorgan will solve this by making each client open a single account for JPM Coin purchases and redemptions. Account openings will be slow and careful. Purchases and redemptions may not always be immediate, but once converted to JPMCoin, transfers should be quick and error-free.

But why not call the units in the blockchain "dollars" instead of "JPM Coin"? For one thing, they're not dollars. Technically, and confusingly, they are "eurodollars." That is, they are unsecured promises by a bank to give you dollars. One possible reason for using JPM Coin is to reduce regulation, including reserve and capital requirements, but the regulatory view is not yet clear.

I suspect a more important reason is the same one why sovereigns throughout history have issued their own currencies — it's very profitable. JPMorgan promises to buy JPM Coin for \$1, but it could sell them for more. Or it could create its own JPM Coins for spending or lending, without funding them with dollars. JPMorgan is not allowed to create dollars for spending, and if it does it for lending, it has to adhere to strict rules and set aside capital.

These schemes only work if people decide to hold JPM Coin balances. If JPM Coin is better for certain transactions than dollars, that will happen, and the value of JPM Coin could monetize, rising above redemption value. There's \$8 trillion of notes and currency in the world, and another \$88 trillion of money broadly defined. If JPM Coin could capture 1 percent of that it's something on the order of 25 years of earnings.

So why use a blockchain? Why not just have an encrypted database? And where does the distributed ledger come in? I'm pretty sure the JPMorgan private blockchain will be a centralized ledger maintained by JPMorgan. However it is designed to interact with any "standard" blockchain. It needs to be a blockchain to play with other blockchains and I think the distributed ledger means that JPM Coin will circulate outside the JPMorgan private blockchain. Those other ledgers might be private or public, centralized or distributed (probably mostly private and centralized), but the overall system is distributed.

Imagine if Yelp decided to issue Yelp Coin to pay reviewers. It would build clever game theory incentives to reward honest and helpful reviews. Review users would pay Yelp Coin to get the best reviews. Merchants would also reward customers with Yelp Coin, and higher merchant rewards, for example from new merchants, would lead to higher payments for reviews. There are many similar ideas in crypto; virtually every website that has user ratings, or is supported by ads, or has a paywall, or gives away content or functionality for free, or asks for user information like location could be improved by properly designed crypto.

The crypto technology has been developed and is available free. The hard part is building in some fiat cash transfers. Merchants will buy Yelp Coin for, and professional reviews will want to be paid in, fiat currency. Getting and receiving fiat currency, especially with anonymous global parties, is a core bank business. Yelp would find it easier to buy and sell Yelp Coin for JPM Coin than to run its own cash operations. Merchants would buy from, and reviews would sell to, brokers or exchanges.

I don't think JPM Coin is about money transfers, although it has to establish itself for that. I think it's about providing payment services to businesses that build their own blockchains. I think JPMorgan will earn seigniorage creating JPM Coin. I think the exciting potential is circulation outside the JPMorgan private blockchain.

The regulatory attitude toward this remains to be seen, and of course there's no assurance that I have guessed JPMorgan's plans correctly, and that if I have, that those plans will succeed. But JPM Coin could launch the next round of cryptocurrency expansion. It will be tamer than Bitcoin, but wilder than any other idea to come out of a big bank since 2008.

Venezuela's Failed Cryptocurrency Is Money's Future: Aaron Brown

El Petro couldn't save Venezuela, but may save the world.

By Aaron Brown

(Bloomberg Markets) --

Shakespeare tells us, “Misery acquaints a man with strange bedfellows.” Venezuela’s 20-year slide from peaceful, prosperous democracy to violent, impoverished dictatorship has caused misery on a vast scale. And it brought together the protagonists in the story of el petro—a mashup of fringe economists and cypherpunks, socialists and libertarians, real-asset fundamentalists and next-generation financial engineers, the “Dutch disease” and exorbitant privilege. Their experiment ended in failure, but their ideas deserve exposure.

Consider the French Revolution in 1789. Its political accomplishments were short-lived: a century alternating among monarchy, republic, and empire. But the metric system it introduced spread throughout the world and persists today.

