

## A SWOT Analysis of the China Dairy Industry

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### Abstract

The combination of rising consumer incomes, stimulative government subsidies and fading memories of post2008 dairy food safety scandals had put the industry on the path to solid recovery. Following a decade of booming growth, China's dairy industry once more faces a period of flat prospects. In this paper, the China dairy industry has been investigated and its strength, weakness, opportunities and threats has been discussed. And a few conclusions have been arrived at.

**Keywords:** Dairy industry; China; SWOT analysis

### Strengths of the China Dairy Industry

#### China has quality cows

A fact central to this market assessment is that China now has good dairy cows in very large numbers and they need to be fed. Depending on who is counting, China has 13.7 million to 14.9 million dairy cows and are milking close to 7 million [1,2]. They have the third largest herd after India and Brazil. Today, China's Modern Dairy has 22 dairy farms operating with 260,000 cows under management. Yili and Mengniu have similarly large enterprises. Calves at China Modern Dairy's 20,000-head farm in Feidong, Anhui province, were bred from highly productive foreign cows. Dairy industry in China for 2017 is forecast to be unchanged from 2014 as weaker prices have pressured smaller operations. Currently, farm-gate milk prices in 2017 through September are averaging 30 percent up the same period in 2016. This is effectively driving out the smaller farms while directing investment to the larger scale more efficient dairy farms. Since December 2016, raw milk prices rose sharply with the double factors of the overcapacity decline in the global milk and high feed prices. And the raw milk production is forecast to grow by 2 percent to 38.0 million tons. (Data sources: National Bureau of Statistics of China).

#### Consolidation and modernization of production facilities

Many of the new large scale dairies and their investors figure the only way to bring up the productivity of the Chinese cows up to speed is to replace them with new genetics or stock [1]. Output per cow at Modern Dairy has increased from 6.1 tons per year in 2008 to 7.8 tons in 2011 thanks to the new cows and investments in American-style facilities and feeding techniques. Each keep at least 10,000 heads of imported breed, mostly Holstein for a bigger daily milk flow (on average 12,000 pounds/year, compared to 20,000 in the US). The biggest company, Modern Dairy has 210,000 cows on 22 farms. On the farms milking is performed in eight rotaries, 80-bay milking parlors with cooling and self-cleaning piping systems to maintain high standards of hygiene. Most modern farms also typically equip themselves with automated systems for feed control, temperature control, fresh bedding and litter disposal [3]. Mengniu and Yili, the two

Chinese leaders in fresh milk, both cross the bar of 10.000 tons of fresh milk collected every day.

#### Rising incomes

According to the National Bureau of Statistics of China disposable personal income in China increased to 31195 CNY (\$4799.23) in 2015 from 28844 CNY (\$4578.41) in 2014. Disposable Personal Income in China is reported by the National Bureau of Statistics of China. Family income levels in China will continue to increase substantially over the coming years, particularly in urban areas. With growing affluence comes a greater recognition of the value which high quality protein can play in the diet.

#### Health Consciousness

As incomes increase, dietary options for the Chinese family will increasingly focus on healthy, nutritious foods particularly in dense urban environments. Milk and milk products are highly nutritious foods. They contain a unique "package of nutrients" that are an essential part of a healthy family eating plan. Milk is not easily replaceable with other foods; the substitutes are not the same. Research continues to identify positive ways that milk impacts health. In addition to dairy building healthy bones, consuming milk, cheese and yogurt can boost immunity, lower blood pressure, reduce risk of diabetes, reduce risk for some cancers and help maintain healthy weight. Milk is an excellent source of high-quality protein, which is important throughout life and specifically for athletes and the elderly. In addition to these health benefits, milk and milk products taste good, are convenient, are affordable and provide three nutrients that are often deficient in Chinese diets: calcium, vitamin D and potassium. Chinese on average drink about 2.5 gallons of liquid milk a year, less than a third as much as Japanese and South Koreans, and far behind the 20.8 gallons drunk in the U.S., according to the International Dairy Federation, a Brussels-based trade group. That is after a 90% increase in consumer spending in the past five years, to \$32 billion, according to market researchers at Euro monitors International. Euro monitor expects the milk consumption gap will narrow as more Chinese move to cities, diets change and spending on dairy grows at a similar pace in the years ahead.

