Behavioral Economics Research on Domestic Consumption Status Based on Co-word Analysis

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Abstract: With the development of economy and society, economic theory develops with each passing day, opportunities and challenges coexist. Economic development not only follows the laws of economics, but as contemporary people pursue individuality and self-psychology, economic decision-making also depends on psychological factors. In order to solve the contradiction of "people, game, decision-making", the development of behavioral economics has become an important factor in the development of economics in the future. In order to study the hotspots and key points of domestic behavioral economics research, this article uses China Knowledge Network (CNKI) as the data source, selects all the documents with the theme of "behavioral economics" from 2010 to 2019, and extracts its keywords as the research object , As the theme of 2010-2019, and extract its keywords as the research object. With the help of data analysis methods such as co-word analysis, factor analysis, and cluster analysis, and using tools such as SPSS to visualize the analysis results, we can scientifically analyze the research hotspots in the field of behavioral economics in my country in the past decade. As the theme of 2010-2019, and extract its keywords as the research object. Through co-word analysis, factor analysis, cluster analysis and other data analysis methods, and the use of SPSS and other tools to visualize the analysis results, scientific analysis of the research hotspots in the field of behavioral economics in my country in the past ten years is carried out. The research found that "prospect theory", "bounded rationality", "mental account", "experimental economics", "endowment effect", "demand" and other words are currently hot vocabularies, from which this article will conduct more in-depth research on these words.

1. Literature review

1.1 Overview of Behavioral Economics

Behavioral economics occupies a large proportion of the Nobel Prize-winning theories in economics in the 21st century. Behavioral economics started from explaining market anomalies, and gradually constructed its own theoretical model, which was recognized and widely used by mainstream economics in the 21st century, and promoted the development of behavioral finance and other disciplines. The theories and methods of behavioral economics have reference value for the construction of a socialist market economy with Chinese characteristics, and have specific practical applications in analyzing the investment behavior of the stock market and the real estate market and understanding the poverty problem. Behavioral economics has challenged the theoretical assumptions of traditional economics, but it has not yet constituted a revolution to traditional economics. In the future, we should continue to study practical economic issues in depth and strengthen the construction and improvement of our own theoretical framework.

1.1.1 The related realization technology research involved in behavioral economics mainly focuses on the following aspects

1) Finite theory, that is, the incomplete substitutability of money, which is divided into loss aversion, endowment effect, mental account, and prospect mental account theory.

2) Limited willpower, about the planner-executor model.

3) Limited self-interest. This theory mainly studies social preferences, mainly covering ultimatum game, dictator game, punishment game, etc.

1.1.2 Analyze and study the development status and future development of behavioral economics in the current domestic environment

Huang Zhan, Liu Binglei based on the dual-system decision-making theory of behavioral economics, proposed that in an uncertain environment, insufficient emotional education will cause college graduates to have "double innovation" qualities that cannot effectively meet the practical needs of "double innovation". Chinese college graduates "double innovation" "One possible reason for the low ratio is the imbalance in emotional education. In order to test this hypothesis, considering the long-term nature of education issues, and the degree thesis has less professional background requirements and is affected by short-term research hotspots, it can more accurately reflect the importance of domestic emotional education, and choose my country's 2006-2016 Ph.D. The dissertation data test this hypothesis. The results show that not only the total amount of research on emotional education in universities in our country is significantly less than that in middle schools, but also the research on emotional education in science courses is basically blank. This result supports the view that there is an imbalance of emotional education in higher education in our country, and accordingly it is recommended that emotional education for "double innovation" should be strengthened. To

Li Wenjing, Jiang Qingyun, and Liu Ting proposed that from the perspective of behavioral economics, on the basis of the analysis of the concept of behavioral contagion, the representative research results of behavioral contagion should be summarized, summarized and reviewed from the two aspects of cause and dynamic mechanism. Suggestions for future research directions are provided in order to provide valuable references for theoretical research and business practice.

