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## **A Case Study of Shuanghui International's Strategic Acquisition of Smithfield Foods**

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### **Abstract**

Pork consumption accounts for more than 60% of total meat consumption in China. China's rapid economic growth, expanding middle class and continuous urbanization is increasing the demand for pork and importance in stabilizing China's pork market. This also creates an opportunity for foreign pork producers to export more pork to China. How can this be done? Foreign direct investment is one solution when trade barriers exist. This case study explores the reasons why China's Shuanghui International acquired the U.S. based, Smithfield Foods. Analysis shows that the success of the two companies' merger depends upon the establishment of an efficient transnational pork supply chain. This case study can be used for Bachelor of Science and Master of Science students in international economics, agribusiness and agricultural marketing courses. It will also be helpful to business managers who want to export more agricultural goods to China.

**Keywords:** pork, foreign direct investment, acquisition, U.S. and China agricultural trade, supply chain

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*“The new combined company expects to meet the growing demand for pork in China by exporting high-quality pork products from the U.S. This means more production for U.S. producers, more jobs in processing and more exports for the American economy.”*

C. Larry Pope, President and CEO, Smithfield Foods

*“Shuanghui will gain access to high-quality, competitively-priced and safe U.S. products, as well as Smithfield’s best practices and operational expertise. We were especially attracted to Smithfield for its strong management team, leading brands and vertically integrated model.”*

Wan Long, President and CEO, Shuanghui International

## **Introduction**

On September 26, 2013, Smithfield Foods merged with its Chinese counterpart, Shuanghui International. To acquire Smithfield, Shuanghui International paid \$7.1 billion (all values are in U.S. dollars), including \$4.7 billion for Smithfield shareholders, and \$2.4 billion for Smithfield debt owners. This transaction is the largest foreign direct investment in the U.S. by a Chinese firm to date and gives rise to concerns and curiosities.

The acquisition may seem strange at first glance. Smithfield Foods is the world’s largest hog raiser and pork producer. In 2013, the company ranked 213 on the Fortune 500 list with its \$13.2 billion sales. It has a long history of 77 years with 12 different product brands. Although Shuanghui International is registered in Hong Kong, this company actually operates in Mainland China. In 2012, the sales value of Shuanghui International was only \$6.3 billion, less than half of Smithfield’s. Yet, Shuanghui acquired Smithfield.

A concern about this foreign direct investment is that it was coming from China. Although China has carried out opening up and reforming policies for 35 years—since 1978, its economic system is still quite different from that of the United States. Even today, the U.S. has not recognized China as a market economy. Opponents of the acquisition accuse Shuanghui of being a state-owned company which is heavily subsidized by China’s government and some Americans question whether the acquisition is dangerous to U.S. food security. Michigan Senator, Debbie Stabenow (Stabenow 2013) asked the following two questions during a hearing held specifically for Shuanghui’s acquisition of Smithfield.

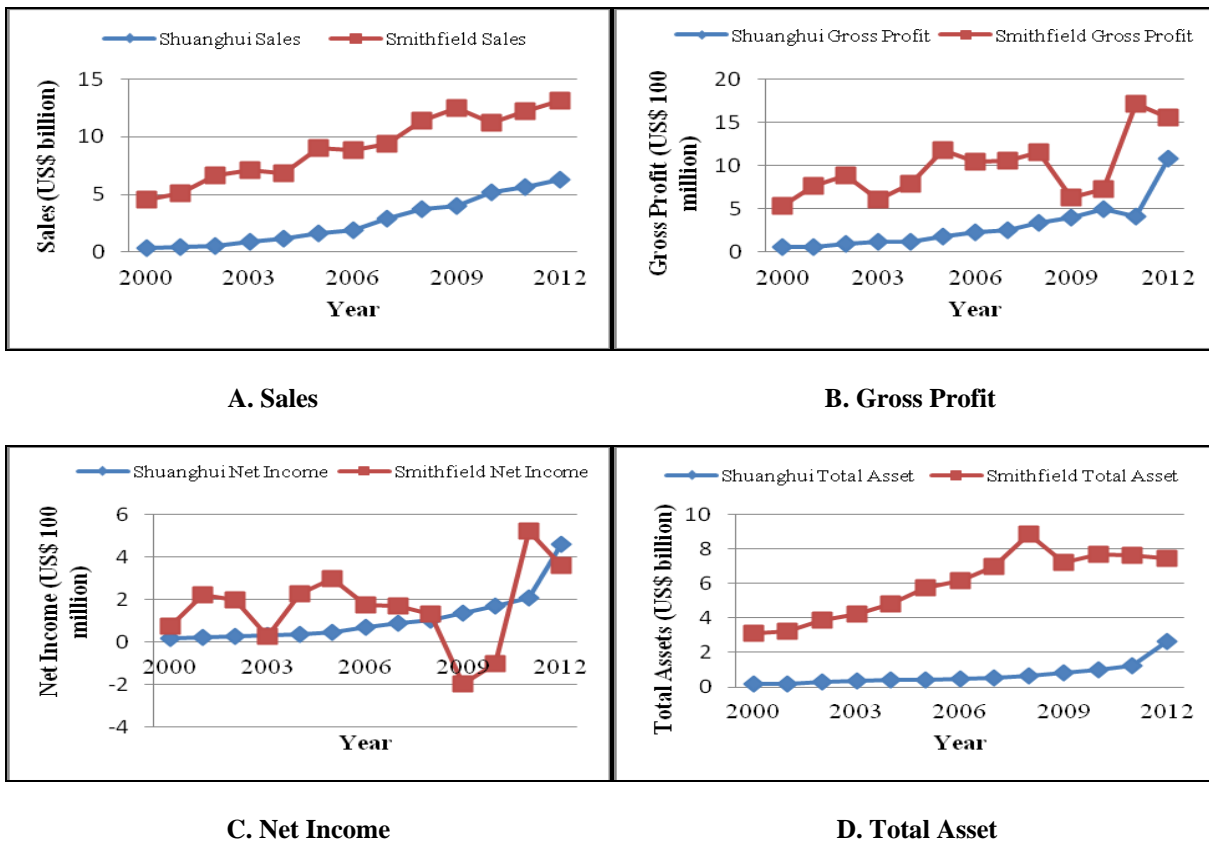
1. Why did Shuanghui need to acquire Smithfield when in 2012 Shuanghui sold less than half of Smithfield’s sales?
2. Why did Smithfield need to sell itself to Shuanghui when Smithfield was doing well?

This case study aims to explain the reasons why firms choose to invest abroad by analyzing Shuanghui’s acquisition of Smithfield. Additionally, readers will gain deeper insight into the function, definition, key determinants, and success of foreign direct investment (FDI).

