

China Market Assessment

20 Year Foresight Analysis of Pork and Processed Pork Product Consumption

Final Report

Prepared by



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for

National Pork Board

25th October 2019

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Acronyms

AI	Artificial Intelligence
ASF	African Swine Fever
B2B	Business to Business
BSE	Bovine spongiform encephalopathy
CAGR	Compound Annual Growth Rate
CAFO	Concentrated animal feed operations
CCP	Chinese Communist Party
CEO	Chief Executive Officer
CN	China
cwe	Carcass Weight Equivalent
e	Estimate
EU	European Union
EU28	Current EU block of 28 countries (including the UK)
f	Forecast
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GPD PPP	Gross Domestic Product measured in Purchasing Power Parity
hd	Head
HPAI	Highly Pathogenic Avian Influenza
HS code	Harmonized System code – a numeric code, normally of 4, 6 or 8 digits, which defines products being traded. These are agreed globally, and linked to import duties applied by WTO members.
M&A	Mergers and Acquisitions
MARA	Ministry of Agriculture and Rural Affairs
MFN	Most favored nation – a term that refers to the lower standard tariff system under WTO conditions.
mio	Million
MOU	Memorandum of Understanding
mph	Miles per hour

MRL	Minimum Residue Level – important in testing of important meat.
NPB	National Pork Board (US)
O2O	Online to Offline – an eCommerce distribution model
PED	Porcine Epidemic Diarrhea
PRRS	Porcine Reproductive and Respiratory Syndrome / Blue Ear disease
QSR	Quick Service Restaurant
RFP	Request for Proposal
RMB	Renminbi – Yuan – the Chinese Currency
¥	RMB – as above
t	Tonne(s)
t cwe	Tonnes Carcass Weight Equivalent
t pw	Tonnes Product Weight
TEU	Container movements, measured in 20 foot equivalent units.
USDA	United States Department of Agriculture
USMEF	United States Meat Export Federation
USP	Unique Selling Point
WTO	World Trade Organization

1)

EXECUTIVE SUMMARY

➤ **The world's largest pork consumer and import market is on the threshold of the biggest changes since Mao Zedong**

China has the world's largest domestic pork market, feeding 1.3 billion people. With per capita pork consumption stated at around 40kg cwe / year, it has become *the* major influence on the price and availability of pork worldwide.

- Even though pork imports are currently only 4% of Chinese consumption, this represents around 20% of international trade and will grow further. Even small movements in a market of this size send shockwaves around the world.

But today's countrywide ASF debacle is not just creating shockwaves. It's an earthquake that is changing the very structure of the pork chain both inside and outside of China.

While creating enormous opportunities for pork exporters in the medium term, it's also storing up real potential pitfalls for the longer term.

➤ **From backyard to hyper-efficient mega-farms and plants, all in a generation**

Even today, China's huge pork production system is still heavily based on the backyard and semi-formal breeding and processing that have driven growth for the last 20 years. But since 2014, this structure has been changing, as the Chinese government set out to improve food quality and to regulate the industry and limit its environmental footprint. At the same time, pork distribution has been slowly shifting away from the still dominant, very traditional wet market retail structure to Western-style modern retail and, more recently, even to eCommerce.

Then along came ASF, the black swan event of the millennium. In the last 14 months it has swept across the whole country, probably leaving pork production down by more than 20 million tons cwe by 2020!

- China's vast backyard and semi-professional pig industry – millions of farms and nearly half of pork production even today – has no hope of meeting the new biosecurity rules needed just to contain, much less eradicate a disease which is already thought to have become endemic.
- And the State lacks the monitoring, reporting and testing infrastructure and the personnel and cash to come to their aid.

So the backyard and semi-formal sectors are finished in China, and pig production from this sector will be insignificant probably as early as 2025.

They will be replaced, at least to a large extent, and in record time...

- **China, the country that has built by far the world's largest high-speed train network from scratch in just 10 years, will also create probably the world's largest-scale and most efficient pig supply chain, probably in just 5!**

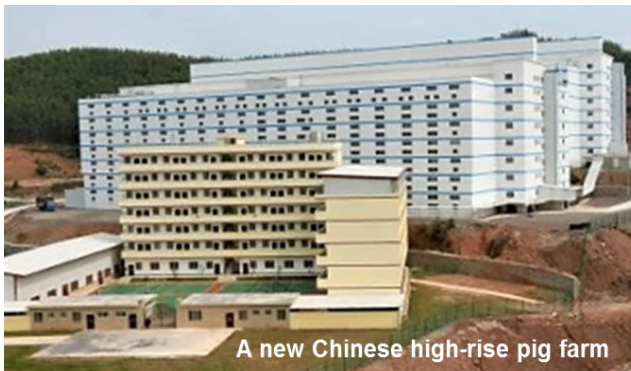
Measures needed to contain ASF and to rapidly return pig production to near-normality will telescope 20 years of regular development into just 5.

This will happen mainly by the major pork farms modernizing and becoming much much larger, involving vast investment and restocking.

- It will involve almost exclusively private sector investment, but will be heavily backed by the State in the form of subsidies and, later, by protection from imports. Foreign investors may or may not be welcome...
- Slaughtering will move nearer pig production and will largely integrate with it.

The result, within 10 years at the latest, will be integrated Chinese pig production that should be as efficient as anything to be found in the US or Europe. In principle it will be able to compete with imports on price (not least because of lower transport costs) as well as on quality.

This means that importing pork will have become a value-added activity to be carried out only by those exporters who are as good as the Chinese at producing, marketing and valorizing their meat.



Danish Crown has already started on such a strategy, and it is exactly what we have already seen in recent years in parts of the Chinese dairy market.

It will be a far cry from spot selling of excess domestic production!

➤ **Importing pigmeat to China**

ASF means there will be a short and medium-term massive uplift in demand for import volumes of both pork and variety meats, in which a market for almost any product will exist, and where demand for carcasses will be strong.

- But as 2025 approaches, domestic production will be well into its recovery phase, thereafter displacing imports while the Chinese government reverts to walking the fine line between keeping recent investments made in the pig industry profitable and keeping the retail price of pork accessible to as many consumers as possible.

It is above all during the period to 2025 that the US export industry must work hard, not just to sell as much pork at good prices as it can but also to use this windfall to build loyalty and brand recognition with both processors/retailers and consumers. This credibility will then be valorized in the following period – 2030 to 2040 – of much higher competition, when only a solid reputation for service, quality and consistency will preserve market share and maintain product value.

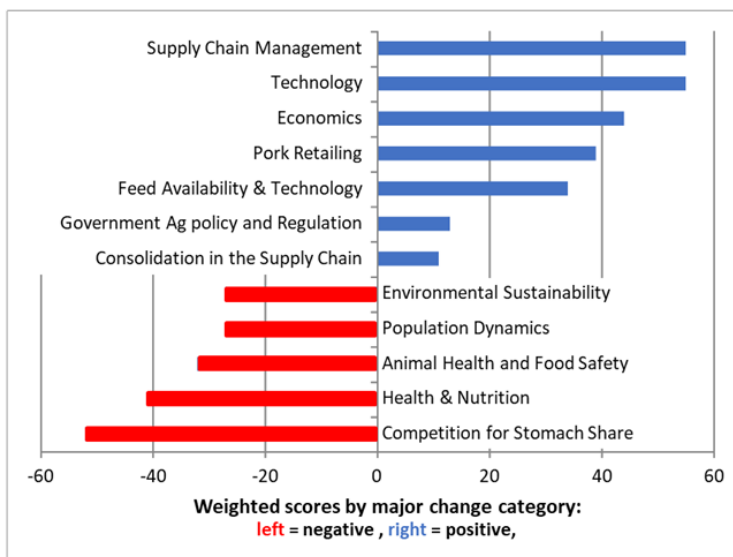
➤ **It is essential to understand what forces are changing the Chinese market and how best to position US pork products as a function of these.**

The long-term trend in pork consumption is a slow decline, from a very high peak.

A major part of our work in this study has been to determine what the major Forces for change – good or bad – are that are most likely to influence the production and distribution, and hence the consumption of pork in China through 2040.

Gira's in-depth research and a major operator and consumer interview program have allowed us to determine and categorize these Forces and to prioritize them according to their strength and their probability.

Key Categories of Forces for Change in Chinese Pork



The chart here shows these categories, from the most important growth drivers through to the most potent negative factors. Each one of these, along with its constituent elements, is discussed in detail in Chapter 7 of this report.

US exporters owe it to themselves to consider each of these elements in developing their own strategies and action plans for sustainable selling to China.

Despite the strength and sheer volume of the overall pork market, there are several significant forces working against demand, in part linked to its historic success. The key negative Forces for the long term are:

- *Competition for stomach share from other proteins* – increased availability of fish and other meats, along with increased disposable incomes, will drive consumers to look for center plate protein variety away from pork.

- *Pork's impact on human health and nutrition* – there will be much increased awareness, leading to rebalancing of diet choice; chicken breast is already gaining market share based on its low fat content.
- *Animal health and food safety* – primarily focused on food safety, which has a poor track record in China but which will improve. Animal health is primarily a problem of increased cost, increasing prices, since consumers largely still don't relate pigs to animal welfare issues.

But the long-term outlook for pork isn't by any means all negative – with the rebuilding after ASF leading to a significant jump in pork's consumer accessibility compared to the more traditional structures existing pre-ASF. Key "plus" Forces for change are:

- *Supply Chain management improvements* – savings in efficiency, new ways of moving product, and ultimately reduced costs passed on to the consumer.
- *Technological improvements* – throughout the chain, meaning better productivity and delivering lower costs that translate into lower consumer prices.
- *Economic well-being* – despite slowing somewhat, GDP growth will still be the envy of most major markets, as disposable income – a key factor in meat purchases – rises inexorably. But though this may mean more demand for quality and real and perceived added value, there won't be higher volumes.

➤ **The highly traditional Chinese pork consumer will take some time to "modernize", but in the end she will – and it's already happening for some.**

Consumers will play a major role in shaping the long-term pork outlook. Our qualitative consumer research (see Chapter 6 of this report) shows that whilst most of the market is still very traditional, with the housewife focusing on buying fresh meat and cooking traditional recipes from scratch... the higher-income and younger generations are already shifting, losing traditional knowledge of food preparation and cooking, as we have seen in Europe and the US in the past 20 years.

- Ultimately, younger generations are passing responsibility for the quality of meat to the vendor, opening the door to an all new wave of modern retail and all it entails.
- There will be a real opportunity for foreign exporters in modern, Western convenience pork preparations. But there's no rush; the volumes aren't there yet, although now is the time to start testing the market.

➤ **Leveraging the ASF windfall to ensure a long-term, valorized import-market presence**

For US pork exporters to China to thrive in the long term, it is important that at least part of the initial, short-term flood of high-priced sales due to ASF be "reinvested".

- The initial surge in Chinese demand will pull in huge volumes of parts, but it will also see buyers (both private and governmental) looking for half carcasses as well.

As the import flow settles and becomes more manageable, there will be an opportunity for US exporters to build value around their products and to lay down the markers that will differentiate their products and themselves as suppliers well into the long term. These will both create and defend market share in the period around and after 2030. Exporters for the long term must:

- Treat the products like the premium products they want Chinese buyers to be happy to pay for, not as low value items that they have difficulty marketing elsewhere.
- Always have strong, visible plant codes on boxes; they are exporters' B2B "brands".
- Use better and stronger boxes; they get abused as they are manually moved in China, and the exporter's image and the value of their product suffers if the boxes start to look worn.

The above then needs backing up with the in-market support and service that Chinese buyers will certainly be demanding in the medium term.

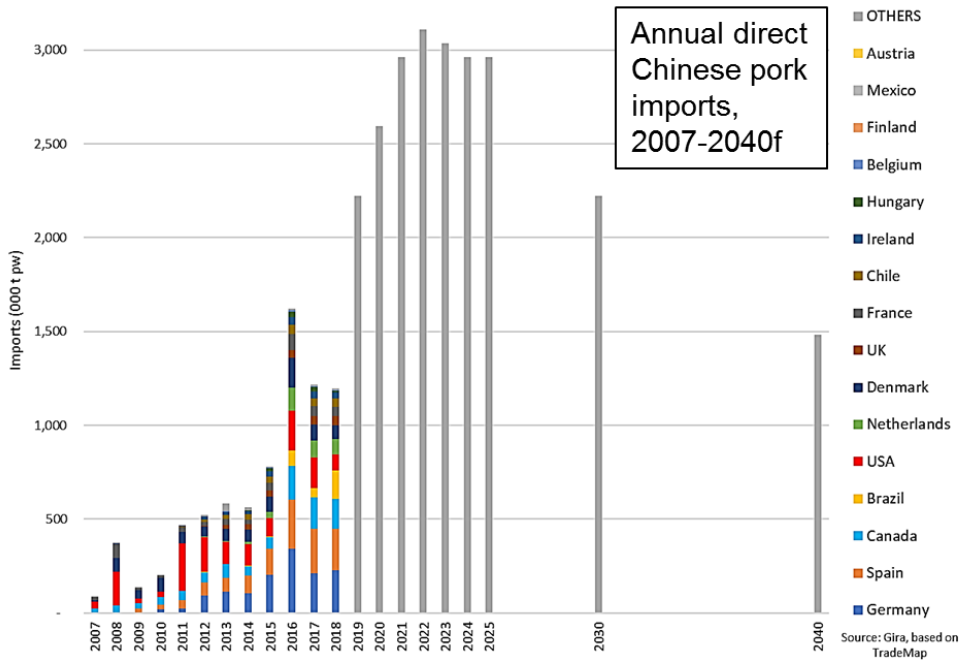
If US exporters don't do the following, they can be sure that the Europeans will:

- Open in-country offices; not just for sales, but offering rapid response technical and product support directly to clients.
- Hold in-country inventory, shortening supply times (post-ASF rush). There will be plenty of third-party logistics companies to manage this in China.
- Use and further develop support from the US industry bodies; for marketing and market research, but also for keeping abreast of all important import and market regulations and changes.

➤ **You can't ignore China, and it's not in your long-term interest to try to.**

Even into the very long term, China will remain a major pork import market. There will certainly be periods when it is difficult or even impossible to trade with China, but if serious exporters looking for sustainable markets don't invest to ensure their long term place in this gigantic and high-potential country, then they can be sure that it is they who will be first losers when the market eventually moves against imports.

Chinese Pork Imports – 2007-40f



2) OBJECTIVES AND COVERAGE

The following are the objectives and coverage of this Study as set out in the Proposal from Gira to NPB of February 2019.

Objectives of the study:

- To provide NPB's stakeholders with a deeper and broader, holistic view of the Chinese pork market as a source of opportunities and challenges for them through 2040.
- To detect, prioritize and forecast, qualitatively and quantitatively, the major forces for change (the “hot zones”) that will shape future demand and impact supply of pork to the Chinese market, with particular attention paid to imports. For each force for change, we will determine and analyze the most likely scenario.
- To provide the bases and recommendations for the subsequent design and implementation of a long-term China export strategy for US stakeholders.
- To present the findings, conclusions and recommendations of the study in a form tailored to and immediately accessible by the major stakeholders.

Scope and coverage:

- The forces for change include all those trends that could impact on both Chinese pork production and the Chinese pork market, with special focus on how they could affect key US stakeholders.
- Pork product segmentation.
- Operators: all those Chinese farms and pork processors that are shaping the market, as well as the important wholesaler/importers and foreign pork suppliers.
- Chinese consumer perception of pork and its place in today's market and how this is likely to evolve to 2040. Beside the development of the products themselves, this also analyses attitudes to hog production, to technology, to domestic vs imported product, and to the pork supply chain.
- Our results and forecasts are applied to the major US meat companies that do or may export to China, to US administrations and associations promoting export, and to Client themselves.
- Geographical coverage: we have studied mainland China as a whole (excluding Hong Kong). We have also looked at major differences between the key provinces, the major cities and/or city types (Tier 1, 2, etc.), with specific focus on Beijing and Chengdu.
- Time Horizon: our forecasting horizon runs through 2040, with intermediary situations for 2025 and 2030. We only use historical data insofar as it is still an element in formulating our long-term forecasts.

- Future marketing investment needs for US suppliers: where possible, these are presented as orders of magnitude in 2018/19 US dollars.

3) METHODOLOGY

We have applied the following methodologies, as set out in our February 2019 proposal.

Gira has used its tried and tested, multi-layer approach to information gathering and analysis in challenging and un-transparent market environments such as China today:

3.1: DOCUMENTARY RESEARCH, involving:

- A thorough scan of all relevant press, trade and company publications, in Chinese and English, but also informed sources publishing in French, German, Spanish etc.
- All publicly available data sources: national statistics and customs data, published studies of all types, newsletters, company websites, etc.
- Relevant recent Gira studies and data.

3.2: INTERVIEWS with well-informed operators and experts

Our interviews with operators have allowed us to “put flesh on the bones” of our figures and forecasts. They have given us market-makers' opinions and ideas concerning every aspect of the forces for change in the pork supply chain, and have often helped us correct errors and weaknesses in official figures. Several of our interviewees are people instrumental in making tomorrow's markets.

The interviews were both face-to-face and by telephone. They were generally semi-directive, i.e. our experienced interviewers worked from a predetermined questionnaire, but always followed up on any interesting digressions by the interviewee, looking for indications of trends that may become important only in the medium or long-term.

Here Gira has used its very wide range of contacts in China and among its suppliers to the Chinese market, and our “hit rate” has been high.

We carried out a total of around 100 such operator interviews. Interviewees were mainly informed representatives of:

- Large Chinese slaughterers, packers and further processors
- Traders, importers, wholesalers (including those supplying lower Tier cities and traditional markets and stores)
- Modern retailers (including eCommerce specialists) and foodservice chains
- Large farmers and their suppliers of inputs, feed additives, genetics and equipment
- Suppliers of packaging and equipment to pork processors
- State regulatory bodies

- US suppliers of pork and their competitors from the EU, Canada and Brazil
- ... as well as with experts and associations.

We also carried out interviews in Beijing and Chengdu which were largely face-to-face with operators on-the-ground: store and market operators, restaurant managers, meat plant operators, meat traders, representatives of the local administration, farmers etc. We carried out a total of around 40 such interviews per city.

3.3: CONSUMER FOCUS GROUPS

Using a specialist Chinese qualitative consumer research team, Gira carried out 4 focus groups (2 in Chengdu and 2 in Beijing). The purpose of these groups was to gain insight into consumer perceptions of pork, especially regarding origin (domestic vs imports), buying and cooking criteria, animal welfare, production technology, farming and scale, ASF, food safety etc., and projecting these into the medium and long term.

These focus groups – each with 8 "average" urban pork consumer/purchasers – used a semi-directive interview guide derived from Gira's 40 years of experience and expertise in consumer profiling. Gira's consumer expert briefed and directed a trained Chinese group moderator so as to direct the conversations towards the elements that are of interest to us and that are shaping the future, giving indicative insights into the likely direction of travel of major consumer issues. This has provided an important counter-balance for our industry operator interviews, both reality-checking and completing them.

3.4: STORECHECKS

As a further reality-check of what interviewees and the statistics tell us, we carried out around 20 in-store, online and restaurant menu checks in Beijing and Chengdu..

The results from this have shown us clearly what consumer marketing is currently being undertaken and have given us an understanding of the resources being deployed and with what success (volumes in store, relative price levels). A comparison between the results from different types of retailer has shown where the most rapid progress or change is to be expected in the future.

3.5: DATA ANALYSIS, FORECASTING AND CROSS REFERENCING

Gira has built a model of the future of the Chinese pork chain through 2040.

Utilizing Gira's highly experienced team of meat sector analysts and consultants, we have compared current data with investment plans, economic outlooks and market data to build a model for demand in 2025, 2030 and through 2040. This has then been compared with probable domestic supply and requirements for imports, to give a volume estimate of the potential market for importers through 2040.

THE WORKPLAN

We have respected the work sequence set out by NPB in its request for proposals:

A PRELIMINARY PHASE: setting out the most likely 2040 macro-economic & social playing field in which pork supply will develop. These were all agreed with NPB's economists before our fieldwork began.

PHASE I: detecting, evaluating and prioritizing all the relevant forces for change that are detectable today, and setting them in their global context. For this we used the following techniques

A: Domain Mapping – detecting, categorizing and making a preliminary prioritization of the forces for change (the trends) on pork consumption and on the pork supply chain.

B: Environmental Scan – a deeper investigation targeting the most important forces for change. We have tested these trends to see to what degree they might be changed, accelerated or slowed by extraneous and/or macro-economic events.

PHASE II: further research both countrywide and in two selected provinces.

A: Deeper research into the main forces for change and finalization of forecasts, paying particular attention to the practical effects of change for US exporters and what need be done to benefit from it.

B: Research visits to Beijing and Chengdu, involving interviews with pork operators throughout the local pork supply chain in each city. This allowed us to test our hypotheses for change that we had developed in the earlier phase and to evaluate in "real time" what marketing investment could be needed to promote US pork advantageously in those cities through 2040.

C: Analysis: developing the finalized holistic, long-term insights for our forecasts and practical recommendations for US exporters.

D: Preparing the Report and the other deliverables.

4) THE MACRO-ECONOMIC AND SOCIAL FORECASTS AND ASSUMPTIONS THROUGH 2040 USED IN THE STUDY.

4.1 GEOGRAPHY

China is located in East Asia, with land borders to Russia, Mongolia, Kazakhstan, Kyrgyzstan, Tajikistan, Nepal, Bhutan, Laos, Pakistan, Afghanistan, India and North Korea. The borders with India and Pakistan are still disputed, but the Himalayas make this a moot point, and tensions only led to an occasional flare up.

For administrative purposes China is divided into:

- 23 provinces: Anhui, Fujian, Gansu, Guangdong, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang and... Taiwan.
- 5 autonomous regions: Guangxi, Nei Mongol (Inner Mongolia), Ningxia, Xinjiang Uygur, Xizang (Tibet).
- 4 municipalities: Beijing, Chongqing, Shanghai, Tianjin

Figure 4.1: Map of China – Provinces and Cities



China is the 3rd largest country by land area in the world, after Russia and Canada (note some calculations put it 4th just behind the US on land mass). China is 2,500 miles east-west and 2,500 miles north-south, total land area is 3.7 million square miles. The eastern coastline is approximately 9,000 miles long.

These vast geographic distances have made china historically hard to rule centrally, with the provinces still holding power over local decisions, and this is one of the key drivers for the investment seen in road and rail infrastructure over the last 20 years. China has built 18,000 miles of high-speed (150-220mph) rail network (the biggest in the world) linking 31 provinces, in just 15 years... an example of just how much can be achieved if the Chinese government demands it.

China has a vast range of natural resources, including coal, crude oil, iron ore and natural gas. It is ranked 7th in the world for crude oil production, but is still beholden to imports for the booming economy. Its need for global sourcing has been a key driver for its investments in Africa over the last decade.

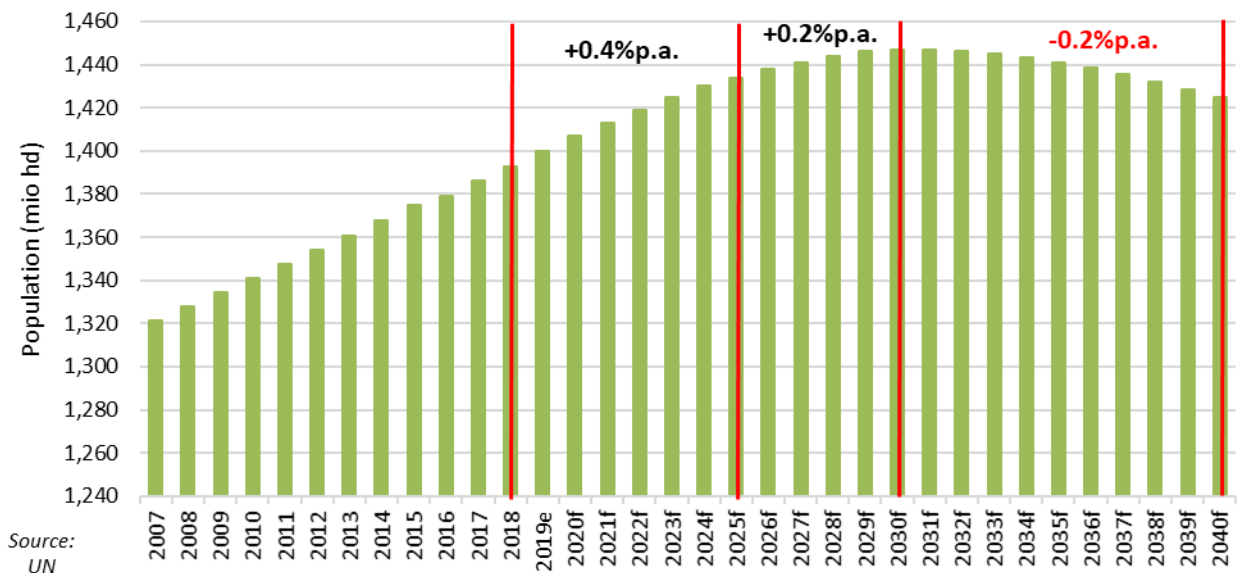
Environmental issues are increasingly important at government level, although they are hard to police at a provincial level. Degraded air and water quality are top of the list, and have led to a range of controls on industry (both manufacturing and agriculture) to attempt to improve them. There is some slow progress.

4.2 POPULATION

China's population of 1.39 bio people in 2018 accounted for 18% of the global population. This explains the significant impact that China has on world food markets, especially when combined with the fact that it is calculated that China only accounts for 10% of global agricultural land.

Fears over the expansion of China's population led to the introduction of the one-child policy, aimed at curbing growth in the mid-term. Today China's population growth has slowed to just 0.4% per annum and will peak in 2030, before falling into a slow decline. This leaves China's government with a sizable economic challenge, and it has already led to the removal of the one-child policy in October 2015. But in reality this has come too late, with many modern families accepting that life with one-child is the norm, and appreciating the better quality of life afforded by only having one-child to pay for.

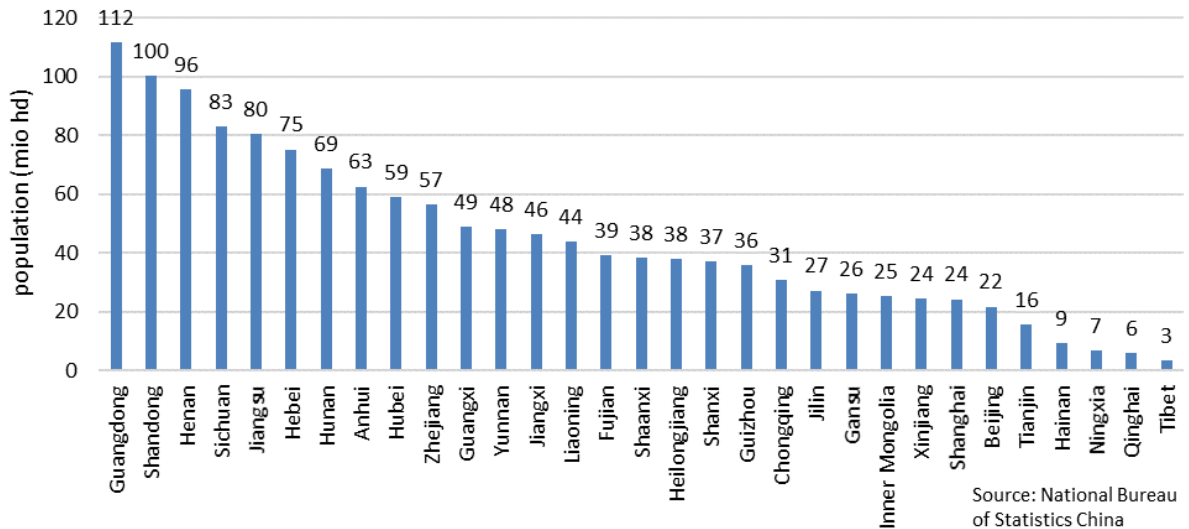
Figure 4.2: Population, 2007-40f



The majority of China's population lives along the eastern side of the country and in the 2 major river delta regions (the Yellow River and the Yangtze River). The North Western regions are far more sparsely populated.

Many of the provinces have populations equal to major countries in their own right, and this points to one of the major challenges of the Chinese market... its sheer scale, and the fact that efforts to penetrate it are often spread too thin in a vain effort to reach it all!

Figure 4.3: Population by Province – 2017



China still differentiates its population between urban and rural, with different schooling, health care and social support afforded to these 2 classes. The population was still 50:50 in 2010, and even in 2018 only 59% of the population were classed as urban inhabitants.

Changes in policy in recent years have moved from actively discouraging rural to urban migration (for fear of having vast urban unemployment) to encouraging it as a means to drive income growth and promote increased consumerism!

The rate of migration to the cities is to some extent overstated, as it factors in both physical migration (people moving from a village to a town) and also the reclassification of “rural” towns as “urban”.

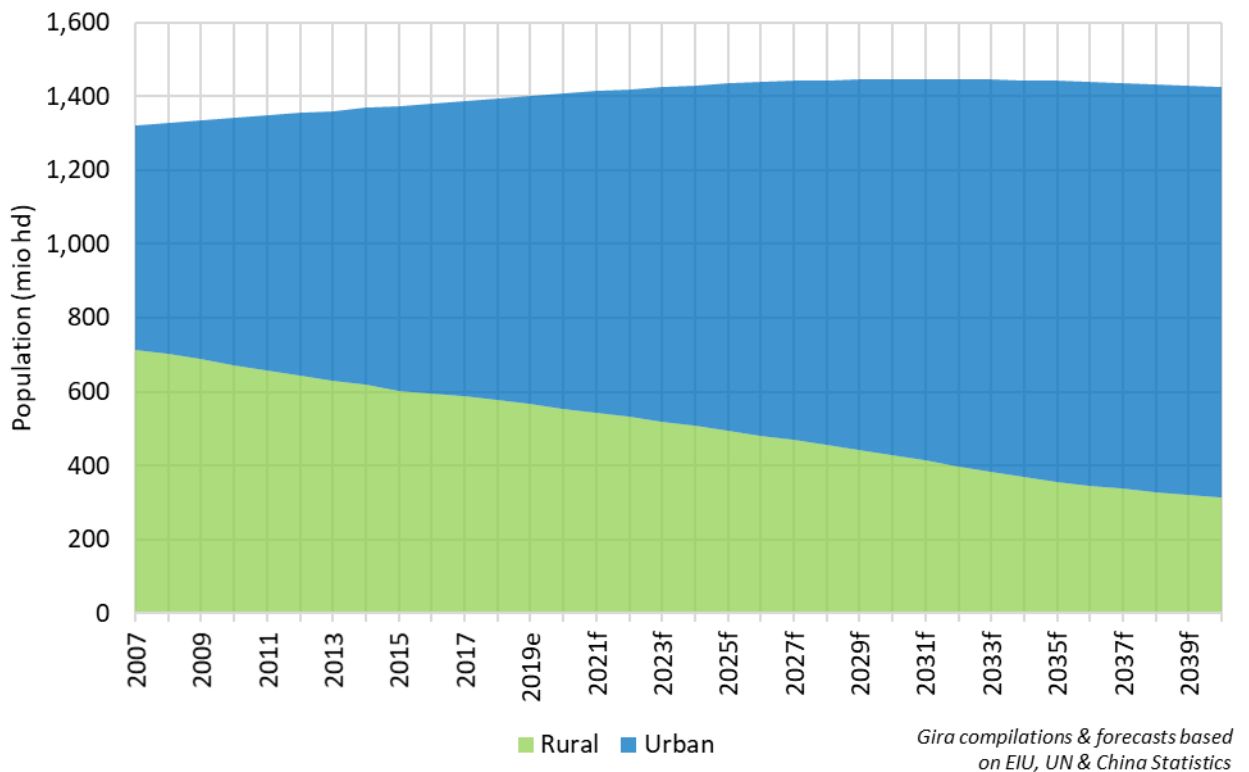
The importance for food:

However, the difference between urban and rural is important, as it reflects the growing urban market in China, as well as the ongoing and rapid dislocation of the population from their rural roots... importantly necessitating rapid growth in commercial food supply channels.