When revolutionaries took over France, they looked to the *cahiers de doléances*, lists of grievances. Among the most common demands was one for standard weights and measures. Peasants hated local nobles changing the size of the containers used to measure their obligations. They wanted one fixed local bushel kept where they could see it year-round.

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Five brilliant Enlightenment scientists were recruited: Jean-Charles de Borda, Joseph-Louis Lagrange, Pierre-Simon Laplace, Gaspard Monge, and Nicolas de Condorcet. But they misunderstood the problem.¹ They created a good system—though not one the peasants embraced—because it was designed by smart people.

El petro is an oil-backed cryptocurrency designed at an October 2017 meeting at the Venezuelan central bank, where bemused bankers met socialist economists and cryptocurrency zealots. A white paper and official announcement followed in December. But the details kept changing. Since then, Venezuela has produced a confusing series of grand announcements, countered by

denunciations from elsewhere. Amid all the debate, there has been too little analysis of the underlying theory.

Benjamin Graham is remembered today as the father of value investing and Warren Buffett's mentor. But he thought his important contribution to finance was his idea for a commodity-backed currency². He came up with it in 1921—long before he lost his money on Wall Street and turned to undergraduate teaching and textbook writing to make ends meet. He promoted it in articles and books throughout his lifetime.

Graham, like many others, noticed that when commodities are plentiful and cheap, the economy is in recession. In prosperous times, commodities are scarce and expensive. As he wrote in his 1937 book *Storage and Stability: A Modern Ever-Normal Granary*:

[I]f surplus stocks do operate as a national liability rather than an asset, the fault must lie in the functioning of the business machine and not in any inherent viciousness of the surplus itself. ... Some means must be found to restore the Goddess of Plenty to the role of benefactress-in-chief that was hers without question under a simpler economy.

Holding commodity buffer stocks to smooth supply is as old as the seven fat years story in the Bible, or the ancient Chinese system of “ever-normal granary.” But Graham's genius was to use commodity buffer stocks to regulate the supply of money, not commodities. When commodities were cheap, the government would issue commodity-backed notes to buy them. These would not replace traditional banknotes, then backed by gold, but would circulate in parallel. The point was not to manipulate the supply or price of commodities. It was to get money into the hands of commodity producers so they could spend it—preventing financial distress for them and their workers and stimulating the economy, thus creating demand for the surplus.

If prices were high, the government could redeem the recession-issued notes by selling down its commodity stocks. This would pull money out of the economy, damping irrational exuberance.

John Maynard Keynes and Friedrich Hayek both enthusiastically backed this idea. It appeared in the English proposals brought to the Bretton Woods negotiations and had wide support among economists at the meeting. But gold producers and holders blocked it from the final agreement.

Graham's idea was revived in the second half of the 20th century when oil discoveries wreaked havoc with developed economies (the Dutch disease, in which oil export revenue causes the currency to strengthen, draining profit and capital from other sectors) and undeveloped ones (the “resource curse,” in which natural resource wealth leads to corruption and violence, stifling productive economic activity). The government didn't have to buy and store oil. It already owned it, safe in the ground. All it needed to do was issue an oil-backed currency when oil prices were low and redeem it when prices were high. It could do this through a central bank, which would make domestic loans in the oil currency when prices were low to help the local economy. The drop in lending when prices rose would help offset the flood of export earnings. The non-oil economy could function on a traditional currency.

Venezuela's Hugo Chávez started lecturing oil-producing nations about the need for alternative economic arrangements as early as 2000. In 2009 he proposed an oil-backed currency. He appears to have been primarily seeking a way to avoid U.S. financial controls. Nevertheless, some economists dusted off Graham's arguments. Cryptocurrency lovers added a technological twist. Time will tell if they were as smart as the guys who designed the metric system.

The economists slipped an underappreciated aspect into el petro. Although Venezuela has the largest proven oil reserves in the world, its oil is low in quality and expensive to extract. The lowest-quality and most expensive to extract, but also the largest in quantity, is in the Orinoco Belt. There could be two Saudi Arabias or more there, but extracting it requires massive investment. So one petro could be exchanged for a barrel of oil a kilometer under the remote village of Atapirire (population 1,300).

