

## **The Issue of “Two Stabilities” of MSG Industry**

### **Report Summary**

# China's urbanization and economic development have procured the flourishing development of the food industry and the catering industry. As one of the invisible champions in the background, the glutamic acid and MSG industry has also grown stably. China is the new centre of the worldwide glutamic acid and MSG industry. Its vast market provides a good platform for the industry. On this foundation, this report aims to probe into the important issues of the existing layout and “two stabilities” in the industry.

# Stability 1: Stability of the industry layout. After the drastic 2006-2008 industry integration, the current glutamic acid and MSG industry has formed the leadership enterprise group in the initial stage. The basic reason of the integration refers to the leading strategic judgment of the enterprise and it is embodied in the low-cost barrier and the price war. Glutamic acid and MSG are different parts of the production chain. Because of different investment levels and technical characteristics, glutamic acid incorporates “integration steadiness” while MSG incorporates “integration repetition”.

# Stability 2: Stability of making profit. The making profit-making cycle of the glutamic acid and MSG industry can be divided into the industry cycle (or cost cycle) and the integration cycle. Because of the demand steadiness, the enterprises of the industry in general are capable of pricing in line with the cost so as to transfer the cost downstream. It has been embodied in the stable gross profit margin in the industry. The widening profit variation is in fact due to the integration cycle, that is, the process in which the leading enterprises take the initiative to eliminate production capacities in the industry.

# After the industry integration cycle in the, the glutamic acid and MSG industry will enjoy the golden period at this stage, due to decreased supply terminals and increased concentration. Starting from the 4th quarter in 2008, China's glutamic acid and MSG industry has entered this stage.

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## Preface: Are you concerned about “Stability”?

Report Series 1: Emphasizing Macro-economy and Directing Meso-economy. The main conclusion is: China has emerged to become the new empire of the main glutamic acid and MSG industry in the world. After getting through numerous “wars” prior to the establishment of the empire, particularly the recent industry integration war starting from 2007, the distinguished enterprises such as Fufeng and Meihua have managed to outperform the various enterprises. By taking advantage of regional cost, technical management and network marketing, they have captured the leading positions in the industry. In face of the current industry situation of stable growth of market demand, extension of the production chain of the distinguished enterprises and so on, there are two decisive issues affecting the industry conduct and even the establishment of the empire from the viewpoint of meso-economy. It is the so-called the “Issue of Two Stabilities”, that is, the stability of industry structure and the stability of profit-making capability. Why we have focused on the issue of stability? First, the structural stability will enable the distinguished enterprises to get better control in the business. Second, the profit-making stability is capable of providing the investors with better returns. Both are differentiated from and related to each other. The interpretation process of the issue will also bring about a series of important conclusions, which is the core of this report.

## My Territories – How to Wait for: The Stability Issue of Industry Structure

As of the end of 2008, the integration has brought about the concentration of the glutamic acid and MSG industry. From 2002 to 2008, the number of MSG enterprises dropped from 100 odd to 35 (47 of them with production capacity), and that of glutamic acid enterprises from 140 odd to 21.

**Table 1: Concentration Level of the Glutamic Acid and MSG Industry**

	CR2	CR4	CR10
MSG Industry	34.46%	51.2%	71.88%
Glutamic Acid Industry	37.54%	53.54%	83.39%

Source: China Fermentation Industry Association and Research Department of Changjiang Securities

The structural stability of the industry effectively concerns the issue of whether the production capacity of the industry is in good order, and subsequently whether the price control capability of the industry is sustainable. As the current leading enterprises are merely of tentative status, the enterprises have doubt in implementing strategies by means of their leading position on the market.

## Further Review on the Formation of Industry Structure –

### Construction of Low-cost Barrier

As for the pattern of enterprise competition, it can be classified into two categories, that is,

differentiation and low cost, from the abstract point of view. In particular, there are four types of differential strategies, that is, product, service, personnel and image differentiation. After having surveyed the glutamic acid and MSG industry, we conclude the level of industry differentiation as follows:

**Table 2: Current Situation and Differentiation of the Glutamic Acid and MSG Industry**

Category of Differentiation	Current Conditions	Level of Differentiation
Product	The production techniques of glutamic acid and MSG are mature and open to the public. Their products are similar. MSG features consumption by the general public.	As there is no obvious product differentiation, it is very difficult to obtain public. MSG proprietary technical breakthrough.
Service	Some MSG brands are adherent to specified markets	Some MSG brands have regional dominance. It may be a prolong process for the integration of the MSG industry.
Personnel	Most of them adopt the procedural production. There is no obvious differentiation of personnel at the basic level.	The leadership judgment is a more important factor in the process of industry integration.
Image	Domestic enterprises often adopt the VI design and major products may be one of mid-stream orientation, without the large-scale terminal development	

Source: Information collated by Research Department of Changjiang Securities

According to our findings, in terms of the mature techniques and the popularized product nature of current glutamic acid and MSG markets, sheer reliance on the strategy of differentiation is not the key to the decisive factor of the industry competition and the industry integration. On the contrary, we have mentioned above that the low-cost strategy is the actual power directing the industry integration.

## Main Costs of the Glutamic Acid and MSG Industry

According to our discussion in Report Series 1, since 2000, the emergence of the leading enterprise in the industry has derived from the strategic judgment of the distinguished leader, and the execution capability of the enterprise in implementing its own strategies. **All the adjustments of these strategies aim at one goal, that is, the construction and consolidation of the low-cost barrier.** Subsequently, in further review of the industry structure, it is of first priority to have thorough understanding of the formation of the main costs of the glutamic acid and MSG industry.