The biggest *volume* gain in the quantity of meat consumed by a given individual comes in the first step after the move from country to city, but the biggest *value* gains come as income rises within the urban population. An upper-middle class urban resident may eat the same amount of protein as a poor resident, but the value of the protein they consume may well be ten times as high.

This factor is also linked to the booming growth in restaurants and food consumption outside the home, where higher-value, more varied food (including kinds and cuts of meat) is on the menu. Consumption surveys show that urban residents in prosperous cities (Shanghai, Beijing, Nanjing, Guangzhou) consume at least one-third of their protein outside the home, far more than elsewhere.

Figure 4.4: Urbanization, 2007-40f

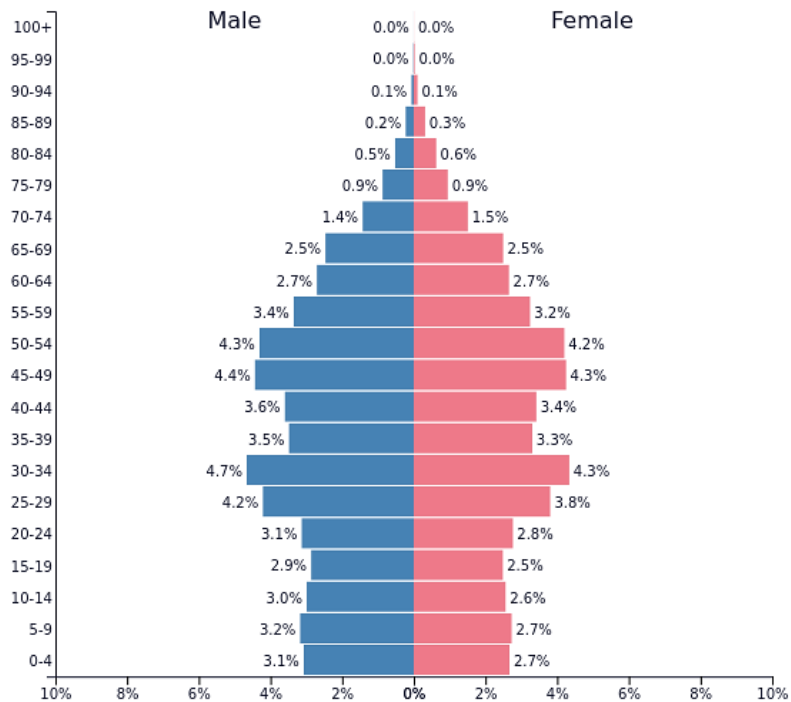


4.3 DEMOGRAPHICS

China has a largely cohesive ethnic structure, in spite of a few vociferous minorities. Well over 90% of the population are ethnic Hans, and 800 million people (nearly 60%) speak the one official language, Mandarin. In spite of significant regional differences, due to geography, history etc., this represents an enormous advantage for the rapid implementation of central government decisions as well as for modern food distribution and advertising.

China's one-child policy and the resultant slowdown in population growth have lasting effects that will shape market trends in the long-term. Whilst the one-child policy does produce slightly more men than women, it is the steep-sided population "pyramid", with its narrowing base and its middle-aged bulge that is the biggest concern going forward. China's is still a developing economy, yet it will see a population decline in the near future. This is highlighted by the decline in working age population (15-64 years old), which fell from 1,004 million in 2012 to 807 million in 2017.

Figure 4.5: The Chinese Population Pyramid - 2019



Other significant factors affecting food demand and distribution have been the modernization of the urban population. The old, large household structure (still present 20 years ago) of 3 generations living in one house has now been replaced by small apartments with couples and their one child! Furthermore, single occupancy households are on the rise, and, in major cities like Beijing, these have doubled in a decade and now represent >20% of all households!

Unemployment rates are low, at just 3.9%, and still falling, and this combined with slower urban migration and an increasingly skilled workforce is resulting in increases in average wages. This in turn is impacting China's competitiveness in manufacturing for export, especially on low cost products.

4.4 THE ECONOMY

Table 4.1: China: Economic Assumptions 2010-2040f

	2010	2011	2012	2013	2014	2015	2016	2017	2018e	2025f	2030f	2040f
Real GDP change (% p.a.)	+10.61	+9.50	+7.90	+7.80	+7.30	+6.90	+6.59	+6.86	+6.60	+5.40	+5.00	+3.04
PPP GDP (USD per cap.)	9,252	10,290	11,252	12,265	13,327	14,157	15,417	16,696	18,120	26,000	31,600	44,000
Average Inflation (% p.a.)	+3.30	+5.40	+2.65	+2.62	+1.99	+1.44	+2.08	+1.56	+2.19	+3.00	+2.50	+2.00
Exchange Rate (CNY/USD,ave.)	6.77	6.46	6.31	6.20	6.14	6.23	6.60	6.76	6.85	6.90	6.80	6.80
Unemployment Rate (%)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.9	4.0	4.1	4.2	4.5
Population (mio head)	1,341	1,347	1,354	1,361	1,368	1,373	1,379	1,390	1,397	1,434	1,447	1,425

Source: Gira compilations, estimates and forecasts based on IMF and World Data Bank

The table above shows us that, while having developed rapidly into an enormous economic powerhouse as a country, the "average" Chinese citizen remains poor by international purchasing power standards. Yet by whatever measure we judge, economic stability has been achieved and recent growth has been spectacular even at the level of the individual citizen. There has been a radical increase in consumers' spending power and well-being across the board, even if often from a low base.

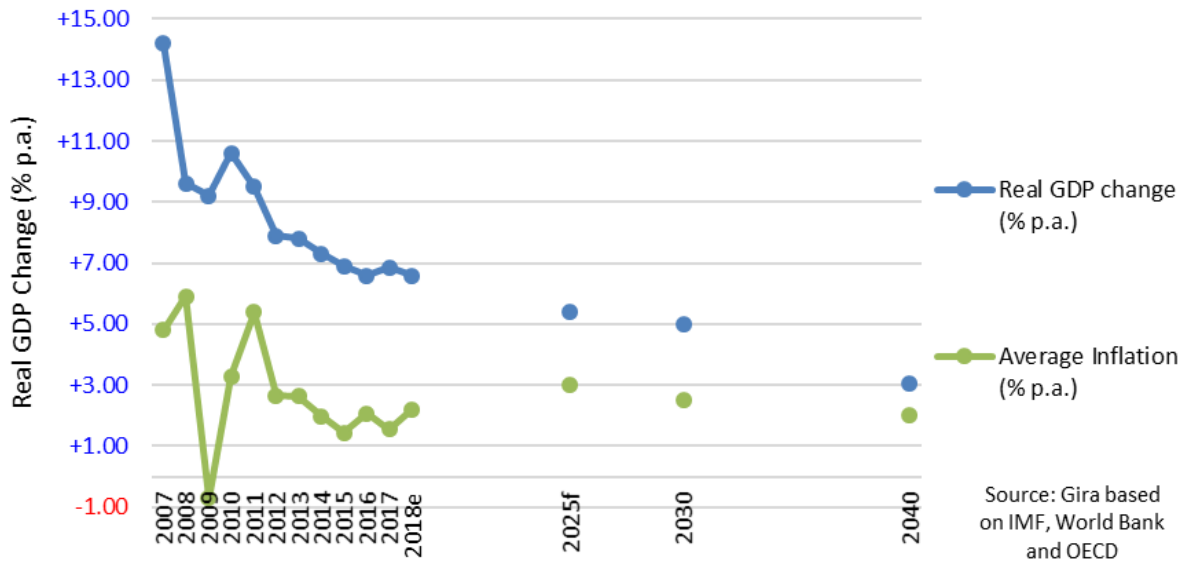
It is this vast improvement in living (and eating) standards that has enshrined the Communist Party's authority and credibility. For the future, maintaining and growing this prosperity further will be Party's main objective, the only way to ensure social stability and, with it, the Party's continuing dominant position. Maintaining access to affordable and quality food for the urban population is already a major part of this objective.

Since 1978, the election of reformist President Deng Xiaoping, China has slowly opened up, both socially and economically. Its once entirely centrally planned economy has an increased free market element (whilst still remaining under the control of the central government and the Communist Party).

The health of China's economy has now become of major concern to all the western market-driven economies. Indeed, concerns over a slowing Chinese economy have been headline news everywhere for the last 2 years, as economists and companies wake up to the reality that the country's once staggering growth rate can't go on forever in its present form.

The Chinese government still interferes in the economy on a regular basis, trying to tune and maintain the growth signals that continue to drive increased disposable incomes and the resultant harmony across its large population. Whilst exchange rates have been in theory free since 2005 (previously they were directly controlled by the government) there are still signals that any unwanted movement is "dampened"!

Figure 4.6: Real GDP vs Inflation, 2007-40f



Along with falling GDP growth rates, the Chinese government has maintained low inflation rates, meaning that growth has contributed to a prolonged period of real economic growth. This has been reflected by increased disposable incomes across China and a booming middle class.

For the meat industry this has been important as it has contributed to strong increases in per capita meat consumption, favoring pork.

Pork is a special product in China, due to its perceived cultural importance, and it features strongly in Chinese shopping baskets. It is a major factor in the basket used to calculate the Consumer Price Index (CPI), where it is thought to account for 3.1% of the weighting.

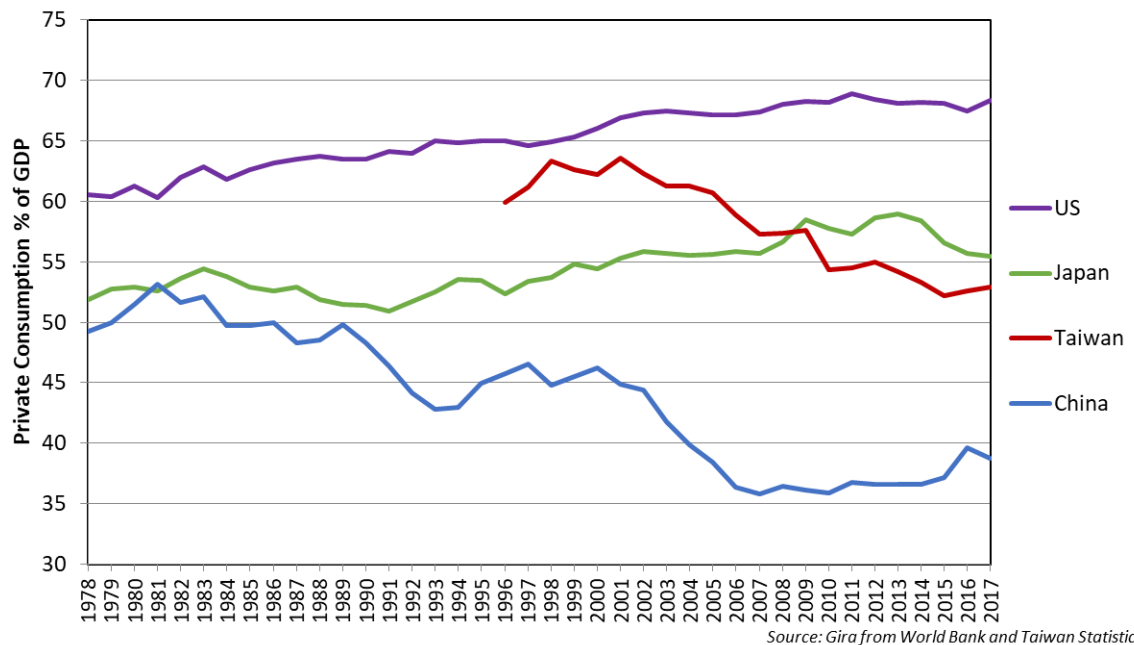
- Indeed, it is so important that in September 2019 the Politburo in Beijing are debating the risk that the current sky-rocketing pork prices could undermine celebrations of the 70th anniversary of the Cultural Revolution...

The biggest economic problem facing China, Beijing and the pork market is a product of China’s very success. The country has followed a classic developing country pattern since 1978, in which migration from the poverty-stricken countryside provided cheap labor to power a surge of exports that have driven growth.

The problem always comes when the country begins to run out of cheap rural labor, and after 40 years this is happening in China today. Economists call this the Lewis Turning Point, the moment when surplus labor runs out and the economy needs to find a new driver (the phenomenon is named after Sir Arthur Lewis, who won the Nobel Memorial Prize in Economics for this work).

In countries that have successfully navigated this turning point, the solution to the labor shortage is to move to an economy that is driven by domestic consumption rather than foreign exports. But in order to supply the higher incomes that can drive a consumption-based economy, a nation needs to improve its technology and make more sophisticated products. Countries like Japan, South Korea and Taiwan, which have successfully made this leap, have moved from simple processes like making shoes or assembling mobile phones to higher-added-value manufacturing like producing automobiles or computer software.

Figure 4.7: Private Consumption % of GDP, 1978-2017



However, China's private consumption expenditure is very low, at below 40% of GDP, meaning that the economy is still being driven by investment, exports and government expenditures. China's consumption expenditure is well below Japan and Taiwan (a possible model of a future Chinese economy), both over 50%, and far below the US economy, where private consumption expenditure accounted for 68% of GDP in 2017.

Indeed, many countries have stalled at their “Lewis Turning Point.” Economists say countries like Brazil, Argentina, Mexico and Malaysia have fallen into the “middle-income trap” – their labor market has become too expensive for simple manufacturing, but they haven’t been able to create higher-value industries. Growth stalls, inflation becomes high and their economies can’t stand on their own, supported by the country’s own consumer demand.

This remains a real risk for China's future, and success or failure, stagnation or the move to "Wester" economy, will be decided in the next ten years.

Gira is of the opinion that China will successfully pass its Lewis Turning Point. It has over twice the domestic market size of any other country and, like Japan in the past, it is busy accumulating and assimilating the latest technology and know-how. Continuing economic stability and "enlightened" free-market incentives from government should ensure China's growth continues well into the future.

We also recognize, however, that unresolved trade wars coupled with another major world economic crisis and even a foolish war (etc.) could delay or even stop this transition, with long-term negative consequences for China. We believe that this will not be the case.

4.5 POLITICS AND GOVERNANCE

China is ruled by Chinese Communist Party (CCP), led by President Xi Jinping since March 2013. His progress since election means he could potentially have the job for life; there are no plans currently for a change of leader. There are also 8 small independent parties, but these are controlled by the CCP!

The foundation of China’s rise in the later 20th Century was the Communist Party’s decision for “reform and opening” following the death of Mao Zedong. Led by paramount leader Deng Xiaoping, the era of “kaifang” began in 1978, and China has not been the same since. The Party withdrew from control of people’s private lives, while reforms progressively freed the economy and liberated an army of aggressive entrepreneurs who built many of the companies that dominate the economy today – including titans of the pork industry like Wan Long of Shuanghui, Liu Yonghao of New Hope and Wen Beiyong of Wens.

Self-belief in what has been achieved in 30 years of economic growth continue to fuel China’s projection on the world stage. The aim is “Making China Great Again.” President Xi’s explicit goal is to build a powerful China that no longer needs cooperation and support from “the West.” “Cultural confidence” is a major theme of his speeches, which constantly appeal to the sources of Chinese tradition.

To achieve this, he has laid out a comprehensive plan that involves both expanded power and technological progress. But the growth since 1978 has depended on loosening central control, and free market practices... these are currently slowly being reversed in favor of more central management.

Policy is centrally managed, with 5 years plans published stating the major objectives for the next period and outlining government policy. The last such policy document was published in March 2016 (the 13th 5-year plan) and it covers agriculture as well. In the last plan the government made a few notable moves; it has:

- Discarded self-sufficiency in grain as a strategic goal; this had been a mantra of the Communist Party since 1949.
- Admits it will need meat imports for the foreseeable future, with policy changes making it simpler to authorize imports.
- Designed new land policies to allow corporations to assemble land for large-scale operations, on the basis that they are both more productive, require less labor and make meat production safer. This could be key in the rebuilding of the swine industry post ASF.
- Combined with efforts to encourage consolidation, the government has instituted policies designed to drive small growers out of business and reduce the rural population in order to clear land for production. This has been hugely accelerated by ASF.

There is also a central policy to increase the technology levels throughout the food chain, by developing or acquiring (by any means) world leading technology.

Chinese government planning will be a major factor in rebuilding the domestic pig industry after ASF; it will allow consolidation of the leading players, and manage the market to ensure they thrive...

4.6 WORKING ASSUMPTIONS ADOPTED FOR THIS STUDY

At the outset of the study a number of working assumptions were agreed between Gira and the National Pork Board. The purpose of these were to be clear on the assumptions taken, so that if they should change at any point in the next 20 years, the reader in the future could understand the view taken in writing, and could adjust the outcome. Few of these are contentious.

- No war between China and a major partner – especially with Japan / Vietnam.
- No border changes – notably Taiwan, but ignoring the Himalayan issue, which would have little or no impact, except if it caused a further rift with India.

- China remains a united country with a centralized government structure – although there are theories that say that eventually the mass will become too difficult to manage from a central seat. For the purpose of the study it is assumed the country remains united.
- No outright ban on trade – although periodic disruption with a variety of partners is inevitable over a 20 year time horizon.
- ASF will be effectively controlled in the pig industry in China – but we will of course discuss below the impact on reshaping production this is already having and will have in the future. It is expected to remain endemic in wild pigs.
- The US and China resolve their current trade dispute.
- The US pork industry is willing and motivated to supply the Chinese market.
- Beta agonists will not be approved for use in China or for imports to China – Importers who want to supply China will need a system that is and guarantees itself as free of them. There are no MRLs for Beta agonists in China, any detection could lead to a plant delisting.

5) A QUALITATIVE & QUANTITATIVE OVERVIEW OF THE CURRENT CHINESE PORK MARKET.

5.1 OVERVIEW OF THE EVOLUTION OF THE CHINESE PORK MARKET

Pork's central traditional role in China's diet has allowed it to build a position for itself in the national psyche where it is considered a paramount measure of the overall wellbeing of the country.

Since the cultural revolution the rearing of pigs by rural households has been a major driver for increasing rural prosperity, and until quite recently was considered an important anchor for preventing mass rural to urban migration that could have led to the development of slums around major cities as works flocked to them looking for jobs.

At the other end of the supply chain, affordable pork has been a mainstay of the communist party policy to keep food affordable. It is the meat which most Chinese consumers prefer, and the one served on traditional holidays and family gatherings. Its price is considered to be of national importance, and is a major factor in CPI calculations.

These factors have led to constant monitoring of the Chinese pork market by the Chinese government, and this shapes government policy in spite of the fact that it is well accepted that real data and insight in China has been clouded by poor or even falsified reporting of herd and slaughter numbers. Even so the pork price remains key.

Imports of pork have been restricted to under 5% of consumption. This is part of a policy to support domestic production, recognizing that the cost of production in China is far higher than in the key global export markets. This will be waived during the ASF recovery period.

Attitudes have also been changing: urban migration is now considered good, small scale farms are seen as bad, unable to feed the massive urban demand and equally unable to assure the safety and quality of their products... and consumers are looking for other meats. All of this was happening even before ASF turned the market on its head.

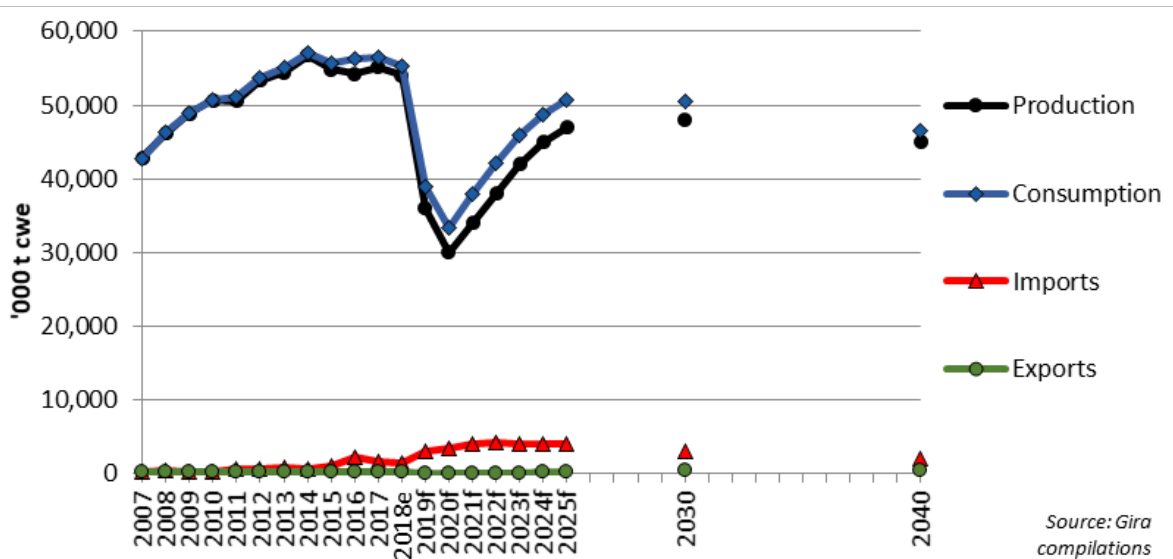
Table 5.1 Chinese Pork Balance Table 2007-2040

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018e	2019f	2020f	2021f	2022f	2023f	2024f	2025f	2030f	2040f	CAGR				
	17/07	25/18	30/25	40/30																						
TOTAL PIG HERD on January 1st (mio head)	418.5	439.9	462.9	470.0	467.7	473.3	477.0	474.1	465.8	451.1	441.0	435.0	290.0	200.0	260.0	290.0	320.0	330.0	340.0	335.0	310.0	+0.5%	-3.5%	-0.3%	-0.8%	
- Sows and gilts	44	47	49	49	49	51	51	50	47	42	41	40	28	21.0	23.0	25	26	26	26	24	21	-0.8%	-6.0%	-1.6%	-1.3%	
- Piglet crop	2,393.1	3,227.1	2,142.0	2,221.4	2,045.9	2,196.8	2,261.7	1,843.7	1,656.0	2,386.5	2,126.9	1,589.6	...	...	...	...	...	...	...	...	545	-1.2%	-1.9%	-0.1%	-0.7%
- Live pig exports ('000 head)	143.5	193.2	128.3	133.4	123.6	132.7	136.1	142.3	141.3	235.7	210.1	157.0	...	...	...	...	...	...	...	...	26.0	+3.9%	+4.3%	+1.5%	+0.7%
- Live pig exports ('000 t cwe)	565.1	609.6	645.3	667.0	661.7	697.8	715.6	735.1	708.3	685.0	688.0	680.0	480.0	380.0	420.0	470.0	515.0	546.0	570.0	570.0	530.0	+2.0%	-2.5%	...	-0.7%	
COMMERCIAL SLAUGHTERINGS (mio head)	135.6%	139.3%	139.9%	142.8%	141.9%	147.9%	150.5%	155.4%	152.4%	152.4%	156.3%	156.7%	165.5%	190.0%	161.5%	162.1%	160.9%	165.8%	167.6%	170.1%	171.0%	+14.0%	+15.5%	-9.3%	...	
OFFTAKE RATE (%)	75.9	75.8	75.8	76.0	76.5	76.4	76.2	77.1	77.5	79.3	80.1	79.6	75.0	78.9	81.0	80.9	81.6	82.4	82.5	84.2	84.9	+0.5%	+0.5%	+0.4%	+0.1%	
AVERAGE CARCASS WEIGHT (kg)	42,878	46,205	48,908	50,712	50,602	53,342	54,493	56,710	54,865	54,300	55,100	54,100	36,000	30,000	34,000	38,000	42,000	45,000	47,000	48,000	45,000	+2.5%	-2.0%	+0.4%	-0.6%	
TOTAL NET PIGMEAT PRODUCTION ('000 t cwe)	103	105	106	108	113	115	120	118	121	125	125	125	124	150	131	131	131	136	138	143	145	+2.0%	+1.5%	+0.7%	+0.1%	
HERD PRODUCTIVITY (kg/head)	973	978	1,005	1,036	1,085	1,059	1,082	1,137	1,170	1,298	1,349	1,356	1,286	1,429	1,478	1,520	1,615	1,731	1,808	2,000	2,143	...	...	...	...
SOW PRODUCTIVITY (kg/head)	205	444	280	364	740	677	916	683	1,111	2,207	1,616	1,410	3,000	3,500	4,000	4,200	4,100	4,000	4,000	3,000	2,000	+22.9%	+16.1%	-5.6%	-4.0%	
PORK TRADE ('000 t cwe)	351	226	236	282	251	248	256	290	244	209	231	188	100	100	100	100	100	200	200	500	500	-4.1%	+0.9%	+20.1%	...	
- Pork imports ('000t cwe)	611	1,176	1,019	1,299	1,247	1,166	1,084	1,325	1,214	1,485	1,392	1,252	1,400	2,000	2,200	2,300	2,100	1,950	1,800	1,500	1,000	+8.6%	+5.3%	-3.6%	-4.0%	
- Pork exports ('000t cwe)	0	0	0	0	0	0	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	+1.0%	...	...	...
SWINE OFFAL TRADE ('000t pw)	42,732	46,424	48,952	50,794	51,091	53,771	55,154	57,103	55,731	56,298	56,485	55,322	38,900	33,400	37,900	42,100	46,000	48,800	50,800	50,500	46,500	+2.8%	-1.2%	-0.1%	-0.8%	
- Swine offal imports ('000t pw)	32.3	35.0	36.7	37.9	37.9	39.7	40.5	41.7	40.6	40.8	40.6	39.6	27.7	23.7	26.8	29.7	32.4	34.2	35.4	34.9	32.6	+2.3%	-1.6%	-0.3%	-0.7%	
- Swine offal exports ('000t pw)	1,321.3	1,328.0	1,334.5	1,340.9	1,347.4	1,354.0	1,360.7	1,367.8	1,373.5	1,379.0	1,390.1	1,397.0	1,403.4	1,409.3	1,414.6	1,419.5	1,420.9	1,426.5	1,434.0	1,447.0	1,424.9	+0.5%	+0.4%	+0.2%	-0.2%	
TOTAL APPARENT CONSUMPTION ('000 t cwe)	1,321.3	1,328.0	1,334.5	1,340.9	1,347.4	1,354.0	1,360.7	1,367.8	1,373.5	1,379.0	1,390.1	1,397.0	1,403.4	1,409.3	1,414.6	1,419.5	1,420.9	1,426.5	1,434.0	1,447.0	1,424.9	+0.5%	+0.4%	+0.2%	-0.2%	
- Per capita (kg cwe/capita)
POPULATION (mio head)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

n.a. = not available

Source: Gira compilations

Figure 5.1: Chinese Pork Balance 2007-2040



5.2 THE DEVELOPMENT OF CHINESE PORK PRODUCTION – 2025 / 2030 / 2040

Figure 5.2: Pig herd and carcass weights, 2007-2040f

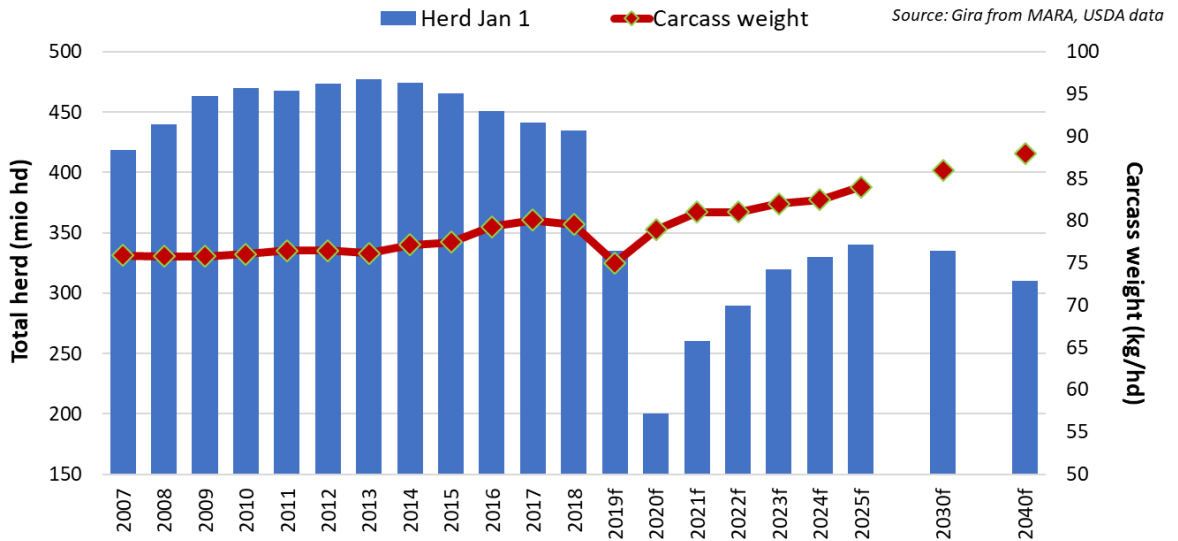


Figure 5.3: Two pig farms



Explanation: Left - a large family pig farm in Inner Mongolia, operating with 50 sows and producing about 750 head a year. Right - The GGP sow shed at New Hope's 25,000-sow facility in Xiajin, Shandong Province.

