

# The Impact of Digital Financial Inclusion on Relative Deprivation of Household Consumption: An Analysis Based on CHFS Data

Lu Liu<sup>1,3</sup>, Asan Ali Golam Hassan<sup>2</sup>

<sup>1,2</sup>Azman Hashim International Business School, Universiti Teknologi Malaysia, 54100 Kuala Lumpur, Malaysia, <sup>3</sup>School of Economics and Management, Ningxia University, Yinchuan, China

Corresponding Authors Email: liuluoyrs@gmail.com

DOI Link: <http://dx.doi.org/10.6007/IJARAFMS/v15-i4/26950>

---

Published Online: 01 December 2025

## Abstract

The present study focuses on the impact of digital inclusive finance on household consumption relative deprivation. The study utilises the microdata from the China Household Finance Survey (CHFS) to systematically explore the influence and mechanism of digital inclusive finance on household consumption relative deprivation from a micro perspective. The findings of the study indicate that digital inclusive finance has a significant impact on the exacerbation of household consumption relative deprivation. This conclusion is supported by the 1% significance test when measured by the total index of digital inclusive finance and the three-dimensional indices of coverage breadth, digitalization degree, and usage depth. The mechanism analysis reveals that digital inclusive finance affects household consumption relative deprivation by intensifying household income relative deprivation. The heterogeneity analysis further finds that the aggravating effect of digital inclusive finance on consumption relative deprivation is more pronounced in urban households, households in first-tier cities, and high-income households, while higher financial literacy and digital capabilities can effectively mitigate this effect. This study challenges the prevailing research perspective, which has historically concentrated on the "positive promotion" of digital inclusive finance on household consumption. Instead, it adopts an alternative approach, termed "consumption relative deprivation," which examines the differential responses of various groups to digital inclusive finance. This study contributes to the expansion of research dimensions in the field of digital inclusive finance and household consumption. The objective of this study is to capitalise on the inclusive advantages of digital finance, thereby facilitating enhanced access to financial services for vulnerable groups. The study further aims to promote the sustainable development of digital inclusive finance, alleviate household consumption inequality, and explore the scientific basis for promoting common prosperity.

**Keywords:** Digital Financial Inclusion, Household Consumption, Relative Deprivation in Consumption

### Introduction

In today's economy, household consumption plays a crucial role in enhancing residents' quality of life and social welfare, while concurrently functioning as a pivotal catalyst for economic growth. During the initial quarter of 2025, China's final consumption expenditure contributed 51.7 percent to economic growth, thus exceeding the full-year figure for 2024 by 7.2 percentage points. This contributed 2.8 percentage points to GDP growth, thereby providing robust support for China's economy to maintain stable growth and achieve its annual economic targets amid a complex and volatile international environment. However, it should be noted that increased consumption does not necessarily lead to a significant rise in consumer utility or household welfare. This is due to the fact that fluctuations in relative consumption disparities between individuals give rise to consumption inequality. It is evident that consumption inequality functions as a superior indicator of welfare levels, given that consumption functions as a measure of household income, wealth, and other social resources. The levels of consumption are influenced by a number of factors, including current income, wealth, borrowing capacity, and other non-cash social resources (Attanasio and Pistaferri, 2016). Changes in consumption inequality, otherwise known as relative deprivation in household consumption, have been shown to exert a more profound influence on consumers' actual welfare shifts (Yitzhaki, 1979). This heightened awareness of 'relative deprivation' has the potential to engender psychological dissatisfaction, perceptions of inequality, and may even exert an influence on social stability and harmony.

The rapid development of digital inclusive finance offers new possibilities for alleviating household consumption inequality. Digital inclusive finance is defined as the provision of convenient, low-cost and widely accessible financial services through digital technology. The literature suggests that this enables more marginalised groups to enjoy financial resources on an equal footing (Sahay et al., 2020), effectively easing the conflict between household income and consumption and enhancing household utility and well-being (Fungáčová & Weill, 2015; Lai et al., 2020). Digital inclusive finance has also been demonstrated to promote residents' entrepreneurial intentions through the provision of payment convenience and the alleviation of credit constraints (Ai et al., 2022; Yang & Zhang, 2022), thereby enhancing consumption capacity. For instance, Ant Financial's "Ant Huabei" and Paytm's "Paytm" have successfully reached vast rural and low-income populations, providing them with convenient consumer credit services. The implementation of these measures has been demonstrated to be effective in alleviating poverty and enhancing consumption levels in specific regions (Park & Mercado, 2021). Furthermore, digital inclusive finance has been demonstrated to effectively eliminate consumption fluctuations and assist in stabilising household consumption patterns during periods of economic uncertainty and volatility (Song et al., 2024).

However, the impact of digital inclusive finance on household consumption is equally diverse and complex. Digital inclusive finance has been demonstrated to reduce barriers to credit and payments through technological means, thereby providing sources of consumption funding for low-to-middle income groups and residents in remote areas (Liu et al., 2022). This has been shown to help narrow consumption disparities. Conversely, substantial disparities emerge among diverse social groups with regard to financial literacy, credit scores and

technological proficiency. This has the effect of preventing some households from fully utilising digital inclusive financial services, thereby imposing further constraints on their consumption. The financial and technological divides that have been identified may have a detrimental effect on consumption inequality and intensify relative deprivation among certain groups (Dabla-Norris et al., 2021). According to statistics published by the World Bank, although over 76% of adults worldwide have bank accounts, residents of low-income countries and regions generally lack stable financial infrastructure and digital skills, thereby hindering their access to comprehensive financial services and resulting in their being disadvantaged in terms of consumption levels (World Bank, 2021). It is evident that digital inclusive finance continues to encounter significant challenges and uncertainties in its efforts to mitigate relative deprivation and inequality in consumption.

The extant literature on the impact of digital financial inclusion on relative deprivation in household consumption is limited in scope, and existing studies have not clearly elucidated how digital financial inclusion influences this phenomenon. It is evident that digital financial inclusion has a heterogeneous impact on households, as evidenced by the varying degrees of consumption enhancement that are observed. Consequently, this results in shifts in the relative deprivation experienced by households within their reference groups, thereby giving rise to consumption inequality. Therefore, the present research seeks to examine how digital inclusive finance influences relative deprivation in household consumption, and to reveal its practical role in promoting consumption equality and achieving the goal of common prosperity. By doing so, the present research aims to expand the research domain concerning the impact mechanisms of digital inclusive finance on household consumption and consumption inequality. Moreover, it provides scientific grounds for the optimisation of inclusive finance policies, the advancement of the rational allocation of financial resources, and the realization of common prosperity.

In order to gain a more systematic understanding of the relationship between digital inclusive finance and household consumption inequality, this paper seeks to address the following key questions: The present study seeks to investigate the influence of digital inclusive finance on relative deprivation in household consumption. By which mechanisms does this influence operate? The question of whether this phenomenon manifests in household or regional variations remains to be elucidated. Consequently, this study employs the nationwide household sample from the China Household Finance Survey (CHFS), utilising the household consumption relative deprivation index (Kakwani index) as the primary measure of consumption inequality. The integration of the digital inclusive finance index with household-level characteristics is a novel approach that enables a comprehensive examination of the impact of digital inclusive finance on consumption inequality, its operational mechanisms, and heterogeneous effects. The objectives of the study are comprised of three principal aspects: Firstly, utilising microdata from the CHFS database, the present study accurately measures the degree of relative deprivation in household consumption in order to examine whether digital inclusive finance significantly influences this deprivation. Secondly, it analyses the causal pathways through which digital inclusive finance affects relative deprivation in household consumption, focusing on the mechanism of household income inequality, thereby revealing its underlying logic in improving genuine household welfare. Thirdly, it conducts further heterogeneity analysis across dimensions such as household characteristics and regional economic development levels to examine the differential impacts of digital inclusive finance across distinct groups.

