Analysis on the influence mechanism of business environment optimization on consumption upgrading

Yichun Zhang[a], Ruiqi Li[b]

Northwest University for Nationalities, Lanzhou, China

[a]2393430298@qq.com, [b]970263797@qq.com

Abstract. Based on the panel data of 31 provinces and cities in China from 2017 to 2020, the impact of business environment on consumption structure is analyzed as an explanatory variable. Through empirical analysis, the indicators of business environment and consumption upgrading are subdivided and tested, and the influencing mechanism between the two is studied. The results show that the development of business environment has a significant driving effect on China's consumption upgrading at the national level, and the human environment has a significant role in promoting consumption upgrading in the four sub-environments. After heterogeneity analysis and testing, this paper concludes that the impact of business environment on consumption upgrading index and consumption upgrading is positive in both the eastern region and the central and western regions, but the improvement of business environment in the eastern region has a greater impact on consumption upgrading.

Keywords: Business environment; consumption structure upgrade; consumer price index; fiscal expenditure

1   INTRODUCTION

The business environment is an important factor in accelerating the development of society and upgrading consumption. Optimizing the business environment is related to China's ability to open up new international markets, and the Chinese government has dramatically improved its ability to implement the "release of regulations and services," and has continuously improved and upgraded the business environment.

At present, there are few studies on the impact mechanism of business environment on consumption upgrading, which is related to the impact of digital business environment on consumption upgrading researched by Lin[1], which is based on the provincial panel data of the Yangtze River Economic Belt from 2011 to 2020, and the results show that there is a "ratchet effect" in the consumption of residents. The results show that there is a "ratchet effect" in residents' consumption, and that the digital business environment increases the level of residents' consumption.

Regarding the literature on consumption upgrading, from the point of view of domestic scholars, the research results of some scholars show that when the income level exceeds the standard stipulated by the "trickle-down effect", the consumption level of

middle-income economies can be inhibited from increasing, as well as the corresponding optimization of industrial structure. From the related research of foreign scholars, Stiglitz et al.[6](1981) believe that when the lack of consumer credit, the market will appear liquidity constraints; Deaton[4](1991) believes that consumers in the face of a high degree of uncertainty, will enhance the precautionary savings behavior; Carroll[3] (1994) found that residents' consumption is closely related to current income; Jappelli et al.[2] (1994) confirm that liquidity constraints enhance the savings rate of residential households.

The theoretical research in this paper can provide a theoretical basis for the optimization and improvement of China's business environment and provide ideas for future research on the upgrading of the consumption structure. The study of the influence mechanism between business environment and consumption structure can stand in the perspective of individual consumers(Rokhman[5],2024), and has certain practical significance for China to optimize the release of management services, promote the continuous upgrading of the consumption structure, as well as the coordinated and sustainable development of the economy.

2   THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS

In order to further explore the impact of business environment on consumption upgrading, the following hypotheses are made:

H1: Business environment optimization has a positive promotion effect on consumption upgrading

The business environment contains four sub-environments, and these four sub-environments will have an impact on consumption upgrading, such as the governmental environment, a good governmental environment is manifested in the enhancement of the government's care and transparency of government affairs, etc., one of the three sectors of economics, the government's macroeconomic control of one of the departments to improve the level of enterprises will be driven by the continuous development of the standard of living of the residents, the impact of the economic growth of the "troika" in the investment and import and export. "Investment and import and export volume will increase, and the consumption level will be improved.

H2: Optimization of the human environment in the indicators of business environment has a positive role in promoting consumption upgrading.

The degree of openness to the outside world and social credit, the secondary indicators in the human environment, are inextricably linked to consumption upgrading. The higher the degree of openness to the outside world, the more and more high-quality products enter the domestic market, and consumers have more choices and a wider range of commodities; and an increase in an enterprise's social credit not only improves consumers' brand loyalty, but also prompts the enterprise to produce products of higher quality and more in line with consumers' needs. Therefore, the higher the human environment indicator, the higher the degree of consumption upgrading.

3   MODEL CONSTRUCTION AND DATA DESCRIPTION

3.1   Model construction

In order to explore the impact effect of business environment optimization on consumption upgrading, this paper takes the panel data at the provincial level in China from 2017 to 2020 as the research sample, and carries out the fitting estimation and regression analysis of the model, according to the analysis of the construction of the fixed effect model is as follows:

$$\text{Upgrade}_{it}=\alpha_0+\alpha_1\text{BE}_{it}+\alpha_2\text{PGDP}_{it}+\alpha_3\text{Finance}_{it}+\alpha_4\text{POP}_{it}+\alpha_5\text{Students}+\alpha_6\text{M2}+\varepsilon_{it} \qquad (1)$$

3.2   Data description

In order to capture as comprehensively as possible, the factors driving the evolution of consumption upgrading in the business environment, based on the availability of data, the article focuses on the following aspects of variable selection:

(1) Explained Variables

This paper treats developmental consumption and enjoyment consumption in a unified way, and refers to household equipment and services, medical care, transportation and communication, education, culture and entertainment, and other consumption as developmental and enjoyment consumption, and takes the increase in the proportion of developmental and enjoyment consumption in total consumption expenditure as a manifestation of consumption upgrading.

