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The Impact of Digital Finance Inclusion on the Employment of Chinese Residents

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Abstract

The development of digital finance Inclusion can effectively alleviate information asymmetry and reduce the financing constraints of small and micro enterprises to a certain extent; At the same time, the development of digital finance Inclusion will also give birth to new forms of employment, such as flexible employment methods such as independent entrepreneurship and freelance work, releasing a large number of employment opportunities; The development of digital finance Inclusion can effectively alleviate the financing constraints of individual education and vocational training, improve the human capital and skill level of workers, and facilitate their reemployment, job promotion, and personal income growth. Studying the relationship between digital finance Inclusion and residents' employment is of great practical significance for solving the livelihood problem of difficult employment and promoting high-quality development of Chinese economy. This article first introduces the characteristics of digital finance Inclusion and theoretically studies the mechanism of its impact on employment. In terms of empirical analysis, match the employment statistics of China from 2011 to 2021 with the Digital Finance Inclusion Index of Peking University (PKU-DFIIC) in China to test the impact and mechanism of digital finance Inclusion development on residents' employment. The research results indicate that digital finance Inclusion can significantly and actively stimulate employment in the tertiary/service industries; The using of digital finance Inclusion has a more significant positive impact on the employment of urban residents; Relatively speaking, digital finance Inclusion is more conducive to the employment of individuals with higher education, but not conducive to the employment of individuals with lower levels of education; Digital finance Inclusion promotes economic growth and is more conducive to achieving common prosperity. Finally, based on the analysis results of this article, policy guidance is provided.

Keywords: Digital Finance Inclusion, Influence Mechanism, PKU_DFIIC, Employment Level

Introduction

Due to the pursuit of maximizing profits by commercial banks, financial resources continue to flow from vulnerable groups to strong ones, which to some extent leads to the "Matthew effect" of the wealthy getting richer and the poor getting poorer (Allen et al., 2016). Since the

United Nations proposed "finance inclusion" (also known as "inclusive finance") in 2005, its connotation and theory have also been continuously enriched and developed.

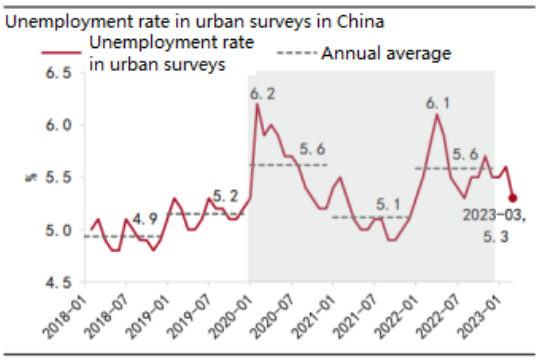
In the 2016 G20 Summit, digital finance inclusion was defined as "all actions that promote finance inclusion through the use of digital financial services" (G20, 2016). Its main function is to break the boundaries of traditional financial services through digital technology, reduce the cost of financial transactions, and incorporate vulnerable groups such as small and medium-sized enterprises and low-income groups that have long been excluded by traditional finance into the financial service system, thereby effectively alleviating the financial constraints of vulnerable groups. This function inevitably has a positive employment promoting effect. Scholars such as Manyika have predicted that by 2025, the widespread application of digital finance will lead to an average annual GDP growth of $3.7 trillion in emerging economies, creating 95 million job opportunities (Manyika et al., 2016).

There are many literature (literature 3,4,8,10,11,12,13,14, etc.) indicating that digital finance inclusion has a positive promoting effect on increasing the number, level, quality, and structure of employment. Therefore, exploring the impact of digital finance inclusion on China's employment development has important practical guiding significance. This article attempts to explore the impact of the current development of digital finance inclusion in China on employment quantity, employment level, employment quality, and employment structure.

Problem Statement

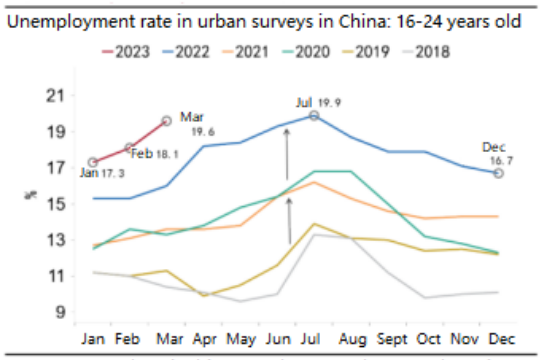
China is a country with a large population and long-term employment pressure. From 2018 to 2019, the average annual unemployment rates in China were 4.9% and 5.2%, both lower than 5.5%. However, in the three years of the COVID-19 pandemic, the employment pressure in China has increased significantly compared with that before the epidemic. In 2020 and 2022, which were greatly affected by the epidemic, the national urban survey unemployment rate was 5.6%, which was 0.4% higher than in 2019. The unemployment rate in 2022 exceeded the upper limit of the unemployment rate target range of "within 5.5%" (Figure 1).

At the same time, the unemployment rate of young people and migrant workers remains high. Since 2020, the unemployment rate of the 16-24 year old group in China has continued to rise (Figure 2), reaching a historical peak of 19.9% in July 2022 and still reaching 16.7% in December, which is 2.4% higher than the same period in 2021. Since February 2022, the unemployment rate of the migrant population with registered residence has exceeded that of the local population, reaching 5.9% throughout the year, 0.5% higher than that of the local population with registered residence, and 0.9% higher than its average annual value in 2021 (Figure 3). The true level of unemployment in China during the epidemic period may be higher than the statistical survey data mentioned above.



