

“Fintech and crypto currencies: is it betting or investing”

By

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Your excellencies, distinguished guests, ladies and gentlemen

Thank you for including computer science and technology in this business and policy discussions and congratulations for celebrating the 20th anniversary

I am pleased to contribute on the topic of “Fintech and crypto currencies: is it betting or investing”. The synopsis provided by the organizers was very useful in composing this message

The continuing adoption of computing technologies to enhance performance in the financial sector, Fintech, is expected to gain a major boost with the coming to maturity of Blockchain and crypto currency technologies. Blockchain promises traceability, integrity, robustness, strong authentication and implements crypto currencies natively

The contribution is organized in three parts: blockchain, crypto currencies and policy recommendations

**Blockchain.** Ghana and Africa need to embrace the blockchain technology and prepare for its impact. Blockchain is enabled by the Internet and implements a trust architecture on top of the Internet. It is well known that there’s a correlation between adoption of affordable internet and these new technologies that the internet has enabled

The description of the first implementation of the crypto currency, bitcoin white paper, was published on [bitcoin.org](http://bitcoin.org) in October 2008 and the first block of the bitcoin blockchain, was mined on 3, January 2009 by an apparently anonymous Satoshi Yakomoto. However, since 2014 new platforms starting with ethereum have emerged offering variations in blockchain architecture. Ghana launched its first bitcoin exchange, [africoinx.com](http://africoinx.com), and mining facility in 2015

Thus, Bitcoin is 10 years old this year

The ledger of the confirmed transactions are stored on the blockchain making them ordered, immutable and open to anyone without permission. The blockchain technology has also been referred to as distributed ledger technology, as result, as copies of the ledger are distributed among users. The concepts behind the technology includes: a user is associated with a set of cryptographic key pairs for identification and authentication, there’s a method of agreeing on state of confirmed transactions called consensus, a permanent storage of control information (output of consensus algorithm) and programmable autonomous contracts

The confirmed blocks are added to the blockchain on average every 10 minutes by miners. A good analogy is the office paper filing system which has file contents added only on top of ordered stack with the entries having unique and increasing higher numbers. The filing is done by clerks who are the equivalent of miners today

Short pieces of integrity information as well as small programs now live on variety of blockchain platforms. Due to the high electricity cost of implementing bitcoin’s consensus on

state of transaction records, by proof of work, new types of consensus algorithms are research topics including, proof of stake, proof of presence, gossip, off chain settlements and others

The blockchain has also been used as storage of small records of non currency transactions, integrity information, certificates, stamps, logs and others

The blockchain also enforces fundamental rules of ownership in transactions as one must show proof of ownership when a “transfer transaction” is executed on a blockchain

Though the technology is at its beginning of adoption and remains obscure, we expect it to have positive impact in all sectors to retain essential invariants, things that ought not to change, in all sectors and organizations. Many governments and companies are already exploring the technology across sectors: energy, healthcare, financial services, supply chain management, manufacturing, transport, education, creative industries and public services. Blockchain, may however displace some trust intermediary institutions and functions, after all why would one need a third party trust intermediary when we can trust each other

**Now to Crypto currency**, the crypto currencies exist on blockchain. I bet that the future of money is in this truly digital money which are under direct control of individuals and organizations. The transactions are transparently and permanently preserved with traceability. It is also the future of financial programming globally

According to a global emerging code of conduct for cryptographic assets, tokens are instantiation or legal forms of a share of an asset, a set of permissions, or a set of claims that are held by bearers of token. Of particular interest, is the subset of digital tokens that exist within distributed or decentralized networks known as “cryptoassets”

In less than a decade, the industry has grown to few thousands of “cryptoassets”, a total market capitalization of about 300 billion USD, and total funds raised from investors via the sale of “cryptoassets” is 20 billion USD. An important advantage of “cryptoassets” is automatically-executed management, that implements the business logic directly into the decentralized token infrastructure via “smart contracts”

