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Research on the impact of digital inclusive finance development on the consumption gap between urban and rural residents

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Abstract: This study employs panel data from 31 provinces across China spanning the period from 2011 to 2023 to conduct an empirical examination of the impact of digital inclusive finance on the urban-rural consumption gap and its underlying mechanisms. The findings reveal that digital inclusive finance has a significant effect in narrowing the urban-rural consumption gap. Specifically, for every one-unit increase in the digital inclusive finance index, the urban-rural consumption gap decreases by 0.1688 units. Through the mediation effect test, it is demonstrated that digital inclusive finance indirectly achieves the outcome of reducing the consumption gap by enhancing residents' income levels. Heterogeneity analysis further unveils a differentiated pattern in the inclusive effects of digital inclusive finance across regions: its effect in narrowing the urban-rural consumption gap is more pronounced in areas with higher urbanization rates and municipalities directly under the central government, whereas the corresponding effect is relatively weaker in regions with lower urbanization rates and ordinary provinces. Based on these research findings, this paper proposes relevant recommendations. It is suggested to refine a differentiated financial support system centered on upgrading the rural consumption structure, while concurrently strengthening the development of digital infrastructure and risk prevention and control efforts. These measures are aimed at facilitating a gradual transition from a mere quantitative pursuit of urban-rural consumption convergence towards a balanced qualitative development, thereby establishing a sustainable policy focal point for the realization of common prosperity.

Keywords: *Dynamic Synergy, Factor analysis, Logistics industry, Regional economy, Regression analysis.*

1. Introduction

With the continuous development of China's economy, the consumption level of both urban and rural residents has been steadily rising. However, the issue of the urban-rural consumption gap has become increasingly prominent, exhibiting characteristics of structural imbalance. According to data from the National Bureau of Statistics, in 2024, the per capita consumption expenditure of urban residents was 1.79 times that of rural residents, and the gap in consumption expenditure between urban and rural residents reached as high as 15,277 yuan. This urban-rural consumption gap clearly exists across multiple dimensions, including basic consumption, developmental consumption, and enjoyment-oriented consumption, particularly in fields outside basic consumption such as education, healthcare, housing, and cultural entertainment [1]. Constrained by issues such as insufficient supply of financial services, low accessibility to credit, and poor payment convenience, the consumption potential of rural residents has not been fully unleashed. This has become a core issue hindering the coordinated development of urban and rural areas and the realization of common prosperity.

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The rapid development of digital inclusive finance has brought an unprecedented opportunity for narrowing the urban-rural consumption gap. Financial resources that were previously difficult to access can quickly penetrate rural areas, covering rural groups that have long been marginalized by the traditional financial system. This in-depth integration of technology and finance, on the one hand, improves the convenience of accessing financial services in rural areas, and on the other hand, significantly reduces transaction costs, thereby providing rural residents with more convenient, efficient, and low-cost financial services. Meanwhile, by virtue of big data analytics and intelligent risk control technologies, digital inclusive finance effectively reduces the uncertainties and risk costs that exist during financial transactions, providing rural residents with more secure and reliable financial protection [2]. Based on this, digital inclusive finance is expected to activate the consumption potential of rural areas, further improve the urban-rural consumption structure at the overall level, and alleviate the imbalance in urban-rural consumption caused by the uneven distribution of financial services. Whether the "inclusive" attribute that digital inclusive finance possesses can truly be transformed into a driving force that promotes the balanced development of urban-rural consumption still needs to be accurately verified through rigorous empirical research.

This study attempts to, based on the actual situation of the urban-rural consumption gap and after analyzing the theoretical mechanism of action, empirically examine the impact of digital inclusive finance on the urban-rural consumption gap and the underlying mechanism of action using large-sample data. Compared with previous related studies, the potential marginal contributions of this study are reflected in the following aspects: first, there is innovation in the research perspective. Many previous studies often focus on exploring the role of digital inclusive finance in improving the consumption level of rural residents, while this study starts from the perspective of the urban-rural consumption gap and systematically analyzes the impact of digital inclusive finance on the urban-rural consumption gap and its mechanism of action, which to a certain extent expands the research paradigm of digital inclusive finance and consumption economics. Second, a more detailed analysis of the mechanism of action is conducted. This study not only explores the direct impact of digital inclusive finance on the urban-rural consumption gap but also conducts an in-depth and detailed analysis of the specific paths through which it affects the urban-rural consumption gap, thereby providing a more refined analytical framework for understanding the functional channels of digital inclusive finance. Third, there is an expansion in the analysis of heterogeneity and robustness. By introducing a multi-dimensional heterogeneity analysis method, this study further reveals the heterogeneous impacts of digital inclusive finance across different consumption types, thus making up for the deficiency that existed in previous studies, which ignored the consumption structure.

2. Theoretical Analysis and Hypotheses

2.1. Theoretical Analysis

2.1.1. The Impact of Digital Inclusive Finance on Urban Consumption

With the rapid development of information and communication technologies, the widespread popularization of digital inclusive finance in urban areas has significantly reshaped the consumption ecology that underpins urban residents' daily spending patterns. On the one hand, it has promoted the continuous optimization and upgrading of the consumption structure of urban residents; on the other hand, its more far-reaching impact lies in the systematic enhancement of consumption quality and the fulfillment of personalized consumption demands that urban residents increasingly pursue. Urban residents themselves possess relatively high-income levels and strong consumption capacity, which lay a solid user foundation for the expansion of digital inclusive finance that relies on user participation and transaction frequency. By constructing convenient payment channels, flexible credit mechanisms, and intelligent financial service platforms, digital inclusive finance has provided urban consumers with unprecedented financial accessibility, thereby creating a more diverse range of consumption scenarios that cover daily necessities, services, and high-end products [3]. Empowered by technologies such as mobile Internet, big data, and artificial intelligence, the consumption behaviors of urban residents have exhibited a profound digital transformation trend that is reflected in both online and offline spending. The widespread application of new payment tools, such as credit payment and installment payment, not only lowers the threshold for consumption that was previously restricted by immediate liquidity but also greatly expands the accessible boundary of consumption categories, enhancing consumers' initiative and flexibility in the process of selecting goods and services that meet their specific needs.

