



The Future of Currency

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The Future of Currency

The world is amidst a technological revolution that is shifting the power balance. The Internet continues to expand into every neck of the world, empowering

The social divide between those who spread the message and those who receive it, those who pay and those who are paid is becoming increasingly blurry. The frontiers of communication are eroded with every day that goes by. Each person connected to the Net becomes receiver and sender: this revolution is about the access. Twitter's revolution lies in breaking the centralized power in communications. Square's re-

and the future: money can now be the message. This is such a huge phenomenon that it deserved an in-depth discussion among the best experts gathered by the Banker Foundation of Innovation for the XXII Future Trends Forum. There is now a common protocol to exchange value. The bitcoin revolution is here. Some obstacles had to be cleared up before its arrival in order to effectively replicate a tangible exchange of value in the digital domain. The main obstacle was the double-spending issue: not being certain of being the one and only recipient when you receive wealth over the Internet. The more than reasonable doubt that a copy of what is being sent might have been previously saved, uploaded to the Net and there for the taking, that hundreds of identical messages might have been simultaneously delivered... this is a deep concern when money is involved. Up until now the intermediary was the only competent party who verified the reliability of the process. The reason of the existence and business of this party is to inspire trust in a payment system or exchange of value.

Internet is expanding because it operates based on a protocol, a common language that interconnects all platforms

volution lies in enabling anyone with a mobile phone to make and receive payments anywhere.

Internet is expanding because it operates based on a protocol, a common language that interconnects all platforms. Messages with information are exchanged in this common code. This is so since the beginning of **the Net.** **However, it has evolved to open a gap between the known world**

Up until now the intermediary was the only competent party who verified the reliability of the process. The reason of the existence and business of this party is to inspire trust in a payment system or exchange of value.

And then came the digital ledger, a verifiable record of who owns each unit of value at each point in time. In the case of Credits—Facebook's virtual currency to pay for games purchased—the record of transactions or ledger was centralized and controlled by a party (Facebook), making it once again impossible to access information and verify that units had not been multiplied, diminishing the value of existing units.

The arrival of bitcoin has disintermediated the process of verifica-

tion and control of information.

The key lies in the block chain, a system based on creating a chronological record of each and every transaction carried out with each unit of account (each bitcoin) since its creation. This chained block registry tracks the trail of each bitcoin. It is saved and updated in each and every node that integrates the system network. The verification is based on constantly balancing out the information contained in the ledgers of each node. This is how all nodes become the supervisor, rendering unnecessary the task and cost of the intermediary. The system marks the before and after in the exchange of digital money and solves a major concern of copyrighted material in the digital age, when IP-protected materials can be replicated endless times.

What Bitcoin Needs to Become of Age

Once the tool is there, what is the chance of making it widespread?

The cryptocurrency revolution, where bitcoin is the first stronghold, needs to comply from the start with certain specifics requi-

red from any currency: liquidity, security, trust. These are no small challenges, but the circumstances where bitcoin emerges might be-

come an advantage for this and other cryptocurrencies, because these very challenges continue to be the weak spots of all currencies.

Liquidity. The monetary landscape is in turmoil due to the policies enforced by traditional monetary policies (Federal Reserve, Bank of England, Bank of Japan) in matters of liquidity in the aftermath of the financial crisis of 2008. Their need to keep the global payment system running has led to multiplying the volume of

Bitcoin's liquidity will need to increase as well in order to become a relevant currency worldwide. The struggle among traditional currencies might become an opportunity.

dollars, pounds and yens in circulation. At the same time and given the weakness of other currencies, the emerging world wants to play a larger international role, as proven by China and its initiatives to increase the liquidity of the renminbi. Bitcoin's liquidity will need to increase as well in order to become a relevant currency worldwide. The struggle among traditional currencies might become an opportunity.