1.2 Overview of research methods

The research methods used in this article mainly include co-word analysis, cluster analysis and visualization analysis. The co-word analysis method was first proposed by French biologists in the middle and late 1970s. After more than 20 years of development, it has been used in many fields. The main principle is to extract keywords that often appear in the literature, so as to find the common word relationship between multiple literature research topics, and further analyze the research hotspots in a specific field for a period of time. The research methods used in this article mainly include co-word analysis, Cluster analysis and visual analysis. Liu Xiaomei and others used the co-word analysis method to analyze the current research status of pediatric nursing teaching in my country; Zhang Baogang studied preferences, time discounting, intertemporal selection and addictive behaviors, and discussed the hierarchical structure and micro-morphology of domain knowledge networks. From the existing research on co-word analysis methods, it can be seen that the co-word analysis method is a better method.

This research uses CNKI as the data source and "behavioral economics" as the subject term. From January 1, 2010 to October 18, 2020, 1464 articles were searched from the CNKI database. Chinese literature. Manually delete no abstract and no keywords, filter out documents unrelated to the subject of behavioral economics, and get a total of 319 valid documents.

2. Research process

2.1 Building a keyword matrix

2.1.1 Extract high-frequency keywords and count word frequency

Import the keywords of the 319 selected documents into Excel. Each keyword occupies a separate column. Use statistical filter functions to calculate the word frequency of keywords. 2010 original keywords were obtained, and 1765 keywords and their word frequencies were obtained after removing duplicates. Because the research focus of this article is the research focus of domestic behavioral economics, the "behavioral economics keywords that completely overlap with the topic" are eliminated, and keywords with a word frequency of not less than 4 ar are obtained.

Table 1 Frequency table of high-frequency keywords

Key words	Word frequency	Key words	Word frequency
Behavioral economics	471	loss avers	4
Prospect theory	37	purchase task	4
Bounded rationality	36	Daniel Kahneman	4
Mental accounts	28	empirical analysis	4
Experimental economics	26	investor sentiment	4
Nugd	12	Evolution Game	4
Psychology	12	financial incent	4
Endownment effect	12	Reciprocal preference	4
Irrationality	11	climate change	4
Irrational behavior	7	design	4
Tax	7	system	4
Social preferences	7	reference point	4
alcohol demand	4	Neuroeconomics	4
Image Processing	4	cognitive load	4
economics of law	4	Behavioral economics	4

2.1.2 Construct a general word matrix of high-frequency keywords

Based on the list of high-frequency keywords, we have understood the key directions of high-frequency research on behavioral economics systems in the past ten years, and now we build a general word matrix of these keywords to explore whether their appearance is relevant: in the keyword list, use the VLOOKUP function Filter other keywords except the high-frequency keywords in Table 1, then combine several columns of keyword pairs into a two-column keyword table, and finally obtain the general word matrix of keywords through pivot table analysis.

The co-character matrix is a symmetric matrix. The data on the diagonal is the word frequency of the keyword. The data in the upper triangle cell and the lower triangle cell are the number of times the two keywords appear in the row and column at the same time. The larger the data value in the grid, the closer the relationship between these two keywords.

2.1.3 Construct a keyword similarity matrix

After getting the co-word matrix, we can see that the frequency gap in the co-word matrix is relatively large, which is not conducive to the subsequent calculation of the multivariate statistical method. Therefore, the Ochiia coefficient is used here to convert the co-character matrix into a similarity matrix. The calculated similarity matrix of some high-frequency keywords is shown in Table 2:

Table 2 Partial similarity matrix

	Behavioral economics	Prospect theory	Bounded rationality	Mental accounts	Experimental	Nugde	Psychology	Endownment effect	Irrationality
Behavioral economics	1.0000	0.1166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Prospect theory	0.1166	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Bounded rationality	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0315	0.0983
Mental accounts	0.0000	0.0000	0.0000	1.0000	0.0392	0.0000	0.0000	0.0267	0.0417
Experimental economics	0.0000	0.0000	0.0000	0.0392	1.0000	0.0000	0.0000	0.0000	0.0000
Nugde	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000
Psychology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.2339	0.0000
Endownment effect	0.0000	0.0000	0.0315	0.0267	0.0000	0.0000	0.2339	1.0000	0.0279
Irrationality	0.0000	0.0000	0.0983	0.0417	0.0000	0.0000	0.0000	0.0279	1.0000

The data in the keyword similarity matrix can indicate the degree of similarity between the two keywords. In the corresponding rows and columns, the sum value ranges from 0 to 1: The closer the value is to 1, the greater the similarity between keywords That is to say, the higher the frequency of appearance; on the contrary, the closer the value is to 0, the smaller the similarity between keywords and the smaller the frequency of simultaneous appearance. The data on the diagonal indicates the similarity between the keyword and itself, and both are 1.