It is evident from above that crypto currencies are about investing not betting. A bet puts a price on a future outcome while the price in fiat currency of a crypto currency varies based on market performance, much like stock prices

The map of users worldwide today shows that while Asia and North America are leading and Europe following in adopting, Africa is far behind and watching. The maps show global adoption of crypto currencies are as at about 1991-1993 in Internet history timeline. This reminds me of when Network Computer Systems (NCS) introduced internet to Ghana in 1993

The crypto currencies being truly digital would inevitably become the future of money as society becomes more digitized

There are three overlapping token categories: “payment tokens”, “Asset tokens” and “consumer tokens”

1. **Payment Tokens**: Tokens features are designed to serve as a general purpose store of value, medium of exchange, and/or unit of account. Such general-purpose “Payment Tokens” could be created and distributed by any number of organizations or methods, including:

Central banks or other government departments, Commercial banks, Companies issuing something akin to card-based payment instruments (e.g. Apple Pay), new models and distributions - e.g. a decentralized network which creates, distributes and operates a crypto payment token, as is the case with Bitcoin.

**2. Financial Asset Tokens:** Tokens whose intrinsic features are designed to serve as or represent financial assets such as financial instruments and “securities”.

These “cryptoassets” are designed to represent assets typically of an underlying financial type, such as participations in companies or earnings streams, or an entitlement to dividends or interest payments. These tokens are analogous to equities, bonds or derivatives and alternative assets (e.g. Real Estate, Private Equity, Art etc.). A typical “Asset Token” would be issued by a business or entity in order to raise capital.

**3. Consumer Tokens:** Tokens that are inherently consumptive in nature, because their intrinsic features are designed to serve as, or provide access to, a particular set of goods, services or content. These consumer tokens serve as or power next-generation consumer goods, services, and platforms. These are also called “utility tokens”

Initial Coin Offering has been used to raise funding from other crypto currency holders. A finite number of tokens are typically issued and can be setup with low transaction fees. The general belief is some past ICOs have been poorly managed. The emerging core actors of the “cryptoassets” ecosystem includes: issuers, issuer service providers, platforms, wallets and custodians, investor/user, consumer services, advisory services, policy makers and regulators

**Now on policy and regulatory recommendations,** These technologies are coming from computer scientists who are a distinct and highly specialized professionals. We are scientists with engineers of a particular discipline of “humble programmers”. There’s a burning need for more investment in computer science departments at universities in the country; hubs, parks and centers would not achieve the desired impact without strong academic and industrial technical capacity

One has to determine which parts of the ecosystem are best managed by regulation, self regulation or left open. These technologies are moving fast hence policy would lag behind the technologies however we may create “sandboxes” and allow the new developments to thrive. We would want to regulate at the right time, not prematurely and not too late. An early clear direction gives advantage to local production capacity as the global market is yet to mature and consolidate. A late policy indication would lead to a late start and should this technology gain global acceptance, we become principally consumers not producers in this wave

It is refreshing that Bank of Ghana has issued caution about crypto currencies given that many citizens lost money for trusting ordinary websites and joining informal motivational clubs; that is a high price to pay for bad due diligence and greed. The awareness is being raised by the intervention is good for the local ecosystem. These are beginnings of policy for crypto currency industry in Ghana

Government may recognize crypto currencies and perhaps the Bank of Ghana, might issue currencies of the “payment tokens” type and regulate the exchanges that facilitate the trading of crypto currencies. SEC may also regulate the “financial asset tokens” normally while private sector may adopt “consumer utility tokens” to streamline business

We foresaw that the Internet would transform communications and society. We have been hooted at and some sacrificed dearly, yet we have been proven right in face of the digital divide. We hope this time, our warning of a looming “digital economy divide” will be taken

seriously and Ghana will adopt these over Internet and computer science enabled solutions, to address our issues and make investments for future

We have to be ready for crypto currencies culturally and technically and we have to be equipped with necessary policy and legal framework

Thank you