

**VALUATION SUMMARY:**

In China, the most concerned issue of hundreds of millions of ordinary people in the past months is not that GDP growth is about to fall below 6%, nor is it a Sino-US trade war, but that pork prices are soaring. Pork prices have risen from a low of 12 yuan/kg to 60 yuan/kg, and the process continues. The high price of pork provides an opportunity for us to profit from the capital market.

We expect pork prices to reach an inflection point in the fourth quarter of 2020. Prior to this, the long-term average price of pork will reach 60 yuan/kg. Based on the growth rate of the historical stocks of MUYUAN and the number of sows that MUYUAN has disclosed, we believe MUYUAN has great opportunity in this period. We forecast that its stock price will grow by 80% by 2020.

## BUY MUYUAN FOODS CO., LTD 002714 CH

<b>Price:95.66</b>	<b>Price Target Potential: 88.17%</b>
<b>Price Target:180.00</b>	<b>Price Target Period: 6M</b>
<b>Exchange: SZSE</b>	<b>52 wk Price Range: 20.38-103.6</b>
<b>Sector: Food</b>	<b>Shares Outstanding: 2.16 Billion</b>
<b>PE(2019E): 42.16</b>	<b>EPS:0.66</b>



- Swine fever, strict environment protect regulation and market cycle will keep the price of pig at high level for at least a year.
- MUYUAN's business model can scale up quickly to capture the opportunity in market
- MUYUAN now has 0.9M sows and it is forecasted to reach 1.3M by the end of 2019. Based on their advanced breeding technology, we forecast they can produce 24M pigs in 2020 and the profit will reach 65.2 billion yuan.

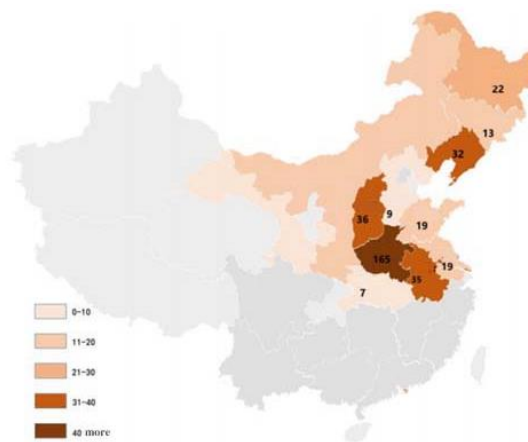


Yang Haiyan	yhy@auxin-tech.com.cn
Zhang Zhiwei	zhangzhiwei@163.com
Li Liangliang	asos1028@163.com
Ning Zhenxing	413462214@qq.com
Wang Yi	599286365@qq.com
An Kai	kevinan329@163.com

## Company Level Analysis about Muyuan

### a. Overall

Muyuan Foods Co., Ltd is listed in January 2014, and its current market value exceeds 200 billion yuan. Muyuan is the leading company in the pig industry. The main products are commercial pigs, piglets and breeding pigs. The company insists on adopting a large-scale integrated breeding model. After more than 20 years of development, it has formed a complete closed-loop pig industry chain integrating scientific research, feed processing, pig breeding, breeding pig breeding and commercial pig breeding.



[Pig Farm Distribution Source : China Merchants Securities]



### b. The company's competitive advantages:

1. The pig house design is fully upgraded in 2018. Through the measures of air inlet and outlet sterilization, independent ventilation, improvement of feeding mode, automatic drinking water dosing

system design, etc., the company will create a highly healthy pig house environment to prevent diseases. The company continues to explore new upgrades in pig house design to improve the quality of pig house construction, increase the service life of pig houses, create a healthy pig house environment, reduce production costs, and achieve sustainable profitability and long-term success.

2. The company adopts new technologies to improve efficiency. For example, European EXAGO piggyback tester can do the bio-inspection of the inter-muscular fat content of pigs (the index of judging the tenderness of meat) and the area of the eye muscle (mainly used to determine the lean meat rate), thus avoiding the determination of the pigs after slaughter. By adopting this new technology, the company improves the efficiency of selecting and breeding high quality pigs.