2.1.4 Construct a keyword difference matrix

After getting the similarity matrix, we found that there are too many 0 values in the similarity matrix. In order to avoid excessive errors in statistics, we subtract the current 1 from the data in all similarity matrices to get the degree of difference between the two keywords. The different matrices are shown in Table 3.

Table 3 Some different matrices

	Behavioral economics	Prospect theory	Bounded rationality	Mental accounts	Experimental economics	Nugde	Psychology	Endownment effect	Irrationality
Behavioral economics	0.0000	0.8834	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Prospect theory	0.8834	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Bounded rationality	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.9685	0.9017
Mental accounts	1.0000	1.0000	1.0000	0.0000	0.9608	1.0000	1.0000	0.9733	0.9583
Experimental economics	1.0000	1.0000	1.0000	0.9608	0.0000	1.0000	1.0000	1.0000	1.0000
Nugde	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Psychology	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.7661	1.0000
Endownment effect	1.0000	1.0000	0.9685	0.9733	1.0000	1.0000	0.7661	0.0000	0.9721
Irrationality	1.0000	1.0000	0.9017	0.9583	1.0000	1.0000	1.0000	0.9721	0.0000

3. Analysis method

In this paper, through factor analysis and cluster analysis of the keywords of 1464 articles, nine research hotspots of behavioral economics are obtained. Now comprehensively analyze the results and related literature to explain these 7 aspects.

Factor analysis integrates multiple measurement variables through dimensionality reduction, transforms highly correlated variables into several comprehensive indicators, and replaces the overall analysis with several comprehensive indicators, thereby simplifying the analysis and calculation process and reducing the complexity of the problem. Since there are many high-frequency keywords selected in this analysis, factor analysis is used here to extract common factors to represent the entire research sample for further research. The use of SPSS software for dimensionality reduction factor analysis is to combine multiple measurement variables through dimensionality reduction, convert highly correlated variables into several comprehensive indicators, and replace the overall analysis with several comprehensive indicators, thereby simplifying the analysis and calculation process and reducing problems Complexity. Since there are many high-frequency keywords selected in this analysis, factor analysis is used here to extract common factors to represent the entire research sample for further research. Use SPSS software for dimensionality reduction.

Then, according to the analysis of the component matrix and the rotation component matrix, for each main factor, the keyword with the largest factor load is selected to represent the factor. Because the representative keywords of different factors may be repeated, a total of 30 main factor keywords are formed, as shown in Table 4.

Table 4 Main factors and key factors table

Key words	Key words	Key words
Behavioral economics	Tax	Evolution Game
Prospect theory	Social preferences	financial incent
Bounded rationality	alcohol demand	Reciprocal preference
Mental accounts	Image Processing	climate change
Experimental economics	economics of law	design
Nugde	loss avers	system
Psychology	purchase task	Evolution Game
Endownment effect	Daniel Kahneman	financial incent
Irrationality	empirical analysis	Reciprocal preference
Behavioral economics	investor sentiment	climate change