## Comparison of Smithfield Foods and Shuanghui International

### *Shuanghui is Smaller than Smithfield*

In 2000, respective sales, gross profit, net income and total assets of Shuanghui were only 8.3%, 10.4%, 24.2% and 6.0% of Smithfield's. Shuanghui's business grew faster than Smithfield's during 2000-2012. For 2012, respective sales, gross profit, net income and total assets of Shuanghui had risen to 47.7%, 69.9%, 126.5% and 35.6% of Smithfield's. Smithfield's net income was negative in 2009-2010, but recovered in 2011. Shuanghui had consistent net income growth during 2000-2012 (see Figure 1A, B, C, and D).



**Figure 1.** Selected Financial Indicators of Shuanghui and Smithfield—A. Sales; B. Gross Profit; C. Net Income; D. Total Asset.

**Note.** Fiscal year of Shuanghui is from January 1 to December 31, while fiscal year of Smithfield is from April 1 to March 31. Shuanghui's financial indicators were converted to U.S. dollars with Renminbi's exchange rate with U.S. dollar on July 1 of each year during 2000-2012.

**Source.** Annual Report of Shuanghui Development (2000-2012) from Shenzhen Stock Exchange, Smithfield Integrated Report 2013 (2004-2012 data), Smithfield Foods Annual Report (2000-2003 data).

Between 2000 and 2012, sales, gross profit, net income and total assets of Smithfield grew at a moderate geometric mean of 9.3%, 9.4%, 14%, and 7.5%, respectively. Smithfield pork business was healthy when it merged with Shuanghui. Meanwhile, respective sales, gross profit, net income and total assets of Shuanghui grew at a faster geometric mean of 26.4%, 28.2%, 30.8%, and 24.7% in the same period.

Though Shuanghui does own hog production operations, the company's competitiveness exists in pork processing and distribution. On the contrary, Smithfield is not only the world's largest pork processor, but also the world's largest hog producer (Smithfield Press Release Archive 2013d). Its contract model of hog production, which is able to supply sufficient and safe pork to China's market, attracted Shuanghui to Smithfield (Smithfield Press Release Archive 2013e).

### *Steady Growth of Smithfield Foods*

Smithfield Foods is the world's largest pork producer and processor. Headquartered in Smithfield, Virginia, it runs facilities in 26 U.S. states. It also has operations in Mexico and in 10 European countries, with a global total of 47,000 employees (Smithfield Press Release Archive 2013a). Murphy-Brown, a subsidiary of Smithfield, produces approximately 16 million hogs annually on its U.S. company-owned and contract farms. Eight U.S. fresh pork processing plants of Smithfield produce more than 1.7 million metric tons of fresh pork annually (Smithfield Press Release Archive 2013b).

Smithfield is also the leader in numerous packaged meats categories with popular brands (see Exhibit 2). It is committed to providing good food with six pillars of sustainability: animal care, employees, environment, food safety and quality, helping communities, and value creation (Smithfield Integrated Report 2013).

As a vertically integrated company, Smithfield is dedicated to supplying the domestic and international markets with quality products by improving its supply chain (see Exhibit 3). 50% of Smithfield's pork is free of the feed additive ractopamine (Smithfield Press Release Archive 2013c). It is legal to use ractopamine in the U.S. pork industry, while in China the government banned the use of ractopamine in hog production in 2002. For fiscal year 2013, Smithfield sales value reached \$13.2 billion, 1% higher than the prior year, with a net income of \$183.8 million.

### *Rapid Growth of Shuanghui International*

Shuanghui International owns a variety of global businesses that include food, logistics, and flavoring products. Shuanghui International and its subsidiaries are the majority shareholders of China's largest meat processing enterprise, Henan Shuanghui Development (Shuanghui International Press Release 2014). Henan Shuanghui Development is a publicly traded meat processing company headquartered in Luohe, Henan province, P.R.China. It is the largest pork producer in China. This company's departments include hog production, pig slaughtering, pork processing, fresh meat and packaged meat distribution (see Exhibit 1). The president and CEO of Shuanghui International, Mr. Wan Long, is nicknamed "China's number one butcher."

In 2012, Shuanghui slaughtered 11.4 million hogs and processed 1.6 million metric tons of meat, increasing by 14.1% and 6.4%, respectively from 2011. Today's Shuanghui has its roots in Luohe Slaughterhouse, a state-owned firm that went bankrupt in 1984. Mr. Wan Long reorganized assets of the company and transformed the state-owned firm to a private one. In the mid 1980s, annual sales of Shuanghui were less than \$1.7 million. Since the late 1980s, Shuanghui has witnessed rapid business growth. Annual sales reached \$17 million in 1990, \$1.7 billion in 2003 and \$6.3 billion in 2012.

In China's pork industry, Shuanghui's competitors include Yurun, Delisi and a few other companies. Shuanghui has devoted itself to the pork industry and does not currently invest in more profitable real estate businesses. In 2012, the turnover of Yurun was \$3.5 billion, which was 45.1% less than Shuanghui's sales value. In the same year of 2012, Delisi sold \$31.3 million pork products to the market and accounted for 5% of Shuanghui's market share only. Shuanghui Development has 61,050 employees and a state-of-the-art meat research center. Dedication pays off. Shuanghui has already become the largest hog production and pork processing company in China. In the first half of 2013, the net income of Shuanghui business increased by 59.1%.

## **Pork Production and Consumption in Mainland China**

Since 1984, Shuanghui has run a successful pork business and its net income always grew at a two digit rate. Why does Shuanghui need to acquire Smithfield when it is already doing well in China? The pork business of Smithfield still earns acceptable profits and operates on a sustainable basis. Why does Smithfield need to sell itself to Shuanghui? Answers to these two questions partly lie in the status quo of pork production and consumption in China and the United States.

