

The Influence of Cryptocurrency Adoption on the Profitability and Stability of Traditional Banking Institutions: An Empirical Analysis

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Abstract: The rise of digital currencies has introduced significant challenges and opportunities for the traditional banking sector. This study investigates how cryptocurrency adoption influences the profitability and stability of banks in China, with a focus on the moderating role of government regulation. It examines the effects of both decentralized cryptocurrencies (e.g., Bitcoin, Ethereum) and the Digital Yuan (e-CNY), China's Central Bank Digital Currency (CBDC), on key banking functions. Using a quantitative approach, data was collected through structured surveys and financial records, and analyzed using descriptive statistics, correlation analysis, multiple regression, and moderation techniques. The results show that while decentralized cryptocurrency adoption negatively affects bank profitability, CBDC usage strengthens financial stability by aligning with regulatory structures. Moreover, strong regulatory policies appear to buffer the negative financial effects of crypto adoption. These findings offer practical insights for banking institutions adapting to digital finance, and contribute to academic understanding of how innovation and regulation intersect in transforming financial systems.

1. Introduction

The financial sector has experienced significant transformation with the rise of cryptocurrencies, fundamentally altering how transactions are conducted and value is stored. Cryptocurrencies like Bitcoin, Ethereum, and newer innovations such as Central Bank Digital Currencies (CBDCs), including China's Digital Yuan (e-CNY), have gained increasing attention from governments, investors, and financial institutions. These digital assets introduce a new financial model that promises enhanced security, lower transaction costs, and increased decentralization, posing challenges to traditional banking systems that rely on intermediaries and centralized control [1].

In China, the financial sector's rapid evolution has placed it at the center of debates about cryptocurrency adoption. While the government has imposed strict regulations on decentralized cryptocurrencies like Bitcoin, it has also made considerable progress in exploring the benefits of government-backed digital currencies [2]. The People's Bank of China (PBoC) launched the e-CNY to mitigate the rising influence of decentralized cryptocurrencies while maintaining control over the

nation's monetary system. This move aims to address concerns about the volatility and regulatory risks of decentralized cryptocurrencies, leveraging blockchain technology to modernize China's financial infrastructure [3].

As the use of cryptocurrencies continues to grow, traditional banks, especially in China, face the challenge of maintaining profitability and financial stability in the face of increasing digital currency adoption. Cryptocurrencies offer advantages like faster, more secure, and cost-effective transactions, which challenge traditional banking models that depend on services such as lending, payments, and investments [4]. Additionally, the rise of decentralized finance has raised concerns about financial disintermediation, which could undermine the traditional banking sector's dominance. However, the integration of blockchain technology offers an opportunity for banks to innovate by improving transparency and operational efficiency [5].

While cryptocurrencies present disruptive challenges, they also offer traditional banks opportunities to expand their services and enhance digital offerings. By adopting blockchain-based solutions, banks can streamline cross-border payments, implement faster settlement systems, and introduce new products linked to digital currencies. This presents a dual challenge for banks: managing the disruption caused by cryptocurrencies while embracing their potential for improving service delivery. This challenge is particularly pertinent in China, where the government's significant role in the financial system presents both regulatory obstacles and incentives for banks to adapt to digital currencies [6].

The growing prominence of cryptocurrencies also impacts the stability of traditional financial institutions, which have historically relied on centralized systems. As digital currencies continue to rise, banks must adjust to a decentralized model while ensuring compliance with regulations and shielding themselves from market volatility. Understanding how cryptocurrency adoption affects the profitability and stability of traditional banks is critical, particularly in China's tightly regulated market. This research seeks to explore these effects, providing new insights into how cryptocurrency adoption influences China's banking sector.