Table 5.2: Basic pig production performance parameters, 2025/2030/2040

Parameters (annual)	2018	2025f	2030f	2040f
Weaned piglets per sow:	16.8	22.5	24.3	26.0
Offtake rate:	157%	168%	170%	171%
Carcass weight:	79.6	82.5	84.2	84.9
Herd productivity (kg/hd)	125	138	143	145
Sow productivity (kg/hd)	1,356	1,808	2,000	2,143

Source: Projections from Gira compilations

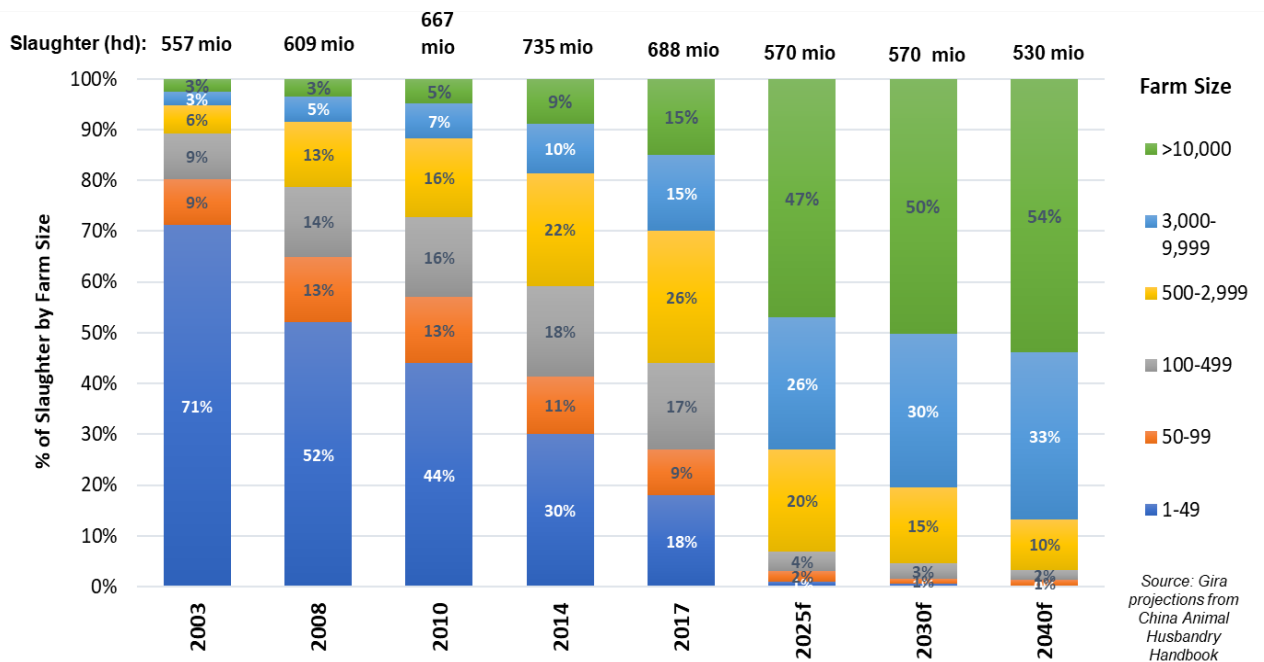
In terms of pig numbers and production, in the space of 3 years ASF will have turned the clock back several decades. It represents the single largest shake out ever in the pork chain and heralds a new era in Chinese production and consumption of meat.

The Chinese pig herd has slowly been consolidating into larger operations for the last several decades, and its geographic base has been migrating to areas nearer the cereals production zones and that can provide more space for large concentrated animal feed operations (CAFO). ASF will accelerate those trends as the emphasis on biosecurity rises.

In 2012, China's Top Ten pig producers controlled only 4% of the market, but by 2018 their share had reached 7.7% and by 2020 it will be close to 20%. The big operations will be able to expand because they can afford better biosecurity, while smaller operations will close or be acquired. The government's goal is to have the Top Ten produce more than 50% of all pigs by 2025, to improve biosecurity, food safety and production efficiency. ASF makes this development look more than probable, creating world-level breeder and slaughterer corporations the like of which probably will not exist anywhere else.

Even before ASF, the herd was shrinking steadily in most provinces, while modern CAFO facilities were boosting efficiency and carcass weights. Consolidation was at first largely driven by market forces, but after 2016 the government speeded the process by using new environmental rules to drive many small farmers out of production, especially near urban areas. Some areas have been criticized for going too far, after local officials abused the rules to profit by changing land registration from rural to more lucrative urban categories.

Figure 5.4: Change in slaughter share by farm size, 2003-2040f

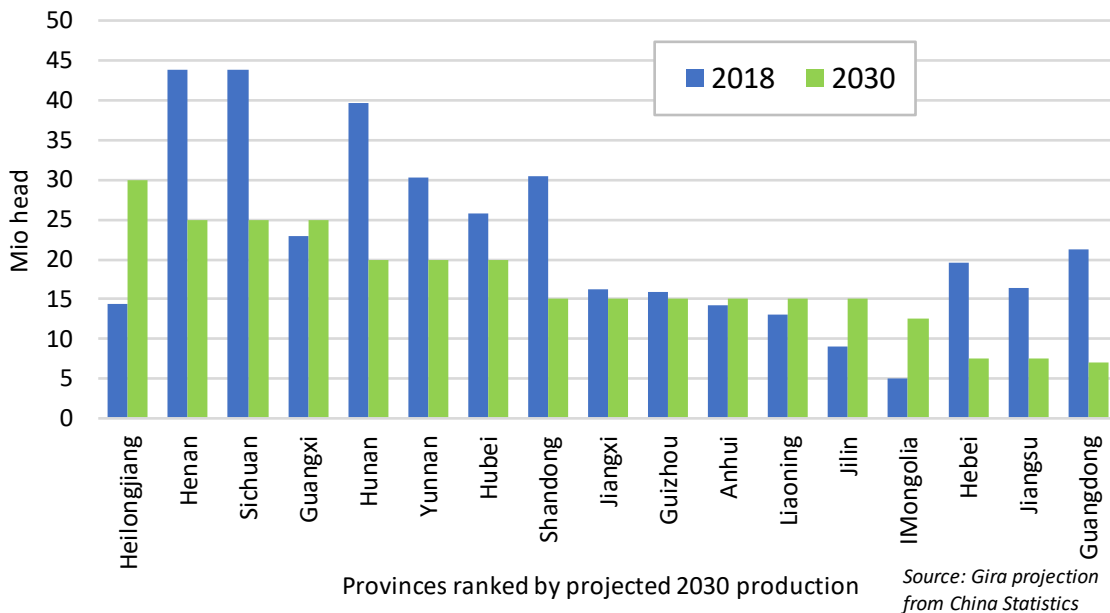


Backyard farming, the smallest category, has been fading out, but in many cases small farmers are consolidating into larger entities. As farms expand, the definition of “family farm” is also expanding. Some “family farms” now maintain their own sow herd and feed as many as 9,000 head. These farms are usually managed by one family, but consolidate land contributed by neighbors and extended family members, many of whom have moved to urban areas for employment but retain a share in the operation. Many farms in the 500-2,999 and 3,000-9,999 head categories have become contract growers for the big breeding and production companies like Wens and New Hope.

Many of these consolidating farmers are investing in expanding their facilities and, with the advent of ASF, improving biosecurity. Some farmers have become large enough to incorporate themselves in farm networks raising tens of thousands of pigs. However, ASF has also driven many of them out of the market, at least temporarily, and some have switched to aquaculture or raising chicken.

The largest farm category – 10,000 head and up – has been the fastest growing and is expected to be producing more than half the country’s pigs by 2030. However some growers are saying that, with ASF probably now endemic in China, the big units have become too risky, and it is better to raise pigs in smaller facilities. Still, a small facility by this definition is in the 3,000-9,999 head category.

Figure 5.5: Projected change in herd size by province, 2018 and 2030f



Large scale farms will be able to utilize the best modern technology, reducing the cost of production in China. But it will remain higher than the US cost of production due to both the cost of importing feed (notably soybeans) and a lack of soft skills. Whilst the gap will close as these farms become established, it will remain even in 2040.

The overall Chinese pig herd will shrink by at least 25% over the next 20 years, and that will also be the case for many individual provincial herds. However, the herd's profile by province will also change as the industry modernizes and as Chinese cities continue to develop. In provinces that host major urban areas, such as Hebei, Jiangsu and Guangdong, herd numbers will drop dramatically. Meanwhile those peripheral provinces with good access to cereals will maintain or even increase their herd size. These provinces include Heilongjiang, Jilin, Liaoning and Inner Mongolia in the north eastern corn belt, Jiangxi and Anhui (to feed Shanghai) and the booming Yangtze River Delta, and Guangxi and Guizhou, feeding the Pearl River Delta in Guangdong Province.

IMPACT ON BREEDERS:

Companies in China's meat industry, unlike many other economic sectors, are almost entirely privately owned, and have grown by aggressive entrepreneurs born during the hard economic years of Mao Zedong's ascendancy. The sector is divided between pig producers and slaughter/processing companies, a situation that has been changing only very slowly. Vertical integration is another trend that ASF will accelerate.

Despite big losses on pig operations in 2018, investors and large pig producers are bullish about the future. Pig company stock prices started rising sharply late in 2018, as investors realized that the big players can control ASF and take advantage of anticipated shortages and higher pork prices in 2019 and 2020.

Nevertheless, ASF has hit big company results, partly because of the cost of improving biosecurity. Big operations are enforcing strict quarantine measures, with closed-circuit video monitoring walls and gates (workers have been caught hopping a fence when they forget a key). Facilities have been redesigned to permit secure loadouts and keep outside vehicles off the grounds. Batch production has been implemented. Increased costs also include disinfectant chemicals and higher wages to keep reliable employees.

However, the improvements are already giving good results. Industry sources are saying that the increased attention on biosecurity is helping control not just ASF, but all kinds of diseases, including previously endemic FMD, PED, PRRS and classical swine fever. Said one interviewee: "We didn't take biosecurity so seriously before, now we take it very seriously. We have made the quickest improvement in biosecurity in history. It's *to be or not to be*."

Artificial intelligence became a hot topic in 2019 at the China animal husbandry association’s annual exhibition in Wuhan. AI companies were mobbed by producers interested in the potential to maintain herd health and boost efficiency, while at the same time reducing human contact with their herds. With the ability to better understand the effects of diet and to measure basic parameters like weight gain, AI is being applied to feed protocols and is expected to permit more specific diets for each herd component and growth period. 3D cameras and related applications will enable in-barn monitoring, with the added benefit that AI applications can use Big Data to teach themselves what works and what doesn’t. One company is working to design an in-barn drone that could inspect every corner of a facility without human presence (the biggest problem is apparently that the whine from a drone’s engines upsets the pigs).

Table 5.3: China’s largest pig growers

2018 rank by sows	Rank 2017	Company	('000 head)				Chg 17-18	Pig-sow ratio, 2018	Major Operating Area	
			Sows, 2018	Pigs sold, 2015	Pigs sold, 2016	Pigs sold, 2017				Pigs sold, 2018
1	1	Wens	1,150	15,350	17,121	19,040	22,297	17%	19.39	Guangdong
2	2	Muyuan Foods	550	1,911	3,114	7,231	11,011	52%	20.02	Henan
3	5	Zhengbang	220		2,300	3,200	5,540	73%	25.18	Jiangxi
4	3	Cofco Meat	200	1,571	1,712	2,226	2,550	15%	12.75	Jiangsu-Hubei
5	4	Chuying/Truein	175			2,510	2,270	-10%	12.97	Henan
6	8	Tech-bank	146		590	1,014	2,170	114%	14.86	Anhui-Hebei-Shandong
7	6	CP China	110							Hubei
8	7	New Hope Liuhe	105	700	1,100	1,900	2,500	32%	23.81	Shandong-Sichuan
9	9	Shanghai Bright	60							Jiangsu
10	10	Jiahe Farms	45							Hunan

Source: Gira from industry sources and media reports

The biggest pig grower, Wens, had almost overtaken Smithfield for the world’s largest sow herd before ASF broke out in August 2018 (Smithfield has about 1.2 mio sows worldwide and is owned by China’s WH Group). Most of Wens’ herd is housed in 5,000-sow units, with weaned piglets going to contract farmers for finishing. Wens has thousands of contract farmers and industry sources say they were unable to protect them all from ASF. However, Wens is also the largest yellow chicken grower in the country, and profits from high poultry prices have more than balanced its pig-related losses.

Land speculation and other non-core investments are the bane of Chinese company development, and it doesn’t look like that will change over the next decade.

IMPACT ON SLAUGHTERERS AND PROCESSORS:

Table 5.4: Largest listed processing companies

	Headquarters	Slaughter Capacity (mio hd)	2016 Slaughter (mio hd)	2016 Production (tons)	2017 Slaughter (mio hd)	2017 Production (tons)	2018 Slaughter (mio hd)	2018 Production (tons)	2018 Slaughter Capacity Utilisation (%)
Shuanghui	Luohe, Henan	30	12.35	n/a	14.27	n/a	16.30	n/a	54%
Delise	Shandong	3	n/a	n/a	n/a	n/a	2.1	163.8	70%
Yurun	Nanjing, Jiangsu	52	6.63	n/a	5.36	n/a	6.61	n/a	13%
New Hope	Qingdao, Shandong	5.5	1.1	76,000	2.3	161,000	3.71	278,300	67%
Cofco Meat	Beijing	3	1.9	143,000	2.2	172,000	1.78	142,000	59%

Source: Company reports

In contrast to breeders, 2018 and 2019 have not been kind to pigmeat processors, with disruption from ASF as well as shortages and rising prices for their raw material. The country’s largest slaughter company, Shuanghui, had to close its massive Zhengzhou slaughter and processing complex for six weeks following ASF contamination.

But in the long run, ASF favors the big players in slaughter and processing just as it does in pig production.

In the interests of safety and efficiency, the central government has been trying to shut small meat processors down and consolidate the industry for the last 10 years. In addition to thousands of small slaughterhouses, there were thousands of “black” unlicensed or seasonal abattoirs that operated without supervision or sanitary protocols, often protected by local government officials. ASF will accelerate the withdrawal or ejection of small slaughtering and processing companies from the marketplace, just as it is doing with small pig producers.

A major regional restructuring of the slaughter sector is on tap, with new slaughter facilities being built close to pig production regions in order to end the long-distance transport of live slaughter pigs.

Vertical integration is in its infancy, in part because entrepreneurial owners resist being merged or acquired. However New Hope and state-controlled Cofco Meat are pointing the way, and others are beginning to follow.

- New Hope, which is also China’s largest feed company, has become a major pork producer, both in pig production and slaughter. The company’s strategic goal is to create a farm-to-fork brand through control of the entire value chain.

- Shuanghui, which currently supplies less than 5% of its own slaughter pigs, is building up production, albeit from a low level. Shuanghui’s purchase of Smithfield looked like a logical play because Smithfield is the largest US pig producer while Shuanghui is China’s largest pork processor. Shuanghui built an entire factory modeled on Smithfield’s US facilities to produce American-style sausage, pork and bacon from imported US pork, but the venture has been troubled by China’s retaliatory trade war tariffs, among other issues.
- From the other direction, Wens, the largest pig producer, is now building some of its own slaughter facilities. Muyuan, another major producer, has announced plans to do the same.

But the non-core investment vice has hit the slaughter and processing sector too. Yurun, based in Nanjing, bought scores of small slaughterhouses and ended up with ten times as much capacity as it needed. Many of the purchases were property plays that didn’t work out.

Moreover, three of the largest processors, Jinluo (also known as People’s Food), Zhongpin and Goldkinn, western China’s largest pork processor, have delisted from various stock exchanges due to investor dissatisfaction and low stock prices.

2025 Outlook – National pork production will be recovering from AFS, but by 2025 the structure of production and processing will be very different.

- Small producers and slaughterhouses will be much thinner on the ground, and large commercial firms will be leading the recovery.
- Better biosecurity will mean fewer diseases and healthier animals, from GGP sows through slaughter pigs.
- The Northeast will become a major slaughter center, while many slaughterhouses in urban areas will close.
- Major cities will get their pork from an efficient chilled value chain.
- The trend to vertical integration will lead to some mergers and acquisitions.
- Imports will remain high to make up for missing production.

2030 Outlook – Pork production will reach a post-ASF peak, but still at least 10% short of the pre-ASF status due to changes in consumer demand.

- Vertical integration will be much further advanced, and slaughter more consolidated.
- The cold chain will reach into 3rd and 4th tier cities and even the countryside.
- The recovery in production will displace imports.

2040 Outlook – The sector will continue to concentrate due to declining overall pork consumption as other meats out-compete the market leader.

- Pig production and slaughter/processing will be consolidated in fewer than a dozen vertically integrated companies operating from a few key supply bases in the country.
- The cold chain will be fully evolved, with gas-packaged meat the most common consumer product.

- Import volumes will be considerably lower, but will still occupy some high-value niches in food service and retail.

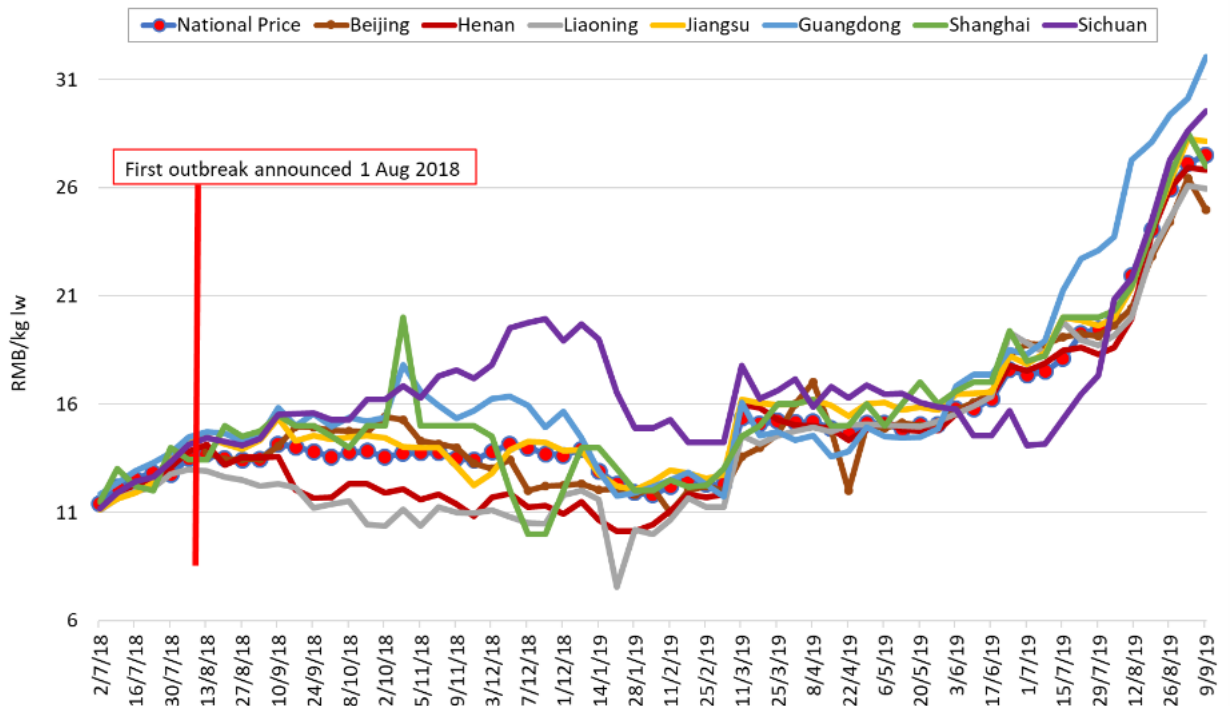
5.3 THE EVOLUTION OF ASF AND ITS ENDURING IMPACT ON THE MARKET

African Swine Fever seems to have been perfectly designed to exploit every fault and flaw in the existing Chinese pork sector. Poor biosecurity, long-distance transport of live pigs, a shortage of veterinary staff, facilities and expertise, the national government’s desire to manage information and the local government’s engrained instinct to hide embarrassing problems, all of these have contributed to the disastrous spread of the plague.

But despite the trauma, many pork sector players see the crisis as an opportunity to decisively restructure and modernize the industry.

As of September 2019, live pig and pork prices were soaring and the Ministry of Agriculture and Rural Affairs (MARA) admitted the nation’s herd had shrunk by more than 32%! Many observers thought that was a minimum figure, and projected a herd at least 50% smaller than 2018’s by the end of the year.

Figure 5.6: Weekly Provincial Live Pig Prices since the Outbreak of ASF



Source: Gira from Zhujiu.com - updated 9th September 2019

The advent of the disease did not come as a surprise, but the speed and completeness with which it devastated the Chinese pork industry was astonishing. ASF had been spreading through Russia's scattered pig population for almost 10 years, slowly creeping closer to the Chinese border. By March 2018 it had gotten as far as the Lake Baikal region, still a few hundred miles from the northern tip of Heilongjiang Province. But when it reached the world's largest and densest population of commercial pigs a few months later, it caught fire.

The first reported case in China came on August 1, 2018, although by that time it had probably been spreading in northeastern China for a month or more. The outbreak was a type that became depressingly familiar: A farmer in Shenyang, seeing that some of his pigs were sick, depopulated his farm and sold his whole herd to another farmer, who reported the incident because some of the pigs were already dying.

However, it was the second reported outbreak two weeks later which signaled the shape of the crisis, drawing the attention of pork specialists everywhere. The disease was discovered in a shipment of 260 pigs at the giant Shuanghui pork slaughter and processing facility in Zhengzhou, Henan Province, 700 miles southwest of Shenyang in central China. The news got worse: the infected pigs had been bought in the Heilongjiang Province district of Jiamusi, 1,400 miles away on the border with Russia.

The Shuanghui outbreak exposed what turned out to be a fatal flaw in the partially modernized Chinese pig industry: a pig production sector had grown up far from slaughter and processing centers, which meant that *live, diseased pigs were being shipped half-way across China*. Some slaughterhouses stopped buying in the Northeast as soon as word of the Shenyang outbreak got out. That led to lower prices in the area – and that is when buying agents moved in, seeking better deals.

Outbreak reports spread quickly across the country, but in fact most outbreaks were not being reported, through a combination of ignorance, lack of resources and reluctance to report bad news. This effectively kept the government as a whole and the national and international pork sectors from recognizing the depth of the disaster until the early spring of 2019.

ASF didn't just show up flaws in China's pork sector, however; its spread even took advantage of the basic structure of the Chinese government. Outbreak reports in province after province made the disease seem serious but slow-moving. In fact, the slow dribble of reports was concealing the real depth of the plague.

Figure 5.7: ASF outbreaks officially reported to FAO as of September 2019



Explanation: By September 2019, the Chinese government had reported 156 outbreaks covering every province, but the real number was probably 1,000 or even 10,000 times as high. Vietnam, where ASF broke out six months behind China, has been more honest in its reporting, as the map demonstrates.

THE FACTORS THAT TURNED ASF INTO A NATIONWIDE DISASTER FOR CHINA

All of the following can be expected to be fully addressed, and most resolved, within the next 10 years, far more rapidly than if ASF had never occurred...

Poor biosecurity – Throughout the pig production sector there was almost no awareness of the need for biosecurity. Even large family and contract farmers paid little attention to access management or feed safety. Some of the big new industrial production centers installed the right facilities – such as showers, changing rooms and truck washes – but only a few maintained genuine procedural integrity.

Long distance transport of live pigs – The pork industry was in the middle of a gradual modernizing process when ASF struck. Local production had dominated for years – pigs were grown, sold and slaughtered locally, with the meat was sold hot in local markets. However, this local food supply market structure could not keep up with skyrocketing demand from an increasingly urbanized and prosperous population. By 2005, pig production was moving into the countryside as urban areas doubled and tripled in size and population. Environmental regulations also began to drive big producers farther from the urban centers of demand. In addition, major breeders and piglet producers started looking for remote locations where they could set up large-scale operations near cheaper cereals production.

Meanwhile the government built a national highway system that made long-distance trucking economically feasible. Since most consumers still demand “fresh” meat and chilled chain infrastructure was in its infancy, the solution was for slaughterhouses to remain close to urban areas, while the pigs got shipped live around the country. Ironically, without China’s modern highway superhighway network, the disease would have spread much more slowly.

Feeding swill – With the exponential growth of the urban food service sector, a whole industry grew up to collect leftovers from restaurants and process them as cheap commercial feed for pigs. The solids in the swill are mostly wheat noodles or rice, but since pork is a major component of many Chinese dishes, swill became an effective vector for ASF. Many small farmers ignored the government’s ban on swill feeding because they could not afford to buy commercial feeds.

Inadequate veterinary service – There are many good veterinarians in China’s veterinary service, but far from enough to cover the whole country. In the beginning there were 29 veterinary stations equipped and authorized to diagnose ASF – not even one per province. Local stations were underfunded, understaffed, and using outdated equipment. Even large private facilities did not have their own veterinarians, and many local vets were poorly trained. The veterinary administration had sent a few staffers to Russia and other European countries to research ASF as it spread, but on the ground the basic situation was near total ignorance – of its symptoms, how it spread, its perseverance in the environment.

Government and Party structure – China appears to have a unitary government, with Beijing giving orders from the center, passed down through the provinces to cities, counties, towns and villages. But there are good reasons that the saying “The mountain is high, and the emperor is far away” is one of China’s best-known proverbs. It is rare that even a strong leader like Mao Zedong can get the whole country to fall in line. For thousands of years provinces and cities have turned a blind eye to the center’s orders in favor of local interests, and that has not changed in the modern era. Officers of the veterinary administration who work outside Beijing do not report to the capital, as they would under the US federal structure. Instead they report to the local county or city mayor, or the provincial governor.

Local Protectionism – Local veterinary officials therefore helped hometown growers evade restrictions, and even provided bogus inspection certificates and shipping permits. Provinces, cities and counties quashed ASF reports because they didn't want to get stuck with the bill for compensation. In addition, political pressure from above to resolve the problem made local officials believe that honestly reporting an outbreak would be a black mark on their personal record. After an outbreak at one large facility in Guangdong Province the local government culled 6,000 pigs, but it then locked up the owner and a dozen employees to prevent them from reporting the disease.

So it was that even by September 2019, more than a year after the disease broke out, Shandong Province had reported only one outbreak of ASF, although its pig population shrank as much as any other. Shandong is one of the few provinces with a major meat export business (processed pork and chicken to Japan), and it is eager to get itself declared a disease-free zone by the OIE to enable more exports. So, according to industry sources, the governor and the Communist Party secretary of Shandong personally visited the largest pork facilities in the province to make sure that they had no reportable disease...

Government backfires – The initial response was not just ineffective, but counterproductive. The central government tried forbidding all transport of live pigs across provincial lines, which led to high prices in cities and extremely low prices in producing regions like Liaoning Province (as can be seen from the diverging lines from September 2018 to January 2019 in the weekly live price chart above). It also led to widespread cheating, as black market dealers took advantage of wide provincial price disparities to ship diseased pigs from low-priced production provinces into high-priced, pork-starved urban areas. Thus the transport ban itself became one of the most dangerous factors in the spread of the disease. The government finally modified the rules in late 2018, and prices began to stabilize across provinces.

Meanwhile, farmers evaded draconian culling rules by selling their herds at the first sign of illness. Local officials adjusted the reported location of outbreaks to avoid culling at large facilities. Even so, video of brutal culling operations that showed thousands of pigs being buried alive appeared on social media, although they were usually quickly deleted by government censors. The central government ordered regions to compensate farmers for culled stock, but didn't provide funds to pay the bills, with the result that only a favored few got paid.

Figure 5.8: Fighting the plague



Explanation: Government-controlled media emphasized the great efforts the government was making to fight the disease; on the left, scientists search for a vaccine; on the right, Inner Mongolian officials practice capturing a pig at arm’s length

THE PLAGUE SPREADS

The following timeline of events shows how the above factors worked out on the ground. By 2030 we should know whether such a disaster could ever happen again in the Chinese meat industry; we believe it will be most unlikely given the industry consolidation we are likely to witness soon.

The Start:

With growers depopulating their farms, supplies rose through the 2019 Chinese New Year and the retail pork price remained fundamentally stable for seven months.

Pork prices jumped in March but plateaued because there were still so many farmers selling their herds that supply remained steady; scam buyers were reported planting dead pigs in neighborhoods to panic local farmers into selling their herds at a throwaway price. Second-wave infections were reported among farmers who attempted to restock before their property was clear of the long-lasting virus.

Meanwhile the national average retail prices for beef, chicken and sheepmeat hit all-time records, and imports of all meats rose.

The central government raised compensation levels for pigs that died of the illness, but much was not paid out.

Pork prices rose and provincial consumer price subsidies reached more than RMB2 billion and had helped more than 80 million poor residents afford pork by late August 2019.

The Leadership Wakes Up:

Top government officials made occasional statements that the disease is "under control" and that "normal" production and trade should be restored.

But the Ministry of Agriculture did warn that pork prices would rise 70% by the end of the year, but in fact prices broke through that level by the middle of August. It was not clear if top officials were trying to avoid panic or really did not understand the ramifications of ASF, perhaps because there was so much being covered up by the lower levels.

The Politburo didn't appear fully awake to the depth of the crisis until August 2019, when live pig and retail pork prices began to skyrocket, threatening the huge celebration due on October 1 to mark the 70th anniversary of the Communist Party's conquest of power.

Figure 5.9: Premier Li Keqiang (right), Vice Premier Hu Chunhua (left)



In August 2019 the Communist Party announced the establishment of a Leading Small Group – a special group of top party and government officials – to coordinate agricultural and overall rural policy.

Then Hu Chunhua, a member of the Politburo, gave a speech at last setting out the real extent of the problem and suggesting some remedies. Among the most important statements were that ASF is now endemic and that pork shortfall would exceed 10 million metric tons, a volume that could not be made good from imports or substitute meats. He recognized that long-distance trucking and inadequate veterinary services were not sustainable.

He also introduced short-term measures including banning banks from cutting off credit and introducing some subsidies. He made city officials accountable for supplying pork to their citizens and he reversed some environmental restrictions on pig farms.

Hu’s speech ended with a focus on information control, telling cadres they should continue to make reassuring noises in public while vigorously fighting the disease in private.

However, because ASF contamination is so widespread and because the virus can survive for long periods in the environment, it is not clear that even these measures can speed up a production comeback. More than half of the herd’s sows are gone, and decontaminating facilities and rebuilding the herd will take time.

As one Gira interviewee observed, with a sigh: “Politicians don’t know anything about pig farming.” But at least they now know far more than they used to.

Figure 5.10: Decontamination will take years



Explanation: Left - Workers practice decontaminating pigs in Inner Mongolia (the sign reads Decontamination Isolation Area); Right - workers spray pigs at Dabeinong in Liaoning Province.

RECOVERY IN PORK PRODUCTION

The conventional wisdom is that it will take five-to-seven years for the pork sector to recover from ASF. The disease is extremely persistent in the environment.

Except for the few who already had good biosecurity, most pig producers need to start from scratch, design and build new facilities, establish biosecure protocols, and rebuild their herds. But the first task will be to decontaminate their land and their facilities. The standard is to decontaminate and disinfect, then leave facilities fallow for six months, and a full year for sow farms. Reported attempts to shortcut these periods using sentinel animals have not been notably successful. It should be remembered that in the worst case, from the Spanish experience in the 1980s, the virus survived in a facility for six years and then re-infected animals.