The potential marginal contributions of this paper are as follows: (1) By adopting a micro-household perspective and leveraging household consumption data from the CHFS database, this study employs the Kakwani index to measure the extent of household consumption relative deprivation, thereby capturing welfare disparities arising from consumption inequality. It further investigates the impact and underlying mechanisms of digital inclusive finance on household consumption relative deprivation, thus contributing to and extending the existing literature on digital inclusive finance, household consumption, and consumption inequality. (2) The paper examines the role of income inequality in mediating the relationship between digital inclusive finance and consumption relative deprivation. By integrating household demographic characteristics, regional economic conditions, and the development level of digital inclusive finance, it provides a nuanced analysis of the heterogeneous effects of digital inclusive finance in mitigating consumption relative deprivation, thereby deepening the understanding of how DFI influences such disparities across different contexts.

### **Hypotheses Development**

The impact of digital inclusive finance on relative deprivation in household consumption can be explained through multiple theoretical frameworks, including financial accessibility, household income formation, and consumption decision-making behaviour. The theoretical underpinnings of this paper encompass three principal aspects, as outlined below: Firstly, financial repression theory and credit constraint theory emphasise that unequal access to financial resources directly limits household consumption capacity. Low-income groups are particularly susceptible to liquidity constraints. Consequently, digital inclusive finance, by lowering barriers to financial services and alleviating credit constraints, has the capacity to enhance household consumption capacity and potentially reduce relative deprivation in consumption. Secondly, the permanent income hypothesis and life-cycle hypothesis indicate that household consumption is contingent on both current income and future income expectations. Digital inclusive finance has been demonstrated to engender improvements in household financial conditions through a number of mechanisms, including payment convenience, wealth management tools, and entrepreneurial financing channels. Consequently, it exerts a significant influence on long-term consumption levels. Thirdly, theories on income inequality and the digital divide suggest that digital inclusive finance does not penetrate equally across different income groups or regions. Disparities in technology, education, and geography have the potential to result in an uneven distribution of financial dividends, which may, in certain circumstances, lead to an exacerbation of consumption inequality or an increase in relative deprivation in household consumption.

The present study has been developed in accordance with the aforementioned theories, and its objective is to construct a conceptual framework of 'digital inclusive finance—income inequality—relative deprivation in consumption.' On the one hand, digital inclusive finance may reduce disparities in household consumption by lowering financial barriers, alleviating credit constraints, and enhancing expected income. Conversely, due to factors such as the digital divide, the Matthew effect, and sectoral disparities, there is a possibility that financial resources may be disproportionately allocated to high-income groups, thereby exacerbating consumption disparities between households. Furthermore, the impact of digital inclusive finance on household income inequality may also exert an indirect influence on relative deprivation in consumption through income channels. Within this theoretical framework, the present paper puts forward three research hypotheses, focusing respectively on the overall

effect of digital inclusive finance on relative deprivation in consumption, its potential counterintuitive impact, and the mediating role of income inequality in this relationship.

Based on the theory of financial repression, credit constraint theory, and the permanent income hypothesis, digital inclusive finance may to some extent alleviate household consumption inequality. As demonstrated by previous studies, digital financial inclusion has the capacity to influence household consumption. This is facilitated by the provision of convenient payment and financial services, the alleviation of credit constraints (Tay et al., 2022), and the promotion of entrepreneurship (Liu et al., 2021). Firstly, the theory of financial repression posits that entry barriers within traditional financial systems may limit financial accessibility for lower-income groups (Loizos, 2018). The credit constraint theory posits that certain demographics are unable to obtain loans from conventional financial institutions due to an absence of collateral or a credit history (Coerdacier et al., 2015). Digital inclusive finance has been demonstrated to lower service thresholds, thereby enabling clients who have been excluded from traditional financial services to access low-cost credit services. These services have been shown to alleviate liquidity pressures, and thus stimulate household consumption. Secondly, Friedman's permanent income hypothesis and Modigliani's life-cycle hypothesis emphasise that consumer spending depends not only on current income but also on anticipated future income. The wealth management tools and convenient lending services provided by digital inclusive finance have been shown to increase households' opportunities to participate in financial markets (Du et al., 2023), improve household financial asset allocation (Ma et al., 2024), stimulate entrepreneurship while alleviating short-term capital pressures for entrepreneurial households (Hu, Guo, & Zhai, 2023), and enhance household disposable income and expected income (Peng & Mao, 2023), thereby influencing household consumption. It is evident that the inclusive nature of digital inclusive finance is more beneficial to vulnerable groups, facilitating consumption upgrades among low-income and disadvantaged populations (Li et al., 2020). Based on this, Hypothesis 1 is proposed.

Hypothesis 1. Digital financial inclusion can alleviate relative deprivation in household consumption.

However, from the perspective of the digital divide and dual-structure theory, it becomes apparent that digital inclusive finance may further exacerbate inequalities in household consumption. The inclusion of digital inclusive finance has been demonstrated to facilitate greater financial participation among individuals. However, the existence of technological and digital divides leads to unequal resource distribution and subsequent inequality (Das & Chatterjee, 2023). As posited by Suhrab et al. (2024), this observation is corroborated by evidence demonstrating that the technological and digital divides act as obstacles to the financial inclusion of all groups. In contrast, the dual structure theory of the economy (Lewis, 1954) posits that the development of digital inclusive finance exhibits varying degrees of efficiency across economic sectors. It advances more rapidly within efficient economic sectors while penetrating less efficiently in inefficient sectors such as agriculture or rural economies (Allen et al., 2016). Individuals with high incomes, who are concentrated in efficient sectors, have the capacity to utilise digital financial systems to achieve higher levels of income. Conversely, low-income groups, predominantly located in inefficient sectors, encounter difficulties in accessing equitable financial services, thereby exacerbating income and consumption inequalities. It is evident that disparities between urban and rural areas (Zhao et al., 2022) and variations in household characteristics (Wang et al., 2022) can

engender heterogeneity in the impact of digital inclusive finance on household consumption. This, in turn, can result in relative deprivation at the household micro-level. The credit constraint theory posits that difficulties in accessing credit have a detrimental effect on the consumption capacity of low-income groups. Digital inclusive finance has been shown to alleviate consumption credit constraints by providing small-scale credit services to those with low-incomes without requiring collateral. However, it is important to note that excessive borrowing has the potential to trap low-income groups in a state of debt distress (Yue et al., 2022), thereby widening household consumption inequality. It is upon these findings that Hypothesis 2 is formulated.

Hypothesis 2. Digital financial inclusion has the potential to exacerbate relative deprivation in household consumption.