This convenient financial service system, on the one hand, helps urban residents upgrade their consumption structure that originally focused on basic necessities; on the other hand, it drives the transformation of consumption categories and consumption methods that adapt to modern lifestyles. As the demand for high-quality goods and services continues to grow, consumption has gradually shifted from traditional basic commodities to higher-quality and more personalized goods and services that cater to individual preferences and quality-of-life pursuits. The increasing demand for high-end consumer goods, such as smart home devices, eco-friendly products, and personalized customized products, all of which embody advanced technology, environmental consciousness, and individualization, serves as evidence of the important role that digital inclusive finance plays in promoting the improvement of consumption quality. Consumers can easily obtain products that better align with their personal needs through digital channels, which in turn makes consumption patterns more diversified and significantly improves consumption quality that as measured by satisfaction and utility [4].

While promoting the rapid development of e-commerce platforms that connect suppliers and consumers across regions, digital inclusive finance has further boosted the growth trend of online consumption. E-commerce platforms provide consumers with a broader range of commodity choices and better cater to personalized consumption demands that vary from individual to individual. With the gradual popularization of online shopping, the flexibility and convenience of consumption choices for urban residents have been significantly enhanced; this consumption model that combines online and offline channels has further driven urban consumption to exhibit characteristics of diversity and personalization that are typical of a mature consumer market. From this, it can be observed that the promotion of digital inclusive finance not only improves the consumption quality of urban residents but also triggers considerable changes in the consumption structure, demonstrating a strong trend of consumption upgrading that is characteristic of mature urban consumer markets [5]. Throughout this process, digital inclusive finance, on the one hand, enhances the convenience of consumers' payment processes that involve multiple scenarios and frequent transactions; on the other hand, it enables more people to access higher-quality goods and services that were once limited by information asymmetry or high transaction costs, thereby promoting the upgrading of the entire urban consumer market.

2.1.2. The Impact of Digital Inclusive Finance on Rural Consumption

Compared with urban areas, rural regions have long been confronted with the severe issue of insufficient financial service supply, which is reflected not only in the uneven spatial distribution of financial resources but also in the systematic deficiency in institutional arrangements and service accessibility [6]. First, the financial infrastructure in rural areas is relatively underdeveloped, featuring sparse bank branches and uneven distribution of basic facilities such as Automated Teller Machines (ATMs), which significantly reduce the physical accessibility of financial services compared to that in urban areas. Second, the coverage of traditional financial institutions in rural markets is limited; most commercial banks and formal credit institutions generally regard rural areas as inefficient markets or non-priority service targets due to concerns over risk control, profit expectations, and operational costs, thereby leading to the widespread existence of "financial discrimination" or "financial exclusion." More importantly, against the backdrop of an incomplete credit reporting system and unstable income sources for rural residents, they often fail to meet the risk assessment standards set by formal credit institutions, resulting in frequent encounters with high-threshold credit constraints during their actual access to financial services. This structural restriction not only suppresses rural residents' willingness to participate in financial activities but also prevents them from making timely and effective responses to

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developmental consumption needs such as daily consumption, durable goods purchase, children's education, and medical security due to limited capital mobility, thereby significantly inhibiting their overall consumption capacity.

From the perspective of the long-tail theory, the rural consumption market is essentially a "long-tail market" where the potential demand for diversified and customized products among rural residents has long been unmet by the traditional offline retail system. This failure stems from factors such as remote geographical locations, high logistics costs, and low population density. However, with the coordinated expansion of digital inclusive finance with e-commerce platforms and logistics infrastructure, the traditional barrier of supply-demand asymmetry has been gradually broken. In particular, when financial services are embedded into e-commerce ecosystems, such as through models like "buy now, pay later" and "Rural Taobao," rural residents gain access to goods and services that were previously inaccessible due to constraints in information, capital, and channels, which in turn stimulates the enormous consumption potential hidden in the "long tail". With the rapid development of digital inclusive finance, especially driven by technologies related to Internet finance, mobile payments, and P2P lending, financial services have gradually penetrated into rural areas, thereby providing rural residents with a wider range of flexible financial products and services with relatively low thresholds. This development effectively fills the multiple gaps that existed in rural financial services. The impact of the popularization of digital inclusive finance in rural areas is particularly prominent. First, the widespread application of digital payment methods has made it more convenient for rural residents to engage in consumption activities [7]. In the past, rural consumption was often restricted by cash transactions, where most transactions were limited to face-to-face cash payments, a form that not only added inconvenience to the transaction process but also constrained the scope and frequency of consumption. Currently, however, through digital payment methods such as mobile payments, rural residents can conduct consumption payments anytime and anywhere without worrying about cash-carrying issues, which undoubtedly brings great convenience to daily shopping and payment activities. This significant transformation has strongly promoted the transition of rural consumption patterns.