Source: Wind, China Merchants Bank Research Institute

Fig1. Unemployment rate in urban surveys in China

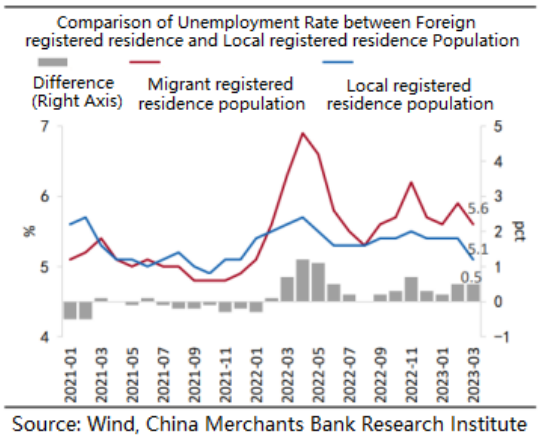


Source: Macrobond, China Merchants Bank Research Institute

Fig2. Youth unemployment rate remains high

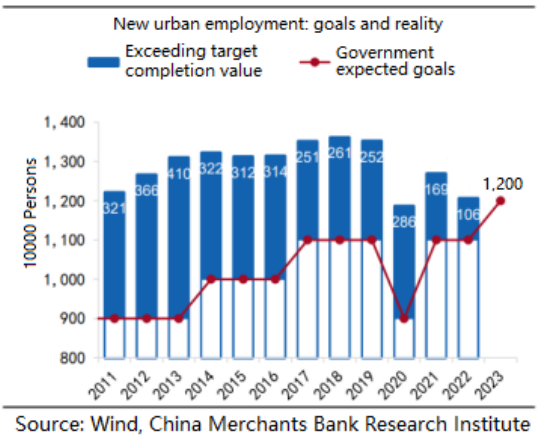
With population growth and urbanization, the supply of urban labor market in China continues to rise, becoming the main consideration for government departments to set new employment goals. The Ministry of Human Resources and Social Security stated that in 2023, there will be 16.62 million newly growing laborers who need to work in urban areas, reaching a new high in recent years. The difference between the newly growing workforce (mainly fresh college graduates and newly added migrant workers) and the new employment target remains at around 5 million people.

From the actual completion situation, during the three years before the 2017-2019 pandemic, the actual number of new urban employment added each year was around 13.55 million, exceeding the government's target of 2.55 million on average (Figure 4). The actual number of newly added employment before the epidemic was significantly higher than the government's work target, which can be seen as the "redundancy" of urban employment absorption. However, under the impact of the epidemic, the "redundancy" of new employment has significantly decreased, reflecting a significant increase in employment pressure.



Source: Wind, China Merchants Bank Research Institute

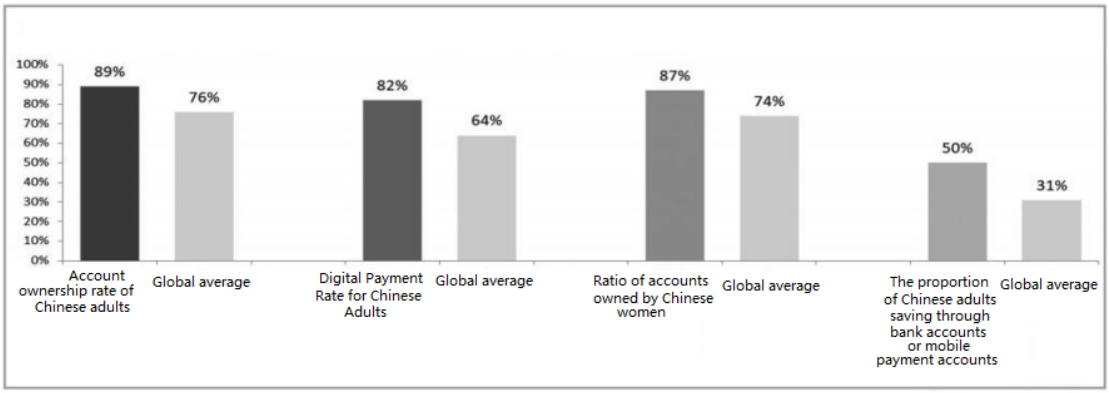
Fig3. In 2022, the gap between the unemployment rate of foreign and local registered residence population will widen



Source: Wind, China Merchants Bank Research Institute

Fig4. The redundancy of new urban employment exceeding government targets is decreasing

In June 2022, the World Bank released the "2021 Global Financial Inclusion Index Report", which analyzed the use of financial services such as bank accounts by people in over 140 economies. The report points out that the digital revolution has changed the way people receive, pay, borrow, and save.Among them,China's account ownership rate, digital payment rate, proportion of women owning accounts,and proportion of savings through bank or mobile payment accounts are all higher than the global average, as shown in Figure 5.



Source: World Bank

Fig5. Partial Achievements of China's Digital Revolution

The report shows that in India and China, more than 80 million and 100 million adults respectively used digital payment methods to make payments to merchants for the first time after the outbreak. As of the end of 2021, 82% of adults in China used digital payments, which is 18 percentage points higher than the global average. China has become an important factor in promoting digital payments in developing economies. Excluding China, only 20% of adults in developing economies use digital payments.

China has been developing digital finance since 2005, and its scale and level of various businesses such as internet payments, loans, and digital insurance have been far ahead internationally. The rapid development of digital finance in China is generally attributed to the favorable digital environment created by the government, as well as the digital financial inclusion services provided by traditional financial institutions and fintech enterprises, and the formation of a "Chinese model" of digital finance inclusion (Yin, 2017).

With the vigorous promotion of digital inclusive finance, the traditional employment forms in Chinese society are gradually evolving, and various flexible employment methods such as food delivery personnel, self media, WeChat commerce, and online anchors have emerged, resulting in a large number of emerging employment opportunities. Flexible employment generally refers to the flexibility of employment time, such as part-time, outsourced, and dispatched jobs, which are not full-time jobs. According to statistics, the number of flexible employment practitioners in personal part-time and new forms of employment has reached 200 million (data source: Chinese government website, 2021.5, https://www.gov.cn/xinwen/2021-05/20/content_5609599.htm).