The theory of financial inclusion posits that the expansion of access to financial services has the capacity to stimulate income growth and to narrow income disparities. This theory finds support in digital financial inclusion, as it is characterised by the provision of a broad spectrum of financial services that are both affordable and easily accessible. This enables the 'tail groups' to more readily access financial products such as credit, savings, and wealth management, thereby creating income growth opportunities for these groups and reducing income inequality. Suhrab et al. (2024) discovered that digital inclusive finance exerts a considerable negative effect on income inequality within BRICS countries. Adugna (2024) analysed unbalanced panel data from 65 countries spanning 2013 to 2019, and similarly confirmed that digital financial services can mitigate income inequality. Hao and Zhang's (2024) study, which employed household microdata, yielded analogous findings. The researchers observed that digital payments, digital money management, digital funds, and credit card usage have a positive moderating effect on household income inequality. The research indicates that household entrepreneurship, entrepreneurial frequency, and migrant labour represent crucial channels through which digital financial services mitigate household income inequality. Digital payments and credit cards have been demonstrated to reduce wage income inequality, while digital wealth management and digital funds have been shown to effectively diminish property income inequality.

However, fintech has been shown to reduce income inequality directly or indirectly through the medium of inclusive finance, although this occurs primarily in high-income countries (Demir et al., 2022). Research has also revealed that due to the 'Matthew Effect' (Merton, 1968) and 'elite capture' (Chambers, 2014) phenomena, the investment and wealth management tools offered by digital inclusive finance are more readily utilized by high-income groups, further enhancing their wealth accumulation (Balakumar & Maitra, 2023; Frost et al., 2020), whilst low-income groups, constrained by limited risk tolerance, struggle to access returns from high-risk assets, thereby widening income disparities. The central question guiding this study is whether DFI exerts a significant influence on relative deprivation in household consumption, particularly in contexts characterised by income inequality. The present investigation aims to provide a response to this question by proposing Hypothesis 3.

Hypothesis 3. Digital inclusive finance has the potential to influence relative deprivation in consumption by affecting income inequality.

## Data and Methodology

### *Sample and Data Collection*

The data utilised in this paper comprises three components. The initial component is derived from the China Household Finance Survey (CHFS), a study conducted by the China Household Finance Survey Research Centre at Southwestern University of Finance and Economics. The second component constitutes the Digital Inclusive Finance Index, sourced from the China Digital Inclusive Finance Index, which was compiled by the Digital Finance Research Centre at Peking University (Guo et al., 2020). The third component comprises macroeconomic data, with variables such as per capita GDP and financial development levels across regions sourced from the China Statistical Yearbook. The CHFS data was selected primarily due to its nationwide coverage, encompassing 1,360 villages (or neighbourhood committees) across 343 counties and districts in 29 provinces (autonomous regions and municipalities directly under the central government), ensuring both national and provincial representativeness. The survey encompasses all members of the sampled households, covering household assets and liabilities, income and consumption, social security and insurance, demographic characteristics, and labour employment. The present study utilises the 2019 CHFS survey data as its research sample, encompassing information from 34,643 households. This provides robust micro-level household financial data for the empirical analysis. In order to mitigate the impact of outliers, the raw data underwent the following processing: The following criteria were applied to the selection of household samples for the study: (1) The household sample was restricted to cases in which the respondent identified as the head of the household at the time of questionnaire completion. (2) Samples with invalid, missing, or negative values for total household income and total consumption expenditure were excluded from the study. (3) Following the elimination of outliers, the household data were correlated with provincial digital finance indices based on household location. This was followed by a subsequent alignment with pertinent macroeconomic variables. The household data were then organised through the following steps, yielding a final sample of 30,424 observations.

### *Independent Variable*

The primary independent variable in this study is the Digital Finance Inclusive Development Index. The China Digital Inclusive Finance Index (DFI), a metric developed by the Digital Finance Research Centre at Peking University, is utilised to assess the advancement of digital inclusive finance. The index system under scrutiny comprises indicators across three dimensions: digital financial coverage breadth, usage depth, and digitalisation level. During the analysis process, this data is matched to household data at the provincial level.

### *Dependent Variable*

The dependent variable in this study is relative deprivation in consumption. Unlike indicators such as the Gini coefficient and the Theil index, which measure group-level inequality, relative deprivation is applied to individual-level inequality, reflecting the degree of disparity between individuals. Specifically, relative deprivation in consumption occurs when consumers find themselves in a comparatively disadvantaged position in terms of their consumption status or circumstances when compared to individuals within a reference group who enjoy a higher standard of consumption (Smith & Pettigrew, 2015). Measures of relative deprivation in consumption include the Yitzhaki, Kakwani and Podder indices. The Kakwani index is used as the dependent variable in the baseline regression, while robustness checks use the Yitzhaki and Podder indices for supplementary analysis. Following the methodology of Luo and Li

(2022), this study uses the Kakwani index, calculated from per capital household consumption expenditure, as the dependent variable. The province/municipality/district in which the household sample resides is selected as the reference group and denoted by  $X$ , and the consumption levels of all samples within the region are sorted in ascending order (i.e.  $x_1 \leq x_2 \leq x_3 \leq \dots \leq x_n$ ). The relative deprivation experienced by the  $i$ -th household is then calculated as follows:

$$\text{Kakwani}(x, x_i) = \frac{1}{n\mu_x} \sum_{j=i+1}^n (X_j - X_i) = \gamma_{x_i}^+ [(\mu_{x_i}^+ - x_i)/\mu_x] \quad (1)$$

In Formula (1),  $\text{Kakwani}(x, x_i)$  represents the Kakwani index, where  $\mu_x$  is the average of all household consumption expenditures in group  $X$ ,  $\mu_{x_i}^+$  is the average calculated based on households in group  $X$  with consumption expenditures exceeding  $x_i$ , and  $\gamma_{x_i}^+$  is the proportion of households in group  $X$  with consumption expenditures exceeding  $x_i$ . This index is a strictly decreasing function for a specific household consumption expenditure  $x_i$ . When the household's consumption expenditure reaches the highest within the group, its relative deprivation is 0.

### *Control Variables*

Following the approach of Hu et al. (2023), the control variables in this paper are composed of variables at the household head, household, and regional levels. Variables at the household head level include the age, years of education, marital status, risk attitude, and health status of the household head. Variables at the household level include the number of household members, the dependency ratio of the elderly, the dependency ratio of children, relative income deprivation, total household assets, total household liabilities, whether there is social endowment insurance, and whether there is social medical insurance. Variables at the regional level include the per capita GDP and financial development level of the region where the household is located, which are used to reflect the macroeconomic conditions of the region.

### **Empirical Methodology**

To examine the impact of digital inclusive finance on relative deprivation in consumption, a baseline regression model is constructed as follows based on the research hypothesis:

$$\text{kakwani}_i = \alpha_1 + \beta_1 DFI_i + \gamma_1 A_i + \varepsilon_{1i} \quad (2)$$

In this case,  $\text{kakwani}_i$  represents the relative deprivation of household consumption for the  $i$ -th household.  $DFI_i$  is the core explanatory variable, indicating the digital inclusive finance development index for the household's region.  $A_i$  denotes a series of control variables, while  $\varepsilon_{1i}$  represents the random disturbance term.

