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ARTICLE

THE IMPACT OF US ANIMAL HUSBANDRY TRADE POLICIES AND ITS COUNTER BENEFITS TO CHINA

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ABSTRACT

Limited natural resources, rising production costs, and growing demand for food require expanding imports of meat products and increasing domestic supply. It is an inevitable trend for China to expand its imports of animal products from the United States. A more open and transparent trade in China's livestock products is of positive significance to protecting food safety and reducing prices of livestock products. Through the comparison of production and trade between China and the United States, this article analyzes the U.S. policy support for Sino-U.S. animal husbandry trade. The scale of animal husbandry production in China has been growing, but the overall level is lower than that of developed countries. High production cost and weak anti-risk ability. With the deepening of the opening of the animal product market and the gradual integration of domestic and foreign markets, the competition between the United States' imports of low-cost livestock products and China's domestic animal products will intensify.

KEYWORDS

Livestock industry, China-us animal husbandry trade, international market, animal products.

1. INTRODUCTION

Animal husbandry is an important component of agriculture in China. The 2016 per capita GDP is \$8516, per capita; purchasing power parity GDP is \$15,424 dollars. It is close to the level of moderately developed countries. In the process of economic growth and transformation, the demand of grain is falling in China, but the demand of livestock, especially meat, has led to a surge increase. In China, the quantity of cultivated land is reducing during the progress of urbanization; it is unsatisfied with the demand in both food and feed at the same time. There is the complication between human and livestock. How to ensure a secure food supply for China has become the central task during the development of economy—under the condition of the rising rigid demand of domestic grain and the deepening constraints of resource and environment. In 2014, The Central Committee of the Communist Party of China put forward a new strategy of grain security in the central economic work conference and the Central Rural Work Conference. The meeting required that the governments transformed all food self-sufficiency into staple food self-sufficiency and guaranteed its safety absolutely. The Sino-US trade in animal products is of positive significance. It not only stabilizes the supply of domestic animal products, reduce the crowding out of animal husbandry to the resources of grain production, lessen the ecological pressure of livestock farming in production and ensure the national food security as well. In recent years, the relevant scholars introduced the specific practices of subsidies of animal husbandry in the United States, but few experts combine the domestic supportive policy of American livestock husbandry and the Sino-US bilateral trade in animal products together^[1]. The United States and Europe use several measures like financial support, insurance, and others to maintain stable development of animal husbandry. Under the framework of WTO, the

developed countries such as the United States subsidized the livestock from the income of the farmers and the prices of animal. The agricultural support of China is at a low level; we should increase subsidies and support. Meat production in China is faced with several problems, such as the constraints of resource and environment, instability of feed supply and so on^[2]. The supply and demand of domestic meat production are on a tight balance, and the situation of food safety is severe.

China should make full use of the resources of foreign agricultural by importing and investing the foreign food with appropriate methods, in order to ensure the safety of domestic food. With the increased awareness of food safety, the increasingly number of consumers are willing to pay a higher price to the better food. The limited natural resources, the ever-rising costs of production and the ever-growing demand of food need to expand the import of meat products and increase domestic supply approximately^[3]. It is the inevitable trend that China expands imports of animal products from the United States. The more open and transparent trade policy of livestock products in China is of positive significance for the protection of food safety and the reduction of the prices of domestic animal products.

There are differences in requirements of interests between two countries on bilateral trade of livestock products. China focus is based on the stability of the domestic production capacity, coordinating the relationship of both international and domestic markets, increasing imports of meat and other animal products properly, reducing the production of animal husbandry which occupies the resources of grain production and ensuring food security. While the focus of the United States is to expand the market access of American livestock products, and increase the farmers' income, promoting the domestic employment.

China needs the products from the United States and the latter also cannot revolve without Chinese market as well^[4].

2. ANIMAL HUSBANDRY PRODUCTION IN THE UNITED STATES

The United States is a super animal husbandry. The output value of animal husbandry accounted for more than 40 percent of the total agricultural output. The absolute number of animal products is very large; the per capita share of animal products is high. The production of a variety of animal products is the highest in the world, of which the output of poultry exceeds the whole of Europe. The United States is the world's second largest producer of poultry and eggs. The production of animal husbandry is similar to that of planting in the United States, both are zonal distribution. Such as the northeast, north, central dairy farming belt, contribute 70 of the country's dairy production. The south of the dairy farming belt and the near area is a meat animal husbandry belt; it includes more than 50 percent of beef production and more than 80 percent of pig production. Texas is the nation's largest producer of animal products, with sales of more than \$10 billion, followed by Nebraska and Iowa. With the growing industrialization and specialization of animal husbandry in the United States, the scale of all kinds of livestock farms is expanding but the number is reduced. The level of intensive production has been improved. The production of animal husbandry in the United States is driven by scale efficiency and profit, and the productivity is high.