### *Production-China is the World's Largest Pork Producer*

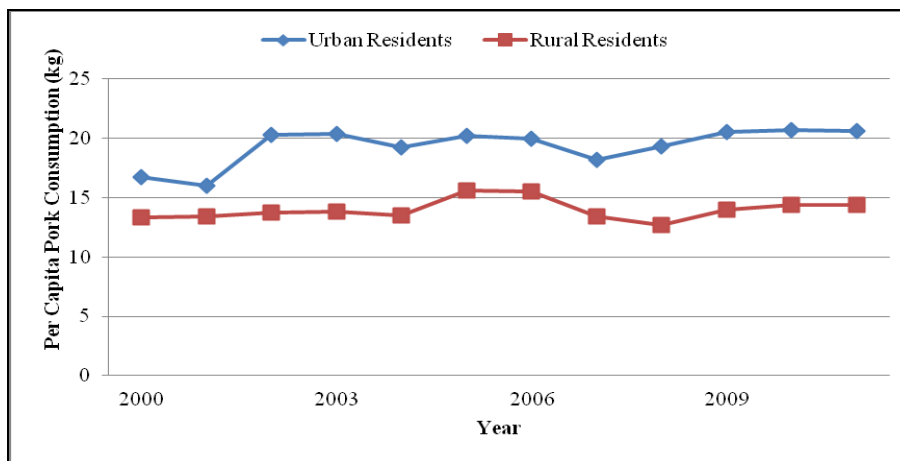
China has a long history of hog production. Pork always accounts for the highest proportion of China's meat production (Li 2013). In 2012, China's total meat output was 83.8 million metric tons. Respective output of pork, beef, mutton, and poultry were 53.4, 6.6, 4.0, and 18.2 million metric tons. In the same year, China's beginning stock for hogs was 467.7 million head, and ending stock was 474.9 million head. China slaughtered 696.3 million head of pigs in 2012 (China's Statistical Yearbook 2012). Only China, EU-27 and the U.S. can produce more than 10 million metric tons of pork annually. In 2012, the world pork output was 105.7 million metric tons. China, EU-27 and the U.S. approximated 49.6%, 21.3% and 10% of the world production, respectively. China produced as much as five times the pork as the United States and 2.3 times the pork as the European Union (USDA Foreign Agricultural Service data 2013a).

### *Consumption-China is the World's Largest Pork Consumer*

China's pork consumption is greater than pork production and China needs to import pork from the international market. In 2012, China's carcass weight pork production was 52.4 million metric tons, which was 0.3 million metric tons lower than its pork consumption. Since pork

consumption approximates 65% of total meat consumption in China, it becomes a political and public concern to stabilize the pork market. All in all, pork is the main meat protein source for the 1.35 billion Chinese populations. With income increases, annual per capita pork consumption continues to grow in China.

Since liberation (October 1, 1949) to the late 1980s, most of the Chinese people were too poor to afford pork and the annual per capita pork consumption was less than 10 kilograms in this period (Li et al. 2011). Thanks to its economic success, Chinese pork demand has risen dramatically from the 1990s to date. At the same time, China is currently experiencing a rapid process of urbanization. Around 15 million farmers ceased farming and migrate to the cities every year. Per capita pork consumption of urban residents is greater than rural residents in China, due to a dual economy. In 2011, urban residents on average consumed 20.6 kilograms of pork, while per capita pork consumption of rural residents was only 14.4 kilograms this year (see Figure 2). While urbanization continues in China, richer urban consumers will demand more pork.



**Figure 2.** Per Capita Pork Consumption of China's Urban and Rural Residents.

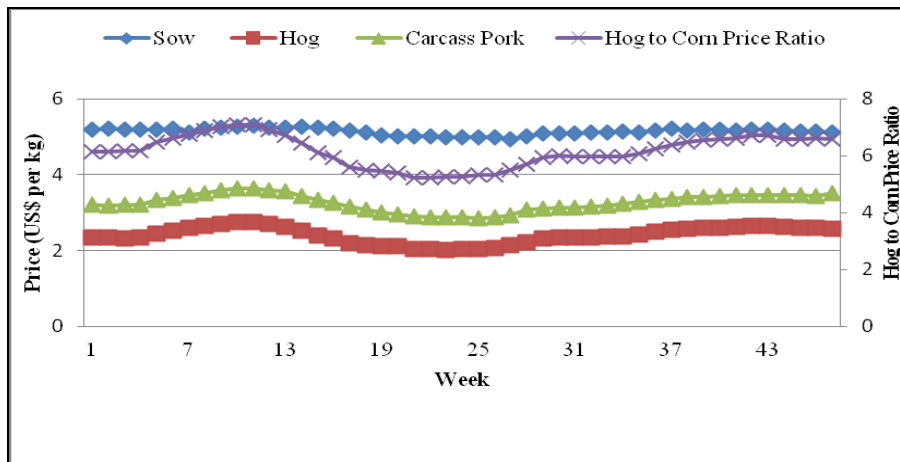
**Source.** China's Statistical Yearbook, 2012.

In 2012, total pork consumption of the world was 105.1 million metric tons. The largest three markets for pork are: China, EU-27, and the United States. Consumers in these three countries consumed 52.7, 20.4 and 8.4 million metric tons of pork respectively in 2012. Also in 2012, China's pork consumption was 50.2% of the world's total, 6.3 times that of the United States. Both EU-27 and the U.S. consumed less pork in 2012 than previous years, but China consumed more pork. China's pork consumption in 2012 was 8% greater than in 2009, while pork consumption of the U.S. and EU-27 in 2012 was 6.8% and 3% less than in 2009 (USDA Foreign Agricultural Service 2013b).

### *China's Pork Market is Volatile*

Pork price peaks appeared in 2013 during the Spring Festival (February 9) and the Middle Moon holiday (September 19). In the summer, the Chinese consumed less pork because of hot weather and hog and pork prices dropped to their lowest points. Hog and carcass pork prices in one week before the 2013 Spring Festival went up to \$2.6 and \$3.6 per kilogram. At this time, hog prices

were 11.1% higher than hog prices in the summer and carcass pork prices were 13.5% higher. Hog and carcass pork prices in the week before the Middle Moon holiday rose to \$2.6 and \$3.5 per kilogram. Again, these prices were 11.1% and 10.1% higher than summer prices. Though hog and pork prices moved up and down frequently, sow prices, which can be taken as one of the hog production cost indicators, were quite stable. China's pork industry suffers from price volatility and often brings about public concerns. Between October 24, 2012 and October 23, 2013, weekly hog and pork prices fluctuated in China's market (see Figure 3).



**Figure 3.** China's Weekly Pork Price during October 24, 2012 - October 23, 2013.

**Note.** Data covered 46 weeks between October 24, 2012 and October 23, 2013. Seven weeks data are missing.

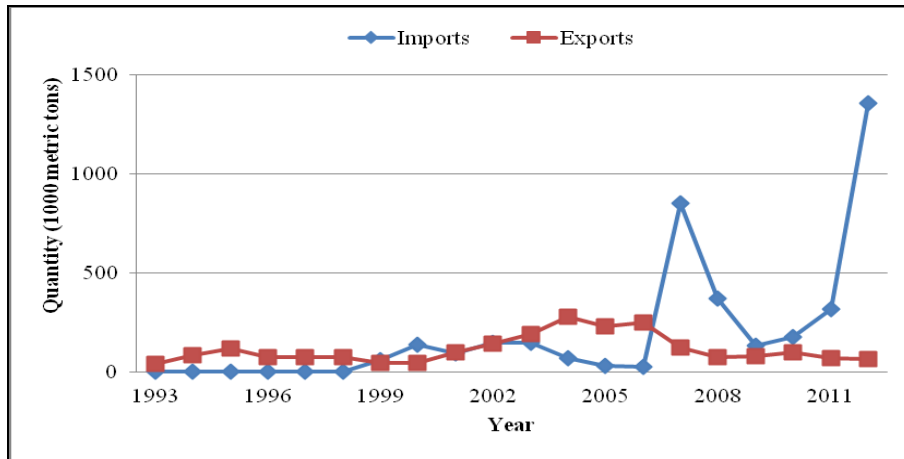
**Source.** China's pork market monitoring reports.