Security. This concern is shared by all stakeholders: users are worried about being stolen on the Net; banks and other intermediaries, afraid of becoming involved

in unlawful actions, see increasingly complex and wide-ranging governmental requirements they need to comply with regarding information to control flows of capital originated in criminal activities; and governments are concerned with an unstoppable digital revolution. They might be tempted to forbid it instead of trying to understand how innovation works and the advantages involved.

The emergence of bitcoin has provided fabulous testing grounds for all these crossed interests because of the doubts users might have and the decisions regulators might take based on an essential characteristic of this cryptocurrency: anonymity. Authorities are shuddering at the fact that the user ID is the only piece of data disclosed from a party making a transaction in bitcoins. However, this cryptocurrency offers a clear advantage that may stop them from banning it altogether in order to maintain their control: the block chain technology enables following the trail of money. Time will tell if governments—or what governments—saw an advantage in this.

Trust. All currencies and payment systems need to inspire trust in order to become widespread. Again, the advantage of cryptocurrencies is realizing that 100% secure systems do not exist and that a digital economy makes both traditional and new payment systems vulnerable. Crypto-

graphy will need to show to what extent it can evolve to bridge security gaps in traditional and new systems. The good news for the supporters of bitcoin is that you can verify what happened because it is transparent; as opposed to traditional systems, where information is centralized and opaque to users.

Bitcoin, the Mysterious Legacy that Came from the Net

There is a long road ahead of Bitcoin to become widespread. But where is it coming from?

A self-published report sprouted on the Net in the fall of 2008 (6 weeks after Lehman Brothers went bankrupt) to announce the advent of a revolutionary cash system: bitcoin. Satoshi Nakamoto is the pseudonym of a person or group of people who planted the seed of the cryptocurrency on the Net a few months thereafter, in early 2009, by openly sharing the software to join the system

and create blocks. Nakamoto lists the main features of bitcoin in his first paper: it is a fully P2P anonymous payment system, without the need for a trusted third party, since security is based on cryptographic proof that eliminates the double-spending issue. The system is such that a set amount of bitcoins (21 million units) is scheduled to be created and production growth is halved every four years.

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Bitcoin emerged with no specific purpose. Its staunchest supporters expect it will fulfill all the functions of money in due time, and replace traditional currencies in all their uses: means of exchange, unit of account and

deposit of value, and even reach the status of reserve currency. For the time being, it has become widely used as means of speculation. Given its wild fluctuations, some thinkers question the ability of the cryptocurrency to generate the trust needed to become widespread. Whether or not bitcoin overcomes this barrier will depend on its ability to become a useful means of exchange. Some important steps have been taken already; most recently, Paypal has famously adopted bitcoin. The payment platform

thus joins the ranks of the technological company Dell, the travel agency Expedia, the retailer Overstock, the gaming platform Zynga or Virgin Galactic future spaceflights.

Because it preserves the anonymity of its users, bitcoin has quickly become the widespread means of exchange of criminal activities online. Many bitcoin transactions take place in the so-called deep web or invisible Internet, in markets such as Silk Road (dubbed the eBay of illegal products. It was shut down in 2013).

A Temptation for Regulators

The growing dark use of cryptocurrencies and the fact that two thirds of the planet will only gain access to the Internet in the next 5 to 20 years poses a big question.

Governments might feel powerfully compelled to over regulate and even forbid bitcoins for tax-related reasons or to control flows of capital.

The decisions taken by regulators are and will remain a key factor

in the future of currencies. There are many examples of how a decision of a central authority radically changed the landscape of a currency and means of payment. For instance, the regulation in favor of using credit cards passed after the Asian crisis at the end of the 1990s transformed South Korea from being a nation of majority savers to becoming indebted consumers. Currently, South

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Koreans rank first in the world in number of cards per person.

Beyond South Korea there are other emerging economies — spearheaded by China— pushing some sort of economic colonialism to expand their currencies and payment systems worldwide. You may see the evidence strolling around Madrid or New York, two of the cities where you will find China UnionPay ATMs.