Furthermore, the credit services covered by digital inclusive finance have provided rural residents with more diverse channels to obtain capital. In particular, through low-cost consumer credit, rural residents are able to advance the fulfillment of high-value consumption needs that were previously unaffordable with their own economic capacity [8]. For instance, many rural households purchase home appliances, smart devices, and other items through microloans, which in turn improves their quality of life. In the past, the purchase of these consumer goods was difficult due to capital scarcity; however, thanks to digital inclusive finance, its low-threshold loan services and installment payment options have made such high-value consumption feasible, thereby significantly enhancing the overall living standards of rural residents.

Digital inclusive finance also provides multi-dimensional support to rural areas, which is particularly evident in fields of developmental consumption such as education and medical care. Historically, due to financial constraints, many rural households often failed to ensure sufficient spending on both education and medical care, two types of expenditures that are critical to human capital accumulation and health maintenance. This inadequacy resulted in many rural children being unable to access higher-quality education and elderly or sick individuals being unable to receive timely and effective medical treatment due to medical expense burdens. However, with the gradual popularization of digital inclusive finance, rural residents can obtain more convenient and efficient financial services through online platforms, which alleviates the financial pressure they face in areas such as education and medical care. This not only helps improve the quality of life of rural residents but also promotes the overall development of rural society.

Therefore, digital inclusive finance has practically promoted the growth of rural consumption, with a particularly significant role in boosting basic consumption and developmental consumption, while also remarkably improving the overall living standards of rural residents. As digital inclusive finance continues to develop, the consumption capacity of rural residents has gradually increased, and their consumption patterns have become increasingly diversified, factors that undoubtedly provide new impetus and rare opportunities for narrowing the urban-rural consumption gap and promoting rural economic development. The widespread popularization of digital inclusive finance has transformed the long-restricted financial environment in rural areas, thereby laying a solid foundation for the sustainable development of the rural economy.

2.1.3. The Impact of Digital Inclusive Finance on the Urban-Rural Gap

Against the backdrop of China's long-standing urban-rural dual structure, the consumption gap not only reflects the spatial imbalance in economic development but also serves as a key indicator for measuring social equity and the level of coordinated development. Urban areas, which boast highly concentrated economic resources, complete infrastructure, and a sound financial service system, have residents with generally higher income levels and stronger consumption capacity, and their consumption structure tends to be diversified and high-quality. In contrast, rural areas are constrained by multiple factors including financial exclusion, unstable income sources, and insufficient educational and informational resources, leading to an overall low consumption level where consumption remains focused on subsistence and basic needs, while the proportion of developmental, hedonic, and high-quality consumption is relatively small. This consumption gap between urban and rural areas has long existed and is difficult to effectively bridge in the short term [9].

The impact of digital inclusive finance on the urban-rural consumption gap is primarily manifested in its function of improving the consumption level in rural areas. The urban-rural consumption gap is reflected not only in differences in consumption levels but also in disparities in consumption structures and consumption patterns. Urban areas have long possessed more advanced financial services, information infrastructure, and higher income levels relative to rural areas, which in turn contribute to their higher consumption levels. In rural areas, however, the relatively weak infrastructure and insufficient financial services result in lower consumption levels, with particularly obvious gaps in developmental and hedonic consumption [10]. The popularization of digital inclusive finance can indeed significantly improve the consumption level in rural areas, which is particularly prominent in aspects of basic consumption and developmental consumption. For example, the popularization of mobile payments and online lending enables rural residents to purchase more home appliances, smart devices, and other goods, while also facilitating their consumption in education and medical care, all of which greatly enhance the quality of life of rural residents. Through this mechanism, digital inclusive finance plays a highly positive role in narrowing the urban-rural consumption gap. Given the lag in rural infrastructure, the effect of digital inclusive finance becomes even more prominent, leading to a substantial increase in consumption levels; this growth effect, to a certain extent, promotes the gradual narrowing of the urban-rural gap.

Nevertheless, even though digital inclusive finance has effectively improved rural consumption levels, the improvement in urban consumption is more reflected in the enhancement of consumption quality and the upgrading of consumption structure [11]. Therefore, the impact of digital inclusive finance on the urban-rural consumption gap is not a simple equivalent effect but rather a trend of differentiated effects across different dimensions. In urban areas, consumption improvement is mainly manifested in quality enhancement; in rural areas, consumption growth is more reflected in the increase in consumption level. Overall, the growth effect of digital inclusive finance in rural areas is more prominent, which is of great significance for narrowing the urban-rural consumption gap.

2.2. Research Hypotheses

Based on the theoretical analysis presented above, this study puts forward the following two research hypotheses:

$H_{1:}$ Digital inclusive finance possesses the capacity to narrow the urban-rural consumption gap. As elaborated in the theoretical analysis section of this study, the promotion of digital inclusive finance in rural areas not only enhances the consumption level in these regions but also may contribute to

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narrowing the urban-rural consumption gap to a certain extent. For a long time, rural areas have been constrained by the inadequacy of traditional financial services and the uneven distribution of financial resources two factors that have collectively resulted in a relatively low consumption level in these regions. However, with the popularization of digital inclusive finance, rural residents can access more convenient financial services at a lower cost, a development that has significantly improved the consumption environment. This facilitative role of digital inclusive finance is particularly prominent in areas such as basic consumption and developmental consumption. For instance, rural residents can more easily participate in market activities through digital payment tools and financial products, which in turn enhances their consumption capacity and willingness to consume. Therefore, this study hypothesizes that digital inclusive finance can significantly narrow the urban-rural consumption gap, particularly in rural areas where the consumption level is relatively low, it can bring about notable improvements in residents' consumption status.