Some have taken that as evidence that el petro was a fraud. But the cryptocurrency makes sense in theory. Let's do some wild ballparking: If the backing were credible and the government stable and honest and if giving the government one petro for every barrel you extract covered all royalties and taxes, a petro might be worth about half a barrel of oil.

In that case, a Venezuelan entrepreneur might borrow 100 million petro from the central bank to fund extraction at a rate of 20 million barrels a year after, say, three years of development. Each barrel extracted would allow paydown of one petro of debt, after one petro is paid to the government for the royalties and taxes. This could well be a positive net present value investment.

An oil-backed currency allows the government to offer loans in a hard currency without being limited by its currency reserves, and the investment return is largely insulated from oil price fluctuations because revenues and expenses are both denominated in oil.

Unfortunately, none of the key requirements to make this plan work—a credible government, an oil shortage, and investors interested in taking on the massive technological and political risks of the drilling schemes—were in place. You could imagine it working better if oil soared above \$200 a barrel and Canada tried it to spur development of its oil sands.

As a securitization of future oil royalties and taxes, it could be managed on a private centralized ledger. Only a few people in the oil business would hold el petro, and the currency would flow from the central bank to the entrepreneurs, from the entrepreneurs to the equipment and expertise providers, and from the providers back to the central bank. That could help fund oil development, but policymakers in Venezuela had grander ideas.

Using cryptocurrency tools opened breathtaking possibilities. Venezuela was starved for a trusted currency, and its citizens were accustomed to mining and using cryptocurrencies. Global investors were wild for anything crypto and were buying into even obvious frauds. El petro had very weak backing—royalty and tax savings on oil that might never be extracted—but Bitcoin and other cryptocurrencies had no backing at all, and their market capitalization was approaching \$1 trillion.

Many crypto enthusiasts denounced el petro because it required trust in the Venezuelan government to honor its legal promises to allow extraction of the oil. But if el petro had gone into general use for payment of taxes and fees, for government benefits, and eventually for nongovernment transactions, users wouldn't care about the theoretical backing by oil any more than they did when currencies were backed by gold. People would have accepted the currency for what it could buy today, not for its ability to get oil in the distant future.

The bigger problem was the need for trust in the honesty and competence of Venezuela's currency management. Because el petro was on a private centralized ledger, it would allow corrupt officials to expand issuance and steal the proceeds until the currency was worthless. That had already happened to the official currency, the bolivar. The Venezuelan government couldn't be trusted, or more precisely, it could be trusted to steal everything.

But the technology exists for a thoroughly untrustworthy government to credibly manage the issuance, acceptance, and use of a currency. Venezuela could have implemented a public blockchain. It could have released a public register of petro sales. But there never was a real cryptocurrency. Corrupt government officials need cryptotrust, the trustless exchange provided by a public blockchain, even more than anonymous internet transactors; they know they are dealing with crooks; the internet transactors only fear they might be.

During the 19th century, Venezuela averaged a revolution or civil war every five years. After the Blue Revolution of 1867-68, Venezuelan journalist Cecilio Acosta wrote in his essay "Las Revoluciones"³:

The truth is that revolutions carry and leave new ideas to incubate; they throw down the old and force reconstruction. They are admirable as providential when they are honest; but honest or dishonest, they are convulsions that upset, and remedies that regenerate.

Chávez's self-named Bolivarian Revolution carried and will leave behind new ideas to incubate. The French Revolution gave us the metric system, with worldwide influence more than two centuries later. Perhaps the chaos in Venezuela will be remembered for fusing—if only in theory—the technological and financial ideas that could someday allow us to link volatile resource prices with risky development to promote the economy's general welfare.

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1. See an entertaining discussion in Theodore M. Porter's *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*.