During the mechanism testing process, to investigate the mediating effect of the intermediate variable in the process whereby digital inclusive finance influences relative deprivation in consumption, this paper employs Baron and Kenny's (1986) three-step mediation analysis methodology. The model is constructed as follows, In this context,  $Med_i$  serves as the mediating variable.

$$Med_i = \alpha_2 + \beta_2 DFI_i + \gamma_2 A_i + \varepsilon_{2i} \quad (3)$$

$$\text{kakwani}_i = \alpha_3 + \beta_3 DFI_i + \delta Med_i + \gamma_3 A_i + \varepsilon_{3i} \quad (4)$$

## Empirical Results

### Baseline Regression Results

In order to investigate the impact of the development of digital inclusive finance on relative deprivation in household consumption, this paper employs OLS estimation based on Formula (1). The results of the regression analysis, which were collated in Table 1, provide a quantitative indication of the impact of digital inclusive finance on relative deprivation in household consumption. Model (1) presents the estimation results, with the core explanatory variable being the overall Digital Inclusive Finance Index. Models (2), (3), and (4), respectively, substitute the core independent variable with the digital financial coverage breadth index, digital financial usage depth index, and digitalisation level of the inclusive finance index. In Model (1), the regression coefficient for the overall digital financial inclusion index is 0.276, which is greater than zero and passes the 1% significance level test. In the other three models, the core explanatory variables are all greater than zero and pass the 1% significance level test. This result implies that digital inclusive finance is linked to a worsening of relative deprivation in household consumption, regardless of the measurement scale used, such as the overall index or the three-dimensional indices. This suggests that the advancement of digital inclusive finance does not alleviate inequality in household consumption but rather intensifies the sense of relative deprivation. It is noteworthy that among the control variables, the regression coefficients for household head age and number of household members were 0.0611 and 0.0383, respectively, both passing the 1% significance test. This finding suggests that as the age of the household head increases and the size of the household decreases, the relative deprivation in household consumption becomes more evident. The regression coefficient for the head of household's educational attainment was -0.117, which passed the 1% significance test. This finding suggests that as the educational attainment of the head of the household increases, the household's consumption relative deprivation index decreases.

Table 1

### Baseline Regression Results

Variables	Relative Deprivation of Household Consumption			
	(1)	(2)	(3)	(4)
DFI <sub>i</sub>	0.276*** (9.27)			
DFI <sub>i</sub> _Coverage		0.317*** (10.27)		
DFI <sub>i</sub> _Usage			0.0870*** (5.87)	
DFI <sub>i</sub> _Digital				0.185*** (5.08)
Control Variable	control	control	control	control
Constant	-1.122*** (-10.45)	-1.298*** (-11.37)	-0.394*** (-7.61)	-1.054*** (-6.09)
Observations	30424	30424	30424	30424
R-squared	0.321	0.322	0.320	0.320

Notes: \*\*\*significant at 1% level. \*\*significant at 5% level. \*significant at 10% level.

### Endogeneity Discussion

The baseline regression model may be subject to endogeneity issues arising from omitted variables, reverse causality, and correlations between variables and residual terms. This can result in biased or inaccurate estimates in the benchmark regression results. Concerning omitted variables, it should be noted that this study incorporates as many control variables as possible, including household characteristics, head-of-household characteristics, and regional characteristics, which serve to significantly reduce the impact of unobservable omitted variables. Some variables, like household characteristics and individual abilities, are correlated with the explanatory variables but are not observable. The omission of such variables has the potential to introduce regression bias. In order to address the endogeneity that arises from reverse causality and the correlation between variables and residuals, this paper employs the instrumental variables method to address the endogeneity of explanatory variables. With regard to the selection of instruments, this study employs the internet penetration rate of the household's province as the instrumental variable (IV). This choice is justified by the close relationship between the development of digital inclusive finance in a given region and the advancement and prevalence of internet infrastructure within that area. The correlation between internet penetration and digital inclusive finance is significant, yet this correlation is not accompanied by a relationship with household consumption relative deprivation.

The results of the instrumental variables estimation are presented in Table 2. The F-statistic of 667 in the first stage is substantially greater than the critical value of 10, leading to a significant rejection of the weak instrumental variables hypothesis. The first column presents the findings of the initial regression analysis. Evidence suggests a positive correlation between the internet penetration rate in a household's province of residence and the digital inclusive finance index for that province. This suggests a correlation between a higher internet penetration rate and a higher digital inclusive finance development index. The second stage regression's outcomes are documented in column (2). It is evident that, following the implementation of instrumental variables, the model maintains its overall statistical significance. The digital inclusive finance index continues to exert a significant positive influence on relative deprivation in household consumption, consistent with the benchmark regression results.

Table 2

#### *Results of the Instrumental Variable Method*

	First-stage	Second-stage
	DFI <sub>i</sub>	kakwani <sub>i</sub>
IV	0.0009*** (25.83)	3.46097*** (14.53)
Control Variable	control	control
Observations	30424	30424
First-stage F statistic	667	
Wald chi-squared test		10605.72

#### *Robustness Test*

To further verify the reliability of the earlier presented empirical findings, this paper conducts the following robustness tests: firstly, replacing the model; secondly, substituting the

dependent variable; and thirdly, sequentially applying trimmed and truncated samples at the 1% upper and lower bounds to eliminate the influence of outliers on the regression.

Firstly, model substitution. As the dependent variable in the benchmark regression is restricted, a Tobit model is used to test the robustness of the results. The robustness results in Table 3 (1) show that, when tested using the Tobit model, the impact of digital inclusive finance on relative deprivation in household consumption is consistent with the findings of the benchmark regression. This confirms the robustness of the benchmark regression results. Secondly, the dependent variable is replaced. Measures of relative deprivation in consumption include the Yitzhaki, Kakwani and Podder indices. In this paper, the Kakwani index is replaced with the Yitzhaki and Podder indices in order to conduct stability tests on the regression results. Robustness tests on models (2), (3) and (4) show that increases in digital financial inclusion continue to heighten individual relative deprivation in consumption and exacerbate household consumption inequality, even after replacing the dependent variable.

Finally, the sample was adjusted. After applying a 1% trimmed and truncated tail to the sample, the impact of outlier deviations on the mean and other statistics was reduced. Simultaneously, excluding the smallest and largest 1% of observations further mitigated the influence of outliers on regression estimates. The significance level, direction, and magnitude of the results from Model (5) remained unchanged, thereby providing further validation of the robustness of the model.

Table 3  
*Robustness Test*

Variables	Relative Deprivation of Household Consumption				
	(1) Tobit	(2) Kakwani	(3) Yitzhaki	(4) Podder	(5) Adjustment Sample
DFI <sub>i</sub>	0.276*** (9.29)	0.276*** (9.27)	1.334*** (12.18)	0.240*** (4.24)	0.272*** (9.11)
Control Variable	control	control	control	control	control
Constant	-1.127*** (-10.49)	-1.122*** (-10.45)	-2.994*** (-7.58)	-0.948*** (-4.65)	-1.165*** (-10.81)
Observations	30424	30424	30393	30393	29270
R-squared	—	0.321	0.283	0.277	0.300

#### *Mechanism Analysis*

To verify how digital inclusive finance exacerbates consumption inequality by influencing household income inequality, this paper uses a mediation effect model. The mediating variable in the model is household income inequality. The study calculates the Kakwani index using household survey data on annual per capita disposable income, grouped by province of residence, to represent household income inequality. The results show that the coefficient for relative income deprivation is significantly positive at the 1% level, indicating that digital inclusive finance substantially increases relative household income deprivation. Column (3) shows that the coefficients for both digital inclusive finance and relative income deprivation are significantly positive at the 1% level. This confirms that digital inclusive finance heightens

relative household consumption deprivation, with relative income deprivation exhibiting a mediating effect.