2.1 Beef

Beef industry is widely distributed, more than 1 million of beef breeding stock which accounted for 70 percent of the United States. In 2016, the United States added 3 million 100 thousand beef herds, the beef production reaches 11 million 320 thousand tons. Beef output accounted for 1/4 of animal husbandry output value. It mainly focuses in four areas: first is the Midwest, including Kansas, Nebraska, South Dakota, Oklahoma, Colorado and other states; the second is the western region, including California, Washington, Oregon and other states; the third is the eastern region of Tennessee, Minnesota, Pennsylvania, Florida and other states; and the fourth is the central and southern Texas. Texas's cattle industry is the most developed, maintaining the top-ranking in the United States. The second is Nebraska, the third is Kansas. The size of the beef in the United States is mainly between 100 to 499 heads, the proportion of large cattle farms is increasing and the proportion of small cattle farms continues to decline. The number of cattle farms which is on a larger scale is also increasing.

2.2 Pork

The pig industry is mainly distributed in the planting belt of the corn production-Eight states near the northern plains, which include the Great Lakes region, east of Ohio, Michigan, northwest to Minnesota, southwest to Missouri. Here produced more than 70 percent of the country's corn raw materials. Because pig production needs adequate, cheap feed corn, 80 percent of the US hog production state in this place. According to the numbers of livestock in 2016, the pig production in the top ten states is: Iowa, North Carolina, Minnesota, Illinois, Indiana, Oklahoma, Kansas, Nebraska, and Ohio. Iowa's population and output of

the pork accounted for more than 28 percent of the country; the output value accounts for more than 27 percent. The scale of pig feed is mainly from 1 to 99 heads, and the proportion of large-scale farms is increasing.

2.3 Milk

In the United States, the milk production is increasing every year. In 2015, the national milk production hit a record highest point of 208 billion 500 million pounds, up 1.3 percent from last year. Dairy industry is located in the Pacific coast of the United States, the five Great Lakes regions, the southern plains and the northeast region, which is known as "the cow belt". These places produce more than 70 percent of the milk production in the United States. California milk production is 23 million 800 thousand tons, ranking first in the state. The remaining nine dairy states are: Wisconsin, New York, Pennsylvania, Idaho, Minnesota, Texas, Michigan, New Mexico, Washington. The number of cows in these 10 states continued to maintain more than 70 percent of the total number of cows. The scale of dairy cattle feed is mainly from 1 to 45 heads. The feeding scale of dairy cattle was similar to that of beef, but the amplification rate was slow.

3. THE PROGRESS OF SINO-US TRADE AND LIVESTOCK PRODUCTION

The United States is a world leading producer of animal husbandry in various types. It is the third largest production of pork for 11.312 million tons in 2016, next only to China and the European Union. The beef production is 12.226 million tons and in the van of the world. The milk production is 94.62 million tons, second only to the European Union. The United States meat production is at a stable level during 2009 to 2016, but the consumption of meat decline gradually. From the beginning of 2010, the US pork consumption tailed off to below 9 million tons, while beef consumption dropped to 12 million tons. Although the milk production is increased continually at the same span, the growth of liquid milk consumption is lagging behind the production (as shown in Table 1 & Figure 1).

China is the world's largest producer and consumer of pork. Chinese pork production is 53.8 million tons and it was 5 times that of the United States in 2016. Beef production is 5.63 million tons in China, with 48.5 percent of American beef production. China's milk production is 37.7 percent of that in the United States for 34.50 million tons. During the period from 2009 to 2016, the pork production in China is basically increasing year by year, but the beef production is declining on the opposite direction. In 2016, China's pork consumption grew 3.2 percent and beef grew 6.1 percent year-on-year. It is obvious that meat products suffer a tight balance between supply and demand. During the study period, China's milk production increased at an average rate of 4.7 percent, the yield can basically meet the domestic liquid milk consumption. The yield of dairy products such as milk powder is low but the demand is large in China. So, the disparity between demand and supply is intensive. The dried skimmed milk of China remained at about 55 thousand tons. The consumption rose from 124 thousand tons in 2009 to a total of 32.4 thousand in 2016, the gap between supply and demand continues to expand (as shown in Table 2 & Figure 2).