2. 2 See Perry Mehrling's "The Monetary Economics of Benjamin Graham: A Bridge Between Goods and Money?," *Journal of the History of Economic Thought*, Vol. 33, Issue 3, September 2011.
3. 3 See *Antología del Pensamiento de Cecilio Acosta*, Biblioteca Popular Miranda, 1977.

Facebook Cryptocurrency Plan Faces New Calls for Moratorium (2)

- . More than 30 advocacy groups seek halt in letter to lawmakers
- . Libra criticism could set the tone for congressional hearings

By Austin Weinstein

(Bloomberg) --

Facebook Inc.'s plan for its own digital currency is drawing yet another round of fire in Washington, this time in the form of a letter from more than 30 groups influential with Democrats demanding a halt to the project to deal with the "profound questions" it raises.

In their letter to leaders of five congressional committees, organizations including the Service Employees International Union, the Consumer Federation of America and Public Citizen argued that regulators aren't prepared to address issues surrounding the Libra project and that the social-networking giant needs to present a fuller picture of its plans.

Rep. Maxine Waters

"All of us believe the risks posed by Facebook's proposal are too great to allow the plan to proceed with so many unanswered questions," the groups said. Their demand echoes House Financial Services Committee Chairwoman Maxine Waters' earlier call for lawmakers to impose a moratorium and may set the tone for this month's congressional hearings on the issue.

Waters and other committee Democrats on Tuesday sent a letter to Facebook Chief Executive Officer Mark Zuckerberg, Chief Operating Officer Sheryl Sandberg and David Marcus, the

executive responsible for Libra, formally asking the company to agree to halt development “until regulators and Congress have an opportunity” to examine issues tied to cryptocurrency.

Libra raises “serious privacy, trading, national security and monetary policy concerns for not only Facebook’s over 2 billion users, but also for investors, consumers and the broader global economy,” Waters and the other lawmakers said in their letter.

Facebook’s announcement of the digital currency plan last month incurred a fresh wave of lawmaker criticism of the company, which was already under fire in Washington for a series of stumbles including major data breaches and allowing Russians to hijack its platform during the 2016 election to push Donald Trump’s candidacy.

Facebook’s plans for rolling out the cryptocurrency builds in time to talk with regulators and policymakers and “take their questions into account,” according to Dante Disparte, a spokesman for the not-for-profit organization that will govern the planned payment network and manage its financial reserves.

“The Libra Association maintains that financial inclusion, regulatory harmony and consumer concerns are not competing objectives, but rather work in lockstep with the association’s goals of offering a simple global currency and financial infrastructure that empowers billions of people,” Disparte said in a statement.

Cryptocurrency Winners Are Starting to Emerge: Aaron Brown

There’s still a lot of dead wood that needs jettisoning, but a few digital coins are gaining traction.

By Aaron Brown

(Bloomberg Opinion) --

The value of all cryptocurrencies in circulation is about \$275 billion, which is around the same level as late November 2017. But a lot has happened in between, with values soaring to more than \$800 billion at the every end of that year, and then plunging to barely \$100 billion in late 2018.

The wild swings are not unlike the early days of the internet era. Internet stocks soared 50 times in value from 1997 to 2000, then lost 95% of their value in a crash that bottomed around September 2002. Prices were recovering by the end of that year, but many investors were still licking their wounds and were reluctant to buy. Of those who did, some looked for bigger companies such as Amazon.com that had weathered the crash, while others looked forward to initial public offerings from firms like Google.

There's one important difference for crypto. Failed companies liquidate, sell themselves or get delisted. There's no similar process in crypto. So the Pets.com of crypto are still around. There may be no one maintaining or improving the code, there may be no users, but as long as some optimists somewhere are trading the coin, it will show up on crypto exchanges. I can't tell you which, if any, will thrive or go bust, but there are areas with much promise. (Full disclosure: I own Bitcoin and other cryptocurrencies.)

The first thing to do is jettison the deadwood and replace it with coins with more potential. Crypto experts will find bargains among the coins that have not kept up with Bitcoin, but most crypto ideas require continuous momentum in order to attract developer talent, investor capital and user enthusiasm for the necessary network effects to catch on.

