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The Impact of e-CNY on Commercial Bank Deposits

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Abstract. With the spread of e-CNY, many banks have begun to explore the prospects of commercial bank deposits. Based on a review of the literature, this paper investigates the impact mechanisms of e-CNY on bank deposits from the perspectives of customer asset allocation and bank asset-liability management. Different people and enterprises have different liquidity needs and desired returns; therefore, they use banks for some purposes and digital wallets for others. Based on the above, the problems are mainly structural and under certain circumstances. Transactional funds are more likely to be withdrawn; time deposits will be relatively stable. The impact on bank lending and liquidity depends on the destination and speed of fund transfer, the bank's capacity to replace lost funds, its funding structure, and the operational arrangements of the central bank. The effect will also differ for banks with different customer bases and access to other funds. In light of the institutional changes introduced by e-CNY 2.0, this paper will further separate changes in account deposits from real reductions in bank liabilities. Strengthen the supervision of fund flows, improve scenario-based stress testing, and implement differentiated supervision. These measures will guide the deposit management and other policies of commercial banks. In addition, some empirical research has used both wallet-level and bank-level data to explore how the composition and liquidity risk of deposits have changed.

Keywords: e-CNY, commercial banks, deposit structure, asset allocation, liquidity risk

1. Introduction

With the development of digital economy and the digitization of payment methods, the central bank digital currency (CBDC) has gradually become an important topic in the research of money and banking. China launched the retail CBDC pilot earlier, and the application scenario of e-CNY continued to expand. After the e-CNY enters the 2.0 stage in 2026, the balance of the real name wallet will be converted into the liabilities of commercial banks, and the interest can be calculated by referring to the current deposit interest rate, and included in the deposit reserve and deposit insurance management [1]. This institutional change has made the relationship between e-CNY and traditional bank deposits closer, and also raised new questions: how will the promotion of e-CNY affect the deposit scale and structure of commercial banks, and further change the liquidity management of banks?

Most previous research has explored the impact of CBDCs on bank deposits via asset substitution. Households and enterprises can transfer funds from bank accounts to digital wallets

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according to the return, liquidity, holding limits and application scenarios of substitution [2, 3]. However, asset substitution does not necessarily result in a corresponding reduction in bank deposits or loans; instead, banks may raise deposit rates and other funding sources. CBDC Design also affects its connection to deposits [4, 5]. Research on e-CNY has studied deposit creation, financial disintermediation and financial stability [6, 7]. Most of the above studies focus on total deposits or the early stage of transmission and have not systematically investigated the differences among various types of deposits, liquidity risk after fund migration, or variations among banks. Given the alteration in the liability status of wallet balances under e-CNY 2.0, the previous analysis that treated CBDC as a central bank liability should no longer be used. From the perspective of asset allocation, this paper explores why households and enterprises hold e-CNY, and under the asset-liability management model, studies the impact of fund migration on deposit structure, financing costs and liquidity risk management. The three problems are: When can e-CNY be used instead of a bank deposit? How are the effects of different deposit types and banks different? How do the institutional changes under e-CNY 2.0 affect the applicability of previous research results?

The theoretical contributions of this paper are to link customers' asset choices with banks' liability adjustments and to distinguish the results from models of CBDC issued as a central bank liability from those in institutional arrangements of e-CNY 2.0. Identify the main reasons for the instability of deposits and liquidity pressure in practice in this paper, provide an analytical foundation to help commercial banks monitor fund migration and strengthen liability management.

2. Literature review on e-CNY and commercial bank deposits

The two types of literature on e-CNY and commercial bank deposits are as follows. Most research abroad on CBDCs investigates substitution effects for bank deposits and their impacts on deposit levels and financial intermediation. Research on e-CNY investigates deposit creation, financial disintermediation and financial stability in a two-tier operating system. With the availability of pilot data, research has begun to shift from general theoretical analysis to an in-depth study of deposit structure and risk transmission paths.

2.1. International research on CBDC and bank deposits

Research on CBDC and bank deposits mainly covers asset substitution and bank intermediation. Chang and others built a model of household portfolio allocation for bank deposits, cash and CBDC. The model indicates that CBDCs may replace some bank deposits; thus, the banks' response of raising deposit rates will affect this situation. Recently, some studies have also found that CBDC and bank deposits are not perfect substitutes, and their effects differ according to the remuneration, liquidity and substitutability of the CBDC [2]. Banks have market power, and competition from a CBDC will raise deposit rates without reducing bank lending [4]. Under certain Design arrangements, CBDC and bank deposits can be used together [5]. Therefore, one cannot assume that deposit crowding out will occur in all cases according to the model.