3. The company launched a pig production capacity expansion project in 2018. This pig production capacity expansion project's total investment amount is 548,276,500 yuan. This project is the response of this company to the development requirements of "scale farming" under the national policies and regulations. After the project is implemented, the company will add 4.75 million heads of slaughter pigs, which will enable the company to firmly grasp the market. The opportunity brought about by the transformation will increase the amount of production and provide a stable supply of live pigs to the market.



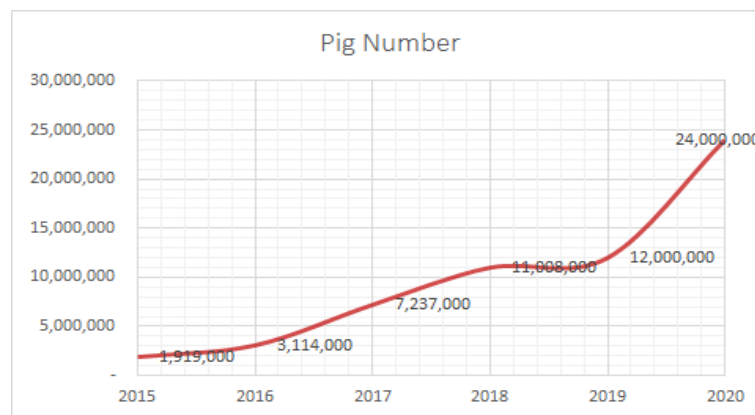
[Muyuan's Pig Farms      Source : Internet]



[What 90% of China's pig farms which are usually small-scale ones look like      Source: Internet]

### c. Large-scale farming with the ability to scale up rapidly

Muyuan sold 1.919 million live pigs in 2015, 3.114 million in 2016, 7.237 million in 2017 and 11.008 million in 2018, with an annual compound growth rate of 43.41 percent. In order to expand the production scale, the company reserved in advance in 19 years, the number of live pigs is expected to reach 24 million in 2020.



[Muyuan's pig production Source : wind]

### d. Financial analysis of Muyuan

The nature of Muyuan's business: Maintain an average ROE level of 29 per cent for many years, reasoning that ROIC is much higher than WACC (weighted average cost of capital)

Muyuan's business model: In order to control food safety, Muyuan chose to operate the whole process by themselves at the very beginning of their business. The heavy asset investment model led to high costs at that time. However, after 20 years development, Muyuan has transferred the investments into its core competencies. In the wake of swan flu and rising labor costs, these core competencies have turned into their advantages when compared with other companies. This business model allows the Muyuan to achieve an average of 17.4% of ROIC and 29.3% of ROE at 57% of its asset-liability ratio.

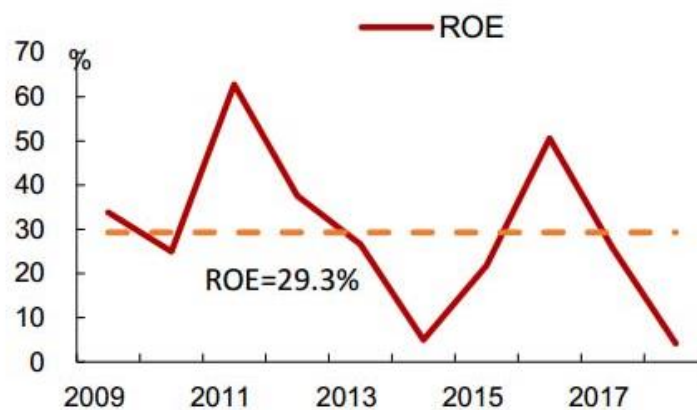
Third quarter data	Muyuan	Wéns	Tianbang	Zhengbang
DuPont analysis				
Return on equity (ROE) (%)	8.99	16.96	0.5	0.72
Year-on-year growth	221.38	93.49	-87.36	28.28
Factor decomposition:				
Sales margin	12.4	13.11	0.31	0.47
Net profit / total profit	100.89	95.24	30.81	86.53

Total profit / profit before interest and taxes	75.06	97.07	30.76	22.41
Earnings before interest and taxes / total operating income	16.37	14.18	3.23	2.41
Net profit/net profit attributable to shareholders of the parent company (%)	95.36	96.11	87.62	61.17
Equity Multiplier	2.17	1.56	2.73	3.37
Asset turnover	0.35	0.86	0.68	0.74

