

Research on the Relationship between Logistics Development and Consumption of Rural Residents

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Abstract—Logistics is an important factor to the consumption of rural residents. From analyzing the classic consumption function, the article demonstrates that the impact of the logistics to the consumption of rural residents is transaction efficiency improving. In order to improving the situation of logistics in rural areas, we must rely on a mandatory system changes.

Keywords—logistics; consumption of rural residents; trading efficiency; compulsory institutional change

I. INTRODUCTION

In a long term, the central government has proposed to take expanding domestic demand as an important means of transforming the mode of economic growth. Expanding consumption growth of rural residents is an important component of domestic demand growth. In order to enlarge the growth of rural consumption demand, a series of measures have been formulated. A series of policies and measures to stimulate rural consumption are implemented such as "Home appliances going to the countryside" project, "Automobile and motorcycle going to the countryside" project, "etc. These measures have greatly promoted the growth of rural residents' consumption. Then, why has the rural consumption not increased considerably before the implementation of project known as "Home appliances going to the countryside"? Is it just because the subsidies of "Home appliances going to the countryside" expanded rural residents' demand, or any other reasons? The author intends to start with the influence of commodities convenience on the consumption of rural residents, and then discuss the influence of logistics development on rural residents.

II. LITERATURE REVIEW

At present, there are many researchers studying the consumption of rural residents, many of whom are focusing on the influence of income improvement on the consumption. Keynes theory assumes that income is the only determinant in the various factors that influence consumption, and the change in income determines the change in consumption. As the income is increasing, the consumption will increase. However the increase of consumption is less than the increase of income. The relationship between the two economic variables, income and consumption, is known as consumption function or

consumption tendency. Later, Duesenberry's theory of relative income, Modigliani's life cycle theory and Buddha and Redman's enduring income theory are also to study the impact of income on level of consumption from different angles.

Chinese researchers have done many researches on the influence of income on rural residents' consumption. Zang Xuheng [1] (1994) verified it by establishing the model of rural consumption function which is based on the differences in consumption behavior resulting from the separation of urban and rural areas in China (including income levels, spiritual and material life differences, as well as the man-made restrictions of free movement of labor force, etc.), and using the linear regression model analysis and other related methods. Miao Huikai [2] (2015) analyzed the problem that the rural residents' income is generally low from the negative influence of income gap between urban and rural areas on consumption demand. Li Rui, Xiang Hairong [3] (2016) analyzed that the consumption spending of rural residents mainly depends on the level of sustainable income, but temporary income has a certain impact on consumer spending. Xu Huiqi, Li Jingqiang [4] (2015) analyzed the influence of different sources of income on rural consumption from different income resources and living expenses of different incomes of rural residents in 1978~2007.

Besides focusing on the influence of income on rural residents' consumption, many scholars also focus on rural consumption from the aspects of system, consumer behavior, and rural social security and so on. Wang Jun [5] (2001) analyzed rural consumption by focusing on the specific consumer behavior of consumers during the system transition period. Tian Xuebing [6] (2006) designed a system analysis framework to study the influence of institutional change on rural residents' consumption; Ma Jiexiong, Liu Binde [7] (2009) use linear regression model to analyze and point out that the retail price index of rural commodities has the greatest impact on rural per capita consumption. Shi Qiaoyu [8](2008) believes that expanding rural consumption should take financial expenditure as the breakthrough point to guide social capital investment in construction of new countryside, which is taken the data of Gansu as an example.

There are few existing literature related to consumption of rural residents especially from the respective of logistics, as most of them are focusing on the improvement of consumption environment. For example, Guo Guofeng [9] (2015) believed that the backward infrastructure, poor

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consumption environment and outdated consumption concept are the primary reasons that hinder the development of rural consumption market. Considering logistics as an important public good, Ding Zixin [10] (2014) deemed that public goods supply is proportional to the improvement of the consumption structure in rural areas, and therefore, eliminating the undersupply of public goods is an important way to boost rural consumption. Besides, Xu Duwei [11] (2008) proposed that logistics shall be regarded as an important consumption environment in the point of view of creating a harmony consumption environment. Only Hu Yu [12] (2017) put forward clearly that to solve the problem of rural weak consumption, modern logistics shall be energetically developed.

