An analysis of residents' consumption potential based on regression analysis

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ABSTRACT

With the development of the global economy and the improvement of people's living standards, consumption plays an increasingly important role in economic activities. Consumption not only directly affects the quality of life of individuals, but also has a profound impact on the economic growth and stability of the whole society. Although previous studies have made some achievements in the field of consumption potential, there are still some shortcomings. Therefore, this study chooses regression analysis as the method, through the collection of data, regression analysis, to explore the consumption potential of residents. The study found that in recent years, with the increase of years, the consumption potential index of residents also increased greatly, indicating that the consumption potential increased, but also reflects the improvement of consumption level. Finally, the research is summarized and the shortcomings of the research are analyzed.

Keywords: Household Consumption Potential, Regression Analysis, Consumption Level, Economy, Policy

1 INTRODUCTION

1.1 Research background

Consumption is one of the most important components of the national economy, and it is also the basic driving force and ultimate goal of economic development. With the continuous improvement of China's socialist market economic system and the continuous improvement of people's living standards, residents' demand for consumer goods and services shows a trend of diversification and individuation [1].

1.2 Purpose and meaning

This study aims to explore the conceptual and theoretical basis of domestic consumer potential and provide guidance for practice in related fields. Through the evaluation and analysis of consumer potential, it can help enterprises to formulate more effective marketing strategies, and the government to formulate policies that are more in line with consumer needs, thus promoting sustainable economic development [2].

2 THE CONCEPT AND THEORETICAL BASIS OF DOMESTIC CONSUMER POTENTIAL

2.1 Definition of consumer potential

There is no clear stipulation on the term "consumption potential" in our research. From the meaning of the word, consumption potential refers to the potential ability to buy and consume, that is, how many types and quantities can be bought. As for domestic research, Zhang Hongmei, Li Wei and Kong Rong (2012) mentioned that consumption potential can be popularly understood as how much people really need. Tang Ye (2022) defined residents' consumption potential as "the space for residents to further increase consumption, which is a kind of consumption demand to be guided and created [3]. It has no obvious expression in the market, but it is an objective existence".

2.2 Relevant theoretical basis

Consumer behavior theory: studies the behavior and psychological factors of consumers in the purchase decision-making process, such as demand cognition, information search, purchase intention and purchase behavior.

Marketing theory: Focus on how enterprises meet consumer demand and achieve marketing objectives through market segmentation, target market selection and positioning.

Consumer psychology theory: To explore the psychological process and behavioral motivation of consumers, such as emotions, attitudes, values and social influences on consumer behavior.

3 ANALYSIS OF INFLUENCING FACTORS OF DOMESTIC CONSUMER POTENTIAL

3.1 Level of economic development

The level of economic development is one of the important factors affecting consumer potential. The higher the level of economic development of a country or region, it usually means that the income level of residents will also increase, thus enhancing their consumption power. A higher level of economic development may also lead to more jobs and better infrastructure, further stimulating consumption [4].

Income growth: As the economy grows, people's income levels tend to rise, which gives them more money to spend. Consumers can buy more goods and services to satisfy their needs and desires.

Changes in consumption attitudes: Economic development may lead to changes in consumption attitudes. People may have higher requirements for quality of life and pay more attention to brand, quality and experience, which will promote the upgrading of the consumer market.

3.2 Income distribution status

Income distribution also has an important impact on consumer potential. Uneven income distribution may result in limited purchasing power for some consumers, while others have higher spending power.

Differences in purchasing power: Uneven income distribution may lead to large differences in purchasing power among different classes of consumers [5]. Low-income groups

may face consumption restrictions, while high-income groups have more spending options.

Consumer demand stratification: Consumers at different income levels may also have different needs for products and services. Companies need to position products according to different market segments to meet the needs of different consumers.

3.3 Social security system

A sound social security system has a positive impact on consumer potential. It can provide the following protection:

Security of consumption: The social security system can alleviate consumers' worries and make them feel more secure in the face of unexpected situations, so that they are more willing to spend.

Increased consumer confidence: Stable social security can enhance consumers' confidence in the future and encourage them to participate more actively in consumption activities.

3.4 Consumer culture and values

Consumer culture and values play an important role in shaping consumer behavior and potential.

Consumption concept: Different consumption cultures and values will affect consumers' consumption concept. Some cultures may place more emphasis on saving and frugality, while others may favor immediate consumption and enjoyment [6].