Water will also be a problem in the short term, since burial of diseased pigs contaminates the water supply (however the virus apparently does not survive as long in water as it does on solid surfaces).

The implication is that successful restocking will not be possible until 2020, or even later if proper protocols are not established and observed. Some producers may succeed in restoring production, only to be sabotaged by less conscientious producers who fail to keep their operations clean. Furthermore, for the whole industry to recover, the disease must be controlled all along the value chain.

A full recovery won't be in place until at least 2025 – maybe a little bit earlier if an effective vaccine comes onto the market.

IMPACT OF FUTURE IMPORTS

Meanwhile, imports will surge to unprecedented levels, but there will still not be enough to make up for the domestic shortfall. The government is authorizing imports from more countries and slaughterhouses, and will ignore or minimize violations by licensed exporters.

US and Canadian pork is likely to find a way into the market even if political issues continue to affect the trade, although not in the volumes that would flow if the issues are settled. US situation has eased in early September'19, but at the time of writing it is too early to confirm that it has been fully implemented. US pork may enter via the Hong Kong grey channel, or repapered as pork from another country (as has already apparently happened with meat from other markets). The Chinese government may offer tariff exemptions or rebates to some importers, as it has in the past.

There will be opportunities for the international pork sector aside from simply shipping meat to China. The country desperately needs trained pork specialists, and several companies have set up consulting operations that train staff and manage pig production facilities. Facility design, construction supervision and equipment supply (along with genetic restocking) are also areas where foreign expertise can win customers.

The top Chinese producers are often willing to pay for the best, if they are really persuaded that it is the best. Effective decontaminants and disinfectants will be in demand, although of course providers must be ready for copycats (a secret of combatting copycats is that they are often less effective than the original product, and if the foreign supplier can persuade the market that their products work they will be able to hold market share even with cheap imitations around).

RECOVERY IN PORK CONSUMPTION

On the consumption side, there is already anecdotal evidence from news reports that sharp price hikes are leading middle and low-end consumers to seek cheaper cuts or substitute chicken or alternative sources of protein like aquatic products and tofu. Skeptical consumers are avoiding pork despite government assurances that ASF does not affect humans. High-end consumers who can afford it will buy more beef, sheepmeat and high-end aquatic products – so those prices are rising sharply as well. Marginal proteins like once-popular rabbit meat may enjoy a revival.

Even after recovery it is likely that the market for pork will be much smaller than it was before. Pork consumption hit its peak in 2014 and had been falling slowly since, as incomes rose and other proteins became more available. ASF will boost this trend --- many consumers will develop new habits, and stick with them after ASF is gone. Meanwhile the generation of traditional consumers, who liked to buy their meat fresh in the wet markets and cook their offal at home, will be slowly dying out.

RAMIFICATIONS: THE OUTLOOK FOR 2025 AND 2030

Despite the trauma of ASF, many pork sector players see it as an opportunity to restructure and modernize the industry. Among the predicted, or hoped for, effects:

The end of backyard production – The disease will sweep small farmers who can't afford good biosecurity out of the market. This will happen before 2025, indeed in the next two or three years. The backyard/small family farm sector has been a big factor in China's volatile pork cycle, because they can opportunistically step in and out of the market in huge numbers depending on the price picture. *Their departure will contribute to more predictable production and more stable prices.* The elimination of non-biosecure farms and swill feeding will also help reduce the overall disease load in the herd and limit the spread of new disease outbreaks.

Vertical integration – Chinese pig production and slaughter operations have by-and-large been operating in separate environments, with only two major vertically-integrated companies, New Hope and state-controlled Cofco Meat. That is changing as pig producers like Wens invest in slaughter operations, and slaughter companies like Shuanghui build supply herds. M&A solutions seem logical, but there hasn't been any major action yet; the trend to vertical integration will progress slowly if that does not occur.

Slaughter migration – *New integrated slaughter and processing facilities will be built in pig-production regions.* The problems caused by long-distance shipping of live pigs are all too clear. The trend will begin immediately, but due to the large current installed base of near-city facilities it will not fully mature until 2030.

Healthier herd – The safety and sanitation improvements needed to keep ASF at bay will also reduce the incidence of FMD, classical swine fever, PRRS and other diseases that have plagued the Chinese industry for decades. And although they are not strictly a result of ASF reforms, new artificial intelligence and Big Data technologies that reduce human-hog contact and detailed focus on nourishment and early disease detection will also improve herd health.

Safer operations – Farms will get bigger, more efficient, more biosecure, with more full-time professional management and staff. Even big farms that escaped the plague so far are redesigning facilities for secure shipments and loadouts, installing video cameras to monitor access points, and switching to complete batch production. Large family farms are also implementing the same types of controls, and sales of disinfectants to large family farms are reported to be booming. Big operations are also buying up smaller farms in order to protect themselves from unsafe operations nearby.

Veterinary services – The Ministry of Agriculture and the veterinary administration have promised to invest more in veterinary services, equipment and training. But this is not the first time such promises have been heard, and good intentions (and capital spending) tend to get washed away when the crisis fades. That is what happened when PRRS surged and retreated in 2008 and 2013. But *the ASF crisis may last long enough to create real improvement in the field.*

Government structures – The government and party structures that led to widespread deception and violations are *not likely to change soon.* “The center has policies, the regions have counter-policies,” is another classic Chinese saying on the theme. The government structure would have to change from a unitary system to some kind of federal system, where the center actually has its own boots on the ground. And the Party would have to give up its desire to maintain control over all aspects of society and the economy, and to manage information on a political basis. Neither is likely to happen soon.

5.4 MEAT IMPORTS – TRADING PARTNERS, DYNAMICS, AND PRODUCTS

METHODOLOGICAL NOTE ON TRADE STATISTICS

Statistically deciphering the trade of livestock and livestock products into Hong Kong, Macau and the Chinese Mainland is fraught with pitfalls, including:

- Cross border undeclared trade from Hong Kong, Macau, Thailand and Vietnam into China (the grey channel).
- The large percentage of the offal trade in relation to the meat trade.
- Hong Kong regularly reports higher offal re-exports than imports – suggesting that meat products may be re-classified as offal to gain more favorable tariff treatment from Chinese customs, as long as they don't take a peek in the box.
- Care must be taken not to double count product that moves from Hong Kong into Vietnam, or otherwise changes channels.
- Customs classification differences between exporting countries, Hong Kong and China: e.g. the difference between meat, offal and other edible items which are notable traded items.
- China, and most other nations report meat trade statistics using the Harmonized System of tariffs (HS codes), but Hong Kong uses the slightly different Standard International Trade Classification (SITC codes).
- Countries that don't report trade figures in a timely way; Vietnam, for instance, provides almost no statistics on its meat imports and exports, and Thailand's figures are not always reliable.

For these reasons, when calculating Chinese import volumes, Gira always checks and often uses so-called “mirror” figures, which are declared shipments by country of origin. All of Vietnam's imports, as well as some Hong Kong and Thai imports, are calculated from mirror figures.

Gira calculates the volume that may be moving through the grey channel by looking at import, export and consumption statistics for Hong Kong, Vietnam and Thailand.

TRADE OVERVIEW

In recent years, China's imports of pork have fluctuated between 1.6 and 1.2 million tons per year, whilst variety meats (offal) have accounted for an additional 1-1.3 million tons. China is already the major force in world pork trade, and is set rapidly to become even more important.

Imports of pork to China are pulled by China's higher cost of production, and also a demand for cuts and variety meat items that have low values in most of the other key producing markets. This has made it an important part of carcass valorization for established exporters in the US and EU. It is expected that the overall cost of production advantage will narrow in the long-term (to 2040) but will be maintained, this is further amplified by the difference in cut preference between the Chinese and US markets.

Table 5.5: China's direct total pigmeat (excl. offal) imports by country of origin, excluding Hong Kong, in product weight, 2007-2018

	(000 t pw)											CAGR		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018/08	2018/17
Germany		0		18	25	95	115	107	205	344	212	228	+151%	+7.8%
Spain		0	25	28	45	67	70	91	137	260	238	220	+105%	-7.5%
Canada	22	42	28	39	50	53	74	52	61	179	167	160	+14.4%	-3.9%
Brazil						3	2	1	3	81	49	150		+208.1%
USA	38	177	22	29	252	187	119	117	101	216	166	86	-7.0%	-48.3%
Netherlands					0	4	2	9	30	120	86	85		-2.0%
Denmark	10	76	46	74	60	51	64	68	81	159	89	72	-0.5%	-18.6%
UK						5	21	28	33	43	46	50		+8.7%
France	16	73	13	11	26	22	34	26	43	87	51	49	-3.9%	-4.1%
Chile					2	10	20	26	31	46	40	44		+8.6%
Ireland	0	5		1	7	17	16	20	28	43	36	33	+21.7%	-7.6%
OTHERS	0	5	0	2	8	26	62	40	52	86	74	49	+25.2%	-33.2%
TOTAL	86	373	135	201	468	522	583	564	778	1,620	1,217	1,193	+12.3%	-2.0%
Ave. Unit value (USD/t pw)	1,439	1,402	1,010	1,038	1,813	1,879	1,894	1,861	1,865	1,969	1,825	1,739	+2.2%	-4.7%

Source: Gira based on TradeMap

Note: large "Others" volume in 2012-14 is from Poland, now banned due to ASF.

China's imports had grown reasonably regularly until 2016, when they literally exploded as domestic retail prices boomed and then seemed to have settled at a new normal of over 1 million tons per year. It was reasonably expected that they would remain at this level for the foreseeable future; but this was pre-ASF, which Gira's analyses show should increase imports dramatically.

So, China will be *the* driving force behind world pork trade for the foreseeable future, well into the long-term, and hence it will also drive world pork and pig prices.

China has been the driving force behind world dairy trade (and prices) for some years, and recent events in the dairy sector have shown clearly that when China sneezes, drastically reducing imports, the rest of the world catches a serious cold.

But the opposite is true with pork today; ASF in China is bringing good health to the world's pork chain and this could last well into the medium term. However, exporters must remember that at some time China will sneeze again, and any plans for sustainable pork exports to China must take this into account.

This warning is particularly relevant for US exporters looking to set up sustainable sales channels into China and to move US exports there to a significantly higher level through the long-term. In China, prudence and having a "Plan B" are absolute necessities.

Figure 5.11: Direct Chinese total pigmeat import market share by country of origin, 2018

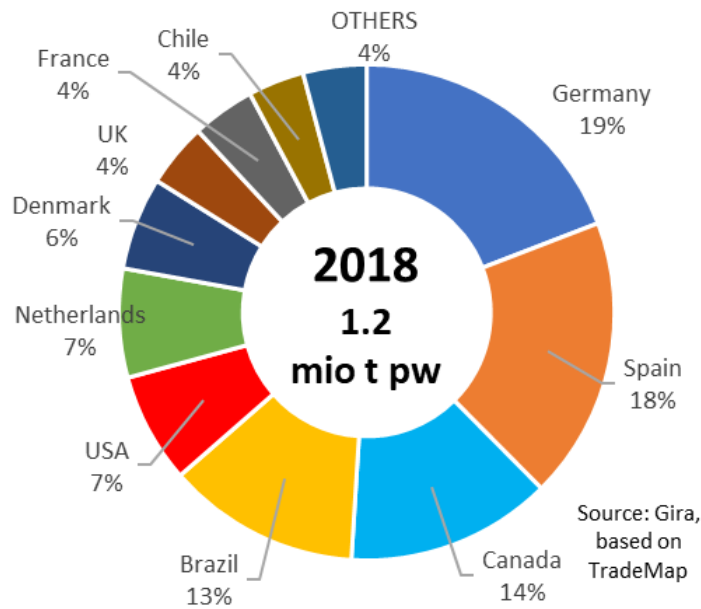
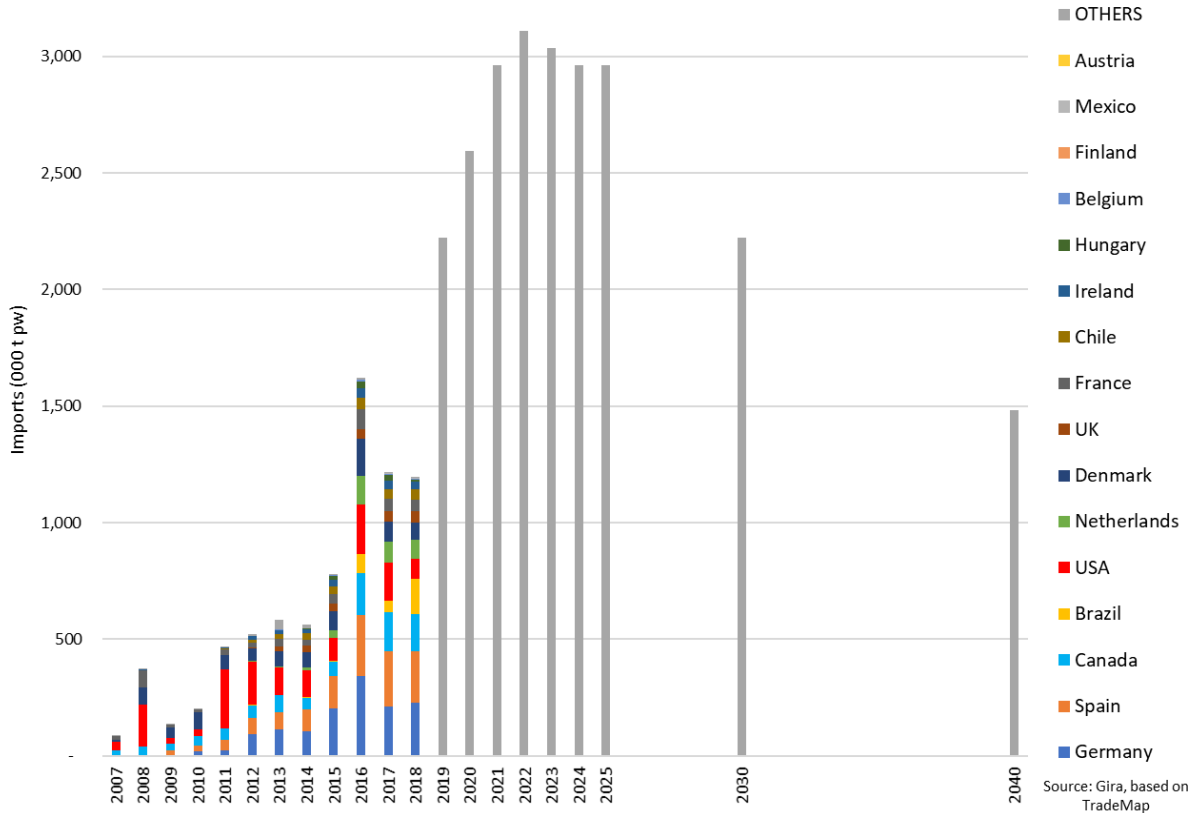


Figure 5.12: Annual direct Chinese pork imports, 2007-2040f



The outbreak of African Swine Fever in 2018 scrambled China’s pork market and has set the scene for imports of all meats to soar in 2019, with the country facing a supply deficit that could even reach 20 million tons in 2020.

Ironically, in early 2018 some Chinese pork producers had been speculating about the possibility that consolidation and modernization would upgrade their industry enough to turn China into an exporter, rather than an importer. Such talk is no longer heard.

Chinese government policy has for a long time favored developing domestic pork production at the expense of imports. Policy has been to limit imports when domestic market prices fall and promote them only when the pork retail price is off putting to consumers. The theoretical limit for imports is 5% of the total pork market, the level of which can be debated as actual domestic production is generally considered to be considerably lower than what is recorded in the official statistics! However, the policy stands, and after a pause for ASF rebuilding is expected to continue in the long term.

China has been importing substantial volumes of pork since the turn of the century, but they have never amounted to more than a sliver of the enormous domestic market. Volumes waxed and waned in response to China's pork cycle, which in turn was driven by outbreaks of disease, sow slaughter and often irrational government subsidy policies. Even the huge volumes imported during the "pork panic" and price spikes of mid 2016 did not amount to more than 4% of China's overall consumption, and imports slowed in 2017 and early 2018 as low prices signaled a glutted domestic market. "Slowing" however is a relative term, since import volumes in 2017 and 2018 were down from 2016 but remained well above previous norms.

Imports began to soar in April 2019, when the size of the AFS disaster began to become clear. With domestic production dropping sharply, the percentage of consumption supplied by imports *could* reach 10-15% in 2020 and 2021, although these are %s of a much smaller market.

Gira estimates that pork imports alone will peak at more than 3 million tons pw by 2022, with offal reaching another 1.5 million tons. Imports are projected to fall slowly thereafter, as Chinese production recovers and as the government tries to maintain impetus in the developing, modern industry.

Imports at the peak will be limited by supply factors outside of Chinese control, so demand will remain unsatisfied until domestic production can recover. Key limiting factors will be:

- Global Availability of pork and offal for trade. Restricted by products needing to be suitable. Major global markets will be robbed to supply China, and prices will rise accordingly.
- Port logistics in China will only be able to manage so much volume; they will adjust over time, but will still be a limiting factor.
- Reefer containers will all end up in China, and need to be freighted back empty (or at least not refrigerated)!

The increase in volume necessary for this short-mid-term boom will need the Chinese government to relax some if not all of their stringent barriers to trade... but they are most likely to revert to these barriers again in the mid-long term in order to protect the vast investments expected in domestic production.

Figure 5.13: Direct Chinese pigmeat imports by year and origin, 2007-18

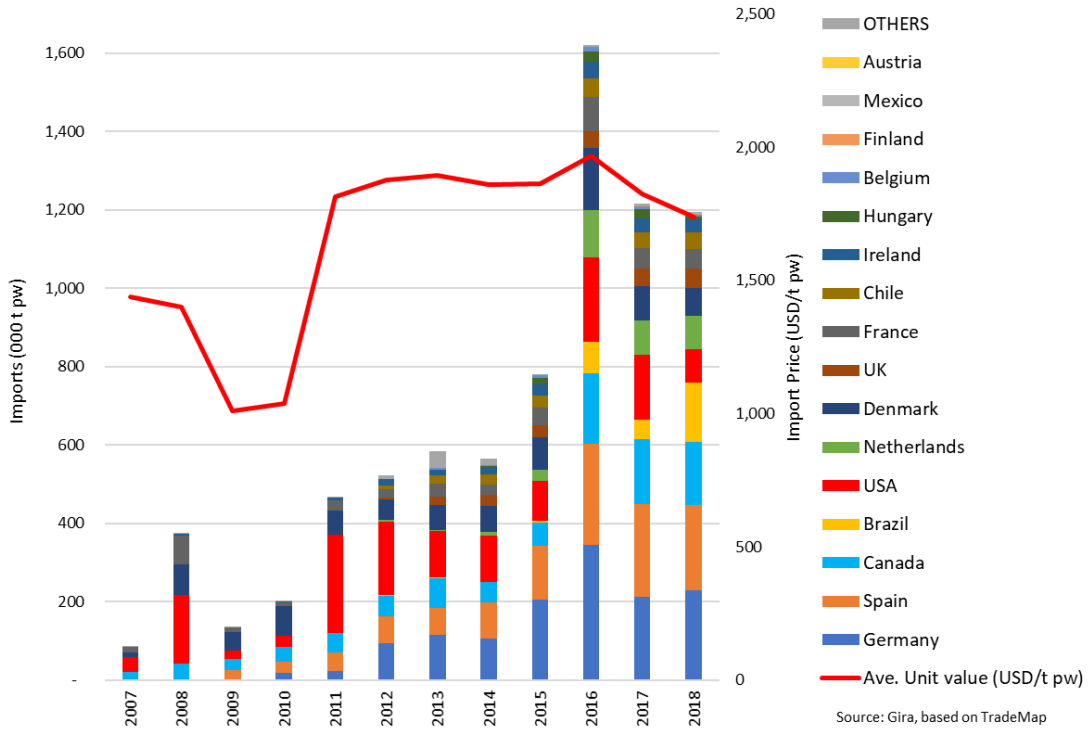
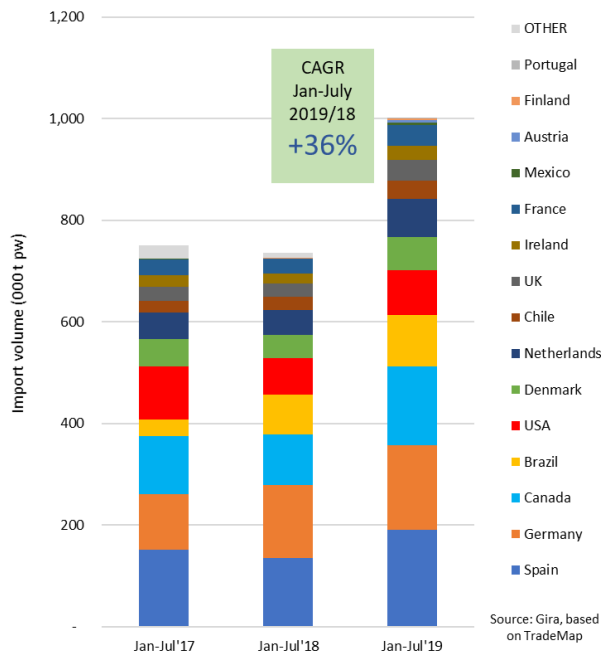


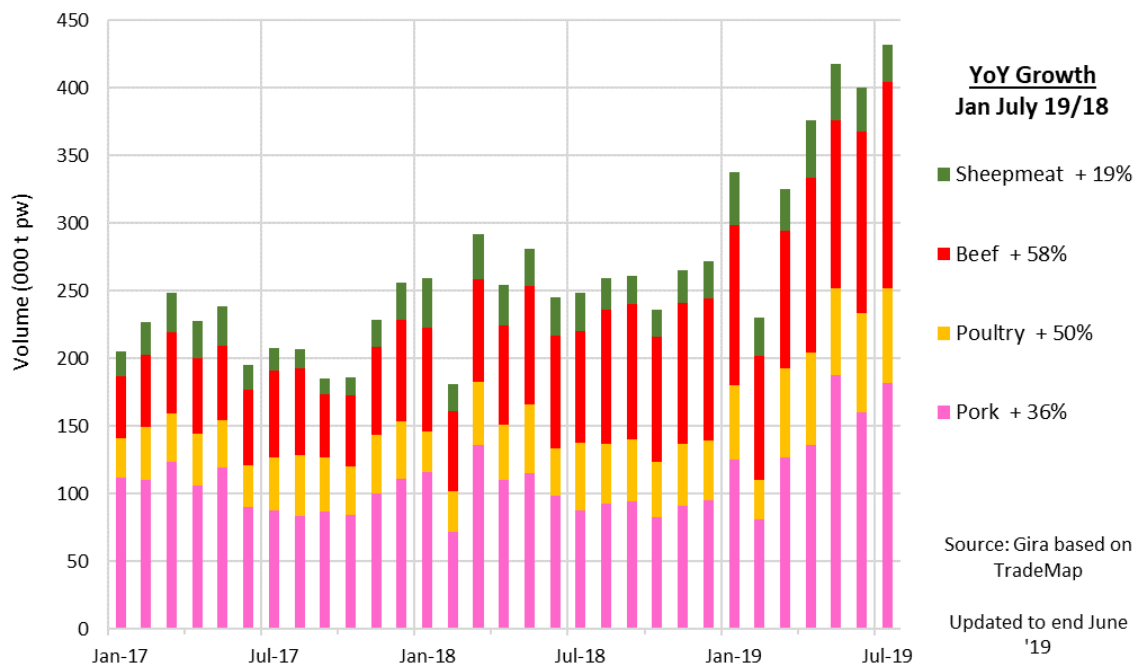
Figure 5.14: YOY Chinese direct pigmeat import comparisons, 1H 2016-2017-2018



OTHER MEATS

China’s pork shortfall sent domestic prices and imports of beef and poultry soaring along with pork. First half beef imports were up 58% between 2018 and 2019, with poultry imports rising 50%, pork 36%, and sheepmeat 19% over the same period. It should be noted that beef prices were growing even before ASF, since there is no domestic production growth but expanding demand.

Figure 5.15: Direct monthly Chinese meat imports and H1 change by species, Jan 2017-July 2018



Chinese demand is already raising meat prices throughout the world. China’s pork shortfall will be larger than the normal total annual worldwide trade in pork (8 mio t cwe in 2018), and that will pull pork and other meat volumes out of lower-priced domestic markets, as well as diverting trade from other markets.

The higher prices should delight producers and exporters, but they can have political repercussions for exporting countries if domestic prices get out of hand. Argentina became an extreme example of this in 2006, when President Néstor Kirchner banned all beef exports for 180 days to lower domestic prices.

To facilitate this increase in imports, China has already undertaken a number of steps and there are several others which may follow:

- Accelerated exporting slaughter plant approval. China had been holding out on approving new plants, but as was seen in the PRRS crisis, new plants are now being approved. And for all meats, even a donkey plant! This could free up large volumes for direct shipment from major producing countries.
- Approval of new supplier countries. Not evident yet, but there are several pork exporters not approved, such as Australia. Volumes will be limited though as these are not major producers.
- Suspending the need for 100% container inspection and testing on arrival at a port in China. The current requirement means holding containers for at least 15 days, and in some ports it is now taking 45 days due to a lack of testing capacity. But exporters should be aware that China will most likely reinstate this requirement as domestic pork production recovers.
- Derestricting the list of approved cuts and offal. These are specific not just by country but also by plant, and have hindered the ability of many companies to respond to demand.
- Regionalization within an exporting country is not accepted by China, despite OIE guidelines. This means that Poland cannot be approved to ship pork to China due to ASF... and if Germany has even one case in wild boar, they too could be banned. The US poultry industry has already suffered from this due to HPAI (still shut). However, it is possible, given the pressure on prices in China now, that China may accept regionalization from selected countries.

Whilst the above will be welcomed by the international meat trade, caution and experience suggest that these import-restricting measures will be reapplied in the long term and probably without forewarning. So, exporters must have strategies ready at all times for switching volumes when the barriers reappear.

Trade War

The US-China “trade war” whipsawed US pork exports to China. US shipments fell sharply in the second half of 2018 after China imposed punitive tariffs that lifted the tariff + VAT load on US pork to 78%. However, there were suggestions that some Chinese importers were getting tariff rebates or special treatment, and some importers and suppliers worked together to share the pain and keep channels open as domestic prices rose and made even expensive pork viable.

In September 2019 the Chinese government lifted the punitive tariffs, supposedly as a concession to President Donald Trump to get negotiations going again, but the move also came as panic was beginning to set in over the availability of pork supplies for the 2020. Given the shortfall in Chinese supplies, it seems unlikely that the tariffs on pork will be re-imposed for the foreseeable future; if China feels a response is necessary, they will likely pick a different target.

China also lifted the punitive tariffs it slapped on soybean imports from the US, but this really does seem to be a concession since the impact on the Chinese market was less serious because demand fell as ASF shrank the pig herd.

However, the trade war situation shows just how fast the story can change for Chinese market access, and nothing is certain for the long term. Government support is necessary under normal trading arrangements to keep things not just moving, but also to progress access agreements, more plants, more products. When political relations with China are bad, the meat industry often suffers.

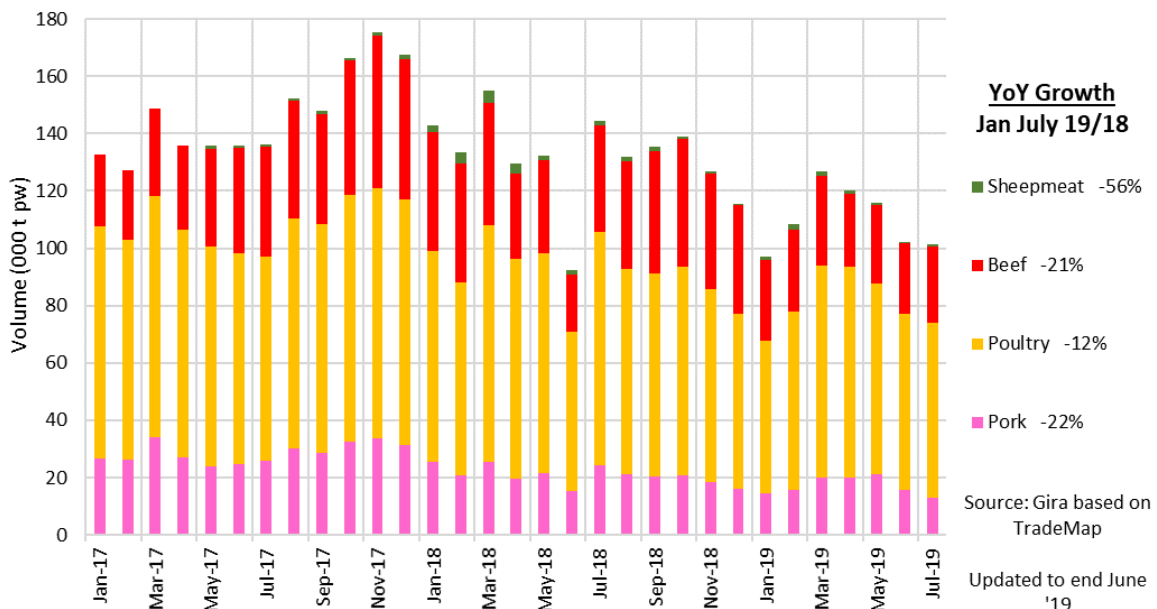
As we have indicated elsewhere, this study has been prepared on the assumption that the current US-China trade spat will be solved within at least a couple of years... in fact it appears for now to have already been resolved for pork, although for how long is not clear! However, this doesn't mean that there won't be other hiccoughs over the next 20 years, there will be.

The fact that trade is now firmly in the realm of politics means that exporters must have a Plan B plan at all times, in case significant volumes have to be switched to other markets in a hurry.

Hong Kong and Grey Channel imports

The Hong Kong "grey channel", which has fed the expanding Chinese market for more than 30 years, has become less important as direct trade with China has soared. Depending on the year and the market, from 40% to 80% of international-origin pork shipped to Hong Kong ended up being transshipped to the Mainland (while China also exports pigmeat and live pigs to Hong Kong, which are consumed there). In the past, much of the transshipped product was either under-invoiced or bypassed Customs and quarantine inspection.

Figure 5.16: Hong Kong meat imports by month and H1 change by species, Jan 2017-July 2018



The route was called a "grey channel" rather than a black market because authorities in southern China winked at it, if they were not complicit. Many Hong Kong import agents are members of the Chaozhou ethnic minority, which specialized in smuggling and piracy for hundreds of years. They have relationships, often family ties, in ports up and down the South China coast, from Haiphong in Vietnam to Shanghai. Often goods were simply shipped across the border in containers, under-invoiced or just charged less. Traders would patiently explain that "Guangdong Province has its own tariff policy," the equivalent of allowing the Port of Los Angeles to charge lower customs tariffs so as to boost its regional economy... While this is not possible in the US because the Federal government has its own representatives on the ground in Los Angeles, in China the central government must normally work through the provinces, which have their own interests and these may conflict with central government policy.

