

The Rise of Digital Currency and the Adaptability of Traditional Monetary Policy Transmission Mechanisms

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Abstract: The rise of digital currency is profoundly transforming the traditional monetary policy transmission mechanism. With the widespread adoption of central bank digital currency (CBDC) and private digital currencies, central banks face new challenges in regulating money supply, interest rate management, and financial stability. The decentralization and cross-border circulation of digital currencies may weaken the role of traditional financial intermediaries, affecting the transmission of monetary policy through credit, interest rates, and asset prices. At the same time, their digital and traceable nature offers new opportunities for policy implementation, enabling central banks to monitor capital flows more accurately, thereby enhancing monetary policy transparency and execution efficiency. Against this backdrop, this paper explores how to optimize regulatory frameworks, adjust monetary policy tools, and strengthen international cooperation to ensure the stability and effectiveness of monetary policy in the digital currency era.

Keywords: Digital Currency; Monetary Policy Transmission; Central Bank Digital Currency (CBDC); Financial Regulation; Cross-Border Payments

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1.Introduction

With rapid technological advancements, digital currencies, particularly central bank digital currencies (CBDCs), are gradually becoming an integral part of the global financial system. Since the emergence of private digital currencies such as Bitcoin, the scope of digital currency applications has continuously expanded, encompassing payments, investments, and value storage. The COVID-19 pandemic further highlighted the advantages of digital currencies, particularly their convenience in payments and decentralized nature, drawing increased attention from governments worldwide^[1]. Many central banks have already launched or are planning to issue digital currencies, such as China's Digital Currency Electronic Payment (DCEP) and the European Central Bank's Digital Euro. These developments signify the transition of digital currencies from theoretical discussions to practical implementation, driving profound changes in financial systems.

However, the rapid rise of digital currencies poses unprecedented challenges to the traditional monetary policy transmission mechanism. Conventional monetary policies influence economic activity through tools such as interest rate adjustments, open market operations, and interbank credit channels. Yet, with the widespread adoption of digital currencies, the effectiveness and transmission pathways of traditional monetary policies may be disrupted. For instance, the growing use of digital currencies could diminish the role of banks as financial intermediaries, altering capital flows and credit supply, which in turn affects the execution of monetary policies. Moreover, the increasing prevalence of cross-border digital currency transactions

adds another layer of complexity to international monetary policy coordination. Therefore, studying the challenges and opportunities presented by digital currencies in relation to traditional monetary policy transmission is not only theoretically significant but also provides valuable insights for policymakers and financial regulators.

2. Overview of Digital Currency

2.1 Definition and Classification of Digital Currency

Digital currency, as the name suggests, is a form of money that exists in a purely digital format. Unlike traditional physical cash or paper money, digital currency does not rely on a physical medium but circulates in electronic form. Depending on the issuing entity and usage scenarios, digital currencies can be categorized into the following types:

Central Bank Digital Currency (CBDC): CBDC is a digital form of money issued and regulated by a national central bank, typically considered an extension of fiat currency in digital format. Its key features include government endorsement, legal tender status, and broad acceptance. The primary objectives of CBDC include improving payment efficiency, strengthening financial supervision, and enhancing the transmission of monetary policy.

Private Digital Currency: These currencies are issued by non-governmental entities and represent a decentralized monetary system. Examples include Bitcoin, Ethereum, and other cryptocurrencies that rely on blockchain technology, offering decentralization, anonymity, and global accessibility. Although not recognized as legal tender by governments, these currencies have attracted significant attention due to their speculative value and practical applications in certain sectors.

Stablecoins: Stablecoins are digital currencies pegged to a fiat currency or asset to minimize price volatility. A prominent example is USDT (Tether), which maintains a 1:1 peg to the U.S. dollar. Designed to offer price stability, stablecoins serve as a reliable medium of exchange in digital transactions.

Electronic Money (E-Money): E-money refers to funds stored and transferred electronically, usually issued by financial institutions or payment platforms. Examples include balances in Alipay and WeChat Pay, which, while not functioning as full-fledged currencies, are widely used for daily transactions^[2].