In May of 2012, the National Development and Reform Commission of China's State Council, together with five other departments, renewed a 2009 plan to control cyclical hog price volatility. The new plan continued the policy of setting up a national pork reserve system and tried to keep the hog to corn price ratio around 7.5:1, at which a Chinese hog producer can earn \$32 per hog. Once the hog to corn price ratio is smaller than 6:1 or greater than 8.5:1, the government will interfere with the pork market by utilizing the national pork reserve system.

### *China's Pork Trade*

Mainland China exports its pork to Hong Kong, Kirghizstan and Macau. Meanwhile, China's pork imports are concentrated in the U.S., Denmark and Germany. These countries are the three largest sources for China's pork imports. In 2012, 71.1% of China's pork imports are from the above mentioned three countries.

China's pork imports fluctuated more frequently than exports, depending on domestic production and consumption. In 2007, China imported 854.2 thousand metric tons of pork, which was 7.0 times of its exports. Between 2008 and 2011, China's pork imports fell. In 2012, China's pork imports surged to a historical high of 1.4 million metric tons. Before 2007, China typically had a pork trade surplus. From 2007 to 2012, China has been a net pork importer (see Figure 4).



**Figure 4.** China's Pork Trade (carcass weight).

**Source.** Agricultural Trade Statistics of China's Ministry of Commerce.

## Pork Production and Consumption in the U.S.

### *Production - U.S. is the World's Third Largest Pork Producer*

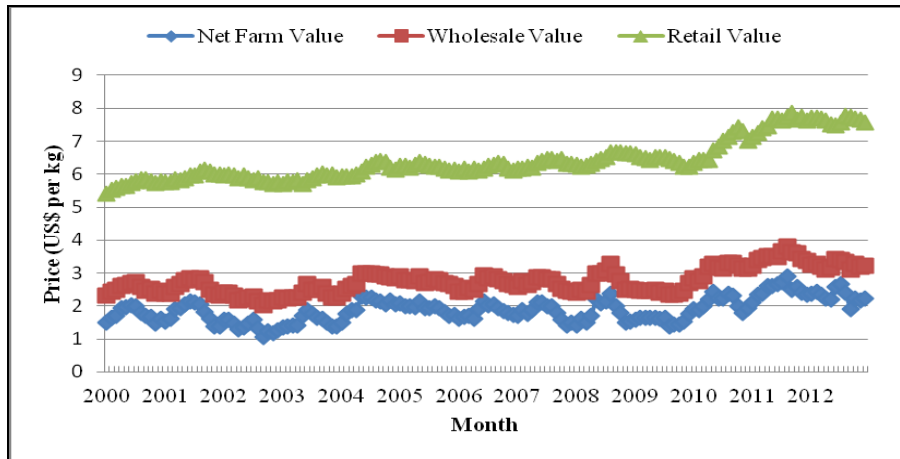
Since 2000, U.S. pork production has been increasingly greater than its pork consumption and the U.S. needs to export its pork surplus to the international market. Pork ranks third in U.S. meat output, next to (1) poultry and (2) beef and veal. In 2012, U.S. total meat output amounted to 42.0 million metric tons. Poultry, beef and veal, pork and mutton and lamb output in 2012 were 19.8, 11.7, 10.5 and 0.07 million metric tons, respectively.

“U.S. hog production consolidated considerably as fewer and larger farms accounted for an increasing share of total output. From 1992 to 2009, the share of U.S. hog inventory on farms with 2,000 heads or more increased from less than 30% to 86%. Since 1992, the use of production contracts has increased dramatically” (McBride and Key 2013).

### *Farm Gate Price of Pork is Low*

Between 2000 and 2012, the net farm and wholesale value of pork grew in the U.S. at a very slow rate. The retail price of pork outpaced the net farm and the wholesale value. The gap between the pork retail price and farm gate price widened in the U.S. over time (see Figure 5).





**Figure 5.** Monthly Net Farm, Wholesale and Retail Pork Prices in the U.S.

**Source.** USDA, ERS Data 2012.

In January 2000, the retail value of pork was \$5.4 per kilogram. This shows a difference of \$3.1 per kilogram between retail price and wholesale price, along with a \$3.9 per kilogram difference between retail value and net farm value. In December 2012, the retail value of pork was \$7.6 per kilogram. This shows a difference of \$4.3 per kilogram between retail price and wholesale price, along with a \$5.3 per kilogram difference between retail value and net farm value. If U.S. hog farmers can export more pork to the high-priced international market, their incomes will increase.

#### *U.S. Pork Consumption Tends to Decrease*

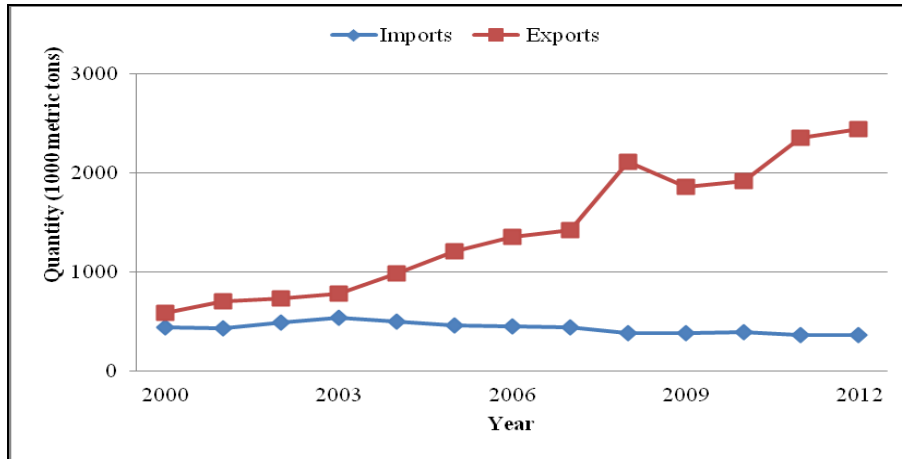
Pork also ranks third in U.S. annual meat consumption, following beef and chicken (Daniel et al. 2011). In 2009, Americans ate 9.0 million metric tons of pork while in 2012, they only consumed 8.4 million metric tons of pork. Pork consumption took a 6.8% decrease from 2009 to 2012.

