

## **Digital Service Trade Exports, Expanding Domestic Demand, and Improving Subjective Welfare Levels**

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**Abstract:** In order to better leverage the impact of exports on domestic demand and the subjective welfare level of residents, this article systematically studies the mechanism by which digital service trade exports expand domestic demand and improve subjective welfare levels by increasing household income or employment. Through matching UNCTAD and CFPS data, empirical research has found that digital service trade exports significantly expand domestic demand and improve residents' subjective welfare levels, and the effectiveness of the intermediate impact mechanism has been verified. Meanwhile, the promotion effect of digital service trade exports on service consumption is greater than that on physical consumption. From the perspective of physical consumption segmentation, the promotion effect of digital service trade exports on household equipment and daily necessities consumption is greater than that on clothing, shoes and hats consumption and food consumption. From the perspective of service consumption segmentation, the promotion effect of digital service trade exports on residents' cultural, educational, and entertainment consumption is greater than that on transportation and communication consumption and education consumption, but has no significant effect on healthcare consumption. At the same time, the impact of expanding physical consumption on the subjective welfare level of residents through the export of digital service trade is greater than the impact of expanding service consumption on the subjective welfare level of residents. Therefore, this article proposes that we should make good use of the comparative advantage of digital service trade exports to expand domestic demand and enhance people's well-being, thereby contributing to accelerating the formation of a new

development pattern with domestic circulation as the mainstay and connecting domestic and international circulations, and continuously improving people's happiness.

**Keywords:** Digital Service Trade Export; Expand Domestic Demand; Improvement of Subjective Welfare Level; Service Consumption; Physical Consumption

### **1. Introduction**

China emphasizes that expanding domestic demand should be given top priority. In the face of the complex international environment, expanding domestic demand is an inevitable requirement for the Chinese economy to better cope with the profound changes in the international environment in the unprecedented global changes. It is an important strategy to stabilize the Chinese economy and effectively respond to external risks and challenges. China cannot engage in construction behind closed doors. We need to expand domestic demand and fully leverage the role of opening up to the outside world to boost domestic demand. However, existing literature mainly focuses on the impact of income inequality and related policies on consumption, with little in-depth analysis from the perspective of opening up to the outside world. Although Qu Fengjie, Yang Yunjie, and others have also discussed the issue of external demand driving domestic demand, they have not addressed the role of digital service trade exports in expanding domestic demand in the context of the digital economy [1,2]. As the largest developing country in the world, China focus on digital economic development, digital service trade has virtualization, platformization, inclusiveness, personalization, ecologicalization, and globalization characteristics that traditional service trade does not have. Since 2018, it has achieved a negative to positive export advantage in digital service trade, significantly

reducing China's traditional service trade deficit. In 2023, China's digital service trade export surplus reached 44.947 billion US dollars, reducing the service trade deficit to 170.874 billion yuan. China's WeChat has become an important online social platform in Bhutan and Malaysia; Alipay is widely used in Japan, South Korea, etc; Tiktok is listed in the United States; Kwai is popular in Russia, South Korea, etc; Baidu Maps covers 209 countries and regions, with a global road network covering over 70 million kilometers. It supports 52 languages and the Beidou satellite navigation and location service industry has entered a stage of global development. These characteristics are clear reflections of China's gradually emerging advantages in digital service trade exports. Therefore, this article innovatively studies the impact of China's digital service trade exports on expanding domestic demand and enhancing people's well-being, in order to contribute to the construction of a new development pattern in China that is dominated by the domestic circulation and effectively connects the domestic and international circulations, in order to continuously improve people's well-being. The literature related to this article can be roughly divided into three aspects. Firstly, relevant literature on digital service trade. Domestic and foreign scholars have defined digital service trade. Borga & Koncz first proposed the concept of digital service trade, which was further defined by Turgeon et al as services supported by information and communication technology [3,4]. Grimm divides digital trade into information and communication services, potential information and communication empowerment services, and non information and communication empowerment services [5]. Chinese scholars Jia Huaiqin and Liu Nan proposed the concept of digital actual delivery services, using the expression "digital technology has integrated services" [6]. Jia Huaiqin et al. summarized the measurement methods of digital trade [7]. The Department of Service Trade and Commercial Services of the Ministry of Commerce released the "China Digital Service Trade Development Report 2018", defining digital trade as: digital trade that excludes the digitization of goods trade. Sheng Bin and Gao Jiang compared the different characteristics of digital goods trade and digital services trade, and pointed out that digital technology will enable global trade to

enter a new era of digital trade after experiencing the traditional trade and value chain trade era [8]. Lv Yanfang et al. believe that global digital service trade relies on networks with significant agglomeration effects, and there is a noticeable dynamic delay in reciprocal trade relationships [9]. Based on the important role of the digital economy, scholars at home and abroad have also studied the significant impact of digital trade on economic growth, traditional trade, and carbon reduction. Among them, Simon Abendin & Pingfang Duan found that the digital economy has promoted trade and economic growth in Africa [10]. Abeliatsky & Hilbert clarify that the quality and quantity of a country's digital communication technology have a greater impact on exports in developing countries than in developed countries [11]. With the help of the Internet, digital trade can transform the traditional trade in goods and services, and can introduce relevant policies to promote the development of digital trade [12]. Conduct research on digital service trade in the United States and clarify the latest developments in digital service trade [13]. Digital service trade can promote social equity and inclusive growth [14]. Chinese scholars Han Jing et al. found that the development of digital service trade has a positive impact on carbon emissions reduction through economies of scale, structural effects, and technological effects [15]. After measuring the characteristics of the global digital service trade network, Lv Yanfang et al. found that there is a trend of "globalization regionalization globalization" in the two trade clusters of Asia Pacific and Europe, with the United States and the United Kingdom as the central economies [16]. Based on the role of digital service trade platforms, Qi Junyan and Qiang Huajun emphasize the importance of reducing barriers to digital service trade for the development of China's service trade [17].

Secondly, relevant literature on expanding consumption. Current research mainly focuses on income inequality and the impact of related policies. Domestic scholars Sun Weizeng et al. found that location oriented policies in development zones have a promoting effect on total consumption, lifestyle consumption, housing consumption, and children's education consumption of urban residents [18]. The same group effect has a significant impact on the visibility consumption of clothing, mobile

phones, and other items among households in mega cities, while low - and middle-income families face greater competition pressure from the same group in education consumption (Song Ze & Zou Hong) [19]. Urban households in our country are affluent, but the proportion of food and household goods consumption has decreased. Meanwhile, the increase in the total proportion of housing consumption has squeezed other consumption and increased the pressure of wage increases [20]. In the process of expanding domestic demand, China is facing a structural imbalance contradiction of total demand concentrating on the service industry and total supply tilting towards the manufacturing industry [21]. Compared with low-income families, high-income families are more susceptible to the influence of current and non current assets [22]. Some scholars have also compared the consumption differences between China and European and American countries, and found that China's consumption tendency is not significantly different from the international level, and is close to the consumption tendencies of Japan, South Korea in East Asia. It is about 10 percentage points lower than the United States, Germany, the United Kingdom, France, and other countries [23]. Over the past 30-40 years, economic inequality has intensified in high-income countries. High income families are increasingly affected, and income inequality determines their energy consumption [24]. The third aspect is related the research on subjective welfare. This literature mainly focuses on three levels: individuals, families, and society [25]. Shen Kunrong & Zhang Ruimin pointed out that the platform economy can increase the income and subjective welfare of flexible workers by improving employment matching and social capital [26]. Diener pointed out based on Campbell that happiness, as an overall evaluation of one's on living conditions, is a positive emotional experience [27,28]. Subjective welfare is an important method for evaluating residents' living standards. The subjective well-being of the previous household head has a positive promoting effect on the per capita consumption of the current household [29]. Since the 1990s, some scholars have linked the study of subjective welfare with the digital economy. For example, Robert et al. made it clear that the Internet will reduce people's social interaction and increase their sense of loneliness

[30]. Campante et al. found that the Internet will affect policy participation, and new participants will use the Internet to attract voters [31]. Zhou Shuo and Zhang Wentao also clearly pointed out that the Internet will improve people's job satisfaction, but will reduce their life satisfaction [32].