### Urbanization

Traditionally, most people in China have been subsistence farmers. Urbanization will change coming decades, with a much larger portion of the population working in the industrial and service sectors and living in towns and cities. In the long run, a declining number of larger farmers will have to supply a growing number of urban dwellers. This will require a productivity increase in agriculture and the introduction or expansion of food markets and a specialized food industry and service sectors. Urbanization promotes commercial agriculture in China. In the face of rapidly increasing demand, China’s agricultural workforce is shrinking significantly [4]. In 2013, China unveiled its long-awaited plan to move more people into the cities in a bid to boost economic growth, resulting in the migration of about 100 million people to the cities during the balance of this decade. Over the longer term, China’s goal is to have at least 70 percent of its population, or 900 million people, living in the cities. This will involve a movement of 240 million farmers into urban environments from now until 2025, further straining China’s agricultural production capability. Doing so will make it easier to provide basic social services, the government believes.

### Demographics

The other major policy change initiated recently by the Chinese government is the modification of the one child policy. The change in the One Child Policy will be beneficial to China’s demographics in the long run but will also impact the dairy economy quickly. When the changes were announced, stocks in companies that provide baby products rose dramatically. The Chinese government hopes that by allowing families to have more children it will lead to a more consumer-driven society as parents face pressure from both children. It will also increase the need for children’s products in general and help to drive up sales of products aimed at children. Today China represents a growing market for milk powders, whey and UHT milk. Domestic milk production is on the increase but in relative terms, it is not keeping pace with the increase in China’s growing demand for dairy products. This policy should keep investment in dairy strong.

### State support

Many big Chinese dairy farms have enjoyed substantial state support. Often, the government provides these large enterprises the land and give a per cow subsidy. As an agricultural producer, the company pays no income taxes [5].

### Weaknesses of the China Dairy Industry

The rapid development of these large scale farms present other practical problems such as; supply of imported production animals, access to good quality forage, ability to recruit and hold skilled livestock business managers, and the management of effluents aside from the expected health challenges. China’s large population, limited arable land, and water resources have long been one of China’s top concerns. To secure grain and oil supplies, Chinese companies have been encouraged by the government to extend their upstream agribusiness value chain overseas, and to strengthen their position in international commodities trading. Thus it would be a mistake to believe that China is a cheap place to produce milk.

### Farm size, forage production, and access to quality forage

Feeding systems in the north and west differ because of the ecological conditions. Steppe is the dominant grassland type in Inner Mongolia. The pasture is flat or rolling and the environment is plain. Land can be grazed all season as long as water is available. Animals are moved around following a predetermined range and routine. Before these large scale dairies, there were two types of holdings: private family farms and state-owned farms. The pasture of family farms still belongs to the State and families pay according to a Long-term Grassland Use Contract with the government, but the livestock belong to the family. The State-owned farms were used mainly for breeding and their size varies greatly. According to the sample survey on rural households in 1999, a family had only 1.48 pigs, 0.47 sheep and 0.05 cattle on average and the output of beef, milk and wool was 0.40 kg, 12.74 kg and 0.73 kg respectively. Some family farms specialize in pig raising, sheep raising or cattle raising and their scale is much larger than common family farms. This small dairy farms segment represents the largest one in China at slightly less than 60% but it is also the one shrinking the fastest as the government pushes to more modern, larger farms where environmental, quality, and food safety standards can be monitored and enforced. Like the milk they produce, the composition quality and availability of local forages present a challenge for large scale farms. For many farms, the sourcing and purchasing function requires middlemen and incurs significant transaction costs. The solution for these large scale farms will be domestic development of larger scale forage production units and continued importation of forage from overseas sources. In 2014, the value exports of alfalfa hay (Table 1) and all hay (Table 2) to China increased by 30.5% and 19.8% in 2014 compared with 2013.