Per capita pork consumption decreased continuously from 29.9 kilograms per person to 26.9 kilograms per person. “The Continuing Survey of Food Intakes by Individuals (CSFII) indicates that rural consumers eat more pork than urban/suburban consumers. Higher income consumers tend to consume less pork. Everything else remaining constant, demographic data in the CSFII suggest future declines in per capita pork consumption. Americans tend to consume less pork in away-from-home markets and reduce pork consumption as they age. As Hispanics become a larger population, their lower per capita consumption of pork will bring down total per capita pork consumption.” (Daniel et al. 2011).

#### *U.S. Pork Trade*

The U.S. has a comparative advantage of hog production over its competitors. Large scale production and rich feed corn resources bring about lower production costs and prices. U.S. live weight producer pork price was \$1440.0 per metric ton in 2011, which was 20.4% lower than China's producer pork price and 169.9% lower than Japan's producer pork price. China's live weight producer price in 2006 was only \$811.5 per metric ton, but dramatically changed to \$1814.5 per metric ton in 2007. Lower pork prices ensure competitiveness of U.S. pork industry

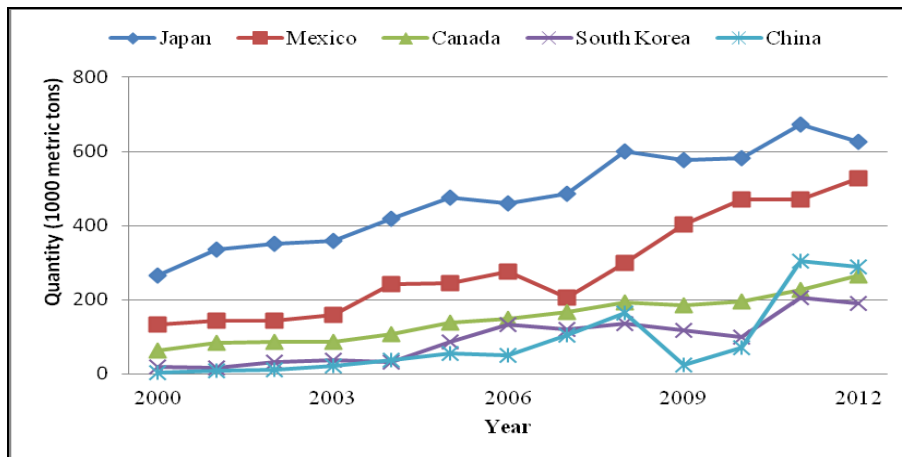
and its share in the international pork market to increase. U.S. pork exports started in 2000 and they grew fast. At the same time, the U.S. exports much more pork than it imports. Over the period of 2000-2012, U.S. pork imports decreased and exports as a share of traded goods increased (see Figure 6).



**Figure 6.** U.S. Pork Trade (carcass weight).

Source. USDA, ERS Data 2012b.

The U.S. primarily exports pork to Japan, Mexico, Canada, South Korea and China. Japan is the largest pork export market for the United States of America. During 2000-2012, U.S. pork exports to these five countries generally increased. In 2012, China surpassed Canada to become the third largest export market for the U.S. pork industry, while its pork imports from the U.S. varied dramatically (see Figure 7).



**Figure 7.** U.S. Pork Exports to its Top Five Markets (carcass weight).

Source. USDA, ERS Data 2012c.

The U.S. exports a large portion of its pork output. Between 2000 and 2012, U.S. pork production and exports increased substantially. Production rose by about 2.0 million metric tons over this period and much of this rise was exported. Annual pork exports changed from about 0.6

million metric tons in 2000 to 2.4 million metric tons in 2012. Exports represented, on average, about 6.8% of production in 2000, but about 23.1% of production in 2012. China's pork imports from the U.S. grow fastest, but are unstable.

## **The U.S. and China Pork Trade**

High unit production costs, epidemic animal diseases, hog manure disposal challenges and food safety scandals are obstacles to hinder China's pork production. China does not possess abundant arable land to produce feed corn. The purchasing power of the Chinese population is increasing. The richer Chinese need more pork to consume simply because they had less pork to eat in the poor old times. In Chinese recipes, pork is the most important food. Famous pork dishes such as Dongpo Elbow (Dongpo Zhou Zi), Double Cooked Pork Slices (Hui Guo Rou) and Yu Xiang Shredded Pork (Yu Xiang Rou Si) attract Chinese consumers deeply, including those who became rich. So it is very promising that the U.S. will export more pork to China. For the U.S. pork industry, China has been one of the leading export markets since 2007. In 2012, U.S. pork sales to China accounted for 7.5% of U.S. total pork exports and 1.7% of U.S. pork production, but only about 0.3% of China's total pork consumption. U.S. pork exports to China will increase greatly, if the U.S. pork industry can gain free access to China's pork market.

In 2012, monthly retail pork prices in China averaged \$4.1 per kilogram, only 53.7% of the retail pork prices in the U.S. market. Average U.S. farm gate and wholesale pork prices were \$2.3 per kilogram and \$3.2 per kilogram in 2012, which was 77.6% and 26.6% lower than retail prices in China. Thus, pork price margins exist between the pork markets of China and the United States. Pork price differences across the two nations will encourage more U.S. pork exports to China.

Except for price difference, consumption preferences also affect U.S.-China pork trade. Chinese consumers use virtually all pork parts, while U.S. consumers eat muscle meat only. For example, some Chinese think pig's intestines are more delicious than muscle meat. Many elderly and sick Chinese also think pig's feet are more nutritious than other meat types. For a worship ceremony of a Chinese family, a pig's head is a necessary sacrifice in some rural areas of China.