Table 4

*Mechanism Analysis: Income Inequality*

Variables	(1) Kakwani_ Consumption	(2) Kakwani_ Income	(3) Kakwani_ Consumption
DFI <sub>i</sub>	0.276*** (9.27)	0.414*** (12.59)	0.157*** (5.56)
Kakwani_ Income			0.286*** (57.98)
Control Variable	control	control	control
Constant	-1.122*** (-10.45)	-0.966*** (-8.15)	-0.846*** (-8.30)
Observations	30424	30424	30424
R-squared	0.321	0.352	0.389

*Heterogeneity Analysis*

Households with different characteristics have different consumption preferences and behaviours. The development of digital inclusive finance has different effects on consumption in these different household groups. Jiang et al. (2024) analysed the effects of digital inclusive finance on household consumption levels and found that these differ by region and consumption level. They found that digital inclusive finance has a more pronounced influence on consumption in eastern and rural regions, as well as on the consumption levels of individuals under 60 years of age and married individuals. These disparities may also imply heterogeneity in the relative deprivation effects of digital inclusive finance on household consumption. To investigate this, this paper examines variations in the relative deprivation impacts of digital inclusive finance on household consumption based on household location (urban/rural), regional differences, head-of-household age, household indebtedness, financial literacy and digital capabilities. The CHFS database provides detailed information on each household and its members. Households can be categorised by location as urban or rural, or as being in first-, second-, or third-tier cities. Based on the age of the household head, households are categorised as having a head under 50 years old or aged 51 or above. Households are grouped according to their asset-liability ratio, which is calculated using asset and liability information.

This paper examines how households measure up in terms of financial literacy and digital competence, looking at their understanding and application of financial knowledge, and their capacity for managing funds. Relevant questions were drawn from the China Household Finance Survey questionnaire, such as: 'Has your household ever engaged in stock speculation after opening a stock account?' and 'How well do you understand stocks, bonds, and funds in general?' 'In general, which do you consider riskier: main board stocks or ChiNext stocks?' Eight such questions were selected. Questions regarding smartphone usage, online shopping, electronic payments and internet-based wealth management capabilities were drawn from the CFHI questionnaire. Examples include: 'Last year, what was your household's average monthly expenditure on communication services, including phone bills, internet fees and postal services?' 'Which type of mobile phone do you currently use? What categories of

products did your household primarily purchase online last year? Does your household currently hold third-party payment accounts such as Alipay, WeChat Pay, JD.com e-wallet or Baidu Wallet? Why does your household not hold internet-based wealth management products such as Yu'eobao or WeChat's Qianzhengtong? Six such questions were included. Ultimately, following the methodology of Abreu and Mendes (2010), the number of questions correctly answered by respondents was aggregated to measure their financial literacy and digital capability index.

Table 5

*Heterogeneity analysis: Urban-rural disparities and disparities in city development levels*

Variables	Kakwani_ Consumption				
	(1) Rural	(2) Urban	(3) First-tier city	(4) Second-tier city	(5) Third-tier city
DFI <sub>i</sub>	0.141*** (2.60)	0.270*** (7.80)	0.429*** (5.95)	0.160* (1.69)	0.297*** (8.05)
Control Variable	control	control	control	control	control
Constant	-0.594*** (-3.02)	-1.305*** (-10.44)	-2.002*** (-8.21)	-0.844*** (-2.69)	-1.736*** (-11.29)
Observations	10112	20312	8969	4585	16870
R-squared	0.163	0.282	0.271	0.379	0.305

Table 6

*Heterogeneity analysis: household income disparities and household debt disparities*

Variables	Kakwani_ Consumption				
	(1) Low-income	(2) Middle-income	(3) High-income	(4) Low-debt	(5) High-debt
DFI <sub>i</sub>	0.222*** (3.68)	0.181*** (3.75)	0.344*** (7.68)	0.106*** (3.60)	0.0549 (0.56)
Control Variable	control	control	control	control	control
Constant	-1.168*** (-5.16)	-1.275*** (-7.22)	-1.747*** (-10.99)	-0.669*** (-6.38)	-0.603* (-1.68)
Observations	8373	10838	11213	27879	2545
R-squared	0.218	0.298	0.310	0.400	0.351

Table 7

*Heterogeneity analysis: Exploring differences in household head age, financial literacy and digital capabilities*

Variables	Kakwani_ Consumption					
	(1)	(2)	(3)	(4)	(5)	(6)
	Age ≤50	Age >50	Low financial literacy	High financial literacy	Low digital capabilities	High digital capabilities
DFI <sub>i</sub>	0.0825* (1.79)	0.113*** (3.19)	0.105*** (3.13)	0.0877* (1.70)	0.107** (2.52)	0.0985*** (2.66)
Control Variable	control	control	control	control	control	control
Constant	-0.601*** (-3.60)	-0.568*** (-4.24)	-0.681*** (-5.61)	-0.662*** (-3.65)	-0.621*** (-4.05)	-0.735*** (-5.59)
Observations	9138	21286	21897	8527	15501	14923
R-squared	0.417	0.366	0.354	0.411	0.327	0.356

Tables 5, 6 and 7 present the results of the heterogeneity analysis. The comprehensive findings reveal that digital inclusive finance has a more significant impact on relative deprivation in household consumption among urban and first-tier city households. The regression coefficients for these groups are significantly higher than for other household categories, indicating that digital inclusive finance exacerbates consumption disparities and intensifies the sense of relative deprivation among urban and first-tier city households. Digital inclusive finance exacerbates relative deprivation in household consumption more markedly for households headed by individuals aged 51 and over. The regression coefficient for this group is higher than for households headed by individuals under 50 and exceeds the 1% significance level. This suggests that households with older heads of household face a greater digital divide, preventing them from accessing the benefits of digital inclusive finance and exacerbating consumption inequality. Results in columns (3) to (6) of Table 7 further substantiate this finding, showing that digital financial inclusion has a greater impact on households with lower financial literacy and digital capabilities. This results in more severe relative deprivation in consumption among such households. After grouping households based on debt-to-asset ratios above and below 50%, the analysis revealed that, while digital inclusive finance positively correlates with relative consumption deprivation in both groups, its impact is more pronounced among low-debt households, significantly exacerbating consumption inequality within this cohort. Digital inclusive finance exerts a stronger positive influence on relative consumption deprivation among high-income households. The regression coefficients from the heterogeneity analysis of financial literacy and digital capability suggest that both groups with high levels of financial literacy and digital capability exhibit smaller coefficients than the control group. This suggests that higher levels of financial literacy and digital competence mitigate the extent to which digital inclusive finance exacerbates relative deprivation in consumption compared to households with low financial literacy and digital capability.