Digital inclusive finance can promote an increase in residents' income, which in turn contributes to narrowing the urban-rural consumption gap. Digital inclusive finance is not only instrumental in boosting consumption; more importantly, it can influence changes in the consumption gap by raising residents' income levels. Its geographical penetration feature effectively addresses the high-cost issue that traditional financial services face in their promotion in rural areas, enabling financial services to cover a wider range of regions. With the development of digital inclusive finance, a growing number of rural residents can conveniently access a full spectrum of financial services, including payment, wealth management, and credit services. This access not only enhances their ability to obtain financial resources but also promotes an increase in their income. Particularly beyond agricultural income, the diversified financial products provided by digital inclusive finance have further boosted the economic vitality of rural residents. The increase in income equips rural residents with greater economic capacity to engage in consumption, which in turn narrows the urban-rural consumption gap. Therefore, this study proposes the hypothesis that digital inclusive finance can promote the narrowing of the urban-rural consumption gap by increasing residents' income.

3. Model Design

3.1. Data Sources

The research data used in this study are derived from sources including the China Statistical Yearbook, the China Urban Statistical Yearbook, and the statistical yearbooks of various provinces. This study empirically analyzes the relationship between digital inclusive finance and the urban-rural residents' consumption gap using data spanning from 2011 to 2023. In alignment with the research theme, this study processes the raw data and fills in missing data via the interpolation method, eventually yielding a total of 403 valid samples for analysis.

3.2. Variable Description

The urban-rural residents' consumption gap, which serves as the explained variable in this study, is obtained from the annual data of the China Statistical Yearbook and is measured as the ratio of urban residents' consumption expenditure to rural residents' consumption expenditure.

Digital inclusive finance (denoted as Ida), the core explanatory variable of this study, is sourced from the Peking University Digital Inclusive Finance Index. This index is compiled by a joint research team consisting of the Digital Finance Research Center of Peking University and Ant Group, and in this study, digital inclusive finance is operationalized as the logarithm of the comprehensive index of inclusive finance.

Existing literature has identified that certain potential factors may lead to variations in the model. To avoid the impact of omitted variables, this study draws on relevant literature and incorporates five control variables, which include tax burden level (Tl), fiscal support intensity (Csl), urbanization rate (Cl), population density (Peo), and economic development level (Eco).

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Table 1.
Variable Definition.

Variable Type	Variable Meaning	Variable Symbol	Variable description
Explained Variable	Urban-rural Residents' Consumption Gap	Gap	Urban residents' consumption divided by rural residents' consumption
Explanatory Variable	Digital Inclusive Finance	Ida	Logarithmic calculation of the digital inclusive finance index for each province.
Control variables	Tax Burden Level	Tl	Tax revenue/GDP
	Fiscal Support Intensity	Csl	General budget expenditure/GDP
	Urbanization Rate	Cl	The urbanization level of each province in that year.
	Population Density	Peo	Annual resident population of each province/land area.
	Economic Development Level	Eco	Logarithmic calculation of per capita GDP in each province.

3.3. Model Construction

Based on the previous analysis, construct the following benchmark regression model:

$$Gap_{it} = \alpha + \beta_1 Ida_{it} + \beta_2 X_{it} + \mu_i + \theta_t + \varepsilon_{it} \quad (1)$$

Among them, Gap is the consumption gap between urban and rural residents, Ida is the level of digital inclusive finance, and X is the control variable, including tax burden level (Tl), fiscal support intensity (Csl), urbanization rate (Cl), population density (Peo), and economic development level (Eco). α is a constant term, μ is the fixed effect of provinces, controlling for the influence of unobservable factors that do not change over time on individuals in each province, θ is the fixed effect over time, ε is the error term, and i and t are different provinces and times across the country.

3.4. Descriptive statistics

The descriptive statistical results of the main variables in this article are shown in Table 2. The average value of the consumption gap between urban and rural residents as the dependent variable is 2.1037, with a standard deviation of 0.3641, indicating that the consumption gap between urban and rural residents in China is relatively small. The average level of inclusive finance is 5.3800, with a standard deviation of 0.6696, indicating that digital inclusive finance in various provinces of China is currently at a moderate level. The average urbanization rate is 58.97%, but the standard deviation is 0.1410, indicating that China's urbanization development is rapid but uneven. The dispersion and difference levels of the remaining control variables are distributed within a reasonable range and are consistent with existing literature.

Table 2.
Descriptive Statistics.

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Gap	403	2.1037	0.3641	1.4758	3.6964
Ida	403	5.3800	0.6696	2.7862	6.1609
Tl	403	0.0825	0.0282	0.0355	0.1882
Csl	403	0.2889	0.2044	0.1050	1.3538
Cl	403	0.5897	0.1410	0.2281	0.8958
Peo	403	456.5352	702.4997	2.5129	3951.4760
Eco	403	10.8915	0.4715	9.6818	12.2075

4. Empirical Analysis

4.1. Baseline Regression

This study adopts a fixed effects model to perform regression analysis. The results presented in Column (1) of Table 3 show that when neither fixed effects nor control variables are included in the model, the explanatory variable Ida (which represents digital inclusive finance) is significantly negative at the 1% statistical significance level. This result indicates that digital inclusive finance plays a role in reducing the urban-rural residents' consumption gap.

Columns (2) to (3) of Table 3 report the regression results after the sequential inclusion of control variables and fixed effects into the model. In these specifications, the explanatory variable remains significantly negative, with statistical significance observed at the 1% and 5% levels, respectively. This finding implies that an improvement in the development level of digital inclusive finance can contribute to a reduction in the urban-rural residents' consumption gap.

