Empirical Study of China's Rural Consumption Function from the Perspective of Balancing Urban and Rural Development

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Abstract From the perspective of balancing urban and rural development, this article researches the factors influencing the consumption level of rural residents in China. I select the relevant data concerning per capita net income of rural households and annual per capita consumer spending of rural residents for living in the period 1985-2008, establish the regression model of per capita net income of rural households and per capita consumer spending of rural residents for living, and conduct regression analysis and error correction model test using the measurement software. The analysis results show that there is not only long-term equilibrium relationship between rural residents' current consumption and rural residents' current income, between rural residents' consumption in lag period 1 and rural residents' income in lag period 1, but also short-term equilibrium relationship; current income is the main reason for determining the current consumption). Corresponding proposals are put forward to promote the level of rural consumption in China as follows: propel agricultural modernization; actively develop specialized cooperative organizations of rural residents; improve rural land transfer mechanism; promote the level of public services in rural areas; accelerate the transfer of rural surplus labor.

Key words Balancing urban and rural development, Consumption function model, Current income, Increase in rural residents' income

The contradiction of China's urban-rural dual structure is prominent, and especially the issues concerning agriculture, farmers and countryside have been plaguing China's economic and social development. The 12th Five-Year Plan in China also proposes to establish the long-term mechanism for expanding consumer demand, and further release urban-rural residents' consumption potential. At present, in the vast rural areas having more than 50 percent of China's market, some problems outcrop, such as weakness of rural consumer market, lagging of rural consumption and lack of the staying power. Therefore, in the process of balancing urban and rural development, the study of issues concerning factors influencing rural consumption is invested with deeper economic and social significance.

1 Theoretical basis of rural consumption function and factors influencing consumption

The modern theory of consumption function, built on the basis of the assumption of consumer behavior, is a series of theories and hypotheses used for unraveling a certain dependent relationship between consumption and income, including Keynes's absolute income hypothesis, Duesenberry's relative income hypothesis, Modigliani's life cycle hypothesis, Friedman's permanent income hypothesis, the random walk hypothesis and precautionary savings theory *etc.*[1].

The study mainly uses absolute income, relative income and other classic hypotheses, to analyze the factors influencing consumption of China's rural residents. Keynes's absolute income hypothesis points out that the total consumption is a function of the total income, and the total consumption increases along with increase in the total income. There is a stable functional relationship between the current income Y and the current consumption C, namely $C=f(Y)=a+bY$[2], where a is spontaneous consumption, and b is the marginal propensity to consume. Duesenberry's relative income hypothesis suggests that consumers' consumer spending is not only affected by their current income, but also affected by their income in the past as well as the consumption level. This kind of "irreversibility" of consumption is called "ratchet effect". Brown incorporates the consumption in the past into the consumption function model, and advances the generalized relative income hypothesis that people's spending habits and consumer behavior savor of characteristics of lagging.

2 Consumption function model test of China's rural residents

I select the nominal data concerning per capita net income of rural households and annual per capita consumer spending of rural residents for living in the period 1985-2008 from *China Statistical Yearbook in* 2009[3]. Taking the year 1985 as base period, deflated by rural household net income and rural residents' consumption, I obtain the actual data, and conduct model estimation using ordinary least squares method. I use PC_t and PI_t to signify the annual per capita consumer spending of rural residents for living and per capita net income of rural households, respectively, and take logarithm of PC_t and PI_t, in order to eliminate the heteroscedasticity of variables.

2.1 Stationarity Test We conduct unit root test using the ADF method of econometric model software Eviews 3.1, and

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determine the best lag period in accordance with the AIC criterion. As t value of the first-order difference sequences signified by $\Delta \ln PC_t$ and $\Delta \ln PI_t$ is significant, then the hypothesis of there being unit root is rejected, $\ln PC_t$ and $\ln PI_t$ are stationary[4].

2.2 Co-integration test I establish the regression model of per capita net income of rural households and per capita consumer spending of rural residents for living as follows:

$$\ln PC_t = -0.238\ 277 + 0.997\ 048 \ln PI_t \quad (1)$$
$$t = (-1.381\ 638) \quad (37.319\ 41)$$
$$p = (0.181\ 0) \quad (0.000\ 00)$$

In equation (1), $R^2 = 0.984\ 449$; R^2 adjusted = 0.983 743; $DW = 0.599\ 112$; $F_{0.05} = 1\ 392.739$. All parameters are in line with the signification of economic theory, and the equation passes F test at significance level of 5%, indicating that the model fits well. Since $0 < DW < d_l$, there is positive autocorrelation in the error term of equation. The constant term does not pass t-test, and I conduct co-integration test using the method of omitting the variables of constant term and then adding independent variables.