- On the part of glutamic acid production, the main raw materials depleted are corn, coal, liquefied ammonia and sulphuric acid. Production of 1 tonne of glutamic acid requires the depletion of 3 tonnes of corn, 2.2 tonnes of coal (based on the standard of 5,000 kilocalories), 0.4 tonnes of liquefied ammonia and 0.5 tonnes of sulphuric acid.
- On the part of MSG production, the main raw materials depleted are glutamic acid and coal. Production of 1 tonne of MSG requires the depletion of 0.8 tonnes of glutamic acid and 0.3 tonnes of coal (based on the standard of 5,000 kilocalories).
- The environmental protection in the fermentation industry constitutes another major source of variable costs: Waste water in great volume is generated in the production process of MSG. The production of a tonne of MSG has to discharge 10-15 tonnes of mother liquid. In China, the annual discharge of such highly concentrated organic waste water is over 10 million tonnes. Hence, the MSG industry is one of the major industries involved in China's implementation of the policy of saving energy and minimizing emission. The waste gas generated in the course of production is more difficult to handle than the treatment of waste water. The main contaminant in such gas emitted in the production of MSG is the industrial aerosol containing sulphur compounds and burnt smell, which has become the main concern of the local government.

The above three constitutes the main production costs of the glutamic acid and MSG industry. Hence, the construction of the low-cost barrier must be carried out in connection of the above.

## Glutamic Acid Is the Direct Link for Imposing Low Cost

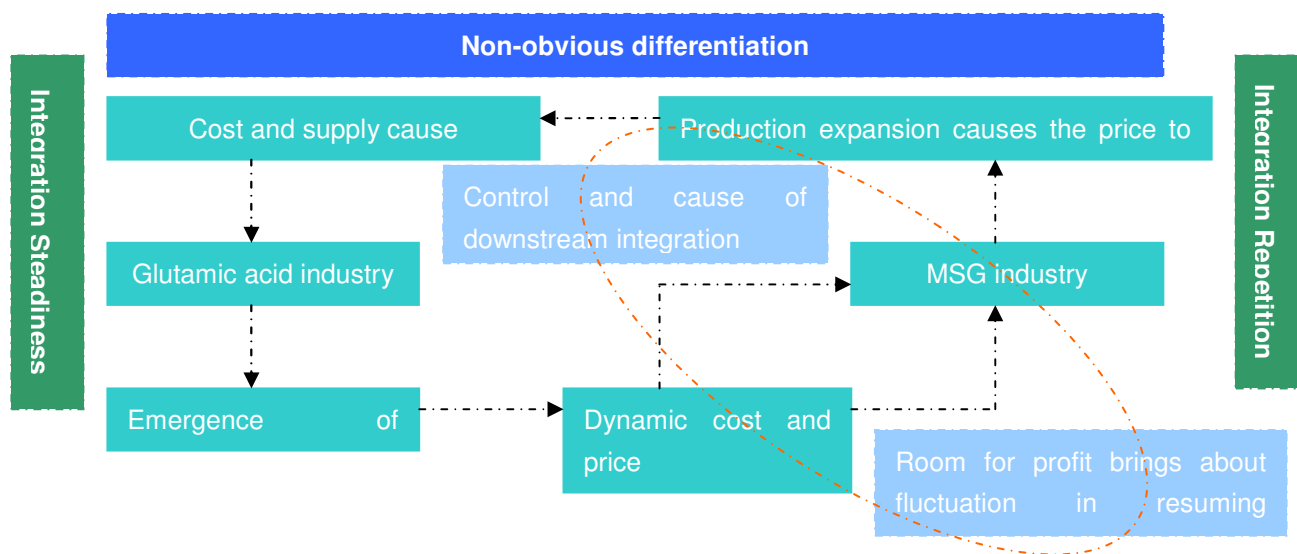
In the operation process of the glutamic acid and MSG industry, the glutamic acid industry is the more direct link for imposing the barrier from the viewpoint of cost. The main reasons are as follows:

- 1) The direct raw materials including big volume of agricultural products or commodities such as corn and coal requiring higher transportation cost for the production of glutamic acid has led to the not replaceable regional layout. The direct raw material for the production of MSG is glutamic acid, which can be transported in the form of crystal. Hence, it enables the more extensive distribution of production capacity of the MSG industry.
- 2) The production capacity of glutamic acid requires bigger expenditure in investment. The projected production line with the production capacity for 100,000 tonnes of glutamic acid requires the investment of RMB400 to 500 million, while the production of 10,000 tonnes of MSG requires capital contribution of merely RMB10 million odd. Less capital

expenditure also makes it more flexible for entering the MSG industry and foreshadows the industry fluctuation.

The above two points constitutes “integration steadiness” of the glutamic acid industry and “integration repetition” of the MSG industry.

**Diagram 1: “Integration Steadiness” of the Glutamic Acid and “Integration Repetition” of MSG**



Source: Research Department of Changjiang Securities

### Construction of Low-cost Barrier

In regard to the main costs of the glutamic acid and MSG industry, the leading enterprises proceed with the construction of low-cost barrier by means of the following methods.

- **Layout of Raw Materials and Energy: Winning Right from the Starting Line**  
As of November 2009, the layout of the top ten glutamic acid production enterprises is in the major provinces\* producing corn. Their total production capacity takes 83.4% of the entire market. Four enterprises have their layout located in the major provinces producing coal. Their total production capacity takes 49.5% of the entire market. In the production of glutamic acid, corn and coal take a total of over 60% of the production cost (as the main raw material of liquefied ammonia is coal, the relative proportion of coal is higher). As a result of the cost competition derived from the price competition of the end products, those enterprises with inherent low cost have become the survivors naturally.
- **Integrated Production: Switchover from Single-aspect Competition to Value**