Table 1: Output and consumption of major animal products in the US.

Year	Output			Consumption		
	Pork	Beef	Milk	Pork	Beef	Milk
2009	10.44	11.89	85.88	9.01	12.23	28.55
2010	10.18	12.05	87.47	8.65	12.02	28.89
2011	10.33	11.98	88.97	8.34	11.64	28.28
2012	10.55	11.85	90.82	8.44	11.73	28.76
2013	10.50	11.70	91.44	8.62	11.63	28.88

2014	10.41	11.02	92.98	8.56	11.55	28.45
2015	11.23	11.86	93.32	8.75	11.32	28.56
2016	11.32	12.22	94.62	9.03	12.01	28.37

Table 2: Output and consumption of major animal products in China. Unit: million.

Year	Output			Consumption		
	Pork	Beef	Milk	Pork	Beef	Milk
2009	48.91	5.76	28.44	48.82	5.74	11.79
2010	51.07	5.6	29.3	51.15	5.58	12.06
2011	49.50	5.55	30.7	50.00	5.52	12.60
2012	52.35	5.54	32.6	52.72	5.59	13.51
2013	53.80	5.63	34.5	54.25	6.01	14.35
2014	56.71	6.89	37.25	57.01	6.13	14.41
2015	54.87	7.30	37.55	58.25	6.82	15.20
2016	52.99	7.17	36.02	56.50	7.59	16.01

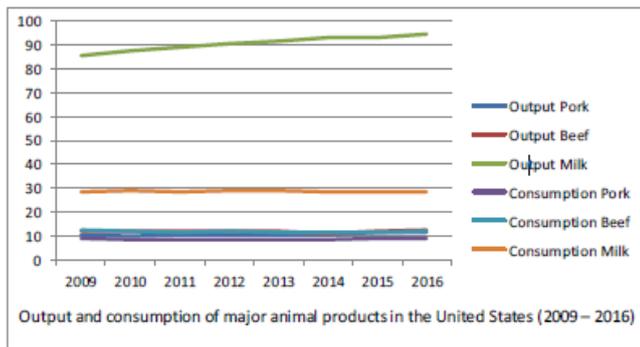


Figure 1: Output and consumption of major animal products in the US. Data source: American sources yearbook 2015.

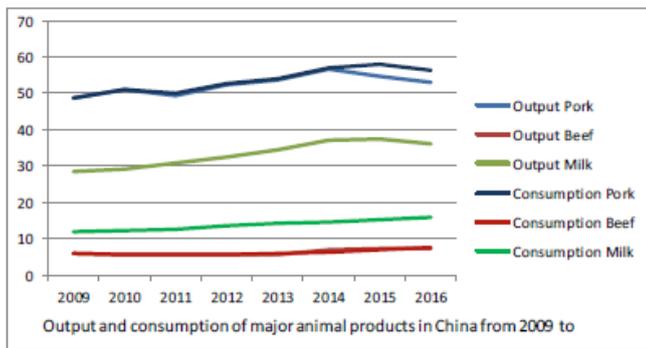


Figure 2: Output and consumption of major animal products in China. Data source: China statistic yearbook 2015.

Since 1994, the United States has maintained a favorable balance of trade in animal products. In 2016, the United States has a trade surplus of 3 billion and 260 million to China livestock product. During the period of 2009-2016, the US exports to China livestock products increased from 994 thousand tons to 2 million 10 thousand tons, up 8.5 percent. The US exports 8 thousand tons of pork to China in 2009. In 2011, the exports of pork are 194 thousand tons from the US to China, reaching the peak of history. During the period of 2003, the outbreak of mad cow disease

affects China's import of beef from American. China has not yet fully liberalized the US beef imports. The exports gradually restored at the end of 2016. The US dairy exports 6 thousand tons to China in 2009, and in 2013 increased to 71 thousand tons. In 2016, the US dairy exports to China increased by 84 percent year on year.

