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Research Article

Chongqing Farm and Sideline Food Processing Industry Adjustment and Countermeasure Research

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Abstract: Farm products are not only the basis of solving survival problems of large population, but also the main source of rural incomes. This study analyzes the structural status of farm and sideline food processing industry in Chongqing based on the theory of comparative advantage. The present situation of farm and sideline food processing industry is concluded as flowing: little base area of primary farm product, low yield, low benefit and low technical content in farm and sideline food processing industry, without famous enterprises and brands and so on. Thus, the article puts forward lots of measures to improve farm and sideline food processing industry in Chongqing, such as proposing policy decision of overall planning, determining the advantaged farm products in every county, increasing the support of science and technology, building leading enterprises of farm and sideline food processing industry, promoting the establishment of professional cooperatives and professional associations, strengthening scientific and technological support and policy support, etc.

Keywords: Farm and sideline product, food processing industry, food source

INTRODUCTION

Agriculture is the most important foundation of our economic development while the sales of farm products are the main source of farmers' incomes, even the national economic pillar in undeveloped industrial economy era (Saleh and Roslin, 2015). After the reform and opening up, great changes happened in China's countryside (Zhu, 2014a). The role of agriculture reduced gradually. Peasants' increasing incomes are not got through farm products (Zhu, 2014b). After China entered WTO, foreign farm products dominate the price based on their advantages on production technology and management (Zhu, 2014c). The surge export to China pushes China's farm products in unprecedented dangers. Economic globalization has brought China opportunities and challenges as well. In the face of strong international competitors, the current problem demanding prompt solution in China's agriculture is to learn from the other's production technology and management methods and to implement structural adjustment of current farm and sideline food processing industry, so as to improve the quality and yield of farm products and to promote farmers' incomes (Lin and Xie, 2015). A lot of problems existed in China's structure of farm and sideline food processing industry, manifesting as: Low economic efficiency in farm products; reasonable use of agricultural food resources, which affects farmers' incomes (Chen, 2015).

The key to solve the three rural issues is to increase peasants' incomes (Verdouw *et al*., 2010). Chinese government had carried out series of policies and measures on structure adjustment of farm and sideline food processing industry, but with limited effect. Chongqing, the experimental zone of urban-rural coordinated reform in China, is the pioneer of solving three rural issues (Zhou *et al*., 2011). The research on the relationship between structure adjustment of Chongqing farm and sideline food processing industry and farmers' increasing incomes possesses important reference significance not only on boosting Chongqing's agricultural modernization and solving three rural issues, but also on the structure adjustment of other areas' farm and sideline food processing industry.

MATERIALS AND METHODS

The source of farm products can be divided into for aspects: planting industry, animal husbandry, forestry and fisheries. We start Chongqing farm and sideline food processing industry research form 2009, the place such as *Tongnan* district, *Qijiang* district, *Wansheng* district, *Dazu* district, *Changshou* district and *Yongchuan* district. Chongqing is located in the west part of China, which of composed of hills and mountainous. As a result, planting industry is one of the most important industries in Chongqing, containing

Table 1: Total value of Chongqing agricultural industry and structure classification (unit: ten thousand)

Year	Output of planting industry	Output of animal husbandry	Output of forestry	Output of fisheries	Output of planting industry	Output of animal husbandry	Output of forestry	Output of fisheries
1997	2678892	1468914	117313	128389	0.61	0.33	0.03	0.03
1998	2549365	1444758	150929	143787	0.59	0.34	0.04	0.03
1999	2496237	1409527	115588	147428	0.60	0.34	0.03	0.04
2000	2447376	1419910	108236	150750	0.59	0.34	0.03	0.04
2001	2503968	1544041	112044	151613	0.58	0.36	0.03	0.04
2002	2640760	1661965	135143	171887	0.55	0.36	0.03	0.04
2003	2701156	1776384	145824	183251	0.56	0.36	0.03	0.04
2004	3329516	2309374	184814	212464	0.55	0.38	0.03	0.03
2005	3583035	2494965	199704	237959	0.55	0.37	0.03	0.04
2006	3230078	2042194	223069	159087	0.55	0.36	0.04	0.03
2007	4095523	2644768	178527	184442	0.56	0.37	0.02	0.03
2008	4730118	3441474	217986	211481	0.55	0.39	0.03	0.02
2009	5311679	3194244	258084	242699	0.57	0.35	0.03	0.03
2010	6233343	3265542	304021	272083	0.58	0.32	0.03	0.03
2011	7512246	4253262	380907	349432	0.59	0.34	0.03	0.03

59% of the total value of agricultural output in 2011. The second most important industries are animal husbandry, accounting for 34% of total value of agricultural output. The proportion of forestry and fishery is low, reaching only 7% in 2011. The trend of Chongqing agricultural industry development is: Extend from traditional farming, forestry, animal husbandry and fishery to their respective extension industry chain horizontally and vertically, total value of Chongqing agricultural industry and structure classification (Table 1).