Cluster analysis is a data analysis method, which divides the research objects into different clusters with large differences between classes and small differences within classes according to certain characteristics. This article clusters the main factor keywords, and plans to classify these keywords through clustering, so as to get the research hotspots of intelligent transportation systems. Import the different matrices of the main factor keywords obtained after screening into SPSS, and perform the systematic clustering of the inter-group linkage method, and the obtained pedigree diagram is:
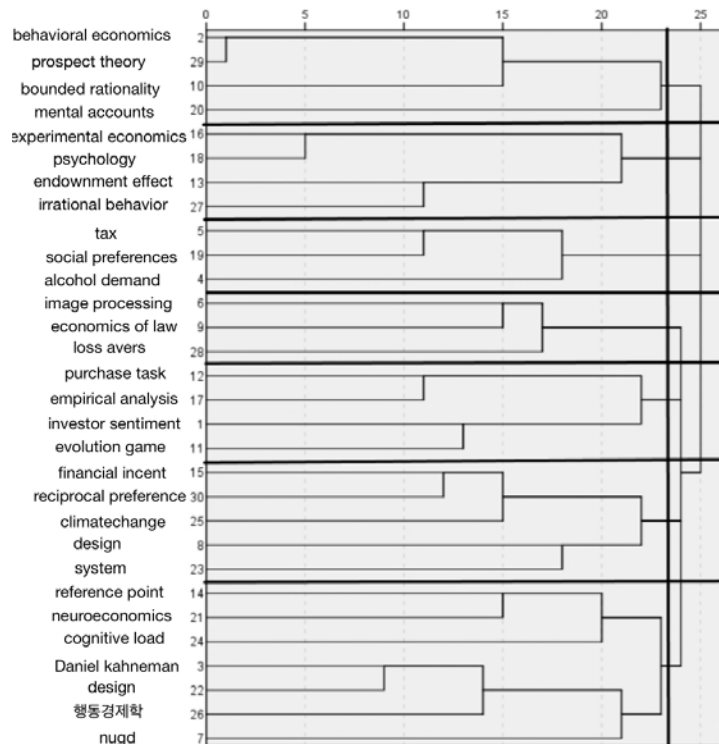

Fig.1

4. Conclusion

1) In terms of personal and national taxation, a large part of national fiscal revenue is inseparable from taxation, which is very important for economic development, but tax loss is accompanied by taxation. After studying the fine rate, supervision rate and reputation cost and tax payment There is a positive correlation between compliance and a negative correlation between the size of the tax rate and the compliance of the tax rate, which indicates that taxpayers will conduct some behaviors that are not conducive to taxation due to herd mentality.

2) In terms of social identity and social preferences, social identity changes individual behavior

by changing personal preferences. The impact of social identity on preferences is mainly that social identity will increase the level of individual social preference for the group to which they belong, and promote individual behavior to more satisfy group interests. , This stems from the individual's sense of belonging and identification with the group.

3) Regarding the research on addiction, behavioral economics refers to psychology and experimental economics. It believes that people are hyperbolic discounters, and their preferences will undergo phased and reverse changes. They believe that addictive behaviors are selective and compulsive and require self. Control and social assistance coexist. In terms of research on loss aversion, it is concluded that people tend to benefit and avoid disadvantages, and the intensity of psychological harm caused by loss is about twice as strong as the satisfaction of gains. It is often reflected in the economic and consumption fields, which can explain some of the differences in life from conventional theories. Difference phenomena, such as endowment effect, winner's curse, status quo deviation, etc., help people reduce economic losses caused by irrational decision-making and loss aversion.

4) The research aspect of mental account is the measurement process of sorting, categorizing and evaluating the income and expenditure of money from the psychological aspect when people make economic decisions. People usually like to use windfalls for hedonic consumption, and the rewards from hard work are often used for daily necessities consumption. In addition, domestic consumers are more inclined to non-advanced consumption.

5) Research on endowment effect: This theory shows that people tend to pay more attention to the objects that will be lost. This shows that in order to promote consumers to innovate existing products or services, the key is to reduce their psychological cost of eliminating old products.

6) Judgment based on people having only "bounded rationality". The content of the advertisement is changed according to the consumer's consumption power and consumption motivation. When the two factors are high, more advertisements with content related to product price and quality and other substantive information are placed, thereby realizing the induction of consumption by the central path; when the two factors are low At the same time, increase the proportion of irrational appeals such as brand and celebrity spokespersons, so as to induce consumption on the edge, and highlight the compatibility and price concessions of new services or new products replaced, and avoid The low score evaluation of products or services makes consumers resist the upgrading of products or services.

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