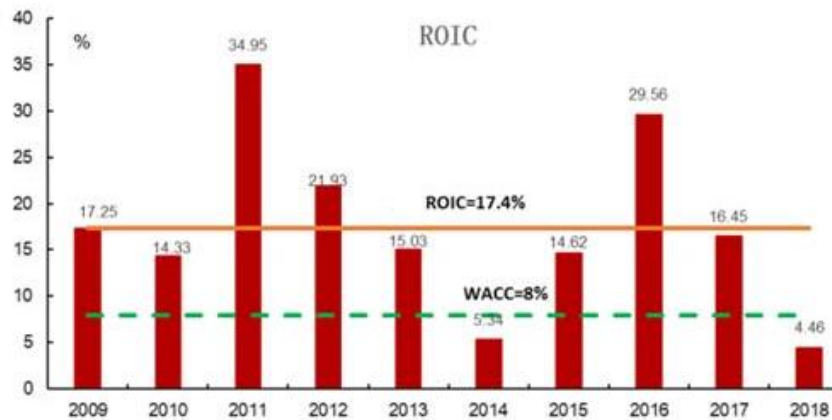
[Comparison of quantitative indicators in the same industry Source : wind]

According to the data at the end of the third quarter, the ROE of Muyuan shares was 8.99%, which was lower than the 16.96% of Wens. On the one hand, the compound growth rate of pastoral is high. However, its year-on-year growth rate is 221.38%, which is far greater than Wens' 93.49%. Compared with other companies in the industry, the ROE and its growth rate of the company are far ahead, and the result is also benefited from the increase in capital expenditure. As a result, the net profit attributable to the parent company will increase, eventually leading to an increase in ROE. On the other hand, the main reason for the decline of ROE of Muyuan in 2019 was that the decline of ROE was not representative because of the retention of seeds to expand the production scale, but provided support for the outbreak of profits in the later period.

Using DuPont analysis, we can analyze the composition of Muyuan's ROE  $ROE = ROIC + (ROIC - R) * DFL$ , which is an approximate equation where R is the Interest rate after tax and DFL is Degree Of Financial Leverage. The average ROE of Muyuan remains 29% over the years, which is due to its high ROIC, low WACC decision and moderate leverage ratio. The average ROIC over the years remains 17.4%, average WACC over the years remains 8%, and asset-liability ratio of the previous years remains 57%, showing that the growth of Muyuan is of very high quality.



[ROE from 2009-2018 Source : wind]



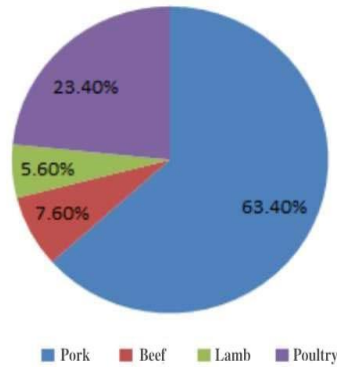
[ROIC & WACC from 2009-2018 Source : wind]

## Industry Analysis

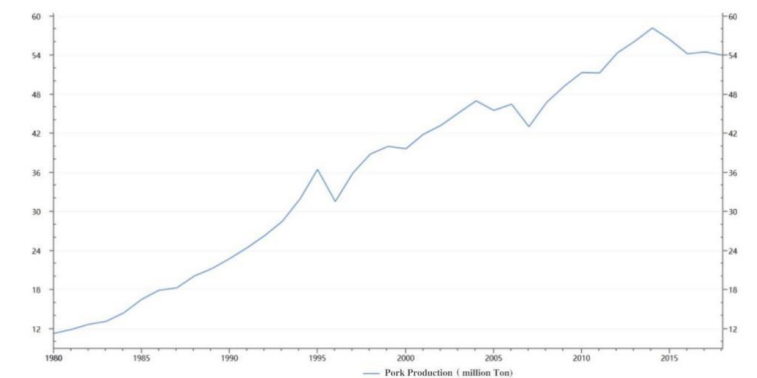
### a. China's pig market:

From 1978 to 2018, China's pork consumption increased from 7.79 million tons to 55.4 million tons, an average annual growth rate of 5.03 percent. First, since the reform and opening up, China's income level has improved; The second, the eating habits of the Chinese people—pork accounts for about 63.4% of the domestic meat consumption structure, which is generally stable and absolutely dominant. From the perspective of the future, the effect from income, urbanization and consumption habits to the total consumption of pork will continue to rise in the long run, and the influence of swine fever and the rise of price may decrease in the short term. However, the change in the influence of the supply side is relatively smaller than that of the demand side. The income of residents in China will continue to grow, and the process of urbanization will continue to rise. The pursuit of health may slightly reduce the proportion of pork consumption. However, from the world level, the per capita pork consumption of mainland Chinese residents is 39.8 kg, which still has certain growth potential compared with 67.1 kg of Hong Kong.

