



Virtual Money: Concept, Types And Economic Effects

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Abstract:

Dealing with virtual money has spread in many countries of the world (a currency that does not have a physical presence that is traded on the Internet only and generated through special programs in the computer), yet the majority of individuals are still not familiar with the characteristics, advantages and risks of these currencies, and therefore the study aimed to show the fact Virtual money and its types and characteristics, with an analysis of the most prominent economic effects arising from its spread and use as a modern means of payment, the study reached a number of conclusions , the most important of which are: the weak infrastructure of this money, which made it exposed to sharp fluctuations in its prices at the lowest economic situations and events, and the lack of a central entity that regulates, supports and protects its issuance processes in times of crises contributed to the increase in fluctuations in its exchange rates, one of the most important proposals of the study was the need for international monetary coordination and cooperation that works on developing frameworks to protect dealers with this money, while working on the formulation of laws that control the issuance of this money and its circulation mechanisms at the international level , as well as the speed of the Saudi Arabian Monetary Agency issuing educational guidelines showing the risks of these currencies, with the issuance of mandatory instructions that prevent the circulation of these currencies on the local level, until international controls are reached.

Keywords: Electronic Money; Digital Money; Virtual Money; Bitcoin, Monetary Policy and Money Supply.

1. Introduction

The origin and types Virtual (encrypted) money is one of the latest forms of digital money, dealing with this money has spread in the last two decades, in many countries due to its

low cost and ease of use as payment is made immediately without the need for any other media, and they are currencies created by a technically integrated system, by an individual, a group, a well-known person, or an unidentified person. This topic deals with the concept of virtual money, its characteristics, origin and development, and its most famous types with a quick presentation of its most prominent advantages and disadvantages.

- **The concept of virtual money:**

Virtual money has been known as a digital representation of value, issued by private developers, it can be obtained, stored, accessed and dealt with electronically, and used for a variety of purposes when two parties agree to use it [1]. Also, it is a digital representation of a monetary value that is not issued by a central bank or a public authority, and is not necessarily linked to paper currency, but is accepted by normal or legal persons as a means of payment, and can be transferred, stored or traded electronically [2].

- It has also been defined as: one of the types of unregulated (decentralized) digital cash, issued by developers who usually control it, and used and accepted among members of a specific virtual community [3].
- It is a virtual currency that operates outside the official monetary system, as it is a digital representation of the monetary value issued by other than the central bank and credit institutions, deriving its value from the confidence in its voluntary acceptance [4].
- It is defined as: a set of digital protocols and signatures in which an electronic message actually replaces the exchange of traditional cash.
- It is also a recording of the value of the documented and restricted currency in electronic form, and the virtual money unit contains a reference number, which is a number that does not repeat and characterizes the virtual digital currency, as is the case of the serial number for the banknote, and it is called digital money because it performs the functions of money and appears in a digital form, they are electronically traded, and they are stored-value or prepaid payment mechanisms that enable payments to be made through the use of the Internet, known as network money or digital liquid money, and therefore virtual money is an expression used primarily to describe a variety of payment mechanisms of limited value, the most important characteristic of it is that its value is prepaid or that its value is stored inside it [5].

Based on the previous definitions, the virtual money is a virtual digital currency (that does not have a tangible physical entity or physical presence) produced by computer programs and not subject to control or control by a central bank or any international official administration, which is used via the Internet in The purchase and sale operations, or their conversion into other currencies, and optional acceptance by the dealers in them.

- **The emergence of virtual money:**

The idea of this money was put forward by a programmer who used a pseudonym, Satoshi Nakamoto [6], and presented it in a research published in 2008, which defined it as a new

cash system for electronic payment, and that dealing with it and transferring it is directly between users via peer-to-peer without relying on an intermediary. This currency is based on encryption between two parties, and is built on the anonymity of electronic transactions, with the aim of moving away from the centralization of major banks, as they are not monitored by banks of different types and bodies and are not subject to the laws of banks.

Bitcoin is designed to be a purely digital currency. A person cannot go to an ATM to withdraw or deposit bitcoins, but rather it is stored in online wallets, which are accessed by computers. The idea is based mainly on a program that is installed in the users' computer, which provides very high protection due to exchanges that can be described as confidential in some countries, because the value of the currency is transferred from one computer to another directly without an intermediary or transfer fees, as soon as the user downloads and activates a program or the application of Bitcoin. This program begins with the production of non-replicating currencies through specialized programmers called mining operations, and they are run on special servers, designed to issue a specific amount annually, and this quantity is reduced by half every four years[6].