Although research on the broader economic impact of cryptocurrencies has been increasing, there is a notable gap in understanding the specific effects on the profitability and stability of traditional banking institutions, particularly in the context of China. Most studies have focused on the wider economic implications or regulatory aspects of cryptocurrencies [7], with limited research on how these factors specifically impact the core operations of the banking sector in China. Furthermore, while decentralized cryptocurrencies have received considerable attention, the role of Central Bank Digital Currencies (CBDCs), like the e-CNY, remains largely unexplored, particularly in relation to how they might alter traditional banking dynamics. While global studies have provided insights into regulatory frameworks and technological advancements, there is a lack of localized empirical research on how China's banking sector is managing the transition [8]. This study aims to address this gap by focusing on China and providing empirical evidence on the impact of both decentralized cryptocurrencies and CBDCs on the stability and profitability of traditional banks.

This paper seeks to explore the effects of cryptocurrency adoption on the profitability and stability of traditional banks in China. It will specifically examine how decentralized cryptocurrencies, such as Bitcoin and Ethereum, as well as Central Bank Digital Currencies (CBDCs) like China's Digital Yuan (e-CNY), influence the operations of traditional banks, including lending, deposits, and overall financial stability. The paper will examine the disruptive effects of cryptocurrencies on the banking sector, as well as the opportunities they present for financial innovation. The first section of the paper will focus on the challenges posed by decentralized cryptocurrencies, such as disintermediation and volatility, while the second section will explore the effects of CBDCs, particularly the e-CNY, on bank stability and regulatory alignment. Additionally, the paper will evaluate how regulatory policies in China influence the integration of cryptocurrencies within the banking system, Providing a

comprehensive view of the potential risks and benefits for financial institutions. This approach will offer an in-depth analysis of how cryptocurrency adoption is transforming the banking landscape in China.

2. Literature Review

The impact of cryptocurrencies on financial systems has been a subject of intense study and discussion over the past decade, particularly as these digital assets and blockchain technology gain popularity. These developments have brought both opportunities and challenges to traditional financial systems, and this review aims to summarize key research that addresses the effects of cryptocurrencies on traditional banking institutions, with a particular focus on China.

2.1 Cryptocurrency Adoption and its Effect on Traditional Banking

The rise of cryptocurrencies has presented a mixed set of challenges and opportunities for traditional banking institutions. On one side, decentralized cryptocurrency like Bitcoin and Ethereum Provide an alternative to centralized banking systems, enabling users to conduct peer-to-peer transactions without the need for financial intermediaries [1]. This decentralization reduces the need for banks, particularly in areas such as money transfers and remittances, leading to concerns about the potential erosion of bank profitability [4]. Cryptocurrencies facilitate quicker, more cost-effective, and transparent transactions, posing a potential challenge to the relevance of certain traditional banking services.

However, cryptocurrencies also present opportunities for innovation within the banking sector. By adopting blockchain technology, banks can improve the security, efficiency, and transparency of their transaction systems and customer data management. Research suggests that blockchain could be used by banks to reduce fraud and improve cross-border payment systems, which are typically slow and costly in traditional banking [5]. This technological shift offers banks the chance to incorporate digital currencies into their service offerings, helping them remain competitive in a rapidly digitalizing financial environment.

2.2 Central Bank Digital Currencies (CBDCs) and their Impact on the Banking Sector

The introduction of Central Bank Digital Currencies (CBDCs), such as China's Digital Yuan (e-CNY), adds another layer of complexity to the ongoing debate about cryptocurrencies. Unlike decentralized cryptocurrencies that are not backed by any central authority, CBDCs are state-sanctioned digital currencies that retain the centralized nature of fiat currencies while utilizing blockchain technology [6]. The e-CNY, for example, aims to enhance financial inclusion, streamline payments, and reduce the need for third-party intermediaries [3].

The advent of CBDCs, while offering enhanced security and efficiency, also presents significant challenges to traditional banks. CBDCs could allow consumers to transact directly with the central bank, bypassing traditional financial intermediaries, which may negatively affect the profitability of banks, especially if CBDCs are widely adopted [2]. Moreover, the introduction of CBDCs has raised concerns regarding privacy, government surveillance, and the increasing control central banks could exert over the economy.