In China, small and medium-sized enterprises are the largest source of employment, playing an important role in stabilizing employment and promoting economic development. The number of legal entities in small and medium-sized enterprises in China accounts for 99.8% of the total number of legal entities in enterprises of all sizes, absorbing employment accounts for 79.4% of the total employment of enterprises, providing up to 78% of job positions, contributing more than 80% of urban labor employment and 90% of new employment in the country (data source: People's Daily, https://www.gov.cn/xinwen/2022-09/02/content_5707953.htm).

For a long time, the growing credit demand of small and micro enterprises has not been fully met. At the same time, due to the lack of stable credit conditions, reliable financial information, and qualified collateral, small and micro enterprises generally face the problem

of difficult and expensive financing. In the context of a slowdown in macroeconomic growth and a shortage of liquidity, the problem of financing difficulties for small and micro enterprises is more prominent (iResearch Consulting, China Small and Medium sized Enterprise Financing Development Report, 2021).

Digital finance inclusion can alleviate the financing difficulties of small and micro enterprises, assist their development, and promote employment; At the same time, residents can also use digital finance inclusion for small loans to meet the costs of education and work, as well as financing issues for personal entrepreneurship and operation, promoting personal employment (Mehry et al., 2021). Studying the relationship between the development of digital finance inclusion and residents' employment has practical significance in alleviating the current employment pressure in China.

Scope of the Research

This study will focus on the impact of the development of digital finance inclusion in China on residents' employment at the current stage, including the mechanism of its impact on employment, channels for creating employment opportunities, the impact of digital finance inclusion on employment quantity, support for entrepreneurial activities, and the role of improving income and employment quality, as well as the analysis of differences in employment population structure.

Literature Review

Existing research has explored the relationship between digital finance inclusion and non agricultural employment of rural households. When studying the employment status of farmers, it is believed that employment includes both employed employment and large-scale "self-employment" such as opening factories, planting and breeding (Shangxi, 2006). Zhichao et al (2021) found that the development of digital finance inclusion can significantly increase the number of employment in the household sector, mainly promoting self employment, with no significant impact on non self employment. Yin et al (2022) empirically tested and concluded that the development of digital finance inclusion has a positive impact on residents' employment and work income. Zhiming et al (2018) conducted empirical tests on data collected through field research and online questionnaire surveys, and found that digital finance inclusion can effectively reduce the threshold and cost of financial services in rural areas, thereby promoting farmers' entrepreneurship. Yan et al (2021) used finance inclusion data from a survey conducted by China Agricultural University to segment the types of entrepreneurship. Empirical research found that digital finance significantly affects survival entrepreneurship and non agricultural entrepreneurship, especially for low human capital, social capital, and material capital farmers. Wenwu et al (2020) believe that the depth of use of digital finance inclusion can significantly promote farmers' entrepreneurship, while the coverage is not significant. Digital finance inclusion has a significant impact on farmers' entrepreneurship in the central region, but has no significant promoting effect on farmers' entrepreneurship in the eastern and western regions.

In terms of analyzing the impact mechanism of digital finance inclusion on employment levels, existing literature discusses it from two aspects: direct impact and indirect impact.

In terms of direct impact perspective, He & Li et al (2019) selected the differential GMM method to measure the dynamic poverty reduction effect of digital finance inclusion in China,

and pointed out that the employment opportunities brought about by digital finance inclusion have urban-rural and regional heterogeneity. Yin et al (2022) used Chinese household tracking survey data to construct a fixed effect model and found that digital finance inclusion has a positive promoting effect on residents' employment and income, and has a greater impact on non agricultural employment and private enterprise employment. Ran and Tang (2021) explored the impact of digital finance inclusion on social employment based on provincial-level panel data from 2011 to 2019, and found that digital finance inclusion can significantly promote employment in the tertiary industry, while having inhibitory effects on the primary and secondary industries.

In terms of indirect impact perspective, Manyika et al (2016) pointed out that the development of digital finance inclusion has effectively improved the financing difficulties of small and medium-sized enterprises while increasing employment opportunities in emerging economies in China. And from this, it can be inferred that the development of digital finance inclusion will drive the development of local enterprises and bring huge employment opportunities to society. Beck et al (2018) pointed out that digital finance inclusion can use intelligent technology to alleviate information asymmetry between regions, reduce the cost of information search for urban employment, and thus give urban residents more employment opportunities.

Of course, the frequency of digital finance usage can reflect the depth of digital finance inclusion usage, and also reflect that the development of digital finance inclusion has promoted employment to enjoy diversified and deep-seated financial services. Therefore, the development of digital finance inclusion can increase the opportunities for employment in remote areas to access the financial ecosystem and improve employment equity.

Research Objectives

The research objectives of this article focus on the following aspects: firstly, from a macro perspective, based on macro statistical data, to explore the impact of digital finance inclusion on the employment of Chinese residents. Secondly, study various factors that affect employment and analyze the impact mechanism of digital inclusive finance development on employment. Thirdly, distinguish between rural and urban areas, men and women, different industries, and groups with different levels of education, and study the heterogeneity of the impact of digital finance inclusion development on employment.

Research Questions and Hypothesis Development

Digital technology has made the boundaries of employment increasingly blurred, and employment methods more flexible. Under a platform based employment relationship, workers' workplace, time, and employment contracts are more flexible. Not only can they obtain job opportunities across space and distance, but they can also easily enjoy the financial support and other financial services brought by digital finance inclusion for employment or entrepreneurship.

On the one hand, digital finance inclusion can provide various types of flexible microcredit products, alleviate the financing constraints of households, and workers can use loan funds to receive vocational and technical education and training, enhance their human capital, and thus meet the threshold and conditions required for employment positions. At the same time,

digital finance inclusion promotes some workers to start businesses, such as handling individual businesses, WeChat business and delivery platforms, online e-commerce and other physical and online industries.

On the other hand, electronic network-based payment methods provide convenience for employees, reducing financial transaction costs and expanding the scope of financial services. Internet platforms such as e-commerce and sales through live streaming have flourished in the trend of electronic payment consumption, creating a large number of flexible job opportunities. Flexible employment through the internet is the choice of some workers, who can engage in one or several jobs without constraints. Compared to employed employment, self-employed employment has advantages such as strong flexibility, balancing work and life, and enhancing satisfaction, making it easy to gain the favor of employers. Given this, this article proposes question hypothesis 1.