2.2 Development History and Current Status of Digital Currency

The development of digital currency can be traced back to the late 1980s when digital payment tools such as credit cards and electronic wallets laid the groundwork for future digital currencies. However, the first true digital currency emerged in 2009 with the creation of Bitcoin, marking the beginning of a decentralized and intermediary-free financial system. Bitcoin addressed the reliance on intermediaries in traditional financial structures and leveraged blockchain technology to enable secure and transparent transactions.

Since the launch of Bitcoin, digital currencies have undergone multiple phases of development. In the early 2010s, the introduction of Ethereum and other cryptocurrencies further advanced blockchain technology, enabling the implementation of smart contracts and decentralized applications. During this period, the private digital currency market flourished, despite significant price volatility, attracting interest from investors and certain user groups due to its decentralization and potential value.

By 2014, central banks and financial regulators worldwide had begun recognizing the potential impact of digital currencies on the traditional financial system, leading to varying degrees of regulatory responses. The digital currency market experienced a surge after 2017, fueled by innovations such as Initial Coin Offerings (ICOs) and Decentralized Finance (DeFi), which expanded the applications of digital currencies beyond simple transactions.

In the 2020s, particularly after the COVID-19 pandemic, digital currency adoption accelerated. Many central banks initiated research and pilot programs for CBDCs, with notable examples including China's Digital Currency Electronic Payment (DCEP), the European Central Bank's Digital Euro, and the Bahamas' Sand Dollar. Today, digital currency is no longer confined to the realm of speculative assets but is gradually becoming an integral part of the financial system.

2.3 Technical Characteristics and Functions of Digital Currency

The technological foundation of digital currency primarily relies on blockchain, cryptographic security, and distributed ledger technology. These innovations provide digital currencies with decentralization, transparency, and security. The key technical characteristics and functions are as follows:

Blockchain Technology: Blockchain serves as the core technology of digital currencies, recording transactions through a decentralized ledger that ensures transparency and immutability. Its decentralized nature eliminates reliance on centralized institutions such as banks or governments, reducing intermediation costs in the financial system.

Cryptographic Security: Digital currencies employ cryptographic techniques to secure transactions. Using public and private key encryption, digital transactions remain anonymous and tamper-proof while preventing fraud and double-spending issues. Cryptographic algorithms also regulate the supply and circulation of digital currencies, mitigating risks of inflation or deflation.

Decentralization and Distributed Ledger Technology (DLT): A defining feature of digital currencies is their decentralized nature, which removes the need for central banks or financial institutions to validate transactions. Distributed ledger technology ensures that transactions are securely stored and verified across multiple nodes, enhancing the resilience and integrity of the digital currency system. This capability also enables seamless cross-border transactions without reliance on traditional banking networks.

Smart Contracts and Decentralized Applications : Platforms like Ethereum support smart contracts, which execute predefined agreements automatically without human intervention, reducing fraud and increasing efficiency. Decentralized applications further expand the use cases of blockchain technology, offering financial services, supply chain management, and insurance solutions without centralized control.

Payment and Transaction Functionality: The primary function of digital currency is to facilitate payments and transactions. Digital currencies enable fast, low-cost domestic and cross-border transactions while bypassing traditional banking intermediaries. This reduces transaction fees and processing times, making digital currencies an attractive alternative to conventional payment systems. Additionally, digital currencies enhance security, minimizing risks associated with fraud and financial theft in traditional payment networks.

3. Framework of Traditional Monetary Policy Transmission Mechanism

3.1 Objectives and Tools of Traditional Monetary Policy

3.1.1 Primary Objectives of Traditional Monetary Policy

The main goal of traditional monetary policy is to regulate the money supply and interest rates to achieve price stability, promote employment, and sustain long-term economic growth. The focus of monetary policy may vary depending on a country's economic conditions and stage of development, but it generally includes the following key objectives:

Price Stability: Maintaining price stability is a core objective of most central banks. Excessive price fluctuations can lead to inflation or deflation, affecting economic predictability and stability. By controlling the money supply, central banks aim to keep inflation at a moderate and stable level to support sustainable economic development.

Full Employment: Monetary policy plays a crucial role in promoting economic growth and job creation. In times of economic downturn, central banks often implement expansionary monetary policies to reduce unemployment and stimulate economic recovery.