In simple terms, the program prospers by default and according to certain programming for currencies, but the quality and strength of this mining process is according to the power of the computer processor; The more powerful the processor of the device, the better the mining process, and thus results in more currency generation, but the mining process is not that easy, as it requires the user to solve a lot of puzzles and equations to reveal a long series of numbers and letters to issue Bitcoin and transfer it to an electronic wallet, and the more mining operations, the more difficult the puzzles, and their solution requires specialized computer programs, and therefore users of the system are keen to provide powerful computers and advanced specialized programs to issue them, perhaps some may also attempt to hack other people's computers to use them in Bitcoin mining operations, and it is assumed that each operation is performed on the bitcoins, they are recorded in a public record called (Block Chain), which includes information about the accounts that were used in the exchange mining operations and the number of bitcoins that were exchanged, in order to analyze these transactions and to ensure that the dealers do not deal in the same units continuously.

It should be noted that 'Bitcoin' usually means the system, while 'bitcoin' or BTC generally means currency unit. Bitcoin encompasses an electronic, virtual currency with no physical depiction including banknotes or coins [7, 8]. The ecosystem of bitcoin encompasses a network comprising users in communication with each other with the usage of the bitcoin protocol through the internet as shown in Figure 1. This protocol is accessible as an open-source software application, and it enables users to keep and hand over bitcoins to buy and sell goods, or to swap bitcoins for other currencies. Bitcoins are produced within the network during the handling of transactions in a bitcoin mining process.

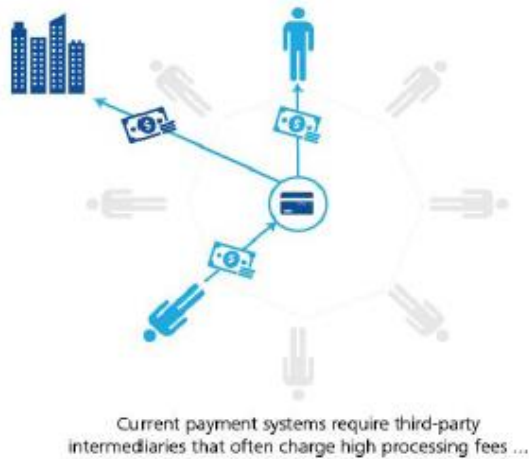


Figure 1: How bitcoins work[7].

Anyone connected to the internet can produce bitcoins using free software available for all operating platforms, as the production of this digital currency requires a certain amount of work to produce a certain amount of money, and this amount is modified by the main network site, so that it is not over-produced and without prediction.

Bitcoin is also traded through a decentralized network consisting of a large group of nodes and direct links, these nodes represent the group of users participating in the Bitcoin network, as in Figure (2).



Figure 2: Bitcoin is a decentralized network made up of a number of nodes.

Bitcoin can only buy goods and services from the Internet (by people or sites that accept it and deal with it), and it can also be converted into traditional currencies by specialized sites or by people who want to get it and exchange it for traditional currencies[9, 10].

- **Evolution of virtual money**

Bitcoin (the main currency representing virtual money) has gone through various stages of rise and fall in its value, spread and supporters in dealing with and accepting it, during the past eight years[11, 12].The founders of this currency say that the operations of issuing this currency will stop by 2024, when the exported quantity of it will reach (21) million units, which is the maximum quantity that can be mined from it, in order to preserve its value from deteriorating, if the issuance is excessive as happens in normal paper currencies, after that date it cannot be mined.

The currency can be obtained by purchasing only, and in order to ensure this, its code has been developed, as it becomes more difficult to produce it through mining, with the complexity of the algorithms required to be solved as the number of miners increases over time until its issuance completely stops, and until January 16, 2017 , the amount of Bitcoin issued amounted to (16,104.750) units [11, 12].

To overcome the scarcity of the virtual currency (Bitcoin) if it becomes the world's currency in the future, as its proponents hope; Whoever invented it made it divisible into small particles called satoshis, and every single bitcoin contains 100 million satoshis, which is what whoever invented it believes that it allows the total value of it to reach any number to meet the world’s needs of money [13, 14].