H1: Digital finance inclusion helps to promote employment for residents, and has a significant promoting effect on employment in the tertiary/service industries.

Due to the instability of agricultural income and low labor returns, the growth of agricultural operating income can only promote a small short-term increase in rural household income. Therefore, in the long run, improving the income level of rural households still needs to rely on the growth of nonagricultural employment income. The level of traditional financial development has to some extent limited the employment of rural workers, while digital finance inclusion, as a policy window for rural financial development, can effectively alleviate the constraints on farmers' loans and increase capital investment in rural areas.
Scholars have conducted research and found that digital finance inclusion has a positive promoting effect on rural workers' participation in non agricultural work, entrepreneurship, and increasing income. Digital finance inclusion can increase human capital investment in rural areas, improve the education level and physical fitness of rural workers, meet the labor conditions for engaging in non agricultural work, and promote rural workers to engage in non agricultural employment.

The digital technology relied on by digital finance inclusion can compensate for information asymmetry, improve the adaptation rate of labor and job positions, and alleviate the constraints of insufficient education on farmers' entrepreneurship. Digital finance inclusion has alleviated lending constraints in rural areas, reduced information asymmetry, and reduced transaction costs to stimulate rural household entrepreneurship (Zhiming et al., 2018). The development of digital finance inclusion in a region will drive entrepreneurial activity in the local and nearby areas.

From the perspective of market factors among exogenous factors, digital finance inclusion has accelerated digital industrialization, giving rise to a large number of positions such as couriers, drivers, and broadcasters, and low-cost rural labor has flowed to non agricultural industries; At the same time, industrial digitization promotes the transfer of rural highly skilled workers from traditional non-agricultural industries to digital non-agricultural industries. Given this, this article proposes question hypothesis 2.

H2: Digital finance inclusion has a positive impact on rural residents' participation in non agricultural employment.

Although digital finance inclusion can benefit the general public, the gender, age, and education level of residents vary. Many literature studies have shown that compared to women, men are more likely to find employment; Compared to the middle-aged group, the probability of employment for the youth group is higher; The higher the education level, the higher the probability of employment (Guo et al., 2020). Given this, this article proposes question hypothesis 3.

H3: Digital finance inclusion has a positive impact on the employment of men, young people, and residents with high education levels.

Research Methodology

This study first adopts a qualitative literature research method, collecting and analyzing literature to understand the factors that affect residents' employment.

The academic community generally believes that the level of economic development has a significant impact on employment and is an effective way to promote employment growth. To some extent, it can significantly promote the expansion of employment scale and reduce unemployment rate.

The improvement of urbanization level means an increase in urban population and the expansion of urban scale, and its impact on employment cannot be ignored.

Industrial structure and market demand. The development of different industries and market demand will also have an impact on employment. Employment opportunities in some industries may be affected by changes in economic structure and market competition, resulting in fluctuations and changes in demand.

Labor supply and demand. The balance between labor supply and demand is also an important factor affecting employment. When supply exceeds demand, there are relatively few job opportunities and fierce competition; When demand exceeds supply, there are relatively more jobs.

Technology development and automation. Advances in technology and automation have far-reaching implications for employment. Some occupations may be reduced by automation, and emerging technology fields may also create new jobs (Yong & Xian, 2020).

Government policy. Relevant government policies and regulations have an important impact on employment. Employment policy, labor law and tax policy will directly or indirectly affect the job market.

Education and skills. Education and skills have an important impact on employment. Having high-quality education and professional skills can improve employment opportunities and competitiveness.

In the research on the employment effect mechanism of the development of digital Finance Inclusion , Xi Mingming's literature points out that digital finance inclusion can not only promote the industrial transformation and upgrading of small and medium-sized enterprises in manufacturing industry, promote the expansion and strengthening of enterprises and industries, but also indirectly create new employment models and more jobs (Mingming et al., 2021).

Digital finance inclusion can improve the income level of low-income groups by increasing financial availability and reducing the threshold effect, so as to promote non farm employment and narrow the income gap between urban and rural areas; Digital finance inclusive can provide all kinds of microfinance products with flexible maturities, alleviate the financing constraints of residents 'families, and workers can use loan funds to receive vocational and technical education and training, enhance their human capital, so as to meet the threshold and conditions needed for employment. Literature shows that the development of digital Finance inclusive has a direct impact on employment by promoting entrepreneurial activities.

This study mainly uses quantitative research methods and data analysis to understand the specific impact of digital Finance Inclusion on residents'e mployment. According to the main research questions, this paper matches China's employment data from 2011-2021 (China demographic and employment statistics yearbook 2011-2022, China Agricultural Statistics Yearbook 2022) with the provincial level digital financial inclusion index (pku_dfiic) released by the digital finance research center of Peking University. The collated data are shown in Figure 6.