Compared with existing literature, the innovation of this article mainly lies in three aspects. Firstly, the existing new trade theory reveals the impact of exports on improving the production efficiency of enterprises. This article innovatively demonstrates the promoting effect of exports on consumption, providing an opportunity for China to better leverage its comparative advantage in digital service trade exports in the new era, expand domestic demand, and achieve external demand driving domestic demand, in order to contribute to the new development pattern of promoting domestic and international circulations through the domestic circulation as the main body. Secondly, based on the study of the impact of expanding domestic demand through exports, this article innovatively extends the research to improve the subjective welfare level of residents, providing a feasible path for China to further explore ways to improve people's livelihoods and enhance their well-being. At the same time, based on theoretical research on the mechanism of expanding domestic demand and improving residents' subjective welfare level through digital service trade exports, this article empirically verifies its practical effects, providing policy recommendations for China to utilize the comparative advantage of digital service trade from negative to positive in the digital economy era to expand domestic demand and enhance people's livelihood.

In the second part of this article, the theoretical mechanism of expanding domestic demand and enhancing subjective welfare through digital service trade exports will be studied; Conduct empirical verification of this theoretical mechanism in the third and fourth parts; Conduct intermediate impact mechanism testing in the fifth section; Summarize and propose relevant policy recommendations in the final section.

## **2. Heoretical Analysis and Hypothesis Formulation**

According to neoclassical international trade theory, exports promote international division

of labor, obtain trade benefits, increase the income of domestic exporters, and increase employment. Based on the New-New Trade Theory, this article explores the mechanism by which exports expand consumption and improve residents' subjective well-being and proposes two theoretical hypotheses.

### **2.1 Digital Service Trade Exports, Household Income, Expanding Domestic Demand, and Subjective Welfare of Residents**

When a country's exports increase, domestic demand will be expanded by the feedback effect of external demand, which will affect the growth of the domestic demand market by the local market effect and the upgrading of consumer demand [33,34]. The current strategy for China to participate in international digital service trade export competition must be based on the open economy strategy of the domestic market, with the expansion of the domestic market scale, the "import" of innovative factors, and the reform of government system and mechanism as the basis. These effects have clarified the expansion of demand for digital service trade exports, deeply integrating domestic demand markets with global markets, and reshaping China's new advantages in an open economy under the pattern of economic globalization. China is a developing country with a middle-income group of 400 million. The local market effect of digital service trade exports can increase household income, expand domestic demand for final products, and improve product quality [35]. Usually, we believe that exports expand domestic demand through an increase in household income, where domestic demand mainly refers to consumer demand [36]. The comparative advantage of China's digital service trade exports in the international market can be effectively transmitted through the benefits of export trade. On the basis of increasing household income, it promotes the structural reform of China's domestic supply side, gradually providing more high-quality products that are suitable for sale in the domestic market, better meeting consumer needs, and thereby improving the subjective welfare level of residents. Therefore, the export of digital service trade can expand the market size and promote the upgrading of consumer demand. This upgrade in consumer demand is driven by the driving force of product upgrades) [37]. Therefore, the

international market opened up by digital service trade exports will further expand the scale and scope of the international market, enabling residents with increased household income to seek diversified product consumption. The diversified demands of consumers in the market will encourage more knowledge spillovers, technology spillovers, and human capital spillovers generated by digital service trade exports to drive domestic enterprises to provide more diversified products. These diversified products have higher added value than traditional service trade products, which can significantly increase household income. In the process of expanding diversified product consumption, residents can also improve their subjective welfare level. Therefore, this article proposes theoretical hypothesis 1.

Theoretical hypothesis 1: the export of digital services promotes the increase of household income, expands domestic demand, and improves the subjective welfare level of residents.

### **2.2 Digital Service Trade Exports, Increasing Employment, Expanding Domestic Demand, and Subjective Welfare of Residents**

The export of digital services has increased employment opportunities [38]. The traditional way of foreign trade has less and less obvious role in promoting the export of SMEs. The rise of digital services based on Internet technology has enabled export enterprises to gain new channel advantages. If we look at the traditional process of a product from a Chinese factory to a foreign consumer, it usually goes through five stages: factory exporter wholesaler retailer consumer. However, now digital service trade exports have simplified this chain from the factory to the consumer. This small amount and fast frequency of digital service trade exports significantly reduces the transaction costs of enterprise exports, opens up international markets with new means, and drives more small and medium-sized manufacturing enterprises to export [39]. The growth of digital service trade exports can facilitate the two-way flow of capital, technology, talent, and goods in the domestic market, and in the process of providing high-quality products overseas, make good use of the export market, and increase employment [40]. The employment opportunities brought by the export of digital service trade provide more opportunities for

simple labor practitioners to receive training and produce higher quality products, improving their personal skills through the process of "learning by doing". It plays a good role in promoting the cultivation of human capital, enabling China's domestic market to continuously improve its mid to high end production factors on the basis of low-end production factors, accumulate advanced production experience, and leverage the endogenous foreign trade development mechanism of the domestic large market [40]. The multiplier effect generated by the upstream and downstream industries of foreign trade can fully leverage the role of digital service trade exports in driving the expansion and upgrading of domestic demand in the primary, secondary, and tertiary industries [41]. The expansion and upgrading of domestic demand can effectively form a second round of production follow-up, cultivate more talents from unskilled labor to skilled labor, enable talents to obtain better job opportunities, better education, and thus improve subjective welfare levels [42]. Meanwhile, online shopping for digital service trade exports also contributes to improving consumer happiness [43]. Therefore, the expansion of domestic demand mainly relies on the improvement of the technological level, quality level, and brand awareness of digital service trade exporters, so that consumers can enjoy high-quality and high priced products while improving their subjective welfare level. Therefore, this article proposes theoretical hypothesis 2.

Theoretical hypothesis 2: digital service trade exports promote employment, expand domestic demand, and improve residents' subjective welfare levels.

### 3. Data Explanation and Measurement Model Setting

#### 3.1 Data Explanation

The data used in this empirical study are all from the China Family Panel Studies (CFPS) database, including data from five years: 2010, 2012, 2014, 2016, and 2018. The export data of digital service trade comes from UNCTAD. The per capita GDP data of each province comes from the National Statistical Yearbook. Internet broadband access data comes from the International Telecommunication Union.

#### 3.2 Measurement Model Setting

$$\text{consumption}_{ijt} = \alpha_0 + \alpha_1 \text{digitalservice}_{ijt} + \gamma_{ijt} + \varepsilon_i + \psi_t + \delta_{ijt} \quad (1)$$

$$\text{swe}_{ijt} = \beta_0 + \beta_1 \text{digitalservice}_{ijt} * \text{consumption}_{ijt} + \zeta_{ijt} + \mu_t + \nu_i + \eta_{ijt} \quad (2)$$

This article studies the impact of digital service trade exports on expanding domestic demand and subjective welfare, and constructs models (1) and (2). In model (1), it represents physical consumption based on households, including food consumption, clothing and footwear consumption, household equipment and daily necessities consumption; Service oriented consumption: including healthcare consumption, transportation and communication consumption, cultural and educational entertainment consumption, and education consumption. Refers to the export of digital service trade, represented by the interaction term between China's digital service trade export value published by UNCTAD and the "Internet access" in CFPS household survey data. Answer 'yes' to 'whether you are online', defined as 1, and 'no', defined as 0. Representing control variables at the individual, family, and regional levels. Representing fixed effects in households; Indicates the fixed effect of the year. Representing random residuals, standard errors cluster at the household level. In Model (2), subjective welfare is represented and measured using three questions from CFPS, namely how happy you feel (with values ranging from 0 to 10); How confident are you in your future prospects (with values ranging from 0 to 5); How much do you think you can score in terms of interpersonal skills (with values ranging from 0 to 10). It is the interaction term between digital service trade exports and household consumption, measuring the impact of digital service trade exports on household consumption and subjective welfare of residents; Representing control variables at the individual, family, and regional levels. Representing fixed effects in households; Indicates the fixed effect of the year. Representing random residuals, standard errors are also clustered at the household level. In the control variables, personal characteristic variables include the health status of the respondents (numerical values ranging from 0 to 7); The marital status of the head of household (numerical values are: married 1; unmarried 0); Age of the head of household. Family characteristic variables include the highest education level of the father, the highest education level of the mother, the

number of family members, household registration (non-agricultural household registration 1; agricultural household registration 0), household income, cash and total deposits. Regional characteristic variables include provincial per capita GDP and Internet broadband access. To avoid missing variables, this article follows the approach of Zhang Xun et al. [43] and adds a square term for the age of the household head.