With the progress of research, scholars have started to study the effect on deposit size and structure. Di Maggio and others found that CBDC eligibility reduced the retail deposits of the banks in their sample by about 2.7%. The decrease was mainly in more liquid savings deposits; the amount of the decline for time deposits was different. When CBDCs serve as money for saving, their replacement of bank deposits will be more obvious [3]. Deposit crowding out may also restrict bank investment by raising their funding costs [8]. In addition, the amount issued and the design of CBDCs will affect the trade-off between bank intermediation and aggregate welfare [9]. In short, the

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effect of CBDC on bank deposits will vary depending on how it is used, how banks respond, and the institutional system.

2.2. Research on e-CNY and its characteristics

Research on e-CNY has focused more on its institutional attributes and effects on commercial bank operations. Early research focused on issuance and operation, as well as the opportunities and risks for commercial banks. Subsequently, studies have investigated the reasons for financial disintermediation and deposit creation [10, 11]. The impact of e-CNY on commercial banks' capacity to create deposits is relatively weak in the short run, but it may increase as adoption spreads [6]. Furthermore, there is a risk of financial instability due to deposit crowding-out and changes in monetary and fiscal policy coordination [7].

3. Mechanisms through which e-CNY affects commercial bank deposits

The effects of e-CNY on commercial bank deposits can be understood through two interconnected stages. Asset-side substitution occurs on the balance sheets of households and firms and explains why they transfer funds from bank accounts to e-CNY wallets. Liability-side transmission occurs within commercial banks and is reflected in changes in deposit composition, funding costs, and liquidity management. Distinguishing these stages helps clarify how individual allocation decisions translate into bank-level outcomes.

3.1. Asset-side substitution: asset allocation by households and firms

The choice by households and enterprises to hold e-CNY is an economic trade-off of returns, safety, liquidity and usage costs. Chang and others believe that, with more applications and convenience in payment, some transaction funds will be transferred from bank accounts to e-CNY wallets. Institutional Design restricts this process; a low-holding limit and non-interest-bearing arrangement limit the use of e-CNY for saving, but interest payment or stronger savings function can expand its substitution for bank deposits [2, 3].

The division of funds for different purposes and groups varies. Chang and others have also studied that household income, payment habits, financial literacy and access to bank services affect their willingness to use e-CNY. Funds in demand or savings deposits for daily living are highly liquid and serve the same function as e-CNY; thus, they are more likely to be transferred. Time deposits have a relatively stable income due to a fixed term and guaranteed interest [3]. Therefore, the asset-side change is caused by a shift in deposit composition according to holder characteristics, intended use of funds and CBDC design, rather than a simultaneous decline in all deposit categories.

3.2. Liability-side transmission: commercial bank asset–liability management

Initially, the transmission of asset-side fund migration to banks has appeared as a reduction in low-cost core liabilities. The conversion of demand deposits into e-CNY will change the cash leakage ratio and the time-to-demand deposit ratio, thereby reducing the money-multiplier-based deposit creation capacity of commercial banks [6]. If the bank replaces lost funds with time deposits, interbank borrowing or wholesale funding, its average cost of funds will rise, narrow the lending-deposit interest spread and reduce credit supply. The extent of these effects depends on the availability and cost of alternative funding [8, 12].

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Whether a reduction in deposits leads to a liquidity risk also depends on the bank's liquidity buffer and the operating conditions of the central bank. Normally, the bank will use the excess reserves or other funds to meet the demand for deposits. The operational framework of the central bank will affect how easily banks raise funds; therefore, a drop in deposits will not immediately reduce lending [13, 14]. In times of financial difficulty, a large number of quick-conversion e-CNY products will rapidly pull out funds and increase the demand for liquidity. The actual risk will be affected by whether the central bank returns the funds to the banks and other relevant government arrangements [15, 7].

