Digital Currency: Emerging Trend in World Financial Systems

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Introduction

Digital currency is a money balance recorded electronically on a stored-value card or other device. Another form of electronic money is network money, allowing the transfer of value on computer networks, particularly the Internet. Electronic money is also a claim on a private bank or other financial institution such as bank deposits. Digital money can either be centralized, where there is a central point of control over the money supply, or decentralized, where the control over the money supply can come from various sources. Digital currency is a type of currency available only in digital form, not in physical (such as banknotes and coins). It exhibits properties similar to physical currencies, but allows for instantaneous transactions and borderless transfer-of-ownership. Examples include virtual currencies and cryptocurrencies **(Andrew Wagner, 2014)** or even central bank issued "digital base money". Like traditional money, these currencies may be used to buy physical goods and services, but may also be restricted to certain communities such as for use inside an on-line game or social network.

Historically, in 1983, a research paper by David Chaum introduced the idea of digital cash (Chaum,1982). In 1990, he founded DigiCash, an electronic cash company, in Amsterdam to commercialize the ideas in his research. It filed for bankruptcy in 1998. In 1999, Chaum left the company. In 1997, Coca-Cola offered buying from vending machines using mobile payments. After that PayPal emerged in 1998. Other system such as e-gold followed suit, but faced issues because it was used by criminals and was raided by US Feds in 2005. In 2008, bitcoin was introduced, which marked the start of Digital currencies. Origins of digital currencies date back to the 1990s Dot-com bubble. One of the first was E-gold, founded in 1996 and backed by gold. Another known digital currency service was Liberty Reserve,

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founded in 2006; it let users convert dollars or euros to Liberty Reserve Dollars or Euros, and exchange them freely with one another at a 1% fee. Both services were centralized, reputed to be used for money laundering, and inevitably shut down by the US government **(Jack Cloherty,(2013)** "'Black Market Bank' Accused of Laundering $6B in Criminal Proceeds". ABC News. Retrieved 28 May 2013). Q coins or QQ coins, were used as a type of commodity-based digital currency on Tencent QQ's messaging platform and emerged in early 2005. Q coins were so effective in China that they were said to have had a destabilizing effect on the Chinese Yuan currency due to speculation.[11] Recent interest in cryptocurrencies has prompted renewed interest in digital currencies, with bitcoin, introduced in 2008, becoming the most widely used and accepted digital currency **(China's virtual currency threatens the Yuan, 2016)**

Digital vs. Virtual Currency

According to the European Central Bank's "Virtual currency schemes – a further analysis" report of February 2015, virtual currency is a digital representation of value, not issued by a central bank, credit institution or e-money institution, which, in some circumstances, can be used as an alternative to money. In the previous report of October 2012, the virtual currency was defined as a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community. Based on the Bank For International Settlements' "Digital currencies" report of November 2015, digital currency is an asset represented in digital form and having some monetary characteristics. Digital currency can be denominated to a sovereign currency and issued by the issuer responsible to redeem digital money for cash. In that case, digital currency represents electronic money (e-money). Digital currency denominated in its own units of value or with decentralized or automatic issuance will be considered as a virtual currency. As such, bitcoin is a digital currency but also a type of virtual currency. Bitcoin and its alternatives are based on cryptographic algorithms, so these kinds of virtual currencies are also called cryptocurrencies.

Types of Systems

Centralized Systems

Many systems—such as PayPal, eCash, WebMoney, Payoneer, cashU,and Hub Culture's Ven will sell their electronic currency directly to the end user. Other systems only sell through third party digital currency exchangers.

The M-Pesa system is used to transfer money through mobile phones in Africa, India, Afghanistan, and Eastern Europe. Some community currencies, like some local exchange trading systems (LETS) and the Community Exchange System, work with electronic transactions.

Mobile Digital Wallets

A number of electronic money systems use contactless payment transfer in order to facilitate easy payment and give the payee more confidence in not letting go of their electronic wallet during the transaction.

• In 2005 Telefónica and BBVA Bank launched a payment system in Spain called Mobipay[13] which used simple short message service facilities of feature phones intended for pay-as you go services including taxis and pre-pay phone recharges via a BBVA current bank account debit.

