

# Legal Conditions in the Field of Digital Assets and Feasibility Analysis of the Application of Blockchain Technology: the Support and Limitations of the Field in the Macro Background

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**Abstract.** With the development of blockchain technology and digital assets, the problem pages of digital assets at the legal level are becoming more and more prominent. This article will start with smart contracts and combine the case of Shenzhen Ethereum to analyze the legal issues based on blockchain technology and digital assets. The current status of conservation and its possible future development directions are analyzed. This article will specifically discuss the issue of contract law regulation of smart contracts from the perspective of legal system construction, as well as the compatibility between smart contracts and current contract law. Finally, the following conclusions are drawn: Firstly, consciously accepting the law needs to adapt to social changes and accepting the fact that the law needs to be adjusted. Secondly, at the operational level, the use of technology must comply with. Thirdly, at the research level, relevant legal research must be done, and legal scholars must have inter-professional knowledge and capabilities.

**Keywords:** Smart Contracts, Legislation, Digital Assets.

## 1. Introduction

### 1.1 Background

With the rapid application and popularization of blockchain technology, digital asset NFTs on the blockchain have attracted widespread attention from academia and industry. From the users' point of view, a smart contract is usually thought of as an automatically secured account, for example, a program that releases and transfers funds when certain conditions are met [1].

### 1.2 Smart Contracts

From a technical point of view, smart contracts are considered web servers, but these servers are not set up on the Internet using IP addresses, but on the blockchain. So that a specific contract program can be run on it. But unlike web servers, smart contracts are visible to everyone because the code and state of these smart contracts are on the blockchain (assuming the blockchain is public) [2]. Moreover, unlike web servers, smart contracts do not depend on a specific hardware device, in fact, the code of smart contracts is executed by all devices involved in mining (which also means that the computing power entering a single contract is limited, although the automatic adjustment of mining difficulty moderates this effect).

Smart contracts are assembly language programmed on the blockchain. Often people do not write bytecode themselves, but compile it from a higher-level language, such as Solidity, a specialized language similar to Javascript. These bytecodes do guide the functionality of the blockchain so that code can easily interact with it, such as transferring cryptocurrency and recording events.

### 1.3 NFTs & Blockchain

As a new thing in the network industry, NFT and the Metaverse have produced a series of existing entity systems, legal conflict between regulations.

In 1994, the cryptographer Nick Szabo proposed the concept of smart contracts, arguing that a smart contract "is a set of offers and promises expressed externally by code, and can cover the automatic behaviour of two parties in accordance with the offers and promises to perform the

agreement." This Nearly two decades after the concept was proposed, it was stranded due to the lack of a credible execution environment suitable for smart contracts. Until the emergence of blockchain technology, participants who execute smart contracts in systems without third-party guarantees can still trust each other's The validity of the identity and contract execution, the automatic transaction of digital assets becomes possible. On this basis, although the definition of smart contracts is still controversial, it should be undeniable that blockchain technology is the basic condition for smart contracts to exist. Therefore, a smart contract is a computer program that is deployed on the blockchain and exists in the form of computer code that can automatically execute the terms of the contract.

However, in view of the fact that blockchain, as a new type of network data underlying technology, is in the initial stage of development, and that blockchain and smart contracts themselves have high technical understanding difficulties, the research on it in the field of law is in the primary technical principle. At the stage of understanding and basic theoretical discussion, the number of relevant legal research results at home and abroad is relatively small, most of which are directional and enlightening research, and the content of existing research is relatively scattered. Foreign countries in the field of legal research focus on exploring the legal fields in which blockchain and smart contracts will bring paradigm shifts.