### 3.3 Endogeneity Processing

This article uses the Hausman test to conduct an endogeneity test on the explanatory variables of model (1), with a P-value of 0, indicating the existence of endogeneity. The article analyzed the export value of digital service trade in various countries around the world in 2010, 2012, 2014, 2016, and 2018 (data source: UNCTAD), and found that the top 40 countries accounted for more than 90%, which is representative of the world's digital service trade export value. Drawing on the method proposed by Zhang Xun et al., this paper uses the mean of the product of the spherical distance between each household's corresponding provincial capital in CFPS and the bandwidth of these 40 countries (data source: International Telecommunication Union) as an instrumental variable[43]. Meanwhile, considering the comparative advantages of the United States, the United Kingdom, and Germany in global digital service trade exports, this article also selects the average product of the spherical distance from the provincial capital of each household to the capital cities of the United States, Britain, and Germany and the bandwidth of the United States, Britain, and Germany as another instrumental variable. At the same time, to avoid missing variables, this paper also adds provincial per capita GDP variables and Internet broadband access terminal variables at the regional level.

This article focuses on the effects of digital service trade exports on expanding domestic

demand and enhancing subjective welfare. According to model (1), fixed effects analysis was conducted using both household and yearly methods. Considering the presence of zero consumption in the household consumption sample, a Tobit model is used for robustness testing. To eliminate endogeneity issues, this article conducted 2SLS regression, and the results showed that digital service trade exports have a positive promoting effect on household consumption.

### 4. Measurement Results and Analysis

This article conducts empirical research on the types of consumer goods in Chinese households in 2010, 2012, 2014, 2016, and 2018 based on CFPS household survey data. The research focuses on physical goods consumption (including food consumption, clothing and footwear consumption, household equipment and daily necessities consumption) and service goods consumption (including healthcare consumption, transportation and communication consumption, cultural and educational entertainment consumption, and education consumption). The specific results are as follows:

#### 4.1 The Impact of Digital Service Trade Exports on Expanding Domestic Demand

To better distinguish the different impacts on physical consumption and service consumption, this article conducts empirical research from two aspects: the impact of digital service trade exports on expanding physical consumption and the impact on service consumption; research on the Impact of digital service trade exports on physical consumption

According to the CFPS household survey data, the categories of consumer products for residents are classified as physical consumption, including food consumption, clothing and footwear consumption, household equipment and daily necessities consumption. The empirical results are shown in Table 1.

**Table1. Impact of Digital Service Trade Exports on Physical Commodity Consumption**

dependent variable	Tobit		2SLS	
	(1)	(2)	Phase One	Phase Two
			(3)	(4)
	Physical consumption		Digital Service Trade Export	Physical consumption
Digital Service Trade Export	3.01e-13*** (2.27e-14)	3.43e-13*** (2.48e-14)		3.13e-12*** (5.78e-13)
The average distance between the provincial capital			2.1406***	

and the top 40 countries multiplied by the bandwidth of the top 40 countries				
			(0.5473)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.5285***	
			(0.0842)	
Father's highest education level	0.0052***	-0.0012	1.54e+09	-0.0063
	(0.0018)	(0.0017)	(1.05e+09)	(0.0043)
Mother's highest education level	0.0025	-0.0035**	3.43e+09***	-0.0078*
	(0.0017)	(0.0016)	(1.10e+09)	(0.0043)
Number of family members	0.0457***	0.0356***	-1.84e+10***	0.1171***
	(0.0039)	(0.0038)	(3.10e+09)	(0.0174)
household registration	-0.2457***	-0.2233***	-1.67e+10	0.0160
	(0.0162)	(0.0170)	(1.71e+10)	(0.0623)
health condition	0.0478***	0.0163***	-3.36e+09	0.0433***
	(0.0050)	(0.0036)	(2.76e+09)	(0.0097)
Household income (logarithmic)	0.3485***	0.3751***	2.67e+09	0.1612***
	(0.0095618)	(0.0072)	(4.68e+09)	(0.0207)
Per capita GDP of provinces (logarithmic)	0.2673***	0.3669***	-1.59e+11***	0.3812***
	(0.0191)	(0.0200)	(4.28e+10)	(0.1011)
Internet broadband access port	-3.36e-10	2.08e-09***	704.6697	-1.65e-09
	(4.74e-10)	(4.75e-10)	(479.6593)	(2.06e-09)
Household head's marital status	0.1114***	0.0931***	1.87e+10	0.0280
	(0.0366)	(0.0332643)	(1.91e+10)	(0.0840684)
Age of head of household				
Total amount of cash and deposits				
Family fixed effect	yes			yes
Fixed year effect	yes			yes
Phase I F-statistic				24.5000
Hansen test - P value				0.8664
Number of variables	12,282	12,282		7,520

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

The regression results in Table 1 indicate that digital service trade exports have a positive promoting effect on physical consumption. We further validated this result using model (2) Tobit regression. At the same time, this article uses the average of the product of the spherical distance and bandwidth of the top 40 countries in China's digital service trade exports in 2010, 2012, 2014, 2016, and 2018 by provincial capitals as an instrumental variable, and uses the average of the product of the spherical distance and bandwidth of the United States, Britain, and Germany by provincial capitals as another instrumental variable for two-stage least squares (2SLS) regression analysis. In two-stage least squares regression, the F-statistic values of weak instrumental variables in the first stage test are all greater than 10, indicating that the instrumental variables meet the correlation requirements; The Hansen

statistics for testing exogeneity are all greater than 0.1, which cannot reject the null hypothesis that the instrumental variable satisfies exogeneity, indicating the validity of the instrumental variable. From the perspective of controlling variables, there is a positive correlation between the number of family members, health status, household income, per capita GDP of provinces, marital status of household heads, and physical consumption. Overall, the export of digital service trade is beneficial to the physical consumption of Chinese residents, expanding the consumption of agricultural and industrial products, improving people's consumption levels of food, clothing, shoes, hats, household equipment, and daily necessities, and promoting the overall improvement of the daily material living standards of the majority of residents, achieving high-quality development of traditional

consumption. Therefore, overall, the significant promotion of physical consumption by digital service trade exports indicates that China can fully utilize the policy of opening up to the outside world through digital service trade exports to help expand domestic demand, and

play a good role in promoting domestic demand through exports. In order to expand domestic demand and facilitate the construction of a unified domestic market under the new development pattern, China can make good use of opening up to the outside world.

**Table 2. Impact of Digital Service Trade Exports on Food Consumption**

dependent variable	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)
	food consumption		Digital Service Trade Export	food consumption
Digital Service Trade Export	2.42e-3*** (2.27E-14)	2.80e-13*** (2.53E-14)		3.61e-12*** (6.49e-13)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			2.1402*** (0.5398)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.5063*** (0.0823)	
Father's highest education level	0.0043** (0.0018)	-0.0010 (0.0018)	1.31E+09 (1.04E+09)	-0.0059 (0.0046)
Mother's highest education level	0.0025 (0.0017)	-0.0027 (0.0017)	3.31e+09*** (1.08E+09)	-0.0082* (0.0047)
Number of family members	0.0403*** (0.0040)	0.0315*** (0.0038)	-1.66e+10*** (3.07E+09)	0.1069*** (0.0183)
household registration	-0.2908*** (0.0169)	-0.2685*** (0.0174)	-1.60E+10 (1.71E+10)	0.0415 (0.0691)
health condition	0.0353*** (0.0053)	0.0105*** (0.0037)	-3.31E+09 (2.72e+09)	0.0456*** (0.0108)
Household income (logarithmic)	0.2827*** (0.0092)	0.3058*** (0.0073)	3.20E+09 (4.63e+09)	0.1130*** (0.0223)
Household head's marital status	0.1046*** (0.0381)	0.0956*** (0.0340)	1.76E+10 (1.89e+10)	0.0881 (0.0923)
Household head age (square)				
Total amount of cash and deposits				
Per capita GDP of provinces (logarithmic)	0.3157*** (0.0194)	0.3951*** (0.0202)	-1.54e+11*** (4.21e+10)	0.2873** (0.1120)
Internet broadband access port	1.41e-10 (4.71e-10)	2.21e-09*** (4.81e-10)	724.2683 (464.0499)	-2.19e-09 (2.26e-09)
Family fixed effect	yes		yes	yes
Fixed year effect	yes		yes	yes
Phase I F-statistic				23.9100
Hansen test - P value				0.6444
Number of variables	12,663		12,663	7846