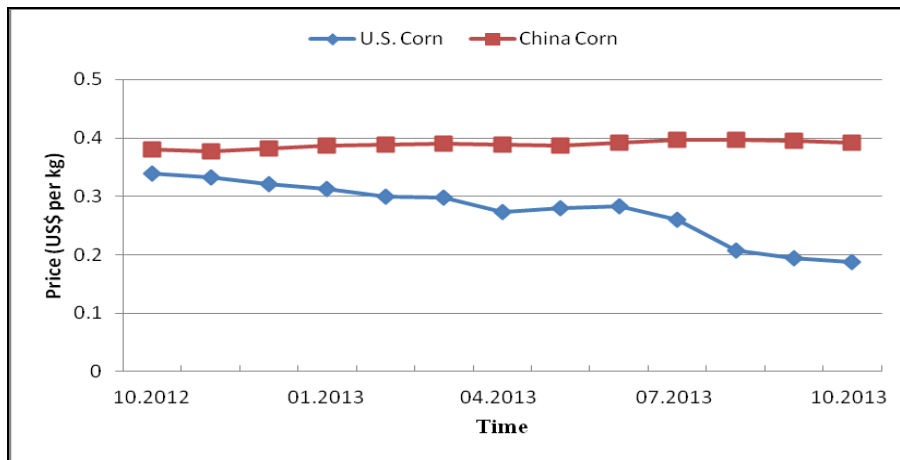
"In 2011, the average U.S. prices of livers, hearts, hocks, feet, kidneys and tails were less than half the prices of corresponding parts in a Beijing wholesale market. Variety meats constitute most of U.S. pork exported to China, but the widening difference in prices improves the prospects for U.S. muscle meats to be competitive in China." (Gale et al. 2012). In 2013, China imported \$1.1 billion carcass pork, \$1.5 billion pork by-products. If China balances its imports of carcass pork and pork by-products, it will import more pork from the U.S. and benefit U.S. pork producers.

## **Challenges of China's Pork Industry**

### *Rising Costs*

Feed corn prices in China have been rising due to cropland scarcity and vigorous demand for grain by feed mills and industrial users, e.g. distillers. Chinese hog producers and feed mills pay much higher prices for corn than their U.S. counterpart do. In recent years, rising feed corn prices have pushed China's feed expenses higher. Rising feed prices tend to propel hog and pork prices upward as well. During October 2012 to October 2013, the feed corn price in China was

around 2.4 yuan per kilogram (\$0.4/kg). With continuing appreciation of Renminbi (domestic Chinese currency), China's feed corn price in U.S. dollars rose slightly by 2.8% in the 12-month period in China (China Corn Price Statistics). On the contrary, feed corn (No.2 white, Kansas City, MO) prices reduced by 44.6% in the U.S. in the same time period. In October 2013, the feed corn price in China was 2.1 times of the feed corn price in the United States (see Figure 8). Feed corn prices in China will continue to be higher than feed corn prices in the U.S. if we don't take adverse weather conditions and bio-fuel production into considerations.



**Figure 8.** Monthly Feed Corn Prices in China and U.S.

**Source.** USDA ERS feed grain data 2013, China corn price statistics.

### *Small Scale Production*

Traditionally, Chinese farmers fed hogs in the backyard. In a self-subsistence economy, a young farmer would be laughed at by neighbors if he or she did not own a backyard hog pen. Today the situation has changed. Most of young villagers work in the cities and stop feeding hogs in the backyards of their homes as their parents did in the past. Diminishing backyard hog production does not mean that large scale hog production is occurring. Governmental officials realize that small scale hog production impedes technology progress, productivity increase and cannot ensure food safety and pork market stability (China's 12<sup>th</sup> Five-year Pork Industry Plan). Local governments welcome new investors to enter into their pork market. China's No.1 feed producer New Hope Group and No.2 real estate developer Hengda Group started their pork businesses in 2006 and 2014 respectively. Small scale production of China's pork industry might last for a long time even large firms invest in this industry.

China's National 12<sup>th</sup> Five-year Food Industry Plan encourages slaughterhouse mergers and acquisitions and aims to reduce the number of small scale slaughterhouses by 50% by 2015. Meanwhile, the National 12<sup>th</sup> Five-year Meat Industry Plan aims to upgrade China's meat production structure. According to this plan, by 2015, fresh and chilled meat will be 30.0% of the total pork sales in Chinese cities, while processed meat will be 17.0% of total sales. Ironically, some small slaughterhouses and pork processors seek protection from local governments by not allowing large pork distributors to enter into the local market. On October 3, 2013, a newly opened chain store of Shuanghui was vandalized by local competitors in Yiyang County, Jiangxi

province. The chief instigator of the incident was an official of the local government. Shuanghui sued the local government. Finally, criminals were arrested.

### *Epidemic Diseases*

Large losses attributed to epidemic diseases periodically restrict the supply of pork and contribute to price surges. China does have animal quarantine and inspection organizations. Veterinary services are also available for hog farms. Nevertheless, outbreaks of blue ear disease, foot-and-mouth disease, classical swine fever, pneumonia, streptococcus suis, circovirus, parasites and erysipelas are often reported by the media. Experts point out that Chinese hog farms are in delicate balance in controlling epidemic diseases (Hu and Zhang 2013). Lag in phase of early warning systems, vaccine misuse, lack of antibodies' uniformity, negligence of nutrition's role in immunity and overuse of antibiotics are typical problems of epidemic disease control and prevention in Chinese hog farms.

### *Environmental Stress*

Hog production brings about environmental stress in China. One hog produces around 5.5 kilograms of waste per day, which contains large amounts of nutrients not absorbed by the animal as well as heavy metals and pharmaceutical residues. A hog can only absorb 40% of copper, zinc, and iron metals of feed, while 60% of them will be excreted into the environment. In an anaerobic condition, hog waste decomposition releases unpleasant gases such as ammonia, hepatic gas, methyl mercaptan, trimethylamine, volatile organic acid, indoles, skatole, ethanol, and acetaldehyde. These odors pollute air and water environment (Liu et al. 2011). China's annual hog waste is about 1.3 billion metric tons, which is 47% of the total livestock and poultry waste generated. Livestock waste, including hog waste, is the main source of water pollution in rural areas (China's Environmental Bulletin 2012).

China's government subsidizes hog farmers to construct biogas tanks to manage hog waste. In large hog farms, biogas programs are usually successful. How to distribute and utilize huge tons of biogas slurry and residue is still a big challenge. In some small hog farms, animal waste is treated recklessly and some is directly poured into the environment.

### *Food Safety and Consumer Confidence*

Food safety is also a major concern for Chinese pork consumers. In the recent years, food scandals have reduced consumers' confidence with Chinese food safety. The media in China reported the illegal use of clenbuterol, ractopamine, and other illegal feed additives in Henan province in 2011. Walmart was involved in China's food scandals also. In September 2011, Walmart angered its Chinese consumers by selling around 30 metric tons of fake organic pork. In May 2013, the police in Fujian province arrested criminals that processed sick and dead hogs. Ironically, sausages made from these sick and dead hogs passed the quality and quarantine inspection of a local sanitary agency. "Chinese consumers are also becoming more wary of pork products that contain dyes, preservatives, and other food additives." (Woolsey and Zhang 2011). In March 2011, Shuanghui was reported to have slaughtered hogs containing clenbuterol and ractopamine by China's Central Television (CCTV). It caused disastrous effects on consumers' confidence in the pork industry. Shuanghui is the largest pork producer, but its pork product is

contaminated by illegal feed additives. What other pork producers have done the same without the public's knowledge? A household survey showed that a sampled family did not consume pork at all in the first week after the scandal. During March 16-25, Shuanghui slaughtered 61.6% less hogs and sold 71.6% less pork than the previous week (Zeng 2011).