#### **1.4 Current Situation**

In terms of legislation and judiciary, the legal status of smart contracts has been gradually recognized. For example, in the United States, many states or cities such as Arizona have enacted legislation on smart contracts, affirmed their legal validity and role and made a statement about the relevant laws and regulations of smart contracts [3,4]. protect the rights of the parties. In addition, countries with more developed technology fields such as the European Union, the United Kingdom, and Australia have also legislated or regulated smart contracts [5,6]. However, most of these legislations are frameworks, and only recognize the legal status of smart contracts without detailed legislation. At present, China has no special legislation on smart contracts, nor does it explicitly recognize the legality of smart contracts. In terms of domestic legal research results, it is basically agreed that smart contracts should be included in the adjustment scope of contract law, but there is no systematic research results on how to make corresponding adjustments to the contract law system. It is more pointed out that blockchain and smart contracts have the potential to change the boundaries of technology and law and form new governance models, but technical solutions may also threaten the non-efficiency value of law while improving efficiency and certainty, such as equality Therefore, when conducting legal research, the value dimension of the law should be preserved while considering the institutional innovation brought about by technology.

In view of the current situation, this article starts with smart contracts. The purpose of this paper is to study the contract law regulation of smart contracts under blockchain technology, to explore the compatibility of smart contracts with current contract law norms, and to clarify that smart contracts operate under the current contract law system. The feasibility of the smart contract and the corresponding contract law system should be reformed and innovated, solve the problem of docking between smart contracts and the current contract law system, and provide a contract law system for the perfect design of smart contracts and their real application in the market and suggestions.

## **2. smart contracts & blockchain**

The characteristics of a smart contract should have: (1) Pure electronic nature: a smart contract should be based on computer code to read the contract, and execute instructions under trigger conditions to automatically complete the performance of the contract; (2) Software execution: compared to In traditional contracts, after the establishment of a smart contract, the performance of the contract no longer depends on both parties to the contract [7,8].

The behaviour of the parties, but the computer software program completes the execution of the contract, confirms or transfers the digital assets pointed to by the subject of the contract; (3) The object is special: because the smart contract is a virtual representation deployed on the computer program after all, its execution only It can be limited to the change of data and cannot directly dominate the physical entities in reality. Therefore, the object of smart contracts should be assets that exist in the form of electronic data, such as digital currency, virtual property and other digital assets; Changes in vouchers can determine the reality of equity changes [8].

Assets (that is, asset tokenization), such as real estate ownership, equity, intellectual property rights, etc. after the registration of rights and interests is completed on the chain. (4) Automatic performance, the performance of the contract no longer depends on the creditor's request behaviour and the debtor's payment, but the smart contract program automatically completes the performance of the contract [7,8].

### 3. Examples of digital assets in the legal field

In 2020, a local court in Shenzhen ruled that Ethereum is legal property. In the judgment, the court clearly mentioned: Although Ethereum cannot be circulated as currency in China, as a virtual property, its owner can control the currency he/she held. It is well managed, which can be paid in a specific way, transferred, and can be publicly traded using currency. It has a certain economic value and belongs to the "property" in criminal law.

In recent years, the German federal government, together with the Federal Ministry of Finance and BaFin (Federal Financial Supervisory Authority), issued a number of laws and regulations aimed at laying a solid foundation for digital assets. One of them regulates how institutions store digital assets in their custody. In addition, the Electronic Securities Act and, more recently, the Funding Locator Act have been introduced. Although smaller countries like Switzerland are nimbler and more progressive than Germany, the German government is making progress in establishing a solid regulatory foundation for tomorrow's capital markets. At the same time, Europe as a whole is making great strides. While the above-mentioned legal and regulatory initiatives are being implemented in Germany, the introduction of MiCA regulations (markets of crypto assets) is being pursued across Europe.

MiCA represents a universal regulatory effort with a speed and determination rarely seen in European bureaucracies, and the European Commission could enact it by the end of 2022. The regulatory framework covers all possible types of blockchain-based assets and applies the applicable unified regulation for all 450 million EU citizens. This is especially notable given that U.S. regulators are determining which agencies have jurisdiction over crypto assets. Of course, some aspects of the MiCA regulations are not optimally addressed. However, given the speed at which the regulation has been implemented and its general relevance, it may well be worthwhile considering that businesses need safety and protection before they are willing to make any investment.

Digital assets are often viewed as property by market participants. Property and property rights are vital to modern societies, economies and legal systems. Therefore, they should be recognized and protected. The laws of England and Wales are flexible enough to accommodate digital assets. However, certain amendment of the law needs to be made to ensure that digital assets are consistently recognized and protected.

