Comparative Analysis of Rural Consumption Expenditure in China

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Abstract   The disparity of consumption expenditure among rural areas in China was studied. Then income and living expenditure of rural residents were divided into 5 grades. Principle and method of Cluster Analysis were introduced. Next, Cluster Analysis was adopted to research the disparity of rural consumption expenditure among various areas. Results showed that income and consumption expenditure of 31 districts, cities and provinces could be divided into 5 classes. Shanghai City was the only city rated as the first-class areas with highest income and consumption. 7 cities and provinces were rated as the top three classes of areas. Taking Hebei and Jilin Province as the representatives, most parts of the fourth-class areas were located in northeast part of China with poor cultivated land, which will lead to slow development of rural economy. The fifth-class areas represented by Chongqing City and Sichuan Province were constrained by natural factors with frequent disasters as well as underdevelopment of industry and agriculture, which could not play an improving role in rural development. On this basis, relevant policy countermeasures were put forward.

Key words   Consumption expenditure; Engel coefficient; Cluster Analysis; China

Income and expenditure of peasants were improved at the initial stage of reform and opening-up. But after the 1990s, there were some difficulties in increasing peasants' income. The rapid increase and rigidity of expenditure have an adverse effect on rural development and stability, the key reason of which lies in the insufficiency of reform. Setting up socialist market economy system as quickly as possible and regulating the relationship between government and peasants are the top priorities in improving peasants' income and expenditure. Since the execution of the eleventh five-year plan, Central Committee of the CPC and State Council have issued a series of laws and measures for protecting rural areas such as reducing or exempting agricultural taxes, which helps to increase peasants' disposable income obviously and change the status of rural income and expenditure greatly. This paper tries to make a comparative analysis of rural consumption expenditure among areas by adopting Engel coefficient and study its regional disparity by adopting Cluster Analysis, so as to provide a basis for relevant policy decision.

1   Analysis on the disparity of rural consumption expenditure

Income of rural residents is bound to influence peasants' consumption. Disparity of peasants' income among districts, cities and provinces will directly lead to the disparity of their consumption. According to Engel's Law, Engel coefficient shows a downtrend with the income increase. Income data of rural residents from *China Statistical Yearbook* were divided into

5 grades, and then consumption of rural residents were divided into 5 grades accordingly, that is to say, living expenditure can be divided as 1 548.30, 1 913.07, 2 327.69, 2 879.06 and 4 593.05 yuan, and their proportion were 1:1.24:1.50:1.86:2.97. Total living expenditure of high-income households is 3 times than that of low-income households, which indicates that there is a positive relationship between income and consumption. In order to increase peasants' consumption and raise market demand, peasants' income, especially the disposable income, should be raised. Absolute number of food expenditure of low-income households is only 796.26 yuan while that of high-income households is 1 807.58 yuan, which indicates that living quality of high-income households is much better than that of low-income households. From the view of relative number, Engel coefficients of low-income households, households with middle and low income, middle-income households, households with middle and high income and high-income households are 51.34%, 49.66%, 48.15%, 45.06% and 39.35% respectively, which reflects the same conclusion. In the total consumption expenditure of high-income households, a large part is used for other living consumption besides food expenditure. In the expenditure of household facilities articles and services as well as transportation and communication, the expenditure of high-income households is almost 5 times than that of low-income households.

2   Cluster Analysis of rural consumption expenditure

By inspecting the characteristics of rural consumption expenditure and comparing Engel coefficients of income groups, we find that consumption expenditure is sensitive to income.

Due to the impacts of historical issues in rural areas of China, there is an obvious gap in income and consumption among provinces. For instance, per capita income of municipalities such as Beijing and Shanghai is very high. However, income and consumption of peasants in northern and northwest areas are lower. Cluster Analysis will be adopted in the following text based on the income and consumption data of various cities and provinces in eastern and western part, so as to inspect that whether the consumption expenditure of regions are in accordance with actual conditions of rural areas in China.