It can be seen from the above literature that most researchers pay more attention to income increase, some to consumption institutions and environment along with public goods when it comes to the influence on the rural consumption. However, existing papers specializing in the influence of logistics on rural consumption has been found rarely, especially those in-depth studying the mechanism and degree of the influence of logistics on rural people. Therefore, this paper aims to fill in the blank by making some discusses about these aspects.

III. MECHANISM ANALYSIS OF LOGISTICS ON RURAL CONSUMPTION

According to the Absolute Income Hypothesis (AIH) proposed by Keynes, income is the only determinant of consumption. That is to say, there is a stable function relationship between consumer spending and income, namely, $C=a+bY$. By analyzing consumption data of 70 years, Kuznets found that the relationship between the consumption and income can be expressed as $C=bY$. This fact reveals that there is a fixed ratio between the consumption and the income. Based on the above equations, it seems that it is true that income is the only determinant of consumption, and influencing factors are negligible. Based on the above, here is the conclusion that logistics has little influence on consumption, and rural consumption problem can be solved immediately as long as the income is raised. But is this conclusion true?

In fact, this viewpoint is pretty biased. Because there is a constant a in AIH which stands for all the external environments cannot be taken account into income, such as consumption institutions and environment, consumer psychology and logistics, of course. Although the disappearance of the constant a in Kuznets' equation makes it seem like consumption is only related to income, actually, from the long term, other factors including consumption environment, logistics, etc have already been considered as a part of income.

According to Ma Jieqiong and Liu Binde [7], they took per capita consumption expenditure (E) as explained variable, and per capita annual gross income (Y), government investment in agriculture (C), retail sales index (P), Engel's coefficient (D), along with the permillage of people with endowment insurance of the rural population (I) as explanatory variables.

A linear regression model was built to analyze the relationship between rural consumption and these variables and they found that P exerts the strongest influence on rural consumption, followed by E, I, D and C successively.

As seen from above, apart from the income, retail sales index, the permillage of people with endowment insurance of the rural population, etc. have significant influence on rural consumption, and the influence of retail sales index is more profound than that of per capita consumption expenditure. Certainly, this conclusion is not necessarily completely true, but at least it shows that there are other factors that have strong influence on rural consumption. And this conclusion is also testified by other researches such as that of Zang Xuheng [1] (1994). Therefore, it can be said that there are other factors in addition to the income affecting rural consumption,

Now that, here comes that question, is logistics one of the factors? If it is, then, to what degree does it influence the rural consumption?

Firstly, in terms of the characteristics and function, logistics is a component of goods transferring from the producer to the consumer, and hence it is an important precondition of the consumption of rural people. As a changing process of the value form of commodity, commodity circulation is definitely accompanied by the movement of the substance of commodity value. From the operation of commodity economy, it is not possible for people to buy and sell goods purely for the buying and selling process itself or only for the transformation of the value form. The ultimate purpose of commodity circulation is to meet consumer demands. As a result, pure commodity circulation has to be together with the physical movement of commodity. Only in this way, can commodity be transferred to the consumer from the producer, and this kind of commodity movement is known as logistics, also called as "circulation of objects" by Marx. In addition, logistics not only includes the transporting, but also storing, loading and unloading, packaging, classifying, distributing, arranging, examining, etc. Thus, pure commodity circulation is the economic activity, while transporting and storing goods are the external conditions for the economic activity of the circulation [13]. As a result, without logistics, the commodity is not possible to realize its physical transfer and hence logistics is the condition that commodity depends on to realize its circulation. That is to say, logistics and commodity are closely associated with each other and supplement each other. Essentially, logistics can be defined as object movement, by which commodity transfer from the producer to the consumer as soon as possible. From the relationship between the business flow and logistics, the business flow exists to solve the problem of the transfer of goods property while logistics is to solve that of the transfer of the right to use of goods. The two of them supplement each other, constituting the whole process of commodity circulation.