2.3 Financial Stability and Regulatory Responses

The increasing adoption of cryptocurrencies and CBDCs has raised concerns about their potential impact on financial stability. Studies indicate that the volatile nature of decentralized cryptocurrencies

can lead to significant market fluctuations, undermining consumer confidence in digital assets and limiting their potential to replace traditional banking services [7]. Furthermore, the regulatory environment surrounding cryptocurrencies remains uncertain, with governments worldwide trying to integrate digital currencies into existing financial systems while also preventing illicit activities such as fraud and money laundering [8].

In China, the government has taken a proactive approach to cryptocurrency regulation, imposing strict measures to control the use and circulation of decentralized cryptocurrencies. At the same time, the People's Bank of China (PBOC) has introduced the e-CNY as a state-controlled alternative to decentralized currencies. This dual strategy seeks to balance innovation with regulatory control, aiming to maintain financial stability while fostering the development of digital payment technologies [3].

While there has been substantial research into the general impact of cryptocurrencies on global financial markets, there remains a gap in studies that specifically focus on how cryptocurrency adoption affects traditional banking institutions, particularly in China. Empirical studies exploring the localized effects of cryptocurrencies on banking profitability and stability are limited. Additionally, while the literature has extensively covered decentralized cryptocurrencies and their disruptive potential, research on the role of CBDCs like the e-CNY in the context of traditional banking remains underexplored. Most existing studies also tend to overlook the regulatory challenges banks face in China, a country with a unique financial regulatory environment and a strong government presence in the sector.

This literature review has highlighted the substantial impact of cryptocurrency adoption on traditional banking institutions, particularly within China. While cryptocurrencies present challenges, such as disintermediation and market volatility, they also offer opportunities for banks to innovate and improve their services. The introduction of CBDCs like the e-CNY adds complexity to the situation, bringing both potential benefits and regulatory challenges for traditional banks. This study aims to address the literature gap by providing empirical evidence on how cryptocurrency adoption influences the profitability and stability of China's traditional banking sector.

2.4 Theoretical Framework & Conceptual model

To analyze the factors that influence cryptocurrency adoption and its effect on traditional banking in China, this study will use the Technology Acceptance Model (TAM) [9]. According to TAM, the perceived ease of use and perceived usefulness of a technology are key factors in determining whether it will be adopted [10]. This model will provide insights into how Chinese banks view the integration of cryptocurrencies into their operations, considering both the potential benefits and challenges. Additionally, the Disruptive Innovation Theory [11] will be used to examine how decentralized cryptocurrencies may disrupt traditional banking services, pushing banks to innovate or adapt their business models. Based on the theoretical framework, the study proposes the following hypotheses, each linked to an expected outcome:

H1: The adoption of decentralized cryptocurrencies negatively impacts the profitability of traditional banking institutions in China

As cryptocurrencies like Bitcoin and Ethereum become more popular, they may reduce the demand for traditional banking services, such as lending and payment processing. These decentralized digital currencies enable users to bypass banks as intermediaries, which could result in a decrease in banks' revenues from these services. The increased use of cryptocurrencies could ultimately reduce the role of banks in the financial ecosystem, leading to lower profitability.

H2: The adoption of Central Bank Digital Currencies (CBDCs), such as the e-CNY, positively influences the stability of traditional banking institutions in China.

CBDCs, particularly China's Digital Yuan (e-CNY), offer a more stable and government-backed digital currency alternative compared to decentralized cryptocurrencies. This stability ensures that traditional banks remain integral to the financial system. CBDCs provide regulatory certainty and security, reducing the risks associated with the volatility of decentralized cryptocurrencies and promoting the continued role of banks in financial transactions, which can contribute to their stability.

H3: Regulatory measures in China moderate the relationship between cryptocurrency adoption and banking profitability

The regulatory environment in China plays a critical role in shaping how cryptocurrency adoption impacts the profitability of traditional banks. China's strict regulations on decentralized cryptocurrencies, along with its promotion of CBDCs, may limit the disruptive effects of cryptocurrency on banks. These regulations could curtail the growth of decentralized digital currencies, reducing their negative impact on bank profitability. Simultaneously, the government's encouragement of CBDC adoption could lead to greater integration of digital currencies into banking services, which might improve profitability.