\* Represented by Fufeng, Meihua, Linghua and Lotus

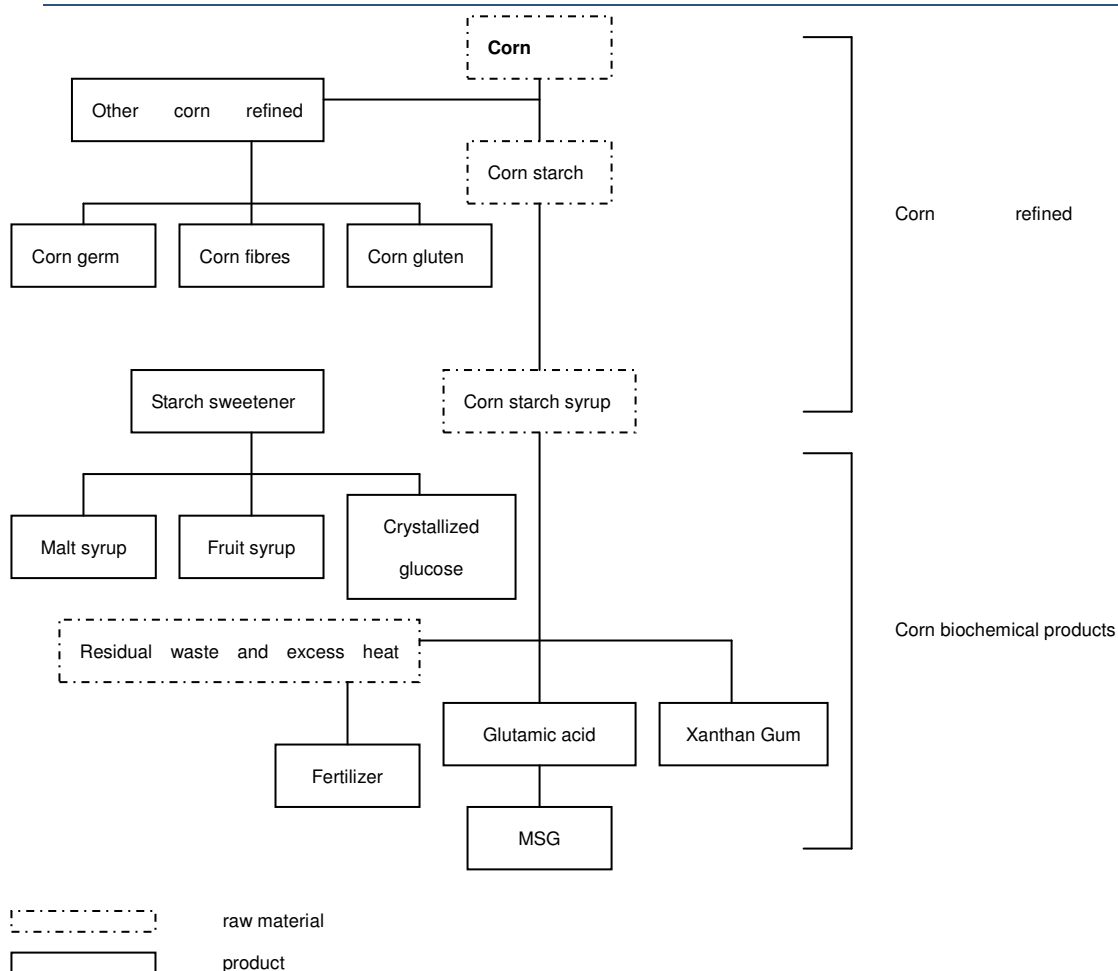
### Chain Competition

In the process of bio-chemical fermentation, integrated production is a more common type of economic and reasonable production method. Integrated production extends the production chain. It enables the value transfer in the production chain within the enterprise. Hence, such organization structure is in a better position in dealing with the hedging risk when the upstream cost or downstream product prices have negative fluctuation. **When the enterprise has a longer production chain under its control, it will have better capability of standing against the risk theoretically. Production chain competition has become the powerful weapon in the “invasion” of the leading enterprise.**

As of November 2009, out of the top ten enterprises producing MSG, eight of them have carried out the integrated design and production of glutamic acid and MSG, taking 65.9% production capacity of the entire market. Among these eight leading enterprises, the glutamic acid production capacity of only two has been able to fully satisfy their production of MSG; five have provided barely enough glutamic acid production capacity to satisfy their production of MSG and one has had to purchase a portion of the glutamic acid from outside suppliers.



**Diagram 2: Actual Example of a Complete Production Chain of Glutamic Acid and MSG**



Source: IPO prospectus of Fufeng Group and Research Department of Changjiang Securities

● **Scalization: Dilution of Fixed Costs**

By means of amortizing the period expenses by mass production and offsetting the depreciation of fixed assets by high utilization rate of production capacity, the total production cost is scaled downward accordingly. It is also very important for the enterprise making use of the low-cost competition strategy. In particular, when the end product price is falling (in line with the survival of the fittest in the industry integration), the effects of the above two are more conspicuous.

As of November 2009, the top ten enterprises with actual output of glutamic acid exceeding 60,000 tonnes have captured 83% of the entire market, compared to 77% in 2008.

At the end of 2008, the top twelve MSG production enterprises with actual output exceeding 40,000 tonnes have captured 83% of the entire market. As of November 2009, the production capacity of all MSG enterprises has exceeded 40,000 tonnes.

● **Pollution Treatment: In Advance Complying with the Overall Trend**

Following the economic development, the government and various sectors in society keep on placing greater emphasis on the issue of enterprise pollution. The development of environmental economy has become a major content in policy formulation. Sewage and waste gas of the MSG industry continue to become more important issues. Starting from the initial formulation of laws and regulations to the recent elimination of the obsolete production capacity, the standards are getting more stringent than before and the power of execution is growing.