For a long time, the pork market of our country is highly dependent on domestic supply, and the proportion of imported pork meat is not more than 3%. Since the beginning of this year, due to the growing pork supply gap, China has increased the intensity of imported pork, but the total amount of global pork exports is limited, which was only 11 million tons in 2018. Other Asian countries such as Japan and Vietnam have also increased their demand for pork imports due to domestic swine fever. Therefore, compared with the supply gap of about 10 million tons, the amount of pork available for import is still on the low side, so it is difficult to stabilize the market supply, and the impact on domestic pork prices is also limited.



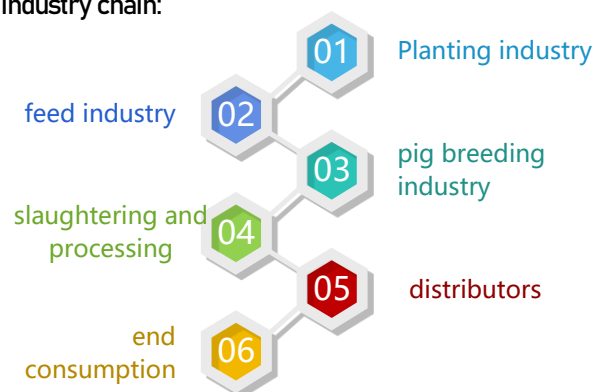
[domestic meat consumption structure source : wind]



[Pork production changing chart source : wind]

### b. The main business mode of the pig breeding industry

Meat product industry chain:



Generally speaking, China's pig breeding industry can be divided into three production and management modes, namely, "large-scale industrial automation mode", "large-scale combined mode with farmers' free-range" and "combined mode of large-scale and decentralized farming". The third mode combines the above two modes, with strong flexibility and applicability, and is more in line with China's

national conditions. Therefore, in general, most aquaculture companies adopt this model, and the difference in farming mode is the main reason for the difference in gross profit of each company. In addition, the profitability in a single production chain is usually low. It is necessary to integrate multiple production links to realize the benefits of integrated industrial clusters. The more links in the industry chain, the better profits.

### **c. The impact of the African swine fever incident and China's prevention and control measures against the fever**

In August 2018, African swine fever broke out and flowed into China.

In December 2018, the national pig stocks fell by 4.8% year-on-year; the number of breeding sow fell by 8.3% year-on-year. According to the principle of price lag, it means that the production of pigs will be less in the second half of 2019 and the price will rise. The current market reaction has been in line with expectations, and pork prices continue to rise.

To cope with the outbreak of African swine fever, China has taken some measures, including controlling and hunting of farmer's free-range pigs. It will seriously dampen the enthusiasm of the farmers. But the regulation is relatively favorable for a company with a large scale such as Muyuan, because the company has been using the scientific housing method and has strict monitoring. The epidemic has little impact on it. On the contrary, it has forced the whole industry's upgrading and technological progress. The epidemic usually takes 5 years to eliminate. In the short to medium term, Muyuan has very good development opportunities.

Along with the control measures of the epidemic, there will be fewer and fewer intermediate links to reduce the risk, which leaves more room for Muyuan to gain more and stable profits.

### **d. Industry barriers which prevents other competitors to enter**

For farmers and self-employed households, traditional scattered free-range or small-scale pig farming has low requirements on capital, technology, and talents, and the threshold for entry is low. However, large-scale pig farming faces higher barriers to entry. There are several factors:

Large capital investment:

The scale of breeding pigs directly determines the scale and speed of pig breeding. Large-scale pig breeding enterprises, especially those that use self-cultivation and self-supporting large-scale



integrated mode for pig breeding, need a lot of money to buy breeding pigs, build pig houses, buy equipment, etc. Large-scale farming also needs to invest in the relevant environmental protection facilities and other related supporting facilities, and the initial investment is large. At the same time, the pig breeding cycle is relatively long, and more liquidity is needed for the turnover in the production and operation process. Moreover, large-scale integrated pig breeding involves more specialized technical fields, especially requiring a large number of experienced technicians and managers specialized in breeding and disease prevention and control, and the cultivation and experience accumulation of technicians takes a long time. Therefore, large-scale pig breeding has high financial barriers.