|               | Values (\$millions) |      | Percent Change | Volume (1,000MT) |       | Percent Change |
|---------------|---------------------|------|----------------|------------------|-------|----------------|
|               | 2013                | 2014 |                | 2013             | 2014  |                |
| China/HK      | 179                 | 234  | 30.5           | 590              | 722   | 22.4           |
| Japan         | 204                 | 196  | -4.1           | 623              | 595   | -4.5           |
| UAE           | 157                 | 72   | -54.2          | 656              | 298   | -54.6          |
| Korea         | 59                  | 56   | -4.3           | 184              | 173   | -6             |
| Total Exports | 623                 | 581  | 6.5            | 2,129            | 1,861 | -12.3          |

**Table 1:** Comparison of 2013 and 2014 Alfalfa Hay Exports to Top Destination Countries from Western Ports.

|               | Values (\$millions) |       | Percent Change | Volume (1,000MT) |       | Percent Change |
|---------------|---------------------|-------|----------------|------------------|-------|----------------|
|               | 2013                | 2014  |                | 2013             | 2014  |                |
| Japan         | 603                 | 529   | -12.3          | 1,782            | 1,609 | -9.7           |
| China/HK      | 243                 | 291   | 19.8           | 818              | 911   | 11.4           |
| Korea         | 246                 | 227   | -7.7           | 808              | 774   | -4.2           |
| UAE           | 209                 | 115   | -45            | 823              | 419   | -49.1          |
| Total Exports | 1,340               | 1,197 | -10.7          | 4,355            | 3,828 | -12.2          |

**Table 2:** Comparison of 2013 and 2014 All Hay Exports to Top Destination Countries from Western Ports.

Hay crop exports to China are more than three quarters alfalfa and the remainder are made up of grass rich hays. These grasses consist primarily of timothy hays from the Pacific Northwest, grass seed straws from Oregon, cool season grasses from perennial stands in many western states and some oat hay.

Low feed grain prices have a tendency to soften US hay prices and this happened again in 2015. Corn, grain, and hay prices tend to be positively correlated. Low US milk prices also tend to soften US prices for hay and US milk prices fell throughout 2015. Lower hay prices should stimulate exports but it is important to note that China also experienced dramatic decreases in milk prices and an increase in the relative strength of US dollar compared with other currencies. These two facts alone could negate any lower US hay price benefits. Nevertheless, the rapid expansion of Chinese dairies and their dairy demand, the inability of China to fully meet its own forage needs, the inability to produce high quality hay in many provinces due to weather, the high quality of US hay products, limitations of water supplies in some Chinese regions, and the relative low cost of China bound ocean freight favour US forage exporters in the long run. China is a growing market which came on the scene within the last 5 years. Alfalfa hay is the primary export forage from the US. Unlike other hay products, alfalfa does not require a special import permit. The Chinese market has grown exponentially each year through 2015. According to this trend, China could easily require a million tons of U.S. alfalfa in the next two years. Due to Chinese regulations, only exporters with a compliance agreement with the USDA are allowed to ship hay to China. Farm-gate milk prices in 2015 are averaged 17 percent to 20 percent below 2014. This price decline is effectively driving out the smaller farms while directing investment to the larger scale more efficient dairy farms. Despite facing low milk prices, the dairy herd in China is expected to grow by one percent in 2016 as shorter-term impacts of the loss of smaller operations are offset by the shift in production to larger operation with improved efficiency.

**Reputation for food safety**

The safety of dairy supply is a key driver for Chinese consumers for obvious reasons. Unfortunately, a number of health scares melamine being the main one but not the only one have dented peoples' confidence in domestic milk products especially infant formula, with the effects we are now seeing in trying to access more supplies from overseas.

**Imported milk**

In 2017, China is expected to produce 38 million tons of fresh cow's milk and is the world's third largest producer. Chinese milk processors have been able to import product to reconstitute and sell as fluid milk with world skim and whole milk powders priced so low. This practice has been driving down farm margins and further eroding demand for domestically produced fresh milk in China. China remains a major importer of fluid milk largely in the form of Ultra High Temperature (UHT) milk. For 2016, imports of fluid milk (including UHT) are up 31 percent year-over-year and forecast to reach 380,000 tons in 2017. This import pace is expected to continue through 2016 driven by consumer demand for relatively low priced imported UHT milk, confidence in the safety of imported milk, and a thriving ecommerce market. Consequently, USDA forecasts 2017 imports are to grow by 6 percent to 425,000 tons.