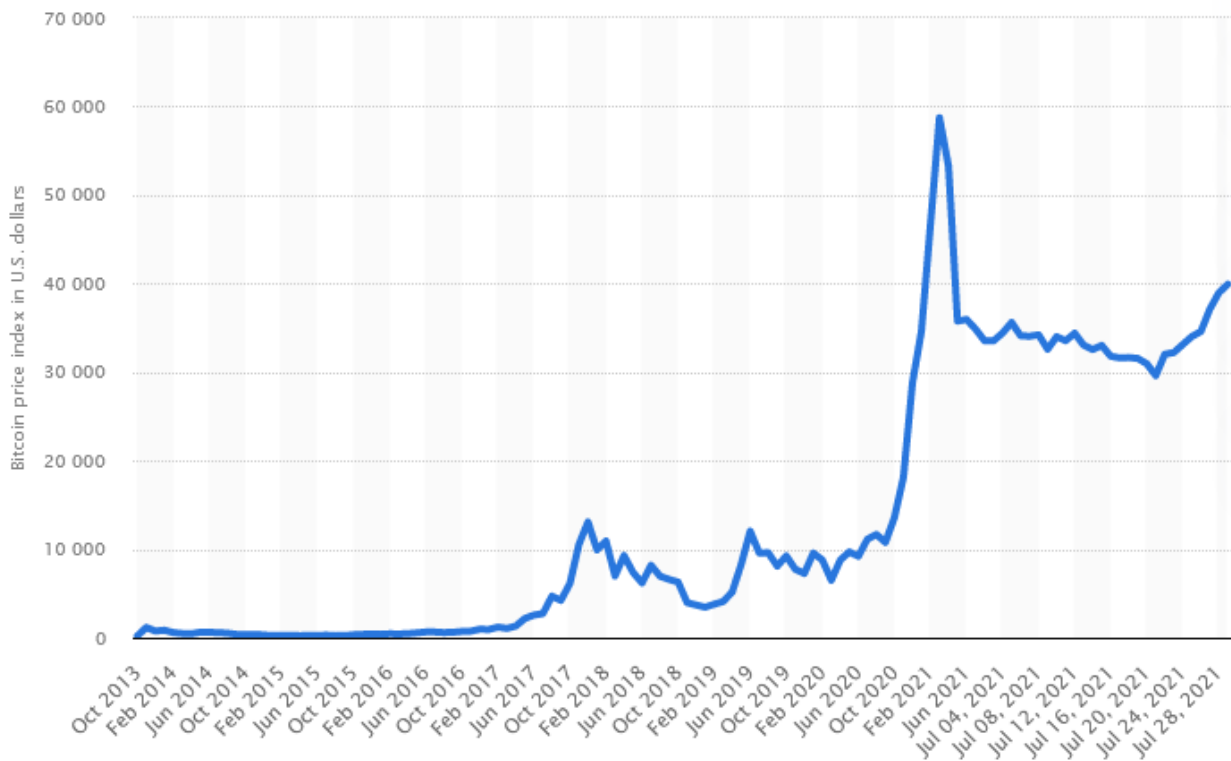


Figure 3: The Bitcoin price from October 2013 to July 29, 2021[15].

With the beginning of 2014, the second generation of cryptocurrencies appeared, with the inclusion of some advanced functions such as hacked addresses, smart contracts, as well as

side chains, and the number of markets and exchanges in which they are traded increased. The exchange value of the virtual currency (Bitcoin) has remained low since its issuance in 2009, then its price reached only 17 dollars in 2011, after that its price began to rise until it reached its maximum value in late 2013, when large-scale speculative operations began on it. It amounted to 1,200 dollars in early 2013, which is the highest price it has reached; Its market value at that time reached about 16 billion dollars. Then 2014 witnessed a significant decline in its value, as its price amounted to only \$326 per unit, and its trading was characterized by fluctuation in its prices. Since November 2016, the bitcoin price has been on the rise until it reached on January 5, 2017, \$1,150, knowing that at the beginning of 2016 the unit price was trading at \$435. Figure 3 shows the Bitcoin price from October 2013 to July 29, 2021 [15].

