

# The Market Demand Analysis of the Liquid Milk

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**Abstract:** *With the happen of sanlug milk powder incident in 2008, China's food problems, especially infant milk, obtained the wide spread attention. Also for the necessities that in our dairy life, such as pure milk, yogurt and so on, its production enterprises also need to improve the quality of their products. So this is an opportunity for overall dairy industry .which is also a challenge. This paper mainly focuses on the liquid milk of overall dairy products demand. Based on the research of the liquid milk industry, we were to explore the development of China's dairy products in recent years and to analyze how much potential market demand for liquid milk. This report is selected liquid milk sales from 2002 to 2011. According to these previous sales data; we use time series analysis methods and the quantitative analysis for the main factors which can affect their demand. Finally we combined with least square method for curve fitting to calculate the future market demand forecasting model. And then to forecast the future demand of liquid milk, thereby establishing the liquid milk market in China market demand analysis report. The goal of this report is the study of the change of liquid milk market demand in China since 2002. Thereby reflecting the developmental status of Chinese liquid milk.*

**Keywords:** least square method time series market demand forecast liquid milk

## 1. Introduction

Chinese dairy industry after reform and opening up, the development of recent decades has been gradually developing. After the government and the enterprises of the dairy products and dairy products propaganda to popularize the knowledge of demand for dairy products market, the China has entered the stage of rapid growth. China dairy consumption market is now the world dairy giants strain every nerve segmentation chunk "fat". The dairy products enterprise and foreign enterprise to China is a potential huge market.

Three melamine incident 2008 years Sanlug milk powder led to reduced confidence in Chinese dairy products of national. At the same time also caused a decline in China dairy products demand. But this does not mean that the dairy products demand Chinese they really would have fallen down, but the sudden drop another sustained and rapid growth of another demand would cause Chinese dairy products demand.

The current dairy market competition has further exacerbated the trend, some media called "feudal lords vying for the throne of the Warring States period". Careful observation, the dairy enterprise competition, this competition has been transferred to the former price competition is competition, competition and market competition of service quality. Therefore, through the research of this project will help further understanding to improve the development of liquid milk industry trends.

## 2. Product Introduction

Liquid milk is produced by healthy cows' fresh milk, through heating sterilization method and effective treatment, packaging sale of drinking milk. According to the International Dairy Federation (IDF) definition, liquid milk (liquid) is a general term for pasteurized milk, UHT milk and yogurt three kinds of dairy products.

Liquid milk easy digestion and absorption, high quality and inexpensive, convenient to eat, is the most "near perfect food", known as "white blood", is the most ideal natural food. It has the effects of inhibiting tumor, tranquilizing the mind, such as the role of beauty

China's dairy industry, from the beginning of 1998 has entered a rapid growth stage, until 2008 were maintained two digit growth. In particular, in 2005 to 2007 was the golden period of development, industry output growth rate reached an average of about 16%, in 2009 the total output breaks through 17000000 tons, normal temperature milk to occupy more than 70% share, of which 2001-2008 years, the per capita expenditure dairy consumption of national urban residents rose from 80.06yuan to 189.84yuan, an increase of 2.37 times, dairy consumption expenditure accounted for the proportion of food consumption expenditure increased from 3.98% to 4.46%, an increase of 0.48 percentage points, which in 2003 the most proportion, 5.16%. In recent years, the consumption of dairy products in liquid milk consumption is the main force. China's liquid milk production and sales volume in 2002 was 12997800 tons, 17462800 tons in 2003, 22606100 tons in 2004, has become the first domestic varieties of dairy consumption in the market. According to the existing data, since 1996, the liquid milk production has more than milk, become the first domestic varieties of dairy consumption in the market. From the development status of all kinds of dairy consumption in recent years, from 1996 to 2000 5 years, liquid milk production and sales of an average annual growth rate reached about 53% in 2003 to 67%, 40% in 2004, while the average annual growth over the same period the rate is only about 1% of milk powder. So the liquid milk has become the largest scale dairy industry in China, the fastest growing segment of the market.

It has the following characteristics: urban residents per capita consumption of liquid milk volume stability, the market is in the mature stage; rural residents per capita consumption of liquid milk volume growth, the market is in transition to a mature stage of growth; economic developed area and dairy resource rich area per capita consumption of the most high, the urban area is much higher than in rural

areas, but rural area consumption the per capita growth rate is far higher than the urban areas; consumers in the large warehouse and supermarket to buy the proportion of liquid milk rise and occupy a dominant position, traditional channel sales ratio declining; consumption declining traditional pasteurized milk, milk consumption of UHT increases rapidly and occupy the dominant position.