To examine in more detail how digital inclusive finance exacerbates relative deprivation in household consumption, this study uses group and quantile regression to analyse its impact on household spending. The dependent variable is the logarithm of per capita household consumption. Households are categorised into low-, medium- and high-groups based on their per capita consumption and income levels. Regression analyses compare the differential

effects of digital inclusive finance across high- and low-consumption groups, as well as high- and low-income groups. As shown in the table 8, the results reveal significant disparities in the promotion of household consumption across groups by digital inclusive finance in columns (1) to (3). There is a significant positive effect on consumption within the high-consumption group, whereas the impact on the low-consumption group is not significant, although a crowding-out effect is present. Columns (4) to (6) reveal disparities in the impact of digital financial inclusion across income brackets. The consumption-boosting effect is markedly stronger for middle- and high-income households than for low-income households, with high-income households experiencing a greater positive impact. Regression results indicate that digital financial inclusion exacerbates consumption disparities between different consumption and income groups.

Quantile regression results show that digital financial inclusion has a negative effect on household consumption at lower quantiles (P10, P30 and P50, where P10 denotes the 10th percentile), but a positive effect at higher quantiles (P70 and P90), with a particularly significant positive effect at the 90th percentile. This further substantiates the reliability of the paper's conclusions: digital inclusive finance increases the difference in consumption between households with different levels of income and consumption, thereby exacerbating inequality in consumption among individual households.

Table 8

*The Impact of Digital Inclusive Finance on Household Consumption by Different Consumer Groups and Income Groups*

Variables	ln(Household per capita consumption )					
	(1) Low- consumption	(2) Mid- consumption	(3) High- consumption	(4) Low- income	(5) Mid- income	(6) High- income
DFI <sub>i</sub>	-0.131 (-0.88)	0.0543 (0.82)	0.354** (2.45)	0.218 (0.88)	0.384* (1.95)	0.739*** (3.96)
Control Variable	control	control	control	control	control	control
Constant	8.268*** (14.91)	9.189*** (38.50)	8.119*** (15.94)	6.137*** (6.69)	5.692*** (7.76)	3.682*** (5.52)
Observations	5906	7276	8193	5885	7290	8200
R-squared	0.146	0.087	0.187	0.341	0.361	0.427

Table 9

*Quartile Regression of Per Capita Household Consumption*

Variables	ln(Household per capita consumption )				
	(1) P10	(2) P30	(3) P50	(4) P70	(5) P90
DFI <sub>i</sub>	-0.0617 (-0.35)	-0.140 (-1.13)	-0.109 (-0.89)	0.0256 (0.19)	0.336* (1.78)
Control Variable	control	control	control	control	control
Constant	5.555*** (8.83)	6.714*** (14.96)	7.322*** (16.48)	7.271*** (15.08)	6.308*** (9.23)
Observations	30424	30424	30424	30424	30424
Pseudo R <sup>2</sup>	0.229	0.240	0.238	0.228	0.221

### Discussion and Conclusions

The advent of digital inclusive finance has precipitated a paradigm shift in household consumption patterns and levels. However, due to factors such as the digital divide, urban-rural disparities, and financial literacy, the marginal impact of digital inclusive finance on household consumption varies. This inconsistency has the potential to either exacerbate or alleviate inequalities in household consumption. The present study examines the impact of digital inclusive finance on relative deprivation in household consumption from a micro perspective, utilising microdata from the China Household Finance Survey (CHFS). The study investigates whether the development of digital inclusive finance has a mitigating or exacerbating effect on inequalities in household consumption. The findings indicate that digital inclusive finance has a detrimental effect on relative deprivation in household consumption. Specifically, it has been demonstrated that this phenomenon results in the widening of the consumption gap between high- and low-consumption households within provinces, thereby intensifying the sense of relative deprivation among the latter. The analysis of the mechanism under scrutiny indicates that digital inclusive finance primarily exacerbates relative deprivation by widening disparities in income between households. A heterogeneity analysis reveals that the impact of digital inclusive finance on relative deprivation is more pronounced among urban households, those in first-tier cities, and high-income households. Households that possess superior financial literacy and digital capabilities demonstrate a mitigated response to the impact of digital inclusive finance on relative deprivation when compared to those who exhibit inferior financial literacy and digital capabilities.

An examination of the impact of digital inclusive finance on relative deprivation in household consumption revealed that, irrespective of the measurement metric – be it the overall digital inclusive finance development index or its three component dimensions – digital inclusive finance has a detrimental effect on relative deprivation in household consumption. This effect passed the 1% significance level test, a conclusion that is inconsistent with the findings of Chen et al. (2024) and Luo & Li (2022). The latter studies suggest that DFI mitigates household consumption inequality. The following potential reasons for this discrepancy are posited: The primary distinction between the present study and that of Luo and Li (2023) is that the former employs data from 2019, whereas the latter utilises data from 2015 and 2017. (2) Discrepancies in the Assessment of the Digital Financial Inclusion Index: the present study utilises the logarithmically transformed Peking University Digital Financial Inclusion Index, while Chen et al. (2024) developed their DFI metric on the basis of household digital financial usage patterns. It is noteworthy that when digital financial usage depth is employed as an explanatory variable, its coefficient is considerably smaller in comparison to the overall Digital Financial Inclusion Index, digital financial coverage, and digital financial sophistication. This finding suggests that the degree to which digital financial instruments are utilised exerts a lesser influence on the exacerbation of relative deprivation in household consumption. This finding is consistent with the conclusions of Arvai and Mann (2022), which indicate that levels of welfare experience a decline during the initial stages of digitalisation. However, as digitalisation progresses and individuals adapt to and utilise these technologies, welfare levels gradually recover and significantly improve.

The findings of the mechanism testing indicate that DFI exerts its primary effect through the exacerbation of relative deprivation in household consumption, a phenomenon that is

concomitant with the intensification of relative deprivation in household income. This finding is corroborated by the research of Yao and Ma (2022). The development of digital finance exerts a Kuznets effect on China's income distribution. The majority of regions in China have yet to reach the inflection point of the bell-shaped curve. As digital finance continues to evolve, the disparities in income between different regions are likely to intensify. The positive impact of digital finance on income gaps is observed to gradually intensify during the initial stages of regional economic development, but diminishes as regional economies reach more advanced stages. From a micro perspective, the 'Matthew Effect' and 'elite capture' phenomena further elucidate this dynamic. Investment and wealth management tools offered by digital inclusive finance are more readily utilised by high-income groups, accelerating their wealth accumulation (Balakumar & Maitra, 2023; Frost et al., 2020), whereas low-income groups, constrained by limited risk tolerance, struggle to achieve comparable returns, thereby widening income disparities. Wang and Zhao's (2020) observations, in conjunction with those of other researchers, have highlighted a pronounced 'Matthew Effect' in the realm of digital finance development. This effect suggests that non-poor households possess a distinct advantage over low-income households in utilising digital financial instruments for risk mitigation and consumption smoothing.