Imports of whole milk powder (WMP) by China in 2015 were by 50 percent lower as users continue to work off domestic stocks. As a result, the USDA forecast has been revised to 310,000 tons which will represent the lowest level of WMP imports since 2011. In 2017, WMP imports are expected to grow by 16 percent to 360,000 tons as stocks are drawn down and demand is anticipated to increase due to continuing urbanization and economic growth. Approximately 37 percent of WMP in China is used in the production of infant formula, 32 percent is used in the milk beverage industry, 22 percent is reconstituted into milk and used in yogurt, and the balance is channelled into the production of ice cream and bakery goods. Imports of foreign milk and other dairy products will likely only stabilize (not increase significantly) in 2017.

**Lactose intolerance**

Chinese scientists conducted a study to determine prevalence of lactase deficiency and lactose intolerance in Chinese children of different ages. All 1168 healthy subjects between 3 and 13 years were recruited from schools in four large cities in China [6]. They were screened by a 25 g lactose tolerance test. Some subjects were challenged with 50 g milk powder on different days. Both indicators, the expiratory H2 concentration and intolerance symptoms, were analysed. The results indicated that lactase deficiency occurred in 38.5% of children in the 3 years-5 years age group, and 87% of the 7 years-8 years and 11 years-13 years old groups. The age of occurrence for lactase deficiency may be at 7 years-8 years among Chinese children. The prevalence of lactose intolerance among Chinese children was 12.2% at age 3 years-5 years, 33.1% at age 7 years-8 years, and 30.5% at age 11 years-13 years, respectively. The results

demonstrate that lactase deficiency is very common in Chinese children from these four cities. Lactase deficiency and lactose intolerance have a dose dependent response: lactose absorption and symptoms are based on lactase activity. The relationship between breast feeding history (or the history of cow milk intake) and lactase activity among Chinese children has not been established.

## Opportunities in the China Dairy Industry

China is attempting to rebalance its economy. The future strategy is to build domestic consumption, and create jobs less dependent on the export markets. This focus on Chinese consumerism is an opportunity for the Chinese dairy industry. Although the current industry appears focused on fluid milk, there are a substantial number of value added dairy products currently imported that will be produced in China and may eventually be exported from China into south east Asia.

It is true that for a variety of reasons, China has a low per capita dairy consumption rate so that gives fantastic scope for growth. Growth in milk consumption is also actively encouraged by the government with a number of initiatives aimed to encourage increased milk intake, especially by children. The average Chinese only consumes 18 kilos of milk per year, compared to 31 to 32 kilos to his Japanese or Korean neighbours. Most experts expect the Asian milk consumption gap will narrow as more Chinese move to cities, their diets change, and their spending on dairy grows at a similar pace in the future [7]. The current growth in the dairy market indicates the Chinese consumer is ready to increase their intake, and is able to pay for it. Even with depressed global prices, the prices paid for milk inside China, whether fresh milk or powder, are higher than the world average, due to the pressure of a demand that the country's domestic industry can't satisfy. With 20 percent of the world's population and rising incomes the rebalanced economic perspective of the next generation could create a consumer class like the American "baby boomers". The very recent Government relaxation of the one child policy has the potential to significantly increase demand in the infant milk formula (IMF) market.

In addition to another child, rising incomes, urbanization, and cultural curiosity are changing tastes and preferences in China urban areas [8]. These tastes are definitely changing with the inclination towards western diets and that includes dairy. Most experts predict dairy consumption in China will continue to strongly increase, and the volumes are significant, at nearly 40 billion litres' milk equivalent in 2016.

With the Government continuing to promote and subsidize safe and secure local food production, as well as defining ambitious production growth targets, there are many opportunities for companies to capitalize on this gap consumer demands for food safety and integrity. Foreign WMP sources have also been at the centre of a number of food scares over recent years. As a consequence, Chinese importers have sought to diversify their sources of dairy product supply. And this is, potentially, good news for non-Oceania milk processors and first class domestic producers.