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

According to the China Family Panel Studies (CFPS) database, physical consumption is specifically divided into food consumption, clothing and footwear consumption, household equipment and daily necessities consumption. Therefore, this article further demonstrates the impact of digital service trade exports on the consumption of food, clothing, footwear, household equipment, and daily necessities. The specific results are as follows:

4.1.1 Research on the impact of digital service trade exports on food consumption  
From the regression results in Table 2. the fixed effects of Model (1) indicate that the export of

digital service trade is beneficial for increasing household food consumption. This effect was also validated in Tobit model (2).The regression results of the first and second stages of the two-stage least squares method indicate a significant positive correlation between the instrumental variable and the explanatory variable, respectively; At the same time, the export of digital service trade positively promotes the increase of household food consumption, which is consistent with the fixed effects of model (1) and the Tobit results of model (2), indicating the robustness of the regression results. At the same time, this article controls for variables

such as the number of family members, health status, household income and marital status of the head of the household, and per capita GDP and food consumption in the province, which are positively correlated; It is inversely proportional to household registration. The above empirical results indicate that China's digital service trade exports have a positive impact on residents' food consumption, which can promote an increase in demand for daily necessities. Based on the requirements of continuously improving traditional consumption in the "Outline of the Strategic Plan for Expanding Domestic Demand (2022-2035)", the empirical results in Table 2 show that the use of digital service trade exports can further improve the food consumption of the vast majority of Chinese residents and is an effective path to promote the high-quality development of consumption in China.

4.1.2. Research on the impact of digital service trade exports on clothing, shoes, and hats consumption

From the regression results in Table 3. It can be seen that the export of digital service trade has a positive promoting effect on clothing, shoes, and hats consumption, and the impact is slightly greater than that on food consumption. The Tobit test of model (2) also confirmed this regression result. Meanwhile, similar to Table 3, Table 4 also uses two-stage least squares method to validate the results of models (1) and (2). The results of the first stage regression (Model 3) and the second stage regression (Model 4) of the two-stage least squares method further verify that the export of digital service trade significantly promotes the consumption of clothing, shoes, and hats by Chinese residents, and both endogeneity and robustness tests are effective. Observing the control variables, it can be seen that the consumption of clothing, shoes, and hats is positively correlated with the number of family members, health status, household income, and per capita GDP of the province; It is negatively correlated with the household registration, Internet broadband access port and the age of the head of household. Summarizing the empirical results in Table 4. It fully verifies the positive impact

of digital service trade exports on the consumption of clothing, shoes, and hats by Chinese residents. That is, digital service trade exports are conducive to increasing the consumption of clothing, shoes, and hats by Chinese residents, similar to expanding the consumption of essential goods such as food, and are also an important manifestation of continuously improving traditional consumption in China.

4.1.3 The impact of digital service trade exports on promoting household equipment and daily necessities consumption.

From the impact of digital service trade exports on household equipment and daily necessities consumption in Table 4. it can be seen that similar to food consumption and clothing, shoes, and hats consumption, there is also a significant positive promotion effect, and the impact coefficient is greater than that of food consumption and clothing, shoes, and hats consumption. The Tobit regression of model (2) and the two-stage least squares regression of models (3) and (4) also fully demonstrate the robustness of empirical results and the effectiveness of endogeneity treatment. Observation and control variables: Household equipment and daily necessities consumption are positively correlated with the father's highest education level, number of family members, health status, household income, per capita GDP of the province, and total cash and savings; Negative correlation with household registration. Unlike food, clothing, shoes, and hats, household appliances and daily necessities include some durable consumer goods, such as refrigerators, televisions, washing machines, air conditioners, and other physical goods with longer consumption cycles, relatively greater elasticity, and relatively higher amounts of money. The promotion effect of digital service trade exports on household equipment and daily necessities consumption is more significant in expanding current consumption and boosting consumer confidence. For example, the "Implementation Measures for the Trade in of Home Appliances" is one of the important measures launched by China to promote current consumption through household devices.

**Table 3. The Impact of Digital Service Trade Exports on Clothing, Shoes, and Hats**

dependent variable	Consumption			
	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)

	Clothing, shoes, and hats consumption		Digital Service Trade Export	Clothing, shoes, and hats consumption
Digital Service Trade Export	3.49e-13*** (3.19e-14)	3.67e-13*** (3.18e-14)		1.87e-12*** (4.86e-13)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			3.5618*** (0.7863)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.5942*** (0.1000)	
Father's highest education level	0.0012 (0.0025)	-0.0085*** (0.0024)	2.57e+09* (1.34e+09)	-0.0069 (0.0049)
Mother's highest education level	0.0077*** (0.0023)	-0.0038* (0.0022)	4.27e+09*** (1.37e+09)	-0.0091* (0.0047)
Number of family members	0.0251*** (0.0054)	0.0154*** (0.0052)	-1.67e+10*** (3.94e+09)	0.0672*** (0.0179)
household registration	-0.1695*** (0.0237)	-0.1657*** (0.0231)	-1.82e+10 (2.07e+10)	-0.0554 (0.0679)
health condition	0.0519*** (0.0068)	0.0192*** (0.0051)	-4.56e+09 (3.47e+09)	0.0446*** (0.0112)
Household income (logarithmic)	0.3957*** (0.0124)	0.4382*** (0.0101)	1.91e+08 (5.82e+09)	0.2268*** (0.0240)
Per capita GDP of provinces (logarithmic)	0.1556*** (0.0294)	0.3147*** (0.0273)	-2.05e+11*** (5.11e+10)	0.7237*** (0.1018)
Internet broadband access port	-4.68e-09*** (6.75e-10)	-1.50e-09** (6.26e-10)	541.0981 (586.0284)	-2.23e-09 (2.23e-09)
Household head's marital status	0.0655*** (0.0469)	0.0201 (0.0467)	4.36e+10* (2.56e+10)	0.0103 (0.1010)
Age of head of household	-0.00003*** (4.24e-06)	-0.00004*** (3.82e-06)	5303583 (2513991)	-0.00001** (8.04e-06)
Total amount of cash and deposits				
Family fixed effect	yes			
Fixed year effect	yes			
Phase I F-statistic				26.3200
Hansen test - P value				0.5590
Number of variables	10,427	10,427		5683

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

**Table 4. Impact of Digital Service Trade Exports on Household Equipment and Daily Necessities Consumption**

dependent variable	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)
	Household equipment and daily necessities consumption	Digital Service Trade Export	Household equipment and daily necessities consumption	
Digital Service Trade Export	3.94e-13*** (5.08e-14)	4.07e-13*** (5.03e-14)		1.54e-12* (8.86e-13)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			3.9214*** (0.9341)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.6014*** (0.1611)	

Father's highest education level	0.0101** (0.0041)	0.0091** (0.0039)	2.56e+09 (1.95e+09)	-0.0072 (0.0098)
Mother's highest education level	0.0033 (0.0039)	0.0026 (0.0038)	2.50e+09 (1.98e+09)	-0.0023 (0.0085)
Number of family members	0.0573*** (0.0090)	0.0523*** (0.0086)	-1.27e+10** (6.06e+09)	0.0979*** (0.0330)
household registration	-0.0736** (0.0374)	-0.0600* (0.0368)	-5.05e+10* (2.77e+10)	0.0628 (0.1259)
health condition	0.0442*** (0.0113)	0.0230*** (0.0082)	-2.37e+09 (4.89e+09)	0.0094 (0.0202)
Household income (logarithmic)	0.5015*** (0.0215)	0.5017*** (0.0192)	1.55e+10 (9.57e+09)	0.2566*** (0.0523)
Per capita GDP of provinces (logarithmic)	0.1374*** (0.0443)	0.1659 (0.0445)	-1.91e+11** (8.59e+10)	0.0701 (0.2299)
Internet broadband access port	-1.22e-09 (9.94e-10)	-7.85e-10 (9.64e-10)	324.294 (929.4453)	3.19e-10 (3.84e-09)
Household head's marital status	0.0829 (0.0872)	0.0753 (0.0784)	3.45e+10 (4.09e+10)	0.0428 (0.2385)
Age of head of household				
Total amount of cash and deposits	0.0630*** (0.0100)	0.0623*** (0.0096)	5.42e+09 (5.08e+09)	-0.0073 (0.0232)
Family fixed effect				
Fixed year effect				
Phase 1 F-statistic				13.1200
Hansen test - P value				0.5141
Number of variables	7,403	7,403		3200

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

#### 4.2 The Impact of Digital Service Trade Exports on Service Consumption

Based on the classification of consumer service product categories in CFPS household survey data, healthcare consumption, transportation

and communication consumption, cultural and educational entertainment consumption, and education consumption are classified as service consumption, and empirical research is conducted. The results are shown in Table 5.