Brand perception and pursuit: Consumer culture also affects consumers' perception and pursuit of brands. Some consumers pay more attention to the image and reputation of the brand and are willing to pay a higher price for it.

4 RESEARCH DESIGN

4.1 Methods for assessing the potential of domestic consumers

Through the definition and exploration, it is found that consumption potential includes three major elements, namely, residents' consumption base, residents' consumption ability and residents' consumption environment. Zhang Xiaoli and Yu Yingbo (2022) mentioned that residents' consumption base is the economic basis to stimulate residents' consumption potential, reflecting the basic support of a region's economy to consumption. Fang Fuqian (2020) residents' consumption power reflects the degree of consumer's demand for consumption objects, the sum of existing consumption demand and potential consumption willingness, and directly reflects the level of residents' consumption potential [7]. Geng Liping (2007) mentioned that residents' consumption environment refers to various external factors that directly affect consumers' demands and behaviors, and is characterized by externality and objectivity [8].

4.1.1 Household consumption base

When studying the basis of residents' consumption, it can be divided into two important aspects: development level and development efficiency. The development level of residents'

consumption mainly refers to the overall scale and level reached by residents in terms of consumption. It is affected by many factors, including residents' income level, consumption concept, market supply and so on. The development efficiency of resident consumption emphasizes the effective use of resources and the maximization of consumption benefits in the process of consumption, including the optimization of consumption structure, product and service quality.

4.1.2 Household consumption power

When studying residents' consumption power, it can be divided into three aspects: consumption level, consumption structure and consumption result. Consumption level refers to the quantity and quality of goods and services that residents can purchase in a certain period of time. It is not only directly affected by the income level of residents, but also closely related to the price level, consumer confidence and other factors. Consumption structure refers to the proportion of residents' expenditure on various consumption items [9]. It reflects residents' consumption preferences and lifestyle, and is also influenced by social and economic development, cultural traditions and other factors. Consumption result is the final effect produced by residents' consumption behavior, including individual and social impact.

4.1.3 Residential consumption environment

When studying residents' consumption environment, it can be divided into three aspects: social environment, ecological environment and business environment. Social environment, including social culture, values, policies and regulations, has a profound impact on residents' consumption behavior and consumption concept [10]. The quality of ecological environment is directly related to the quality of life and health of residents, and also has an impact on consumer behavior. Business environment mainly involves market supply, competition, consumer rights and interests protection and so on.

4.2 Research method

It is not difficult to find that the provisions of the three elements are flexible. This paper will specifically study these aspects and divide the basis of resident consumption into: development level and development efficiency; Residents' consumption power is divided into: consumption level, consumption structure, consumption results; Residential consumption environment is divided into: social environment, ecological environment, business environment. Using each index weight and index data, calculate the data of consumption base, consumption power and consumption environment; Using fuzzy evaluation to calculate the weight of residents' consumption base, residents' consumption ability and residents' consumption environment, and finally calculate the residents' consumption potential index.

According to the calculated consumer potential index, a linear regression model is established, in which the independent variable is the year and the dependent variable is the consumer potential. By analyzing the relationship between consumption potential and year, the changing trend of residents' consumption potential is determined.

5 EMPIRICAL ANALYSIS

5.1 Data sources and descriptive statistics

5.1.1 Data source

Part of the data of China Statistical Yearbook and China Tertiary Industry Statistical Yearbook from 2011 to 2021 were adopted according to the mean value, that is, the average index. The entropy weight method is used to calculate the weight of each index.

According to the indicators and weights, relevant data are obtained, and finally the consumption potential system of residents is calculated as shown in the following table:

Table 1: Index system table

Target layer	Subtarget layer	Element level	Index weight
Consumption potential index	Basic measure index of household consumption	Development level	0.1818
		Development efficiency	0.0417
	Measuring index of people's consumption ability	Consumption level	0.107
		Consumption structure	0.2491
		Consumption result	0.0593
	Consumer environment measurement index	Social environment	0.2326
		Ecological environment	0.0211
		Business environment	0.1073

Fuzzy evaluation is used to calculate the weights of the three sub-target layers, and the results are shown in the following table:

Table 2: Index weights of sub-target layer

Subtarget layer	Index weight
Basic measure index of household consumption	0.2235
Measuring index of people's consumption ability	0.4154
Consumer environment measurement index	0.3610

According to the index weights and data, the final data is calculated, which is the consumption potential index.