It is worthy of note that in the heterogeneity analysis, digital inclusive finance exerts a greater positive influence on the relative deprivation of consumption among urban households and those in first-tier cities. This finding corroborates the perspective of Yao and Ma (2022). The impact of digital inclusive finance on household income and consumption disparities has yet to reach an inflection point. The development of digital inclusive finance and regional economic growth have been identified as key factors in the joint influence of these disparities. At the present stage, digital inclusive finance continues to exacerbate household consumption gaps, particularly among households in rapidly developing urban areas and first-tier cities, intensifying their relative deprivation. Furthermore, the 'Matthew effect' and 'elite capture' phenomena similarly elucidate the profound impact of digital inclusive finance on relative deprivation in consumption among high-income households within the heterogeneity analysis. High-income households have been shown to possess a greater capacity for risk-bearing, and to derive benefits from digital inclusive finance. The absolute income hypothesis posits that as income increases, the rate of consumption growth diminishes, with marginal propensity to consume exhibiting a decreasing trend. Consequently, for high-income households, even when securing higher incomes through digital inclusive finance dividends, consumption does not rise proportionally, thereby intensifying relative deprivation in consumption.

In conclusion, in comparison to households that demonstrate low financial literacy and digital competence, higher levels of financial literacy and digital competence serve to mitigate the extent to which digital inclusive finance exacerbates relative deprivation in consumption. Households with high digital competence are more likely to participate in digital inclusive finance, while higher financial literacy enables more rational household financial decision-making (Kumar et al., 2023), resulting in lower perceptions of relative deprivation in consumption. Research by Xu et al. (2024) similarly corroborates the hypothesis that enhancing financial literacy helps mitigate consumption inequality among rural households. In recent years, there has been a significant amount of research conducted on digital inclusive finance and household consumption. This research has examined how DFI revitalises

household consumption, unlocks consumption potential, optimise consumption structure, and promotes consumption upgrading from both macro and micro perspectives. The extant research findings and practical observations indicate that digital inclusive finance exerts a positive, stimulating effect on household consumption. However, the degree of impact varies across different consumption levels. The varying degrees of consumption enhancement that are observed result in alterations to the relative gaps between consumers within reference groups, thereby ultimately influencing their perceived relative deprivation. Consequently, this study analyses the impact of digital inclusive finance on households through the lens of relative deprivation in household consumption, examining how different groups respond to digital inclusive finance based on their relative deprivation levels. This approach has been demonstrated to enhance research within the field.

The degree of relative deprivation in household consumption has been shown to accurately reflect the welfare gap between households within a given region relative to other reference households. It is imperative to alleviate this relative deprivation, enhance the welfare levels of disadvantaged households, and mitigate the primary social contradictions at this stage. The present study therefore explores the pathways through which digital inclusive finance influences household consumption equilibrium and alleviates relative deprivation, with the ultimate goal of achieving common prosperity in China. To this end, it measures the impact of digital inclusive finance on relative deprivation in household consumption. The following policy implications are proposed on the basis of the findings: Firstly, the focus should be on the demand side of digital inclusive finance, with a view to enhancing the financial dividends for disadvantaged groups within financial markets, thereby achieving the inclusiveness of digital inclusive finance and the equitable distribution of financial resources. Secondly, efforts must be made to optimise the operational environment for digital inclusive finance. It is imperative to enhance digital service capabilities and reduce barriers to the adoption of digital financial technology. In addition, there is a need to concurrently elevate household financial literacy. This enables beneficiaries to utilise it with confidence and ease, thereby addressing both the digital divide and the financial knowledge gap. Thirdly, the coordinated development of the digital economy, digital finance and regional economies must be promoted on an ongoing basis. This will enable the crossing of the inflection point in the income distribution impact curve of digital finance, thereby stimulating the mitigating effects of digital inclusive finance on household income inequality and relative deprivation in consumption. This will ultimately result in enhanced household welfare levels and the advancement of the goal of common prosperity.

This article still exhibits certain limitations. The most recent data published by the China Household Finance Survey (CHFS) dates back to 2019; consequently, the absence of more recent household data poses a significant challenge to the research, which is unable to comprehensively reflect the true impact of rapidly advancing digital financial technologies on household consumption. Consequently, the study can only utilise historical data to track and analyse the effects of digital inclusive finance development on household consumption and consumption inequality. However, it is important to note that household consumption patterns and levels are subject to adjustment in response to macroeconomic conditions and technological advancements. Consequently, the research findings may not fully capture the current reality. It is recommended that future research focus on two key areas. Firstly, there is a need for continued monitoring of the disparate impacts of digital inclusive finance on

consumption across different households. This should include exploration of regional and demographic variations in its effects, alongside more granular analysis of how distinct types of digital inclusive financial services specifically influence household consumption and consumption structures. Secondly, further investigation is required into whether digital inclusive finance persistently exacerbates consumption inequality between households or intensifies feelings of relative deprivation, particularly among economically underdeveloped regions and vulnerable households. This will inform the refinement of digital inclusive policies grounded in equitable resource distribution. In conclusion, as digital financial technologies continue to evolve, it is imperative to monitor their dynamic effects on household consumption. A comprehensive investigation into the long-term implications and evolving characteristics of digital inclusive finance on household consumption inequality is imperative, with the objective of providing scientific substantiation for the sustainable advancement of digital inclusive finance and the optimal progression of household consumption patterns.

The present study focuses on the impact of digital inclusive finance on relative deprivation in household consumption. This study utilises microdata from the 2019 China Household Finance Survey (CHFS) to systematically examine the effects and underlying mechanisms of digital inclusive finance on relative deprivation in household consumption from a micro perspective. The findings unequivocally demonstrate that digital inclusive finance significantly exacerbates relative deprivation in household consumption. The analysis of the mechanism demonstrates that digital inclusive finance exerts a significant influence on relative deprivation in household consumption, which is intensified by relative deprivation in household income. Heterogeneity analysis further indicates that the exacerbating effect of digital inclusive finance on relative deprivation in consumption is more pronounced among urban households, households in first-tier cities, and high-income households. Conversely, higher levels of financial literacy and digital competence have been shown to effectively mitigate this effect. This study deviates from the extant research perspectives that have hitherto been focused on the 'positive promotion' of household consumption by digital inclusive finance. Instead, it adopts a 'relative deprivation in consumption' approach, examining the differential responses of various groups to digital inclusive finance, thereby enriching the research dimensions in the field of digital inclusive finance and household consumption. The paper provides scientific grounds for the sustainable development of digital inclusive finance, leveraging the advantages of digital finance's inclusiveness and targeted services for vulnerable groups, alleviating household consumption inequality, and advancing common prosperity.