Table 1 show the detailed statics data of total value and structure classification of Chongqing agricultural industry in 2011. We can see from the chart that the total value of Chongqing agricultural industry and other industries are on the rise. However, each industry makes up a small changing ratio of the total value of agricultural industry, without big changes in Chongqing's agricultural industry structure. Chongqing is much suitable for forestry and animal husbandry, but not scale planting industry and mechanization since its complex terrain and high forest coverage. However, the output of forestry in Chongqing makes up less than 5% of the total value of agricultural industry while animal husbandry takes up less than one third. The quantity for the source of four major farm products fundamentally decides the output of primary agricultural and sideline products. In Chongqing's farm products, processing of planting industry only takes up 48%, animal husbandry processing of 37%, forestry and fisheries of 15% in total.

Since Chongqing became the direct-controlled municipality, development of agriculture has taken the lead of western regions. From 1997 to 2011, farmers' annual net income of farm food increased from 1692 yuan to 6480 yuan, with a significant promotion in living standard. However, there is a gap between Chongqing and the average one of nationwide because the starting cardinal number of Chongqing farmers' annual net income is quite low and the annual net income increased slightly. For example, the annual net income of peasants nationwide is 6977 yuan in 2011, 7.7% higher than that in Chongqing at the same term.

RESULTS

With the improvement of life quality, people make higher demand for farm food quality and quantity as well. The modern agriculture technology has been the bridge of implementing the improvement of farm food quality and quantity, while the market economy and technological progress are the most direct drive for the structure adjustment of farm food processing industry (Batmaz and Sandeep, 2015). At a macro level, Chongqing has to adjust the original agricultural industrial structure and improve the technological content of agricultural production to obtain better quality of agricultural and sideline food source, realizing modern agriculture finally (Yongyong, 2013). Meanwhile, it is necessary to expand the scale of farm and sideline food processing industry, promoting farm and sideline food processing industry appropriately to extend the length of the whole agricultural chain, so as to change the growth pattern of agriculture. At a micro level, agriculture is still one of the main sources of farmers' incomes. To achieve the goal of income increasing, farmers have to change their original modes of agricultural management, producing the products with high value-added can eventually help them increase incomes.

The fundamental purpose of agricultural production is to satisfy people's demand for food; however, the modern agricultural industry has not satisfied people's requirement in high quality farm food. According to the view of economics, if demand exceeds supply, the prices of goods and yield inevitably increase. From the perspective of governmental macro regulation and control, since the market demanding for high quality farm food has been formed, the government should adjust the original agricultural industrial structure to improve the quality of farm products, developing scale economy to meet the people's requirements (Krasulya *et al*., 2014). Especially after joining the WTO, Chinese government should control the direction and positioned correctly in the international agricultural competition, paying great attention on agricultural labor division and

professional level, so as to increase the incomes of farmers who engaged in producing farm food steadily.

Although in some regions, Chongqing has made a good start in farm and sideline food processing industry with an increasing large scale day by day, there is a limited coverage of the whole rural areas especially in the southeast and northeast of Chongqing. A lot of restrictions and difficulties existed objectively; they can be summed up as the following aspects:

Firstly, agricultural food base has many problems, such as small scale, less companies and low efficiency. Except Fuling Zacai and Wanzhou oranges, other single products are small in scale, with a maximum area of 8 acres and minimum of 2-3 acres, leading to an unobvious market effect. Secondly, the scale of enterprises is small. Many enterprises only turn over two or three million annually with backward technologies and equipment and low technical innovation ability. Few companies can turn over ten million yuan or more each year. Their products are very simply. What's more, linked Products is badly lagged behind. For example, the dried beef factory in Qianjiang area. Ox bones can be processed into bone powder; ox blood into sunscreen, cowhide into leather, etc. Recently, the factory only processes dried beef but throws away ox blood. Cowhide and ox bones are sold as raw materials, which represents a low efficiency in secondary development on raw materials. Thirdly, the product market occupies share is small. Adopting family-style production way, the processing operation is quite simple. Restricted by raw materials and manufacture techniques, the products cannot be sold in supermarket, or even though the money cannot buy. Fourthly, the radiation effect of farmers is not obvious. Restricted by the product processing scale and product grade, the enterprises in the early development phase cannot purchase raw materials at a protected price. Farmers' production scale is influenced by a vicious circle of "bargain at high price but expel at low price", so that more and more farmers lose confidence in planting industry, leading to a non-flashing shining point. Fifthly, there's a low efficiency in companies and farmers (Muehlfeld *et al*., 2011). The scale of the enterprises that have been investigated cannot meet the level of national leading enterprises in the western areas. As a result, they are only able to maintain simple reproduction, providing fewer taxes and small driving effects on farmers, much less for scale benefit and concentration profit of products.