Economic Growth: Over the long term, monetary policy should also foster sustainable economic growth. Central banks adjust interest rates and money supply to influence investment and consumption, thereby driving economic expansion.

Financial Stability: In addition to macroeconomic stability, central banks use monetary policy to maintain financial system stability. This includes preventing financial crises, managing systemic risks, and ensuring sufficient market liquidity.

3.1.2 Tools of Traditional Monetary Policy

To achieve these objectives, central banks primarily rely on the following monetary policy instruments:

Interest Rate Policy: By adjusting benchmark interest rates (such as the lending rate, deposit rate, or reserve requirement ratio), central banks influence market interest rates and, in turn, economic activity. Lowering interest rates encourages borrowing, investment, and consumption, while raising interest rates helps curb inflation.

Open Market Operations (OMO): Central banks buy or sell government securities to regulate banking system liquidity. Purchasing securities injects liquidity into the financial system, while selling securities absorbs excess liquidity, thereby influencing interest rates and money supply.

Reserve Requirement Ratio: Central banks adjust commercial banks' reserve requirements to influence their lending capacity. Lowering reserve requirements allows banks to lend more, stimulating economic activity, whereas raising reserve requirements tightens credit supply and controls inflation.

Standing Lending Facility and Refinancing Tools: These mechanisms allow commercial banks to borrow from the central bank to ensure liquidity, particularly during financial market stress.

3.2 The Basic Process of Monetary Policy Transmission Mechanism

3.2.1 Financial Market Channel

Monetary policy first affects financial markets by influencing interest rates, which subsequently impact borrowing costs for businesses and households. When central banks lower benchmark interest rates, commercial banks also reduce lending rates, making loans more affordable. This leads to higher investment and consumer spending. Conversely, higher interest rates increase borrowing costs, dampening economic activity.

3.2.2 Credit Channel

Monetary policy also affects bank credit supply, which plays a crucial role in financing business expansion and household consumption. By adjusting reserve requirements or conducting open market operations, central banks influence banks' liquidity. Increased liquidity enables banks to extend more loans, fueling economic growth. Conversely, tight liquidity discourages lending and may slow down economic activity.

3.2.3 Asset Price Channel

Monetary policy influences asset prices, including stocks, real estate, and bonds. Lower interest rates typically drive up asset prices, as investors seek higher returns from equities and real estate. Rising asset prices generate a wealth effect, encouraging more consumer spending. Additionally, firms benefit from higher valuations, which improve their financing conditions and investment capacity.

3.2.4 Exchange Rate Channel

Changes in monetary policy impact a country's exchange rate. Lower interest rates can lead to currency depreciation, enhancing the competitiveness of exports and stimulating external demand. Conversely, higher interest rates may strengthen the domestic currency, making exports more expensive and reducing foreign demand.

3.2.5 Expectations Channel

Beyond direct policy tools, central banks also shape economic expectations through forward guidance and policy announcements. By signaling future policy directions, central banks influence market behavior, consumer confidence, and business investment decisions. Well-managed expectations can enhance the effectiveness of monetary policy interventions.

3.3 Effectiveness and Limitations of the Transmission Mechanism

3.3.1 Effectiveness of Traditional Monetary Policy

In theory, the monetary policy transmission mechanism effectively influences economic activity through financial markets, credit supply, asset prices, and exchange rates. Under normal economic conditions, central banks can stimulate or restrain growth by adjusting interest rates, ensuring inflation control, and promoting employment. Particularly during periods of weak economic growth or deflationary risks, expansionary monetary policies can lower borrowing costs, encouraging investment and consumption to drive economic recovery.

3.3.2 Limitations of Monetary Policy

Despite its effectiveness, traditional monetary policy faces several challenges, particularly in the context of globalization and digital transformation.

Reduced Effectiveness in a Globalized Economy: The increasing integration of global capital markets has weakened the effectiveness of domestic monetary policy. With interest rate convergence across economies, central banks may find it difficult to achieve their intended policy outcomes solely through domestic rate adjustments.