**Table 3: Policies & Regulations Relevant to the MSG Industry**

Time	Policy	Main Contents
1996	GB8978: Integrated Waste Water Discharge Standard	To set up the standard for discharging water contaminants of the MSG industry.
2004	GB19431-2004 Discharge Standard of Pollutants for Monosodium Glutamate Industry	On comprehensive basis, to specify the management applicable to the discharge of the water contaminants of the MSG industry and the contaminants in the atmosphere, the control of noise pollution and the disposal of solid waste, superseding the former.
2007	Notice of the State Council on the Publication of the Integrated Work Scheme of Energy-saving and Emission Reduction	To increase the power of eliminating the backward production capacity of paper, alcohol, MSG, and citric acid industry.
2007	Notice from National Development and Reform Commission and State Environmental Protection Administration on properly eliminating backward production capacity of paper, alcohol, MSG, and citric acid industry	According to the law, to implement the elimination of the backward production capacity of paper, alcohol, industry not in compliance with the laws and regulations and the stipulations of the production policy, not up to the standard of environmental protection assessment and examination, or exceeding the emission standard or the emission required by the waste emission licence (including backward enterprises, backward production lines and backward production techniques and installations)

Source: Network, and information collated by Research Department of Changjiang Securities

The issue of environmental protection has become one of the inevitable issues of the MSG industry. The cost of environmental protection has also become one of the costs to be borne by the enterprises. The usual action of the leading enterprises is to turn the waste into valuable things by constructing the “recycling economy” production pattern mentioned above. **In addition, the solution in advance is to reinforce the technology improvement for obtaining the thorough solutions for the problems of waste water and waste gas, in order to take the leading position under the trend of stringent policy and also become the choice for the distinguished enterprise.**

In fact, the importance of environmental protection of the glutamic acid and MSG industry is so outstanding that even the enterprises with mass scale techniques have to place emphasis on the problem environmental protection without fail. Taiwan Vedan International has been forced to stop a part of its MSG production capacity for one year because of having violated Vietnam’s environmental protection law. The sewage problem of Meihua Group was exposed in the report by CCTV in May 2009 as well. It shows that the nations have taken stringent measures in dealing with environmental protection problems alike.

## Structural Stability

For the leading enterprises, structural stability refers to whether the advantageous position obtained by the enterprises on the leading edge can be extended in continuation. For the industry, if the barrier is broken at ease, the increased supply in the industry will definitely cause the product prices and profits to drop. This is what structural stability means. On the other hand, the probe into structural stability must be forward looking under the current circumstances, so that the advantages and disadvantages of the industry development, the favourable and unfavourable conditions of the leading enterprises should be described in the first instance. This part is so structured.

## Positive and Negative Factors of the Industry Development

### ● Policy Environment of the Industry Development

A. The current industry development of the glutamic acid and MSG industry goes in line with the overall direction of China's policy adjustment of the corn deep-processing industry. In 2007, China issued the "Guidance on the Promotion of the Healthy Development of Corn Deep-processing Industry". The main points of the policy are to develop stringent access standards for the development of the corn deep-processing industry, adjust production structure and layout, develop recycling economy and restriction, and eliminate backward production capacity. The launch of this policy is due to **the unbalanced total supply and demand as well as the structure of corn. This is also the basis for the overall environment of the entire corn deep-processing industry at the current stage and the launch of relevant production policy.**

B. The reinforced penalty and treatment of the pollution caused by the MSG industry mentioned above is an inevitable problem in developing the industry. At present, the treatment of waste water has become very mature in the industry. Gas and smell are global problems. Following the creation of relevant techniques, the regulatory authorities may request all enterprises to solve the problem of gas in future.

C. The cancellation of tax exemption and refund has not sign of reversing the situation in the short term. The main reason is still due to China's intention to adjust a part of supply exceeding demand and the problem of depleting raw materials of the products (subjected to the corn deep-processing) mainly for export. The export tax refund for MSG products has been cancelled since 2007, which remains in force up to now.

The above three points bind the development of China's glutamic acid and MSG industry from various aspects and form the policy background for the development of the industry at the current stage.

### ● Effects on the Industry and Leading Enterprises

The policy binding the glutamic acid and MSG industry has brought about different effects. It has also brought about different effects on the development of different

enterprises in the industry. In this regard, we summarize as follows:

**Table 5: Analysis of Policy Effects on the Industry**

	Policy Background A	Policy Background B	Policy Background C
On the Industry	# New production capacities may gather at the place with raw materials available	# Treatment of waste water has become a problem of the industry in principle	# Export of the industry may be subjected to certain suppression
	# To promote the elimination of backward capacities	# The problem of gas and production smell may bring about compulsory standards	
	# To emphasize environmental protection and recycling economy		
On the Company	# The policy of access standards for the enterprises may limit the access of some small enterprises	# The pattern of recycling economy may become a prerequisite for enterprises	# The drop in the tax refund rate enables the powerful new enterprises to obtain advantages in export
	# Distinguished enterprises have policy guidance for production layout and environmental protection	# Emergence of problems in the treatment of waste water and will affect the image and reputation of the enterprise	
		# The leading techniques in the treatment of gas and smell is a factor of competitiveness in future	

Source: Research Department of Changjiang Securities

To some extent, the unfavourable conditions of the industry are good for the distinguished enterprises instead. The upgraded access threshold set up the access obstruction for new production capacities from the starting point. The discussion in our analysis of the new comers is based on the above foundation.

### Analysis of New Comers

The following four situations in which the aspect of supply may have impact on the structural stability are discussed one by one.

- **New Comers with Capital outside the Industry**

The characteristics of the biochemical industry is that very minor changes of the fermentation environment in the biochemical process may lead to very big differences in the rate of product yield and the product functions. The reason is that the nature of the fermentation process is to create the most appropriate metabolic conditions for the bacteria so as to ensure the quantity and quality of the metabolized products. However, the said “most appropriate” conditions for the micro-organisms can only be obtained by means of on-going attempts. Moreover, such experiment has to undergo small, medium and big tests in order to be industrialized. Mature environment in small-scale does not mean that it is capable of proceeding with mass production.

Therefore, according to our findings, one of the characteristics of the biochemical

fermentation industry is that it requires many technicians and a stable team with many years' experience in on-going improvement and maintenance. In this aspect, it is unlikely to achieve the goal merely by having capital available.