The primary place to look for deadwood would be the 211 coins representing 21% of the total crypto market capitalization at the end of November 2017 that failed to maintain their values in terms of Bitcoin at the market low in December 2018. The biggest names in this group are Ethereum, Litecoin, TRON, Cardano and Dash. These are strong technically, but could not command investor loyalty at the bottom of the market. Although overall crypto prices have returned to November 2017 levels, this group is collectively down 25%. These coins could be the first projects abandoned by investors at the next downturn. I don't claim these are bad investments, but they were all on Santa's naughty list for Christmas 2018, and you should know why before you hold them.

Another problematic group is the coins that have not maintained their Bitcoin capitalization in the 2019 rally. That's 534 coins representing 13% of the crypto market in November 2017. The biggest ones are Ripple, Stellar, Monero, IOTA and NEO. Ripple and Stellar are blockchains for settling financial transactions, Monero is a transaction currency with strong privacy protections, IOTA is a currency for the Internet of things and NEO is a digital asset smart contract platform. These coins have lost out in the regulatory evolution since 2017. Monero seems unlikely to be tolerated to the extent necessary to make it a good investment. The other four face competition from blockchains developed by traditional companies working with regulators. There are probably bargains in this group, but they're cheap for specific reasons.

Bitcoin Cash, Bitcoin Gold, Metaverse ETP, HyperCash and Gold Bits Coin are the biggest in a group of 123 coins, representing 13% of total crypto market capitalization in November 2017, that did not maintain Bitcoin market capitalization during the bubble in December 2017. As a group, they are down 77% since November 2017. Investors gave up on them long ago.

The final place to look for deadwood is in currencies introduced in the December 2017 frenzy. This group of 111 was valued at more than \$25 billion at the peak, but are less than \$1 billion today. None are individually big enough to mention.

That leaves five currencies, representing 53% of market capitalization in November 2017, that took full advantage of the rally in December 2017, maintained good value even at the lows of December 2018, and have rebounded sharply. That doesn't mean they're good investments today, but they have demonstrated strong price action in good times and bad. The five are Bitcoin, EOS, Binance Coin, Basic Attention Coin and Freicoin. The last two are too small to discuss, although both are interesting ideas. Bitcoin is familiar. EOS is a distributed computer and Binance is a coin associated with a crypto exchange.

Finally, the most exciting place to look for new investment is coins introduced to the public after the peak. Bitcoin SV, Tezos, Ontology, MakerDAO and Crypto.com Chain are the five biggest, but there are 1,072 by my count. So picking winners can feel like playing the lottery, but if you want exposure to crypto you should have some newer entrants given how fast the market changes.

Bitcoin SV (for "Satoshi's Vision") is a controversial coin promoted by a guy who claims to be Satoshi Nakamoto, the inventor of bitcoin. Tezos is similar to Ethereum. Ontology connects blockchains. MakerDAO is a combination of two coins that provides a decentralized stablecoin for transactions. Crypto.com Chain integrates digital transactions with Visa and other traditional payment systems.

All crypto investments are high risk. Market volatility is high, investor protections are low and the entire sector could go to zero tomorrow. But there are plausible scenarios in which crypto grows to become a significant part of the economy, and I personally try to keep 2% of my portfolio in a diversified crypto exposure. That doesn't require becoming a crypto expert, but it does mean constantly pruning the portfolio for no-longer-promising holdings and making sure I have exposure to up-and-coming ones.

Will Bitcoin Crash Again? Next Cycle Could Be Tamer: Aaron Brown

The digital currency market is much different from the last two boom-and-bust streaks.

By Aaron Brown

(Bloomberg Opinion) --

The cryptocurrency market is one of booms and busts. Bitcoin went from essentially zero in 2009 to almost \$150 by 2013. It then fell 60% and rebounded to \$1,150. By 2015, it was down 85% to \$175 (although still above the high in 2013). It then skyrocketed, peaking at more than \$20,000 by the end of 2017. In 2018, it again lost 85% of its value to \$3,200 (but still above the 2015 high). This year, Bitcoin rose to more than \$9,000 and now hovers around \$8,100.