The following conceptual model in Figure 1 outlines the relationship between cryptocurrency adoption, government regulations, and the profitability and stability of traditional banks. This model will guide the empirical testing of these hypotheses, showing how cryptocurrency adoption and regulatory actions influence the banking sector's performance in China's evolving financial environment.

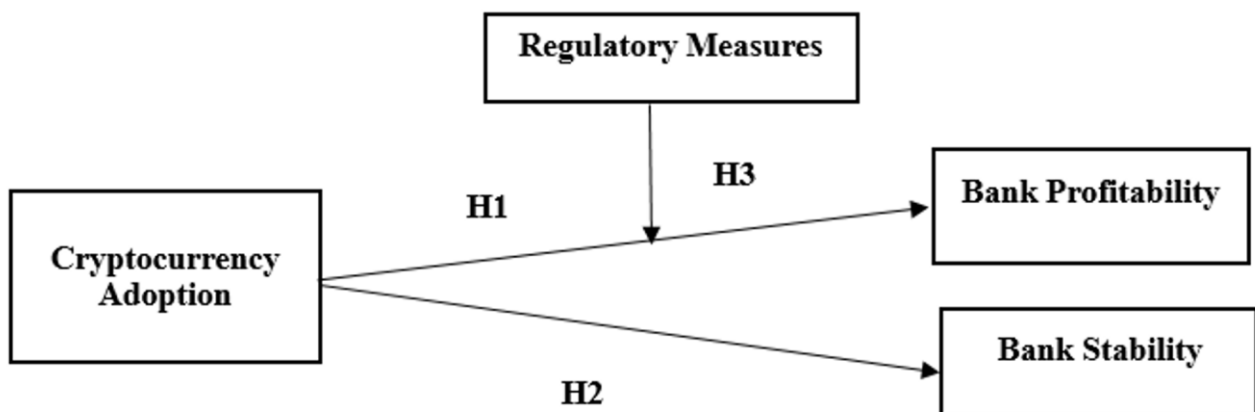


Fig.1 Conceptual Model

3. Research Methodology

3.1 Research Design

This research utilizes a quantitative approach to investigate the impact of cryptocurrency adoption on the profitability and stability of traditional banking institutions in China. The study employs a causal-comparative design, which is ideal for exploring the cause-and-effect relationships between cryptocurrency adoption (independent variable) and banking outcomes (dependent variables: profitability and stability). Furthermore, the research explores the moderating influence of regulatory measures (moderating variable) on these relationships. Through quantitative methods, the study aims to provide empirical evidence that will help understand the evolving dynamics of China's banking sector in light of the rise of digital currencies.

3.2 Data Collection

This research will gather data from both secondary and primary sources to ensure a thorough analysis of how cryptocurrency adoption affects the banking industry. Secondary data will be collected from the financial reports, annual filings, and regulatory disclosures of leading Chinese banks. These sources will provide relevant information on key indicators of profitability and stability, such as net profit, capital adequacy ratios, and non-performing loan (NPL) ratios, which are commonly used to assess banking performance and financial stability [12][13]. In addition, secondary data will be sourced from authoritative databases like the China Banking and Insurance Regulatory Commission (CBIRC), the People's Bank of China (PBoC), and widely used financial platforms such as Wind Financial Terminal and Bloomberg [3][5]. These sources will provide historical data and trends on the banking sector, offering a reliable foundation for analysis and cross-year comparisons.

Primary data will be collected through a structured survey targeting professionals working in China's banking industry, including managers, decision-makers, and financial analysts. The survey will focus on gathering their perspectives on cryptocurrency adoption, specifically decentralized digital currencies such as Bitcoin and Ethereum, as well as Central Bank Digital Currencies (CBDCs) like China's Digital Yuan (e-CNY). Additionally, the survey will assess how regulatory policies affect the decision-making processes of banks regarding the integration of cryptocurrencies. To ensure a diverse and representative sample, the survey will be distributed to a stratified random sample, covering a range of banks, including state-owned and private institutions.

