

# Legal Governance of Digital Currencies and Regulatory Sandboxes in the Blockchain Era

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## ABSTRACT

As an application of blockchain technology, digital currency has the risk of affecting the existing financial legal relationship, and has triggered the problem of digital currency regulation. Consumer protection, globalised asset flows, the dichotomy between the respective regulations of a single jurisdiction, and the difficulty in determining the subject of legal responsibility are all challenges faced by digital currency regulation. In this regard, it is necessary to clarify the legal attributes of digital currencies, and use the “regulatory sandbox” to regulate the blockchain, so as to balance the innovation and risk of the blockchain. Its core is to establish the technical standard access system, financing audit and registration system, and investor suitability management system of blockchain financial enterprises.

**Keywords:** *Blockchain, Digital Currency, Regulatory Sandbox*

## 1. INTRODUCTION

Blockchain is a great innovation in the field of Internet and information technology in recent years. It combines all the transaction information in a certain period into an information block, which is called block. At the same time, each block has a timestamp, and these blocks are linked together in chronological order to form a chain, which can verify each other, so as to form a block chain. Blockchain information can be traced, and the tampering cost is very high, so it has high reliability. It has great application value in the fields with high credit deficit, such as the creation and transfer of digital assets, data validation, bills, securities, certificates of deposit or the anti-counterfeit traceability of some famous products.

<sup>1</sup> Specifically, the applications based on blockchain technology currently include: first, the creation, transfer, cross-border payment and trading of digital assets (non-monetary assets in the form of electronic data with market price, such as bitcoin). Bitcoin is the first mature, large-scale blockchain application. The second is the storage and verification of assets outside the chain, such as recording real estate information on the blockchain and copyright verification. Some countries have begun to try to register land ownership on the blockchain. Third, smart contracts based on blockchain platforms (e.g. Ethernet) control data access, complete some transactions

and automatically execute contracts without third-party intervention.

## 2. DIGITAL CURRENCY

First of all, let's talk about digital currencies and their ephemera. Some scholars divide digital currency into four categories: central bank legal digital currencies, supra-sovereign digital currencies, private stable coins, and cryptocurrencies. According to statistics, 76% of countries or regions in the world use the term cryptocurrency to describe decentralised digital currencies, such as bitcoin. Cryptocurrencies are regarded as the most advanced version of digital currencies.

### 2.1. The Legal Attributes of Digital Currencies

There are many disputes about the legal attribute of digital currency, which has formed the following mainstream views: first, the currency theory holds that digital currency has the attribute of quasi-currency, and its legal currency status should be confirmed in time; The other is the data theory, which holds that digital money is still data, but they are a new legal object with the attribute of property value.

## 2.2. Realistic Judgement

Private digital currencies should be classified as virtual goods.

China's current legal tender is limited to banknotes and coins.<sup>2</sup> Although both Germany and Japan believe that digital currency is similar to monetary payment instruments to some extent, in China, digital currency has no legal basis and the legislation involving RMB has not been modified.<sup>3</sup>

Furthermore, the theory of denationalisation of money does not support the monetisation of digital currencies. Most scholars who advocate the monetisation of digital currencies rely on Hayek's theory of the denationalisation of money, emphasizing that there is no clear boundary between money and non-money. The existence of the clearly defined so-called "currency" is only a legal fiction to meet the needs of lawyers or judges. Moreover, this fiction has never been true, and the focus is to make private funds popular. However, the theory of denationalisation of money emphasises the shift from monocentric to polycentric currency issuance, which is different from decentralisation. Without a central institution that provides services or commitments to consumers, the currency cannot be maintained and appreciated through savings. Therefore, Hayek's theory of the denationalisation of money cannot provide an effective basis for the monetisation of digital currencies in the blockchain era. In a nutshell, digital currencies have monetary "skin" but no monetary "soul".

## 2.3. Contingent Judgement

A legal digital currency should be a currency.