Item	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Labour Force (10 000 persons)	78349	78431	78604	78757	78921	79282	79042	78653	78985	78392	78024
Total Number of Employed Persons(10 000 persons)	76196	76254	76301	76349	76320	76245	76058	75782	75447	75064	74652
Employment rate of Labour Force(%)	97.252039	97.2243118	97.0701237	96.942494	96.704299	96.16937	96.224792	96.34979	95.520669	95.7546688	95.6782528
Primary Industry(10 000 persons)	26472	25535	23838	22372	21418	20908	20295	19515	18652	17715	17072
Secondary Industry(10 000 persons)	22539	23226	23142	23057	22644	22295	21762	21356	21234	21543	21712
Tertiary Industry(10 000 persons)	27185	27493	29321	30920	32258	33042	34001	34911	35561	35806	35868
Employment Rate of Labor Force in the Primary Industry(%)	34.7419812	33.4867679	31.2420545	29.302283	28.063417	27.422126	26.683584	25.751498	24.72199	23.5998615	22.8687778
Employment Rate of Labor Force in the Secondary Industry(%)	29.5802929	30.45873	30.3298777	30.199479	29.669811	29.241262	28.612375	28.180834	28.14426	28.6995098	29.0842844
Employment Rate of Labor Force in the Tertiary Industry(%)	35.6777259	36.0545021	38.4280678	40.498238	42.266771	43.336612	44.704042	46.067668	47.13375	47.7006288	48.0469378
Number of Urban Employed Persons(10 000 persons)	36003	37287	38527	39703	40916	42051	43208	44292	45249	46271	46773
Number of Rural Employed Persons(10 000 persons)	40193	38967	37774	36646	35404	34194	32850	31490	30198	28793	27879
Employment Rate of Urban Residents(%)	47.2505118	48.8984184	50.4934405	52.001991	53.611111	55.152469	56.809277	58.446597	59.974552	61.6420654	62.6547179
Employment Rate of Rural Personnel(%)	52.7494882	51.1015816	49.5065595	47.998009	46.388889	44.847531	43.190723	41.553403	40.025448	38.3579346	37.3452821
Proportion of Employed Males(%)	55.3154665	55.1864013	55.0371903	55.233966	58.08768	56.859408	56.545287	56.296035	56.837394	56.633392	56.889
Proportion of Employed Females(%)	44.6845335	44.8135986	44.9628095	44.766034	41.91232	43.140592	43.454713	43.703965	43.162607	43.366608	43.111
Proportion of no schooling(%)	1.97423801	1.96563237	1.90558667	1.8402149	2.8230552	2.6021052	2.2941139	2.2970918	2.1695607	2.39946016	2.342
Proportion of Primary School(%)	19.62722	18.9818449	18.4657804	18.1	17.751035	17.518385	16.915733	16.40458	15.686575	16.3115081	15.847
Proportion of Junior Secondary School(%)	48.7098148	48.3100147	47.9466194	46.663814	43.288539	43.267368	43.370862	43.14409	40.634303	41.7067134	40.967
Proportion of Senior Secondary School(%)	16.7258641	17.0853627	17.0842822	17.228387	17.307537	17.178178	17.998188	17.979199	18.748171	17.4573118	17.806
Proportion of College(%)	7.62071244	8.02307219	8.54043199	9.3187596	10.562731	10.927176	10.639101	10.845664	11.962707	11.2730833	11.506
Proportion of University(%)	4.90398663	5.15854944	5.54662655	6.2442959	7.5186366	7.7223314	8.0013178	8.4707636	9.6741179	9.76776606	10.258
Proportion of Graduate and Higher Level(%)	0.43816379	0.47552329	0.51067225	0.5490702	0.7484667	0.7844573	0.780683	0.8586123	1.1245644	1.08415728	1.274
Per-capita Disposable Income of Urban Residents(RMB)	21426.9	24126.7	26467	28843.9	31194.8	33616.2	36396.2	39250.8	42358.8	43833.8	47411.9
Per-capita Disposable Income of Rural Residents(RMB)	7393.9	8389.3	9429.6	10488.9	11421.7	12363.4	13432.4	14617	16020.7	17131.5	18930.9
Digital Financial Inclusion Index of China/PKU_DFIIC	40.0041936	99.6854839	155.349355	179.74871	220.00839	230.41424	271.98034	300.2082	323.73396	341.219412	372.719055

Fig6. China's labor force employment and digital financial inclusion index data

This paper takes the employment rate of Chinese residents as the dependent variable.
This paper takes the development level of digital Finance Inclusion as independent variable. Considering the availability of data, this paper uses the digital financial inclusion development index (pku_dfiic) released by the digital financial inclusion research center of Peking University in 2021 to measure the development of digital finance inclusion. The three sub dimensions of Peking University's digital finance inclusion index are the breadth of digital finance inclusion coverage (bread), the depth of digital finance inclusion use (depth) and the digitalization of finance inclusion (digital), totaling 33 specific indicators.

Among them, the breadth of coverage is measured by the number of registered electronic accounts such as Alipay accounts; The depth of use is measured by the number of payment businesses and the number of Monetary Fund businesses; Digitalization is measured by indicators such as mobility and facilitation (Guo et al., 2020). By adding the indexes of various provinces and municipalities directly under the central government and calculating the average value, we can get the general index of digital inclusive financial development in China.

Considering the availability of data and drawing on existing research results, this paper originally planned to select economic development level (lnpGDP), fiscal expenditure level (public), urbanization level (urban), industrial structure level (stru) and human capital level (edu) as control variables. Among them, the level of economic development (lnpGDP) is measured by the logarithm of GDP (10000 yuan). The level of fiscal expenditure (public) is measured by the proportion of fiscal expenditure to GDP. The level of urbanization is measured as the ratio of urban population to the total population of the region. The level of industrial structure (stru) is measured by the proportion of added value of tertiary industry to GDP. The level of human capital (edu) is measured by the length of schooling of the labor force.

Because the data analysis method is still in the process of learning and research, this paper does not do further regression analysis, nor does it do data analysis at the micro level, but only does some data correlation analysis at the macro level.