The importance of the grey channel to the pork market has faded over the last five years, partly due to increased central government enforcement, but mainly due to the fact that China has signed agreements with many more supplying countries and licensed many more plants for direct imports to China, and direct is preferable for all concerned to the grey channel. Thus, remaining traffic via the Hong Kong route usually comes from countries and plants that for one reason or another do not have direct access to the China market. Polish pork shipments via Hong Kong rose after 2016, when ASF was discovered in wild boars there. Brazilian beef shipments via Hong Kong rose and fell over the years due to temporary bans over BSE and other issues.

The Pork Products imported into China

Large, frozen bone-in cuts – carcasses, half-carcasses, shoulders and hams – made up about 24% of China's direct pigmeat imports in 2018, with other bone-in cuts and boneless cuts making up about 38% each.

According to traders, the percentage of large cuts rose in 2019 as imports began to take off. Historically traders have only been willing to buy carcasses and half-carcasses as margins rise. Otherwise they chose to focus on specific cuts, which have a big price differential between origin market and China.

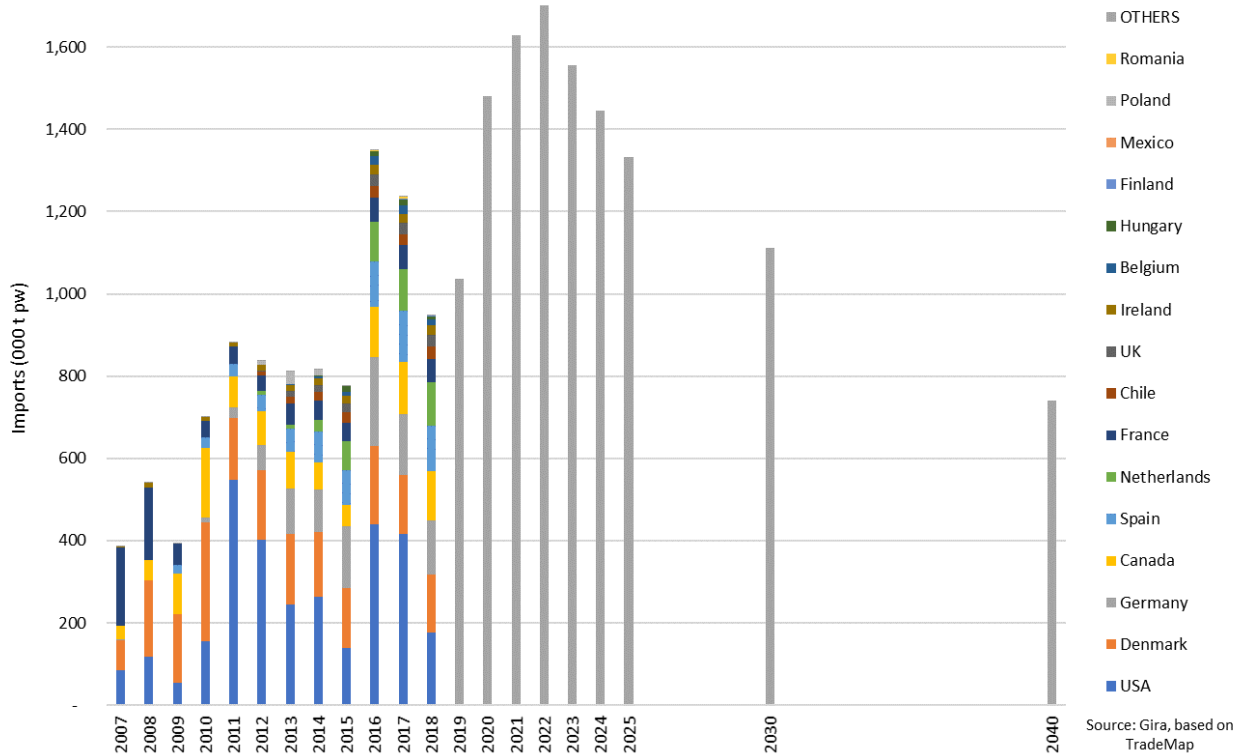
Prices are also normally too low in the mainstream Chinese market for premium cuts to be profitable, but as prices rise, premium cuts can be sold at a profit, even if they are not going into a premium market.

Thus, as prices rise traders become more willing to buy carcasses and half-carcasses, because they know they can make money on every cut. *We can therefore expect good demand for carcasses at least through 2025*. After that date, lower prices and the increased cost of skilled labor should mean a return mainly to imports of pork cuts, with an increasing share of bone-out through to 2040.

It must be remembered that historically, half carcasses may also be sold from regional government stocks into the existing local wholesale market in order to dampen prices. There is no reason that this practice should change in the future. Periodic buying of half carcasses by government agencies can therefore be expected to continue; it is often disruptive for the exporter, but can provide a very useful vent for excess pork.

Variety Meats (Offal)

Figures 5.17: China direct pig offal imports by country of origin, 2007-2040



Offal and variety meat imports are expected to strengthen in the medium term in reaction to the ASF crisis, but not as much as pork imports. The United States has historically been China’s biggest supplier, and direct imports were down in 2018 and the first half of 2019 mainly because punitive tariffs cut into US exports. Once these have been removed, the US should recover its leading position.

However, as we have indicated elsewhere, offal consumption in China is trending downwards, so in the long-term, imports of basic, unprocessed products will do likewise. This will mean tougher competition in a lucrative market, with importers looking for higher quality, more attention to detail, and ultimately added service.

Table 5.6: China's direct pig offal imports by country of origin, 2007-2018

	(000 t pw)											CAGR		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018/08	2018/17
USA	85	118	54	154	548	403	245	264	140	440	416	177	+4%	-57.5%
Denmark	74	184	168	290	149	169	170	157	145	190	144	141	-3%	-2.5%
Germany	2	0	0	13	26	61	111	103	151	217	147	132	+136%	-10.1%
Canada	31	50	99	167	76	82	90	66	50	121	126	119	+9.0%	-5.2%
Spain	0		21	27	31	40	55	74	86	111	125	109		-13.1%
Netherlands	1			0	0	8	11	29	70	96	101	107		+6.8%
France	191	176	51	39	42	38	50	47	45	59	60	57	-10.7%	-5.2%
Chile					1	10	18	21	25	27	25	30		+18.4%
UK						3	14	17	22	29	27	27		+0.8%
Ireland	2	11		10	9	13	13	15	20	23	22	23	+7.2%	+1.3%
Belgium	0						4	6	9	20	21	16		-23.8%
Hungary	0							3	14	13	13	5		-63.1%
Finland	0				0							1		+62.7%
Mexico										0	0	1		+28.9%
Poland	0					8	31	12						
Romania									0	3	6			
OTHERS	0	0	0	0	0	0	0	0	0	0	0	0	-43.7%	+0.0%
TOTAL	387	540	393	701	882	836	812	815	776	1,350	1,236	947	+5.8%	-23.4%
Ave. Unit value (USD/t pw)	884	1,033	978	1,114	1,436	1,729	1,854	1,728	1,613	1,820	1,709	1,602	+4.5%	-6.3%

Source: Gira based on TradeMap

Imported products have grown despite an underlying softness in total Chinese demand for offal, as imported products are often viewed as higher quality and have been price competitive with domestic product. The modern slaughter plants in China are likely to gather and market offal better than the traditional ones, where a lack of cold chain prevented storage and shipping. They will thus better compete with imported product.

Hong Kong has traditionally transshipped a larger percentage of the offal trade than pork, but Hong Kong's import figures haven't risen in 2019. Traders say they expect imports of bone, pigmeat and specialty items like trotters to rise in the mid-term, but some offal and variety cuts are falling due to long-term changing eating trends in the Chinese market (*see Traders section below*). Hong Kong as a route to China is on the wane, and without the ASF crisis would have been phased out in the medium term. It may now run for a little longer, but will not be significant by 2040.

Other Formats

Fresh cuts remain a small percentage of imports – less than 2% in 2018, but that is likely to rise as transportation becomes more efficient and cold chain improves. Current uncertainty at marine ports is deterring growth, with airfreight the most assured route to market currently. An interesting niche has developed in supplying e-commerce with imported fresh pork cuts, this will develop.

Processed product imports plunged from more than 30,000 tons p.a. before 2013 to around 5,500 tons in 2018. China used technical non-tariff requirements to attack US exports, which peaked at 26,000 tons in 2013 and fell to 1,100 tons in 2018. Some of the product went into the grey channel, but it's also possible that some processed meat was reclassified to another HS code category in order to take advantage of reduced tariffs.

*There has also been a small but significant increase in Western style hams, such as Parma and Serrano, imported from France, Italy and Spain. These enjoy good demand in high end restaurants and, increasingly, high end retail and should continue to grow well as long as disposable income continues to increase. This is a strong example of real added value and *the Chinese consumer's desire for a story behind a product!**

Trader Insights and Demands on suppliers

Gira interviewed 15 traders and distributors who specialize in importing pork to China. They handle a wide range of volumes: from two who imported several hundred thousand tons per year down to a former chef who imports several hundred tons for high-end restaurants in Beijing, but with most in the 20,000-80,000 ton range. The interviewees were asked about details of their business and for their opinions on subjects relevant to pork, including their views on different countries-of-origin. Interviews were conducted by telephone and face-to-face. Not all answered every question, and all requested anonymity.

The general observations from the traders below are indicative of how things could develop in the future. They are also useful for today's exporters to China, setting out buyers' expectations and key success factors for sellers.

- *Higher volumes* – Every one of the importers interviewed was expecting to handle significantly higher volumes of pork products in the immediate future, and also expected the government to approve more countries and plants for imports.
 - This comforts our forecasts through 2025, although beyond that date is clearly beyond today's buyers' horizon.
- *Cash flow* – Cash flow and financial strength were important constraints for the medium-size importers. One said he sticks to bones because “Bones require less cash flow.” One of the largest importers (150,000 tons/yr) said that exporters could help by shortening shipping times: “We would like to see shorter shipping times; it would reduce the risk of price fluctuations while the pork is on the water. Currently the average import time is 50 days, it would be great if they could get it down to 10. If the train can shorten the time for European pork considerably, then that would be an advantage.”
 - We see here the potential for train deliveries from Europe, which could be damaging to US exports to China.
 - Suppliers will have to think in terms of longer periods of buyer credit, which should be feasible in the context of sustainable client relations and good and timely market feedback.
- *Stable supply* – The ability to provide a stable supply of consistent product was the most important characteristic importers look for in a foreign supplier.
 - As domestic plants and logistics become bigger and more sophisticated, so importers will have to guarantee the consistency and regularity of their products and their delivery.

- This is a fundamental element in the client relationship for the future, underlying the need for dedicated cutting and packing lines. Although initially an extra cost, it can ultimately become a major client lock-in.
- *Cutting methods* – They would like all their suppliers to pay more attention to cutting methods and Chinese product specifications. Danish suppliers got specific praise in this respect. This is a very common complaint, and can add real value if resolved.
 - Once again, each major Chinese customer's needs will have to be targeted by the foreign supplier. Danish Crown realized this fact many years ago in Japan, and is now applying the same client-service approach to China.
- *Countries of origin* – Importers' views were heavily influenced by their experiences with individual exporters, and several said specifically that relationships with individual plants are more important than country-of-origin issues.
 - The technical dairy ingredient market shows us that, as soon as processor clients' needs go beyond basic raw materials, then they are searching for a product that fits *perfectly* into their specific processing and marketing structures. Once they have found this, they will remain loyal to their supplier – and that supplier is far more likely to be one individual meat plant than a group of plants.
- *Politics* – Traders were aware of political issues including the US-China trade war, specifically citing Canada and the US as problematic. One said flatly that “Import regulations depend on a country's relationship with China.” Separately a large soybean importer (interviewed for the project but not included in the meat importers survey) said trade war back-and-forth was like a series of lightning strikes on his business. This importer added that during times of high political tension he did want to be *seen* buying US soybeans even when he wanted to, regardless of the price or tariffs.
 - Politics will not go away for pork importers into China. Close, on-the-ground, real-time monitoring of both the political and the economic situation is essential – along with, as we have already said elsewhere, a robust and regularly updated “Plan B”.
- *On ASF:*

Two traders said their Further Processing (FP) customers currently prefer to buy imports if they can, due to the prevalence of ASF in the domestic herd and the fear of a negative consumer reaction.

 - *Consumer distrust and eventually disinterest in pork will be the biggest long-term impact of ASF.* Once some of the next 2 years' consumption volume losses have been recouped, say round 2025, stagnation and even slow consumption decline will set in again.

Importers will be the first to suffer from this (lower prices, harder terms), *unless* they have succeeded in differentiating their product in the next 5 years. Differentiation, as we have seen, can be either through (meaningful) branding, or by technical excellence, or both. Just doing nothing will mean exiting the market within the next 10 years.

Some customers and traders were hoarding or helping hoard supplies in anticipation of higher prices. “During the spring and summer many of our clients had cash flow problems because they were holding imported stock in warehouses instead of selling the product. They were expecting higher prices and a bull market due to ASF. We helped them by advancing loans so they could keep buying,” said one large Beijing-based importer.

- As in Cash Flow above, *serious exporters will have to start finding strategies to incite their individual clients remain loyal and to buy regularly*, rather than panic buying with the inevitable dearth of orders for months thereafter. *The dairy industry shows us that this can involve hedging, longer payment conditions, price guarantees (in exchange for volume commitments), and even financing part of the client's inventories.*
- Demand for such financial services will become commonplace as the Chinese processors and retailers become bigger and more “bankable”. Not being able to supply such services will become a major negative for those exporters unable to supply them.

On specific questions, our trader interviewees had the following observations. These are all particularly relevant in the context of long-term trends affecting importers of pork into China.

- *Will large buyers seek to bypass importers and wholesalers and to establish direct relationships with overseas plants?*
 - *The Pros* – General agreement that large FP and large catering companies like Kung Fu (a major Chinese QSR chain) may be able to establish their own import relationships, but not the smaller players, including retailers whose logistics are not sufficiently centralized. Two traders said they were already cooperating closely as agent for an FP. Several however, said that they would not move downstream into processing or semi-processing because of the investment required.
 - History elsewhere shows that the outlook for traders in a developed, concentrated supply chain, such as will be the case by 2040 for Chinese pork, is not rosy. The survivors are those that move into logistic services, targeted wholesaling and maybe cutting and packaging; but a simple trader function, once Chinese importing procedures have been simplified and the cold chain works, will become largely redundant.
 - Time is generally working against basic traders. Russian and East European experience shows that *exporters must permanently monitor the financial state of their trader/importers so that they are not left holding the can if their importer suddenly goes bust.*
 - *The Cons* – Companies that try to work directly with processors and retailers will find it hard to duplicate the trader's network of relationships with suppliers,

wholesalers, customs officials and ports. They may in effect have to establish their own trading subsidiaries to make it work.

They will also have to be ready to deal directly with after-sales issues.

There may also be client resistance as direct selling may narrow the client's sources of supply, since they may be tied to single-plant contracts. “A trader provides access to more sources and product varieties, and more leverage on price because we have relationships with more plants.”

Moreover, traders and wholesalers generally sell spot, which is usually cheaper than futures, and they often offer more flexible payment terms than foreign supply plants.

Our interviewees agreed that most retailers they deal with do not have the size or financial strength to deal direct (however this may change as retailing consolidates, as when you have a company the size of Sun Art aligning with Alibaba).

- In fact, two cases need to be envisaged for the future
 - Processors that become larger and retailers that have more high-volume depots will buy direct. In many cases it is they who will handle all the import documentation, warehousing and onward transport
 - Smaller pork processors and retailers will continue to need trader/importer/wholesalers, but they will choose based on efficiency and service, criteria which generally mean that the traders who survive must offer real value for money to earn their margins.
- *Will traders' margins rise, fall or remain the same in the future?*
 - Traders and wholesalers were almost unanimous that their margins will be thinner in the future. The basic reason is that the market is getting more transparent due to eCommerce and “informatization” of the value chain, as well as clearer standards for the pigs and products themselves.
 - On the other hand, some said that new standards and technology will be positive because they will reduce volatility and stabilize margins, albeit at a lower level.
 - There was also general agreement that suppliers will be winners in the long run. “This is a natural sellers’ market, they hold the high hand and they will be the winners,” said one large importer.
 - As mentioned above, traders' margins will be under strong pressure in the future unless they can develop both scale and real USPs.

- While, in the current ASF context, sellers are indeed pretty certain to be the "winners" and to have the best negotiating hand for the time being, it won't always be like that. When the market comes back into balance by around 2025, importers' markets will decline and so will prices. "Power" will naturally switch back to their, by then, very much larger clients... unless exporters have used *the next 5 years to valorize their products and services for their major clients and thus to lock them in for when competition becomes harder and clients more demanding.*

- *Future import trends*
 - *All meats* – Several said they expected higher imports of beef, poultry and aquatic products and lower pork imports in the long run, not just because of ASF but because of long-term social trends.
 - *In pork* – Less offal and other variety meats, and more boneless muscle cuts. "In general, the percent of low value pork products in the mix will decline."
 - Two traders said foreign suppliers could have a credibility advantage in the "green," organic or free-range pork niches, which they expected to become more popular.
 - We have said above that pork will not recover fully to the consumption levels of the recent, pre-ASF past. Since overall per capita protein consumption will not decline, then the other main meats and fish will indeed take permanently high shares of stomach. Since poultry (price and flexibility) and beef (taste and tradition) have certain advantages over pork, this will mean added pressure on pork quality and price. US and EU exporters should retain their advantages over domestic production in both these areas.
 - If strong GDP growth continues, then there could well be a trend towards premiumization and added value (convenience and prepared products), although the speed of change here should not be overestimated. "Greener" pork will indeed benefit from this in 1st and 2nd Tier cities, and US exporters should be ready to supply these products if their clients request them.

- *Should exporters provide packaging and pre-cutting services?*
 - *The Pros:* Three of the 15 traders we interviewed said they thought smaller packaging and pre-cutting (specific trimming) would help sales, with one saying that eCommerce and better logistics would make this viable. Several others said they already provide pre-cutting services, including for a Beijing restaurant supplier (please see appendix on Beijing for more detail).
 - *The Cons:* Most thought smaller packaging would make no difference or even be a drawback. It would work for products going direct to retail consumers, but

that is not currently a large market for frozen imported pork. Most of their clients are happy with current packaging. Two said pressure over smaller packaging came mainly from foreign suppliers, not the domestic market. “We are currently helping some overseas plants promote small packages, but this is just to do them a favor. Personally, I do not think the development prospects for small packages are promising,” said one.

- In the present state of the market and until the ASF crisis is over, it is indeed wishful thinking on the part of foreign exporters to believe that there is a massive demand for small packaging and cuts somewhere out there. This is the belief that if it works in the exporter's own country, it must work in China as well... but China is not there yet.
- The consumer-group based attitude study in chapter 6 of this study shows that there will indeed be demand for smaller packs (for smaller households and for conservation in fridge or freezer), but it will be some time before this becomes really significant in volume terms.

However, that it will happen is beyond doubt, as lifestyles modernize and incomes grow. This offers a further opportunity for those US exporters that service sophisticated demand in the *US to begin to create an image, probably a brand, that domestic packers cannot currently match*; Initially just for a very limited market, such products, correctly marketed, will valorize their supplier and be part of the *groundwork of differentiation that means the exporter concerned will come through the market changes post-2025 in a much stronger position*.

- *Consumer awareness and raw pork branding*
 - Except for the former chef who supplies high-end restaurants, interviewees were unanimous that consumers are not aware of the difference between imports and domestic product. “Domestic and imported pork target different markets,” said one. However, interviewees did not think that more imported pork might go into retail markets during the ASF crisis.
 - They were also unanimous that branding is meaningless for imported frozen pork, although two thought it might have some future utility. “In a bull market, all products are popular. Branding is important only in a bear market,” said one.
 - Our consumer study makes it quite clear that consumer branding of frozen raw pork is a non-starter in China today, where “freshness” is almost every housewife's guiding principle.
 - *Indeed, it is easy to ignore creating consumer loyalty (essentially branding) in a Bull market. But waiting until the Bear market that will come after 2025 or even before means it will already be too late.*

US exporters looking for consumer recognition and valorization should already be thinking of putting small volumes of branded "modern" and above all chilled products on the market and giving them reasonable, if very localized marketing support. It is possible, but higher-risk, to produce these from frozen product. Far better would be import chilled cuts and produce locally.

- *The idea of national origin branding was met with skepticism.*
“National origin branding is difficult because of uneven quality between different plants in the same country“.
- It would first have to be determined whether or not there is a positive "national" image for the US in pork. Only if this is already the case, or if a very positive image could be created, that any form of "national origin" branding should be envisaged. In the current political situation, this should be approached very sensitively!
- However, US *regional* branding could well be possible for up-market consumers in the medium-term. But there would need to be a real "story" to be told here, and the product would have to be really different from and better than the general pork offer. Here again we would be talking mainly about a fresh/chilled niche product sold to an educated, up-market consumer.

Table 5.7: Most popular imported frozen pork cuts

Cuts cited by traders as major imports		
IMPORTED CUT	CITATIONS	COMMENTS
Spare Ribs	8	Higher import volumes expected
Riblets	3	
Hocks	6	Demand is down, lower volumes and prices expected
Bellies	3	Higher import volumes expected
4D shoulders	2	Consigned to FP, higher volumes expected
Forequarter cuts	1	Higher import volumes expected
Loins	1	Higher import volumes expected
Liver	3	All three expect livers to disappear from the market due to health concerns, since they filter the blood supply
Kidney	2	Lower volumes expected
Hearts	1	Lower volumes expected
Lungs	1	Lower volumes expected; will be relegated to pet food or animal feed
Fat	3	
Heads	9	Four importers said volumes are falling and they expect further declines
Moon bones	2	
Soft bones	3	
Neck bones	5	
Spine	4	
Hip	1	
Leg	4	
Femur	2	
Humerus	1	
Hind Feet	5	Expected to become more popular
Front Feet	5	Expected to become more popular
Tail	4	
Bones (general)	2	Expected to become more popular

Explanation: Traders and importers were asked to list what cuts they import in highest volume, and which cuts they expected to become more or less popular in the future.

The Clients for Imports

Twelve of the 15 traders and wholesalers interviewed gave rough breakdowns by volume percentage of their business in four client categories. In our unrepresentative but probably indicative sample, on average 52% of their business was selling to other wholesalers, 29% to further processors, 13% to retailers and 5% to institutional and restaurant food service.

Importers said that further processors make the best customers because they provide a consistent flow of orders for standard products, but at the same time they are the ones most likely to be buying enough volume to establish direct relationships in the future with exporting plants. Wholesalers provide a lot of business, but individual wholesalers are smaller which means more management and sales effort for the same volume of sales.

Supplying countries

On the supply side, Chinese importers prefer to deal directly with exporting plants, rather than with traders in the exporting country. Several said that a good relationship with an exporting plant is more important than which country the plant is in. Keeping that in mind, some offered the following evaluations of supplying countries:

Denmark – *Denmark got rave reviews.* “Good quality and good packaging,” said one importer. “Most important, they really value the Chinese customer, and listen to our opinions on cutting techniques and packaging.” “The most trustworthy supplier,” said another, citing Danish Crown’s commitment to the China market with their operation in Pinghu, near Shanghai (having a difficult start, but a good talisman for other trade). Two pointed out that Danish prices are generally higher, however.

Germany – Reputation for large volume, stable quality, good prices, but some complaints about poor after-sales service. One importer commented that the Germans don’t take real action to improve cutting methods and meet Chinese customers’ specifications.

Netherlands – Generally good reviews although they have been cut off due to the ASF outbreak in wild boars in the Ardennes. However, one trader had quite specific complaints: “We have a good cooperation with Vion, which is a stable supplier and provides good quality and good prices. But Plant No. XX (not clear in what company) does not follow the principle of good faith; they raise the price at random even after we have reached an agreement.”

Spain – Good quality, not as reliable as others. Good price.

France – Quality inconsistent. One trader said, “You need to watch what plants you deal with.”

UK, Ireland – UK and Irish prices are higher while quality is average (two such comments).

Brazil – General agreement Brazil offers the lowest quality, but also low prices. “They have too much supply because they lost the Russia market,” said one.

Canada – Good quality and volume; one trader said Canadian pork is “popular in China.” Another complained that “the skin on Canadian pigs is too thin, not enough collagen.” Another complained that they had to deal through Canadian traders, instead of directly with exporting plants. Several noted that Canadian exports are currently affected by politics (that is, Canada’s arrest of Huawei’s Chief Operating Officer, and China’s arrest of two Canadian citizens).

USA – *US pork was praised for supplying steady volumes, high quality and generally the lowest prices.* One trader said he worried about Ractopamine-tainted pork getting into shipments. Several noted that “political problems” made the trade volatile. “However, we are willing to share the tariff pain with US suppliers if it makes sense from a price point of view,” said one.

- *The US clearly has a very favorable buyer base here on which to build. This must be cultivated strongly and now, so that buyers know that US pork exporters are pro-Chinese, whatever their government says and does.*
- Only thus will these advantages be still there to be built upon further once the political dust has died down.

It is clear that the ASF crisis has created an exceptional set of circumstances. There is a huge short-term opportunity, after which the market will become more competitive. Chinese buyers know what they want, and will demand more service and tighter specifications as the market becomes more competitive again.

Now is the time for US exporters to establish their reputation for the future.

2025 Outlook – The years to 2025 should be very good for pork exporters, and indeed for all meat exporters. Chinese demand will suck pork out of every nook and cranny of the global market, and the demand will extend to other meats and aquatic products as well. While Chinese pork production will be recovering from ASF by 2025, there will still be substantial import demand. Niche markets such as organic and free range pork will be available.

It is during this period that US exporters must invest in creating an on-the-ground presence in the Chinese market, including looking for more direct sales to processors and foodservice, and testing chilled sales to retail.

2030 Outlook – Chinese pigmeat production will recover from ASF, but consumption will have fallen from 2018 levels. Oversupply and a shakeout in the domestic market are likely. Chinese standards of production will have improved, making domestic pork more competitive with imports in the further processed sector.

Exporters who have established supply relationships during the fat (ASF) years will be able to keep their clients if they continue to offer consistent high quality and good prices. Technological and logistical advances will make it possible for chilled, imported, packaged pork to reach retail consumers. Chilled imports will become commonplace and will open up the retail market to US exporters

It is during this period that US exporters must build up their "branded" presence (both consumer and B2B).

Demand for cuts and offal items will still be strong by pre-ASF standards, but will have fallen from peak levels. Global competition for access to the Chinese market on the items with low values in country of origin markets will lead to increased attention to detail to maintain sales volumes and prices.

2040 Outlook – Seamless high-technology logistics will make it possible for American farmers to compete with Chinese farmers in supplying the still considerable demand overhang, with the result that it is domestic political considerations that will be the real major limit on imports.

Overall pork imports will decline along with consumption, and offal consumption will be considerably lower. Specialty items that cater to a much larger Chinese international food sector will continue to have good prospects, as will niche products like cured ham and organic pork.

5.5 COMPETITION FROM OTHER MEATS – 2025 / 2030 / 2040

The Chinese meat market has long been considered as dependent on pork. This has clearly been the most important meat, with strong traditional demand, peaking annually with Chinese New Year (between 21st January and 20th February). Other meats have been consumed at much lower levels for a range of reasons based on traditional availability and price. Fish however has a very strong role in both tradition and the Chinese diet. Farmed fish has largely displaced more expensive wild catch, with fresh water fish produced in rivers and purpose-built ponds across China.

Even before ASF, China was beginning to see a decline in the market share of pork in the overall protein market.

There are a number of drivers promoting other meats over pork:

Increased disposable incomes – these have made more expensive meats accessible. Pork is one of the cheapest options (along with fish) and is also the most accessible (readily available everywhere). But an increasing number of consumers can now afford to spend more on meat. This has opened up beef and sheepmeat, as well as high quality fish.

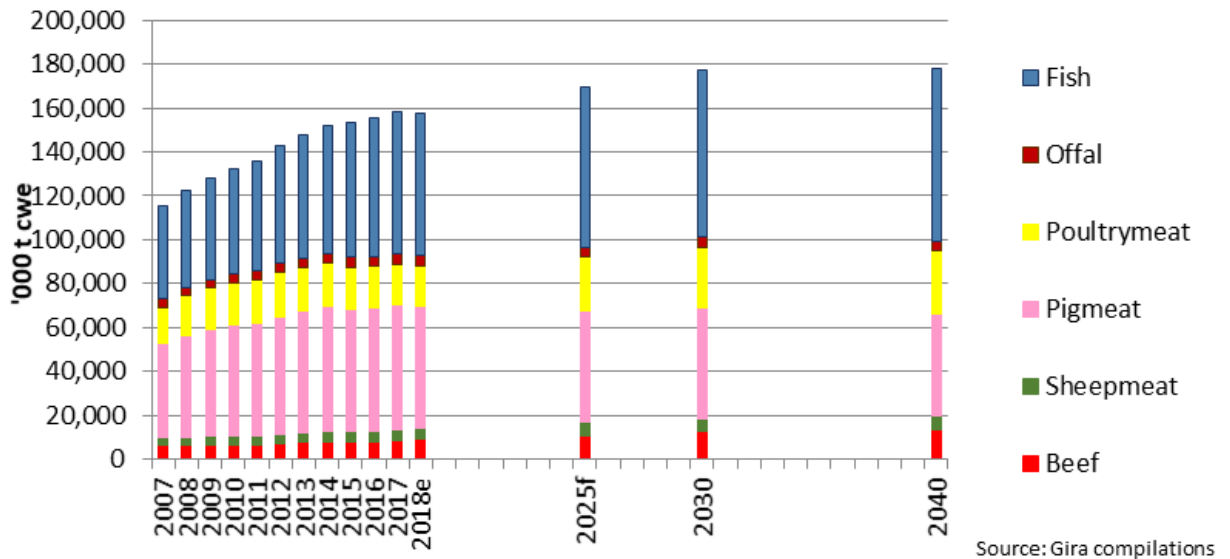
Diet saturation – consumers expanded consumption of pork to the extent that they are increasingly bored with it, and looking for alternatives. Fish, on the face of it, should be suffering the same fate, but there is variety within the category between different fish, crustaceans / fish, saltwater / freshwater... Curious consumers are looking for change, and that is coming in the form of alternatives to pork.

This effect is amplified by the “Novelty Factor,” where Chinese consumers want products that are unusual, or that they haven’t had before. This can lead to new products building momentum very quickly in the market, an effect further increased by social media. This is often a significant driver for a different species, cut or cooking style, and has contributed to the rise of on the “go duck” food service chains, Mongolian Hot Pot and even pulled pork!