• In Jan 2010, Venmo launched as a mobile payment system through SMS, which transformed into a social app where friends can pay each other for minor expenses like a cup of coffee, rent and paying your share of the restaurant bill when you forget your wallet. It is popular with college students, but has some security issues. It can be linked to your bank account, credit/debit card or have a loaded value to limit the amount of loss in case of a security breach. Credit cards and non-major debit cards incur a 3% processing fee.[16]

• On September 19, 2011, Google Wallet was released in the US only, which makes it easy to carry all your credit/debit cards on your phone.

• O2 (United Kingdom) invented O2 Wallet at about the same time. The wallet can be charged with regular bank accounts or cards and discharged by participating retailers using a technique known as 'money messages' The service closed in 2014

• On September 9, 2014 Apple Pay was announced at the iPhone 6 event. In October 2014 it was released as an update to work on iPhone 6 and Apple Watch. It is very similar to Google Wallet, but for Apple devices only.

Decentralized Systems

A cryptocurrency is a type of digital token that relies on cryptography for chaining together digital signatures of token transfers, peer-to-peer networking and decentralization(What does Cryptocurrency mean?, Technopedia, 01-07-2013). In some cases a proof-of-work scheme is used to create and manage the currency. Cryptocurrencies allow electronic money systems to be decentralized; systems include:

• Bitcoin, the first cryptocurrency, a peer-to-peer electronic monetary system based on cryptography.

• Ethereum, an open-source, public, blockchain-based distributed computing platform featuring smart contract (scripting) functionality.

• Ripple monetary system, a monetary system based on trust networks.

• Bitcoin Cash, a 2017 fork of bitcoin; main differences from bitcoin are larger blocks, different difficulty adjustment algorithm, and lack of Segregated Witness.

• Litecoin, originally based on the bitcoin protocol, intended to improve upon its alleged inefficiencies. Faster block times and different mining algorithm compared to bitcoin.

• Dash, originally based on the bitcoin protocol, it offers the option of instant and private transactions. It is a Decentralized Autonomous Organization.

• NEM, a peer-to-peer electronic monetary system and a blockchain platform which allows for storing digital assets.

• NEO, an open-source, public, blockchain-based distributed computing platform featuring smart assets contract functionality.

• IOTA, an open-source distributed ledger and an electronic monetary system designet for the Internet of Things. It uses a directed acyclic graph (DAG) instead of a blockchain.

• Monero, an open source cryptocurrency created in April 2014 that focuses on privacy, decentralisation and scalability.

• Zcash, a cryptocurrency that offers privacy and selective transparency of transactions.

• Dogecoin, a Litecoin-derived system meant by its author to reach broader demographics.

• Nxt, conceived as flexible platform to build applications and financial services around.

• Zcoin, a privacy centric cryptocurrency that utilized the zerocoin protocol.

Virtual Currency

A virtual currency has been defined in 2012 by the European Central Bank as “a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community”. The US Department of Treasury in 2013 defined it more tersely as “a medium of exchange that operates like a currency in some environments, but does not have all the attributes of real currency”. The key attribute a virtual currency does not have according to these definitions, is the status as legal tender.

Law

Since 2001, the European Union has implemented the E-Money Directive “on the taking up, pursuit and prudential supervision of the business of electronic money institutions” last amended in 2009.[27] Doubts on the real nature of EU electronic money have arisen, since calls have been made in connection with the 2007 EU Payment Services Directive in favor of merging payment institutions and electronic money institutions. Such a merger could mean that electronic money is of the same nature as bank money or scriptural money.

In the United States, electronic money is governed by Article 4A of the Uniform Commercial

Code for wholesale transactions and the Electronic Fund Transfer Act for consumer transactions. Provider's responsibility and consumer's liability are regulated under Regulation E.
Regulations

Virtual currencies pose challenges for central banks, financial regulators, departments or ministries of finance, as well as fiscal authorities and statistical authorities.

US Treasury Guidance

On 20 March 2013, the Financial Crimes Enforcement Network issued a guidance to clarify how the US Bank Secrecy Act applied to persons creating, exchanging and transmitting virtual currencies.

Securities and Exchange Commission guidance

In May 2014 the U.S. Securities and Exchange Commission (SEC) "warned about the hazards of bitcoin and other virtual currencies".