Data Analysis

1. Impact of digital Finance Inclusion on the overall employment rate of China's labor force

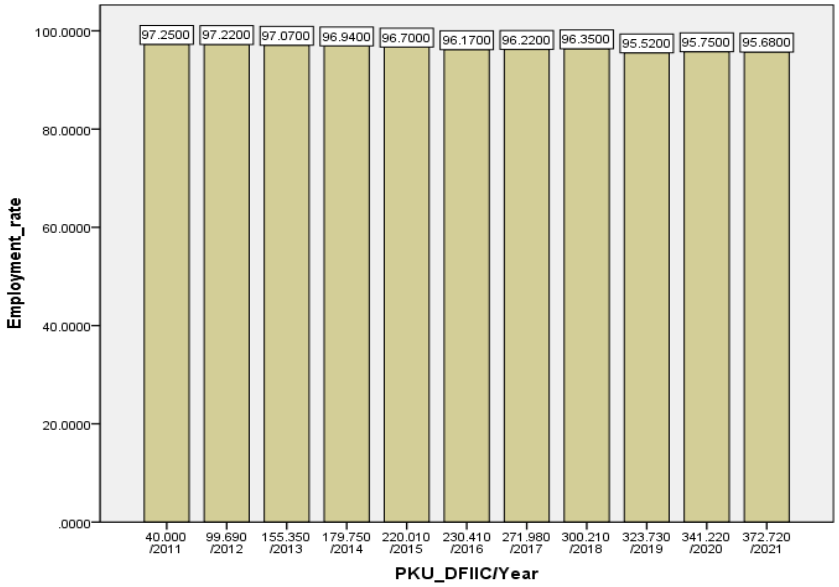


Fig7. bar chart of the impact of digital Inclusive Finance on the overall employment rate of China's labor force

Based on the data in Figure 6, a bar graph of the digital financial inclusion index and the overall employment rate of China's labor force is drawn, as shown in Figure 7. It can be seen that with the increasing development index of China's digital finance inclusion, the overall employment rate of the labor force has not gradually increased, but has declined slightly. The decline in employment may be due to adverse factors such as the trade war, the economic downturn and the covid-19 epidemic after 2019.

According to the correlation analysis between digital finance inclusion and the overall employment rate of the labor force, the Pearson correlation coefficient is - 0.932, showing a strong negative correlation.

2. The impact of digital finance inclusion on the employment rate of China's three major industries

According to the data in Figure 6, the digital financial inclusion index and the employment rate of China's three major industries are plotted, as shown in Figure 8. It can be seen that with the increasing development index of China's digital finance inclusion, the employment rate of the tertiary industry/service industry has increased significantly, and the employment rate of the primary industry/agriculture and the secondary industry has declined significantly. At the same time, the Pearson correlation coefficient of digital Finance Inclusion to the employment rate of the primary, secondary and tertiary industries is - 0.994, - 0.801 and 0.988, respectively, showing strong negative correlation, strong negative correlation and strong positive correlation. Therefore, from a macro perspective, it is confirmed that digital finance inclusion can significantly promote the employment of the tertiary industry, but has a restraining effect on the primary and secondary industries.

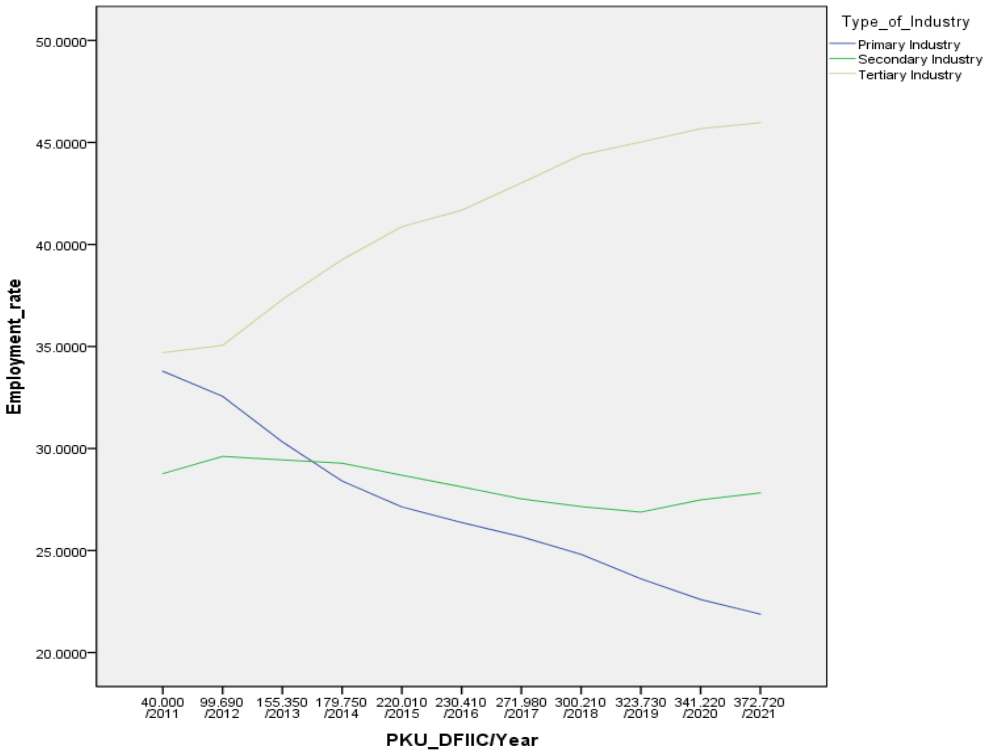


Fig8. broken line chart of the impact of digital finance Inclusion on the employment rate of China's three major industries

3. Impact of digital finance inclusive on urban and rural employment rates

Based on the data in Figure 6, a line graph of the digital financial inclusion index and China's rural employment rate is drawn, as shown in Figure 9. It can be seen that with the increasing development index of China's digital finance inclusion , the urban employment rate has increased significantly, and the rural employment rate has declined significantly. At the same time, the Pearson correlation coefficient of digital finance inclusion to urban and rural employment is 0.990 and - 0.988, respectively, showing strong positive and negative correlation. Therefore, from a macro perspective, it confirms that digital finance inclusion has a significant impact on non farm entrepreneurship or employment of agricultural population.