**Table 5. The Impact of Digital Service Trade Exports on Service Consumption**

dependent variable	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)
	Total service consumption		Digital Service Trade Export	Total service consumption
Digital Service Trade Export	3.47e-13*** (3.16e-14)	3.48e-13*** (3.35e-14)		1.03e-12** (5.08e-13)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			3.4350*** (0.7666)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.5706*** (0.0981)	
Father's highest education level	0.0055**	-0.0010	2.37e+09*	0.0005

	(0.0025)	(0.0025195)	(1.31e+09)	(0.0048)
Mother's highest education level	0.0049**	-0.0035	4.68e+09***	-0.0145***
	(0.0023)	(0.0023736)	(1.31e+09)	(0.0045)
Number of family members	0.1160***	0.1165***	-1.57e+10***	0.1596***
	(0.0057)	(0.0054121)	(3.85e+09)	(0.0170)
household registration	-0.2336***	-0.2377***	-1.65e+10	0.0276
	(0.0238)	(0.0239565)	(1.98e+10)	(0.0632)
health condition	0.0174**	0.0087	-3.16e+09	-0.0027
	(0.0075)	(0.0053705)	(3.33e+09)	(0.0103)
Household income (logarithmic)	0.3016***	0.3278***	-2.37e+08	0.1143***
	(0.0131)	(0.0103361)	(5.70e+09)	(0.0223)
Per capita GDP of provinces (logarithmic)	0.2930***	0.3831***	-1.92e+11***	0.8379***
	(0.0300)	(0.0281164)	(5.04e+10)	(0.1097)
Internet broadband access port	-4.41e-09***	-2.42e-09***	580.9621	-1.74e-09
	(6.65e-10)	(6.53e-10)	(573.3745)	(2.04e-09)
Household head's marital status	0.0485	0.0282	2.89e+10	0.1370
	(0.0497)	(0.0476844)	(2.53e+10)	(0.0995)
Age of head of household	-0.00002***	-	4996899*	-5.67e-06
	(4.57e-06)	(3.93e-06)	(2443726)	(7.52e-06)
Total amount of cash and deposits				
Family fixed effect	yes			yes
Fixed year effect	yes			yes
Phase 1 F-statistic				25.24
Hansen test - P value				
Number of variables	10,637	10,637		5,824

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

The empirical results in Table 5 indicate that digital service trade exports have a positive promoting effect on service consumption, which is slightly greater than physical consumption. Model (2) Tobit regression validated this effect. The two-stage least squares method demonstrated the effectiveness of endogeneity treatment. From the perspective of controlling variables, the number of family members, health status, and household income are positively correlated with service

consumption and negatively correlated with household registration. The degree to which the export of digital service trade expands service consumption is greater than that of physical consumption, indicating that the impact of opening up to the outside world on the service consumption of Chinese residents is greater than that on physical consumption, that is, the consumption of spiritual products is more susceptible to the influence of the international market.

**Table 6. Impact of Digital Service Trade Exports on Healthcare Consumption**

dependent variable	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)
	Healthcare consumption		Digital Service Trade Export	Healthcare consumption
Digital Service Trade Export	-2.39e-14 (4.97e-14)	-3.86e-15 (5.06e-1)		1.12e-12 (7.71e-13)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			4.2365*** (0.8089)	

The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.5193***	
			(0.1109)	
Father's highest education level	0.0031	-0.0018	1.71e+09	-0.0056
	(0.0038)	(0.0037)	(1.40e+09)	(0.0076)
Mother's highest education level	0.0021	-0.0026	3.86e+09***	-0.0057
	(0.0036)	(0.0034)	(1.43e+09)	(0.0072)
Number of family members	0.1460***	0.1381***	-1.49e+10***	0.1608***
	(0.0084)	(0.0080)	(4.10e+09)	(0.0263)
household registration	-0.2016***	-0.1910***	-1.55e+10	0.0725
	(0.0354)	(0.0355)	(2.14e+10)	(0.1019)
health condition	-0.0576***	-0.0779***	-3.07e+09	-0.0513***
	(0.0112)	(0.0079)	(3.50e+09)	(0.0182)
Household income (logarithmic)	0.1703***	0.1968***	2.57e+09	0.0222
	(0.0178)	(0.0152)	(6.16e+09)	(0.0365)
Per capita GDP of provinces (logarithmic)	0.158548***	0.2299***	-2.06e+11***	0.2837*
	(0.043863)	(0.0412)	(5.75e+10)	(0.1538)
Internet broadband access port	-5.68e-09***	-3.82e-09***	633.3027	-9.44e-10
	(9.82e-10)	(9.63e-10)	(617.1477)	(3.17e-09)
Household head's marital status	-0.0901	-0.0760	4.52e+10*	0.1887
	(0.0754)	(0.0709)	(2.44e+10)	(0.1682)
Age of head of household	0.00002***	0.00001**	6686120	0.00001
	(6.37e-06)	(5.78e-06)	(2585678)	(0.00001)
Total amount of cash and deposits				
Family fixed effect				
Fixed year effect				
Phase I F-statistic				22.4300
Hansen test - P value				0.2355
Number of variables	9,752	9,752		5,062

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

According to the China Family Panel Studies (CFPS) database, service consumption is specifically divided into healthcare consumption, transportation and communication consumption, cultural and educational entertainment consumption, and education consumption. Therefore, this article further demonstrates the impact of digital service trade exports on healthcare consumption, transportation and communication consumption, cultural and educational entertainment consumption, and education consumption. The specific results are as follows:

4.2.1 The Impact of Digital Service Trade Exports on Promoting Healthcare Consumption  
Unlike physical consumption of food, clothing, shoes, hats, household equipment, and daily necessities, we found that the impact of digital service trade exports on healthcare consumption is not significant, indicating that digital service trade exports do not have a significant impact on healthcare consumption in China. For

control variables, there is a positive correlation between healthcare consumption and the number of family members, household income, and the age of the head of the household; it is negatively correlated with household registration, health status, and internet broadband port access. At the same time, this article conducted Tobit regression and a two-stage least squares test, and only the first stage showed a positive correlation with the two instrumental variables, while the second stage had no direct impact on healthcare consumption. From the empirical results in Table 6, it can be seen that the export of digital service trade does not have a significant effect on the increase of healthcare consumption.

4.2.2 The impact of digital service trade exports on transportation and communication service consumption

It can be clearly seen from Table 7 that the export of digital service trade has a positive promoting effect on transportation and

communication consumption. The results of this article have been validated by both the fixed effects of model (1) and the Tobit regression of model (2). The robustness of the regression results and the effectiveness of endogeneity treatment can be seen from the results of the two-stage least squares method in models (3) and (4). By observing the control variables, we can see that the consumption of transportation and communication is positively related to the highest education background of the mother, the number of family members, health status, family income, per capita GDP of the province and the marital status of the head of household, and negatively related to the number of household registration, Internet wide port access, and the age of the head of household. This empirical result indicates that the export of digital service trade is conducive to enhancing communication and business exchanges between people, and transportation and communication consumption has significantly increased. As a service consumption, transportation and communication consumption can also meet consumers' spiritual needs.

#### 4.2.3 The impact of digital service trade exports on cultural, educational, and entertainment consumption

Based on the regression results in Table 8, the export of digital service trade has a positive promoting effect on cultural, educational, and

entertainment consumption. This conclusion was further validated in the Tobit regression results of model (2). Consistent with the previous text, models (3) and (4) were also tested using two-stage least squares method, and the empirical results were robust, indicating that endogeneity treatment was effective. Observe the control variables and find that cultural, educational and entertainment consumption is positively related to the number of family members, health status, family income, and provincial per capita GDP, and negatively related to household registration, Internet wide port access, and the age of the head of household. Cultural, educational, and entertainment consumption, as an important component of service consumption, is a significant manifestation of the improvement of residents' living standards. According to Chinese policy, which proposes the goal of developing advanced culture and enhancing the country's cultural soft power, the importance of the cultural, educational, and entertainment industries is increasingly prominent in achieving common prosperity. The empirical research in this article shows that the export of digital service trade can significantly enhance China's cultural, educational, and entertainment consumption, promote residents' service consumption to a new level, and achieve high-quality development.