- **Types of virtual money**

There are many and varied encrypted virtual currencies, most of them are based on the principle of Bitcoin and cloned from it, and the differences between them are often easy, some of them are related to the time that the trading process takes, some are related to the method of mining and distribution, and some are related to hash algorithms (which are those algorithms responsible for the encryption process)[12]. Also, there are a limited number of currencies can be described as the main based on the number of dealers in them, the breadth of the sites that accept them, and the number of places through which virtual currency can be exchanged for fiat currencies. The alternative digital currencies at the present time amounted to a large number of (711) virtual currencies, and among the most prominent the most famous of these currencies are the following:

- Bitcoin: It is the most famous virtual currency in the world, and previously defined.
- Litecoin (Lifecoin): Established in October 2011, it is one of the first alternative cryptocurrencies, and it is distinguished from Bitcoin in that the mining process in it is easier and cheaper, and it adopts encryption algorithms completely different from that used in Bitcoin, and is faster in the exchange than Bitcoin, which It has increased its acceptance, and it has been said about it: If Bitcoin is the gold virtual currency, then Litecoin is the silver currency (<https://lltecoin.com/ar/>).
- Namecoin: Established in April 2011, it is based on open source Bitcoin technology, characterized by high scarcity, decentralization, security, and privacy (<https://namecoin.org/>).
- Peercoin: Established in August 2012, it is based like most virtual currencies on the Internet Protocol (peer-to-peer), but it is characterized by an increase in mining efficiency, improved security and guarantees; To avoid abuse from miners, it ranks fourth among virtual currencies in market capitalization (<https://peercoin.net/>).
- Novacoin: Established in February 2013, it is based on open source code, and on the Internet protocol (peer to peer), but it differs from most alternative digital currencies for Bitcoin in that it integrates protection programs inside the currency's core, which prevents attack by mining groups and prospecting (<http://novacoin.org/>).

- Feathercoin: It is an open source virtual currency, similar to Bitcoin and Litecoin, and has the advantage of adjusting the mining difficulty often, and is also characterized by being regularly updated to incorporate new features and improvements in it, including protection against abuse resulting from mass mining (<https://www.feathercoin.com/about/>).
- E-Dinarcoin: It entered the exchange market for virtual currencies on September 27, 2016. It works on modern open source technology and is characterized by continuous updating of its mining system to increase safety for its dealers (<https://edinarcoin.com/ar/news-ar/>).
- Zcash: The protocol was launched in October 2016. It is based on the source of the Bitcoin Core Currency Test Program. It has the feature of protecting the identity of the sender and recipient, and the value of all transactions on private blocks that can only be viewed by those who have the correct key(<https://z.cash/?page=0>).

The emergence of these alternative encrypted digital currencies increases the number of software developers, which in turn increases the improvement and development of all services and processes for trading these currencies, but the reality proves that the speed of development of programs and services for Bitcoin is much higher than its counterparts in other alternative digital currencies. Some believe that the presence of other virtual currencies besides Bitcoin may generate an atmosphere of healthy competition within the cryptocurrency user community(<https://www.cryptocoinsnews.com/cryptocurrency/>).

- **The economic effects of virtual money**

Given the tangible role of virtual money in international trade, especially in electronic commerce, because it has become a living and influential reality in the international arena, and because the expansion of the use of this money will result in a number of different economic effects, both negative and positive, this topic comes to clarify and review the most important of these effects[2].

- **The effect on money supply**

It is expected that if virtual currencies succeed and spread, they will significantly affect the following economic variables:

- The total supply of money at the international level, because it provides additional means of exchange at the international level in addition to what is in the arena and sourced by the countries of the world, represented in the paper currencies, and this may contribute to an increase in global inflation rates.
- Money generation: The ability of the banking system in each country to generate money will be affected, as the nature of virtual money and its exchange mechanism (although it is digital only) does not allow the possibility of money generation, because the amount of money in is transferred from one owner to another and from one wallet to another.

- The volume of money inside the economy in its narrow sense (M1), where the volume of money circulating outside the banking system increases, and because this money will not be included in the central bank's measures of money volume, it will result in an increase in the overall supply of money within the economy, which is not taken into account when making cash policies.
- It may also result in a lack of demand for legal money (traditional paper), due to the completion of many commercial operations via the Internet using virtual money, which is directly reflected on the ability of the central bank to take appropriate monetary policies, and this will be explained more clearly in the next paragraph.

- **Monetary policy and virtual money**

The function of monitoring and directing credit is one of the most important functions performed by the Central Bank at the present time. It seeks to control credit and direct it towards the targeted sectors, and relies on various tools to achieve this function, which are the so-called direct and indirect monetary policy tools.