Sino-US pork trade has a range fluctuation. The trading of the beef is booming, and the meat trade presents instability. And the dairy trade appears steadily expanding trend. The main livestock products oversupply for The United States, and for China the fact is just the opposite. The Sino-US trade in animal products has both comparative advantage and factor endowment advantage, but the volume of trade between China and the United States is not large. It is obvious that the bilateral trade in animal products has large potentials.

4. THE UNITED STATES DOMESTIC LIVESTOCK HUSBANDRY SUPPORT POLICIES

4.1 The US infrastructure subsidies

The basic investment of the government in the United States mainly includes the protection of grassland resources, animal husbandry science & technology support and the support of farmers and ranchers. In 2002, the United States increased subsidies for land conservation in the new agricultural law. Many of them are related to animal husbandry, such as helping crop and livestock producers to improve the environmental quality of the incentive plan. These include the increase of funding for new farmers or ranchers. Retain the government to assume 75 percent of the cost of environmental protection payments. However, if the producers are limited in resources or are just starting farmers or ranchers, the government allows 90 percent of the cost sharing rate.

To provide technical and educational assistance for the protection and improvement of private ranches, from 2002 to 2007, the government authorized \$60 million annually. In order to protect the development of private pastures, the State encourages the use of sustainable grazing methods, such as year-round grazing, rotational grazing or moderate grazing. In addition, the government also issued a grassland reserve program. Through long-term contracts or easements and other forms, the government helped landowners to restore grassland and protect large grassland. From 2003 to 2007, the government contributed \$25 billion 400 million to the livestock industry, with a rate of about 75 percent to 90 percent for the restoration of grassland. In addition, in order to improve the survival ability of the new farmers, young farmers and agricultural workers and other vulnerable groups, the United

States governments gave special attention to the above in the education and promotion services. One of the main programs to promote the development of agricultural ranchers is to provide assistance to new farmers, young farmers and agricultural workers. At the same time, the government also provides funding to support the development of institutions, which focus on training, education, skills development and technical assistance services to the new farmer ranchers. Other farmers and herdsmen can also participate as they like. The applicant should provide 25 percent of the matching funds. The money is earmarked for farmers in poor resource, social disadvantaged groups and the people who hope to become an agricultural laborer.

4.2 Policies for relative resources and environmental protection

In order to achieve the sustainable and effective use of agricultural resources, the government implemented the plan to arouse the incentive of enhancing environmental quality. In the form of contracts, it is of importance to provide economic and technical assistance to producers. Helping producers meet the relevant environmental laws and regulations, encouraging farmers in obtaining economic benefits while protecting and improving the soil, water and other resources related to agriculture are also necessary. Since the implementation of the program in 1996, the US government continues to increase the fund for agricultural resources and environmental protection. In 2012, financial capital reached \$1 billion, of which about 60 percent were used for animal husbandry.

4.3 The subsidies for the main input volume

In 2012 the American livestock feed costs \$54 billion 410 million, which accounted for 35.8 percent of the total cost. The United States of planting large subsidies to livestock production indirectly benefit. Corn and soybean as the main forage crops, enjoy a fixed premium subsidy, direct subsidies, counter cyclical subsidies, loan balance of payment related income and price support. During the period of 1994 to 2012, the US government for corn subsidies amount to \$84 billion 430 million, accounting for 32.7 percent of the total subsidies respectively. Soybean subsidies amount to \$27 billion 830 million, accounting for 10.9 percent. From 1994 to 2013, the corn and soybean yield were increased by 38.5 percent and 30 percent, the American livestock can obtain stable supply of cheap feed on pig. To live as an example, the United States Department of Agriculture estimates the costs of feed accounted for 47 percent of the cost of pig breeding, long time for feed subsidies made the price of the US hog have been maintained at about \$1/kg. According to Hayes survey (2013), the United States is only about 55.6 percent of the cost of pig production in China, directly benefit from government subsidies for feed crops.

4.4 The subsidies for livestock insurance

In order to reduce natural disasters of livestock and the disease risk to farmers' losses, the subsidies for livestock producers focused on the loss of cash compensation. The beef cattle and dairy farmers are the main beneficiaries. The American livestock insurance subsidy project includes livestock compensation program (LIP), Veterinary Emergency Assistance Program (ELAP) and livestock feed disaster plan (LFP). During the period from January 1, 2008 to September 30, 2011, a total of those three projects subsidy expenditures were \$150 million,

\$40 million and \$570 million. The livestock compensation plan is to solve the disaster which causes excess loss and lead to the mortality of livestock more than normal. Government subsidies accounted for 75 percent of the amount of loss of livestock. The main livestock emergency assistance program aimed for a specific period of time, because of the disease, bad weather and other reasons of the loss of subsidies. Livestock feed disaster plan mainly refers to a subsidy for the loss of grass caused by drought or fire, the subsidy amount is 60 percent of the feed cost.