### 3. The Main Factors Influencing the Liquid Milk Market Demand

In the ever-changing market, the influence factors of the liquid milk needs are constantly changing, but the main factor is mainly the following three.

#### (1) The liquid milk consumption per capita

This is an important factor of dairy products demand, Chinese dairy products per capita consumption or more detailed to the per capita consumption of liquid milk is an important factor analysis of liquid milk consumption growth trend, the amount of consumption of average per capita by liquid milk, liquid milk for analysis can evaluate the milk product how big is the demand of future.

#### (2) Per capita disposable income

The per capita disposable income is one of the important factors affecting the dairy products market demand. Although China's economic development and the growth rate of the total walk in one of the world, but the income distribution is serious unbalanced, the gap between rich and poor is growing, serious impact on the quality of life of the residents to improve. High level of income people pay attention to nutrition, consumption of dairy products, and the income level low person no financial have no energy to focus on the body needs nutrition, natural and less consumption of dairy products; the important factors of consumption of urban residents in Beijing, Shanghai dairy, Tianjin, Shandong, Jiangsu and other developed provinces and cities in our country is much of their income level high, so pay attention to the body balanced nutrition and healthy consumption, while the central and western provinces city

residents income level is relatively low, some barely enough food and clothing, and some just solved the problem of food and clothing, low consumption of dairy products in this case is inevitable, no financial emphasis on good nutrition balance problem. Therefore, the per capita disposable income increase is one of the important factors affecting the demand for liquid milk. Per capita disposable income means the number of tolerable degree of consumption level and commodity prices. According to the habitat of disposable income can evaluate enterprise consumer purchasing power.

#### (3) The resident consumption level

The consumption level of residents refers to residents in the material products and services consumption process, to meet the people survival, development and enjoyment need to reach the level of. We Reflected by the quality and quantity of consumption of material products and services. It is the consumption of structural indicators reflects the level of consumption. Physical form through the consumption of residents consumption level of residents consumption can be observed, the number and amount of the average consumer can also further calculation for all kinds of consumer goods in order to reflect the residents, based on the basic survival need on gradually to enjoy data and development direction development trend.

### 4. Data Collection and Analysis

There are many factors affecting certain liquid milk market demand, such as economic development, market, national policy and so on, but the main factor is the per capita liquid milk consumption, per capita disposable income, the consumption level of residents of the three is the main determinant. Is the key factor to evaluate the liquid milk market demand?

#### (1) Data collection

According to the relevant information Chinese statistical yearbook and China dairy Yearbook and the related literature we can get liquid milk as follow

year	Liquid milk sales volume [unit: 10000 tons]	The consumption level of residents [unit: Yuan]	Hundreds of people per capita of liquid milk Consumption (unit: kilogram)	The per capita disposable income [unit: Yuan]
2002	1,299.78 1,299.78	4,143.75	1,570.00 1,570.00	7,702.80
2003	1,746.28 1,746.28	4,474.534,474.53	1,860.00 1,860.00	8,472.20
2004	2,260.61 2,22,260.61 60.61	5,032.00 5,032.00	1,880.00 1,880.00	9,421.60
2005	2,753.37 2,753.37	5,596.20 5,596.20	1,790.00 1,790.00	10,493.00
2006	3,193.41 3,193.41	6,298.57 6,298.57	1,830.00 1,830.00	11,759.50
2007	2,753.37 3,525.24	7,309.63 7,309.63	1,780.00 1,780.00	13,785.80
2008	3,525.24 3,555.82	8,430.15 8,430.15	1,520.00 1,520.00	15,780.80
2009	3,518.84 3,518.84	9,283.28 9,283.28	1,490.00 1,490.00	17,174.70
2010	3,575.62 3,575.62	10,522.40 10,522.40	1,400.00 1,400.00	19,109.40
2011	3,657.85 3,657.85	12,569.96 12,569.96	1,370.00 1,370.00	21,809.80

According to the table we can found that the per capita disposable income and consumption level of residents in the past ten years has been to the high speed growth. But hundreds of liquid milk consumption per capita in 2004 after declining trend, there is a close relationship between the May and population growth. Liquid milk sales before 2007

growth, after the smaller increase in 2008 and 2009 show a downward trend, declining thus sales may be due in 2008 three melamine incident caused consumer confidence in dairy products decreased resulting in the liquid milk sales also received the influence.