According to Duesenberry's relative income hypothesis of and Brown's generalized relative income hypothesis, the consumers' income and consumption in the previous period are introduced. The consumption in lag period 1 is $\ln PC_{t-1}$, and the income in lag period 1 is $\ln PI_{t-1}$. Through test, we can find that $\ln PC_{t-1}$ and $\ln PI_{t-1}$ are also integration of order one, and get the following equation by regression:

$$\ln PC_t = 0.558\ 497 \ln PC_{t-1} + 1.541\ 142 \ln PI_{t-1} - 1.121\ 378 \ln PI_{t-1} \quad (2)$$
$$t = (3.032\ 188) \quad (4.687\ 172) \quad (-4.087\ 814)$$
$$p = (0.006\ 6) \quad (0.000\ 1) \quad (0.000\ 6)$$

In equation (2), $R^2 = 0.992\ 174$; R^2 adjusted = 0.991 392; $DW = 1.568\ 285$. The economic significance of all parameters is rational, and this equation passes F-test and t-test. The value of DW is in $(d_u, 4 - d_u)$, so there is no autocorrelation in error term of equation.

I conduct unit root test $(C, 0, 1)$ on residual ECM in equation (2) using ADF method, and t value of residual ECM is -4.175772, therefore, it is significant and the sequence is stationary sequence, but the co-integration relationship of it is yet to be proved. According to the co-integration critical formula: $C = -4.131\ 38$ ($T = 23$, $N = 3$, 5%), since $-4.175\ 772 < -4.131\ 380$, so the residual of equation is co-integrated. There is a long-term stable equilibrium relationship between per capita net income of rural households in China and per capita consumer spending of rural residents for living, between consumption in lag period 1 and expenditure in lag period 1.

2.3 Error correction model The above analysis shows that there is co-integration relationship between time sequences $\ln PC_t$, $\ln PI_t$, $\ln PI_{t-1}$ and $\ln PC_{t-1}$, so we can establish error correction model. I use $\Delta \ln PC_t$, $\Delta \ln PI_t$, $\Delta \ln PI_{t-1}$, and $\Delta \ln PC_{t-1}$ (first-order differences of sequence $\ln PC_t$, $\ln PI_t$, $\ln PI_{t-1}$ and $\ln PC_{t-1}$) to estimate the error model, and the result is as follows:

$$\Delta \ln PC_t = 1.180\ 73 \Delta \ln PC_{t-1} + 1.462\ 423\ \Delta \ln PI_t -$$
$$t = (2.967\ 249) \quad (5.570\ 362)$$
$$p = (0.008\ 3) \quad (0.000\ 0)$$
$$1.727\ 260 \Delta \ln PI_{t-1} - 1.418\ 087\ ECM\ t-1 \quad (3)$$
$$(-3.384\ 837) \quad (-2.978\ 591)$$
$$(0.003\ 3) \quad (0.008\ 1)$$

In equation (3), $R^2 = 0.649\ 214$, R^2 adjusted = 0.590 750, $DW = 1.868\ 423$. The goodness of fit of the model is good, and the equation passes t-test and DW test. The regression coefficient of $\Delta \ln PI_t$ and ECM_{t-1} passes t-test, and the sign of consumption variable and income variable, consistent with the sign of the long-term relationship, is positive sign. At the same time, the correction coefficient of the error is negative, in line with the reverse correction mechanism.

The regression results show that short-term changes in per capita net income of rural households have positive impact on per capita consumer spending of rural residents for living. When the current net income increases by 1%, the current per capita spending for living will increase by 1.462%; when the net income in the previous period increases by 1%, the current per capita spending for living will decrease by 1.73%. Short-term changes in per capita consumer spending of rural residents for living in the previous period have positive impact on the current per capita consumer spending of rural residents for living. When the per capita consumer spending of rural residents for living in the previous period increases by 1%, the current per capita consumer spending of rural residents will increase by 1.18%. In addition, the short-term adjustment coefficient is significant, and thus it indicates that 142% of deviation, that actually occurs each year, between the consumer spending for living and long-term equilibrium value, is corrected.