Constraints in the Banking System: The credit transmission channel can be weakened by factors such as financial institution health and market confidence. If banks face liquidity crises or deteriorating asset quality, they may be reluctant to extend credit, even if monetary policy is expansionary.

Liquidity Trap: In low-interest-rate environments, monetary policy may lose its effectiveness, leading to what is known as a “liquidity trap.” When interest rates approach zero, further reductions may not stimulate borrowing and investment, limiting the central bank’s ability to boost economic activity^[3].

4.Challenges of Digital Currency to Traditional Monetary Policy Transmission Mechanism

4.1 Challenges in Money Supply Control and Interest Rate Management

The rapid development of digital currencies, particularly central bank digital currencies (CBDCs) and private digital currencies, poses significant challenges to the control of money supply and the transmission of interest rate policies. Traditional monetary policy relies on adjusting interest rates to influence commercial bank lending rates, thereby regulating money supply and aggregate demand in the economy. However, the emergence of digital currencies introduces new complexities to this mechanism.

One major challenge is that digital currencies may alter the way money supply is regulated. Traditional monetary supply adjustments typically depend on the credit expansion of the banking system. In contrast, digital currencies, particularly those based on decentralized technologies like blockchain, operate outside traditional banking channels, making it more difficult for central banks to directly control their circulation. This challenge is particularly evident with private digital currencies such as Bitcoin, which have a fixed supply and are beyond the control of central banks, further weakening their influence over monetary aggregates.

Additionally, the high liquidity and low transaction costs of digital currencies may diminish the effectiveness of interest rate adjustments as a monetary policy tool. The widespread adoption of CBDCs, for example, could encourage the public to hold digital currencies directly instead of keeping deposits in commercial banks. As a result, banks’ role as financial intermediaries may be weakened, limiting the ability of central banks to influence lending and borrowing behaviors through interest rate changes.

4.2 Financial Disintermediation and Increased Capital Flow Mobility

The rise of digital currencies is gradually eroding the traditional role of banks as financial intermediaries, a phenomenon known as financial disintermediation. Cryptocurrencies such as Bitcoin and Ethereum allow users to conduct peer-to-peer transactions without relying on the banking system. This shift means that conventional monetary policy tools, such as interest rate adjustments and reserve requirement changes, may become less effective in influencing financial markets.

Financial disintermediation not only affects banks’ lending and deposit-taking functions but also promotes greater capital flow mobility. Traditional monetary policy depends on financial institutions acting as intermediaries to regulate capital flows. However, the decentralized nature of digital currencies enables funds to move more freely across borders, bypassing regulatory frameworks and traditional financial constraints. This trend complicates the execution of monetary policy, as external capital flows can undermine domestic monetary policy objectives. In cases where international capital movements intensify, a central bank’s ability to stabilize its economy through monetary policy may be significantly weakened.

4.3 Cross-Border Payments and the Challenge of International Monetary Coordination

The increasing use of digital currencies for cross-border transactions raises new challenges for monetary policy implementation. As stablecoins and CBDCs facilitate more efficient and low-cost international payments, the coordination of global monetary policies becomes increasingly complex.

Traditionally, cross-border payments rely on intermediaries such as international banks and payment systems like SWIFT. Digital currencies, however, allow direct cross-border transfers, reducing reliance on these intermediaries. While this enhances transaction efficiency, it also limits central banks’ ability to regulate cross-border capital flows, exchange rate fluctuations, and fund movements.

Additionally, inconsistencies in cross-border digital currency regulations create regulatory loopholes and arbitrage opportunities, further complicating monetary policy coordination. Different countries impose varying degrees of regulation on digital currencies, leading to fragmented oversight. For instance, some jurisdictions may adopt a more lenient regulatory stance to attract capital inflows, while others may implement strict controls. This regulatory divergence can create financial instability and hinder international efforts to align monetary policies effectively.

4.4 Disruption of the Credit Transmission Channel

A key transmission channel of traditional monetary policy is the bank lending mechanism, through which central banks influence credit supply by adjusting benchmark interest rates and reserve requirements. However, the increasing adoption of digital currencies could disrupt this transmission pathway.