The influence of central authorities in the future of currencies is also evident in the reactions against regulatory decisions. Their actions in the aftermath of the financial crisis

of 2008 may have encouraged the emergence of alternative currencies such as bitcoin. There is strong opposition to central banks printing money as the antidote to the lost ability of commercial banks to create money by granting loans. It is even questioned that the dollar might continue to be the international reserve currency in the long term, something that seems quite logical if you look at the historical evolution of the status of currencies and the period of time a given currency has held this dominating position.

In the battlefield laid out before our eyes, governments and markets usually are in opposing camps, fighting for centralization vs. decentralization, opacity vs. transparency, monopoly vs. competition, currencies with set or adjustable monetary base.

Chances of Success in a World of Single Currencies

Once the main role to be played by governments is accepted, there are many other factors in consideration that may determine the success of a new currency or payment system.

Don't even take for granted that developed economies—apparently used to technological changes—

are more inclined to adopt a new system. Sometimes, the fact of having backed innovation for de-

comes and invested large amounts of money may be an entry barrier to new systems and their adoption lags, as is the case with chip technologies and POS terminals in the US (whereas they are widespread in retail stores throughout Europe).

The cultural affinity with a specific system and the existing competition have impact as well. Powerful established monopolies (central banks, commercial banks, payment processors) play a key role against the emergence of new sys-

the instability of the euro in Europe is partly due to our determination to have a single currency, instead of allowing countries joining the club to maintain their national currencies as complementary currencies.

tems that might jeopardize their business. And the size of the black or grey markets in each case has impact too.

One may wonder if it makes sense to maintain the mantra of one single currency per space going forward. Some expect bitcoin or some other cryptocurrency to replace traditional, centrally controlled currencies in all their functions. Others, Bernard Lietaer for one, champion the creation of a monetary ecosystem, where different currencies fulfill different functions. According to Lietaer, this formula based on diversity would provide monetary

systems with the stability they lack today—precisely because they have persistently chosen single currencies for efficiency purposes. There are grounds to support this hypothesis. Lietaer has studied many successful complementary systems. Some of them would not be initially listed as alternative currencies, despite fulfilling clearly a function connected to money. Such is the case of airline miles. For decades, this system has met the need of airlines to lock the loyalty of customers and use up free seats on planes. It is stable because the functions are clear. Miles are a means of exchange: you can purchase a plane ticket, make a long-distance call, pay a hotel stay or some product of an airline catalogue.

Another case of complementary currencies are social currencies, the foundation of the time bank system, for example. These formulas resolve the paradox of people who do not have money to exchange for goods and services but do have unused resources, such as time. Japan is experiencing a pressing problem in an ageing population: it could not use yens to provide care for their elderly without bankrupting the country. Hence the Fureai Kippu, a system where you can earn credits by spending time doing something for others, and then exchange your credit for services when you lack the time to do something yourself.

Lietaer believes the instability of the euro in Europe is partly due to our determination to have a single

currency, instead of allowing countries joining the club to maintain their national currencies as complementary currencies. This would have contributed to the stability of Greece, for example, and could still do so if a new drachma is introduced as means of exchange among the Greek population who do not have euros but instead have valuable resources. This experiment is duly supported too. Switzerland has run the WIR since 1934. It is a

In Kenya, money is exchanged through mobile phones. Until M-Pesa was created, sending money to relatives in rural areas through the bus service or any other informal route was risky practice. The free range of actions allowed by the Kenyan government is a key factor in the success of Safaricom's system. M-Pesa could evolve towards a truly virtual currency if salaries go to the virtual wallets used to pay all sorts of services and staples, at which point it is unnecessary for money to exchange hands physically, but is rather exchanged over the phone.

M-Pesa in Kenya is yet another case of innovation in the field of currencies and successful payment systems, although very different in nature from complementary currencies.

complementary currency exchanged one for one with the Swiss franc. It was originally intended for business-to-business exchanges, and there is no paper or coin in circulation. Unlike traditional currencies, the WIR goes against the cycle of liquidity, acting as a stabilizer of the Swiss economy.