Increased spread of non-traditional food service – this is key in bringing alternatives to consumers. Many don’t know how to cook other meats, and wouldn’t know where to start. By making it available and ready to eat, then demand increases. This has been obvious in the form of International QSR chains, notably burger restaurants. But just as important has been the expansion of regional Chinese cuisines into other parts of the country (aided by internal migration between cities); this has led to the expansion of Hot Pot and the resultant demand lift for sheepmeat. Chinese consumers continue to look for new experiences, and food is an important part of this.

ASF and, importantly, the resultant shortage of pork and high prices are a significant accelerator for the trend to look to other meats, and whilst pork will recover some market share post-ASF, rebuilding in the period 2025-30, pork will not recover back to 2018 levels.

Figure 5.18 Chinese Meat and Fish Consumption 2007-2040



The biggest winner during ASF is going to be broiler chicken, due to the industry’s ability to increase production quickly, in response to rising demand. The resultant lower price point (compared to pork) and increased difference, will pull consumers who cannot afford higher priced pork. With the pork shortage likely to last 3-5 years, consumer shopping and eating habits will be subtly changed away from pork, limiting the recovery of pork.

Figure 5.19 Chinese Meat and Fish Consumption 2018

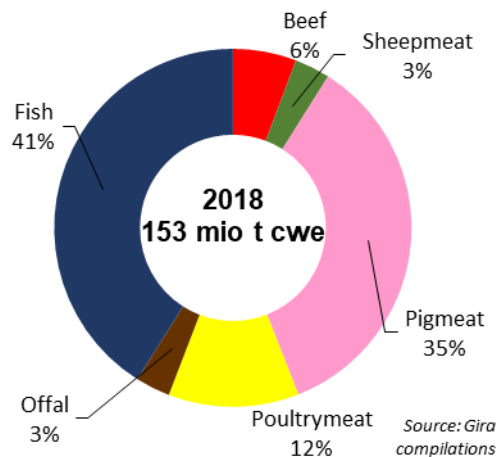
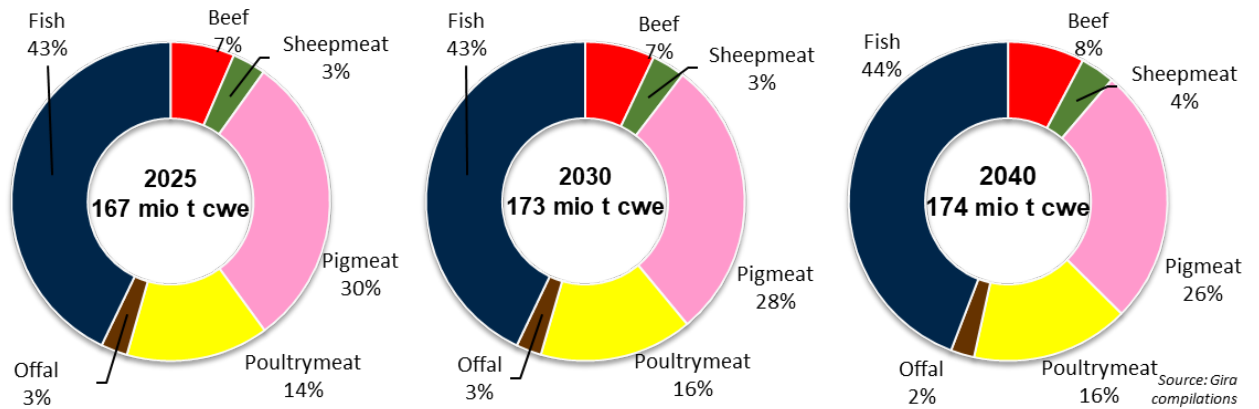


Figure 5.20 Chinese Meat and Fish Consumption 2025f / 30f / 40f

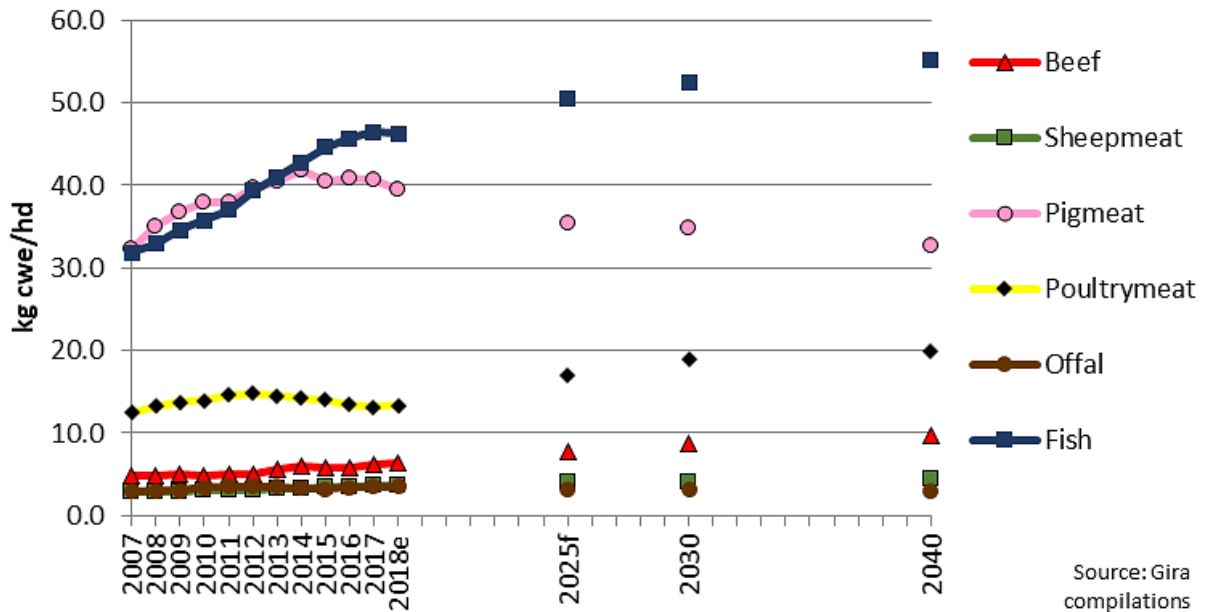


Chinese meat and fish consumption is already quite high on a per capita level (109 kg/capita cwe in 2018, based on official government numbers), whilst it can be expected to increase over the period to 2040 reaching 122 kg/capita.

Its growth will slow in the period from 2030-40 as consumption nears a maximum and consumers look to balance their diets differently (as is currently happening in Western Europe). In this situation a wide variety of proteins will compete with one and other for market share, and we may even see vegetarian and vegan trends taking a significant foothold towards the end of our time horizon.

This will also be a period where consumption volume growth slows, but where expenditure continues to increase as consumers increasingly focus on quality and differentiation.

Figure 5.21: Chinese Per Capita Meat and Fish Consumption, 2007-40f



It should be considered that the other proteins will each compete with pork on a variety of different issues.

The key success factors for each species will be:

Fish – able to compete on price for the bulk of the volume, and also able to offer variety within the category. *Fish growth will be limited by production capacity* and increased controls on water quality and the environment, which ultimately limit new sites for farms.

Chicken – this will be the fastest growing competing species (included in Poultrymeat in the graph above). There are 2 significant categories of chicken in China:

- White feathered broiler chicken – the modern broiler. It had a difficult period in China between 2012-17 due to HPAI and food safety concerns. It is the cheapest meat in the market. Rapid expansion is possible, but limited by availability of Grand Parent breeding stock in the country, made worse by the ongoing HPAI ban on US stock...
- Yellow chicken – the traditional bird. Carcass weights are lower, and its on farm performance is well below that see by the modern white feathered broiler. Prices as a result are higher. But it is popular with consumers who believe it has more taste.

Major poultry integrators often have both white and yellow chicken production, and are increasingly using white feathered infrastructure to improve supply chains for yellow birds, bringing costs down, but in the eyes of consumers thus reducing the flavor for the yellow bird.

Chicken will be able to grow rapidly during ASF induced pork shortages, and will benefit from its significant price advantage, whilst becoming far more profitable. Consumers traditionally prefer dark meat, and paws from the white feathered bird, but changing lifestyle habits, combined with marketing campaigns for chicken breast have seen strong demand growth in the last 12 months, a trend that will continue. *Chicken will lose some market share as pork prices fall in the period around 2025, but importantly it will not go back to pre-ASF levels.* From 2030-40 consumption growth will slow, reflecting already high consumption levels of meat, and more competition in the meat sector.

Other Poultry - the significant product in the sector is duck, but goose and even pigeon are also important. The production systems for all of these are considerably more basic than the modern broiler farms. *Demand for all of these products is on the rise*, with new food outlets across China. Like chicken, they will all benefit from the spread of ASF, and demand patterns will be similar. Strong growth over the last 5 years has already taken some market share, but there is still going to be more growth in the mid-term. Longer term it will slow as the novelty factor is lost.

Beef – high priced and with traditionally low consumption, which stemmed from beef traditionally coming from end of life draft animals or cull dairy cows. Premium beef is a new product, and as such it is gaining market month on month. This is supported by both increased demand in traditional Chinese dishes, and also increases in western foods (burgers and steaks). So far the availability of beef and its price have limited consumption. ASF will give a short-term boost of 2-3 years to beef, but demand had been growing strongly before, and ultimately availability from import is the limiting factor. *Longer term growth in beef will continue to erode pork's market share*, as more consumers can afford the product, aided by increased imports from more global suppliers. Chinese beef production cannot respond to high prices, with the industry lacking infrastructure and land... although niche companies will continue to do well.

It is worth noting that the US has built a good reputation in both food service and increasingly at retail for high quality beef. Good on-pack images and national marketing are part of this. US pork can take advantage of some “me to” imaging.

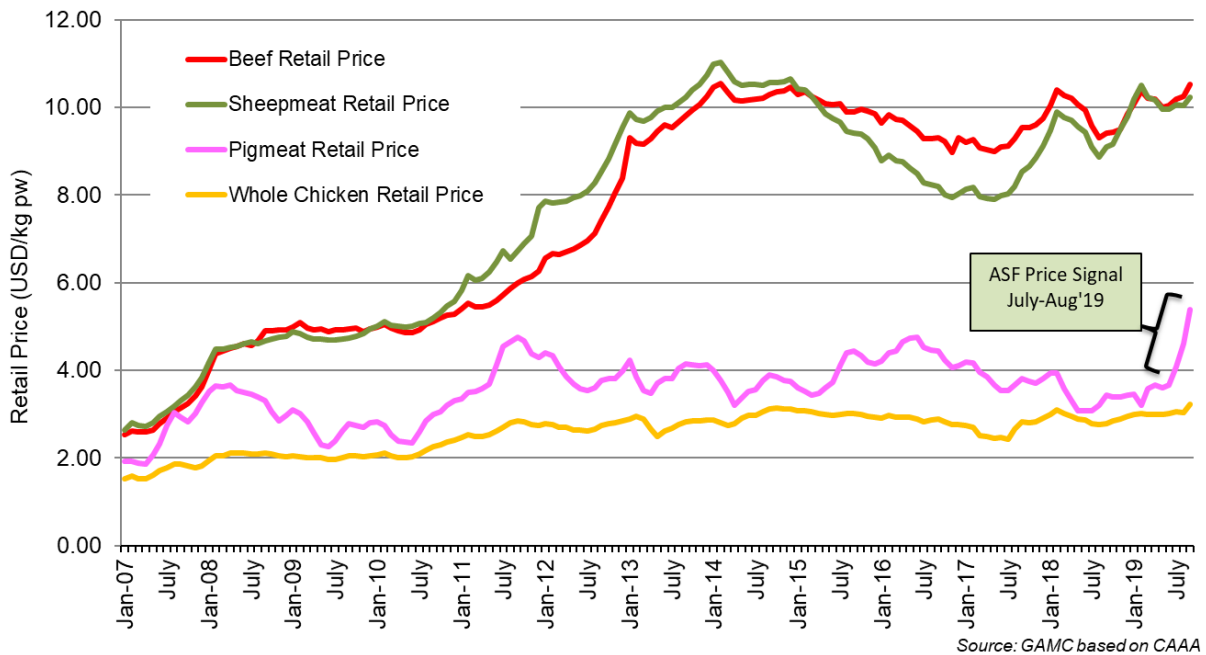
Sheepmeat – a minor product in the market, with a good image. Increased demand has benefited from the boom of the Hot Pot restaurant sector, and continues to grow on the strength of regional cuisine restaurants, notably Inner Mongolian. The reality is volumes are low, prices are high, and availability to increase is limited by slow on farm expansion in China, and limited volumes in the global market. *Long term growth is therefore constrained*, and it poses far less of a challenge to the pork market.

Offal – a significant part of the protein market and key to all livestock sectors in recovering higher value from animals. The Chinese market is notable for strong traditional preferences for a range of offal dishes that have long since lost their place in the western diets. This has been a major pull for global exporters, who have been able to tap into this lucrative market. Demand for offal has continued to grow strongly over the last decade, and imports of offal will benefit from ASF as domestic production of pig offal is lost along with pork production to ASF.

But there are longer term issues, whilst traditional demand is good, and consumers at all levels are still eating offal, and in many cases paying good premiums even over muscle cuts, *frequency of consumption is falling*. The fall is attributed to 2 factors; firstly, competition for meals with a range of new meat-based dishes, including beef, lamb and duck. Secondly the younger generations are lack the know how to prepare and cook offal at home, made worse by lacking the time necessary to carry out often complicated preparation.

Offal will remain important in the mid-long term, but volumes will decline steadily. This reflects lower domestic production and weakening demand. Importantly demand for imports will remain, and prices will remain strong, but buyers will be more selective on the specification, presentation and overall quality of products.

Figure 5.22: Chinese Meat Retail Price – Monthly



The outlook over our time period is for increased competition to pork from other meats, resulting in a reduction in consumption of pork, even without the current ASF crisis. The time frame will depend on the recovery from ASF, but expected movement is:

To 2025 – the supply structure is dominated by ASF, high pork prices and tight supply of pork. This opens the market to other species (notably chicken) and *an increase in imports of all species*. As pork production recovers towards 2025, the price of pork will fall and chicken will lose some market share back to pork.

2025-30 – will be disrupted by the rebalancing of the market around the recovery of pork production. Pork prices will reach a new normal. *It is likely that the Chinese government will restrict some imports of all meat to maintain stimulus for the new pork investments in China*. This will lead to slower overall growth, and a decline in total pork consumption by 2030 as trends that were underway before ASF in 2018 will continue to shape demand.

2030-40 – A significant slowing down of overall meat and fish consumption growth, significant because the overall population is now in slow decline. Slow decline in overall growth is due to a falling population plus consumption growth in fish balancing a small decline in meat. Within meat, poultry, beef and sheepmeat will grow slowly, but pork will continue to lose market share as the market looks for a new balance.

5.6 THE DEVELOPMENT OF CHINESE PORK DISTRIBUTION – 2025 / 2030 / 2040

Logistics and distribution in China is an industry in rapid transition – and has been so for the last 30 years. The development of a modern meat sector in China would have been impossible without a parallel evolution in logistics and distribution. The continued restructuring of the pork sector, under pressure from ASF, means that chilled chain logistics must also continue to expand and develop.

But now the latest developments in logistics are themselves driving change in the whole food sector. Consumers are demanding ever more convenient delivery, while logistics companies provide ever more sophisticated supply chain management.

Logistics is another Chinese industry that had to develop from a standing start. In 1990, pork eaters in China had little option but to be locavores (i.e. to eat what's available locally). Pigs were grown locally, slaughtered locally, and the hot meat was sold locally in wet markets. Even 5-star hotels got their deliveries via bleeding carcasses on the back of tricycle carts. Soviet-era cold warehouses provided some space for imports, but the cold chain could not be trusted.

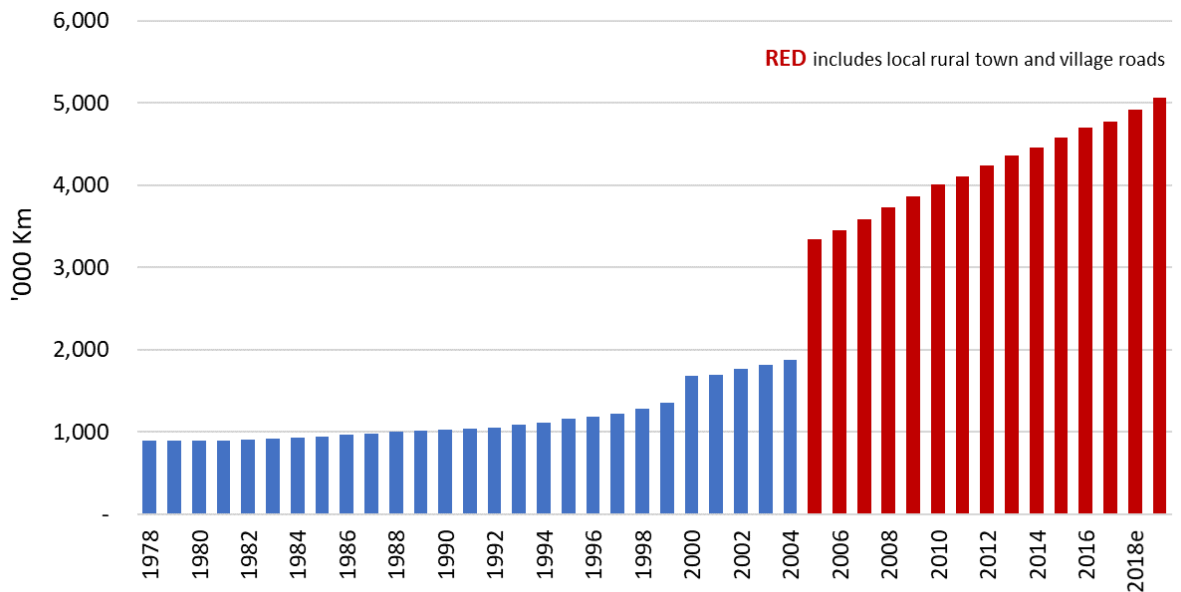
In the current model, pig production has largely been moved out of urban areas, but slaughter and processing remain close to urban centers. Thus, pigs may be shipped long distances across country to slaughter, one of the reasons ASF spread so quickly in China. Pork from freshly slaughtered pigs is shipped to wholesale markets and to large retailers and food service providers who have their own distribution networks. Slaughterers typically ship half-carcasses to wholesale markets, and vendors bid on the carcasses in a pre-dawn auction. Most wholesale markets and vendors now have chilled facilities to preserve pork.

The consumer preference for fresh meat is extremely strong, and the value chain has developed to supply pork to city consumers within 24 hours of slaughter, although it is often now chilled instead of hot. Even modern retailers and premium brands deliver half- and quarter-carcasses to points-of-sale, as at wet markets, where they are further butchered for sale, often to a consumer's specification.

THE DEVELOPMENT OF COLD CHAIN

Western QSR and Western hotel chefs were pioneers in the initial development of cold chain facilities. KFC, which opened its first unit just off Tiananmen Square in 1987, found that one of its biggest problems was figuring out how to move frozen products to new locations when they wanted to expand. They had to develop their own network to avoid issues like cold storage units that operated out of caves, and truck drivers who would switch a refrigeration unit off to save fuel. Key international McDonald's supplier Havi developed a smaller network for burger restaurants. Meanwhile hotel chefs in first tier cities (Shanghai, Beijing, Guangzhou and Shenzhen) worked on getting improved delivery for their meat orders, pushing for traceable chilled chains including chilled delivery.

Figure 5.23 Chinese Road Construction, 1978-2019f



Source: China Statistical Yearbook

The central government gave the logistics sector an important boost with a crash program to build an inter-city highway network modeled on the US Interstate and German autobahn networks. The government also encouraged provinces and cities to build local roads that connected rural China to national markets for the first time. Instead of a two-day haul by dirt roads, a village would find itself just two or three hours from an urban market. The landscape itself changed in many parts of rural China as farmers switched from grain to cash crops like fruit, vegetables, pigs and chicken

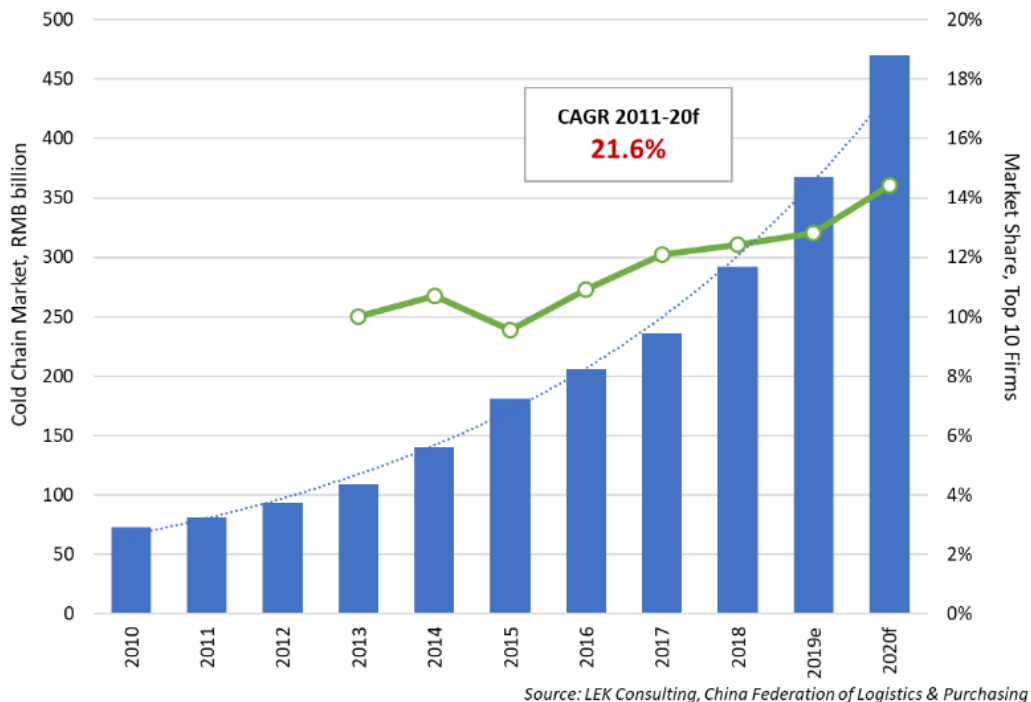
Figure 5.24 A new highway in Inner Mongolia



Explanation: A new divided highway connects northern Inner Mongolia with the national market.

Cold chain capabilities expanded gradually from 2000 to 2013. The pork sector was restructuring, with farms moving farther from cities while slaughterhouses and processors remained nearby. Logistics focused on transporting pigs long distances from production zones to slaughter complexes. Because third-party logistics were unreliable, much of the initial investment came from the large meat companies themselves.

Figure 5.25 China Cold Chain Market Size, 2010-2020f



However, it was consumer demand for chilled products that kicked off the current surge in cold chain development. The surge began in 2014 with the explosion in online delivery services, first in first tier cities like Beijing and Shanghai, but then expanding to second-tier cities and into the provinces. Internet platforms JD.com and Tmall and delivery services like SF Express began to invest in cold warehouses and delivery vehicles. Shippers initially focused on fruit, vegetables, pharmaceuticals and flowers, but as delivery times shortened, meat joined the list of grocery products.

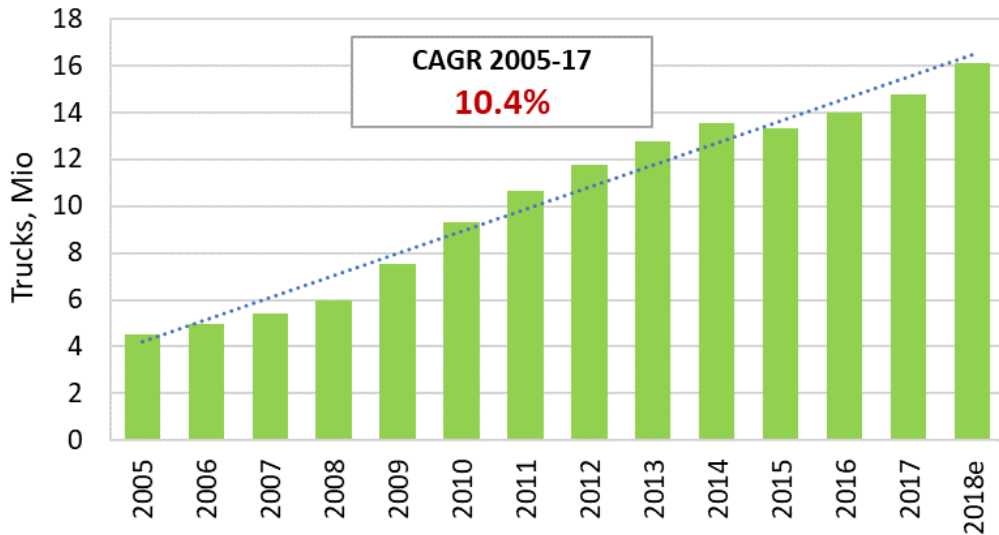
Figure 5.26 Major players in China cold chain logistics



Explanation, clockwise from top left: South Korea-invested CJ Rokin; US-based Havi; eCommerce giant JD.com; Zhongpin spinoff Xianyi Group; Shuanghui spinoff Shuanghui Logistics (WH Group).

As investments and business grew, some meat companies spun their logistics services off into stand-alone operations. *The largest chilled chain operator now is Xianyi Supply Chain, which was spun off by Zhongpin, one of China's largest pork producers. China's largest slaughter company, Shuanghui, set Shuanghui Logistics up as a stand-alone entity. Shanghai-based Bright Dairy & Foods set up Speed Fresh Logistics. Foreign-invested companies included Havi, CJ Rokin (a Chinese provider bought by South Korea's CJ Logistics), Japan's Itochu Logistics and Swire Cold Chain (which was bought by Chinese real estate giant Vanke in 2018). Other major suppliers include CMAC, SF Express and DCH (based in Hong Kong but owned by China Citic). JD.com, one of the leaders in consumer delivery, also provides third party logistics services and is investing USD 2.5bio in its logistics arm.*

Figure 5.27 China’s Refrigerated Truck Park, 2010-2018e



Source: China Statistical Yearbook

Rabobank has estimated the average cold chain truck shipment in China travelled about 300km in 2017, a distance that is expected to grow as the market expands.

The number of refrigerated trucks is growing about 10% per year, while the warehouse networks have been growing rapidly as well. Nevertheless, the segment remains fragmented, with the top 10 companies making up only 15% of the market. *An estimated 20-30% of product is damaged in shipment, far above developed countries' 5-10%, according to an analysis by LEK Consulting.* Among the major problems in the cold chain sector are:

- Divided ownership. Separate ownership at each stage – warehouse, truck, delivery – leads to chain breakage.
- Market fragmentation. Many small companies focus on cutting costs instead of providing service as they compete for business.
- Untrained and inexperienced staff. General awareness of cold chain fragility is low, and there is little training. It is not uncommon to see frozen goods sitting in the sun for long periods on a loading dock.
- Poor equipment. Many still use unrefrigerated vans, sometimes insulated, sometimes packed with bags of ice.
- Tracking is expensive. Ability to track in real time is low and expensive.

Figure 5.28 Zhengzhou Frozen Wholesale Meat Market



Explanation: a frozen warehouse in Zhengzhou, Henan Province, a major central China distribution point for frozen imports. Clockwise from top left:

- *There are no direct docking stations linked to frozen chambers and product frequently waits on the dock to be loaded.*
- *Local delivery via electric tricycle cart is usually unrefrigerated.*
- *The 250,000-ton capacity warehouse is one of four in Zhengzhou.*

Both heavy investment and government action are helping to improve the situation. Integrated platforms that can provide full, through service are growing rapidly.

GPS and temperature monitors are standard with the big companies, controlling such problems as contract drivers who just switch equipment off to save fuel. In 2015 and 2016, the central government cracked down on unsafe vehicles, taking many off the roads, and also cracked down on overloaded and overweight trucks. Weigh stations have been built on major highways, which drivers can of course avoid, but at the cost of an efficient trip. In 2019 Beijing started to require that e-vehicle drivers take safety courses and obtain licenses.

ECOMMERCE

Figure 5.29 Airborne delivery comes of age



Explanation: SF Express is building its own air force, while JD.com has permission to use drones in the countryside.

Meanwhile eCommerce is revolutionizing last-mile distribution in the retail and food service sectors. Consumers in first- and second-tier cities are already ordering online with product delivered via cheap electric tricycle delivery services. JD.com says nationwide it makes 90% of its deliveries on the same or next day, and *in large cities food retailers are promising delivery within 30 minutes of order reception*. Alibaba and JD.com are experimenting with drone delivery – not direct to consumers, but as an intermediate step to extend delivery range. Drones take off from a central point in a restaurant zone or shopping mall and fly to a reception point in another neighborhood, where standard local delivery would take over.

The focus of eCommerce is that consumers want increased choice, with increased convenience.

For the meat industry this translates in to having meat delivered to their door, in as short a time post order as possible (30 minutes for Hema). They may want it raw, in which case *consumers are passing the responsibility for checking quality and freshness to the retailer*. Combined with the need for uniformity in eCommerce, this means industrially packed meat with traceability, and the consumer will pay for this privilege (at least for now)!

Increasingly this will mean cooked, ready to eat meals, although the base so far is very low. Here the trust in the quality of the raw material has already been passed to the catering company. These products will increasingly replace in-home cooking, and are an important part of the erosion of tradition, cooking skills and eventually the central role of pork in the Chinese diet! This will happen slowly in the poorer markets, but much faster in the prosperous city neighborhoods.

Importantly for the US pig industry, eCommerce changes the way that meat is marketed. It means that the on-pack communication is far less effective, instead adverts must be on-screen, accompanying the images associated with the product description. But eCommerce does give an extra opportunity for marketing meat on its country of origin and production standards beyond the on-pack space... and *the consumer positioning of US pork is going to be hugely important over the next 10 years, especially as ASF becomes less of an issue for consumers and retailers.*

IMPORTS

Bulk pork imports come through a network of relatively small trading companies based in Shanghai and other east coast ports that typically import 20-50,000 tons per year. Traders establish relationships with overseas suppliers, negotiate future or spot contracts, and sell the pork to Mainland customers. In the ports there is also a layer of import agents who are specifically licensed to handle Customs formalities, although in many cases the traders do the actual work while the import agents provide cover with their license.

Traders form a tight society that is difficult for outsiders to penetrate. Many of them, especially from Shanghai to the south, are members of the Chaozhou minority, an ethnic group that has specialized in coastal trade (and smuggling) for centuries. Their relationships with import agents and port officials are important assets and make it difficult for newcomers to establish themselves.

Traders sell most of their product directly to food processors, large food service providers and wholesalers in the domestic market. Large customers who want to establish direct relationships with foreign suppliers need to set up their own trading operations that replicate the role of the traders. Such relationships become more likely as the operations grow and imports soar under the impact of ASF. However, it can be difficult to operate independently of the trading network. As one wholesaler in Zhengzhou told Gira, “We tried to set up our own trading office in Hong Kong, but it was too complicated and now we just work through traders and agents.”