Legal digital currency is a type of digital currency, which is a fiat currency secured by the credit of the state and issued by the central bank. In addition to its basic functions as a currency, it is also fiat in nature and should be characterised as a currency.<sup>4</sup>

Since 2018, several countries have entered the digital currency race, with Venezuela taking the lead in issuing a sovereign digital currency globally.<sup>5</sup> Major economies such as Canada, Singapore and UK are also developing their own versions which are very different from bitcoin.

From a financial point of view, legal digital currency is equivalent to existing legal tender. They are not mutually exclusive, but applicable to different fields or ways of existence.

It is the equivalent of cash in the holder's pocket (M0, cash in circulation), which has neither interest nor risk. It is significantly different from bank deposit e-money, which is M1 (narrowly defined as money supply) or M2 (broadly defined as money supply). The holder's account for storing legal tender is a tool provided by the

central bank to users to save legal tender (similar to wallet).

## 3. RISKS OF DIGITAL CURRENCY

Since the launch of the world's first bitcoin in January 2009, the use of digital currency has helped to reduce the cost of fraud and theft, and there is no kickbacks, thus eliminating the risk of kickback fraud and rolling reserves in e-commerce.

Its emergence also brings challenges and risks.<sup>6</sup> The price of bitcoin rose from nearly zero at the beginning of the year to a peak of \$63000 in April 2021, which triggered a large-scale influx of almost all virtual digital currencies, resulting in a plethora of "aircoins" with no value, which made investors lose their funds. The issue of investor protection is extremely prominent, which brings great risks to the protection of financial consumers. In addition, the price of digital currency fluctuates greatly, and the legal and financial regulatory mechanisms in many countries are unclear. There are various risks in digital currency, such as the legitimacy of cryptocurrency tokens, money laundering and data and information leakage.<sup>7</sup>

Due to the inherent decentralisation, anonymity and openness of blockchain technology, digital currency has natural concealment, convertibility and transnational nature, making it easier to launder money. Once these "digital assets" enter the global market, they will cause damage to the financial market. It is requiring regulators to be particularly flexible. The United States has accumulated a large number of laws and regulations, increasing the compliance burden of law-abiding actors, but it is still unable to prevent crime.

The security of a blockchain database depends on the arithmetic power, which means that a blockchain system built on a foundation of sufficient arithmetic power will be more secure with more members of the network participating in the verification, and the single point system with more members writing data will be more vulnerable, with each member being a potential security risk.<sup>8</sup>

Because of the development of ICOs, STOs and other token financing projects, the scale of financial transactions in digital currencies is gradually increasing, and investors bear the risk of investing in digital currencies in order to obtain high returns. For instance, in 2020, China's first "digital currency arbitrage" case, the perpetrator established a fake official community in the name of hobby exchange, involving more than 1300 victims, with an amount of more than 100 million yuan. In addition, if the private password key is stored electronically on a personal computer or mobile device, it may be stolen.<sup>9</sup> This 'theft' can be achieved through malicious email attachments or applications, or keystroke

logging devices or software can be used to track the entered pin keys.<sup>10</sup>

#### **4. EXPERIENCE IN DIGITAL CURRENCY REGULATION AND LEGISLATION**

The Committee on Payment and Settlement Systems (CPSS) of the Bank for International Settlements (BIS) and the International Organization of Securities Commissions (IOSCO) jointly issued the Principles for Financial Market Infrastructures (PFMI), which set out some requirements, such as reducing complexity, reducing coordination across multiple ledgers, and improving the availability of assets and funds. To some extent, CPSS and IOSCO represent the international banking and securities regulatory systems. Therefore, their joint principles for Financial Market Infrastructure will be important in guiding the future of digital finance.

The Financial Stability Board (FSB) was established at the G20 London Financial Summit in 2009. In 2017, the FSB suggested that international institutions and national authorities should take into account the rapid development of FinTech technology and consider FinTech in the existing risk assessment and regulatory framework. Then, in October 2018, the FSB further confirmed that crypto-digital assets are private assets with the functionality and characteristics of a digital trading method.