M-Pesa in Kenya is yet another case of innovation in the field of currencies and successful payment systems, although very different in nature from complementary currencies. This mobile money service offered by Safaricom is spreading banking services throughout a country where only four million inhabitants hold current accounts, compared with the ten million who use M-Pesa.

The Leaders of Change

Kenya's example shows that the new role of incumbent players face a great challenge: newcomers (telecom carriers, for instance) have come to stay. Traditional banks must react with new services.

Digital platforms are also playing an increasingly larger role in financial services. It is perfectly feasible for Amazon to play a key role with its own currency in five years. Technological innovation in currencies and means of payment is not in the least risk-free. The evolution of bitcoin itself will be decisive: if it serves exclusively as speculative instrument, fraud or turbulences will impair how it is perceived and therefore the future of other alternative currencies.

Big retailers with established, highly trusted brands (Walmart, for instance), can play a role in this changing economic landscape.

Big retailers with established, highly trusted brands (Walmart, for instance), can play a role in this changing economic landscape. By using their own alternative currency, they may create currencies that circulate at high speed—just as if these players adopted

bitcoin or another cryptocurrency. For the time being, it seems unlikely to see a digital or brick-and-mortar European company leading this change—the main players are US-based.

On the camp of the incumbents, the back-end of card systems (protocols and connections) is bound to change over the next five years, more so than the front-end seen by users.

The struggle between incumbents and challengers may bring about important changes, such as the possibility of owning your banking identity and accounts (the same way we became owners of our cell phone number and could migrate from one carrier to another while keeping the same number). In this case, private data would no longer be controlled by corporations, but rather, corporations will manage the minimum data necessary to perform transactions in an environment with privacy à-la-carte, as opposed to the Big Data phenomenon and the security breaches suffered in some platforms

In this scenario, 5 billion people will connect online: these social network users bearing smartphones will seek nice, secure and cheap transactions.

linked to payment systems. There is huge business opportunity for IT security experts in this new scenario unfolding before our eyes.

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In five years time as well central banks will have to deal with the consequences of injecting massive amounts of freshly printed money into the global economy, running the risk of another systemic financial crisis. This, in turn, would lead to unpredictable actions by monetary authorities that have used up all known measures and more. Add to this situation the huge gap currently existing between political parties in Washington and the rise of extreme right and left wing parties in Europe that argue in favor of breaking the euro.

Tell Me Where You Are from and I'll Tell You How You Pay

Forecasts on the future of currency may be geographically driven too. In this case, supporters and detractors vary among geographies, as well as the potential milestones and business opportunities for whoever can read a particular scenario and is ready to ride the changes.

In Asia, where billions of consumers are joining the markets, online shopping will open the door to the emergence of alternative

currencies. Now, given the general interest in Asia to level the playing field and dominate currencies and Western economies—mainly led by

China—they will most likely promote a regional cryptocurrency controlled by their authorities. Technological companies (Alibaba and the likes) will be driving this movement as well. And on the other side of the tug of war the US will simply oppose any alternative that may upstage the dollar or the established payment systems. A broad strategy involving Big Data and analytics to foresee changes in the economy and currencies is likely to

property. Bitcoin may play a big role in this geography, supported by consumers, migrants and telephone carriers, although they are likely to run against the opposition of governments.

Change in Africa will not be led by traditional banks, but rather, by other players (as they are actually doing already): telephone carriers opening up new possibilities in a continent where banking services are scarcely used. First-level needs such as security, stability and reputation to operate internationally will favor new systems and currencies, as well as the need to curb sporadic capital drains in African countries. In Africa, the key lies in easily understandable, user-friendly innovations. The biggest enemy might be massive corruption that flees lawful, traceable monetary systems. At the same time, this might become an opportunity for players who want to prove they are not corrupt.