Traders look for consistent quality and good prices, and tend to focus on individual export plants rather than favoring one national origin over another. *“Branding plays an insignificant role in the pork import market,” said one trader interviewed.* “National branding is difficult because the quality level is different in different plants in the same country,” said another. *Several said they prefer to establish direct relationships with export plants, rather than with other traders in the exporting country.*

Premium pork, bound for high-end restaurants, including ethnic restaurants such as American barbeque, and sometimes retail, normally lands in Shanghai and is then trucked to distributors in other major cities by 3PL providers. While most of it goes to first-tier cities with the largest upper-middle class populations, increasing volumes are going to 2nd-tier cities like Nanjing, Wuhan and even Chengdu, in the interior.

Shipping Patterns:

Because of long-distance shipping patterns, *most imported pork lands in Pearl River Delta ports like Shenzhen and Hong Kong, or in Shanghai*. These ports can handle the largest trans-Pacific and smaller trans-Suez container vessels with the deepest drafts. A large container vessel will circle the ocean on a schedule that might run from Oakland to Los Angeles to Yokohama or Kobe in Japan, Busan in South Korea, Shanghai, Shenzhen or Hong Kong, and back to the US. Large vessels also stop at Yantai, in Shandong Province; Ningbo, near Shanghai; and Xiamen, in Fujian Province, all of which are on the main circulation. A port like Tianjin, near Beijing in northern China, will normally be served by smaller vessels because it is off the main circulation. Pork shipped via Tianjin is often dropped off at Busan, where it is picked up by a smaller vessel for the run into the Gulf of Bohai. The transfer costs shippers both money and time.

Time of shipment varies according to port and shipper. Maersk typically offers Los Angeles-Shanghai in 21 days, 27 days to Hong Kong or Yantai. Hyundai offers 26-to-30 day shipment to Dalian in Liaoning Province, which is near South Korea, as well as 20-day shipment to Busan, but containers bound for Tianjin then lose another week in transfer time. *Maersk has said it will be starting a 12-day Los Angeles-Shanghai service*, but it does not yet appear on the company's shipping schedules. Loaded containers must normally be delivered to the shipper's container yard a week ahead of sailing date, a lag that will hopefully shrink as logistics management continues improving.

Ordinary pork imports, bound for processing or institutional food service, are shipped frozen and land in Shanghai or one of the other major Chinese ports, then go into the national distribution network.

Direct shipment to a wider range of Chinese ports should be explored as a mechanism for giving US shippers an advantage, especially into northern ports.

Containers will be shipped by truck to major wholesale meat markets such as Zhengzhou in Henan Province, where they will change hands and be shipped to an end user. Frozen pork may also ship from the port to large processing companies that have direct relations with suppliers.

Another share may be stored in duty-free Free Trade Zone warehouses, saving capital by not paying import tariffs until they are sold and shipped out of the FTZ.

So called “grey channel” pork, shipped via Hong Kong and semi-smuggled into Guangdong Province, enters the national distribution system like any other product, often through the wholesale market in Dongguang. Interviewees in Chengdu told Gira that up to 40% of the imported pork there may have come through the grey channel. Grey channel meat comes in containers, the same as standard imports, and in fact dealers often do not even know whether the pork they are handling has been imported legitimately or not, although increased inspection has made plausible documentation more important.

Figure 5.30 **The world’s largest container port, Yangshan, Shanghai**



Explanation: Yangshan and Shanghai’s older container port at Waigaoqiao together handle more than 42 million TEUs per annum

The scale of Chinese ports is staggering. Shanghai is the world’s largest container port by far, while the 4th largest is at Ningbo, just a few miles across Hangzhou Bay. In the Pearl River Delta, Shenzhen is the world’s 3rd-largest container port (by TEUs handled per year), Guangzhou 5th and Hong Kong 7th (Singapore is 2nd and Busan is 6th). If Los Angeles and Long Beach are considered together, they rank 9th, between two more Chinese ports, Qingdao and Tianjin.

Rail:

Rail shipments have begun between Europe and some cities in China, including Chengdu, but under current conditions meat and especially pork shipments will not expand. This is because of a series of issues, most of which involve Russia, some will be overcome in the medium term, all can be overcome in the long term:

- Firstly, Russian trains run on a much wider gauge than China or Europe, so boxcars and reefers must be switched on and off new bogies (the chassis that carries the wheels attached to the cargo container) at the borders, an issue already resolved by having switching terminals at the borders, but it adds time.
- More importantly, the Russian route is not electrified, which means reefers must use diesel cooling units. Since the Russian railroad does not provide a refueling service, shippers must make their own arrangements to keep the chilling units fueled while the cargo crosses Russia. When enough demand for the service materializes, then a system will follow.
- There is currently an additional issue specifically for pork, with Russia not allowing transshipment of pork from the EU due to ASF concerns! This is political, and will be a medium to long term issue to resolve.
- Time advantage - the rail shipments take 18-20 days (although this will be reduced and in theory it is possible now in 16 days), compared to 25-35 days for ocean shipping from Europe. Cost is high, twice as much, according to non-Chinese shippers, but Chinese companies are being subsidized, and can ship from the EU at half the cost of Ocean freight! *If this continues it would be a significant advantage to EU exporters... if they can get around Russia!*

Russia has made some investments in improving their part of the railway, but major investment would have to come from private companies or from China, perhaps as part of the Belt and Road Initiative (BRI). There is also the possibility to develop a southern route from the EU to China, via Turkey and Iran...

If some of the logistical problems can be resolved while costs are reduced, it may become profitable to ship higher-value *chilled* pork, possibly opening the broad retail market to European product.

But if trans-Pacific shipping times become reliably shorter, US chilled pork would also become competitive.

2025 Outlook – African Swine Fever will boost the speed of logistical development by orders of magnitude. The pork industry, which has already transferred pig production away from cities, will transfer slaughterhouses and processing away from the cities as well. While it will probably take a decade for this move to be complete, much of the change will have taken place by 2025. The sector will consolidate, with small slaughter companies and un-registered “black” slaughterhouses leaving the business.

Major slaughter centers will develop in North eastern China and in other locations remote from the big East Coast cities. Huge investments in long-distance chilled chain and supply chain management will make it possible to supply urban consumers with chilled fresh pork, which will replace “hot” fresh pork in most cities.

By 2025 the eCommerce formula will have spread to cities throughout China and be reaching into rural areas, helped by drone delivery, bringing a new population into the consumption economy. Products that could not be profitably distributed via the bricks-and-mortar structure will become available in the countryside, increasing consumption of pork, seafood and other proteins.

Long-distance container ship sailing patterns make it likely that Shanghai will continue to be the main port-of-entry for imports.

2030 Outlook – The migration of slaughter facilities to pig-growing regions will nearly be complete. The ten largest integrated operations will provide most of China's pork, up from 15% today. With heavy investment in cold chain, chilled pork will become the main product sold in markets nationwide. Central kitchens will become standard for chain restaurants. Imported pork will continue to receive special treatment, and cheaper transportation from overseas (probably from Europe by rail) will help maintain market penetration, although its market share will fall as Chinese producers improve standards and return to full production following ASF.

Most 3PL providers will offer integrated service through from pick-up to delivery, as well as supply chain management services to reduce inventory and other costs. eCommerce will face a crunch as labor and other costs rise. Improved supply chain management, Artificial Intelligence and robot technology will help keep costs in line.

2040 Outlook – As consumers get accustomed to chilled vs fresh pork the need to rush pork to market in a few hours will ease, so more and more of the industry will move to regions like the Northeast, where the grain supply for pig feed is cheapest. Almost all pork will be produced by giant integrated companies combining feed, pig production, slaughter and processing. The value chain will have considerably fewer kinks – relationships with distributors, large retailers and food service giants will be direct. Distributors to small and medium restaurants and shops will provide cutting and portioning services. There will be many fewer consumer wet markets and standard wholesale markets.

Technology, from order processing to inventory control, will become ever more sophisticated. Small players will be driven out because they can't afford the technology to compete. Increasing costs will drive a restless search for efficiencies including Artificial Intelligence technologies such as robots and possibly also self-driving trucks. Complete traceability, from feed to fork, will be a must.

5.7 THE DEVELOPMENT OF CHINESE PORK AT RETAIL – 2025 / 2030 / 2040

Table 5.8: Top 10 World Grocery Markets and Values – 2018 and 2025

Country (2025 rank)	2018 USD bio	2025 proj USD bio	Growth USD bio	CAGR 2025/18 %	Total Growth %
China	1,396	2,060	664	8.1%	48%
US	1,494	1,829	335	4.1%	22%
India	511	1,076	565	16.1%	111%
Brazil	328	542	214	10.5%	65%
Japan	459	488	29	1.2%	6%
Russia	298	393	95	5.7%	32%
Germany	296	361	65	4.1%	22%
France	276	321	46	3.1%	17%
UK	264	321	56	4.0%	21%
Mexico	203	301	97	8.2%	48%

Source: Gira from IGD

China, which is already the world’s largest meat market by volume, will overtake the US and become the world’s largest grocery market by value in 2023. While other developing grocery markets, notably India, may grow at a faster pace, none will post the overall volume gains that China is projected to post.

The grocery market expansion is being driven by progressively higher incomes and higher levels of consumption. While China’s headline economic growth is slowing down, that is partly due to the turn away from an export-driven economy and towards a consumption-driven economy. The slower growth rate comes from a much larger base, so consumers overall have more disposable income every year. Consumer spending is also moving towards convenience and higher value products.

Meanwhile the retail sector is transforming itself to better serve more demanding consumers. The “new retail” concept, which integrates offline, bricks-and-mortar stores with eCommerce and online delivery, is revolutionizing the shopping experience. The country already boasts the world’s most advanced hardware and software eCommerce infrastructure, and every player in the industry is working to create a seamless link to their customers.

The “new retail” concept is a boon for the meat industry because it makes regular home delivery of fresh and chilled meat feasible, allowing meat to join in the growth of the e-economy. The concept uses sophisticated inventory control, logistics and customer relations software to give both on- and offline consumers the combination of convenience, quality and price that they are demanding.

Figure 5.30: Important Chinese eCommerce logos



Explainer: Top left to right - Alibaba Group, China’s largest eCommerce player; Tmall, Alibaba’s online retail platform (the Chinese means “Sky Cat”); JD.com, the 2nd largest player.

Every bricks-and-mortar retailer has its own store as well as an online presence at the major eCommerce platforms, JD.com and Alibaba’s Tmall and Taobao platforms. Major retailers now share cross-investments with big Internet players like JD.com, Alibaba and Tencent, which operates China’s all-purpose must-have app, WeChat, a ubiquitous combination of social media functions with a convenient banking and mobile payment platform. JD.com and Alibaba are also mounting their own “pure play” O2O stores, 7Fresh and Hema, which promise home delivery within 30 minutes of order.

CHINA’S GROCERY CHANNELS

Table 5.9: China’s major grocery channels, 2018 and 2025 projected

Channel	2018	2025f	Total Change		CAGR	% of Modern Retail	
	USD bio	USD bio	USD bio	%		2018	2025f
Online	50.9	306.7	255.8	502.6%	29.2%	7%	22%
Supermarkets	260.3	429.7	169.4	65.1%	7.4%	34%	31%
Convenience	168.8	332.0	163.2	96.7%	10.1%	22%	24%
Hypermarkets	279.2	319.0	39.8	14.3%	1.9%	37%	23%
Total Modern	759.2	1387.4	628.2	82.7%	9.0%	100%	100%
Traditional	636.8	672.4	35.6	5.6%	0.8%	46% ¹	32.6% ¹
Grand Total	1396	2060	664	47.6%	5.7%		

CNY/USD conversion 6.75/1 1=Traditional share of Grand Total e: Gira calculations from IGD data

While the eCommerce channel is growing fastest, other modern retail channels are also projecting solid growth. Sales for the top 10 grocery companies reached 36.5% of the national market in 2018, up from 33% in 2016. Modern retail (including eCommerce) accounted for 54% of grocery sales in 2018, and that will rise to 67% by 2025. While online sales are projected to triple, supermarket and convenience store sales are expected to rise 50%.

Traditional channels are expected to see low growth and lose market share, but they will still hold one-third of the national grocery market in 2025. In major cities there are fewer and fewer traditional “wet markets” where fresh pork is sold by individual vendors on wooden trestle tables, but the traditional markets remain strong in smaller cities and towns, and in the countryside where chilled chain logistics have yet to penetrate. The wet markets are still strong in towns and small cities, so much so that newly opened modern retail stores will stock every kind of meat and aquatic product except pork, which is still sold in the traditional market.

Figure 5.31: Wet market meat sections



Explanation: Left: The fresh meat and fish section of a wet market in Beijing during winter; Right: Pork on sale in the wet market at Arongqi, a large county town in Inner Mongolia. Two modern retailers have opened stores in Arongqi, and stock fresh beef, mutton and poultry as well as aquatic, processed and frozen product. But they don't stock fresh pork because consumers still prefer going to the traditional market.

Wet markets in the cities are upping their game, because there is still a cohort of traditional consumers that want to buy fresh pork, and who believe that even chilled pork cannot be kept for more than two days without losing taste and nutritional value.

- The pork industry's logistics are still geared to feed carcasses into wet markets within a few hours of slaughter, a demand that will become more difficult to satisfy as slaughterhouses move further from urban areas in the wake of the ASF crisis.
- Wet market pork stalls are upgrading, installing refrigerators and chilled display, and signing up with individual pork brands as a guarantee of quality.
- Most now accept online payment services like WeChat and Alibaba's Alipay.

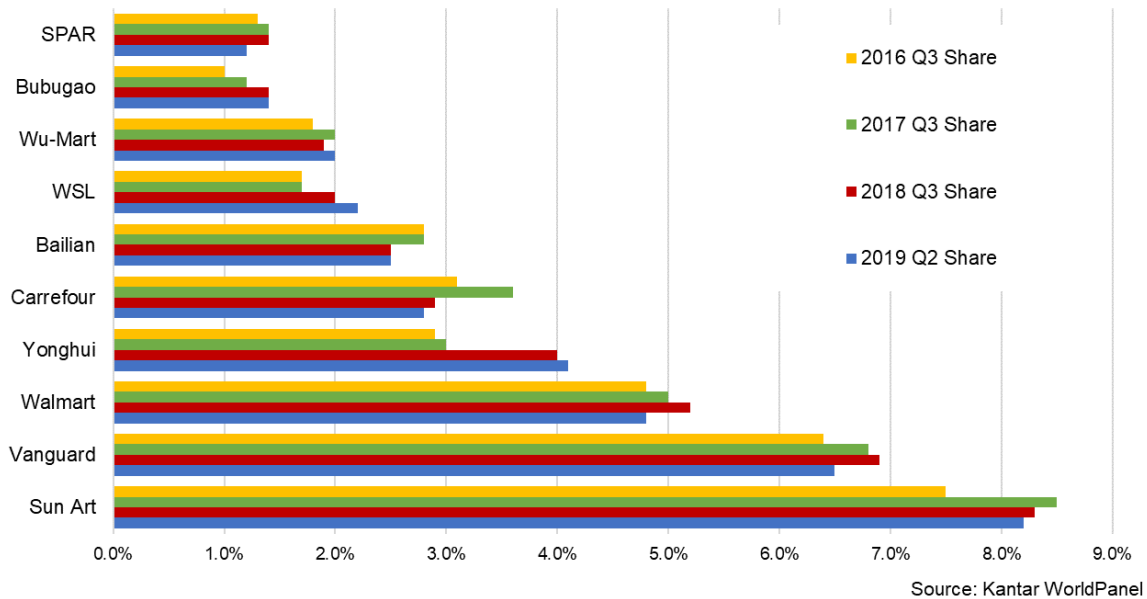
The standalone mom-and-pop store is vanishing in the major cities, but remains a strong traditional outlet in smaller cities and towns, and is even getting help from some of the eCommerce giants, with Alibaba's Taobao Village concept linking small stores to the eCommerce platform.

Growth in hypermarkets and so-called "warehouse" stores has also stalled, and the category has lost market share as retailers turn to a more dispersed model that calls for smaller stores in more neighborhoods. In the warehouse segment, Germany's Metro Cash and Carry has 94 locations nationwide, and Walmart has 23 Sam's Clubs. But the warehouse stores found it wasn't easy to compete with standard wholesale markets and ubiquitous wet markets for business from small restaurant and shop owners.

There are some developing trends that may boost the big stores. The traditional market is eroding, which reduces competition for the small business trade. Membership models have become popular, partly because consumers are more willing to pay for added services – Sam's Club (which is known as "Uncle Sam" in Chinese) even offers dentistry.

Like everybody else, the warehouse stores are working to expand their online-to-offline eCommerce offerings – a vital component in any retailer's relationship with its customers in China. Sam's Club is planning an expansion to 40 stores and has opened smaller "Depots" to guarantee one-hour delivery for online fresh food orders. Costco started an online-only model in 2014 was so successful it decided to add an offline component, opening a Shanghai bricks-and-mortar branch in August 2019. Consumers stormed the store for days after it opened offering low prices and free entry to all. Traffic eased in the subsequent weeks and attendants began asking for membership IDs.

Figure 5.32: Top grocery chain market shares (includes online revenue)



The bricks-and-mortar retail sector is mature in 1st- and 2nd-tier cities, and some of the biggest chains have been losing market share to online pure plays and to regional chains expanding in 3rd and 4th tier cities and in large towns, most of which are seeing genuine modern retail for the first time. The new pattern has been for smaller, more dispersed formats to coordinate with eCommerce, allowing merchants to segment the market, with some chains and locations aimed at higher-end consumers.

A typical modern retail store will display a substantial pork offer:

- Pork – Retailers typically have a large fresh/chilled pork counter that offers unbranded or store-branded pork, accompanied by smaller branded counters that offer specialties like organic pork or pork from (allegedly) grass- or chestnut-fed black pigs (which are normally domestic stock crossbred with European stock). *All claim their meat comes from pigs slaughtered the day before.* Variety meats will be part of any display.
- Beef, lamb and poultry – A smaller counter, or a small section of the main counter, will offer beef and lamb, while poultry normally gets its own section.
- Aquatic products – Most modern retail groceries feature a brightly lit aquatics display that includes tanks of live fish and prawns, even in small inland cities and towns.
- Processed meat – Retailers feature dozens of products, both traditional domestic types and European- or American-influenced products like Vienna sausage or bacon. Most will be chilled, although shelf-stable products still dominate in the snack category and in some regions where the chilled value chain is not yet reliable. A vogue for European-style cured hams and sausages

has grown in major cities like Beijing, Shanghai and Nanjing, including Spanish, Italian and French imports and domestic imitations.

- Frozen products – Dumplings are the dominant frozen offer. The default dumpling is made with pork, but numerous other flavor combinations are now available. Frozen prepared offers outside major cities include more beef and less pork, since pork is usually available fresh or chilled, while fresh beef is harder to find outside northern China.

See the Beijing and Chengdu city appendices for more details and a complete description of pork and other meat offerings.

The convenience category has been expanding rapidly, and includes some small neighborhood groceries. The smallest stores stock prepared foods, including some cooked pork and sausage products, mostly for a quick lunch or snack. Larger outlets, many of them established by the major retail chains, supply a wider range of groceries, including some chilled meat and chilled and frozen processed products, and also serve as bases for neighborhood delivery. Office towers are another growing market for convenience stores servicing white-collar consumers.

Figure 5.33: Retail chain logos



Explanation: Top left RT-Mart logo (one of Sun Art's brands); top right, Walmart Fresh Connections logo; Bottom, Yonghui Superstores logo.

On the modern retail side, major players include:

- *Sun Art* – No. 1 Sun Art looks like it is about to become the vehicle for a major Alibaba play in the grocery sector. Sun Art began as a joint venture between Auchan, the French retail group, and Ruentex, a Taiwanese retailer under the RT-Mart brand. The group built China's top grocer by focusing on regional cities in southern China. In November 2018 Alibaba bought Ruentex out for USD 2.9 billion, taking a 36.2% share in the company. Rumors have flown that Alibaba will buy out Auchan too, but they had not borne fruit as of September 2019.

- *Vanguard* – The chain is owned by state-controlled China Resources and took over British giant Tesco’s abortive effort to enter the China market in 2013. The chain has established a number of profitable specialty shops, including “V+”, aimed at upper middle class consumers, “bit (sic)” which is branded as a fresh farmers market, and “Olé”, which specializes in imported food.
- *Walmart* – The company has more than 400 stores in China but has fallen behind in the “new retail” space and retreated from Northeastern China to save on distribution costs. Walmart first bought Yihaodian, but the online platform struggled to survive in China’s shark-infested eCommerce waters. Now however it has gained support from online giant JD.com, after selling Yihaodian in favor of a 5% share in JD.com.
- *Yonghui* – Industry analysts consider Yonghui the best-managed among the large grocery chains. It has become the fastest-growing retailer by riding several major trends:
 - o Local M&A: Yonghui and ParknShop, Hong Kong’s largest retailer, are merging their operations in Guangdong Province, which borders Hong Kong.
 - o Smaller stores: Yonghui operates hypermarkets, but has focused its bricks-and-mortar expansion outside major cities on smaller stores that can also serve as bases for eCommerce delivery and other O2O services.
 - o Strong online relationships: JD.com, China’s second-largest eCommerce platform, owns 10% of Yonghui, and Tencent put 10% into the ParknShop-Yonghui subsidiary in Guangdong Province.
- *Carrefour* – Carrefour was an early mover, opening its first store in 1995 and stunning Chinese consumers with its size, its broad offerings and its dynamic Point-of-Sale displays, especially for fresh meat, fish and produce. The store became a model for Chinese imitators, but gradually fell back in the field and in June 2019 announced it would sell an 80% share in its 210 China stores to Suning, a consumer electronics and housewares chain. The USD698 million price, less than one-fourth what Alibaba paid for 36% of Sun Art, was considered low, and the company is thought to be considered selling the rest of its shares too.
- *Others of interest* – SPAR is a locally owned group affiliated with the Dutch retail chain; Bailian operates mostly in southern China under the Lianhua brand and also has a relationship with Alibaba. Bubugao is another regional player in southern China.
- *High-end plays* – In addition to Vanguard’s series of shops, BHG (Beijing Hualian Group) operates a dozen medium-size groceries in high-income neighborhoods of Beijing, including many imported products and a premium meat offer. CityShop does the same in Shanghai, and has also opened stores in Beijing.

International grocery players attracted by China's huge market have found the operating challenges are just as huge as at home. Carrefour, Tesco, Home Depot, Takashiyama, Marks & Spencer and even Amazon have retreated, leaving Auchan, Walmart and Metro as the major survivors. The market remains tempting, however, and Costco and Germany's Aldi are now trying their hand. Japanese owned 7-Eleven has good penetration in the convenience sector. On the other hand, Japan's Ito Yokado invested heavily in a China initiative in the early 2000s, then crashed out of the market, leaving behind a single store in Beijing and a successful group of stores way out in Chengdu, Sichuan Province (*see Chengdu appendix for details*).

Problems for foreign players include knowledge of individual markets, China's dog-eat-dog attitude towards competition (including dirty tactics like circulating poor quality fakes of a competitor's product to tarnish the brand, or paying consumers to file bogus complaints and whine on social media), and the need for political and Party connections in every operation at every level (the fact that your CEO met the premier in Beijing carries no water in Wuhan).

All of these factors are problems for Chinese companies too, especially if they are trying to expand out of their founding region. However foreign companies are also exposed to China's strong patriotic attitudes, which means that an unrelated problem in international relations can turn into a surprise consumer boycott that cripples business for a time. And international corporate headquarters cannot make decisions as quickly as Chinese companies do, which makes it hard for the local offices to keep up with the speed of innovation and persuade foreign headquarters to make substantial investments in infrastructure and technology.

THE “NEW RETAIL” CONCEPT

Figure 5.34: Express food delivery is a daily scene in Beijing



Explanation: Top left: A daily scene in a middle-class Beijing apartment compound. Identifiable are delivery carts from Alibaba’s Tmall, SF Express delivery service, and JD.com. Top right: A rare refrigerated delivery cart. Middle left: JD.com delivers chilled meat (the label on the blue box reads: Fresh Products Cold Chain). Middle right: Yurun branded pork in a foam pack. Bottom, young white-collar staffer takes a chilled meat delivery in a Starbucks outlet.

ECommerce is not just another sales channel in the Chinese context, it is a flexible tool that burnishes the customer relationship and uses the flood of resulting data to optimize the value chain from top to bottom. Home delivery of fresh pork or live fish in half an hour may be the headline, but the accomplishment has deeper roots. It is no wonder that *China’s eCommerce grocery sector is projected to grow more than 500% to USD306 billion by 2025, an annual growth rate of 29%*. That will make it larger than the next 10 country eCommerce markets put together.

Leading Chinese retailers are close to achieving an elusive goal in retail: “unified commerce”, a seamless blend of digital, products and customer service that is tailored to ever-changing customer needs and aspirations.

Table 5.10: Leading Countries eCommerce growth, 2018-2025 projected

Country (2025 rank)	2018	2025 f	Growth USD bio	CAGR 2025/18 %	Online share of grocery sales	
	USD bio	USD bio			2018	2025f
China	50.9	306.7	255.8	29%	3.8%	14.9%
US	23.9	85.7	61.8	20%	1.0%	4.7%
Japan	31.9	54.1	22.2	8%	7.2%	11.1%
South Korea	9.9	28.9	19.0	17%	8.3%	18.6%
UK	14.6	26.1	11.5	9%	6.0%	8.1%
France	11.6	20.1	8.5	8%	4.5%	6.3%
India	0.2	18.2	18.0	87%	0.0%	1.7%
Germany	1.3	5.8	4.5	24%	0.5%	1.6%
Australia	2.1	5.5	3.4	15%	2.1%	1.7%
Canada	0.8	3.1	2.3	21%	0.8%	2.5%

Source: Gira from IGD & Kantar Worldpanel

Developing a strong eCommerce online-to-offline model is key for successful modern retailers. The idea is to give the customer a complete “experience.” At Alibaba’s Hema retail stores, a customer can visit the store, order pork, have it cooked to order and eat it at on onsite restaurant. The customer, now linked to Hema in several ways, can also be assured that if they order online, they will get a guaranteed quality product at a standard weight delivered at home, and quickly (see *Beijing appendix for more details on how Alibaba’s Hema stores work.*)

Figure 5.35: Hema’s restaurant, Carrefour’s meat department



Explanation: Left, the dining area in a Alibaba Hema outlet in Wuhan, a major city in central China; Right, the meat section of a Carrefour in Beijing.

Among the advantages of the seamless O2O “new retail” model are:

Personalizing the experience – A consumer can walk through the store checking QSR codes to get details on every product. The app remembers what you like. A click and you’ve bought it. The apps are connected to social media so you can chat about your purchase with your friends, make recommendations and also register complaints – which is why big retailers have teams that monitor social media full time.

Simplifying the experience – You can check out with an app that remembers your selections, so you don’t even have to pull them out at the counter, and pay with a flick of the Alibaba or WeChat apps (for a time Alibaba’s Hema accepted app-only payment and wouldn’t take cash, but local governments objected. So now if you don’t use the app, you have to unload the cart and scan each product). In some stores customers can even pay with their faces, although there have apparently been some rough spots with facial recognition technology and it has not been rolled out generally.

Big Data – The model gathers data on every conceivable aspect of a purchase, both general and personal, from who bought it (and what kind of person they are) to location (was it bought at the store? Delivered? Where was it delivered?) to time of day, month and year. Some of this would not work in a US store due to consumer concerns about privacy, but the algorithms also track general trends of all kinds.

Optimizing the value chain – The supply chain is constantly refreshed by new information about consumer demand and price, supply and logistics conditions.

Fast Reaction – Social media makes consumer trends viral, and the response has to be viral too. Ideally the system allows quick reaction to any trend, and predictive analytics actually allow managers to put the supply chain into gear even before customers show up.

Broadened footprint – Better roads, cheap delivery and quick communications are making the benefits of eCommerce available even in the countryside. Alibaba and JD.com are experimenting with drones, not to make deliveries direct to customers but to get perishable goods to remote delivery points quickly. Alibaba has a service called “Taobao Village” which gives groceries and other vendors in country villages access to the national eCommerce network.

But there are challenges ahead for eCommerce. Standalone delivery services have had trouble making money because they offer cheap deals when introduced, but many consumers draw back when prices normalize. In the cities the service relies on cheap last mile delivery through an army of immigrants from the countryside – an army that is gradually running out of recruits as urbanization slows and early immigrants find better jobs. And workers are beginning to resist management’s “996” work philosophy – 9 a.m. to 9 p.m., six days a week. Nevertheless, even if delivery expenses rise, O2O retailers believe optimized value chains combined with intense consumer involvement will overwhelm the difficulties.

Figure 5.36: China’s most important online payment apps



Explanation: Left, Tencent’s ubiquitous WeChat app, which provides a complete spectrum of social media plus banking and payment services; Right, Alibaba’s payment app.

Cheap delivery, lack of an installed base and a smartphone culture are among the factors that have made China a hotbed of eCommerce and social media. Modern retail and the accompanying logistics didn’t exist in much of the country until 2010, and are still thin on the ground in many locations. But young urban residents can and do order absolutely anything online, and some white-collar millennials order absolutely *everything* online. Smartphone culture is another area where lack of an installed base created opportunity. Fixed-line telephones were once rare and hard to get even in cities, but mobile phones allowed the whole country to leap the technological gap.

2025 Outlook – The “new retail” concept (also called “unified commerce”) will become the main grocery channel in most cities, with bricks-and-mortar combining with eCommerce to provide quick, convenient service for most consumers. “Modern retail” grocery chains will have to incorporate eCommerce/Big Data technology directly into their supply chains or find themselves unable to compete.

Regional chains will become stronger and more numerous as modern retail develops in provinces outside the major cities. The convenience sector will expand, and perhaps over-expand as companies try to win market share. The traditional sector will maintain a presence for loyal customers in major cities, a larger presence in smaller cities, and a major presence in rural towns and villages.

Most markets will get their fresh pork via the chilled chain from slaughterhouses located near production zones. Non-Chinese processed pork products will gain popularity, as will European-style cured hams and sausages, as availability increases and consumers look for talking points. Also more popular will be alternative proteins like beef at the high end, and poultry at the low end, as well as aquatic products both cheap and dear.

Nascent vegetarian, flexitarian and other meat alternatives may gain ground among some sectors in major cities, but make little impact elsewhere.

2030 Outlook – Seamless O2O retail will be the norm in urban areas, with exceptions in smaller cities and the countryside. Alibaba and JD.com will become a highly profitable duopoly because other retailers will need those relationships to thrive. High-end niche groceries like BHG will become far more numerous. While there will be some M&A with larger chains swallowing regional players in an attempt to go national, regional differences and loyalties will keep regional players in the game.

There is likely to be a shakeout in the convenience sector, as the ease of establishing stores will mean there are too many for most markets. The wet market sector will weaken as traditional buyers fade and technology becomes more important, which may give warehouse-style stores a niche as suppliers to small restaurants and groceries.