With the emergence and spread of digital money, the opinions of economic specialists about the expected impact of digital money in general and virtual money in particular on the ability of central banks to manage and use monetary policy tools, and their effectiveness in creating the required effects, varied between the view that this new money will lead to important changes in policy, it will also weaken the role of central banks in managing monetary policy, and will force them to work on creating new tools and means that are compatible with monetary technical developments and innovations, for a number of reasons, the most important of which are:

- The increasing importance of electronic money and the expansion of its acceptance and spread at all levels; Especially with the increasing volume of electronic commerce at the international level, and the increased ability of individuals to exchange goods and services over the Internet; and the prevalence of electronic payment mechanisms and financial settlements around the clock, which leads to the abolition of the worms separating the markets of different countries, and weakens the effectiveness of monetary policy tools.
- The electronic payment services provided via the Internet are often difficult to control or direct, because the Internet does not have a traditional physical presence and is not subject to political borders or social obstacles, and the nature of this network makes it difficult for central banks to limit the balances of electronic transactions that take place through it, This leads to the weakening of the central bank's role in directing credit.
- The effectiveness of monetary policy tools may decline, whether with regard to rationalizing credit operations, rationalizing financing of import operations, or supporting certain economic sectors and activities, due to the decline in the ability to control the money supply within the borders of one country in light of the use of electronic money that generates and flows without borders.

While the majority of researchers believe that there will be no tangible and actual effects of virtual money on the ability of central banks to manage monetary policy, due to a number of reasons:

1. The limited acceptance and the lack of widespread use, so the trader of legal currencies in any country cannot be compared with the volume of virtual money, which makes it not actually affecting the money supply, Hence, it has no real impact on the ability of central banks to use the various monetary policy tools.
2. The official position rejecting it from the majority of countries in the world, which reduces the possibility of its spread, and thus the imitating its effects.

3. Fiscal Policy and Virtual Money

Virtual money is expected to have a tangible impact on fiscal policy, through its impact on the volume of expected tax revenues, due to the difficulty of monitoring transactions and commercial exchanges that take place through the Internet, and between the two dealing parties directly (peer-to-peer) and without a financial intermediary (the bank, or credit companies), which increases the chances of tax and customs evasion, deepens the phenomenon of the hidden economy, and affects economic policies in general.

4. Impact on the stability of payment systems, exchange rates and financial markets

It is expected that if virtual money becomes common, and its economic importance increases so that it becomes the main mechanism for settling payments, especially international exchanges, and with the growth and development of electronic commerce, the size of money in the economy will be impossible to determine, as a result of this money not being subject to direct supervision by the monetary authorities, Which in the long run negatively affects the functioning of the payment systems, this in turn affects the stability of financial markets, and this will also contribute to the inaccuracy of measuring the speed of money turnover rates. On the other hand, the movement of the exchange rate of virtual currencies (especially Bitcoin) during the past years since its appearance until today is very unstable (up and down), as shown in Figure 3, which is negatively reflected on the exchange rates of the local currency, and on the other hand, The exchange rate fluctuations of virtual currencies are not linked to any other international currency.

The widening gap between the real economy and the financial economy: with the increase in financial transactions using virtual money, the gap is growing between the real economy in which goods and services are found and exchanged, and the financial economy in which financial products are pursued and purchased for the main purpose of financial profit only from price differences (bets). One study estimated that the volume of money in the economy financial information is thirty to fifty times its size in the real economy[12].

5. Impact on International Trade

One of the most important factors affecting international trade exchange is scientific and technical progress that is directly proportional to the movement of trade, because it increases the available products and services, and increases the speed of obtaining them,

and monetary facilities have the most important role in that, therefore it is expected that Virtual money plays a large and important role in international trade exchange, but when looking at the volume of trade exchange in virtual currencies, we find that it is still very limited, which indicates that the impact of this currency so far on international trade is still limited, and even not influential in the rates of international trade exchange, this can be attributed to a number of reasons, the most important of which are: the limited monetary base for virtual money, and the lack of approval of legislative authorities in most countries of the world as a legal release unit, which limited its influence so far.

6. Study Objective

This study aims to find out the reality of virtual money, its types, characteristics, with a presentation of the most prominent emerging economic impacts on its spread and use as a modern payment method. Especially with regard to monetary policy.