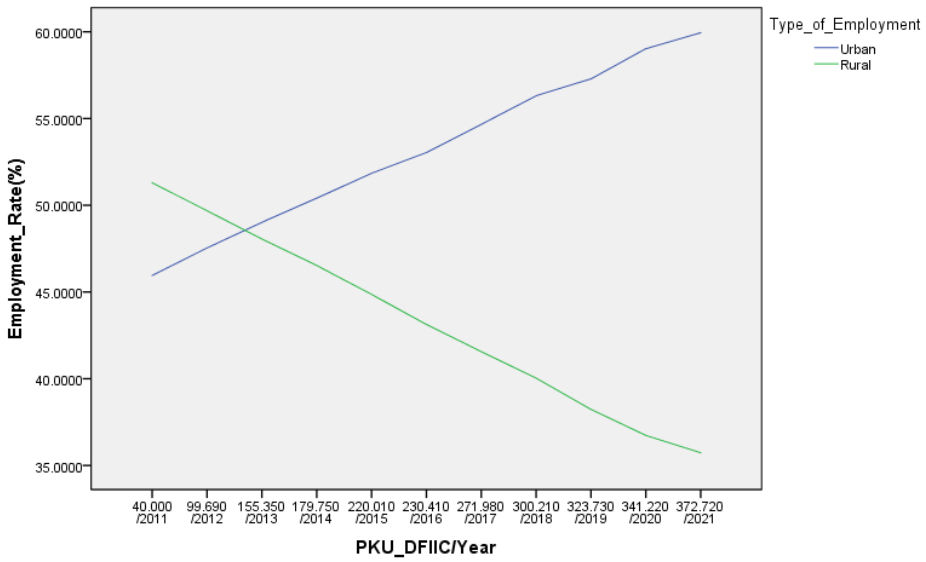


Fig9. broken line chart of the impact of digital finance inclusion on China's urban and rural employment rate

4. The impact of digital finance inclusive on the employment of residents of different genders

According to the data in Figure 6, draw a line graph of the digital financial inclusion index and the employment rate of men and women, as shown in Figure 10. It can be seen that with the increasing development index of digital finance inclusion in China, the employment rate of men has increased slightly and that of women has declined slightly. At the same time, the Pearson correlation coefficient of digital finance inclusion on male and female employment is 0.64 and - 0.64, respectively, showing a significant positive correlation and a significant negative correlation. The decline in female employment may be due to the fact that female employment is more vulnerable to the economic downturn.

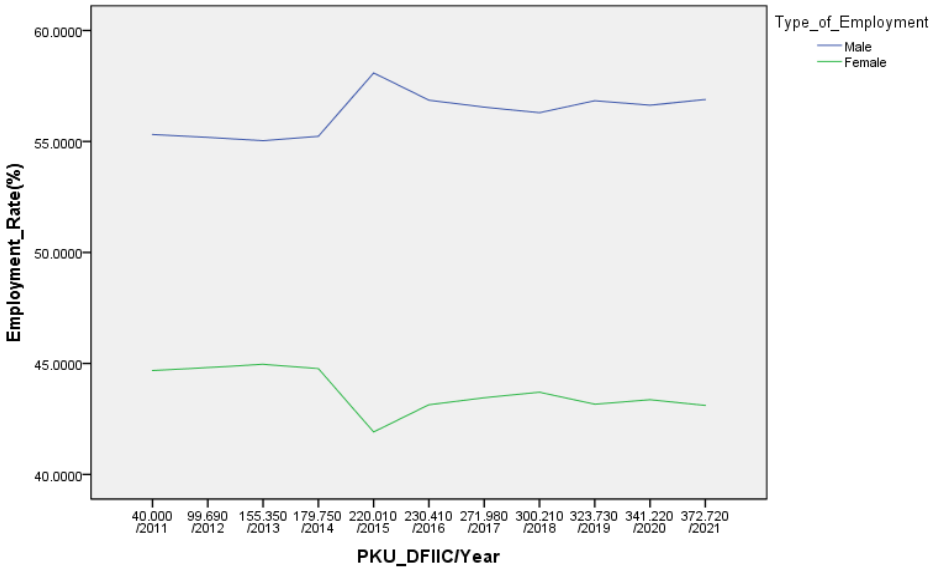


Fig10. broken line chart of the impact of digital finance inclusion on the employment of residents of different genders

5. The impact of digital finance inclusion on the employment of residents with different degrees

According to the data in Figure 6, a broken line chart of the digital financial inclusion index and the employment rate of residents with different degrees is drawn, as shown in Figure 11. It can be seen that with the increasing development index of China's digital financial inclusion, the employment rate of high-level educated personnel has increased significantly, and the employment rate of low-level educated personnel has declined significantly. At the same time, the Pearson correlation coefficient of digital financial inclusion on the employment of residents with different degrees is calculated as: 0.492, - 0.984, - 0.946, 0.763, 0.948, 0.976 and 0.943. Therefore, from a macro perspective, it confirms that digital finance inclusion significantly improves the level of human capital and skills of employees.

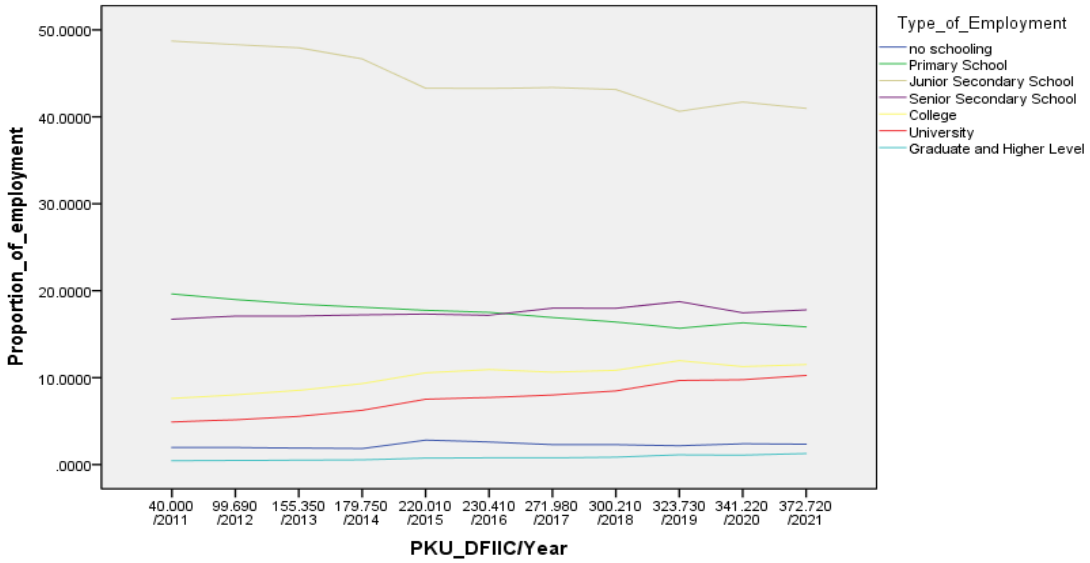


Fig11. broken line chart of the impact of digital finance Inclusion on the employment of residents with different degrees