2.1 Principle and method of Cluster Analysis Cluster Analysis is a multivariate statistical analysis method for setting up classification, which could classify sample (or variables) data automatically according to their characteristics and the qualitative similarity of data without a prior knowledge and lead to various classification results. Individuals in each classification have similarity while individual features are widely different among different classifications. Cluster Analysis measures the similarity of individuals with various distances. From the perspective of definitions of distances, each variable will play a role in the distances. The aim is to classify indices or samples according to the correlation of indices or the similarity of samples[1]. Hierarchical cluster analysis is made based on the income and expenditure data of various provinces from statistical yearbook. Euclidean distance is calculated with distances among samples while distance between classes is calculated by the method of Average Linkage between Groups. Then Z Processing is applied to process data for obtaining Z scores. Next, average value of the variables should be subtracted from variables values being standardized. Above result should be divided by the standard deviation of the variables at last[2]. The computing formula of Euclidean distance is:

$$EUCLID(X, Y) = \sqrt{\sum_{i=1}^{k}(X_i - Y_i)^2}$$

2.2 Steps and results of SPSS Cluster Analysis SPSS is applied to process data and make a Cluster Analysis. The basic steps are stated as follows: ①set up SPSS file based on income and consumption data of various provinces; ② analyze with SPSS software (File→Statistics→Classify→Hierachical Cluster); ③ select income and consumption expenditure variables into Variable Frame; ④ select the computing formula of Euclidean distance in Mothod Button. The results after running SPSS software are showed in Table 1.

Table 1 Center distance of initial clustering   yuan

Item	1	2	3	4	5
Income	6 659.95	5 579.87	3 930.55	1 876.96	8 247.77
Living Consumption	5 432.95	3 035.96	2 735.77	1 552.39	7 277.94

Table 1 shows the distances among 5 classes calculated by the computing formula of Euclidean distance[3]. It's also reported that income and expenditure of 31 provinces can be classified into 5 classes: Shanghai in first-class; Beijing and Zhejiang in second-class; Tianjin, Jiangsu, Fujian and Guangdong in third-class; Hebei, Inner Mongolia, Liaoning, Jilin,

Shandong, Jiangxi, Hunan and Hubei in fourth-class; Shanxi, Anhui, Henan, Guangxi, Hainan, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang in fifth-class.

2.3 Results analysis First-class areas only include Shanghai City with high-level urbanization and rural development. The fact is not an accident. Since the initial period of the P. R. C, Shanghai, which is more developed than the other cities in China, has always been the center of economic development with a long history.

Beijing and Zhejiang are respectively the capital of China and an area with relatively developed industry. With the push of industrial economy, rural economy has developed rapidly. Therefore, net income and consumption of peasants are relatively higher.

Net income and consumption expenditure of peasants in the third-class areas rank at a moderate level in China, which is correlated with the economic policies in early period. Tianjin is one of the earliest municipalities while the other 3 provinces with developed industrial and agricultural economy as well as high-level consumption are located in coastal areas supported by the early policy of reform and opening-up.

Taking Hebei and Jilin Province as the representatives, most parts of the fourth-class areas are located in northeast part of China. They have a long history of agricultural development, thus land is very poor due to excessive development. In addition, these areas belong to old industrial bases with slow social-economic development, which will lead to the slow development of rural economy.

The fifth-class areas are located in western or central part of China. Most of the provinces are always the significant objects of national poverty alleviation. Due to the restriction of natural factors, disasters such as drought, high temperature and sand storm often occur there, which leads to the weak foundation of agriculture. Therefore, these 15 provinces are inevitable to be the areas with minimum net income and consumption of peasants.

3 Conclusions

Per capita net income of rural residents in various areas is generally lower. Per capita net income of peasants in China is 3 225 yuan, in which, that in Guizhou and Gansu Province are the lowest (1 877 and 1 980 yuan respectively). There is a great disparity in rural per capita net income among eastern, central and western parts of China while rural per capita net income in eastern part is the highest. From the view of household income structure, there is a regional disparity in structure of household net income. The ratio of salary income to household net income in eastern areas is higher than that in central and eastern areas while the ratio of net income from household operation to household net income in western areas is lower than that in central and eastern areas.