5.1.2 Descriptive statistics

Descriptive statistical results are shown in the following table:

Table 3: Descriptive statistics

Variable name	Sample size	Maximum value	Minimum value	Mean value	Standard deviation	median	variance
Basic measure index of household consumption	11	51.57	32.51	41.568	6.258	40.71	39.158
Measuring index of people's consumption ability	11	58.5	27.62	42.298	9.907	41.85	98.153
Consumer environment measurement index	11	41.44	26.52	33.254	5.1	32.33	26.009
Consumption potential index	11	50.787	28.313	38.866	7.328	38.154	53.698

As can be seen from the above table, the average value and standard deviation of the

Measuring index of people's consumption ability are the largest, which indicates that the data has a large variation range and there may be outliers. Therefore, the box diagram of the data is drawn, as shown in the figure below:
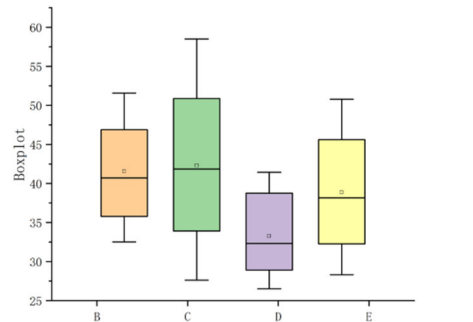

Figure 1: Box type diagram

In the figure, Basic measure index of household consumption, Measuring index of people's consumption ability, In the box diagram of Consumer environment measurement index and Consumption potential index, it can be found that there are no outliers, indicating that the data can be used as support for subsequent research.

5.2 Regression analysis

Make the trend chart of the data, as shown in the figure below:
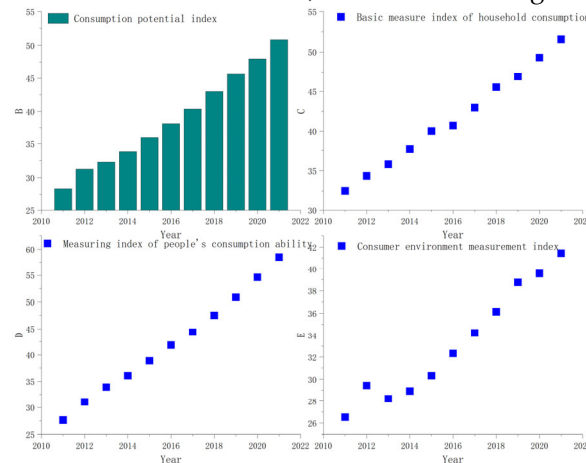

Figure 2: Trend chart

As can be seen from the graph above, Basic measure index of household consumption, Measuring index of people's consumption ability, Consumer environment measurement index, Consumption potential index, with the passage of time, there is a rising trend. It is speculated that there is a strong linear relationship between Consumption potential index and year, so a linear regression model is established:

$$y = \beta x + \varepsilon \tag{1}$$

Where, y represents Consumption potential index, x represents year, and ε represents random error term. Regression test was made, and the results were shown in the table below:

Table 4: Regression results

	Nonnormalized coefficient		Standardization coefficient	t	P	VIF	R²	adjustR²	F
	B	Standard error	Beta						
constant	-4397.381	133.352	-	-32.976	0.000***	-	0.992	0.991	F=1106.706 P=0.000***
Year	2.201	0.066	0.996	33.267	0.000***	1			
				Dependent variable：Consumption potential index					

Linear regression analysis results n=11

Note: ***, ** and * represent significance levels of 1%, 5% and 10% respectively

As can be seen from the table, the analysis of the results of the F-test shows that the F-value is very large, the significance P-value is 0.000***, and the horizontal significance is presented, rejecting the null hypothesis that the regression coefficient is 0. At the same time, the R square is 0.992, indicating that the model basically meets the requirements. For the collinearity of variables, VIF is all less than 10, so the model has no multicollinearity problem, and the model is well constructed.