Overall, the model estimation demonstrates strong robustness, as the core conclusion that an increase in digital inclusive finance narrows the urban-rural residents' consumption gap remains consistent across different model settings, with or without the integration of control variables and fixed effects.

Table 3.
Benchmark Regression.

Variables	**(1)**	**(2)**	**(3)**
	Gap	**Gap**	**Gap**
Ida	-0.3198***	-0.1776***	-0.1688**
	(0.0220)	(0.0242)	(0.0679)
Tl		3.9183***	3.2550***
		(0.5792)	(0.7789)
Csl		0.6698***	-0.0533
		(0.0646)	(0.2599)
Cl		-0.2858**	-0.0589
		(0.1233)	(0.0772)
Peo		0.0001**	-0.0020***
		(0.0000)	(0.0004)
Eco		-0.1868***	-0.2121*
		(0.0458)	(0.1195)
Provinces Fixed Effects	No	No	Yes
Time Fixed Effects	No	No	Yes
Constant	3.8244***	4.7193***	6.0087***
	(0.1191)	(0.3994)	(1.2588)
Observations	403	403	403
R-squared	0.346	0.654	0.925

Note: The parentheses indicate the robust standard error, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

5. Empirical Analysis

5.1. Robustness Tests

5.1.1. Replacing the Explanatory Variable

This study conducts a robustness test by replacing the explanatory variable, and the specific results are presented in Table 4. The original explanatory variable, namely "Ida," which was used to measure digital inclusive finance, is replaced with "Cob," representing the depth of digital finance usage. This robustness test maintains the same regression procedures as the baseline analysis, and the regression result shows that the new explanatory variable is negatively significant at the 10% statistical level. As detailed in Column (1) of Table 4, this result is largely consistent with the findings from the baseline regression, indicating that the estimation results of this study are robust.

5.1.2. Replacing the Explained Variable

In this section, the explained variable is replaced with a proxy variable denoted as "CGap," which is calculated as the logarithm of the difference between urban residents' consumption expenditure and rural residents' consumption expenditure. The specific regression results of this test are shown in Column (2) of Table 4. The explanatory variable (digital inclusive finance) remains negatively

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significant at the 5% statistical level, and this outcome is consistent with the results of the baseline regression. This consistency further confirms the robustness of the regression results in this study.

5.1.3. Lagging the Explanatory Variable by One Period

Column (3) of Table 4 reports the regression results obtained after extending the observation window for the explanatory variable by lagging it by one period. From the regression results, it can be observed that after lagging the explanatory variable by one period, the regression coefficient remains significantly negative and is statistically significant at the 5% level. This finding indicates that the digital inclusive finance lagged by one period still exerts an impact on the urban-rural consumption gap, and no substantial change has occurred in the conclusion of this study. Thus, the regression results continue to demonstrate robustness.

Table 4.
Robustness Test.

Variables	**(1)**	**(2)**	**(3)**
	Gap	**CGap**	**Gap**
Cob	-0.0500*		
	(0.0261)		
Ida		-0.1011**	
		(0.0454)	
Ida_l			-0.1338**
			(0.0614)
Tl	3.1711***	-0.7043	3.3964***
	(0.7799)	(0.5206)	(0.7820)
Csl	-0.0622	0.1590	-0.1416
	(0.2607)	(0.1737)	(0.2567)
Cl	-0.0603	0.0195	-0.0533
	(0.0775)	(0.0516)	(0.0739)
Peo	-0.0017***	0.0001	-0.0024***
	(0.0004)	(0.0003)	(0.0006)
Eco	-0.2299*	-0.1848**	-0.2954**
	(0.1206)	(0.0799)	(0.1284)
Provinces Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Constant	5.4524***	-6.8237***	6.9150***
	(1.2835)	(0.8414)	(1.3585)
Observations	403	403	372
R-squared	0.924	0.942	0.926

Note: The parentheses indicate the robust standard error, *** p<0.01, ** p<0.05, * p<0.1

5.2. Heterogeneity Tests

5.2.1. Urbanization Rate

The urban-rural consumption gap has consistently restricted balanced economic development and exerted a profound impact on social equity and harmony. The urbanization rate, which serves as a crucial factor influencing the effect of digital inclusive finance on the urban-rural consumption gap, exhibits significant variations across different regions. This study sorts the urbanization rates in ascending order and takes the median as the threshold: regions with urbanization rates higher than the median are defined as high-urbanization regions, while those lower than the median are classified as low-urbanization regions. The regression results, presented in Columns (1) and (2) of Table 5, show that in high-urbanization regions, the explanatory variable (digital inclusive finance) is negatively significant at the 1% statistical level. Digital inclusive finance effectively narrows the urban-rural consumption gap by lowering the threshold of financial services, expanding service coverage, promoting consumption upgrading, and stimulating market vitality. In contrast, the regression results are not significant in low-urbanization regions. Due to factors such as underdeveloped infrastructure, low financial literacy among residents, and deeply rooted traditional consumption concepts, the impact of digital inclusive finance on the urban-rural consumption gap in these regions is not statistically significant.