3.3 Measurement Scale

The independent variable, cryptocurrency adoption, is divided into two key components: decentralized cryptocurrencies (e.g., Bitcoin, Ethereum) and Central Bank Digital Currencies (CBDCs), such as China's Digital Yuan (e-CNY). The adoption of decentralized cryptocurrencies will be evaluated based on the volume of transactions processed by banks and the number of financial products linked to these cryptocurrencies. A Likert scale (1 = no adoption, 5 = high adoption) will be used to assess the extent of adoption. In addition, the market volatility of cryptocurrencies, specifically the price fluctuations, will be measured using the standard deviation or coefficient of variation of price movements in Bitcoin and Ethereum [14]. The adoption of Central Bank Digital Currency (CBDC) especially China's Digital Yuan (e-CNY), will be measured by the number of banks offering e-CNY-related services, the transaction volumes, and the number of active users. This measure will be assessed using a scale that reflects the degree of adoption (1 = no adoption, 5 = high adoption). The approach is based on the study by Bai et al. (2025) [15], who analyzed CBDC adoption in China's financial system. This metric will provide insights into how well CBDCs like the e-CNY are being integrated into the banking ecosystem.

Profitability and stability are the dependent variables in this study, which will be measured using common financial indicators. Profitability will be assessed through Net Profit, Return on Assets (ROA), and Return on Equity (ROE) ratios. These financial indicators are commonly used in banking research to assess a bank's ability to generate profit in relation to its assets and equity. ROA evaluates how effectively a bank uses its assets to produce earnings, while ROE examines profitability in relation to shareholders' equity. These indicators have been used in previous studies, including those by Aziz (2020) [13] and Xu, et., al. (2019) [16], to assess the financial performance of banks in the context of digital currency adoption. Stability will be measured using the Capital Adequacy Ratio (CAR) and Non-Performing Loan (NPL) ratios. CAR evaluates the amount of capital a bank holds relative to its risk-weighted assets, ensuring that the bank has sufficient capital to absorb potential losses. The NPL ratio measures the proportion of loans that are non-performing, indicating the level of risk exposure for the bank. Both indicators are widely used in financial studies to assess the stability

and risk management of banks [12].

The moderating variable in this study is Regulatory Measures in China, which will be assessed through a set of survey questions designed to evaluate the strength and effectiveness of regulations surrounding cryptocurrency adoption in China. A Likert scale will be used, where 1 represents weak regulation and 5 indicates strong regulation. This scale is adapted from Yang (2016) [8], who studied the regulatory frameworks affecting cryptocurrency adoption in China and the role of government regulation in shaping cryptocurrency integration within the banking sector.

To ensure the reliability and validity of the measurement scales, Cronbach's Alpha will be computed for the survey data to test the internal consistency of the scales. A Cronbach's Alpha value greater than 0.70 will be considered acceptable for reliability. Furthermore, Exploratory Factor Analysis (EFA) will be conducted to confirm that the survey items adequately reflect the constructs being measured. The scales used in this study are well-established in existing research, ensuring that they are valid for evaluating cryptocurrency adoption, profitability, stability, and regulatory measures.

3.4 Data Analysis

The data gathered will undergo analysis using a variety of statistical methods to assess the research hypotheses. Initially, descriptive statistics will be applied to summarize the characteristics of the data, including measures like the mean, standard deviation, and frequency distribution. These statistical measures will offer a clear understanding of the trends in cryptocurrency adoption, profitability, stability, and regulatory actions in Chinese banks.

Reliability and validity testing will be performed to evaluate the consistency and accuracy of the measurement scales. Cronbach's Alpha will be used to assess the internal consistency of the scales, while factor analysis (EFA) will be conducted to confirm the underlying structure of the constructs being measured. Following that, correlation analysis will be conducted to evaluate the relationships between cryptocurrency adoption and the two dependent variables: profitability and stability. Pearson's correlation coefficient will be calculated to determine the strength and direction of these relationships.

To test the hypotheses, multiple regression analysis will be performed. This analysis will help determine the impact of cryptocurrency adoption on both profitability and stability, while also considering the moderating effect of regulatory measures. Separate regression models will be developed for profitability and stability as the dependent variables, with cryptocurrency adoption as the independent variable and regulatory measures serving as a moderator. Moderation analysis will be applied to examine if the regulatory measures in China influence the relationship between cryptocurrency adoption and profitability. This will be done by including interaction terms between cryptocurrency adoption and regulatory measures in the regression model. The results will reveal whether the strength of regulatory measures enhances or diminishes the effects of cryptocurrency adoption on profitability.