As digital currencies gain popularity, more funds may flow into non-bank financial products and cryptocurrency markets, reducing the volume of traditional bank deposits. Since commercial banks rely on deposits as a primary funding source for lending, a decline in deposits may constrain their ability to extend credit. This could weaken the effectiveness of monetary policy, particularly when central banks attempt to stimulate the economy by lowering interest rates.

Moreover, the high liquidity and decentralized nature of digital currencies may prevent traditional credit channels from responding promptly and effectively to changes in monetary policy. During periods of economic volatility or financial crises, the rapid movement of digital assets and investors' preference for decentralized stores of value could exacerbate credit contractions in the banking sector. Consequently, central banks may find it increasingly difficult to use credit supply adjustments as a reliable tool for monetary policy transmission.

5. Opportunities of Digital Currency for Traditional Monetary Policy Transmission Mechanism

5.1 Enhancing Transparency and Efficiency of Monetary Policy

Digital currency, particularly central bank digital currency (CBDC), is characterized by a high level of digitalization and traceability, making the implementation of monetary policy more transparent and efficient. By leveraging digital currency, central banks can track the flow of funds, monitor user payment behaviors, and assess market reactions with greater accuracy, thereby improving the precision of policy implementation.

One key advantage of digital currency is its real-time traceability, allowing central banks to monitor money circulation without relying on periodic reports from commercial banks. In a traditional monetary system, central banks must depend on monthly or quarterly reports to evaluate economic conditions. However, with digital currency, real-time data on economic activity, inflationary pressures, and market demand can significantly shorten the reaction time for policy adjustments.

Furthermore, the issuance and circulation of digital currency can be automated using smart contracts and other technologies, increasing policy execution efficiency. Central banks could dynamically adjust interest rates and money supply in response to real-time data, improving the adaptability and flexibility of monetary policy.

5.2 Strengthening Financial Stability and Emergency Response Capability

In times of financial crises or economic shocks, digital currency provides central banks with a more effective tool for injecting liquidity into the market, thereby enhancing financial system stability. Traditional monetary policy relies on interbank market operations to stabilize liquidity. However, the high liquidity and electronic nature of digital currency allow central banks to directly distribute funds to businesses and individuals, mitigating liquidity crises more efficiently.

The programmability of digital currency also enables faster policy responses in emergencies. For example, central banks can implement pre-set limits, adjust interest rates, or introduce temporary monetary incentives to stabilize financial markets without waiting for traditional banking mechanisms to process interventions. This enhanced response capability is particularly valuable in addressing sudden economic downturns or financial crises, where rapid monetary adjustments can help prevent panic and restore market confidence.

5.3 Facilitating More Precise Monetary Policy Adjustments

Digital currency provides central banks with more granular and precise policy tools. With real-time data analytics, central banks can monitor capital flows, consumer behavior, and corporate investment activities in greater detail, allowing for more targeted monetary interventions that align with economic conditions.

Unlike traditional cash transactions, digital currency records every transaction, including fund flows, payment purposes, and timestamps. This level of data granularity enables central banks to gain deeper insights into macroeconomic trends and sector-specific financial activities. By analyzing these patterns, central banks can make more accurate assessments of

credit expansion, consumer debt levels, and corporate borrowing trends, thereby implementing tailored monetary policy adjustments.

For instance, if central banks detect excessive consumer credit growth through digital currency transaction data, they can take preemptive tightening measures to prevent economic overheating. Similarly, if investment levels decline in key industries, central banks can implement targeted stimulus measures to encourage economic activity.

5.4 Opportunities for Digital Currency in International Payments

The adoption of digital currency in cross-border payments presents significant opportunities to reduce transaction costs and improve international monetary policy coordination. Traditional cross-border transactions rely on intermediary banks and payment systems, often requiring multiple days to process while incurring high fees. In contrast, digital currency can leverage decentralized networks and real-time settlement mechanisms, drastically reducing both the time and cost of cross-border transactions.

By using digital currency for cross-border payments, central banks can directly engage in bilateral or multilateral transactions without relying on intermediary financial institutions. This direct settlement mechanism lowers transaction fees, enhances payment efficiency, and facilitates seamless international trade and investment.