So the model is:

$$y = 2.201x - 4397.381 \tag{2}$$

As shown in the linear fitting diagram below, it can be seen that the fitting degree between the real value and the predicted value is quite high, indicating that the model is real and effective.
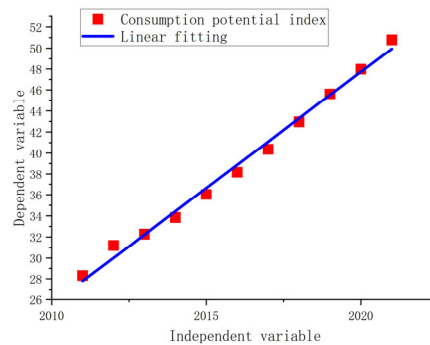

Figure 3: Regression fitting diagram

Then a fitting residual graph is made. From the residual values in the figure below, it can be seen that the residual fluctuates within a certain range. Continuous observation shows that there is a linear relationship between the percentiles of the residual values, and the residual is normal, indicating that the model has a good fitting effect.
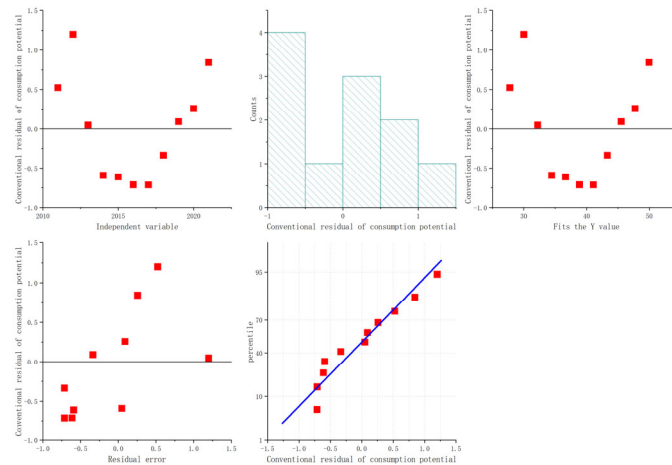
Figure 4: Residual analysis diagram

6 CONCLUSION AND PROSPECT

6.1 Research conclusion

Through the evaluation and analysis of the potential of domestic consumers, we draw the following conclusions: that there is a linear regression relationship between the consumer potential index and the year, and with the increase of the year, the consumer potential index also increases, and the trend is accelerated. Detailed analysis of the reasons, there may be the following aspects: economic growth is accelerating, with the arrival of the Internet, China's economy has also achieved rapid growth, consumer consumption is also increasing; Consumer confidence increased, dared to spend, with a social security system, residents began to confidently consume.

6.2 Research deficiency and prospect

There are still some shortcomings in this study, such as limitations of data and room for improvement of research methods. Future research can further expand the scope of research, and further explore the differences in consumer potential between different groups and different regions, as well as the specific effects of policy implementation. At the same time, more forward-looking research can also be conducted in conjunction with emerging technologies and consumer trends.

REFERENCES

[1] Scientific Platform Serving for Statistics Professional 2021. SPSSPRO. (Version 1.0.11)[Online Application Software]. Retrieved from

[2] Ding, Z., Jiang, X., Liu, Z., Long, R., Xu, Z., & Cao, Q. (2018). Factors affecting low-carbon consumption behavior of urban residents: A comprehensive review. *Resources, Conservation and Recycling, 132,* 3-15.

[3] Wang Z. (2010). An analysis of the current situation and consumption potential of Chinese

residents. Mall Modernization, (2), 12-16.

[4] Nan Yongqing, Song Mingyue, & Xiao Haoran. (2020). Digital inclusive finance and release of consumption potential of urban residents. Journal of Contemporary Economic Research, 297(5), 102-112.

[5] Zhang H M, Li W, & Kong R. (2012). A review of the current research status of China's consumer market potential -- also on cigarette market. New West (Theoretical Edition), (Z4), 81-82.

[6] Tang Y. (2022). Construction of index system for comprehensive evaluation of household consumption potential and its evolution trend. Journal of Business Economics, 3, 60-62.

[7] Zhang, Xiaoli, & Yu, Yingbo. (2022). Consumption environment measurement and consumption growth effect in China's coastal areas. The consumer economy.

[8] Fang Fuqian. (2020). China's consumption potential and realization path from consumption rate. The Economist, (8), 27-38.

[9] Geng L P. (2007). Microeconomic consumption environment status of our country and the analysis of its influence to consumer behavior. Journal of Beijing Technology and Business University: Social Science Edition, 22(1), 97-101.

[10] Peng Fang, Yang Rui-Yan, Luo Wen **, Xiao Haijun, & He Shuiming. (2007). Mathematical modeling method.