Restricted by their own conditions, their development is relatively backward. The rural area of southeast and northeast of Chongqing has been in the state of backwardness in social and economic development 20 years after reform and opening-up policy, restricted by historical conditions and geographical environment (Zhu, 2014b). Although there are lots of changes happened after Chongqing became a direct-controlled municipality, the enterprises and farmers lost many supports from government to industrial enterprises on preferential policy as funds and taxes at the beginning of reform and opening-up policy (Vedovato *et al*., 2015). Therefore, it is strictly difficult for local industry especially for the farm food processing enterprises to struggle for success. The difficulties centralized in the lack of funds, talents, technologies, equipment and bases.

Many factors such as capital and talents will restrict the development of region. Due to the restriction of the above mentioned five small shortcomings, the difficulties of capitals, talents and bases still existed in the current market economic system, though each district and county made many preferential policies to attract investment (Zhu, 2014c). It is not easy to raise funds though the investment of farm food industry is lower. Many investors are not willing to invest their money into farm food industry because the yield rate only maintained at an average market level. Besides, it takes a long time to re-take the money and it is easily influenced by weather. Comparing to other industries, agriculture industry is more difficult to find talents. Most of people are not willing to work on this industry. Due to the landform and weather condition, it is not easy to find a suitable place to build as base. In addition, the difficult in reducing heavy burden and creating brand also impede the progress of farm and sideline product processing industry.

DISCUSSION

Comparing to the commercial products, agricultural and sideline food should be equipped with favorable situation, enjoyable geographical position and supporting of people (Kopanos *et al*., 2012). Resources play an important role in farm products. The essence of the structural adjustment of farm and sideline product industry is to implement a regional favorable production mode and to improve the competitiveness of the regional farm food based on the regional comparative advantages and their own regional resources endowment (Miah *et al*., 2014). Although, the cultivated land area of Chongqing is small, its main agricultural structure is planting, which is not in conformity with the theory of comparative advantage, that is to say, Chongqing has not taken advantage of its own resources endowment. Meanwhile, it means that, there's a potential space for farmers in Chongqing to increase their incomes after the adjustment of agricultural industry structure.

With the development of economic globalization, the agricultural industry of China encountered an unprecedented crisis, requesting to adjust agricultural industry structure as soon as possible and to find its correct position in the world market. In order to increase the competitiveness of the national agricultural industry, relative large scale of agricultural industrial cluster should be formed to extend to the integration of industries of farm products vertically and horizontally.

Making efforts on the quality of agricultural food and specialized production pattern, agricultural food processing technologies and system innovations should be encourage improving the competitiveness of domestic farm food and boosting exports, so as to increase the income of farmers who engaged in agricultural food industry.

Japanese scholars Yujiro Hayami created the theory of agricultural development of the technological changes induced by resources endowment. The biggest difference between this theory and neoclassical economics and traditional development economics is that the agricultural technologies are not changed by the development of human science or technologies, but a dynamic response from people on the increasing demanding for resources endowment changes. That is to say, it is a rational choice for pursuing maximum benefit. The theory of induction technology changes from Yujiro Hayami not only has been proved on the development path of agricultural modernization practiced by developed market economic countries as the United States and Japan, but also be proved in the practice of China's green revolution. In 1988, Yujiro Hayami put forward three phases of agricultural development: the first phase is the development phase characterized by increasing food production and market supply. The policies about improving farm products yield should be dominated in this phase; the second phase is aimed at solving rural poverty through price support policies of farm food, so as to increase farmers' income level; the third phase is characterized by adjusting and promoting the industry structure. Agricultural structure adjustment should be the main goal in this phase.