New York State Regulations

In July 2014, the New York State Department of Financial Services proposed the most comprehensive regulation of virtual currencies to date, commonly called BitLicense. Unlike the US federal regulators it has gathered input from bitcoin supporters and the financial industry through public hearings and a comment period until 21 October 2014 to customize the rules. The proposal per NY DFS press release "... sought to strike an appropriate balance that helps protect consumers and root out illegal activity". It has been criticized by smaller companies to favor established institutions, and Chinese bitcoin exchanges have complained that the rules are "overly broad in its application outside the United States" (Virtual Currency Schemes (PDF). Frankfurt (European Central Bank; 2012)

Adoption by Governments

As of 2016, over 24 countries are investing in distributed ledger technologies (DLT) with $1.4bn in investments. In addition, over 90 central banks are engaged in DLT discussions, including implications of a central bank issued digital currency ("BoE explores implications of blockchain and central bank-issued digital currency". EconoTimes.com. 2016-09-09. Retrieved 2017-01-05). For examples:

Canada

The Bank of Canada has explored the possibility of creating a version of its currency on the blockchain. The Bank of Canada teamed up with the nation's five largest banks — and the blockchain consulting firm R3 — for what was known as Project Jasper. In a simulation run in 2016, the central bank issued CAD-Coins onto a blockchain similar Ethereum.

The banks used the CAD-Coins to exchange money the way they do at the end of each day to settle their master accounts.

hina

A deputy governor at the central bank of China, Fan Yifei, wrote that "the conditions are ripe for digital currencies, which can reduce operating costs, increase efficiency and enable a wide range of new applications." According to Fan Yifei, the best way to take advantage of the situation is for central banks to take the lead, both in supervising private digital currencies and in developing digital legal tender of their own.

Denmark

The Danish government proposed getting rid of the obligation for selected retailers to accept payment in cash, moving the country closer to a "cashless" economy. The Danish Chamber of Commerce is backing the move.[45] Nearly a third of the Danish population uses MobilePay, a smartphone application for transferring money.

Germany

The German central bank is testing a functional prototype for the blockchain technology-based settlement of securities and transfer of centrally-issued digital coins.

Netherlands

The Dutch central bank is experimenting with a bitcoin-based virtual currency called "DNBCoin".

Russia

Government-controlled Sberbank of Russia owns Yandex.Money - electronic payment service and digital currency of the same name.

South Korea

South Korea plans national digital currency using a Blockchain.[52] The chairman of South Korea's Financial Services Commission (FSC), Yim Jong-yong, announced that his department will "Lay the systemic groundwork for the spread of digital currency." South Korea has already announced plans to discontinue coins by the year 2020.

weden

Sweden is in the process of replacing all of its physical banknotes, and most of its coins by mid 2017. However the new banknotes and coins of the Swedish krona will probably be circulating at about half the 2007 peak of 12,494 kronor per capita.

The Riksbank is planning to begin discussions of an electronic currency issued by the central bank to which "is not to replace cash, but to act as complement to it." Deputy Governor Cecilia Skingsley states that cash will continue to spiral out of use in Sweden, and while it is currently fairly easy to get cash in Sweden, it is often very difficult to deposit it into bank accounts, especially in rural areas. No decision has been currently made about the decision to create "e-krona".

Switzerland

In 2016, a city government first accepted digital currency in payment of city fees. Zug, Switzerland added bitcoin as a means of paying small amounts, up to 200 SFr., in a test and an attempt to advance Zug as a region that is advancing future technologies. In order to reduce risk, Zug immediately converts any bitcoin received into the Swiss currency. Swiss Federal Railways, government-owned railway company of Switzerland, sells bitcoins at its ticket machines.

UK

The Chief Scientific Adviser to the UK government advised his Prime Minister and Parliament to consider using a blockchain-based digital currency.

The chief economist of Bank of England, the central bank of the United Kingdom, proposed abolition of paper currency. The Bank has also taken an interest in bitcoin. In 2016 it has embarked on a multi-year research program to explore the implications of a central bank issued digital currency. The Bank of England has produced several research papers on the topic. One suggests that the economic benefits of issuing a digital currency on a distributed ledger could add as much as 3 percent to a country's economic output. The Bank said that it wanted the next version of the bank's basic software infrastructure to be compatible with distributed ledgers.