In regions with relatively high urbanization rates, digital inclusive finance has practically provided more rural residents with access to highly convenient financial services, thereby significantly enhancing rural residents' consumption capacity and level, which in turn gradually narrows the urban-rural consumption gap. Furthermore, digital inclusive finance, by leveraging the Internet and mobile communication technologies, has successfully broken geographical constraints and further extended financial services to a broader range of rural areas. This objectively helps meet the diverse financial service needs of rural residents, strongly promotes the upgrading of the rural consumption market, and drives its continuous expansion. However, in low-urbanization regions, the insufficiently improved infrastructure has, to some extent, restricted the popularization of digital inclusive finance. At the same time, residents in low-urbanization regions have limited knowledge of financial literacy and relatively low acceptance of digital financial services, making it difficult for them to effectively use digital inclusive financial services to enhance their own consumption capacity and level. In addition, traditional consumption concepts are deeply rooted in low-urbanization regions, where residents tend to hold conservative consumption attitudes and prefer to save money rather than spend it. This type of consumption concept has restricted the role of digital inclusive finance in promoting consumption to a certain extent.

5.2.2. Distinguishing Between Direct-Controlled Municipalities and Non-Direct-Controlled Municipalities

As a product of the integration of financial innovation and technology, digital inclusive finance, with its characteristics of low threshold, wide coverage, and high efficiency, provides a new possibility for narrowing the urban-rural consumption gap. This study conducts heterogeneous regression by grouping samples into non-municipalities directly under the Central Government (non-direct-controlled municipalities) and municipalities directly under the Central Government (direct-controlled municipalities). The results in Column (3) of Table 5 indicate that the explanatory variable is negatively significant at the 1% statistical level, which suggests that the development of digital inclusive finance exerts a significant effect on narrowing the urban-rural consumption gap in direct-controlled municipalities, while the effect is not significant in non-direct-controlled municipalities.

Direct-controlled municipalities typically have relatively high income levels, highly active market demand, and a relatively sound industrial structure, which makes the application scenarios of digital inclusive finance in these regions broader and their role in promoting consumption more prominent. Moreover, residents in direct-controlled municipalities generally have a higher level of education and a better understanding and mastery of financial knowledge, which enables them to more easily accept and use digital inclusive financial products, thereby practically enhancing their own consumption capacity and level. However, non-direct-controlled municipalities have relatively weak economic foundations, and their residents have lower income levels and limited consumption capacity. This has restricted the role of digital inclusive finance in promoting consumption, as even with convenient financial services provided, residents may still find it difficult to generate effective consumption demand due to insufficient income. At the same time, compared with non-direct-controlled municipalities, direct-controlled municipalities usually enjoy more advantages in terms of policy environment, while the policy environment in non-direct-controlled municipalities is relatively stringent for the development of digital inclusive finance, such as overly strict regulatory policies. In addition, residents in non-direct-controlled municipalities generally have a lower level of education and limited understanding and mastery of financial knowledge, which results in their low awareness and acceptance of digital inclusive financial products and makes it difficult for them to effectively use digital inclusive financial services to enhance their own consumption capacity and level.

Table 5.
Heterogeneity test.

Variables	(1)	(2)	(3)	(4)
	Gap	**Gap**	**Gap**	**Gap**
Ida	0.0223	-0.8803***	-1.1078***	-0.0724
	(0.0905)	(0.2550)	(0.3870)	(0.0705)
Tl	1.9852	2.5709**	-2.2944	4.1798***
	(1.3242)	(1.0602)	(2.6480)	(0.8257)
Csl	-0.1417	-0.4254	-0.9961	0.0692
	(0.3206)	(0.4887)	(0.9541)	(0.2633)
Cl	-0.0421	-0.2674	0.0813	-0.1059
	(0.1310)	(0.5765)	(0.1113)	(0.0935)
Peo	-0.0090***	-0.0026***	-0.0032***	-0.0004
	(0.0021)	(0.0005)	(0.0008)	(0.0007)
Eco	-0.5320***	0.5606***	-1.0916**	-0.1076
	(0.1730)	(0.1949)	(0.4324)	(0.1209)
Provinces Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Constant	9.6355***	2.4774	26.6394***	3.4889***
	(1.8077)	(2.4677)	(3.6491)	(1.2850)
Observations	198	200	52	351
R-squared	0.950	0.921	0.952	0.934

Note: The parentheses indicate the robust standard error, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

6. Mediation Effect Test

At present, as China's economy moves toward high-quality development, the imbalance in urban-rural economic development remains a challenging issue. The urban-rural consumption gap is a key indicator that measures the economic disparity between urban and rural areas, and narrowing this gap holds significant practical importance for achieving the goal of common prosperity and promoting greater social equity and harmony. Digital inclusive finance, an emerging product resulting from the in-depth integration of financial technology and inclusive finance, has demonstrated considerable vitality and potential in the rural economy. It has become an important force in promoting the continuous increase in rural residents' income and helping to narrow the urban-rural consumption gap. By leveraging the Internet and big data technologies, digital inclusive finance has enabled the transformation of financial services toward greater intelligence and efficiency, thereby supporting the gradual growth of residents' income.

Traditional financial exclusion has led rural residents to face greater income uncertainty. The insurance and savings tools provided by digital inclusive finance reduce risk exposure, weaken the motivation for precautionary savings, and prompt rural residents to convert a higher proportion of their income into immediate consumption rather than passively accumulating "safe assets." Meanwhile, due to capital scarcity, the marginal return on initial capital for low-income rural groups is significantly higher than that for urban residents. By providing financing support, digital inclusive finance helps rural residents overcome capital constraints, resulting in a faster income growth rate driven by improved productivity than that of urban residents. This enhancement in income further strengthens their payment capacity for durable consumer goods and service-based consumption, such as education and medical care, and promotes the convergence of their consumption structure toward that of urban residents.