6. Analyze the impact of digital finance inclusion on residents' income

According to the data in Figure 6, the digital financial inclusion index and the broken line chart of per capita disposable income of urban and rural residents are drawn, as shown in Figure 12. It can be seen that with the increasing development index of digital financial inclusion in China, the personal income of both urban and rural residents has increased significantly. At the same time, the Pearson correlation coefficient of digital financial inclusion on the income of urban and rural residents is 0.985 and 0.978, respectively, showing a strong positive correlation. Therefore, from a macro perspective, it confirms that digital finance inclusion significantly increases the income of employees and improves the quality of employment.

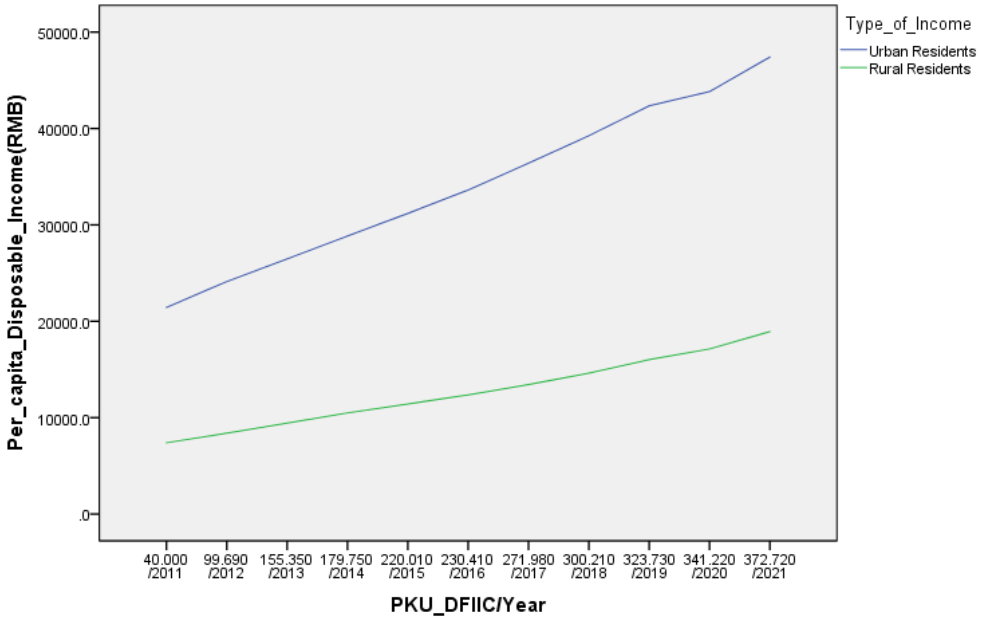


Fig12. broken line chart of the impact of digital finance inclusion on residents'income

Summary of Findings

Through the above research, the results show that digital financial inclusion can significantly and actively stimulate employment in the tertiary industry/service industry; Digital financial inclusion has a more significant positive impact on the employment of urban residents; Relatively speaking, digital finance inclusion is more conducive to the employment of highly educated personnel, not conducive to the employment of low-level education personnel; Digital finance inclusion promotes economic growth and is more conducive to achieving common prosperity.

Contribution

The possible practical contributions of this paper are as follows: first, from a macro perspective, this paper combines China's employment statistics from 2011-2021 (China population and employment statistics yearbook 2011-2022, China Agricultural Statistics Yearbook, 2022) with Peking University's China digital finance inclusion index (pku_dfiic) to explore the impact of digital finance inclusion on the employment of Chinese Residents Based on macro statistics. Secondly, it analyzes the impact mechanism of the development of digital finance inclusion on employment. Thirdly, we divide rural and urban, male and female, different industries and different educational levels to test the heterogeneity of the impact of the development of digital finance inclusion on employment.

Recommendations

Compared with rural areas, the impact of digital finance inclusion on urban employment is more significant. Possible reasons are: on the one hand, cognitive differences between urban and rural areas. Rural residents' relatively low education level and low economic level make them lack of understanding of digital finance inclusion. Urban residents benefit from factors such as geographical location, educational level and economic strength, and have a deeper understanding of digital finance inclusion, thus promoting the employment level of urban and rural areas;

On the other hand, the difference in Internet use between urban and rural areas. Statistically, according to the statistics of China Internet Network Information Center, as of December 2021, the gap between Internet penetration in urban and rural areas in China had narrowed from 23.9% in 2020 to 19.1%. Although the gap in Internet penetration between urban and rural areas is gradually narrowing, in reality, the difference of nearly 35% between the scale of urban Internet users and rural Internet users is still an important factor restricting the gap in Internet use between urban and rural areas.

In terms of national policies, we also need to continue to promote the strategy of rural revitalization, promote the sustainable development of digital finance inclusion in terms of coverage, depth of use and degree of digital support, enhance the educational level and professional and technical capacity of rural population, and reduce the imbalance of economic development between urban and rural areas.

Conclusion

Through the above research, the results show that digital financial inclusion can significantly and actively stimulate employment in the tertiary industry/service industry; Digital financial inclusion has a more significant positive impact on the employment of urban residents; Relatively speaking, digital financial inclusion is more conducive to the employment of highly educated personnel, not conducive to the employment of low-level education personnel; Digital financial inclusion promotes economic growth and is more conducive to achieving common prosperity.

China's experience in the development of digital finance inclusion can be used for reference by other developing countries.

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