For example, the USA law recognizes that digital assets can be property, and digital assets can be "owned". However, it does not recognize the possibility that digital assets can be "owned", as the concept of "owning" is currently limited to physical objects. This has implications for how digital assets are transferred, secured and secured under the law.

Reforming the law to provide legal certainty will provide a solid foundation for the development and adoption of digital assets. It will also encourage the use of English and Welsh law and the jurisdiction of England and Wales in transactions involving digital assets. Legal classification of digital assets and analysis focusing on ownership interests, taking into account specific issues that

arise in various situations, such as secured transactions, applicable law in cross-border transactions, insolvency and the legal status of intermediaries. The approach to be followed will be neutral, seeking to accommodate different types of assets and technologies, as well as different legal cultures. The principles identified will reflect best practices and international standards and enable jurisdictions to take a common approach to legal issues arising from the transfer and use of digital assets.

#### 4. Discussion

The contract law regulation of smart contracts specifically studied above essentially reflects the relationship between new technologies and laws in the context of the current era. That is, in the field of contract law, how exactly the new technologies such as blockchain and smart contracts coexist with traditional law, and which areas of the law need to be modified or even compromised for the technology. Taking the dispute resolution approach of smart contracts as a cut-in can better examine the nature of these problems. Not limited to legal remedies, when the assets in the smart contract are stolen by hackers, the digital assets are damaged and cannot be transferred or paid, the tokenized or digitized real assets are damaged and cannot be delivered, etc., the remedies the parties can seek.

There are roughly three categories: (1) Platform relief: After the inevitable execution of the contract is completed, the party shall prove the situation to the blockchain platform or the community. The smart contract community issues an agreement after reaching a consensus, or it may be necessary to "fork" the blockchain to achieve the purpose of modifying the blockchain data; (2) Public relief: issued by centralized trust institutions represented by court's Ruling, according to the ruling of the authority to achieve the effect of balancing the interests of the parties. It is also possible to consider creating a new specialized adjudication agency for the increasingly large-scale blockchain industry, using professional personnel to better handle smart contract disputes; (3) Self-help: when the smart contract is created, various emergencies, including Force majeure and other situations are written into the smart contract code, relying on oracle technology. When this happens, the oracle captures real data and triggers the smart contract to automatically allocate losses and balance benefits. A careful analysis of the relationship between the above three remedies may provide a clearer idea for us to better understand the relationship between technology and law. The first solution is that the main body of relief is the entire blockchain platform itself. The advantage is that it maintains the decentralized "advantage" of the blockchain that excludes judicial intervention. For example, if the blockchain wants to modify data in a "hard fork" way, it needs the consent of more than 51% of the nodes on the chain. If smart contracts want to be popularized in social life on a large scale and try to resolve disputes within the system with the platform itself, it is necessary for the smart contract community to develop its own dispute resolution mechanism in order to more effectively and properly adjust the disputes arising from smart contracts in the community and respond to user amendments.

The second way is the traditional legal solution. The main body of relief is the state public authority. If the court's ruling wants to restore the original property status of both parties, or force the property value on the blockchain. There are also two ways to compensate for damages. One is that the court forces both parties to reach a new smart contract to rearrange the ownership of the property. The other is that on the premise that the country establishes a sovereign blockchain, the court's ruling can be directly passed through the sovereign blockchain. On state-owned rights to build new blocks with new data states replace the old data. The first way consumes judicial resources, and the second way is to establish sovereign blockchain. It is still controversial whether it destroys the decentralized nature of the blockchain; the advantage of the third way is that it can best maintain the characteristics of the blockchain. The main body of the relief is the parties themselves, and the focus of the relief that can be achieved depends on the technology. Enforceability can be regarded as a remedy provided by pure technology; the disadvantage is that the remedy needs to rely heavily on the development process of technology, specifically referring to the development of oracle technology and the realization of Internet of Things functions. A contract formulated by bounded rationality can never cover all possibilities.