Difficult to control the disease:

The large-scale breeding of pigs is different from the manufacturing industry, and the comprehensive standardization of the farming process is difficult to achieve. It is difficult to fully standardize all the details of breeding. The control depends heavily on the experience of managers. When the single-plant farming scale exceeds 1,000, the management difficulty will increase sharply.

Agricultural land is increasingly scarce:

In recent years, with the acceleration of urbanization in China, agricultural land is increasingly scarce. Large-scale farming has higher requirements for breeding environment, and farms often need to be built in areas with good isolation conditions, few pollution sources, and few activities among surrounding people, and the breeding land must be convenient for transportation, otherwise the transportation cost will be too high. There are site barriers in scale farming.

## Profit Forecast

### a. Production Forecast

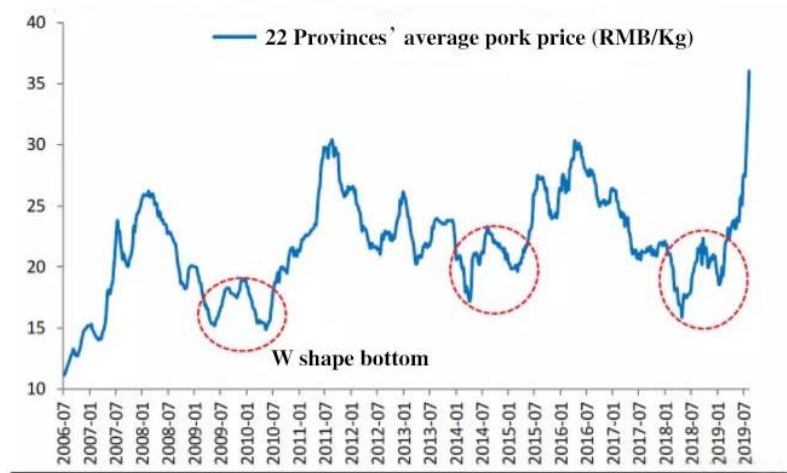
On September 27th, the company disclosed that by the end of September, the company owns nearly 900,000 sows and 600,000 breeding pigs. It is estimated that by the end of 2019, the company will have more than 1.3 million sows. In the third quarter report, the production biological assets of Muyuan increased by 94.15% compared with the beginning of the period, mainly due to the expansion of the company's production and operation scale and the increase of breeding stocks. The ending balance of other non-current assets increased by 65.24% compared with the beginning of the period, mainly due to the increase in prepayments. The sows and farms under construction laid a solid foundation for future production spike. Based on this, we predict that pig production during the period from 2019Q4 to 2020H1 will be about 20 million.

## b. Price Forecast

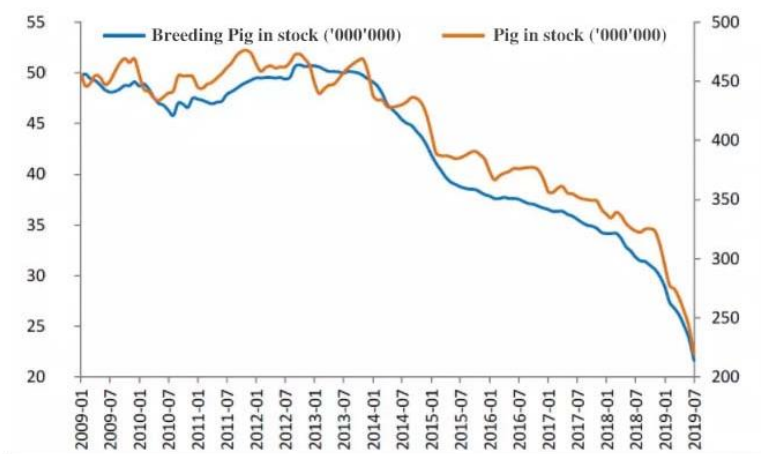
The current surge in prices in the pork market is mainly due to the imbalance of supply and demand.