## Threats in the China Dairy Industry

The major threats to the Chinese dairy industry are primarily economic and political. As China is not considered a low cost producer of fluid milk due to the relatively new investment costs and the cost of quality forages. The milk downturn of the last year or so threatens to drive less efficient dairy enterprises into liquidation. While the forage import issue is not an overwhelming threat, all agricultural imports are

likely to be balanced against State grain reserves particularly corn. The cost of all imports will likely rise with scrutiny. All agriculture is domestic and political. Companies we met with expressed some reservations about increasing their milk production as the "expense" of small dairy herd or peasant dairy farmers. The press reports in the China about milk being dumped by producers because there was no one to buy, too low a price, and restrictions imposed by processors on their milk due to "quality" were fairly common during the past year. Clearly, the government and consequently larger industry players who are part of the modern dairy transformation are worried about alienating small dairy producers, and the overall negative economic impacts that scale and modernization are going to have on rural families.

The slow development of fresh milk marketing and cold chain distribution systems will be a threat to Chinese dairy farms. The fact that the previous and current generations of Chinese consumer has developed a taste for UHT milk probably means the development of the cold chain and dairy product distribution system will not evolve at the pace or with the investment that cold chains were developed in post war Europe or the US because UHT did not exist. More likely, it will mimic the system in southeast Asia, where UHT gained dominance and truly fresh milk remains a niche product. China remains a major importer of fluid milk largely in the form of Ultra High Temperature (UHT) milk. For 2015, imports of fluid milk (including UHT) are surging. The largest supplier is the EU accounting for about 64 percent of shipments so far this year, followed by New Zealand and Australia. As a result, the 2015 import forecast was revised up to 400,000 tons. This import pace is expected to continue through 2016 driven by consumer demand for relatively low priced imported UHT milk and confidence in the safety of imported milk. Consequently, 2016 imports are forecast to grow by 6 percent to 425,000 tons. Specialized storage for fresh dairy products will follow chilled imported fresh meats or poultry and be focused on upper income, health conscious buyers.

A major threat for China's industry is fielding sufficiently trained personnel for modern dairy operations [9]. As new modern farms spring up over China, agricultural schools will have to turn out a new generation of nutritionists. The leap forward in dairy management, nutrition, and health issues for large herds can be bridged in the short term by the importation of expertise and "on the job" training at many of these new farms. In the long term, these new farms and the Chinese universities will have to form alliances which ensure the technology, methodology, and training necessary to efficiently operate these new farms in the long term are present.

Finally, cash flow is also an on-going problem for expanding businesses in China, particularly so in agriculture sectors. In the rush to expand production with higher milk margins, the farms on-going funding requirements are sometimes underestimated. Agriculture generally has lower rates of return on invested capital with uneven inventories and profitability. Investors are often ignorant of the medium and longer term difficulties which can put severe financial constraints on operations.

## Conclusions

We have now looked at the kind of SWOT analysis and arrive at a few conclusions.

Firstly, the newer breeds of high performance cows and larger cow populations that command both the technical expertise and the

financial resources clearly point to direct sales to large farm dairy enterprises as an entry strategy. The high producing cows in China are there in large numbers and in larger groups on the new farms. They need to be fed well to realize their milk production potential and, inevitably, justify the investor's confidence in the domestic industry as an earner.

Secondly, the strengths in the China's dairy industry are its growth, investment, and farm restructuring into a modern industry with a focus on food safety and efficiency. The industry has the environmental benefit of a large population with the rising incomes, becoming ever more urban, who demand more dairy every day. The change in the one child policy and strong state support for dairy signal continued growth.

Thirdly, the weaknesses of the China's dairy industry remain the 80% plus small farms, the poor availability and quality forage crops. The industry continues to struggle with food safety issues and perceptions of poor quality. The liberalization of milk and milk powder imports will likely weaken the domestic growth rates as fresh milk remains a niche and dairy cow feed inputs are subject to duties not affecting milk and milk powders. Asian lactose intolerance may limit consumption.

Fourth, China has a low per capita dairy consumption rate offers opportunity for fantastic growth. Growth in milk consumption is also actively encouraged by the government with a number of initiatives aimed to encourage increased milk intake, especially by children.

Fifth, other major threats are competition from the domestic soy industry, insufficient numbers of competently trained dairy farm staff, and as always in farming insufficient cash flows.

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