Based on the above theoretical analysis and the reality of Chongqing, it is very clear that Chongqing is in the third phase of Yujiro Hayami's theory of agricultural development. The strategies that should be adopted for Chongqing's agricultural industrial structure adjustment are: under the encouragement of government's related policies, adjust measures to local conditions, combine the resources endowment of forestry and animal husbandry, develop the agricultural industry dominated by forestry and animal husbandry; Take advantage of modern agricultural technologies, improve the quality and quantity of primary farm food, develop deep processing of farm food at the same time, improve their additional value and then to achieve the purpose of increasing local farmers' incomes. The adjustments can be concluded in four aspects as follow:

Confirm the advantages of food products in each county: In order to realize the harmonious development between human and nature, to achieve sustainable development of environment and economy and to strengthen the county economy, agricultural food processing industry should be brought to the whole industrial development strategy to make overall plan. It is available and possible to set up some industrial projects.

On the strategies view, it is necessary to stick to the establishment of bulk farm product base, making efforts on developing famous, excellent, special and new products, so as to highlight their own characteristics and emphasis. According to the requirements of the regionalization, specialization and branding, five types of farm food production base can be established (Akkerman and van Donk, 2008). The first one is to set up green ecotype farm food commodity bases mainly producing rice, maize, potatoes, small grains, oil materials, vegetables and poultry and livestock in the area below 500 m of altitude, such as Yangtze river, Jialing river, Wujiang river, Meijiang river and so on. The second type of farm food commodity bases should be established with special local features. Setting up at an altitude between 500 m and 800 m, the bases are featured on tea, dried fruit, special vegetables, dry land crops, poultry and livestock. The third type of farm food commodity bases should be built above an altitude of 800 m focusing on herbivorous livestock. The fourth type of farm food commodity bases is foreign-oriented, located in some microclimate areas as mountains and rivers, mainly producing Chinese medical herbs. The last type of farm food commodity bases aims at health care and appreciation. Mainly located on the side of city, on the wayside or on the riverside, the fifth bases are focused on Adenophora elata, yellow flower, small fruit and flowers.

Enlarge the intensity of food science and food technology support: High quality agricultural food must be brought in vigor and vitality for base construction and brand development by the way of improving technology content. The government should arrange funds for agriculture development, bring in some scientific research achievement which are suitable for the development of agricultural industry, increase the intensity of training, promotion, application and speed up the process of transforming scientific and technological achievements. To solve the problems of low technical level in agricultural food processing enterprises and poor innovation consciousness in traditional products, the cooperation mechanisms of combination involving production about risk-sharing establishment and equal profit sharing should be founded, by formulating technology investment ratio, which can encourage the scientific achievements and scientific and technological talents to flow to the field of farm food deep processing, changing traditional products to famous brand products, so as to access to markets to improve the whole economic level (Pinior *et al*., 2015).

Develop leading food enterprise, specialized cooperatives and professional association: The marketing strategy of farm food that bases and market drive each other is an effective form under the new

situation. Grasping the market situation and potential development of product accurately and establishing network sales channel for farm food are the source for farm food bases to survive and develop. Governments at all levels shall work as a go-between leading enterprises and bases in accordance with the local characteristics, people and logistics and transportation conditions. In order to improve the organizational degree for agricultural industrialization and to overcome the credit crisis between companies and peasants during contract farming, the government should lead peasants to set their business focusing on industrial management, building specialized cooperatives or professional association to realize an management mechanism that can share products, information and market resources. The way of enterprise+specialized cooperatives or associations and professional association can restrain the two steps by "company law" and "contract law" to make them truly become the operation carrier of agricultural industrialization.

Enlarge the intensity of food policy support: The essence of deep processing of farm products is to burst the restrain of traditional agricultural production mode. As a result, to adjust the industrial structure is conform to the times. The government must take special policies, approaches and measures to effectively support, serve and regulate the construction of agricultural products commodity bases and the development of processing industry. Under the favorable policies of capital support and regular taxes, the government should make some related favorable policies to attract talents, business and investment.

CONCLUSION

By interviewing farm food markets and searching for statistical data, we found that the Chongqing's primary farm food has a various sources with abundant types, which can sell in the market from farm land directly, but the increase of additional value is obvious. The farm food processing industry needs to be improved urgently. The government should enlarge the intensity of policy support on farm food processing industry, lead and organize related companies and technicists to develop on farm food, establish some farm food processing leading enterprises that could be highly accepted by residents, develop more famous farm food brand appreciated by residents and explore more various farm food products, which can not only enrich the choices of farm food products for residents, but also enhance the development of modern farm and sideline food processing industry to increase farmers' income eventually. The problems of improving the farm food's quality, enlarging the chosen scope of farm food for residents and increasing farmers' income are widely focused on.

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