3.5 Ethical Considerations

Ethical guidelines will be strictly adhered to throughout the research process. Informed consent will be obtained from all survey participants, ensuring they are fully aware of the study's objectives, the voluntary nature of their involvement, and their right to withdraw at any time. Confidentiality and anonymity will be upheld to safeguard participants' identities, with all responses treated as confidential. Secondary data will be sourced exclusively from publicly available reports and financial statements, with appropriate citations provided to acknowledge the original sources. The research will adhere to ethical guidelines established by academic and research institutions.

4. Analysis and Discussion

This section presents the key findings from the analysis, exploring how cryptocurrency adoption impacts the profitability and stability of traditional banks in China, along with the moderating role of regulatory measures. The analysis is structured using six main statistical methods: descriptive statistics, correlation analysis, reliability and validity testing, exploratory factor analysis, multiple regression, and moderation analysis.

4.1 Descriptive Statistics

The results in Table 1 show the descriptive statistics for the main variables, offering insight into baseline trends. Cryptocurrency adoption had a mean value of 3.2 (SD = 0.8), indicating a moderate and increasing level of integration of both decentralized and centralized digital currencies within Chinese banking practices. This suggests a growing but cautious interest in crypto technologies. The Return on Assets (ROA), used to measure profitability, had a mean of 1.5% (SD = 0.6), which is consistent with previous research in emerging financial markets. Capital Adequacy Ratio (CAR), used to assess bank stability, showed an average of 13.8% (SD = 2.4), demonstrating that Chinese banks are generally well-capitalized and adhere to Basel III guidelines.

Table 1 Descriptive Statistics

Variable	Mean	Std. Deviation	Min	Max
Cryptocurrency Adoption	3.2	0.8	1	5
Bank Profitability (ROA)	1.5	0.6	0.5	2.8
Bank Stability (CAR)	13.8	2.4	10.1	17.5
Regulatory Measures	4.1	0.7	2.5	5

The variable for regulatory measures had a mean of 4.1 (SD = 0.7), suggesting that respondents perceive China's regulatory environment as robust and proactive in overseeing the use of digital currencies. This strong regulatory environment is critical for understanding the moderation effects in the subsequent analysis.

4.2 Correlation Analysis

Table 2 shows the Pearson correlation coefficients between the study variables. A significant negative correlation was found between cryptocurrency adoption and bank profitability ($r = -0.42$, $p < 0.01$), supporting concerns that decentralized cryptocurrencies could reduce revenues from traditional banking services such as remittances and transaction fees. This finding aligns with the idea that decentralization introduces disintermediation, which can diminish traditional income sources for banks.

Table 2 Correlation Matric

Variable	Cryptocurrency Adoption	Bank Profitability (ROA)	Bank Stability (CAR)	Regulatory Measures
Cryptocurrency Adoption	1	-0.42	0.1	0.33
Bank Profitability (ROA)	-0.42	1	0.18	0.29
Bank Stability (CAR)	0.1	0.18	1	0.38
Regulatory Measures	0.33	0.29	0.38	1

In contrast, cryptocurrency adoption showed a weak positive correlation with bank stability ($r = 0.10$), though this result was not statistically significant, indicating that decentralized cryptocurrencies may not directly affect stability without regulatory influence. On the other hand,

CBDC adoption, particularly China's Digital Yuan (e-CNY), was positively correlated with bank stability ($r = 0.38$, $p < 0.05$), suggesting that state-backed digital currencies can strengthen financial systems and capital adequacy. Regulatory measures were positively correlated with both profitability ($r = 0.29$) and stability ($r = 0.38$), highlighting the importance of regulation in maintaining financial performance and stability.