## **Why Not Trade Instead of Acquisition?**

China has many difficulties in continuing to increase its pork production, but China's pork consumption growth will not cease. The Chinese population is sure to grow in the future since there is a social pressure to abandon the "one family, one child" policy. Middle class Chinese refuse to pay for expensive, yet unsafe pork products and pursue higher quality imported pork. The U.S. has stricter environmental regulation, nicer hog producing and processing facilities, more advanced hog waste disposal technologies and a well-developed contract model of hog production as compared to China. All in all, the U.S. has both natural endowment advantage and productivity comparative advantage over China in pork production. Under such circumstances, what is the reason for Smithfield to sell itself to Shuanghui, not considering stock share premium for shareholders?

### *Pork Trade Barriers Exist between China and the U.S.*

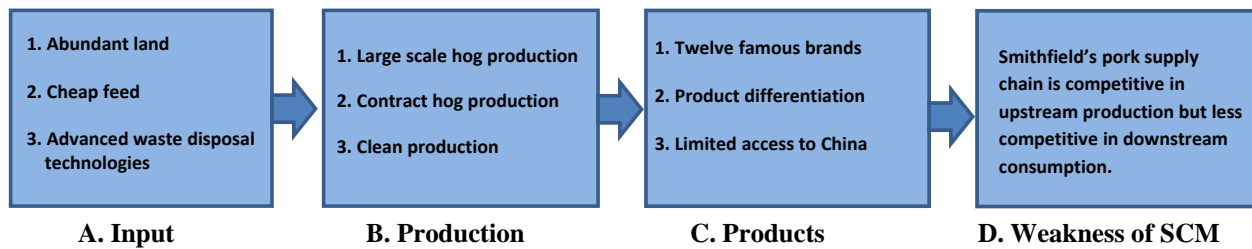
Is it difficult for Smithfield to access China's market? The American pork industry and American government are concerned with China's unwillingness to open its pork market. The U.S. International Trade Commission reported that China's non-tariff barriers particularly its sanitary and phytosanitary measures have a larger effect on U.S. exports (Okun et al. 2011). Interestingly, China's Ministry of Commerce also blamed the U.S. to adopt antidumping and technical barriers to deter agricultural imports from China.

China restricts pork imports with tariff and non-tariff barriers. (1) China's most favored nation (MFN) ad valorem tariff rates for fresh pork, chilled pork and chilled pork by-products are 20%, frozen pork and frozen pork by-products are 12%. These tariff rates are higher than 8.5% average MFN tariff rate for agricultural imports of the nation. (2) Since March 1, 2013, China's quality inspection and quarantine authority requires pork importers to offer costly third party certifications, which caused a 70% decrease of U.S. pork exports to China. (3) China forbids use of ractopamine in pork production, but the U.S. allows pork producers to use this feed additive with a maximum 50 ppb residue limit. (4) China bans pork imports from five states of the U.S. on July 5, 2009 for a year over a brief H1N1 influenza scare though this epidemic disease has nothing to do with pigs.

### *Smithfield's Pork Exports – Room to Grow in China*

Smithfield is the world's largest hog producer and pork processor. Its unit pork production costs are low due to lowly priced feed input and large scale production. It has advanced pig waste disposal technologies to ensure the least possibility of polluting the environment. Its contract model of hog production stabilizes the company's hog supply and reduces farmers' risk. Pork products are differentiated and the company enjoys a large market share in the U.S., Japan and Europe. Though hog production is less profitable than pork processing for Smithfield, it is a necessary part of its supply chain and very valuable to companies such as Shuanghui. The pork

supply chain of Smithfield is more efficient than the competitors, except it can only gain access to the world's largest pork market, China, on a limited basis (See Figure 9).



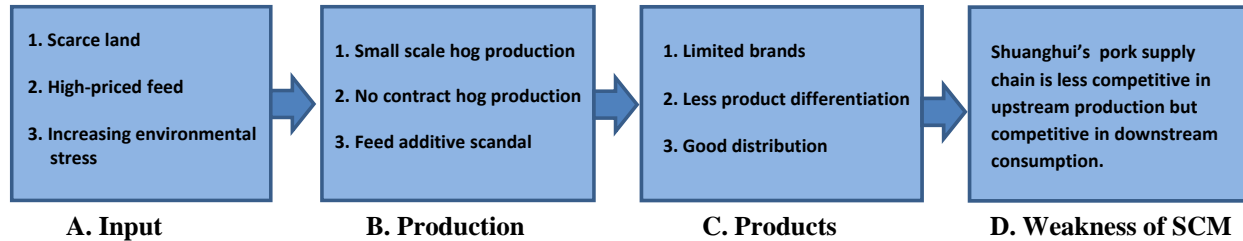
**Figure 9.** Less Developed Pork Supply Chain of Smithfield before Acquisition.

China's government provides domestic pork producers with financial support. Before acquisition, Smithfield could not compete fairly with Shuanghui and other pork producers in China's market. In 2012, Shuanghui received \$44.8 million in financial support from the central and local governments, which was 0.7% of its annual sales. It included \$11.0 million for sick and dead hog culling, \$52,438.0 for sow production, \$112,904.0 for artificial insemination, \$72.9 million for large scale production, \$42,672.0 for pork logistics, \$22.2 million for tax rebate, and \$4.1 million for other purposes (Shuanghui Annual Report, 2012).

#### *Shuanghui's Pork Supply Chain - Not a Competitive Hog Producer*

Presently, Shuanghui has three hog breeding farms and four commercial hog farms. In 2013, Shuanghui raised 330,000 hogs, but it slaughtered and processed 13.31 million hogs. It can only raise 2.5% hogs that the company needed, and had to purchase nearly 13 million hogs from other domestic hog farms. So, Shuanghui's advantage lies in hog slaughtering, pork processing and pork distribution. It is not a competitive hog producer.

Shuanghui wanted to rehabilitate its reputation by raising more company-owned hogs after the 2011 scandal, but hog production is costly, risky and it's too late to invest in this Chinese industry. Most of the local governments in China welcome Shuanghui's pork logistics service and pork processing operations, but say no to the plan of erecting new hog farms. To the contrary of its 2011 announcement, Shuanghui does not expand its hog raising business greatly, but invests more in raising chickens. Chicken raising causes less environmental stress than hog and requires less feed input. Presently, Shuanghui cannot rely heavily on other Chinese domestic hog farms. The current contract model of hog production is not popular and Chinese hog farms are usually small. It is hard to ensure a safe upstream hog supply. If only one upstream hog farm is reported to utilize illegal feed additives, the reputation of Shuanghui will be ruined. The 2011 scandal is a good lesson for Shuanghui (See Figure 10).