2. Literature Review

The study of Al-Ghayesh et al [16] which aimed to study the effects and repercussions resulting from the spread of virtual money through an introduction - an introductory topic entitled the emergence of traditional money and its stages of development, then the stage of e- money development, the third section entitled virtual money problems, a fourth section entitled economic and financial impacts and the spread of this type of money and its widespread use will result in a number of multiple effects, including economic, legal and technical, which specialists should study and know their effects, especially since there is no role for countries or their central banks in issuing this new currency, which will greatly affect the monetary policies of countries, especially Developing, and reduces the ability of central banks to maintain monetary stability by weakening their role in controlling the size of cash liquidity and the speed of money circulation, This is in addition to the effect of this money on financial policies as well, through its impact on the size of tax revenues, as it will be difficult for the competent financial authorities to monitor all transactions and incomes that are paid or received with virtual money, and on the other hand, they may use this money as a tool for financing deals. Illegal and fraud crimes and terrorist financing., then conclusion, results and recommendations.

Garrick Hileman & Michel Rauchs in [17] conducted a study to systematically investigate key cryptocurrency industry sectors by collecting empirical, non-public data using four online surveys. The study gathered survey data from nearly 150 cryptocurrency companies and individuals, and it covers 38 countries from five world regions. The study details the key industry sectors that have emerged and the different entities that inhabit them.

Davoodalhosseini and Rivadeneyrain [18] presented a policy framework for electronic money (e-money) and payments. The framework poses a set of positive questions related to the areas of responsibility of central banks: payment systems, monetary policy, and financial stability. The questions are posed regarding four broad forms of e-money: privately or publicly issued and with centralized or decentralized verification of

transactions. This framework is intended to help evaluate the trade-offs that central banks face in the decision to issue new forms of e-money.

Vlasovin [19] conducted a study to analyze the stages in the evolution of electronic money. The research methodology is composed of the evolutionary theory of the origin of money and the theory of money and credit developed by the Austrian School of Economics. The emergence of cryptocurrency is seen as the next stage in the process of money evolution. The article concludes that it is cryptocurrency which can truly be considered electronic money as it exists only in electronic form and is in no way connected to the objects of the material world. As a result, cryptocurrencies have several advantages when compared to other forms of money.

3. Study Methodology

Depending on the nature of the topic and the novelty of its issues the researchers will use the inductive method to follow the phenomenon under study (virtual money and its applications and uses on the Global market; Then the analytical method to find out the economic implications of the spread of this type of money.

- **Study Hypothesis**

The study assumes that this type of money will significantly affect the money supply at the global level; also, will reduce the ability of central banks to control the supply of money and apply the monetary policies.

4. Study Results

The main results of this study can be summarized as follows:

- Traditional paper money is a unit of release of value, guaranteed by law in all countries of the world; While there is no legal release power for virtual currencies other than the parties' acceptance.
- The events and situations that the virtual currencies went through showed the extent of weakness in its infrastructure and the negative impact resulting from the lack of an administration responsible for issuing money and its supervision, the main virtual currency (Bitcoin) was exposed to a number of sharp fluctuations in their prices at the simplest economic situations.
- The goal of a number of those who acquire virtual currency is to compete and try to take advantage of fluctuations in exchange rates in addition to using them in some illegal transactions.
- The effects of virtual money depend on monetary policies; On the degree of spread and prevalence of dealing with it.
- The spread and prevalence of electronic money dealing in general leads to reducing the role of borders the political and geographical conditions of the country, which limit the effectiveness of the policies of each country.

- Despite the services and advantages offered by virtual money, its risks are as a very high financial instrument, whether on the benefit of the clients or on the overall economy.
- It is not only the virtual currency that is exposed to risks, but all currencies have points of weakness.

5. Recommendations

- Given the importance of financial transactions for individuals and societies; and because this new coin has been tempting to some due to its multiple and new advantages; The study suggests the following:
- The need for coordination and international legislative cooperation that works to develop frameworks to ensure protection of virtual money dealers; And the formulation of laws governing the issuance of this money and dealing mechanisms.
- The international bodies responsible for financial matters in the world, especially the IMF, should take steps that provide individuals and the business sector with rules and controls to integrate the new technology with the rules of the world monetary system; so that you contribute to Providing and developing effective solutions that do not weaken the growth of emerging markets and businesses, and monetary and financial innovations.
- Researchers should do more studies and research that help in understanding and developing this new cash tool, so that in the end it can be used while reducing its disadvantages.

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