This study employs the logarithm of residents' income as the mediating variable, with the regression results presented in Column (2) of Table 6. The explanatory variable, digital inclusive finance, is positively significant at the 1% statistical level, indicating that the ongoing development of digital inclusive finance contributes to an increase in residents' income and a corresponding reduction in the urban-rural residents' consumption gap. Digital inclusive finance offers various credit products and comprehensive insurance protection services, effectively reducing the operating costs of rural industries,

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enhancing their profit margins, and increasing their competitiveness in the market. Consequently, this promotes an increase in rural residents' income levels. Higher income levels enable rural residents to meet diverse living needs, thereby fostering consumption upgrading. Additionally, the gradual popularization of digital inclusive finance accelerates structural optimization within the rural consumption market and promotes its continuous expansion. This expansion provides rural residents with a broader and more diverse range of consumer goods and services. The tangible improvement in consumption capacity and the deepening of the consumption market lay a solid foundation for narrowing the urban-rural consumption gap.

Table 6.
Mediation Effect Test.

Variables	**(1)**	**(2)**
	Gap	**Income**
Ida	-0.1688**	0.2682***
	(0.0679)	(0.0350)
Tl	3.2550***	-0.0214
	(0.7789)	(0.4015)
Csl	-0.0533	-0.3655***
	(0.2599)	(0.1339)
Cl	-0.0589	0.1411***
	(0.0772)	(0.0398)
Peo	-0.0020***	0.0018***
	(0.0004)	(0.0002)
Eco	-0.2121*	0.4274***
	(0.1195)	(0.0616)
Provinces Fixed Effects	Yes	Yes
Time Fixed Effects	Yes	Yes
Constant	6.0087***	20.5753***
	(1.2588)	(0.6488)
Observations	403	403
R-squared	0.925	0.997

Note: The parentheses indicate the robust standard error, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

7. Conclusions and Recommendations

7.1. Conclusions

This study conducts an analysis using panel data from 31 provinces across China spanning the period 2011 to 2023, and finds that digital inclusive finance plays a remarkably significant role in narrowing the urban-rural consumption gap. The mediation effect test reveals that digital inclusive finance indirectly contributes to narrowing the urban-rural consumption gap by increasing residents' income. This undoubtedly fully demonstrates that digital inclusive finance effectively unleashes the potential for income growth and consumption among rural residents by enhancing financial accessibility in rural areas. Furthermore, the results of the heterogeneity test also firmly confirm that the inclusive effect generated by digital inclusive finance exhibits asymmetric characteristics across different regions. Specifically, in regions with relatively high urbanization levels, the effect of digital inclusive finance in narrowing the urban-rural gap is more prominent, whereas in regions with low urbanization levels, this effect is not as significant. Among the samples of direct-controlled municipalities, the narrowing effect of digital inclusive finance is stronger, while the effect in ordinary provinces is relatively weaker.

The findings of this study provide a scientific basis for optimizing digital inclusive finance policies. It is advisable to take the upgrading of rural consumption structure as the guide, further improve the differentiated financial support system, vigorously strengthen the construction of digital infrastructure and risk prevention and control efforts, and promote the transition of urban-rural consumption from a mere pursuit of "quantity" to a balanced state of "quality." In doing so, a long-term driving force will be injected into the realization of common prosperity.

7.2. Recommendations

Based on the aforementioned conclusions, this study proposes the following policy recommendations to better leverage the positive role of digital inclusive finance in promoting the balanced development of urban-rural consumption and the high-quality development of the economy:

7.2.1. Further Strengthen the Promotion of Digital Inclusive Finance in Rural Areas

Relevant research indicates that digital inclusive finance plays a remarkably significant role in enhancing rural consumption levels and narrowing the urban-rural consumption gap. Therefore, both the government and financial institutions should further expand the coverage of digital inclusive finance. Given the current weakness of financial services in rural areas, more measures must be taken to increase investment in infrastructure construction and digital financial service platforms. First, efforts should be made to establish regional financial service platforms that directly deliver modern financial products and related services to rural communities through various technological means such as the Internet, mobile payments, and P2P lending. Second, it is recommended to increase investment in rural digital infrastructure to improve network coverage and information transmission conditions, thereby ensuring that rural residents can access various digital financial service platforms smoothly. By lowering the threshold and costs for rural residents to obtain financial services, the potential of rural consumption can be stimulated, and the rural consumption structure can be gradually aligned with that of urban areas, which will further narrow the urban-rural consumption gap.

7.2.2. Formulate Differentiated Financial Support Policies for Different Consumption Types

The research results show that the impact of digital inclusive finance on different types of consumption exhibits significant heterogeneity, a conclusion that opens up new perspectives for policy formulation. In urban areas, emphasis should be placed on supporting the innovative development of hedonic consumption and high-end consumption, launching more financial products that feature personalization and customization, and strongly encouraging the in-depth integration of e-commerce platforms and financial services. Specifically, policies such as tax incentives, innovation funds, and risk compensation mechanisms can be used to encourage financial institutions to launch financial products for high-end consumption and the service industry, so as to meet the personalized consumption needs of urban residents in areas such as cultural entertainment, tourism, and leisure. Meanwhile, in rural areas, focus should be placed on fields of basic consumption and developmental consumption, such as home appliances, education, and medical care, all of which are crucial for rural residents' quality of life. It is recommended that governments at all levels and relevant departments help rural residents overcome financial barriers through a series of measures, such as providing financial credit support, issuing consumption subsidies, and offering low-interest loans, thereby promoting the improvement of rural consumption levels. Policymakers also need to formulate flexible and diverse differentiated support policies based on the actual differences in urban-rural consumption structures to ensure that the effects of digital inclusive finance can be fully exerted in all consumption fields.