- **New Comers – Enterprises from Similar Industry**

In nature, the similar industry also has the problem of lacking sufficient control of the fermentation process. In comparison to the capital outside the industry, it may have the advanced advantage of having better control of the fermentation process. However, it does not mean that it is capable of having full control of the appropriate factors.

The actual examples of the subsequent withdrawal (after attempting to produce glutamic acid) of the leading enterprises having come from similar industry may provide better proof:

- A) Ronghua Industry: Ronghua Industry announced in April 2007 that it was going to raise fund to shift from the production of lysine to glutamic acid. However, in its announcement in July 2009, the company declared that it had stopped its production line with the explanation that “the production cycle of glutamic acid was long; the turnover rate of current capital was comparatively slow, and moreover, the project was still suffering loss due to low production rate”.
- B) Global Bio-Chem: Global Bio-Chem, the leading enterprise in China's lysine industry, entered the glutamic acid industry upon completing the construction of glutamic acid production capacity of 100,000 tonnes in 2005. However, it has basically withdrawn from the glutamic acid industry in 2008, with the production capacity shifted to the Production of its stronghold – lysine<sup>\*</sup>.
- C) Xiwang Sugar: The Company launched production of glutamic acid products in 2006 with a sales volume of 1,600 tonnes for the year. As estimated in its 2007 annual report, the sale volume of glutamic acid was around 10,000 tonnes only for the whole year. In its 2008 annual report, no disclosure of the glutamic acid business was made. As revealed in its 2009 interim report, its fermentation plant has stopped producing semi-fermented products and switched to the production of sodium gluconate.

The above-mentioned enterprises are the leading enterprises in the corn biochemical-related fields but have launched production of similar products. However, all of them have stopped production and switched to the production of other products. According to our reasonable inference, Very minor differences concerning the technical problems remain very important in the fermentation industry. This is also the soft barrier of access to the industry.

- **Supply Impact from the Resumption of Production by Enterprises in the Industry: the Pioneers Building up the Low-cost Strategy May Confront Threat**

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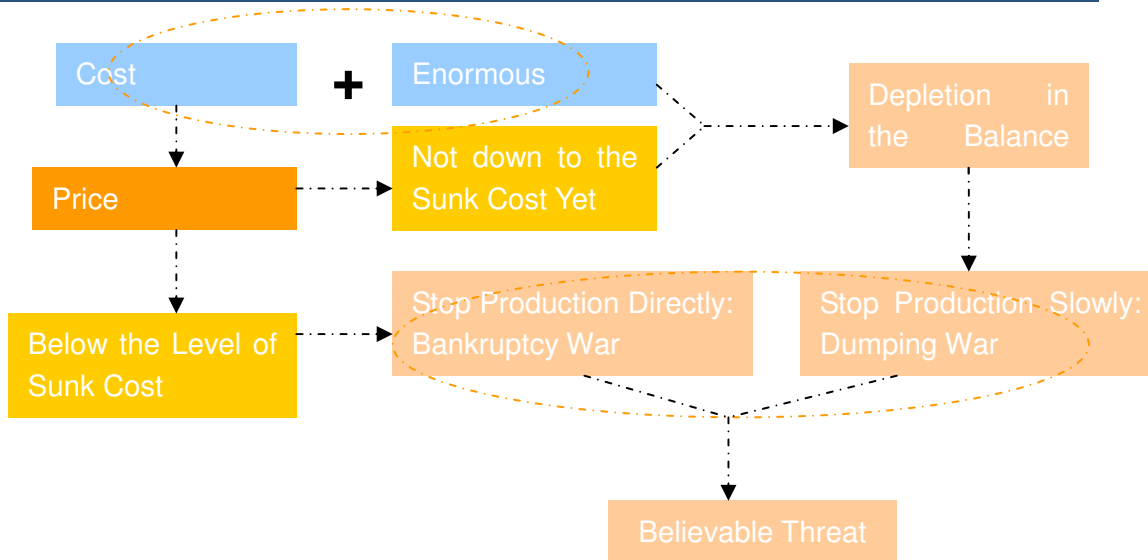
<sup>\*</sup> Such judgments are based on the 2007 production capacity announcement of Global Bio-Chem of 360,000 tonnes of lysine, and 100,000 tonnes of glutamic acid; and 2008 announcement of 460,000 tonnes of amino acid and the announcement of producing 410,000 tonnes of lysine at the same time. It shows that there has been switchover of production capacity.

Judging from the above, the resumption or expansion of production by enterprises in the industry is, in fact, the biggest uncertainty disturbing the industry structure. It incorporates three independent questions

**Question 1: In which area does the leading enterprise take the lead?**

The nature of the resumption of production is the weighing between the marginal revenue and the sunk cost: If the profit for the production of a unit product is unable to indemnify the sunk cost, then, the best choice is to stop production. However, in the actual price competition, it is not necessary for the leading enterprise to lower the product price to the level below that of the sunk cost of the competitor, and it works simply by depleting the competitor’s assets to the level of less than its liabilities, that is, the issue\* of waiting time. This process is illustrated as follows:

**Diagram 3: Illustration of the Barrier Construction Process of the Leading Enterprise**



Source: Research Department of Changjiang Securities

It can be imagined that the rising price of glutamic acid will motivate the resumption of production in the industry. Because of asymmetric information (in fact, cost is one of the core confidentiality for such kind of enterprises), each enterprise will weigh the strengths of its own assets and the cost-benefit situation. In this regard, we have carried out a brief analysis of the situation of resumption of production and fit the supply situation, with the assumptions on the following premise:

- A. It is assumed that the unit fixed cost of each enterprise is the same (in fact, the differentiation of size effects and yield rates will lead to differences in this aspect);
- B. It is assumed that the unit period expense is the same (in fact, the

\* However, in the strict sense, the industry integration has to destroy the production capacity of the competitor. As for the industry with stable demand terminal, the staged opportunity of the supply terminal is the key to investment instead. This is also the essential point of the industry profit-making cycle mentioned below.

differences in the internal management efficiency of the enterprise and the advantages of scale of the expenses are obvious);



Consequently, we only need to compare the difference in production cost. The production process of glutamic acid depends on four basic raw materials, that is, corn, coal, liquefied ammonia and concentrated sulphuric acid. Our further assumption is:

- C. Since liquefied ammonia and concentrated sulphuric acid are mostly purchased by industries, the difference in cost is not big (some leading enterprises carry out their own liquefied ammonia production or will launch the liquefied ammonia project in no time. The liquefied ammonia production requires bigger capital expenditure. The capital contribution for annual production of 300,000 tonnes of liquefied ammonia is around RMB500 to 600 million).