Europe is in a low-employment, low-economy spiral. Innovation might flourish there precisely due to the efforts of Europeans to monetize their illiquid resources and look for alternative economic activities to mitigate the lack of employment. Companies in the credit crunch will also look for more efficient payment systems. Consumers, companies, social networks and other Internet businesses will support change. The ECB and the rest of financial regulators will be in the opposing camp, alongside tax authorities that will oppo-

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succeed in Asia—precisely when it is being questioned in Europe and the USA. Chinese people will offer much less resistance to have their transactions monitored than European or American populations.

Latin America will seek solutions to the endemic instability, inflation and currency devaluation suffered in some countries. To the South of the Rio Grande, capital control, financial restrictions, the market of remittances and foreign investment will also play a role in the evolution of payment systems and currencies. There are business opportunities in the millions of people without banking services or the use of cryptocurrencies to register pro-

Citizens in Europe may be more inclined to adopt bitcoin after having lost trust in traditional currencies

se shared economy initiatives and investments in alternative currencies (which should be taxed). Citizens in Europe may be more inclined to adopt bitcoin after having lost trust in traditional currencies—especially if an event similar to the crisis in Cyprus takes place. It also seems to be fertile grounds for the development of complementary currencies used in parallel to the single currency. Consumers in the US do not have pressing needs regarding access to banking services or liquidity as described in other geographies. Therefore, change towards the new mo-

netary scenario will most likely be led by companies. In any case, the next step undoubtedly is making sure a critical mass of consumers adopts freshly marketed innovations to ensure their significance and sustainability. Some unmet demands (micropayments) might encourage innovations, as well as online shopping, which is limited in size compared with off-line shopping. The fact that everybody carries a cell phone in their hands will be essential. Silicon Valley and big retailers will favor innovation. Traditional money transfer systems, such as Western Union, will oppose it. The US government will struggle between maintaining control over payments and supporting innovative companies as drivers of economic growth.

Futurology. Money and the Next Generation

This is the foundation upon which the future is being built, the starting point leading towards the yet unknown future of currency, the world we envision in ten years.

In the short term, big online shopping platforms (in fact, some of them already did) may embrace

bitcoin, bank accounts in bitcoins may be created and smartphones may have a digital wallet em-

bedded (just as email is offered as a staple now). In this scenario, social networks become providers of financial services and big retail stores accept alternative currencies to save cross-border trade costs.

This scenario is not free from conflict and tensions that might actually be germinating as we speak—the bubble in China or the social upheaval in Europe, where regulators could react aggressively to stop the massive adoption of alternative currencies in response to their actions. However, history tends to normalize and integrate whatever comes. Therefore, bans on crypto-

nated tax reform, spurred by changes in borders and States while Europe starts accepting alternative currencies as the lesser evil that will stabilize the euro. And maybe then Greece will rebound out of the recession.

At some point in this imaginary time line, the dollar may lose its status as international reserve currency and, who knows, facing the impossibility of supporting another currency without provoking excessive geopolitical tension, they will embrace bitcoin. Or maybe the world will embrace the advantages of a monetary ecosystem and will learn to coexist in a mix of options where cryptocurrencies play their part along the rest.

The farther away the forecast, the more options there are. There are countless paths based on this analysis, this wide-eye picture taken during the XXII Future Trends Forum organized by the Bankinter Foundation of Innovation. There is no doubt that this moment has already written a page in the history of money. We will see where the new revolution takes us.

Therefore, bans on cryptocurrencies will gradually be lifted, gradually introducing cryptocurrencies wherever money is in action and even extending bitcoins to tools used in multilateral policies,

currencies will gradually be lifted, gradually introducing cryptocurrencies wherever money is in action and even extending bitcoins to tools used in multilateral policies.

Time will tell what we can improve based on the anonymous legacy left on the Net. This means that, should bitcoin fail, cryptocurrencies will not in the least disappear; a new version of Nakamoto's invention might rise (perhaps without the trait of anonymity or its deflation). Then, governments may decide that they do not need to block the bitcoin phenomenon and focus their efforts on a massive, coordi-



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