7.2.3. Improve Risk Control Mechanisms and Enhance the Quality of Financial Services

Although digital inclusive finance has a positive impact on promoting consumption upgrading and expanding consumption coverage, it is accompanied by certain financial risks. To maintain the stability of the financial market and protect consumers' rights and interests, relevant regulatory authorities must further improve the risk assessment system and intelligent risk control system in the process of promoting digital inclusive finance. Specifically, the measures include establishing and continuously improving credit risk assessment models, introducing big data analytics technology to conduct real-time monitoring of lending and payment behaviors, strengthening supervision over microcredit and online lending platforms, and formulating strict risk early warning and disposal mechanisms. Especially in rural areas where the financial service system is relatively weak, greater emphasis should be placed on preventing credit risks and avoiding the accumulation of non-performing loans, so as to ensure the safety and sustainability of financial services and thereby provide stable and reliable financial support for urban and rural consumers.

7.2.4. Strengthen the Popularization and Training of Financial Knowledge to Enhance the Digital Financial Literacy of Urban and Rural Residents

To ensure that digital inclusive finance truly benefits all types of consumers, the government and financial institutions must fully strengthen the popularization of financial knowledge among urban and rural residents and carry out targeted digital finance training activities. Especially in rural areas where residents have relatively low awareness of modern financial tools and digital services, improving their digital literacy and risk awareness is extremely important. A systematic training plan that includes regularly organizing financial knowledge lectures, conducting online and offline training courses, and popularizing financial knowledge through media channels can be formulated to help rural residents better understand, use, and manage financial tools, thereby improving the scientific and effective decision-making in their consumption. At the same time, the popularization of financial knowledge in the field of high-end consumption should also be carried out in urban areas to enhance consumers' awareness and user experience of personalized and customized financial products, thereby further promoting consumption upgrading and structural transformation.

7.2.5. Promote the Construction of Urban-Rural Informatization and Digital Infrastructure

The gap in informatization levels between urban and rural areas has become one of the key factors leading to the uneven distribution of financial services. To narrow this gap, the government must increase investment in digital infrastructure in rural areas and focus on improving network coverage, broadband access conditions, and informatization construction conditions. Special policies can be formulated to accelerate the pace of rural informatization through financial subsidies, technical support, and preferential loans, ensuring that rural residents can smoothly access various digital financial service platforms. Meanwhile, efforts should be made to promote the digital transformation and intelligent upgrading of urban and rural areas, build a digital economic ecosystem that covers both urban and rural areas, and narrow the information gap between them. This will provide solid technical guarantees and policy support for the in-depth application of digital inclusive finance in rural areas. In this way, it will not only help improve the efficiency of rural financial services but also promote the optimization and upgrading of the rural economic structure, further advancing the balanced development of urban-rural consumption.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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References

[1] Y. Wu, M. Xu, S. Li, H. Wang, and Q. Dong, "The land of homesickness: The impact of homesteads on the social integration of rural migrants," *PLOS One*, vol. 19, no. 7, p. e0307605, 2024. https://doi.org/10.1371/journal.pone.0307605

[2] Z. Song and Y. Wu, "Effects of residential push–pull factors on tenants' intentions to relocate from megacities: Evidence from a Beijing, China survey," *Habitat International*, vol. 129, p. 102663, 2022. https://doi.org/10.1016/j.habitatint.2022.102663

[3] M. Chen and T. Chen, "Land finance, infrastructure investment and housing prices in China," *PLoS One*, vol. 18, no. 10, p. e0292259, 2023. https://doi.org/10.1371/journal.pone.0292259

[4] H. Sun, Y. Wu, X. Wang, and R. Wang, "Did You miss the ride? Housing boom and household wealth in China," *Journal of Regional Science*, vol. 65, no. 3, pp. 654-677, 2025. https://doi.org/10.1111/jors.12747

[5] R. Zhou and Q. Fu, "Inclusive finance and urban household consumption: Evidence from a Quasi-natural Experiment in China," *Finance Research Letters*, vol. 76, p. 106920, 2025. https://doi.org/10.1016/j.frl.2025.106920

[6] L. Sun, Z. Lin, and B. Lai, "Examining the impact of digital inclusive finance on urban and rural consumption patterns: Insights from China household finance survey in 11 coastal regions," *Journal of the Knowledge Economy*, vol. 16, pp. 12809-12842, 2025. https://doi.org/10.1007/s13132-024-02480-0

[7] J. Gao, Y. Wu, and H. Li, "Digital inclusive finance, rural loan availability, and urban–rural income gap: Evidence from China," *Sustainability*, vol. 16, no. 22, p. 9763, 2024. https://doi.org/10.3390/su16229763

[8] S. Yi, Y. Qi, Y. Ya, J. Shi, and Y. Cui, "The impact of China's digital inclusive financial development gap on the optimization of rural consumption structure," *PLOS One*, vol. 19, no. 8, p. e0308412, 2024. https://doi.org/10.1371/journal.pone.0308412

[9] Y. Wang and Z. Zhang, "Digital development and rural financial inclusion: Evidence from China," *Research in International Business and Finance*, vol. 73, p. 102637, 2025. https://doi.org/10.1016/j.ribaf.2024.102637

[10] M. A. Omar and K. Inaba, "Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis," *Journal of Economic Structures*, vol. 9, p. 37, 2020. https://doi.org/10.1186/s40008-020-00214-4

[11] B. Chen and J. Ren, "Does the adoption of digital payment improve the financial availability of farmer households? Evidence from China," *Agriculture*, vol. 12, no. 9, p. 1468, 2022. https://doi.org/10.3390/agriculture12091468