Then, the cost variations of corn and coal have become the important factors in our brief analysis. In fact, in building up the cost of glutamic acid production, it is most important that the cost of corn and coal also takes over 60%.

**Table 6: Corn Prices in Various Regions as Follows (prices including tax on 1<sup>st</sup> July 2009)**

RMB/Tonne	Inner Mongolia	Ningxia	Heilongjiang	Henan	Shandong	Zhejiang	Guangdong
Corn price	1620	1670	1620	1640	1780	1820	1880

**Table 7: Coal Prices (based on the standard of 5,000 Kilocalories) in Various Regions as Follows (prices including tax on 1<sup>st</sup> July 2009)**

RMB/Tonne	Inner Mongolia	Ningxia	Heilongjiang	Henan	Shandong	Zhejiang	Guangdong
Corn price	283	325	388	425	433	480	533

The production of 1 tonne of glutamic acid requires 3 tonnes of corn and 2.2 tonnes of coal. Based on the calculation at the glutamic acid market price of RMB8,000/tonne (including tax) on 1<sup>st</sup> July, the differential cost in various regions is\*

\* Price differentiation of other chemical raw materials not taken into consideration.

**Table 8: Differential Cost of Glutamic Acid per Tonne in Various Regions as Follows**

RMB/Tonne	Inner Mongolia	Ningxia	Heilongjiang	Henan	Shandong	Zhejiang	Guangdong
Differential Cost	5158.6	5391	5389.6	5527	5936.6	6152	6436.6

Source: Information collated by Research Department of Changjiang Securities

As far as only this part is concerned, the gross profit margin difference has already exceeded 10%. It is very difficult for us to expect the enterprises in Zhejiang and Guangdong to resume production. In fact, if the price suppression persists, it seems that the enterprises in Shandong have no remarkable cost advantage as well.

Recently, the prices of corn and coal have increased again. At the same time, prices of glutamic acid and MSG have also risen accordingly. Based on the calculation at the prices in early October, the gross profit margin difference in regions such as Inner Mongolia, Zhejiang and Guangdong has soared by nearly 14 points, and the gross profit margin difference of the production enterprises in Shandong also got close to 12 points!

Based on the disclosure of information on the first half of 2009 of Fufeng Group, the gross profit margin of its MSG business is 27.4%. According to our inference on this basis, the gross profit margins of the glutamic acid and MSG industry in Shandong and Guangdong are merely 15% and 13% approximately. Moreover, as mentioned above, the inference has not included the differentiation caused by economy of scale. The congenital layout plus the acquired scalization has made the profit-making capability of Fufeng Group much higher than its counterparts.

#### ● Supply Impact of the Production Expansion of the Enterprises in the Industry

In the feasibility analysis of the production expansion of the enterprises, one of the main contents is input and output expectation. This is the second question of our survey.

#### Question 2: Are the enterprises in the industry capable of expanding production?

Expansion of production requires capital expenditure in reality. From the analysis of the gross profit margin difference of glutamic acid in the above table, we can be sure that **if the enterprises in the industry expand production, they will choose a place in Inner Mongolia, Ningxia or Northeast China.** That is, the issue of the place for expanding production and also the issue of production capacity have been identified.

It is estimated that output of China's glutamic acid market is 1.60 million tonnes in 2009. According to the calculation at RMB9,000/tonne, the total industry revenue is RMB14.4 billion. In particular, the output of CR2 is 610,000 tonnes with revenue of RMB5.5 billion. For the rest of them, more than fifteen enterprises are still carrying out production, with total revenue of RMB8.9 billion. Based on 10% net profit margin<sup>\*</sup>, the estimated net profit is RMB890 million. The average net profit of each of the fifteen enterprises is RMB59.3 million. As mentioned above, the production capacity for the annual production of 100,000 tonnes of glutamic acid requires the capital expenditure of RMB600 million. It shows that it is extremely difficult to proceed with re-investment by means of retaining profit, if they are not the leading enterprises.

### **Question 3: Which enterprises are capable of expanding production and by means of which methods?**

From the above analysis, we can draw conclusions on the prerequisite characteristics of the enterprises capable of expanding production:

- 1) The leading enterprises are capable of expanding production by means of retaining their profits;
- 2) The enterprises with promising prospects for development can obtain the capital for expanding production by means of external financing;
- 3) The enterprises having developed the layout at the place of raw materials have the advanced advantages of expanding production.

Consequently, we can judge in general that the competition among the leading enterprises in the industry will direct the trend of future industry structure. The best strategy is to achieve co-existence of the leading enterprises in the industry leading to the all-win situation under oligopoly. However, the all-win situation is often fragile. Consequently, one major point is to keep the movement of the leading enterprises in the industry under close watch.