(2) The validity, reliability, significant degree

The above data obtained using SPSS can be obtained by curve fitting analysis table 1, 2 as follows:

Model	R	R <sup>2</sup>	Adjustment of R2	Standard error of estimate
1	0.973a	0.989	0.982	74.62573

a) predictor variables: (Chang Liang),  
 b) The per capita disposable income, a hundred years of liquid milk consumption per capita (XianKen), the consumption level of residents [unit: Yuan].

Model	Coefficient	Non standardized coefficient		Standard coefficient	t	Sig.
		B	Standard error			
1	(constant)	-4245.475	1449.597		-2.929	.026
	The consumption level of residents [unit: Yuan]	-1.354	.433	-4.404	-3.123	.021
	Hundred years of liquid milk consumption per capita (XianKen)	2.090	.697	.484	2.998	.024
	The per capita disposable income	1.009	.249	5.633	4.061	.007

A. dependent variables: liquid milk sales volume [unit: 10000 tons]

By the analysis of the chart shows that: according to table 1; per capita disposable income, a hundred years of liquid milk consumption per capita, these three variables level of consumption of liquid milk sales explanation degree is 98%, this explains the liquid milk these three variables can better sales, is effective. According to table 2 can be found in the three sets of data salience is respectively 0.021, 0.024, 0.007, according to the statistics shows that this explains the rationality explanation levels were in the range of 0.05 shows that the three independent variables on the dependent variable of liquid milk sales is very significant, is credible.

(3) The construction of regression equation and elastic analysis.

Finally, according to above to analyze the data obtained we can get to the final fitting linear expression of  $Q = -4245.475 - 1.354\alpha + 2.09\beta + 1.009\gamma$  (alpha beta, which is the level of consumption is 100 per capita consumption of dairy products, gamma is the per capita disposable income) according to the acquired data: in 2012 per capita disposable income for 269590000, residents consumption level is 14098.21, 100 per capita consumption of dairy products was 22705.50, based on three independent variables we end 2012 data we can estimate the demand for 2012 37935973 tons.

By the model and the data obtained from the above we can get the following data:

The per capita disposable income elasticity	The consumption level of residents elasticity	Hundreds of people per capita annual liquid milk consumption elasticity
5.98	-4.32	2.52
4.90	-3.47	2.23
4.21	-3.01	1.74
3.85	-2.75	1.36
3.72	-2.67	1.20
3.95	-2.81	1.06
4.48	-3.21	0.89
4.92	-3.57	0.88
5.39	-3.98	0.82
6.02	-4.65	0.78

From the table we can see that the per capita disposable income of the influence of liquid milk demand reached a minimum in 2006, the influence of later in 2006 per capita disposable income of demand for fluid milk volume of rapidly rising trend. Influence of residents' consumption level of liquid milk demand has been gradually declining trend. Hundreds of liquid milk consumption per capita in 2006 before the influence of the liquid milk demand is gradually increasing, after 2006; its effect on the liquid milk demand is decreased. The elasticity of demand in addition to the consumption level of residents appeared outside of less than 1 other are greater than 1, this shows that in the China liquid milk consumption is still not fully reach the necessities of life state, at this stage Chinese liquid milk for a part Chinese residents or in addition to the required goods outside the luxury. This shows that China now per capita disposable income is relatively low caused people to meet this demand cannot be normal. That price is still a relatively important competitive factor of liquid milk market.

(4) To establish a prediction model

From the above figures can be drawn from the year of 2012, hundreds of residents and consumption level per capita consumption of dairy products and the per capita disposable income of the function expression between respectively:

The residents' consumption level of  $\alpha = 857.7t + 2401.4$  ( $R^2 = 0.956$ )

Hundreds of people per capita consumption of dairy products to  $\beta = -47.5t + 1910$  ( $R^2 = 0.7223$ )

The per capita disposable income  $\gamma = 1564.1t + 4948.3$  ( $R^2 = 0.9756$ )

These three expressions were brought into the  $Q = -4245.475 - 1.354\alpha + 2.09\beta + 1.009\gamma$  can get the final  $Q = 195.3t + 1488.1$

This can be predicted sales of the next few years as

2012	2013	2014	2015	2016
3831.7	4027.2	4222.3	4417.6	4612.9

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