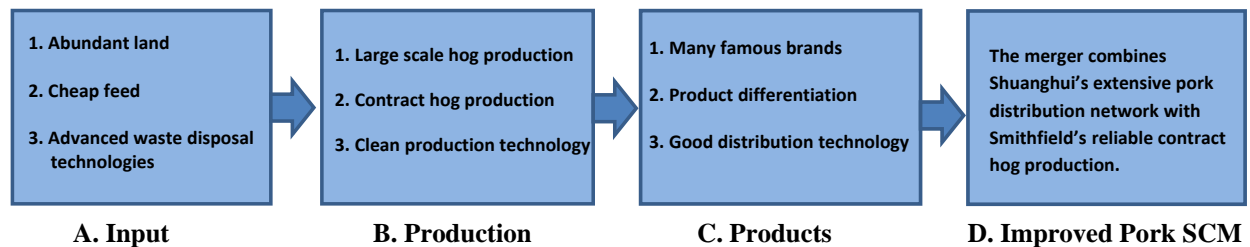


**Figure 10.** Less Developed Pork Supply Chain of Shuanghui International before Acquisition.

### *Shuanhui Establishes a Complete and Efficient Pork Supply Chain after Acquiring Smithfield*

Small scale production has been a source of food scandals. So, domestically, China's government encourages agglomeration in the pork industry to ensure food safety. Shuanghui follows the government's advice and acquired many small slaughterhouses in different regions of China. It has established an extensive distribution network in China's domestic market.

Over production of hog farming is not environmentally sustainable. It might threaten national food security by squeezing land and water resources for grain production. So, internationally, China's government encourages acquisition of foreign pork producers by investing abroad. By acquiring Smithfield, Shuanghui will supplement its strengths and complement its weaknesses with Smithfield (See Figure 11).



**Figure 11.** Well-Constructed Pork Supply Chain of the New Combined Shuanghui-Smithfield.

After acquiring Smithfield, Shuanghui takes advantage of Smithfield's contract model of hog production and connects with more than 2,000 U.S. hog farms. Before the acquisition, Shuanghui did not diversify its products. With Smithfield pork brands, Shuanghui will satisfy the growing Chinese middle class demand and achieve a higher market share in high-end pork consumption. Alternatively, Shuanghui will own Smithfield's hog production and pork processing technologies. These technologies will make Shuanghui more competitive in China's market. With Smithfield's clean production reputation, Shuanghui will win higher Chinese consumer confidence.

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**Exhibit 1. Selected Products of Shuanghui International**



**Spicy Sausage**



**Mushroom Sausage**



**Pig's Head**



**Meat Flavored Sausage**



**Taiwan Recipe Sausage**



**Streaky Pork**



**Sausage**



**Ribs**

**Source.** The website of Shuanghui Development ([shuanghui.net/html/category/food/2](http://shuanghui.net/html/category/food/2), [shuanghui.net/html/category/food/4](http://shuanghui.net/html/category/food/4), [shuanghui.net/html/category/food/5](http://shuanghui.net/html/category/food/5) ).

**Exhibit 2. Selected Products of Smithfield Foods**



**Bacon**



**BBQ**



**Breakfast Sausage**



**Cooked Diner Sausage**



**Ham**



**Hot Dogs**



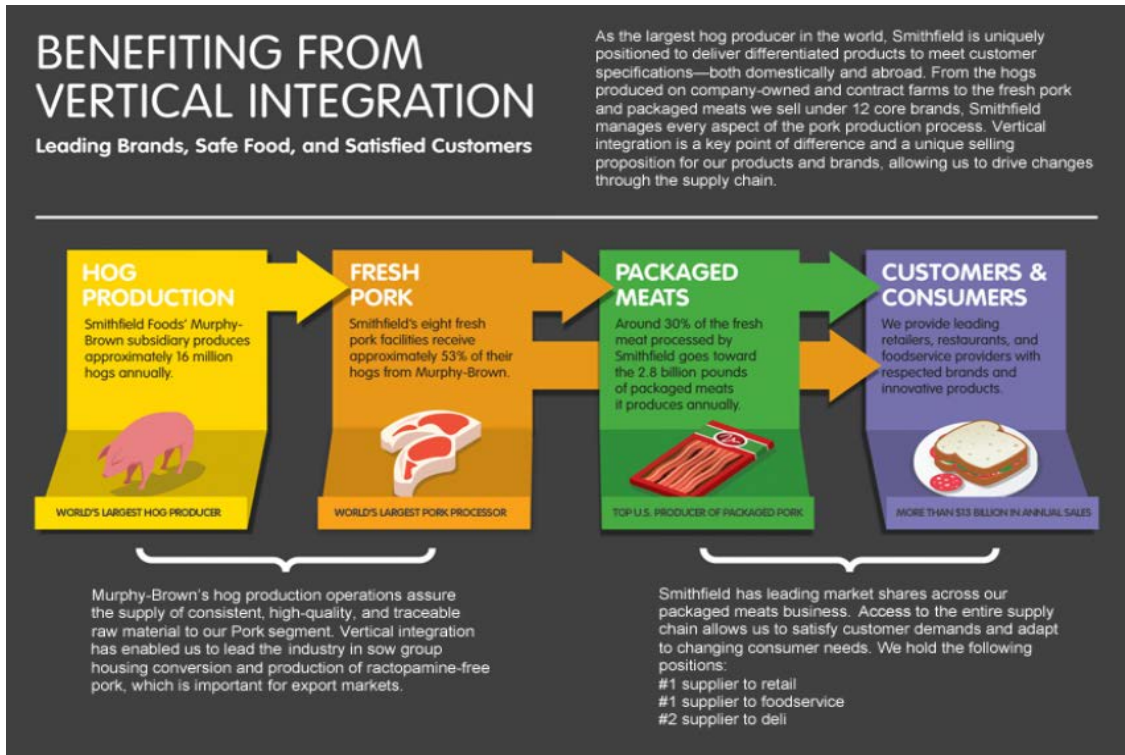
**Lunch Meat**



**Marinated Pork**

**Source.** The website of Smithfield Foods ([smithfieldfoods.com/our-brands/our-products/](http://smithfieldfoods.com/our-brands/our-products/)).

**Exhibit 3. Vertically Integrated Value Chain of Smithfield Foods**



**Source.** The website of Smithfield Foods (smithfieldfoods.com/).