Next, it is the poor logistics that leads to the consumption of rural residents behind the urban residents from the actual situation of the consumption of rural residents in China. Therefore, it has an important impact on the expansion of rural residents' consumption. The development of commerce was

initially carried out in the cities, because the city has convenient transportation facilities, smooth logistics, which are scarce in the rural areas. Marshall[14] (1929), in the book of Money Credit and Commerce, pointed out that the enormous trade volume has always been a highly developed industrial performance, "A country's expansion of foreign trade mainly depend on its domestic transport facilities, and if not from natural waterways, this convenience is generally a highly developed domestic business performance." It is a common problem for the vast rural areas in China that the road traffic is inconvenient and the logistics and transportation are poor. Many durable consumer goods cannot be transported in an efficient and timely manner, and the main reason is that rural logistics costs are too high. According to Yang Xiaokai's new classical trade theory, division of labor is the result of transaction efficiency improvement. However, the improvement of transaction efficiency will promote the increase of market integration, trade varieties and the number of related markets. So, what is the improvement of transaction efficiency? Yang Xiaokai did not make a positive answer. Smith believes that the efficiency of transactions is determined by transport efficiency, which is close to today's trading efficiency concept (Yang Xiaokai, 2002) [15]. The transportation efficiency here is the logistics efficiency to a great extent. Therefore, the improvement of logistics efficiency will certainly promote the improvement of transaction efficiency, and then promote the greater development of commodity circulation.

From the above, it can be seen that logistics is an important factor affecting the consumption of rural residents, and it has a great impact on the consumption of rural residents. So, how does it specifically affect the consumption of rural residents?

From the perspective of new institutional economics, logistics, as a kind of variable affecting the consumption of rural residents, is a system restriction for rural residents' consumption. Logistics efficiency is always an important condition for restricting the consumption of rural residents. First of all, the development level of logistics affects the consumption desire of rural residents. In the case of low logistics level, many consumer goods cannot be timely and effectively transported to the vast rural areas, and some consumer goods are limited to the level of logistics technology and cannot be transported to rural for sale. This directly leads to a weakening or decline in the consumption desire of the rural residents, and then leads to consumption numbness. For example, before the realization of roads in all villages, large and durable consumer goods such as refrigerators and color TVs are difficult to reach rural settlements, causing the purchasing difficulties of farmers in these areas, thus causing farmers to lose their desire to purchase. Another example, when the cold chain logistics is not developed, many fresh foods cannot be sold in rural areas. Even if farmers have the desire to buy some of this food, they cannot be satisfied.

Next, the level of logistics development also affects the consumption ability of rural residents. Since the rural logistics is generally backward, many rural areas cannot timely and effectively deliver agricultural products. For example,

cabbages and fruits appeared in many areas cannot be effectively transported, leading to rot in the ground and trees. This thing happened very often. This makes the output of farmers cannot be effectively converted into commodities, cannot timely obtain currency and cannot achieve a breathtaking leap from the commodity to the currency.

It can be seen that logistics is actually an important external system affecting the consumption of rural residents. The essence of this system is to increase or reduce the transaction costs of rural residents when they are spending. If the rural logistics is developed, farmers in the consumption of the transaction costs will be lower, thus facilitating the expansion of rural consumption level. On the contrary, if the rural logistics is backward, it will increase the transaction cost of the rural residents, thus reducing the consumption level of the rural residents.

IV. AN EMPIRICAL ANALYSIS OF THE IMPACT OF LOGISTICS ON RURAL RESIDENTS' CONSUMPTION

In order to verify the conclusion of the above analysis, the author uses some data of Chongqing Statistical Yearbook (2009) as an analysis sample. Meanwhile, the author uses linear consumption function model to empirically study the concrete impact of logistics on the consumption of rural residents in Chongqing.

Assuming that C is the average rural household consumption expenditure, Y is the average per capita income of rural residents, D is the annual freight volume. A linear consumption function model is established:

$$C=a+bY+cD+\text{§}$$

With the data from 1985 to 2008 and the analysis of Eview6.0 software, the following equations can be obtained:

$$C=183.1474+0.751465Y+0.1554D+\text{§}$$

There is no sequence correlation between Y and D through the D-W test. It shows that the turnover of freight is an independent variable.