**Table 7. Impact of Digital Service Trade Exports on Transportation and Communication Consumption**

dependent variable	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)
	Transportation and communication consumption	Digital Service Trade Export	Transportation and communication consumption	
Digital Service Trade Export	3.13e-13*** (2.95e-14)	3.22e-13*** (3.16e-14)		1.23e-12** (5.10e-13)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			3.4389*** (0.7706)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.5337*** (0.0995)	
Father's highest education level	-0.0005 (0.0023)	-0.0061** (0.0023)	2.20e+09* (1.31e+09)	-0.0041 (0.0045)
Mother's highest education level	0.0062***	-0.0012	4.53e+09***	-0.0100**

	(0.0023)	(0.0022)	(1.32e+09)	(0.0044)
Number of family members	0.0676***	0.0608***	-1.53e+10***	0.0973***
	(0.0054)	(0.0051)	(3.85e+09)	(0.0164)
household registration	-0.1180***	-0.1202***	-1.29e+10	-0.0015
	(0.0234)	(0.0228)	(1.99e+10)	(0.0603)
health condition	0.0619***	0.0387	-3.24e+09	0.0393***
	(0.0070)	(0.0050)	(3.35e+09)	(0.0102)
Household income (logarithmic)	0.36153***	0.3767***	4.05e+08	0.1557***
	(0.0129)	(0.0099)	(5.75e+09)	(0.0220)
Per capita GDP of provinces (logarithmic)	0.2537***	0.3607***	-1.73e+11***	0.7526***
	(0.0282)	(0.0269)	(5.19e+10)	(0.1087)
Internet broadband access port	-2.84e-09***	-1.02e-09	578.9205	-4.13e-09**
	(6.11e-10)	(6.20e-10)	(572.8797)	(1.97e-09)
Household head's marital status	0.1364***	0.1137**	2.85e+10	0.1279
	(0.045342)	(0.0452)	(2.51e+10)	(0.0976)
Age of head of household	-0.00003***	-0.00004***	5069485**	-0.00001*
	(4.51e-06)	(3.73e-06)	(2451024)	(7.49e-06)
Total amount of cash and deposits				
Family fixed effect	yes	yes		yes
Fixed year effect	yes	yes		yes
Phase 1 F-statistic				22.6300
Hansen test - P value				0.5435
Number of variables	10,690	10,690		5849

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

**Table 8. The Impact of Digital Service Trade Exports on Cultural, Educational, and Entertainment Consumption**

dependent variable	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)
	Cultural, educational, and entertainment consumption		Digital Service Trade Export	Cultural, educational, and entertainment consumption
Digital Service Trade Export	3.63e-13***	3.83e-13***		1.95e-12**
	(4.91e-14)	(5.02e-14)		(7.72e-13)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			3.7637***	
			(0.9109)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.6793***	
			(0.1180)	
Father's highest education level	0.0041	-0.0052	2.54e+09	-0.0120
	(0.0040)	(0.0039)	(1.62e+09)	(0.0088)
Mother's highest education level	0.0037	-0.0071479*	4.31e+09***	-0.0290***
	(0.0037)	(0.0036)	(1.59e+09)	(0.0082)
Number of family members	0.0769***	0.07224***	-1.55e+10***	0.1575***
	(0.0086)	(0.0084)	(4.95e+09)	(0.0300)
household registration	-0.4076***	-0.3981637***	-1.85e+10	-0.0056
	(0.0358)	(0.0364)	(2.33e+10)	(0.1059)

health condition	0.0290*** (0.0109)	0.0022 (0.0083)	-3.53e+09 (4.06e+09)	0.0084 (0.0174)
Household income (logarithmic)	0.2868*** (0.0188)	0.3359*** (0.0162)	-6.08e+09 (7.07e+09)	0.1226*** (0.0404)
Per capita GDP of provinces (logarithmic)	0.4920*** (0.0450)	0.6155*** (0.0430)	-2.16e+11*** (6.25e+10)	1.4981*** (0.2175)
Internet broadband access port	-5.10e-09*** (1.07e-09)	-2.54e-09** (9.91e-10)	662.3672 (703.2617)	-1.29e-08*** (3.63e-09)
Household head's marital status	0.0964 (0.0742)	0.04113 (0.07408)	5.20e+10* (3.10e+10)	-0.0179 (0.1828)
Age of head of household	-0.00001* (7.43e-06)	-0.00002*** (6.28e-06)	6054663* (3059783)	2.56e-06 (0.000013)
Total amount of cash and deposits				
Family fixed effect	yes	yes		yes
Fixed year effect	yes	yes		yes
Phase 1 F-statistic				22.9500
Hansen test - P value				0.4575
Number of variables	8,954	8,954		4607

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

**Table 9. The Impact of Digital Service Trade Exports on Education Consumption**

dependent variable	FE	Tobit	2SLS	
			Phase One	Phase Two
	(1)	(2)	(3)	(4)
	education expenditure		Digital Service Trade Export	education expenditure
Digital Service Trade Export	2.86e-13*** (5.26e-14)	3.06e-13*** (5.57e-14)		3.62e-12*** (1.16e-12)
The average distance between the provincial capital and the top 40 countries multiplied by the bandwidth of the top 40 countries			2.8265*** (0.9584)	
The average distance between the provincial capital and the United States, Britain, and Germany multiplied by the bandwidth of the three countries			0.5958*** (0.1282)	
Father's highest education level	-0.0030 (0.0041)	-0.0122*** (0.0040)	3.04e+09* (1.68e+09)	-0.0087 (0.0109)
Mother's highest education level	0.0023 (0.0038)	-0.0094** (0.0038)	3.03e+09 (1.68e+09)	-0.0322*** (0.0097)
Number of family members	0.02635*** (0.0094)	0.01594* (0.0090)	-9.39e+09* (5.34e+09)	0.0951*** (0.0346)
household registration	-0.3228*** (0.0371)	-0.2916*** (0.0385)	--3.49e+09 (2.53e+10)	-0.0996 (0.1334)
health condition	0.0336*** (0.01129)	-0.0217** (0.0085)	-4.28e+09 (4.30e+09)	0.0198 (0.0220)
Household income (logarithmic)	0.2190***	0.27799***	-2.83e+09	0.0939*

	(0.0191)	(0.0166)	(7.35e+09)	(0.0484)
Per capita GDP of provinces (logarithmic)	0.4542***	0.6180***	-1.85e+11***	1.3215***
	(0.0471)	(0.0459)	(6.83e+10)	(0.2644)
Internet broadband access port	-1.85e-09	1.61e-09	1063.8100	-1.15e-08**
	(1.13e-09)	(1.08e-09)	(745.9877)	(4.93e-09)
Household head's marital status	0.1476*	0.0891	5.49e+10	-0.0659
	(0.0792)	(0.0766)	(3.46e+10)	(0.21160)
Age of head of household	0.00001**	-0.00001*	5102295	6.52e-06
	(7.56e-06)	(6.45e-06)	(3143675)	(0.00001)
Total amount of cash and deposits				
Family fixed effect	yes			
Fixed year effect	yes			
Phase 1 F-statistic				13.8300
Hansen test - P value				0.4018
Number of variables	7,779	7,779		3,995

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

#### 4.2.4 The impact of digital service trade exports on education consumption

Based on the regression results in Table 9, the impact of digital service trade exports on education consumption is a positive promotion effect. At the same time, the Tobit test results of model (2) also showed a significant positive effect. Similar to the previous section, this article conducted a two-stage least squares test and effectively processed endogeneity, and the results were consistent with models (1) and (2), demonstrating robustness. Meanwhile, we observed the control variables and found that education consumption is positively correlated with the number of family members, health status, household income, and per capita GDP of the province; Negative correlation with household registration. Education consumption is also one of the service consumption that

millions of Chinese families are most concerned about. As the builder of human capital theory, Schultz clearly pointed out that education investment is the most important part of human capital investment [44]. Prioritizing the development of education is a major policy. China points out the direction for building a strong educational country. From this perspective, the export of digital service trade is positively promoting the increase of residents' education consumption, which is a key measure conducive to the cultivation of innovative national scientific and technological talents in China.