Additionally, digital currency usage can enhance global monetary policy coordination. As global economic interdependence deepens, central banks must collaborate more closely to manage economic fluctuations. Digital currency-based international transactions provide transparent, real-time financial data, allowing policymakers to assess global capital flows more effectively.

For example, by analyzing cross-border payment data from digital currency transactions, central banks can detect trends in international capital movements and proactively adjust domestic monetary policies to mitigate external shocks. This real-time approach to global economic monitoring can improve monetary policy effectiveness in an increasingly interconnected world.

6. Case Studies

6.1 Implementation of China's Central Bank Digital Currency (DCEP)

Since initiating research on central bank digital currency (DCEP) in 2014, the People's Bank of China (PBOC) has conducted pilot programs across multiple cities. The objectives include improving payment system efficiency, enhancing monetary policy transmission, and mitigating financial risks associated with private digital currencies such as Bitcoin. As a state-backed digital currency, DCEP differs from traditional bank deposits and cash by offering electronic traceability, which significantly impacts monetary policy execution.

One of DCEP's most significant advantages lies in its transparency and real-time data tracking capabilities, which strengthen the central bank's ability to monitor economic activity. Unlike traditional monetary supply management methods, DCEP allows the PBOC to instantaneously access information on fund flows and market demand, enabling more precise monetary adjustments. The ability to directly control the amount of digital currency in circulation ensures faster responses to economic changes, eliminating the delays typically found in traditional banking systems.

DCEP's potential is particularly evident in times of financial crises. With digital currency, the central bank can rapidly inject liquidity into the economy, reinforcing its emergency response capabilities. During economic downturns or financial disruptions, the PBOC can bypass traditional banking intermediaries and directly distribute funds to businesses and individuals. This prevents inefficiencies or delays that could arise from banks' intermediary roles in conventional monetary policy operations.

6.2 Exploration of Digital Currencies in Europe and the United States

6.2.1 Exploration of Digital Currency in Europe

The European Central Bank (ECB) launched the Digital Euro project in 2020, aiming to provide a safer and more convenient payment system while enhancing the effectiveness of monetary policy. Unlike China's DCEP, which is directly distributed by the central bank, the ECB prefers a collaborative model where the central bank works with commercial banks to provide the Digital Euro to the public. This approach helps preserve the traditional intermediary role of banks, preventing disruptions in

the credit transmission channel.

The implementation of the Digital Euro is expected to improve the transparency and efficiency of monetary policy. Through a digitalized payment system, the ECB can monitor capital flows in real-time, adjust money supply, and respond promptly to economic conditions. Additionally, the Digital Euro could reduce cross-border transaction costs, promoting the global circulation of the euro, particularly in payments and trade outside the EU. However, differences in adoption levels and regulatory policies among eurozone member states may pose challenges to the smooth transmission of monetary policy^[4].

6.2.2 Exploration of Digital Currency in the United States

Although the United States has not yet officially launched a central bank digital currency (CBDC), the Federal Reserve has continued its research and exploration of digital currencies. The Digital Dollar initiative focuses on assessing the impact of digital currency on payment systems and financial markets. While the U.S. has not formally introduced a Digital Dollar, the Federal Reserve has already begun collaborating with private enterprises to explore blockchain-based payment systems and other digital currency technologies.

The potential introduction of a Digital Dollar could enhance the Federal Reserve's control over the economy, particularly in terms of monetary policy transmission. By leveraging digital currency, the Fed could monitor capital flows in real-time, precisely regulate money supply, and improve policy transparency. However, the progress of digital currency development in the U.S. has been relatively slow, mainly due to concerns over political factors, privacy protection, and technological security. Additionally, strict regulations on private digital currencies such as Bitcoin may impact the smooth rollout of a government-backed Digital Dollar^[5].

6.3 Comparative Analysis

Differences in Policy Background: China's DCEP is designed to have a direct impact on the domestic economy and payment system, whereas Europe and the United States prefer a gradual implementation of digital currency to preserve the stability of the traditional financial system. China's digital currency places greater emphasis on financial stability, emergency response, and cross-border payments, while Europe and the United States focus more on avoiding potential negative impacts on existing financial markets and monetary policies.