It can be seen from the above equation that the income level of rural residents has the greatest impact on the consumption of rural residents. Increasing 1 yuan can drive the consumption of 0.75 yuan. The cargo transportation also has a greater impact on rural consumption. Increasing 1 ton cargo will lead to an increase of 0.15 yuan in rural consumption. The following conclusions can be obtained by the above equation: the amount of logistics has an impact on the consumption of rural residents. The per capita living consumption of rural residents is proportional to the annual freight volume, which indicates that logistics is an important factor affecting the consumption of rural residents. This also validates our theoretical analysis.

V. COUNTERMEASURES AND SUGGESTIONS

China's rural logistics development level is still relatively low. From the perspective of the new institutional economics, it is a process of institutional change to make rural logistics have a lower level to a higher level transition. In this

process of change, it is almost impossible to rely on induced change. As the income of rural residents is inherently low, it is difficult to change the logistics situation by means of spontaneous changes of rural economic organizations. Although some rural areas have established some professional wholesale markets through collective cooperative organizations in recent years to promote the improvement of the logistics system, these practices for the improvement of rural logistics is a drop in the bucket. The improvement of the whole rural logistics system needs large-scale investment to be effective. It is difficult to complete the improvement of the rural logistics system by one or two spontaneous foolish people.

Therefore, improving the backwardness of rural logistics must rely on mandatory institutional changes and depend on the top-down promotion of the government. In the long term economic construction, the government has greatly invested in the urban circulation facilities, but neglected the rural circulation facilities, especially the construction of logistics facilities. Performance: the level of the rural highway is generally low, and many rural even cannot pass the road; Rural is short of professional logistics providers, so many agricultural products is short of professional logistics companies to transport; Many agricultural production centers have not established large wholesale markets, which has caused the lack of rural logistics facilities. However, if we want to increase the mileage of rural roads and establish professional rural logistics companies and wholesale markets, we must rely on government investment and government guidance to complete them. Because of the large amount of investment and long construction period of these logistics facilities, relying on the spontaneous development of the market is difficult to finish. Therefore, if we want to solve these problems, we must use the mandatory institutional changes and the power of the government to push the top-down.

At present, the “home appliances going rural” project implemented by the ministry of commerce and the cancellation of two-level highway toll station implemented by the ministry of transportation are typical and mandatory institutional changes. Rural residents can easily get access to large-scale household electrical appliances through the “home appliances going rural” project. This project has changed the situation that rural residents had to go to the county town to buy large appliances in the past. Meanwhile, the person in rural area can get subsidies for the purchase of home appliances to the countryside. This greatly saved the transaction costs of rural household electrical appliances purchased. Therefore, the national “home appliances going rural” project has led to the continued growth of rural household appliances consumption. This kind of government-driven logistics system change is an important method to promote the consumption of rural residents at this stage, and has achieved good results in practice. Similarly, the withdrawal of the secondary highway toll station is also a typical of the government’s compulsory logistics system changes. By evacuating its own toll station, the government has greatly reduced the cost of transporting goods, shortened the time of logistics transportation and improved the

efficiency of logistics. Moreover, the withdrawal of the secondary toll station established by the government has prompted the secondary highway toll station invested by the private to be removed or repurchased by the government. This makes the government occupy the leading position in the entire logistics system improvement, and induces the private resources into the direction of improving logistics efficiency.

Therefore, the mandatory institutional changes are feasible in the current process of improving rural logistics and increasing the consumption of rural residents. After the mandatory change of the government has played a leading role, we can use the market forces to make the whole market configured to the improving of rural logistics efficiency. For example, after the improvement of rural roads, we can perfect the rural professional market and improve the circulation efficiency of agricultural products with the help of private investment.

VI. CONCLUSION

The analysis of this paper shows that logistics is an important factor affecting the consumption of rural residents. The development level of logistics affects the consumption desire and consumption ability of rural residents. Logistics is actually a kind of external system that affects the consumption of rural residents. The essence of this system is to increase or reduce the transaction costs of rural residents in the consumption. In order to improve the consumption level of rural residents, it is necessary to improve the efficiency of rural logistics through mandatory institutional changes.

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