### 5. Empirical Study on the Subjective Welfare Effect of Digital Service Trade Export Enhancement

**Table 10. Empirical Results of the Impact of Digital Service Trade Exports on Enhancing Subjective Welfare**

dependent variable	happiness	Have confidence in the future	Get along well with others in a friendly manner
	Ordered probit	Ordered probit	Ordered probit
Food consumption (logarithmic) * digital service trade exports	0.086424***	2.02e-14***	2.05e-14***
	(0.0144276)	(3.97e-15)	(3.73e-15)
Clothing, shoes and hats consumption (logarithmic) * Digital service trade export	2.85e-14***	2.55e-14***	2.20e-14***
	(4.85e-15)	(4.92e-15)	(4.70e-15)
Household equipment and daily necessities consumption (logarithmic) * Digital service trade export	2.82e-14***	2.62e-14***	2.11e-14***
	(4.60e-15)	(4.66e-15)	(4.46e-15)
Healthcare consumption (logarithmic) * Digital service trade exports	2.98e-14***	2.50e-14***	2.51e-14***

	(5.38e-15)	(5.42e-15)	(5.21e-15)
Transportation and communication consumption (logarithmic) * digital service trade export	2.61e-14***	2.40e-14***	2.07e-14***
	(4.54e-15)	(4.59e-15)	(4.40e-15)
Cultural, educational, and entertainment consumption (logarithmic) * Digital service trade exports	2.42e-14***	2.16e-14***	1.77e-14***
	(4.79e-15)	(4.80e-15)	(4.64e-15)
Education consumption (logarithmic) * Digital service trade exports	2.36e-14***	1.88e-14***	1.43e-14**
	(5.62e-15)	(5.58e-15)	(6.18e-15)
Total physical consumption (logarithmic) * digital service trade exports	2.38e-14***	2.08e-14***	1.85e-14***
	(3.82e-15)	(3.85e-15)	(4.15e-15)
Total service consumption (logarithmic) * Digital service trade exports	2.28e-14***	1.99e-14***	1.79e-14***
	(3.99e-15)	(4.02e-15)	(4.35e-15)

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

To study the effect of China's digital service trade exports on enhancing residents' subjective welfare, this article cites three questions from CFPS: How happy do you think you are (with values ranging from 0 to 10); how confident are you in your future prospects (with values ranging from 0 to 5); and how much do you think you can score in interpersonal relationships (with values ranging from 0 to 10) is an ordered sequence. Therefore, this article adopts ordered probit to conduct empirical research.

Based on the regression results in Table 10, it can be clearly seen that the interaction terms between food consumption (logarithmic) and digital service trade exports, clothing, shoes, and hats consumption (logarithmic) and digital service trade exports, household equipment and daily necessities consumption (logarithmic) and digital service trade exports, healthcare consumption (logarithmic) and digital service trade exports, transportation and communication consumption (logarithmic) and digital service trade exports, cultural, educational, and entertainment consumption (logarithmic) and digital service trade exports, education consumption (logarithmic) and digital service trade exports, as well as the interaction terms between aggregated physical consumption (logarithmic) and digital service trade exports, and service consumption (logarithmic) and digital service trade exports, all show significant changes. The positive promotion effect of enhancing subjective

welfare includes people feeling happier and more confident about their future and getting along well with others. This article argues that both physical consumption and service consumption can achieve the goal of enhancing the subjective welfare effect of Chinese residents by expanding domestic demand under the influence of digital service trade exports. This indicates that China's digital service trade exports have indeed achieved the goal of expanding domestic demand and improving the subjective well-being of residents.

This effect has a significant promoting effect on the formation of a new development pattern with the domestic circulation as the main body and the mutual promotion of domestic and international circulations. We must resolutely implement it and spare no effort to promote it.

## 6. Mediating Effect Analysis

The impact mechanism of expanding domestic demand and improving residents' subjective well-being through digital service trade exports can be transmitted through two mechanisms. The first intermediate impact mechanism is that the export of digital services increases the household income of Chinese residents, and through the rise in household income levels, expands physical consumption, including food consumption, clothing and footwear consumption, household equipment and daily necessities consumption, and service consumption, including healthcare consumption, transportation and communication consumption,

cultural and educational entertainment consumption, and education consumption. From the summary, China's digital service trade exports can promote both physical and service consumption by increasing household income levels. This mechanism of action has been demonstrated in the theoretical mechanism section, and here, theoretical hypotheses 1 and 2 are verified through the testing of intermediate influence mechanisms. The regression results in Table 11 indicate that China's digital service trade exports increase trade gains by leveraging international division of labor, thereby increasing household income. From the perspective of physical consumption, an increase in household income can significantly promote food consumption, allowing residents not only to have enough to eat, but also to eat healthier and more nutritious food, thereby improving people's subjective well-being; At the same time, it has also increased residents' consumption of clothing, shoes, and hats, allowing them to spend more on their attire, dressing more decently, elegantly, and reflecting their personality traits, thereby improving residents' subjective well-being; The increase in consumption of household equipment and daily necessities has led residents to spend more of their household income on decorating home appliances such as

air conditioning, television, and home theaters, allowing people to enjoy a happier life brought by high-quality homes and thus improving the subjective well-being of residents. From the perspective of service consumption, the increase in household income has led to an increase in transportation and communication expenses, allowing people to spend more time and energy on interpersonal communication, increasing the flow of people in business and daily life, promoting the vitality of the economy, enabling residents to obtain greater spiritual enjoyment in more frequent interpersonal communication, and achieving an improvement in subjective well-being; The increase in household income also leads to an increase in residents' consumption of cultural, educational, and entertainment products, allowing people to have more money to enjoy spiritual products such as cultural, educational, and entertainment. This promotes an increase in people's spiritual pleasure and is very beneficial for the improvement of residents' subjective well-being; The increase in household income provides residents with more opportunities to receive education, allowing them to enjoy better education and improve their overall quality and spiritual realm, enhance their self-worth realization, and better meet their subjective well-being.

**Table 11. Testing the Impact Mechanism of Digital Service Trade Exports with Household Income as the Intermediate Variable**

dependent variable	Digital Service Trade Export		dependent variable	household income		independent variable	happiness	Have confidence in the future	Get along well with others in a friendly manner
	FE	Tobit		FE	Tobit		Ordered probit	Ordered probit	Ordered probit
household income	3.91e-13*** (2.73E-14)	4.86e-13*** (3.08E-14)	food consumption	0.2163*** (0.0071)	0.2231*** (0.0058)	food consumption	0.1387*** (0.0131)	0.0659*** (0.0098)	0.1017*** (0.0132)
			Clothing, shoes, and hats consumption	0.2958*** (0.0091)	0.3039*** (0.0070)	Clothing, shoes, and hats consumption	0.1112*** (0.0117)	0.0707 (0.0084)	0.0993*** (0.0118)
			Household equipment and daily necessities consumption	0.3943*** (0.0120)	0.3954*** (0.0101)	Household equipment and daily necessities consumption	0.0225*** (0.0084)	0.0311*** (0.0058)	0.011 (0.0083)
			Healthcare consumption	0.1126*** (0.0112)	0.1320*** (0.0102)	Healthcare consumption	0.0097 (0.0079)	0.0004 (0.0061)	0.0006 (0.0080)
			Transportation and communication consumption	0.2884*** (0.0089)	0.2826*** (0.00680)	Transportation and communication consumption	0.0345*** (0.0104)	0.0661*** (0.0083)	0.0343*** (0.0104)
			Cultural, educational, and entertainment consumption	0.2093***	0.2269***	Cultural, educational, and entertainment consumption	0.0382***	0.0099	0.0363***

			(0.0140)	(0.0118)		(0.0083)	(0.0064)	(0.0082)
		Educational consumption	0.1607***	0.1834***	Educational consumption	0.0365***	0.0169**	0.0305***
			(0.0129)	(0.0031)		(0.0086)	(0.0069)	(0.0085)
		Total physical consumption (logarithmic)	0.2776***	0.2840***	Total physical consumption (logarithmic)	0.1496***	0.0734***	0.1090***
			(0.0077)	(0.0058)		(0.0146)	(0.0102)	(0.0145)
		Total service consumption (logarithmic)	0.2216***	0.2297***	Total service consumption (logarithmic)	0.0408***	0.0139*	0.0389***
			(0.0095)	(0.0074)		(0.0105)	(0.0076)	(0.0106)