If the pattern of the last two rallies repeats, Bitcoin could rise to \$60,000 to \$400,000 before crashing 85% again. But today's cryptomarket is far different from the ones in 2013 and 2015, when the last two rallies started. It's much larger for one thing, \$260 billion in market cap compared with \$1 billion in 2013 and \$3 billion in 2015. There are far more cryptoassets and far more users. More than \$30 billion of investment capital was spent in 2018 building platforms and code bases. The regulatory picture has clarified considerably, and big companies including JPMorgan Chase & Co. and Facebook Inc. are jumping into the sector. (Full disclosure: I own Bitcoin and other cryptocurrencies.)

Of course, that doesn't eliminate the chance of bubble and crash. Even assets that don't change, that are as boring as gold or residential real estate, have experienced booms and busts. With the rapid innovation, radical ideas and disruption of crypto, investors have to expect a lot of volatility. But is there a chance they could see a few years of sane returns, with drawdowns limited to, say, 20% instead of 85% or more?

One place to look for evidence is the Bitcoin options market. In late November 2017, when cryptocurrency prices were similar to those now, there was active trading in \$10,000 one-month Bitcoin calls at implied volatility above 300%. That means paying \$2,200 for the right to buy Bitcoin at \$10,000 when it is selling for \$8,000. Bitcoin has to go to \$12,200, a more than 50% increase in a month, just to break even on this contract. Investors thought there was a 25% chance Bitcoin would go above \$10,000 in December and, if it did, its expected price was almost \$19,000. If it didn't, its expected price was only about \$4,000.

Today the contract sells for a more reasonable \$200 at about 85% implied volatility. That suggests a 15% chance of Bitcoin going above \$10,000 in a month and an expected price of only a little more than \$11,000 if it does. If it doesn't, the expected price is around \$7,500. That's a volatile investment, but nothing like 2017. So the probability of a bubble or crash in the near future seems smaller than the last time prices were near this level.

Another clue is correlation with the S&P 500 Index. Cryptocurrencies are technology businesses, which tend to have high correlation to the S&P 500 because they do well in good economic times with strong demand growth, support for innovation and inexpensive capital. But they are also substitutes for traditional finance and can do well when populists threaten trade wars, militarists threaten shooting wars or progressives talk about spending increases, wealth taxes and financial regulation.

The table below shows the average and standard deviation of the three-month return on Bitcoin, grouped by the correlation to the S&P 500 in the previous three months. These are quarterly returns, not annualized. You can see that when correlation is near zero for a quarter, Bitcoin average returns are very high the next quarter, but volatility is even higher. These are the boom

and bust quarters. (A correlation of 1 implies that two variables move perfectly in the same direction, whereas a correlation of negative 1 implies that two variables move perfectly in the opposite direction.)

On the other hand, when Bitcoin seems to be responding to fundamentals — either with positive or negative correlations — average returns are lower or negative, and standard deviation is much smaller.

The chart above shows Bitcoin's correlation with the S&P 500, which now stands near -0.2, a point where volatility has not been extreme in the past. Since mid-2018, the correlation stayed near zero only for a couple of months early in 2019. But during the bubble and crash at the end of 2017, correlations were near zero from September 2017 to January 2018. Generally speaking, Bitcoin seems to alternate between positive and negative correlations with the S&P 500, only occasionally spending time near zero, and those times seem to have the rapid price increases, presumably because the Bitcoin prices are not reflecting fundamentals.

Looking at the evidence, it appears the next cycle might be different. Whether that's because the sector has matured or investors have become smarter, I couldn't say. But my best guess is prices will swing this summer in response to fundamental news rather than screaming up on FOMO before crashing.

QuickTake: Mindfulness

By Michelle Cortez | Updated June 13, 2019

(Bloomberg) --

Mindfulness, a mental practice that emerged from 2,500-year-old Buddhist teachings, has turned into a booming industry. It involves focusing attention on the present moment for a sustained period, through the stillness of meditation or with movement, as in yoga. It's meant to train people to observe their thoughts and feelings without necessarily acting on them, so that they can choose the wisest path rather than be driven by emotions, cravings or habitual responses. Propelling much of the interest is the steady flow of studies extolling its potential benefits.