These transmission devices vary by bank type. Large banks generally have many customers, numerous sources of funds and a wide-ranging service network; thus, they can cover deposit losses by means of interbank borrowing or bond issuance. Small and medium-sized banks are more dependent on local retail deposits and have restricted access to other sources of funds; thus, the risk of deposit losses will increase their funding costs [16]. Different operating eligibility, wallet access channels and use cases may also lead to the concentration of customers and funds in large banks. Asset-side substitution determines the origin and extent of fund migration; liability-side transmission decides whether there will be a cost adjustment, liquidity pressure or a change in credit supply.

4. Trends and challenges in research on e-CNY and bank deposits

4.1. Institutional developments: e-CNY 2.0

In 2026, e-CNY entered its 2.0 phase. Balances in real-name wallets became commercial bank liabilities rather than central bank liabilities, could earn interest based on demand deposit rates, and were brought within the deposit reserve and deposit insurance frameworks [1]. In his 2026 report, "China's central bank digital currency 2.0 and the future of digital finance," Alex He argued that this institutional adjustment would further integrate e-CNY into the banking system. It also calls for a reassessment of earlier conclusions about deposit crowding out and financial disintermediation that were based on the characteristics of e-CNY as digital cash.

4.2. Challenges and research gaps

Most existing studies rely on theoretical models and local pilot projects, with limited long-term empirical analysis that combines wallet transaction data with bank balance sheet data following the introduction of e-CNY 2.0. Differences between demand and time deposits, household and corporate deposits, and bank types remain insufficiently examined. Changes in the liability status, remuneration, and insurance coverage of wallet balances under e-CNY 2.0 limit the direct applicability of some assumptions in earlier models. Future research should combine account-level and bank-level data to examine changes in deposit composition and liquidity risk over time under the new framework.

5. Commercial bank responses to e-CNY

5.1. Distinguishing account deposit changes from reductions in bank liabilities

Commercial banks should distinguish changes in account deposits from actual reductions in their liabilities. Under e-CNY 2.0, when customers transfer funds into wallets, banks need to determine whether those funds remain with the same bank, move to another banking operator, or are converted

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into other forms of funds. Banks should also track demand and time deposits, as well as household and corporate deposits, separately. Using the wallet transaction records available to them, banks can assess whether the migration of transactional funds weakens their stable funding base. This approach provides a more accurate basis for funding decisions than changes in aggregate deposits alone.

5.2. Assessing liquidity pressures from fund transfers

The impact of capital transfer on liquidity depends on the scale and speed of transfer and the ability of banks to replenish funds. Commercial banks can set up daily payment, continuous deposit migration and centralized transfer in the stress period respectively in the stress test to calculate the possible capital gap. Available liquidity, alternative financing channels and their costs should also be considered in the calculation to judge the extent to which capital outflows will affect credit supply. Banks that rely more on retail deposits should focus on assessing the ability of customers to cope with the flow of funds to other institutions, and adjust the test parameters with the accumulation of e-CNY 2.0 operating data.

6. Conclusions

6.1. Conclusions

The effects of e-CNY on commercial bank deposits are primarily structural. Deposits used for transactions and characterized by high liquidity are more likely to migrate, while deposit categories do not necessarily decline simultaneously or in the same proportion. The effects of fund migration on bank funding costs and liquidity depend on where funds go and on banks' ability to replace lost funding. Banks with different customer bases and liability structures may therefore face different degrees of pressure. With the transition to e-CNY 2.0, the liability status of real-name wallet balances has changed, so transfers from bank accounts into wallets do not necessarily reduce liabilities across the banking system. Earlier conclusions about deposit crowding out should therefore be reassessed in light of the new institutional framework.

6.2. Policy recommendations

Accordingly, the design of the e-CNY system should continue to be assessed for the effects of remuneration arrangements, holding limits, and payment use cases on different deposit categories, particularly whether transactional funds continue to migrate. Liquidity supervision should also account for banks' reliance on retail deposits and access to alternative funding, with particular attention to the effects of concentrated fund transfers on small and medium-sized banks during periods of stress. Relevant statistics should distinguish transfers into wallets operated by the same bank, transfers to other banking operators, and other destinations for funds. Such distinctions would support a more accurate assessment of the actual effects of e-CNY 2.0.

6.3. Research limitations and future directions

This paper relies on the existing research results and publicly available information, and is limited by a lack of long-term transaction and bank operating data since the introduction of e-CNY 2.0. Future research could use wallet-level and bank-level data together to study actual changes in deposit structure, the distribution of funds among banks, and liquidity risk.

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