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below

**Table 12. Mechanism Test of the Impact of Employment as an Intermediate Variable on Digital Service Trade Exports**

dependent variable	Digital Service Trade Export	dependent variable	employment	independent variable	happiness	Have confidence in the future	Get along well with others in a friendly manner
	Probit		Tobit		Ordered probit	Ordered probit	Ordered probit
employment	5.28e-13***	food consumption	0.0110	food consumption	0.1387***	0.0659***	0.1017***
	(5.25E-14)		(0.01147)		(0.0131)	(0.0098)	(0.0132)
		Clothing, shoes, and hats consumption	0.0509***	Clothing, shoes, and hats consumption	0.1112***	0.0707	0.0993***
			(0.0151)		(0.0117)	(0.0084)	(0.0118)
		Household equipment and daily necessities consumption	0.1298***	Household equipment and daily necessities consumption	0.0225***	0.0311***	0.011
			(0.0223)		(0.0084)	(0.0058)	(0.0083)
		Healthcare consumption	-0.2061***	Healthcare consumption	0.0097	0.0004	0.0006
			(0.0261)		(0.0079)	(0.0061)	(0.0080)
		Transportation and communication consumption	0.0940***	Transportation and communication consumption	0.0345***	0.0661***	0.0343***
			(0.0145)		(0.0104)	(0.0083)	(0.0104)
		Cultural, educational, and entertainment consumption	0.0786**	Cultural, educational, and entertainment consumption	0.0382***	0.0099	0.0363***
			(0.0303)		(0.0083)	(0.0064)	(0.0082)
		Educational consumption	0.0296	Educational consumption	0.0365***	0.0169**	0.0305***
			(0.0295)		(0.0086)	(0.0069)	(0.0085)
		Total physical consumption (logarithmic)	0.0328**	Total physical consumption (logarithmic)	0.1496***	0.0734***	0.1090***
			(0.0129)		(0.0146)	(0.0102)	(0.0145)
		Total service	0.0305**	Total service	0.0408***	0.0139*	0.0389***

		consumption (logarithmic)		consumption (logarithmic)			
			(0.0142)		(0.0105)	-0.0076	(0.0106)

Note: \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, the same below.

Another influencing mechanism is the promotion of employment through digital service trade exports, which in turn enhances the physical consumption of Chinese residents, including food consumption, clothing and footwear consumption, household equipment and daily necessities consumption, and service consumption, including transportation and communication consumption, cultural and educational entertainment consumption, and education consumption. At the same time, it reduced healthcare consumption, and from the empirical results in Table 11, this intermediate impact mechanism is also very significant.

The regression results in Table 12 indicate that with employment as the intermediate variable, its impact mechanism is similar to that with household income as the intermediate variable; that is, digital service trade exports have a positive promoting effect on physical consumption, including food consumption, clothing and footwear consumption, household equipment and daily necessities consumption, and service consumption, including transportation and communication consumption, cultural and educational entertainment consumption, and education consumption, while harming healthcare consumption. At the same time, food consumption, clothing and footwear consumption, household equipment and daily necessities consumption, transportation and communication consumption, cultural and educational entertainment consumption, and education consumption in physical consumption have a positive impact on residents' subjective welfare. Due to the unique nature of healthcare consumption, its impact on residents' subjective well-being is not significant. Taking employment as the intermediate influencing mechanism, we can clearly see that the export of digital services has increased employment opportunities, and the increase in employment opportunities has led people to consume more goods and services, thereby improving their subjective well-being. At the same time, the export of digital service trade has increased employment opportunities, thereby increasing the consumption of clothing, shoes, and hats. Better dressing up enables

people to have a better mental outlook when facing work and greatly improves the subjective well-being of residents. The export of digital service trade has increased employment opportunities for residents, as well as increased consumption of household equipment and daily necessities, freeing residents from household chores and allowing them to focus on work. This has improved work efficiency, productivity, and performance, allowing people to experience a sense of happiness and achievement in fulfilling work, thereby enhancing their subjective well-being; The export of digital service trade increases employment opportunities and promotes healthcare consumption, but has no significant effect on subjective well-being; The export of digital services can increase employment opportunities, provide more people with opportunities for business exchanges, increase transportation and communication consumption, and thus improve the subjective well-being of residents; The export of digital services will increase employment opportunities and provide people with more choices to relax and enjoy a happy life in their spare time. It will also increase cultural, educational, and entertainment consumption, thereby significantly improving the subjective well-being of residents. The export of digital service trade increases employment opportunities, making it more convenient for people to receive education when they discover a lack of reserve knowledge in their work, further enhancing their work abilities. This is very beneficial for the overall quality improvement of practitioners and the realization of their self-worth, thereby improving their subjective well-being level. Therefore, overall, this article significantly verifies the intermediate impact mechanism of digital service trade exports on expanding domestic demand and improving subjective well-being through two paths: increasing household income and enhancing employment, which fully validates theoretical hypotheses 1 and 2

## 7. Conclusion and Policy Suggestions

This article is based on the rapid development

opportunity of China's digital service trade and studies its effects on expanding domestic demand and improving subjective welfare. The results show that China's digital service trade exports expand domestic demand and improve residents' subjective welfare by increasing household income. This impact mechanism is effective and has been empirically verified; China's digital service trade exports can also expand domestic demand and improve residents' subjective well-being by increasing employment, and this impact has been empirically verified. At the same time, the promotion effect of China's digital service trade exports on service consumption is greater than that on physical consumption. In terms of physical consumption, the promotion effect of digital service trade exports on household equipment and daily necessities consumption is greater than that on clothing, shoes, hats, and food consumption, in that order. In terms of service consumption, the promotion effect of digital service trade exports on cultural, educational, and entertainment consumption is greater than that on transportation and communication consumption and education consumption but has no significant effect on healthcare consumption. On this basis, we further found that China's digital service trade exports can significantly improve residents' subjective well-being by expanding physical and service consumption. Among them, the effect of digital service trade exports on residents' subjective well-being by expanding physical consumption is slightly greater than that of service consumption.

Therefore, this article proposes relevant policy recommendations:

Under the new situation, effectively leverage China's comparative advantage in digital service trade exports to expand domestic demand. Assist China in forming a new development pattern with domestic circulation as the mainstay and connecting domestic and international circulations, and contribute to the construction of a unified national market.

Firstly, the face of the world's century-long accelerated evolution, China needs to play a good role in expanding domestic demand and maintaining economic development momentum to effectively respond to uncertain factors in the international market. It is necessary to focus on accelerating the construction of a unified national market. In this process, we need to

make good use of domestic market resources, as well as leverage the comparative advantages of China's digital service trade exports to make good use of international market resources, and give full play to the promotion effect of expanding domestic demand through exports. By exporting digital service trade, we can drive the growth of domestic demand in China.

Secondly, use the export advantage of digital service trade to expand domestic demand to improve the subjective well-being of residents and provide an effective path to solidly promote the Chinese path to modernization.

Thirdly, China further clarified that in the process of steadily advancing the Chinese path to modernization, it is important to highlight the importance of promoting people's well-being as the starting point and result. China is to better improve the subjective welfare

Therefore, we need to make good use of international market resources, leverage the benefits of China's digital service trade exports by expanding residents' physical and service consumption to enhance subjective well-being, better meet the needs of millions of Chinese people for material and spiritual products, and thereby improve residents' sense of happiness and satisfaction in life and enhance people's well-being.

Fourthly, fully leverage the intermediate impact mechanism of digital service trade exports to increase household income and employment to expand domestic demand and enhance residents' subjective well-being, highlighting the importance of this impact mechanism in the national economy.

This article systematically demonstrates the effect of digital service trade exports on expanding domestic demand and improving residents' subjective well-being through the intermediate mechanism of increasing household income and employment. Increasing household income and employment are both crucial factors that directly affect the virtuous cycle of the Chinese economy. By better leveraging the comparative advantages of digital service trade exports, not only can the household income of the majority of Chinese residents be increased, but employment levels can also be increased, thereby expanding residents' physical and service consumption and jointly enhancing people's well-being from both material and spiritual aspects. This intermediate impact mechanism is the core link to effectively

leverage the effects of China's digital service trade exports on expanding domestic demand and improving residents' subjective well-being and should be adhered to and effectively implemented eventually.

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