The regulation of blockchain, virtual currencies and ICOs in the US is primarily within the framework of its Securities Act. In 2017, the Securities and Exchange Commission (SEC) required all ICOs to register unless exempted. In 2018, the California Consumer Privacy Act was passed, which aims to change the way data is processed and requires all technology company platforms to strictly protect customer privacy. The U.S. Commodity Futures Trading Commission (CFTC), the Financial Crimes Enforcement Network (FinCEN) and the SEC issued a joint statement in October 2019, clarifying that entities involved in digital asset activities have anti-money laundering obligations. Then, the US Congress discussed the Cryptocurrency Act of 2020 in March 2020.

The General Data Protection Regulation (GDPR) is a normative legal document of the EU on the protection of personal data and information, which was fully implemented on May 25, 2018.<sup>11</sup>

In December 2019, the European Central Bank (ECB) launched the digital euro "EURO chain" project to create an anonymous central bank digital currency (CBDC). In order to strengthen the fight against money laundering and terrorist financing, the ECB has established a special Anti-Money Laundering Bureau and designed a new "anonymous voucher". If users want to transfer CBDC without disclosing information to AMLA, they need to use an anonymous voucher and AMLA limits the number

of vouchers available to each user. On 14 July 2021, the European Central Bank announced that the Digital Euro would officially enter a 24-month trial phase to solve key issues in the design, circulation and distribution and prepare for its official launch.

Through the implementation of the amendment to the Funds Settlement Act, Japan officially recognised digital currency transaction as a legal method of payment, and became the first country in the world to provide legal protection for digital currency transaction. Subsequently, a Cabinet Order on Virtual Currency Exchange Operators was passed to regulate the payment business of virtual digital currency.

Nowadays, with the boom in digital currencies countries are committed to establishing a regulatory framework and formulating regulations through existing laws and legislative amendments based on the digital economy.

#### **5. REGULATORY SANDBOX**

The UK pioneered the Regulatory Sandbox to follow the Fintech innovation, aiming to provide a pilot area for new financial products and services, relax institutional constraints in a small but real market environment, gradually realise regulatory options, and ensure the vitality of financial innovation and the foresight of regulatory review. Singapore, Australia, Hong Kong, China and other countries have also adopted it to varying degrees and adjusted it according to their respective regimes.

##### **5.1. Who is the Regulator?**

The Regulatory Sandbox is supervised by the Financial Conduct Authority (FCA) in UK and by the Australian Securities and Investments Commission (ASIC) in Australia which is the statutory regulator of Australia's financial services and markets. ASIC also has set up an innovation hub to assist fintech companies to operate under the regulatory framework.<sup>12</sup> Monetary Authority of Singapore (MAS) is the regulator in Singapore regulatory sandbox and is responsible for all matters related to Singapore's financial and banking systems. The Hong Kong Monetary Authority (MAS) is the supervisory authority in Hong Kong, which is responsible for Hong Kong's financial policy and maintaining the stability of the monetary and banking system. In Taiwan, the regulatory institution, Financial Supervisory Commission (FSC), is a unified supervisory body for insurance, securities and finance in Taiwan. It is responsible for maintaining financial stability, implementing financial reforms, assisting industry development, strengthening consumer and investor protection and carrying out financial education.

**5.2. Mechanism Design of the Regulatory Sandbox**

**5.2.1. Entry Criteria**

The conditions for entering the regulatory sandbox include two aspects: the subject of access, (i.e. which enterprises or individuals can enter the sandbox) and the object of access (i.e. which products or services can enter the sandbox). Table 1 sandbox access criteria for different countries and regions.