1. At the bottom of the market cycle: the pig stock is less than half of that in 2014.

China's pork industry has its market cycles. The market cycle means that whenever the market price is low, the farmers will cut production, resulting in insufficient market supply. The shortage of supply will lead to an increase in meat prices. After the meat price becomes higher, the farmers will increase their production in large quantities. The increase in production will lead to oversupply and meat prices. The price begins to fall again. This wave of rise in pork prices is due to its market cycle.



[Source : Thoughts provoked by a new high in pig prices - Ren Zeping]



[Source : Thoughts provoked by a new high in pig prices - Ren Zeping]

2. The most strict environmental protection regulation is driving out unqualified competitors and also driven down the production. The pig breeding industry has high demand for water resources and

creates pollution. To cope with that, four government departments issued five laws and regulations in recent years. The cost of pig industry increased.

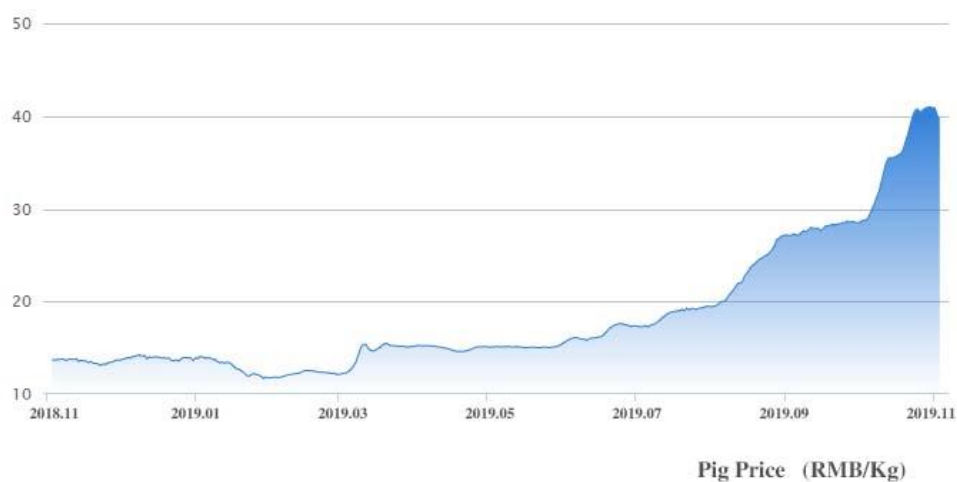
Time	Name of laws and regulations	Government Departments
2014.04	Environmental protection law	National People's Congress
2015.04	Water pollution prevention action plan	State Council
2015.11	Guidance on promoting the adjustment and optimization of pig breeding layout in the southern water network area	Ministry of Agriculture
2016.06	National Pig Production Development Plan 2016-2020	Ministry of Agriculture
2016.12	Notice on Further Strengthening the Prevention and Control of Livestock and Poultry Pollution	Ministry of Environmental Protection Ministry of Agriculture

[Laws and regulations passed in recent years Source : Government departments' website]

### 3. The impact of swine fever will last for at least 5 years

The swine fever broke out in China in August 2018. The epidemic caused the death of a large number of pigs and to prevent its expansion, the government also took measures to hunt suspiciously affected pigs, which drove down the number of the pigs in stock sharply. The impact will last for 5 years and more.

All in all, we forecast that the price of pork will continue to rise. Especially, when spring festival approaches, the seasonal consumption of pork will drive the price even high, probably will reach 60 yuan/kg. We forecast that the average price from 2019 Q1 to 2020 H1 will be around 40 yuan/kg. In worst scenarios, China government might regulate the pork price and increase the import amount of pork. Given that currently, only 3% of the pork consumption is imported and it's crucial for China's food safety, we don't think China is import pork in large scale. And if China increases the import amount, we forecast the price will decrease to 30 yuan/kg.



[Pig price from 2018.11-2019.11

Source : <https://zhujia.zhuwang.cc/>]

### c. Forecast of operating income:

In wake of the recent shortage of pork supply, in order to increase market supply, the company made full use of the pig house to properly raise the weight of commercial pigs within a reasonable range. The average weight of pigs on the market recently is about 120kg and the complete cost of fattening is 13 yuan/kg. The following table shows the sales revenue corresponds to the production and prices.