3 Corresponding proposals for promoting the level of rural consumption in China

The model test shows that the current income, consumers' income in the previous period, and consumers' consumption in the previous period, are the factors influencing consumption of rural residents in China. And the current income is the main reason for determining the current consumption. This requires China to increase agricultural efficiency, increase rural residents' income, and promote the consumption level of rural residents in the process of balancing urban and rural development.

3.1 Propel agricultural modernization In the process of coordinating urban and rural development, we should promote the efficiency of agricultural production through agricultural mechanization, intensive production mode, and scientific production technology; promote comprehensive agricultural productivity and management efficiency through agricultural informatization; propel agricultural specialization and scale operation of through the industrialization of agriculture.

3.2 Actively develop specialized cooperative organizations of rural residents We should increase rural residents' income and effectively protect the rural residents' agricultural dominant position, through the development of professional farmer cooperative organizations, farmer cooperative associations and other farmer cooperatives.

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competition and rise of uncertainty of external environment, enterprises must establish open and dynamic high efficient learning mechanism, grasp new knowledge and skills, seek competitive advantages, and deal with change of external environment through continuous learning, to obtain survival and development[6].

The strategic alliance is an effective way of carrying out learning between organizations. On one hand, it provides cooperative partners with channels of mutually leaning explicit knowledge. On the other hand, when cooperation is achieved between cooperative partners possessing different skills, knowledge and culture, the strategic alliance will create unique learning opportunity for cooperative partners, obtain hidden knowledge and skills of cooperative partners, and jointly create new knowledge and skills that can be shared. Besides, strategic alliances between competitors are more favorable to building platform for learning between organizations, because cooperative partners use similar technologies, satisfy similar market demands, and provide substitutive products.

Through popularizing the application of the value chain management thought in urban agricultural development and utilizing the value chain of urban agriculture with other industries, we can push forward the cooperation in research and development of new agricultural products or technologies. In the course of cooperation, it is able to continuously learn and accumulate various types of knowledge, obtain and utilize knowledge, experience and technology owned by other industries. Then, through deepening and popularizing, it is expected to turn them into comprehensive strength of urban agricultural development, promote core competitive power of the urban agriculture, enhance the ability of responding to changing external environment, and take this as a type of management thought of urban agriculture, to seek survival and development.

4 Conclusions

In the *Proposal for Formulating the* 12*th Five – Year Program for China's Economic and Social Development* (2011 – 2015) put forward at the Fifth Plenum of the 17th CPC Central Committee, it clearly states that the 12th Five-Year Plan period is a crucial stage for building a moderately prosperous society in an all-round way and a time of difficult issues for deepening the reform and opening-up process while accelerating the transformation of the nation's economic development pattern. In this period, it is required to take scientific development as the theme and accelerate transformation of the pattern of economic development as the main thread, and make transformation of economic development mode run through whole process and all fields of socio-economic development, to achieve higher level of comprehensive, coordinated and sustainable economic development. Therefore, it is adaptable to this important requirements for taking such measures as application of the value chain management thought in the urban agricultural development, taking full advantage of support and induced effect of other industries, promotion of opening-up and expansion of urban agriculture, and increase of effective inputs of urban agriculture.

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3.3 Improve rural land transfer mechanism The land circulation promotes the large-scale operation of the land, and improves agricultural efficiency, but in reality, the phenomena of non-agricultural conversion of farmland, non-grain conversion of agriculture and so on, increasingly loom large. In addition to uncertainties in risks of operation of modern agricultural enterprises, we must constantly improve the mechanism of land transfer.

3.4 Promote the level of public services in rural areas We should vigorously develop new rural cooperative medical care system, establish sound the rural medical assistance system; continue to increase financial support to rural education, ceaselessly deepen the reform of the rural education system; gradually improve security standards, improve the new rural pension insurance and other social security systems.

3.5 Strengthen farmers' skills and accelerate the transfer of rural surplus labor The government should increase investment in employment training for rural residents, establish adult vocational schools and job training institutions, strengthen practical skill training for rural residents, enhance the employment ability and employment level of migrant workers, to adapt to the needs of transferring to the secondary and tertiary industries.

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