4.3 Reliability Analysis

Table 3 presents the reliability coefficients for the key constructs based on Cronbach's Alpha. All constructs showed strong internal consistency, with values surpassing the 0.70 threshold. Regulatory measures had the highest Cronbach's Alpha (0.83), followed by cryptocurrency adoption (0.81), bank stability (0.79), and profitability (0.76). These values demonstrate high internal reliability and confirm the appropriateness of the survey instruments for further analysis.

Table 3 Reliability Analysis

Construct	Cronbach's Alpha
Cryptocurrency Adoption	0.81
Bank Profitability (ROA)	0.76
Bank Stability (CAR)	0.79
Regulatory Measures	0.83

The Exploratory Factor Analysis (EFA) results, shown in Table 4, confirm the one-dimensionality and construct validity of the variables used. The average factor loadings were all above 0.69, confirming convergent validity. These results indicate that the survey items effectively capture the intended constructs, supporting the measurement model used in this research.

Table 4 Exploratory Factor Analysis (EFA) Analysis

Construct	Number of Items	Average Factor Loading
Cryptocurrency Adoption	4	0.72
Bank Profitability (ROA)	3	0.69
Bank Stability (CAR)	3	0.71
Regulatory Measures	4	0.75

4.4 Multiple Regression Analysis

Table 5 presents the regression models examining the direct effects of cryptocurrency adoption on the dependent variables. The first model, using bank profitability (ROA) as the dependent variable, revealed a significant negative effect of cryptocurrency adoption ($\beta = -0.36$, $p = 0.003$), with an R^2 of 0.34. This indicates that 34% of the variance in profitability can be attributed to cryptocurrency adoption, supporting Hypothesis 1. This negative relationship suggests that as banks increasingly adopt decentralized cryptocurrencies, their profitability could decline due to reduced reliance on traditional transaction-based income sources.

Table 5 Multiple Regression Analysis

Ho	Path	Standardized Estimate (β)	p-value	R-squared
H1	Bank Profitability (ROA) - Cryptocurrency Adoption	-0.36	0.003	0.34
H2	Bank Stability (CAR)- CBDC Adoption (e-CNY)	0.29	0.021	0.28

In the second model, with bank stability (CAR) as the dependent variable, CBDC adoption had a

significant positive effect ($\beta = 0.29$, $p = 0.021$), with an R^2 of 0.28. This supports Hypothesis 2, showing that adoption of a regulated digital currency like the e-CNY enhances banks' capital adequacy and regulatory compliance, contributing to overall stability.

4.5 Moderation Analysis

Table 6 presents the results of the moderation analysis testing Hypothesis 3. The interaction term between cryptocurrency adoption and regulatory measures was statistically significant ($\beta = 0.22$, $p = 0.037$). This suggests that regulatory measures moderate the relationship between cryptocurrency adoption and bank profitability. Specifically, the strong regulatory framework in China seems to mitigate the negative effects of cryptocurrency adoption on profitability. Banks in highly regulated environments experienced a weaker negative relationship between cryptocurrency adoption and profitability than those in less regulated settings.

Table 6 Moderation Analysis

Ho	Path	Standardized Estimate (β)	p-value
H3	Regulation *Crypto Adoption *Bank Profitability (ROA)	0.22	0.037

4.6 Discussion

The findings from this study reveal a complex relationship between cryptocurrency adoption and the performance of traditional banks in China. The most notable finding is the negative impact of decentralized cryptocurrency adoption on profitability. This supports the view that traditional revenue streams, such as fees from remittances and international transfers, are being challenged by low-cost, decentralized alternatives. These results are consistent with the disruptive innovation theory, which argues that new technologies can undermine established business models when traditional institutions fail to adapt.

At the same time, the study found that adopting CBDCs like the e-CNY enhances bank stability, supporting China's decision to launch a government-controlled digital currency as a way to counterbalance the risks posed by unregulated cryptocurrencies. This dual strategy—restricting decentralized cryptocurrencies while promoting a controlled digital currency—provides banks with an avenue for innovation while reducing systemic risk. These findings align with Zhang (2025) [3], who noted that the e-CNY contributes to regulatory goals while offering modern financial tools to banks.