Impact on Monetary Policy Transmission: DCEP in China is likely to have a more direct influence on the transmission of monetary policy, particularly in terms of money supply control and the role of financial intermediaries. In contrast, Europe's Digital Euro and the U.S. Digital Dollar initiatives retain a certain degree of financial intermediation, meaning their impact on traditional monetary policy transmission may be more moderate^[6].

International Coordination and Regulatory Challenges: The cross-border application of China's DCEP faces complex international regulatory challenges, as some countries remain cautious about the internationalization of China's central bank digital currency. Meanwhile, Europe and the United States place greater emphasis on international cooperation, particularly in cross-border payments and monetary policy coordination, relying more on existing global financial frameworks.

7. Policy Recommendations

7.1 Strengthening the Regulatory Framework for Digital Currency

With the widespread adoption of digital currencies, their impact on traditional monetary policy transmission mechanisms is becoming increasingly significant. To ensure the effectiveness of monetary policy, central banks and financial regulators worldwide must develop a comprehensive regulatory framework for digital currencies, preventing potential disruptions to money supply, credit systems, and financial stability.

At the domestic level, countries should establish a unified legal framework that clearly defines regulations for central bank digital currencies (CBDCs), private digital currencies, and stablecoins, including their issuance, circulation, and usage. The roles of commercial banks, payment institutions, and technology companies within the digital currency ecosystem should also be explicitly defined to prevent market disorder and systemic financial risks. Additionally, regulatory agencies can leverage big data and artificial intelligence technologies to monitor digital currency transactions in real time, thereby mitigating risks such as illicit fund flows, money laundering, and other financial crimes^[7].

At the international level, global regulatory coordination is imperative. Due to the inherently cross-border nature of digital

currencies, discrepancies in national regulatory policies may lead to regulatory arbitrage and financial market instability. International organizations such as the International Monetary Fund (IMF) and the Bank for International Settlements (BIS) should take the lead in harmonizing global digital currency regulations, ensuring that monetary policies across countries do not conflict in the digital currency environment. For instance, establishing an international digital currency regulatory framework through multilateral cooperation could help maintain the stability of the global financial system.

7.2 Innovation and Adjustment of Monetary Policy Tools

Traditional monetary policy tools, such as interest rate adjustments, open market operations, and reserve requirement ratios, have long been the foundation of monetary regulation. However, in the era of digital currency, central banks must adapt and innovate these tools to align with the emerging financial landscape.

First, interest rate policy must be adjusted to accommodate CBDC adoption. If central bank digital currencies gradually replace a portion of bank deposits, commercial banks' lending and deposit businesses may be affected, thereby weakening central banks' ability to regulate interest rates. To address this, central banks could introduce a CBDC interest rate mechanism, setting differentiated interest rates for CBDC deposits and withdrawals. This approach would guide public behavior in digital currency usage, thereby strengthening the effectiveness of monetary policy.

Second, open market operations (OMO) should be restructured for the digital currency era. In the future, central banks could inject liquidity directly into the market through CBDCs without relying on the traditional banking system. For example, during an economic downturn, a central bank could distribute digital currency directly to individuals or businesses to stimulate spending. Conversely, in periods of high inflation, the central bank could use digital mechanisms to limit the circulation speed of CBDCs, thereby controlling money supply growth more effectively^[8].

7.3 Strengthening Cross-Border Coordination of Monetary Policy

First, central banks worldwide must establish multilateral coordination mechanisms to facilitate cross-border CBDC transactions. By signing CBDC interoperability agreements, countries can ensure smooth cross-border circulation of central bank digital currencies while setting clear and transparent cross-border transaction rules to prevent financial market volatility and regulatory arbitrage. Additionally, an international blockchain-based settlement system could be developed to enhance cross-border payment efficiency while maintaining central banks' control over fund flows^[9].

Second, countries should strengthen foreign exchange management mechanisms for digital assets to prevent excessive cross-border capital flows from destabilizing domestic financial markets. For example, central banks could set digital currency exchange quotas or employ smart contract technology to approve large-scale cross-border transactions, thereby mitigating the risks of short-term capital movements impacting exchange rates and monetary policy stability.

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