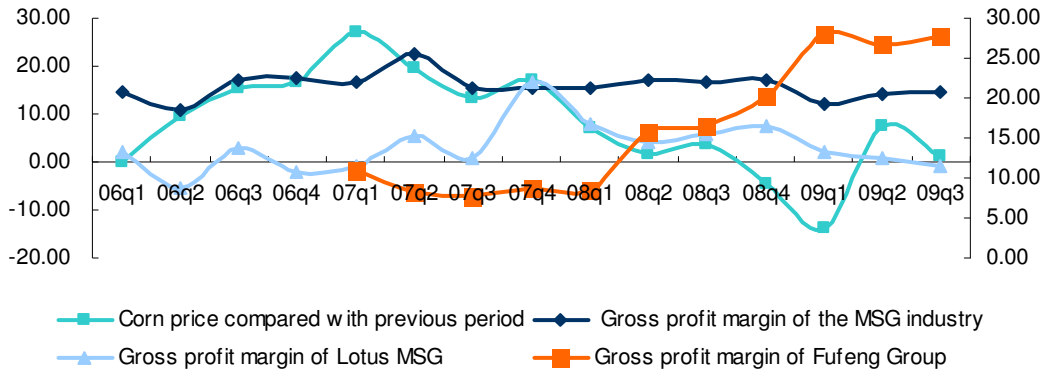
## **Industry Profit-making Cycle and the Story in the Background**

The main discussion in this part is about the issue of fluctuating profit-making capability of the industry and the enterprises. We start from the following diagram:

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<sup>\*</sup> 10% net profit margin is very high for the glutamic acid industry.

**Diagram 4: Gross Profit Margin Variations of the MSG Industry and Enterprises of Various Levels in the Industry**



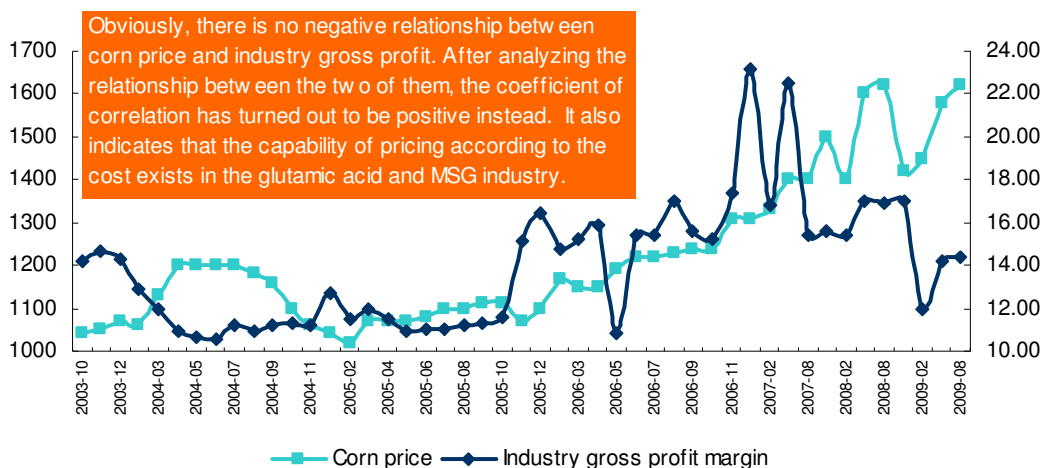
Source: Fufeng Group Financial Statements, Wind and Research Department of Changjiang Securities

Starting from 2006, the prices of corn, the major raw material of the glutamic acid and MSG industry, have experienced a complete rising and falling cycle. At the same time, the gross profit level of the MSG industry and the various enterprises in the industry have experienced dramatically a very different trend. This is the reason behind our probe into the issue of the profit-making stability of the industry and the companies.

## “Cost Cycle” Has No Direct Impact on Profit

Starting from the first quarter of 2006, the corn price has risen substantially and completed a complete up and down cycle just like riding on the coastal roller, following the outbreak of the economic crisis in 2008. At the same time, the gross profit margin of the entire MSG industry has remained stable basically. The reason is that it is easier for the enterprises to transfer the cost downward because of the demand rigidity<sup>\*</sup> of MSG which is being consumed by the general public. When the cost drops, the consumer will often take the price into consideration as one of the standards for making choice because the product is of same quality. Consequently, a comparatively rational action of the enterprises is to promote sales by lowering the price.

**Diagram 5: No Significant Relevance between Corn Price and Industry Gross Profit**



Source: Wind and Research Department of Changjiang Securities

As for the industry, all the enterprises have to face the cost cycle. From the viewpoint of the industry gross profit margin, with the capability of pricing according to the cost, the enterprises need not be particularly worried about the difficulty of their on-going existence. **Obviously, the cost cycle itself will not eliminate the inferior enterprises. The existence of the cost cycle is to provide objective conditions for the industry integration, so as to enable the distinguished enterprises to outperform others through active integration.**

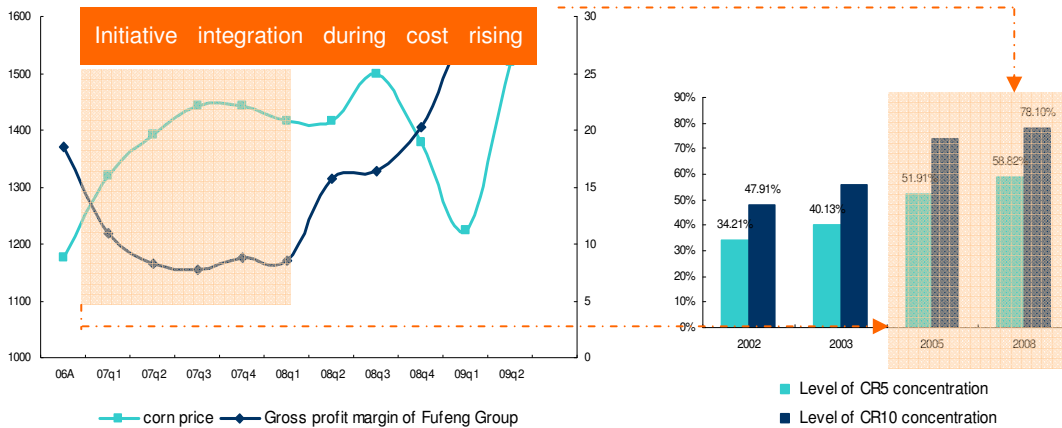
## “Integration Cycle” Causes Enterprise Diversification

The distinguished enterprises make use of the objective conditions of the rising cost to achieve the industry integration by means of initiating the price war, resulting in the actual changes of the industry structure. **The occurrence of such “integration cycle” should possess the subjective and objective conditions: that is, in the subjective aspect, the distinguished enterprises have possessed the low-cost**

<sup>\*</sup> Already discussed in Report Series 1.

barrier mentioned above; in the objective aspect, the occurrence of the integration cycle often constitutes the favourable conditions for integration.