With the increase of the export volume of milk and the world market deepening, the price volatility risk is increasing as well. In order to the protection of the interests of dairy farmers, the National Dairy Industry Association lobby the government to implement new dairy support policies. In 2014 the new farm bill established a dairy profit protection plan and dairy donation program, the above two policies canceled the dairy price support and income support programs. Profit protection

scheme is equivalent to the dairy insurance program. When the actual average profit of dairy products is less than US \$4 and last for at least two months, the government ought to subsidies for dairy producers. This profit is according to the historical outputs of the project participants and adjusted annually. For the producer, in order to obtain a higher level of protection, it is useful to pay the corresponding insurance which is based on the higher level of profits. Under this dairy donation program, when the average profit of dairy products is lower than the minimum margin (\$4/US), the US Department of agriculture will buy dairy products at market prices and donated to low-income groups.

5. THE IMPACT OF THE US ANIMAL HUSBANDRY SUPPORT POLICY ON CHINA

5.1 Help reduce the pressure on supply

America's massive subsidies to livestock reduced the cost of production and price fluctuations in the export trade of livestock products. It can basically maintain long-term stable price in the export trade. The supply of beef in China from the tight balance to scarcity and it is shown gradually enlarge a trend. The pork supply gap in 2011 increased sharply, which showed a gradual upward trend. Skim milk powder supply gap increased constantly with an average annual rate of 29.2 percent. At the same time, the development of animal husbandry in China faces the problems such as the limitation of water resources, the lack of feed grain and environmental capacity constraints and other difficulties. According to OECD estimates, in order to meet the needs of consumption, China needs to slaughter about 794 million pigs. The data was about 100 million more than that in 2012. Expanding the production requires a large amount of feed, land and water resources, so constraint of water resources determines that China cannot achieve complete self-sufficiency. With the increase of foreign exchange reserves in China, the international purchasing power of animal products enhances gradually, China has the capability of using the foreign markets to ease the conditions of supply pressure. In the face of domestic demand for livestock products, which lead to the rising price, the imports will pass the signal to the market. Signal indicates that it is necessary to expand the supply. It is of great importance to ease the domestic market supply pressure and stabilize the domestic market price.

5.2 Rational utility of international resources

The arable land and water resources in China are limited. In 2011, China's arable land area was less than 120 million hectares, the per capital arable land was only

0.08 hectares, less than 40 percent of world average. Total water resources were 2 trillion and 810 billion cubic meters, the per capital water resources was only about 2085.6 cubic meters, less than 30 percent of the world average in the same year. In 2011, the total water consumption was 608 billion cubic meters. Agricultural water accounts for 62 percent of the total water consumption. With the development of industrialization, the development of the city, industrial water and living water increased sharply. The agricultural water gap will be increasingly big. As the transformation of food products, the livestock products lead to a large consumption of agricultural resources, such as water, land and others. The import of animal products is equal to the import of water resources and land resources as well. The United States is rich in water resources. Per capital arable land area and per capital water consumption in the United States were 6.4 times and 4.7 times higher than that of China. It is helpful for our country to make rational use of the international cultivated land resources and water resources by importing the animal products from the United States in a proper way. Optimize the allocation of resources finally.

5.3 Further increase agricultural trade deficit

China's agricultural trade deficit with the United States is one of the main reasons for the growth of China's adverse agricultural trade balance. In 2013, China's trade deficit with the United States accounted for 42 percent of China's agricultural trade deficit. The agricultural trade deficit of China with the United States is mainly composed of animal products, Cereals, soybeans, cottons and other agricultural products. In 2013, China's trade deficit with the United States accounted for 15.2 percent of the total trade deficit between China and the United States. With the

development of bilateral trade in animal products, China's agricultural trade deficit with the United States will be further expanded.