(2) Core Explanatory Variables

This paper draws on the research ideas of existing scholars on the measurement and evaluation of the business environment, determines that the primary indicators mainly include four dimensions, and selects 16 secondary indicators to construct the evaluation index system of the development level of the business environment. Referring to the calculation method of Zhang [8](2021) and others, the utility value method is used to measure the scores of business environment index of each province in China, and the calculation methods of forward and reverse indicators are as follows.

$$\text{Positive indicators:} \quad y_{ij}= \frac{x_{ij}-x_{imin}}{x_{imax}-x_{imin}}*100 \qquad (2)$$

$$\text{Adverse indicators:} \quad y_{ij}= \frac{x_{imax}-x_{ij}}{x_{imax}-x_{imin}}*100 \qquad (3)$$

x_{imax} and x_{imin} denote the maximum and minimum values, respectively.

The main reference indicator in this paper is the Research Report on Provincial Business Environment 2017-2020 published by Wuhan University(Zhang[7],2021), which constructs the evaluation index system of China's urban business environment. The relevant data are all from the statistical yearbooks of China's provinces on the EPS and relevant statistical Zhangyearbooks such as the China Tax Yearbook and the National Statistical Yearbook, and the relevant indicators are detailed in Table 1 on the following page.

Table 1. Variable Definition List

Variable type	Name	symbols	Definition Methods
explained variable	Consumer upgrade index	Index	Share of subsistence consumption + share of development consumption*2 + share of enjoyment consumption*3
	Consumer upgrading	DER	((Developmental + enjoyment consumption)/total consumption)*100
explanatory variable	Business Environment Index	BE	Based on China's Provincial Business Environment Research Report
control variables	Financial expenditures	Finance	General budget expenditures of local finances/GDP
	Economic levels	PGDP	Ln(GDP per capita)
	Permanent population	POP	Ln(Year-end resident population)
	Educational level	Students	Ln(Average enrolment in higher education)
	Money supply	M2	Ln(M2)

Among them, the method of defining the Consumption Upgrade Index (Index) refers to Qiao, and the method of defining the Consumption Upgrade (DER) refers to Li Sings in the impact of digital inclusive finance on rural residents' consumption upgrading.

Table 2. Descriptive Statistics Results

Var	sum	mean	SD	min	median	max
Index	124	144.05	4.06	128.43	144.67	151.90
DER	124	41.65	3.96	26.36	42.33	49.02
BE	124	48.58	9.80	22.19	47.74	70.99
Finance	124	0.29	0.21	0.12	0.24	1.33
PGDP	124	11.01	0.38	10.28	10.91	12.01
POP	124	8.14	0.84	5.86	8.28	9.44
Students	124	7.90	0.26	7.24	7.88	8.59
M2	124	14.46	0.10	14.33	14.46	14.60

Table 2 reports the results of descriptive statistics for each variable in the full sample. It can be found that the mean value of the consumption upgrading index (Index) is indicating that there is not much difference in the consumption upgrading index among provinces and cities in China. The mean value of Consumption Upgrading (DER) is indicating that the combined share of developmental consumption and enjoyment consumption in China, and the differences between provinces and cities are more obvious. Business Environment Index (BE) is indicating that there is also a large gap in the business environment between provinces and cities in China.

4   ANALYSIS OF EMPIRICAL RESULTS

4.1   Base regression analysis

In order to explore the effect of business environment on consumption upgrading, this paper takes the balanced panel data at the provincial level of China in 2017-2020 as the research sample and fits the model to estimate the model, and the model results are shown in Table 3. The results of the model with consumption upgrading index (Index) and consumption upgrading (DER) as explanatory variables. It can be found that business environment and consumption upgrading are positively significant at the 1% level, indicating that the improvement of business environment will significantly increase consumption upgrading. Hypothesis 1 is verified.