**Diagram 6: Integration Cycle and Integration Outcome of the Glutamic Acid and MSG Industry**



Source: Annual Report of Fufeng Group, Wind, China Fermentation Industry Association and Information Collated by Research Department of Changjiang Securities

Following the end of the integration cycle, some enterprises in the industry have been wiped out. Consequently, the distinguished enterprises possess certain capabilities of monopoly and pricing (note: it is not pricing according to the cost any more!) right from the beginning. When the cost cycle is at the downturn stage, it is natural that the gross profit of the distinguished enterprises is substantially higher than the industry.

Two questions are required to be identified in terms of the glutamic acid and MSG industry in this aspect:

- Necessity of Integration

The possibility of the integration on the part of glutamic acid and the repetition of the integration on the part of MSG have been discussed above. In reality, industry integration has also taken place on the part of glutamic acid, and the means of the price war is linked to the persistent low profit. At this time, the means of upstream-downstream integration is of critical importance. The loss of profit on the part of glutamic acid can be partly indemnified by means of increasing the gross profit of the MSG industry. This is also the advantage of production chain competition.

If the enterprise proceeds with integrated production, its gross profit difference on the part of MSG can be estimated as follows. The production of 1 tonne of MSG requires 0.8 tonnes of glutamic acid and 0.3 tonnes of coal. **Based on the calculation at the MSG market price of RMB100,000/tonne on 1<sup>st</sup> July 2009**, the differential cost in various regions is:

**Table 9: Differential Cost of MSG in Various Regions as Follows**

RMB/Tonne	Inner Mongolia	Ningxia	Heilongjiang	Henan	Shandong	Zhejiang	Guangdong
Differential Cost	4212	4410	4428	4549	4879	5066	5309
Based in							
Inner Mongolia	0	198.52	216.3	337.32	667.4	853.82	1097.4
Gross Profit Margin							
Difference (%)	0.00%	2.48%	2.70%	4.22%	8.34%	10.67%	13.72%

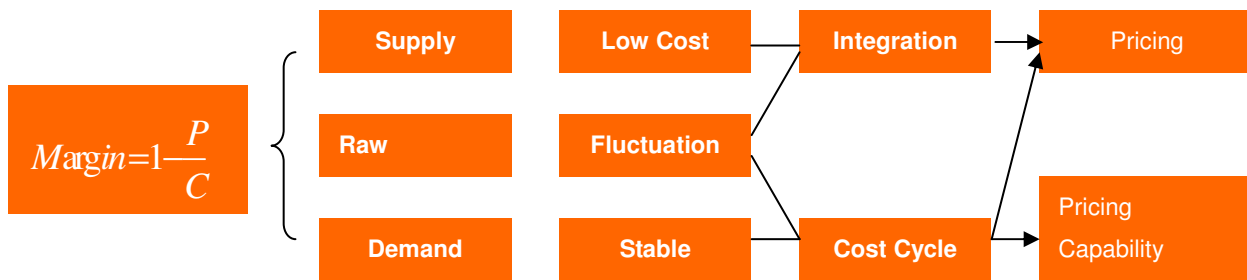
Source: Information collated by Research Department of Changjiang Securities

On the other hand, following the integration on the part of glutamic acid, the decreased supply of glutamic acid will also compress the room for the survival of downstream MSG enterprises. The non-integrated enterprises will be compressed gradually to the level that their survival merely relies on the original brand name accumulated while the integrated enterprises go on with their “invasion”.

- Abstract Thought about the Profit-making Cycle

In fact, the profit-making cycle of the glutamic acid and MSG industry **belongs to the cycle in the aspect of supply**. The possibility of integration on the part of glutamic acid complies with the fluctuation of raw materials. The final industry integration is achieved by taking advantage of integration. The integration factor reflected by means of price war can be displayed directly through the gross profit decomposition mentioned below:

**Diagram 7: Decomposition of the Glutamic Acid and MSG Industry Cycle**



Source: Research Department of Changjiang Securities

## Connection between “Two Stabilities” and Preliminary Conclusion

According to our findings through the above analysis, structural stability of the industry will bring about the staged excess revenue period exactly corresponding to the period of time after the end of the integration cycle. Its nature is to bring about the low point of supply in the supply cycle through the industry integration.

The enterprises in the industry still have the possibility of expanding production. It has become the disturbing factor of the industry stability. Moreover, the barrier of a certain stage will also be overtaken gradually. It will cause the leading enterprises to think about looking for and attempt to find the new barrier. Marx’s so-called “excess marginal revenue” has originated from overtaking and being overtaken in continuation.

Industry structural stability and industry profit-making stability are the critical issues which all the leading enterprises must face and consider. With China’s glutamic acid and MSG industry having experienced the “historical and poetic” integration in 2007, the leading enterprises have constructed the firmer access barrier at the present stage. Consequently, the pricing capability after the “integration cycle” will emerge accordingly.

It can be said that following the changes in supply, we have had the staged golden period of the glutamic acid and MSG industry starting from the end of 2008. The distinguished enterprises such as Fufeng Group are enjoying the fruit after the “war”.

The barrier is always staged. After all, it will be broken sooner or later. When the issue of environmental protection is upgraded to the strategic level, the leading enterprises have had the opportunity of constructing the new barrier as well.

At the current stage, what sort of performance will the leading enterprises in the glutamic acid and MSG industry have? In the short and medium term, what sort of changes will the industry supply and demand have? How do the leading enterprises



cope with them? Please see the follow-up report.

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