Revenue Forecast:

Production Price/kg	10M	15M	20M	25M
50	444	577.2	888	1110
45	384	499.2	768	960
40	324	421.2	648	810
35	264	343.2	528	660
30	204	265.2	408	510
25	144	187.2	288	360
20	84	109.2	168	210

Under the expected scenario, the operating profit of Muyuan will reach 64.8 billion yuan from 2019 Q4 to 2020 H1, which is about 3 times corresponding to PE (TTM). In the worst scenario that may occur, the operating profit of Muyuan will reach 20 billion, corresponding to about 10 times the PE (TTM).

### d. Profit forecast

From the financial report of the past years of the company, we can see that due to the single main business, the operating profit of the company is approximately equal to the net profit. So in the next analysis, we approximate the net profit by estimating the operating profit of the company.

	2019-09-30	2018-12-31	2017-12-31	2016-12-31	2015-12-31
Reporting Period	Q3 Report	Annual Report	Annual Report	Annual Report	Annual Report
Total operating income	1,173,328.87	1,338,815.77	1,004,241.59	560,590.70	300,347.47
Total operating costs	1,063,505.42	1,328,044.54	787,114.64	338,602.48	249,937.59
Operating profit	145,222.80	52,397.58	238,956.99	222,800.51	50,543.16
Net Profit	145,443.09	52,807.90	236,552.94	232,189.87	59,585.08
Net profit attributable to parent company	138,691.27	52,020.88	236,552.94	232,189.87	59,585.08

[Profit of Muyuan from 2015-2019Q3 Source: Wind]

Profit forecast:

Financial data and valuation					
Fiscal year	2017	2018	2019E	2020E	2021E
Main income (million yuan)	10042	13388	50043.51	113413.43	73267
YoY	79%	33%	274%	127%	-35%
Operating profit (million yuan)	2390	524	14572.35	66200	40999
YoY	7%	-78%	2681%	1153%	34%
Net profit (million yuan)	2366	520	14360	65218.42	40390
YoY	2%	-78%	2662%	1153%	34%
Earnings per share (yuan)	2.04	0.25	6.65	30.16	18.68
PE	34.5	282.5	10.6	3.1	4.9
PB	6.4	12	6.2	2.2	1.9

## Risks

- Government regulation of pig prices: Given that the pork price plays an important role in CPI. If the pork price rises too much, it might incur government intervention, which may harm the profit of the company
- The company is infected with African swine fever. African swine fever has cure at present and the fatality rate is 100%. If the company's pigs are infected, it will result in the slaughter of large number of pigs.
- Major food safety incidents: In recent years, China has paid more and more attention to food safety issues. Once food safety incidents occur, especially after media exposure, it will have a serious impact on corporate reputation.
- Major construction accidents: the companies currently have a large number of farms under construction, and engineering accident may affect the amount of production to be affected.

## Reference

- Announcement of voluntary disclosure of the company's recent production and operation – Muyuan
- Reply to the "Shenzhen Stock Exchange's Letter of Concern to Muyuan Food Co., Ltd." - Muyuan
- Thoughts provoked by a new high in pig prices – Ren Zeping
- Muyuan (002714.SZ): A study of Muyuan - China Merchants Securities, Lei Yi, Chen Han
- <https://zhujia.zhuwang.cc/>

---

**[IMPORTANT DISCLAIMER]**

Please read this document before reading this report.

This report has been written by MBA students at Renmin University School of China. The report is a student and not a professional report. It is intended solely to serve as a competition report for GNAM investment competition. It is not intended as investment advice. It is based on publicly available information and may not be complete analyses of all relevant data. If you use this report for any purpose, you do so at your own risk. RENMIN UNIVERSITY OF CHINA, RENMIN BUSINESS SCHOOL, AS WELL AS FELLOWS, FACULTY, STAFF, AND STUDENTS FROM ANY OF THE ABOVE LISTED INSTITUTIONS MAKE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, ABOUT THE ACCURACY OR SUITABILITY FOR ANY USE OF THESE REPORTS, AND EXPRESSLY DISCLAIM RESPONSIBILITY FOR ANY LOSS OR DAMAGE, DIRECT OR INDIRECT, CAUSED BY USE OF OR RELIANCE ON THESE REPORTS.

---