The Situation

Mindfulness programs are being offered by gyms, spas, schools, employers and clinics to ordinary people to deal with the stress of daily life, to schoolchildren to improve resiliency, to workers to boost efficiency and to the ill to alleviate chronic pain. They're often delivered in a part-time, eight-week course that incorporates breathing exercises, nonreligious meditation and yoga, with a goal of quieting what researchers call "the chatter of the mind." The U.K.'s National Health Service offers mindfulness-based therapy to prevent a recurrence of depression in those who have had three bouts of it. The approach is penetrating U.S. workplaces, with business leaders such as LinkedIn Chief Executive Officer Jeff Weiner and Salesforce.com Inc. co-founder Marc Benioff trumpeting its virtues and companies including Apple, Nike and HBO establishing meditation rooms within their offices. With mindfulness practices catching on, the portion of American adults who said they meditated during a 12-month period more than tripled from 2012 to 2017 to 14.2%. Those who engaged in yoga grew to 14.3% from 9.5%. Apps offering guided meditations have proven popular. They include Headspace and Calm, a start-up valued at more than \$1 billion.

The Background

The term mindfulness was coined in 1881 by British scholar Thomas William Rhys Davids based on his understanding of the Buddhist concept of attention, one of seven qualities necessary for enlightenment. The advent of the modern movement is generally credited to molecular biologist Jon Kabat-Zinn, who in 1979 established a program called Mindfulness-Based Stress Reduction at the University of Massachusetts involving weekly group meetings and daily practice over eight weeks. Today, UMass and other institutions offer variations, including adaptations for the workplace. The most common mindfulness practice is a form of meditation in which the practitioner gets in a comfortable position and focuses on breathing and the present moment. A variation, called body-scan meditation, involves directing the attention to points on and inside the body and observing the sensations there. In addition to yoga, mindfulness activities include tai chi — practiced by millions of people in China, often in groups that meet in parks — and the related qigong, both of which focus on slow, deliberate movements. Although the science is at an early stage, MRIs have shown that practitioners exhibit structural changes in the brain. An analysis of 47 high-quality reports found evidence that mindfulness can reduce psychological stress in just eight weeks, leading to less anxiety, depression and chronic pain. Other studies suggest it improves job performance by enabling workers to remain attentive

longer, improve the quality of their communications and recover faster from interruptions and negative emotions.

The Argument

Skeptics say mindfulness is a fad and its benefits are overrated. To be sure, results may have been exaggerated in studies marred by shortcomings, such as bias among participants who believe in the approach or lack of a comparison group, which can mask a placebo effect. Some health-care professionals worry that mindfulness is being pushed as a way of dealing with chronic pain in lieu of medical workups to find the underlying cause. Doubters see the use of mindfulness in the workplace as an effort by employers to distract from problems such as long hours and wage stagnation. Among those who see value for it in job settings, there's a debate about whether its purpose should be increased efficiency for the business or improved peace of mind for workers. In his book 2017, "Why Buddhism Is True," author Robert Wright argues that mindfulness is the best way to cope with the mismatch between our genetically programmed impulses and what's best for us in the modern world. For example, evolution designed us to crave fat and sugar when they were rarities in the human diet. Now that they're abundant, at least in the developed world, we tend to overindulge in them. Mindfulness trains the practitioner to observe a craving for donuts, for example, and then let it go.

The Reference Shelf

- An article in the Harvard Gazette explores the intersection of science and mindfulness.
- Here you can watch Jon Kabat-Zinn lead a mindfulness meditation session.
- An analysis of studies on the effectiveness of mindfulness meditation in JAMA Internal Medicine.
- "Why Buddhism Is True," an argument for mindfulness from the point of view of evolutionary psychology by author Robert Wright.
- The University of Oxford's Mindfulness Research Centre compiles evidence of the benefits of mindfulness.