**Table 1.** Access criteria for regulatory sandboxes in different countries and regions

Country/Region	Entrant subject	Entrant object (product)
United Kingdom	Available to traditional financial institutions as well as non-financial institutions, including fintech innovators	All "truly disruptive" innovative financial products or services, within the limits of the Financial Services and Markets Act
Australia	Open to both financial and non-financial businesses, individuals are also entitled to apply	Prohibits financial products that are complex in design, illiquid, have long payback periods or targeted at vulnerable consumers
Singapore	Financial institutions, technology companies and companies that provide technical support or related services to them	Innovations of financial technology
Hong Kong, China	Local banks in Hong Kong and their technology partner companies	Banking-related businesses, including mobile payment services, biometric authentication, blockchain and robotics
Taiwan, China	Including natural persons, sole proprietorships, partnerships and legal entities, limited to related industry	Businesses that are conducted in a way of technologically innovative

**5.2.2. Information Disclosure Standards**

The rapid innovation and development of Fintech has made financial risks more hidden. In the face of information asymmetry, mandatory information disclosure has great potential in protecting the interests of investors. Disclosure is also a high priority in sandbox regulation. FCA requires companies to fulfil its disclosure obligations, including reporting weekly key events and a complete final test report. Australia's ASIC requires the tested firms to submit a brief report to ASIC within two months of the completion of the test, including the details of the business tested during the test.

**5.2.3. Exit Criteria**

At present, regulatory sandboxes in different countries and regions include the exit criteria of successful testers and failed testers. The exit criteria for regulatory sandboxes are shown in Table 2.

**Table 2** Exit criteria for regulatory sandboxes in different countries and regions

Country/Region	Duration of the test	Exit options for successful companies	Exit options for test companies that fail the test
United Kingdom	3 ~ 6 months	After regulatory assessment and approval, wider roll-out is possible	
Australia	12 months		Apply to ASIC for an exemption prior to the expiry of the test period to extend the test period for a maximum of 12 months. The exemption licence will be assessed within 12-18 months of the test
Singapore	Exit upon reaching the legal and regulatory test time (no specific test length given)	If the results of testing during the regulatory sandbox are satisfactory, companies will have the power to deploy solutions for the relevant technology on a wider scale after exiting the sandbox	Make application and justification to MAS before the expiry of the test period
Hong Kong, China	No specific testing period for licensed institutions and minimum 12 months testing period for non-licensed institutions	Licensed institutions can bring their products to market and non-licensed institutions need to apply to the SFC for removal or variation of some or all of their licensing conditions	SFC will revoke status of licensed institutions. Non-licensed institutions cannot change the licensing conditions, nor can they bring their products to market.
Taiwan, China	12 months		An extension of up to six months may be requested once before the expiry of one month of the experimental period.

#### 5.2.4. Exemption Mechanism

Firms need to be exempted from certain financial regulation rules in the regulatory sandbox. For instance, the UK regulatory sandbox exempts Fintech from certain regulatory requirements and provides conditional relief by allowing them to test certain products and services within 12 months without a licence.<sup>13</sup>

In Australia, Fintech businesses are permitted to test certain products and services for a period of 12 months without holding a licence under the Australian Corporations Act or the National Credit Act. However, the Fintech licence exemption does not apply to complex products (such as derivatives), products for vulnerable consumers, long-term products (such as superannuation and life insurance) and products that are not easy to reverse.

#### 5.2.5. Assessment Institution

FCA is the UK's assessment agency and its regulator. In Australia, the assessment institution is ASIC, Singapore is MAS and Hong Kong is the HKMA.<sup>14</sup> In other words, the regulatory agencies in these countries and regions are basically the assessment agencies of the regulatory sandbox.

## 6. CONCLUSION

The key to the regulation of digital currencies is to protect the rights and interests of enterprises, investors and consumers. Therefore, the regulatory principle and primary goal of the "regulatory sandbox" is to ensure that digital currency enterprises have the opportunity to obtain legitimate interests and fully protect the rights and interests of investors and consumers.

In the current wave of global digital finance development, establishing a national regulatory sandbox and summarizing successful and failed experience will help us accumulate experience for future legislation and amendments.

## AUTHORS' CONTRIBUTIONS

Yuting Tan designed research, performed research, and wrote the paper.

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