5.4 Intensified livestock industry competition

In 2013, China's imports of animal products were \$19 billion 510 million. As the second largest source of imports of animal products to China, the United States on Chinese livestock exports accounted for the proportion of China's total imports of animal products was 9.4 percent. With the opening of Chinese market access to animal products, the expansion of the United States on Chinese imports of animal products will improve our dependence on U.S animal products.

The scale of China's livestock production has been increasing, but the general standard is lower than that of developed countries. The production cost is high and the ability to resist risks is weak. With the deepening of the openness of animal products market and the gradual integration of domestic and foreign markets, the competition will intensify seriously between the United States imports of low-cost livestock products and the China's domestic animal products. Retail farming will gradually withdraw from the market. The fierce competition will become a strong external factor to promote the adjustment of industrial structure of animal husbandry in China. It makes the domestic livestock industry to accelerate the standardization process and speed up the pace of transformation from large to strong.

6. ENLIGHTENMENT TO CHINA

The development of China economy put forward higher demand for livestock products and stable supply, livestock production has become one of the important factors that affect the operation of macro economy. What China needs to do is taking active measures, stabilizing the domestic production capacity and exploring new ideas of animal husbandry in foreign investment cooperation.

First, moderate imports and use the international market to regulate the supply of animal products. The current domestic supply of livestock products stands in the current tight balance, with the steady increase in demand in the future, the shortage is inevitable trend. At present, China's grain rations basically achieve the balance between supply and demand. Moderate reduction in the self-sufficiency rate of livestock products is conducive to reducing the crowding out of livestock production on grain production, which is beneficial to the protection of food security. Animal husbandry resources and costs in the United States are ahead of the domestic level, it is necessary to play the role of livestock trade as a regulator of the domestic market supply and demand. At the same time, China should support the monitoring and early warning system of imported products. Our country should make the forecast for the next stage of domestic and international supply and demand and domestic imports. When domestic prices are expected to rise, the government should improve the domestic supply by increasing the order of international livestock products. Meanwhile, take measures to curb the domestic market price and avoid the sharp fluctuations by temporary excessive purchase for the customers in the International Livestock Market.

Second, China should improve livestock subsidies to ensure domestic production capacity. Moderate import does not mean the total opening of the livestock product trade. In the complex international situation, both natural disasters and trade disputes will affect the domestic supply of livestock products. So, we should improve animal husbandry related support policies, ensure the production capacity of domestic animal husbandry and stable the domestic supply. It is necessary for our country to increase the intensity and scope of animal husbandry subsidies, and increase the green box subsidies as well. At the same time, increasing the investment about livestock aspects, such as the animal husbandry

research, infrastructure construction, disease prevention and control, environmental protection and others is another important thing for China. Moreover, enhance the output of livestock products, improve the quality of animal husbandry ecological environment and improve the domestic supply capacity plays an active role in stabilizing society. Finally, the government should establish a risk prevention system of animal husbandry, increase subsidies for livestock insurance, reduce the risk of breeding and increase the enthusiasm of farmers.

Third, China should speed up the process of moderate scale and enhance the competitiveness of the industry. China encourages animal husbandry enterprises to expand the scale of production, such as mergers and acquisitions. Extend the industrial chain and close cooperation with both upstream and downstream enterprises, in order to form integration of industrial management from the production, processing to sales. Government support enterprises to build trace-ability system of product quality and safety achieve a safe network from production to sales and protect the food safety.

Finally, China should guide agricultural enterprises to invest abroad and promote Sino US cooperation in animal husbandry industry. At present, our country uses the overseas resources mainly by the direct import way. Import and export of agricultural products from large oil companies have the high risk and uncertainty. In addition to direct imports, foreign agricultural development, mergers and acquisitions and other forms of foreign agricultural enterprises can play a regulatory role in the domestic market supply. The level of China's foreign investment in agriculture is low. The government should guide the strength of livestock production enterprises to accelerate the pace of going out, encourage enterprises to take direct investment and mergers and acquisitions and other forms to access to the US market. Learn advanced technology and management experience. Establish the industry chain of livestock production, processing, logistics and warehousing. We will expand the total supply of livestock products to maintain the stability of the world market prices of major livestock products. At the same time, the government should provide appropriate financial support for enterprises to invest in the United States, such as guarantees and loan discount. Improve the insurance systems; reduce the risk of foreign investment enterprises when facing the political risks, natural disasters and so on. We will improve the existing laws on overseas investment in agriculture and safeguard the interests of enterprises.

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