It can be seen that the above three approaches are mutually exclusive, and it is difficult to implement them in social life in a short period of time. A better approach is to apply all three at the same time, on the premise of clarifying the boundaries and clarifying the advantages and disadvantages. Not only blockchain, corresponding artificial intelligence, Internet of Things, big data, etc., can all be analogized. Kevin Warbach has described the complex relationship between blockchain and law in his book, "Blockchain Complements Law, Blockchain Complements Law, and Blockchain Replaces Law." [9].

The value of the law lies in the establishment of rights and obligations between the parties. With the rights and obligations as the framework, with the help of the protection of public power, there are traces to follow, and there are legally binding. The contract law adjusts the legal relationship of the contract and endows the parties' claims with binding force. The German legal philosopher Radbruch believed that property rights are the end, and creditor's rights are just means at the beginning. Debt is a dynamic factor in the legal world, containing the gene of death, and the purpose has been achieved, that is, it will be eliminated [10]. In a smart contract, the performance of the contract is automatically executed by the smart contract technology, and the purpose of the transaction is achieved. There is no need to give the parties credit rights to bind the other party. an alternative to the law. The law as a normative technology faces the challenge of new technologies emerging in social progress.

## 5. Suggestions

Its replacement and challenge, this is an indisputable fact. Similarly, if technology can replace the law to defuse risks and resolve disputes, it also poses a threat to traditional legal professions, such as judges and lawyers. If the contract can be calculated, artificial intelligence can draw up the contract through machine learning; if the oracle machine realizes the true and accurate capture of external data, the smart contract can automatically resolve disputes; In the era of networking, the fate of the traditional judicial system will be completely subverted. This question remains: can technology really completely replace the law?

The answer to the question is no, but the legal profession must stand at the center of the wind of the times to change the degree of paradigm shift is yes. Under the influence of the digital migration, many of the traditional social relationships we have are undergoing or will undergo dramatic changes. But even so, Saab still believes that the classic contract law still has its reasonableness, replacing the contract law will pay a high price, and it is still necessary to retain the contract law. What important is how to better align our hard-earned laws with the digital age.

First of all, in terms of cognition, the encroachment of technology on the legal territory is actually the fact that the law is breaking through the traditional way of implementation, that is, it tends to the deployment and realization of legal norms in technology, and "code is law" should mean this. Secondly, in terms of operation, the code must carry laws and regulations, which can start from the implementation of legal principles. No matter the application of any technology, it must comply with the requirements of traditional legal principles such as public order and good morals, honesty and trustworthiness, and this can be guaranteed by the implementation of external supervision. The further research direction is to place the specific laws and regulations of the country on the smart contract. At this time, it is not only limited to the automatic execution of various contracts, but also can realize the automatic execution of some laws and regulations, which is also not achieved by the current smart contract platform. The laws of the country carried on the blockchain should be the goal and guarantee of the construction of the "sovereign blockchain". In fact, contract modularization, financial technology. The legal practice of domain sandbox supervision has actually opened the door to the era of legal coding.

Finally, in terms of research, the research on such new legal issues must require researchers to no longer be limited to the traditional field of law, but to the corresponding technical fields and other disciplines such as economics that are required for perfect social analysis. To master and consider in a coherent way. For example, in the study of computational jurisprudence, we can break the scope of

the traditional legal problem research method of accumulation of experience and text analysis, and conduct research on legal problems.

## 6. Conclusion

In summary, there is still gap between the digital assets and the law. However, many countries have already responded in this regard and set an example. To further push for legislation, people should realize the necessity that the law should be changed with the development of technology. In turn, the technology also can be used to better understand what to do and make the law reasonable.

The original intention of legislation always has the hope of reducing disputes and making life easier, but no matter how far human technology develops, conflicts cannot be eradicated. The law has a natural defect gene - lag, it may never catch up with the pace of technological development, but with such a defect gene, the law has a solid backing, and the law born for disputes is always the solution. The last line of defense against social conflicts. Even though the continuous emergence and vigorous development of high-tech now indeed let us see that technology is eroding the legal territory, but stepping forward

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