The moderating role of regulatory measures is perhaps the most important finding, reinforcing the idea that strong regulation serves as both a safeguard and an enabler. In heavily regulated environments such as China, the negative effects of cryptocurrency adoption on profitability are lessened, as regulatory frameworks ensure controlled, measured adoption. This supports the regulatory buffer theory, which suggests that robust regulation not only limits risk but also shields business models from disruptive changes [5].

From a practical perspective, these findings highlight the need for Chinese banks to strike a balance between embracing innovations in digital finance, particularly through CBDCs, and minimizing their exposure to the volatility of decentralized cryptocurrencies. Furthermore, the results encourage regulators to maintain a flexible and adaptive policy environment that can support the evolving digital currency landscape while safeguarding the stability of the banking sector.

5. Conclusion

The purpose of this study was to investigate how cryptocurrency adoption influences the profitability and stability of traditional banking institutions in China, while also examining the moderating role of regulatory measures. By combining quantitative data with survey-based insights, the research provides valuable empirical evidence in the evolving field of digital finance and banking innovation. The findings indicate that decentralized cryptocurrencies significantly reduce bank profitability, primarily due to their disruptive effects and ability to bypass traditional banking services. In contrast, the adoption of Central Bank Digital Currencies (CBDCs), particularly China's Digital Yuan (e-CNY), positively influences the financial stability of banks by strengthening regulatory compliance, enhancing capital adequacy, and supporting risk management. Additionally, the study confirms that regulatory measures play a key role in moderating the negative impact of cryptocurrency adoption on profitability, acting as a buffer against financial disruption.

From a theoretical standpoint, this study extends the Technology Acceptance Model (TAM) and Disruptive Innovation Theory within the context of institutional financial services. It shows that the decision of traditional banks to adopt cryptocurrency technologies is influenced not only by perceived usefulness and ease of use, but also by their perception of institutional risks and the regulatory environment. The study also contributes to innovation theory by illustrating how disruptive technologies, such as decentralized cryptocurrencies, can coexist with established financial institutions, provided that supportive regulatory mechanisms are in place. By linking emerging financial technologies to core banking performance indicators in a highly regulated environment like China, this research addresses a critical gap in the literature.

From a practical perspective, the study provides meaningful insights for bank executives, policymakers, and regulators. For banking professionals, the results underscore the importance of developing adaptive strategies that cautiously integrate decentralized cryptocurrencies while embracing regulated digital innovations like CBDCs. The positive correlation between CBDC adoption and bank stability suggests that traditional banks can transition to digital finance without sacrificing resilience, provided they focus on aligning innovations with government-backed platforms. For regulators, the study highlights the need to craft robust and adaptable policies that not only control financial risks but also foster safe, structured innovation within the banking ecosystem.

However, there are several limitations to the study. The cross-sectional nature of the data limits the ability to establish long-term causality between cryptocurrency adoption and bank performance. The reliance on self-reported survey data may also introduce response bias, as participants' perceptions may not align fully with actual bank performance. Moreover, the focus on China, a country with a centralized financial system and strict regulatory governance, may limit the generalizability of the findings to other countries with more liberalized financial systems. Additionally, the assumption of uniform cryptocurrency engagement across all institutions may overlook variations within the banking industry.

Future research could address these limitations by employing longitudinal methods to track how the effects of cryptocurrency and CBDC adoption evolve over time. Comparative studies across different countries would provide valuable context, allowing for a broader understanding of China's regulatory approach. Further studies into other financial technologies, such as decentralized finance (DeFi), tokenized assets, and smart contracts, would enhance our understanding of how digital transformation affects banking outcomes. Qualitative research, including interviews with executives and policymakers, could provide deeper insights into the strategic decision-making processes behind cryptocurrency adoption in banking.

In conclusion, this study highlights that while decentralized cryptocurrencies present challenges to the profitability of traditional banks, the adoption of CBDCs like the e-CNY contributes positively

to the stability of these institutions. Regulatory oversight plays an essential role in mitigating risks and ensuring a balanced transition to digital finance. The findings provide a solid foundation for future research and policy development aimed at navigating the digital evolution of global banking systems.

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