## References

- Abreu, M., & Mendes, V. (2010). Financial literacy and portfolio diversification. *Quantitative finance*, 10(5), 515-528.
- A dugna, H. (2024). Fintech dividend: How would digital financial services impact income inequality across countries? *Technology in Society*, 77, 102485.
- Ai, M., Peng, L., & Ai, M. (2022). The Research on the Influence of Digital Inclusive Finance on Residents' Consumption Structure. International Conference on Intelligent Transportation and Logistics with Big Data & International Forum on Decision Sciences, Allen, F., Demirguc-Kunt, A., Klapper, L., & Peria, M. S. M. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of financial Intermediation*, 27, 1-30.
- Arvai, K., & Mann, K. (2022). Consumption inequality in the digital age.
- Attanasio, O. P., & Pistaferri, L. (2016). Consumption inequality. *Journal of Economic Perspectives*, 30(2), 3-28.
- Balakumar, S., & Maitra, D. (2023). Do political connections or elite capture matter in access to financial services? Evidence from Indian households. *Journal of Behavioral and Experimental Finance*, 39, 100840.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.
- Chambers, R. (2014). *Rural development: Putting the last first*. Routledge.
- Chen, Z., Li, X., Zhang, J., & Xia, X. (2024). Does digital finance alleviate household consumption inequality? Evidence from China. *Finance Research Letters*, 60, 104844.
- Coerdacier, N., Guibaud, S., & Jin, K. (2015). Credit constraints and growth in a global economy. *American Economic Review*, 105(9), 2838-2881.
- Dabla-Norris, E., Ji, Y., Townsend, R. M., & Unsal, D. F. (2021). Distinguishing constraints on financial inclusion and their impact on GDP, TFP, and the distribution of income. *Journal of Monetary Economics*, 117, 1-18.
- Das, S., & Chatterjee, A. (2023). Impacts of ICT and digital finance on poverty and income inequality: A sub-national study from India. *Information Technology for Development*, 29(2-3), 378-405.
- Demir, A., Pesqué-Cela, V., Altunbas, Y., & Murinde, V. (2022). Fintech, financial inclusion and income inequality: a quantile regression approach. *The European Journal of Finance*, 28(1), 86-107.
- Du, Q., Zhou, F., Yang, T., & Du, M. (2023). Digital financial inclusion, household financial participation and well-being: micro-evidence from China. *Emerging Markets Finance and Trade*, 59(6), 1782-1796.
- Frost, J., Gambacorta, L., & Gambacorta, R. (2020). The Matthew effect and modern finance: on the nexus between wealth inequality, financial development and financial technology. *Bank of Italy Occasional Paper*(565).
- Fungáčová, Z., & Weill, L. (2015). Understanding financial inclusion in China. *China Economic Review*, 34, 196-206.
- Guo, F., Wang, J., Wang, F., Kong, Tao, Zhang, X., & Cheng, Z. (2020). Measuring China's Digital Financial Inclusion: Index Compilation and Spatial Characteristics. *China Economic Quarterly International*, 19(04), 1401-1418.

- Hao, Y., & Zhang, B. (2024). The impact of digital financial usage on resident's income inequality in China: An empirical analysis based on CHFS data. *Journal of Asian Economics*, 91, 101706.
- Hu, D., Guo, F., & Zhai, C. (2023). Digital finance, entrepreneurship and the household income gap: evidence from China. *Information Processing & Management*, 60(5), 103478.
- Hu, D., Zhai, C., & Zhao, S. (2023). Does digital finance promote household consumption upgrading? An analysis based on data from the China family panel studies. *Economic Modelling*, 125, 106377.
- Jiang, W., Hu, Y., & Cao, H. (2024). Does digital financial inclusion increase the household consumption? Evidence from China. *Journal of the Knowledge Economy*, 1-32.
- Kumar, P., Pillai, R., Kumar, N., & Tabash, M. I. (2023). The interplay of skills, digital financial literacy, capability, and autonomy in financial decision making and well-being. *Borsa Istanbul Review*, 23(1), 169-183.
- Lai, J. T., Yan, I. K., Yi, X., & Zhang, H. (2020). Digital financial inclusion and consumption smoothing in China. *China & World Economy*, 28(1), 64-93.
- Lewis, W. A. (1954). Economic development with unlimited supplies of labour.
- Li, J., Wu, Y., & Xiao, J. J. (2020). The impact of digital finance on household consumption: Evidence from China. *Economic Modelling*, 86, 317-326.
- Liu, Y., Luan, L., Wu, W., Zhang, Z., & Hsu, Y. (2021). Can digital financial inclusion promote China's economic growth? *International Review of Financial Analysis*, 78, 101889.
- Loizos, K. (2018). The financial repression-liberalization debate: taking stock, looking for a synthesis. *Journal of Economic Surveys*, 32(2), 440-468.
- Luo, J., & Li, B.-z. (2022). Impact of digital financial inclusion on consumption inequality in China. *Social indicators research*, 163(2), 529-553.
- Ma, H., Yin, Y., Liu, Z., & Bai, Y. (2024). A study of the impact of digital finance usage on household consumption upgrading: Based on financial asset allocation perspective. *International Review of Economics & Finance*, 96, 103628.
- Merton, R. K. (1968). The Matthew effect in science: The reward and communication systems of science are considered. *Science*, 159(3810), 56-63.
- Park, C.-Y., & Mercado, R. V. (2021). Financial inclusion: New measurement and cross-country impact assessment 1. In *Financial Inclusion in Asia and beyond* (pp. 98-128). Routledge.
- Peng, P., & Mao, H. (2023). The effect of digital financial inclusion on relative poverty among urban households: a case study on China. *Social indicators research*, 165(2), 377-407.
- Sahay, M. R., von Allmen, M. U. E., Lahreche, M. A., Khera, P., Ogawa, M. S., Bazarbash, M., & Beaton, M. K. (2020). *The promise of fintech: Financial inclusion in the post COVID-19 era*. International Monetary Fund.
- Smith, H. J., & Pettigrew, T. F. (2015). Advances in relative deprivation theory and research. *Social Justice Research*, 28, 1-6.
- Song, Y., Gong, Y., Song, Y., & Chen, X. (2024). Exploring the impact of digital inclusive finance on consumption volatility: Insights from household entrepreneurship and income volatility. *Technological Forecasting and Social Change*, 200, 123179.
- Suhrab, M., Chen, P., & Ullah, A. (2024). Digital financial inclusion and income inequality nexus: can technology innovation and infrastructure development help in achieving sustainable development goals? *Technology in Society*, 76, 102411.
- Tay, L.-Y., Tai, H.-T., & Tan, G.-S. (2022). Digital financial inclusion: A gateway to sustainable development. *Heliyon*.

- Wang, L., Chen, Y., & Ding, S. (2022). Examining the impact of digital finance on farmer consumption inequality in China. *Sustainability*, *14*(20), 13575.
- Wang, X., & Zhao, Y. (2020). Does the Matthew Effect Exist in Digital Finance Development? Empirical Evidence from Poor and Non-Poor Households. *Journal of Financial Research*(07), 114-133.
- Xu, G., Feng, L., Wang, W., & Liang, Q. (2024). Digital Financial Literacy and Rural Income Inequality. *SAGE Open*, *14*(3), 21582440241275642.
- Yang, B., Ma, F., Deng, W., & Pi, Y. (2022). Digital inclusive finance and rural household subsistence consumption in China. *Economic Analysis and Policy*, *76*, 627-642.
- Yang, T., & Zhang, X. (2022). FinTech adoption and financial inclusion: Evidence from household consumption in China. *Journal of Banking & Finance*, *145*, 106668.
- Yao, L., & Ma, X. (2022). Has digital finance widened the income gap? *Plos one*, *17*(2), e0263915.
- Yitzhaki, S. (1979). Relative deprivation and the Gini coefficient. *The Quarterly Journal of Economics*, *93*(2), 321-324.
- Yue, P., Korkmaz, A. G., Yin, Z., & Zhou, H. (2022). The rise of digital finance: Financial inclusion or debt trap? *Finance Research Letters*, *47*, 102604.
- Zhao, H., Zheng, X., & Yang, L. (2022). Does digital inclusive finance narrow the urban-rural income gap through primary distribution and redistribution? *Sustainability*, *14*(4), 2120.