Due to the large disparity of per capita net income of rural households among eastern, central and western areas, there is also a wide disparity in peasants' consumption among regions. From the view of household consumption structure, most of peasants' consumption expenditure in western China is used for

purchasing food, that is to say, Engel coefficient is relatively higher and consumption level is lower than the average national level.

The results show that Shanghai City was the only city rated as the first-class areas while 7 cities and provinces were rated as the top three classes of areas, which indicates the obvious disparity in income and consumption among various areas in China. The disparity is not contingent. Some research pointed out that there was an obvious positive relationship between income and expenditure, i. e. high income led to high consumption. Income in developed areas is higher, so the consumption is higher either. Hence, income should be increased at first so as to promote consumption[4].

4   Policy proposals

(1) Increasing peasants' income is the basis of narrowing the disparity in rural expenditure of China. It's urgent to rethink the relationships between urban and rural areas, industry and agriculture. Successful experience of eastern areas proved that taking industrialization, urbanization and strategic adjustment of rural economic structure as the mainline, rural conditions can be improved by developing secondary and tertiary industries as well as pushing urbanization under the premise of developing agricultural economy stably and enhancing agricultural labor productivity. Meanwhile, government should provide financial and policy supports for depressed rural areas in central and western areas and adjust agricultural structure to be a market-oriented one, so as to promote the development of non-agricultural industries and guide the ordered transfer of peasants. In addition, regional consumption policy should be made based on local conditions for the purpose of pushing coordinated development of Chinese economy.

(2) The residents' expenditure in urban and rural areas has a huge potential. Especially in rural areas, the ratio of residence expenditure to total expenditure is low due to the restriction of disposable income and traditional consumption policy after the housing reform, which leads to the low correlation between residence expenditure and income. Therefore, efforts should be devoted to deepen the reform of housing system, support the development of real estates industry and consumer credit industry greatly and push the development of other industries by the correlated effects of industries. Meanwhile, considering the consumption expenditure structure and current income of rural and urban residents integrally, new economic growth point should be cultivated according to the variation characteristics of urban-rural consumption structure as the income level varies, and relevant policy for developing should be made so as to promote the sustained, stable and healthy development of national economy in China.

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中国农村消费支出状况的比较分析

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摘要 研究了农村消费支出水平的差异,将农村居民的收入与生活消费支出分为5档。高收入户的生活消费总支出约为低收入户的3倍;食品支出的绝对数和恩格尔系数均表明,高收入户的生活质量远远高于低收入户;在家庭设备用品及服务和交通通讯方面,高收入户的支出水平约为低收入户的5倍。介绍了聚类分析的原理与方法,聚类分析的目的在于根据指标间的相关性或样品间的相似性对指标或样本进行归类。在此基础上,运用聚类分析方法研究了中国各地区农村消费支出水平的差异性。结果表明:中国31个省(市、区)的收入与消费支出情况可被聚为5类;仅有上海被列入收入和消费水平最高的第一类地区中,前3类地区总共只包含7个省(市);以河北、吉林为代表的第4类地区大部分地处中国东北部,耕地较为贫乏,必然导致农村经济发展缓慢;以重庆、四川为代表的第5类地区,受自然因素的制约,灾害发生频繁,工农业发展落后,无法对农村经济的发展产生助推作用。基于此,提出了相关政策性建议。一是提高农业劳动生产率,推进城市化进程;向中西部落后农村地区提供财政支持,促进非农产业的发展;因地制宜地制定区域消费政策。二是深化住房制度改革,大力发展房地产业和消费信贷业;培育新的经济增长点,制定合适的发展策略。

关键词 消费支出;恩格尔系数;聚类分析