Table 3. Baseline regression results

	(1)	(2)
	Index	DER
BE	0.100***	0.095***
	(3.53)	(3.70)
Finance	14.762***	12.738**
	(2.84)	(2.71)
PGDP	35.564***	32.472***
	(7.61)	(7.31)
POP	32.032**	27.212**
	(2.38)	(2.20)
Students	-4.978	-4.290
	(-0.80)	(-0.76)
M2	-32.767***	-30.190***
	(-5.63)	(-5.60)
_cons	-4.285	-75.249
	(-0.04)	(-0.73)
N	124	124
R-squared	0.622	0.613
F	19.56***	19.46***

t statistics in parentheses: $^*\,p < 0.1$, $^{**}\,p < 0.05$, $^{***}\,p < 0.01$

According to the results of the fixed-effects model in Table 4, it can be found that the humanistic environment is significant at the 10% level, which indicates that the improvement of the humanistic environment in the business environment has a positive promotion effect on the consumption upgrading index, and this conclusion also verifies the hypothesis of this paper.

Table 4. Regression analysis of sub-environment on consumption upgrade index

	(1)	(2)	(3)	(4)
	Index	Index	Index	Index
market	-0.033			

	(-0.40)			
governmental		0.024		
		(1.65)		
legal policy			0.006	
			(0.47)	
cultural				0.027*
				(1.83)
controls	Yes	Yes	Yes	Yes
_cons	80.296	62.151	60.227	49.903
	(-0.59)	(-0.54)	(-0.50)	(-0.44)
N	124	124	124	124
r2	0.589	0.599	0.587	0.596

t statistics in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.2   Robustness testing

In order to make the research results more convincing, this paper changes the robustness test of the model fitting method and re-fits the results of the model with individual and year fixed in both directions, and the results are shown in Table 5. It can be seen that in the results of the robustness test, although the coefficients of individual control variables did not pass the significance test, the core explanatory variable Business Environment Index (BE) still shows positive and significant, indicating that the research results of this paper have a certain degree of robustness.

Table 5. Model Results for Individuals and Years Fixed in Both Directions

	(1)	(2)
	Index	DER
BE	0.071**	0.070**
	(2.38)	(2.45)
Controls	Yes	Yes
_cons	35.793	-38.820
	(0.26)	(-0.31)
N	124	124
R-squared	0.651	0.641

t statistics in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.3   Heterogeneity analysis

In order to further explore whether the impact of business environment on consumption upgrading varies among different regions, this paper divides the sample data into eastern and central and western regions according to the division criteria of the National Bureau of Statistics, and again fits the fixed-effects model under the sub-sample, and the results are shown in Tables 6.

It can be found that the coefficients of the core explanatory variable Business Environment Index (BE) are positive and significant in columns (1)-columns (4). It indicates that the influence of business environment on the index of consumption upgrading and consumption upgrading is positive in both eastern and central and western regions.

Table 6. Results of Heterogeneity Analysis

	(1)	(2)	(3)	(4)
	Eastern	Central-Western	Eastern	Central-Western
	Index	Index	DER	DER
BE	0.105***	0.095**	0.113***	0.084**
	(3.34)	(2.27)	(3.69)	(2.20)
Controls	Yes	Yes	Yes	Yes
_cons	216.329*	-73.596	99.257	-140.122
	(1.93)	(-0.53)	(0.95)	(-1.11)
N	48	76	48	76
R-squared	0.724	0.623	0.718	0.602

t statistics in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In order to test hypothesis H2 the performance of humanistic environment in different regions, the results are as follows in Table 7. It is found that the humanistic environment is only significant at the 10% level in the eastern region, which indicates that the humanistic environment has a promoting effect on consumption upgrading only in the eastern region. This is because the eastern region is more developed than the central and western regions, and has a more complete policy system and orderly market environment, so the eastern region pays more attention to the improvement of the humanistic environment, which has a more obvious effect on the promotion of consumption upgrading.

Table 7. Results of Heterogeneity Analysis of culture Environment

	(1)	(2)	(3)	(4)
	Eastern	Central-Western	Eastern	Central-Western
	Index	Index	DER	DER
cultural	0.041*	0.026	0.040	0.024
	(1.96)	(1.63)	(1.62)	(1.71)
Controls	Yes	Yes	Yes	Yes
_cons	293.784	114.978	174.079	175.884
	(1.55)	(-0.87)	(1.02)	(-1.47)
N	48	76	48	76
R-squared	0.724	0.623	0.718	0.602

t statistics in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5   CONCLUSION

After empirical analysis, the results of the study show that the improvement and optimization of the business environment plays an obvious role in promoting China's consumption upgrading. Meanwhile, the human environment plays a significant positive role in consumption upgrading. At the regional level, the impact of business environment on the consumption upgrading index and consumption upgrading is shown to be positive, both in the eastern region and the central and western regions. Based on the conclusions obtained in this paper, the following countermeasures are proposed.

1.Optimize the governmental environment, improve governmental efficiency and transparency, and take fairness and transparency as the most important goal of building a business environment.

2. The humanistic environment includes opening up to the outside world and the social credit, and there is a close connection between the degree of opening up to the outside world and the upgrading of consumption.

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