In case of Thailand, the Bank of Thailand, is now considering the possibilities of digital currencies in the financial systems of the country now. Some banks, such as TMB, KTB, Kasikorn Thai, SCB, have started exchanging Bitcoins, some shops accept Bitcoins for payments, and there are already Bitcoin ATM machines at some places in major cities.

Thailand is due to roll out a national digital-payment system that levies much smaller transaction fees than the nation's banks. Yet lenders expect the network to help rather than hinder them financially. Commercial banks could save some 77 billion baht ($2.18 billion) in the next 10 years as the so-called "PromptPay" service curbs the use of cash, according to Thai Bankers' Association Chairman Predee Daochai. That will exceed the revenue loss from money transfers and payments by 20 billion baht.

Thailand plans to unfurl the network this quarter after a delay to fix glitches. Modernizing the national payment system is seen as one way of helping to lift the economy out of a period of subdued growth. Asian neighbors including India and Singapore are also promoting cashless transactions to boost PromptPay transfers of less than 5,000 baht are free, with the levy for the biggest transactions capped at 10 baht. In contrast, inter-bank fund transfers of up to 100,000 baht cost between 25 baht and 120 baht at Kasikornbank. PromptPay will put a lot of pressure on banks' fee income in the early period of implementation, according to Thananchai Jittanoon, an analyst at UOB Kay Hian Securities (Thailand) Pcl in Bangkok. It may cut banks' fee income by about 5 percent. But in the long term, lower cash transactions will benefit most banks with falling costs of transportation and insurance.

The value of transactions via mobile and Internet banking in Thailand rose by more than a quarter to 3.2 trillion baht in the six months through September 2016, the latest data from the Bank of Thailand show. But cash remains the dominant medium for transactions compared with nations such as South Korea, the U.K. or Sweden, according to a central bank presentation.

Fees for money transfers and payments account for about 2.5 percent of Thai banking industry revenue, and half of this will be affected by PromptPay

How to Invest in Cryptocurrency

Investing in cryptocurrency can be very confusing as it differs significantly from how one would approach stocks. Buying Bitcoin or Ethereum is not like buying shares; rather, you are getting digital tokens that have certain functionalities, such as a decentralized, pseudo-anonymous currency in Bitcoin's case or fuel for decentralized apps and smart contracts for the Ethereum platform. You expect increased adoption and technological innovations to translate to demand for your coins/tokens and as a result a return on your investment. Some very enterprising investors will even trade cryptocurrency pairs such as BTC/ETH or BTC/LTC (Litecoin). While there is a wealth of knowledge out there, some which is extremely technical, the process itself is actually pretty simple. While it is a little more of a hassle than signing up for a brokerage account, you can easily get set up in less than a couple days without significant technical knowledge. Here are some of the important steps to invest in Cryptocurrency:1. Identify your cryptocurrency of interest and a relevant exchange, 2. Choose a wallet, or "cold storage" solution, 3. Create and confirm a smart contract in the wallet to transfer and receive funds.

Investing in cryptocurrency simply requires getting verified on an exchange that includes your coin of choice. Keep your tokens safe by storing your private key in a wallet. Use the public keys between the exchange and your wallet to seamlessly transfer your cryptocurrency.

Accessibility remains a huge problem in bringing new investors into cryptocurrency. The process described above, while not exceedingly complex, is nonetheless not very intuitive or easy to explain in 25 words or less. In the meantime, for those of you in the know, never invest money you cannot afford to lose and best of luck in this extremely volatile and exciting market changaporn (hanjaroen.,2016)

Many of the existing digital currencies have not yet seen widespread usage, and may not be easily used or exchanged. Most banks and shops generally do not accept or offer services for them. Moreover, there are concerns that cryptocurrencies are extremely risky due to their very high volatility and potential for pump and dump schemes. Regulators in several countries have warned against their use and some have taken concrete regulatory measures to dissuade users. The non-cryptocurrencies are all centralized. As such, they may be shut down or seized by a government at any time. The more anonymous a currency is, the more attractive it is to criminals, regardless of the intentions of its creators. Forbes writer, Tim Worstall, has written that the value of bitcoin is largely derived from speculative trading (Worstall, Tim. "Bitcoin Is More Like A Speculative Investment Than A Currency". Forbes. Retrieved 24 January 2014)

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