The environment for pork will be extremely competitive at the retail level because production will have recovered from ASF while consumption will remain below previous levels. Consumption of alternative meats like beef, poultry and aquatic products will rise. Animal welfare concerns will begin to effect production and branding in some areas.

2040 Outlook – Seamless O2O retail will become ubiquitous, even pulling traditional and small vendors into eCommerce networks. As the population ages, so health concerns become paramount.

Meat alternatives have a following in most cities, and animal welfare concerns will rise, although not to European levels. Offal consumption will fall, but maintain some strength in the countryside. Technology will compensate for higher labor, property and infrastructure costs.

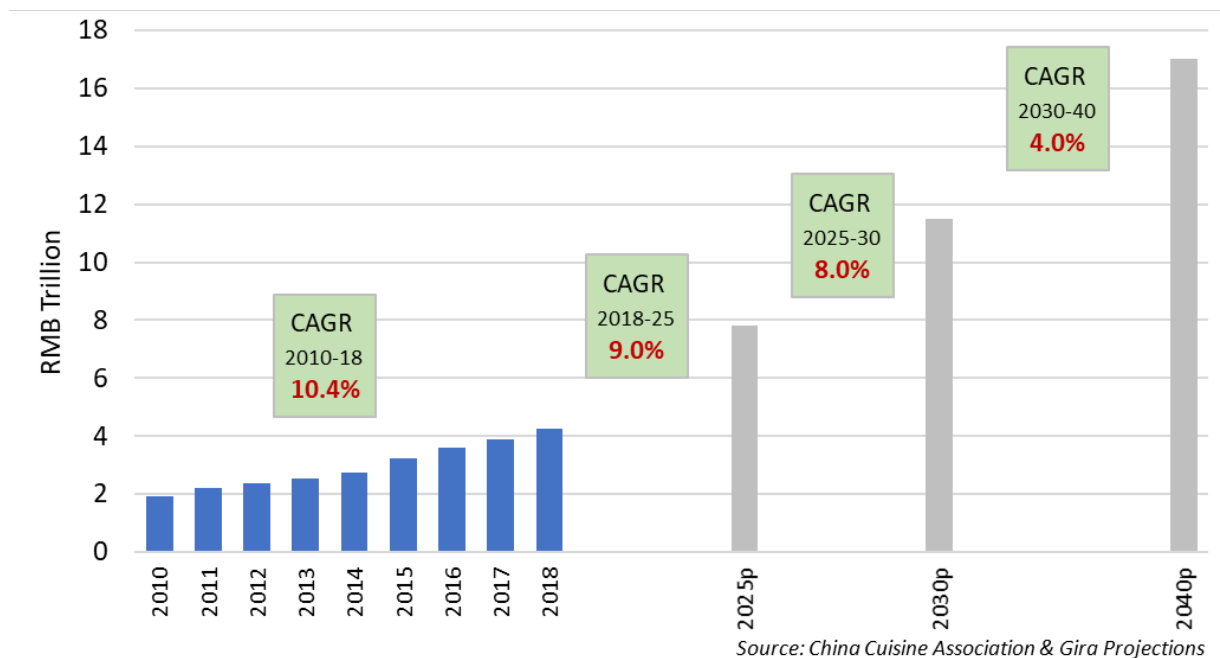
5.8 THE DEVELOPMENT OF CHINESE PORK AT FOOD SERVICE – 2025 / 2030 / 2040

“The way you cut your meat reflects the way you live” - attributed to Confucius

The rapid growth of the Chinese food service sector is a product of the deep drivers that are transforming the Chinese economy. Food service has been growing at a faster rate than GDP, evidence that the economy is slowly turning away from a low-wage, manufacturing model towards a higher wage, consumption-driven model. Consumers are using their rising disposable incomes to eat more meals away from home, to raise the quality and convenience of those meals, to take their holidays on the road and seek new tastes and pleasures in their diets.

Chinese cuisine is really a collection of vigorous regional cuisines, including the North’s meat-and-wheat noodle combinations; hot, peppery, garlicky Sichuan and Hunan food; the salty Shandong and Imperial cooking; and the sweeter Shanghai and Cantonese styles, all with thousands of variations. Those cuisines have been joined by an international element that has imported everything from high-end sushi and US bacon to quick-service KFC chicken – by far China’s biggest QSR chain.

Figure 5.37: China Food Service Revenue, 2010-2040 projected



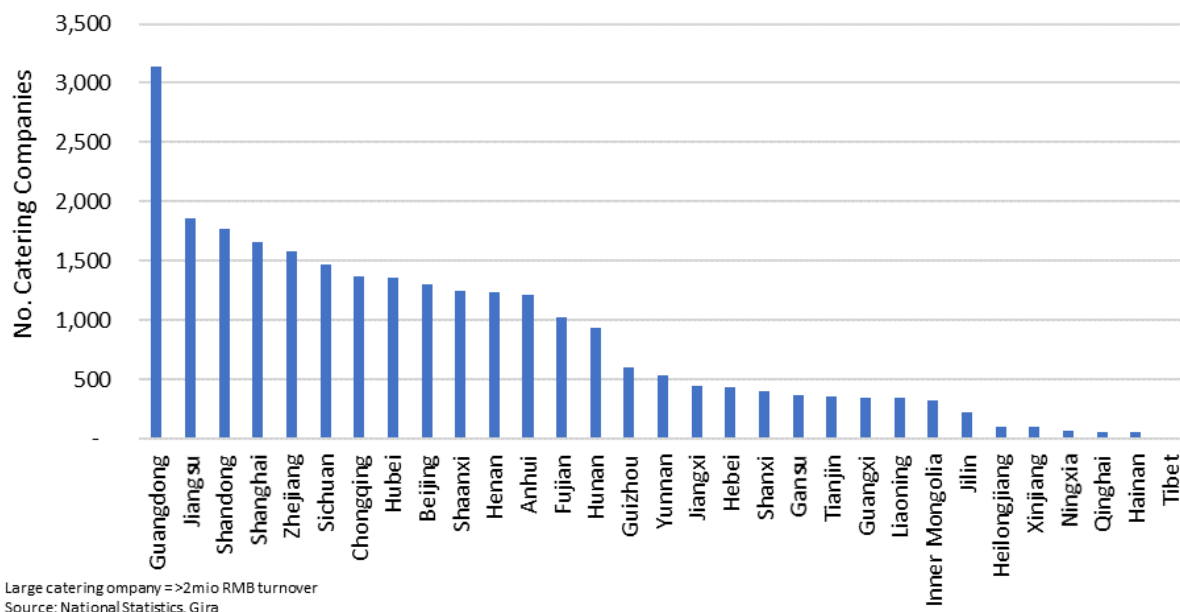
Explanation: We are just at the beginning of real food service growth in most of China. The trends that drove 10.4% annual growth since 2010 are working their way through China’s cities, first at the 1st-tier, now at the 2nd-tier, with the 3rd tier to come. Our outlook calls for continued growth to 2040, at a somewhat slower rate but from an ever-larger base.

While each region’s cuisine is supreme in its domain, prosperity has given Chinese the chance to experience – and comment on – each other’s food. Hot pot, once a dish eaten during the winter in northern and western China, is now available in Guangzhou during the hottest months of the summer. Some Shanghainese find Sichuan food painful to the tongue, but enough Sichuanese have moved to Shanghai to support some major restaurants. With improved highway infrastructure and logistics, chefs in almost any specialty can obtain the ingredients they need in most major cities.

RESTAURANTS

The restaurant industry is extremely fragmented, dominated by small and medium enterprises. While some substantial chains have grown up aside from the QSR giants, they still form only a small fraction of a huge market. Family-run standalone or small chain noodle and dumpling shops are ubiquitous. Small restaurants tout the origins of their particular style down to the county and even the village.

Figure 5.38: Number of large food service companies by province



Food service development follows economic development, and the leading edge of food service growth has moved progressively through the first-tier cities of Beijing, Shanghai and Guangzhou, into 2nd-tier cities like Tianjin, Nanjing and Suzhou, and now into smaller and/or more remote 2nd and 3rd tier cities. The potential for expansion is significant – about 5% of China’s population lives in 1st-tier cities, but 12.5% live in 2nd-tier cities and another 40% live in 3rd- and 4th-tier cities.

Guangdong Province has China's largest concentration of high-end restaurants because it led the national economic charge after Deng Xiaoping's "reform and opening" policy was inaugurated in 1978, aided by its proximity to Hong Kong's international hub, and not incidentally its distance from Beijing. While only Guangzhou is usually listed as a first-tier city, the entire Pearl River Delta, including Shenzhen, Dongguan, Zhongshan and Zhuhai, is equally prosperous.

Other regions with strong economic and restaurant development include Shandong with its exposure to international commerce; Beijing, the seat of government and Party power (*for a detailed look at Beijing's food service scene, see the Beijing city appendix*); and Shanghai and the surrounding coastal provinces of Jiangsu and Zhejiang; The Shanghai-Hangzhou-Nanjing triangle in the Yangtze River Delta is becoming another Pearl River Delta with the entire area reaching 1st-tier status in terms of development and, not least, food service.

High-end dining, both Chinese and international, is largely limited to first- and major second-tier cities, but is developing rapidly in 2nd and even 3rd tier cities as the benefits of economic development reach deeper into the provinces (China has more than 50 "2nd-tier cities," defined as cities with more than 1.5 million people; another 50 3rd-tier cities have more than one million population). Chinese regional food is still the main draw in smaller cities, but international options are rising. The population in 2nd-tier cities tends to be younger, with more families and children, than in the cosmopolitan 1st-tier cities. Surveys have found that married couples with children at home are the biggest spenders, so restaurants that cater to family outings are popular there.

Internationally-based enterprises account for a surprisingly large percentage of overall food service revenue, partly due to the popularity of QSRs like McDonald's and KFC. Those enterprises took in Rmb 89.7 billion in revenue in 2017, 16.9% of the total collected by large restaurants (defined as restaurants that took in more than Rmb2 million). Another Rmb 66.5 billion, or 12.5%, was captured by Hong Kong and Taiwan-owned enterprises like Dintaifeng, a famous dumpling restaurant. To take another example, Element Fresh, a California-style restaurant founded in 2000 as the snack bar in a Gold's Gym, now has more than 30 casual-dining restaurants in China. While most of its outlets are still in first-tier locations Shanghai, Guangzhou and Beijing, it has opened branches in Nanjing, the capital of Jiangsu Province; Wuhan, at the center of the Yangtze Valley, and Chengdu, in the southwest (*for more detail, see the food service section of the Chengdu city appendix*).

With consumption rising, consumer demand has shaped food service development. *Urban dwellers eat more meat*, and with hundreds of millions of people urbanizing, per capita consumption rose rapidly. City dwellers also eat food away from home more often, which drove a burst of new restaurants, often set up at first in family living rooms, throughout the country. Convenience became a virtue as work filled people's lives, first in the big cities on the East and South coasts, then in 2nd tier cities.

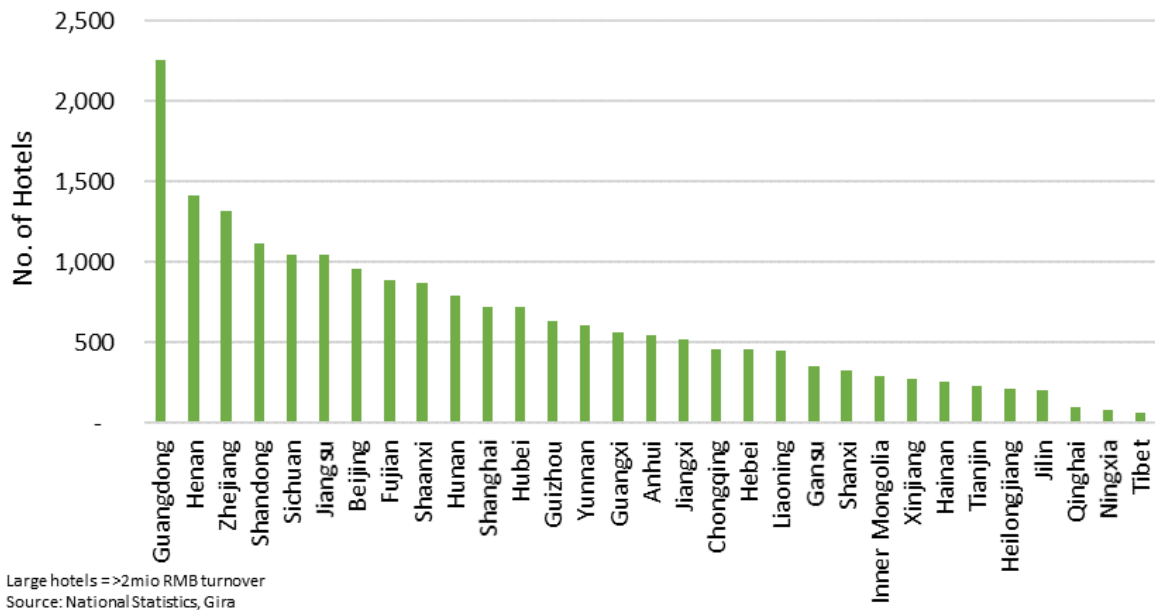
Pork is basic to most Chinese regional cuisines, but its primacy is weakening as food options increase. Since pork is the default in Chinese cooking, to seek options is almost by definition to seek something other than pork. While it remains the No. 1 meat protein in most regions, pork faces a number of challenges:

- **Beef** – Surveys show beef is extremely popular for its taste, but it's also extremely expensive – 3 times pork in normal times – so even many people who like it rarely buy it.
- **Chicken** – Chicken is winning fans with a health story, and ASF is a major opportunity for the poultry industry to gain ground at pork's expense. Duck has experienced a boom, also on health grounds.
- **Aquatic products** – Aquatic products overtook pork as China's biggest source of protein as early as 2010, according to official data. Most of the supply is farmed; shrimp and crayfish are both cheap and popular.
- **Hot pot** – The hugely popular restaurants favor beef or sheepmeat over pork.
- **Muslim restaurants** – Increasingly popular Muslim restaurants that make varieties of Lanzhou's famous pulled wheat noodles are halal and don't serve pork. Popular Muslim shish kebab never uses pork either.
- **International options** – International cuisines may include pork, but Chinese cuisine uses a lot more pork, which is key ingredient in many dishes. Currently Westernized tastes are mainly a threat in 1st-tier cities, but international cuisines are spreading.
- **Vegan/Vegetarian/Flexitarian** – This category is in its infancy, but will make future inroads in 1st-tier cities.

HOTELS

Chinese hotels are significant players in the food service market partly because their restaurants cater to the local community and not just hotel guests, exposing new sets of consumers to higher standards and a variety of cuisines. China Culinary Association figures show that about 65% of food service revenue goes to restaurants, 20% to hotels and 15% to institutional service, and large hotels get about 35% of their revenue from food service. Distribution of major hotels in China largely mirrors the distribution of large restaurants, with Guangdong Province by far the leader. International hotel chains are raising their presence in 2nd-tier cities, which usually raises bar for every high-end restaurant in the city. US-style bacon and sausage get good exposure at international hotel breakfast buffets, although unfortunately the pork itself is not usually from the US.

Figure 5.39: Hotels by province



E-COMMERCE

E-commerce has become a significant delivery channel for restaurants in major cities. The Chinese Culinary Association estimated that 5% of restaurant revenues came from e-commerce related delivery in 2017, but it was much higher in city business districts. KFC teamed with Alibaba to develop a mobile app that allows customers to place an order and pay for their food before they get to the restaurant. Promotional signs in the restaurants point out that app users do not have to wait in line. Restaurants that are not part of giant food groups can compete via platforms like ele.me, a homonym for “Are you hungry?”, which allow residents and office workers to order from hundreds of local participating restaurants.

Although extremely popular among consumers, delivery services have had trouble making money. The services use their investment capital to subsidize deliveries in an effort to win market share, but the burn rate is extremely high. In Beijing prices got so low that it was cheaper to order online than to go to the restaurant, but consumers pulled back somewhat as the subsidies ran out and prices rose. A shakeout is in progress.

Figure 5.40: Alibaba’s robot restaurant in Shanghai



Explanation: Alibaba’s robot restaurant in Shanghai is another wrinkle in the techno-food category. Opened in 2018, the restaurant is located in one of Alibaba’s Hema “new retail” grocery markets, which often include a casual dining restaurant. The consumer takes a seat, scans a QR code on the table and orders via an app. A track runs at about table-height around the restaurant, and the meal arrives on a small mobile platform that resembles nothing so much as a Roomba with a plastic dome. When you’re finished you can call another robot to collect your dirty dishes, and if you spill something the robot will clean it up. There have however apparently been some teething issues, and the robots have yet to be rolled out nationwide.

INSTITUTIONAL

The institutional catering category takes about 15% of the Chinese food service industry’s revenue. The category covers hospitals, government offices, educational institutions, and canteens at factories and for office workers. Factory canteens are shrinking as low-level manufacturing moves out of China, while the office category is growing, often in a cheap basement cafeteria provided by building management. Educational institutions are the most rapidly growing category. Some large international players like Sysco have a token presence, but *the field is disorganized with many small agents and distributors supplying meat from wholesale and wet markets. The emphasis is on extremely low price*, and the segment is a major market for chicken, generally the cheapest protein, and cheap cuts of pork, including imports if they are cheap enough.

HEALTH, VEGANISM, ANIMAL WELFARE

A rule of thumb is that any global food trend will be reflected in China, and that is certainly true of safety, health and nutrition. Whereas, when the economy first started growing, Chinese consumers were focused on just plain getting more meat to eat, safety has become an issue due to a never-ending flow of food scandals and scams, from hormone use to watered and diseased meat. Safety has improved and now concerns have gone beyond that to health and nutrition, with the 1st-tier cities leading the way again as young white-collar workers work out, take yoga classes and look at themselves in the mirror at the local gym.

Some organic restaurants have sprung up, but the definition is shaky. Vegetarian restaurants have never been a major category, although China has also had a long tradition of Buddhist vegetarian restaurants, some of which craft tofu into credible visual imitations of chicken, fish or pork – but the illusion breaks down in the mouth. Companies like Beyond Meat and Impossible Burger have attracted a lot of interest at food expos like Shanghai SIAL and Hong Kong's hotel and restaurant trade fair, but it's a niche audience and the depth of interest isn't clear – although in China, a niche can be quite large by ordinary standards.

Several attempts to open organic or vegan restaurants have failed because the market simply wasn't ready for them. Nevertheless at some point one will catch on; in 2019 a small vegan chain called Bestease staffed by enthusiastic vegans opened in Beijing's Central Business District and seemed to be drawing good office crowds at lunchtime.

Concern about animal welfare is nascent, and non-existent outside 1st-tier cities, where Western animal welfare groups have a presence. But concern about animal welfare will certainly grow as city dwellers lose their connection to the countryside, where chicken are seen as food on two legs and pigs on four. Many urban residents also now have dogs as pets (many fewer have cats), and that is the big reason that dog meat restaurants and meat festivals are encountering opposition for the first time.

PORK SOURCING, DOMESTIC

Large restaurants rely on distributors to supply pork from wholesale markets or branded suppliers, but most small restaurants still source from wet markets. This is true even in big cities like Beijing and Shanghai. Delivery is normally by unrefrigerated electric tricycle cart, although high-end restaurants and international hotels can require refrigerated vehicles (outside major cities, however, this may not work; the chef at one international hotel told Gira he ran out of pork two days after telling his buyer he would no longer accept unrefrigerated deliveries – it turned out there was no refrigerated option. International chefs were key players in upgrading the delivery infrastructure in Beijing, Shanghai and Guangdong because of problems like this).

Wholesale and wet markets provide simple cutting services – separating ribs, for instance, or grinding the stuffing for dumplings – but generally not genuine portion cutting. *Restaurant chains in big cities have established central kitchens*, but managers say they need to serve 10 outlets before it makes financial sense. In major cities, just-in-time delivery allows restaurants to reduce inventory costs, but elsewhere the chilled cold chain is still developing and timing can't be guaranteed.

PORK SOURCING, IMPORTED

Imported pork occupies some profitable niches, largely at hotels and Western-style restaurants, but it is not a standard item beyond the major cities. Small distributors work with importers and US exporters to get the cuts they want, such as baby-back ribs, spareribs, bacon or pork chops. Outside the major cities the value chain gets more articulated as additional middlemen come into play, reducing the safety and reliability of delivery. Most frozen pork imports go to processors or to institutional food (see *Beijing and Chengdu sections for details on how import sourcing works in major cities*).

2025 Outlook – The domestic pork market will still be recovering from the ASF disaster, giving imported pork a rare chance to penetrate the food service market with standard products (as opposed to specialty cuts like baby backs for specific types of restaurants).

Good quality will be assumed, but exporters will also need to cater to the market in terms of specific cuts and trims. Restaurateurs also worry about supply reliability when they deal with imported meat for their menus, something that is less important to processors who can use a selection of cuts for their products.

Better logistics will expand the potential market for imported pork in 2nd-tier cities. Consolidation in 3PL and distribution will help, but it's not clear how advanced it will be in reaching internal cities with viable product by 2025.

2030 Outlook – With ASF no longer a factor, competition will heat up. Domestic producers were already improving their offerings, with better quality and standardization, before ASF hit. They will return to the market aggressively.

Imported pork suppliers will be able to hold onto market share if they can offer either unique cuts for international-style restaurants, or can compete on price and reliability with the domestic suppliers.

The high-end market will cover many more cities than it did in 2025, with good logistics and reliable chilled chain available to most destinations. Traceability will be a must by then, and a good story will help sell the product.

2040 Outlook – The food service market will continue attractive growth. Although the rate will slow down considerably, because the sector will be growing from a much larger base, gross volumes and values will continue to increase substantially every year.

The opportunity for exporters in food service remains the same – unique products for non-Chinese cuisine, or cheap products for the standard market. By this time there will be high-end restaurants and international options even in 4th-tier cities and large country towns (populations less than 150,000), the same way Chinese food and top steakhouses are both available in small US cities.

(Note: For a detailed look at the outlook for a 1st-tier city, please see the food service section in the appendix on Beijing; for the outlook for a 2nd-tier city, please see the food service section in the appendix on Chengdu).

6) CHINESE CONSUMER INSIGHTS

6.1 OBJECTIVES OF THE QUALITATIVE PORK CONSUMER STUDY

The purpose of this consumer study was to gain insight into consumer perceptions of pork, especially regarding buying and cooking, food safety, origin (domestic vs imports), animal welfare, production, farming and scale, ASF, etc., and to forecast these where possible into the medium and long term.

The results we have obtained have given us many indicative insights into the likely direction of travel of these consumer issues, and have allowed us to apply conclusions derived from theme to the medium-term situation of US pork exporters to China (i.e. once the current trade dispute is resolved).

6.2 METHODOLOGY USED

Two pork consumer Focus Groups of 2 ½ hours each were held in late May 2019 in each of Beijing and Chengdu (4 in total).

We believe that the similar, strong social and economic dynamism of these two cities and a strong similarity in their urban food culture allow us to use our results in order to determine the likely development of central/northern urban Chinese pork consumers at least into the medium term and probably beyond.

The Focus Groups comprised a total of 29 relatively young ladies. Each was the person who decides on what meals to cook for the household, and each actually does the shopping and the cooking. They were predominantly aged between 25 and 37 (because it is they who will create the "future" of pork consumption) and they were a mixture of married and unmarried ladies, with and without children.

The Focus Group members were essentially from the "new" middle classes of the two cities where the Groups took place, neither very poor nor very rich.

The recruitment of the consumers, the logistics and the moderation of the Focus Group meetings were carried out by a top firm in this domain that is based in Beijing and Shanghai. The Moderator was the same for all 4 groups and she worked from an interview guide and a related series of photos of pork products that Gira's qualitative research expert had prepared in advance and briefed her thoroughly on. The photos mainly targeted the most popular meat cuts and products, but with a few modern and imported products as well. The guide and the photos are shown in Appendices 1 to 3 of this report.

The videos and sound recordings of each Focus Group were sent to Gira's consumer expert and, over a period of a week, they were translated verbally for him, word by word, by a native Mandarin speaker who has been living for many years in Europe. Her continuing strong family and friend links to China also allowed her to fully explain the local social and economic allusions made by the participants. It was the detailed notes our expert took from these translation sessions that provided him with the basis for the subsequent analyses making up this report.

It should be noted that there were no significant differences in what we were told by the ladies living in Beijing compared to those in Chengdu. This implies that our Lifestyle Typology and our analyses of the consumers' perceptions of the key issues surrounding pork can be assumed to be valid in most of at least the Tier 1 and 2 cities of the center/north.

Finally, it is important that the reader should remember at all times when reading this report that our results are not statistically significant. Indeed, given the very small number of our interviewees and the vast population of China *they could not be representative* of the population as a whole or even of the individual cities themselves.

However, we have reason, from the coherence of our Lifestyle Groups' responses to several key questions, to believe that *our results are indicative* of consumer opinion. This implies, for example, that NPB can rely to a reasonable extent on the consumer Lifestyle demand segmentation and on the optimal marketing-mix requirements for each, but it cannot, from our study alone, attempt to estimate the relative or absolute size of those segments.

To carry out such an estimation would require a *quantitative* study to be carried out involving a very much larger consumer sample in order for it to be statistically significant.

Table 6.1: Interviewee sample characteristics

Age	<26 years	27 to 29	30 to 32	33 to 36	> 37 years	Total
Number	4	7	6	8	4	29

Family situation	Married	Single	With children
Number	23	6	18

6.3 SUMMARY OF MAIN FINDINGS

In this chapter we summarize the most important findings of our study for the future. Details of all points raised here are to be found in the body of the report in chapter 5 below, Detailed Findings.

A: The underlying drivers of consumer demand for pork are universal in China, but there are changes happening within the category

The key trends underlying the future development of Chinese consumer demand for pork are:

Fewer and fewer of today's young mothers have learnt to cook from their mothers. This is leading to the breakdown of a number of traditional culinary "codes" and leaves the door open for innovation and added value.

Despite the lack of crèches and the breakdown of the traditional family structure, younger women and mothers are increasingly likely to work after their marriage or the birth of their children.

This is changing two fundamental parameters:

- Time is becoming more limited, thus reducing the time available for cooking and shopping.
- Family incomes are growing, thus increasing consumer purchasing power. If this continues it will accelerate the transition towards products of higher perceived added value.

We will therefore see a progression of demand from large raw cuts of pork (the "traditional" raw material, cut and prepared at home) to "convenience" raw products (pre-cut, minced, prepared trotters etc.) and then, in the longer term, on through to ready to cook and ready to eat pork products.

B: The role of the internet for the future

The internet will play an important role in the future of pork consumption and retailing on several levels:

Information: it will be a key source of information for consumers about other ways (than the purely traditional) to cook and eat pork. In this it will be instrumental in developing and reinforcing Lifestyle and affinity consumer groupings, primarily via social networks and blogs that both inform and reassure.

Buying: it will be the retail channel to supply pork products directly to households. There are currently significant consumer barriers to this that limit household penetration (fears over packaging, freshness), but these will decline in importance over time.

So the internet will change consumer perceptions of pork products in two very different ways:

- Positively, by making consumers aware of the many potential uses of pork, allowing segmentation (by element of the marketing-mix) according to the meal situations that they envisage. The internet will thus figure as a replacement for advice from the butcher, for mother's recipes etc. The internet will also carry the reassuring messages of brands of all sorts of food products.
- Negatively, with the growth of nutritional concerns and, in the medium to long-term, of the anti-meat lobby (probably on health grounds, rather than animal welfare or ecological).

We will therefore see a scramble for "share of eye" on the internet; not just through advertising and the major e-retail platforms, but also by bloggers and lobbyists for causes that at present are still Western luxuries (welfare, vegetarianism etc.). But above all it is in the area of ASF that the internet will be crucial, with the ability to make-or-break the industry for years to come.

C: Is animal welfare an issue for Chinese consumers?

As far as the welfare of pigs is concerned, our interviewees are mostly pragmatic. There must not be any abuse or aggravated ill treatment of the pig ... since this is detrimental to the quality of the meat (which, they say, can even become toxic).

However, for all of our ladies, a pig remains just human food on legs and is never assimilated to a domestic animal by them. Indeed, a "mummy's pet" approach to the pig's welfare is totally rejected; it is considered to be an attitude reserved strictly for Europeans.

Modern, industrial pig breeding is generally viewed in a positive light, backed by a firm belief in the effectiveness of State controls.

It is therefore unlikely that pig welfare on the farm or at slaughter will become a major issue for consumers in the medium-term. Thereafter it will depend on whether Western ideas are allowed into China and whether the Chinese can pay for them. There may be a welfare marketing card to play, but it will not sell pork on its own.

D: Imports and foreign origins

Foreign pork suppliers are little known and have only a vague image or presence in consumers' minds. Nevertheless, the underlying idea in our interviewees' minds is that each country specializes in the meat that it consumes most. So the USA specializes in beef and chicken (not pork), while it's Germany that specializes in pork.

There are no negative preconceptions regarding imported pork, although doubts are raised over how the meat can stay fresh during transport. However, the more traditional pork consumers are largely unaware of imports, while the more modern consumers are relatively positive towards foreign pig-breeders, citing better on-farm hygiene and management. Moreover, there is a general belief in the efficiency of Chinese frontier controls on imported meat which means that imports are considered to be risk-free.

The main retail channel for imported pork is, and will remain for some time, the supermarket. Internet is growing as consumers become less traditional and more modern, but it will not be the major retailer of imported pork products at least in the medium term, and probably beyond that.¹

Any importer wishing to make his country of origin a marketing tool in China will first have to create a "pork-eating and -producing" image for himself with targeted consumers. Given today's politics, this currently appears difficult and the degree to which it can be used – along with a "health and hygiene" message – will depend on the Party's attitude to imports in the future. The quite recent problems for Japanese (non-food) imports show the power of the Party's propaganda machine with consumers.

E: Communication

"Traditional" consumers have no need of information from anybody; indeed, they are scathing if even the butcher himself tries to advise them.

However, information concerning the product is in considerable demand from more "modern" consumers, often those who are uncertain about their cooking skills and who know least about the meat they buy. We are mainly talking here about nutritional information such as fat content, the absence of preservatives, GMOs and enzymes ... as well as traceability and good sanitary controls.

The more "modern" the consumer is, the less communication around pork has to address her fear of inadequate freshness. For this demand segment, slaughterers and retailers can talk about convenience, pleasure, innovation etc.

¹ Note that, in reality, imported pork *is* present in covered/wet markets, but it is not labeled or differentiated from local product, and *is therefore unknown to the consumer*.

Suppliers and retailers must only communicate on the information that a given Lifestyle consumer segment is ready to listen to, and only in the way those ladies are willing to listen to (see F below).

F: Consumer overview and demand segmentation - *Full details are to be found below, in part 3 of chapter 5, Detailed Findings.*

Our Focus Groups indicate that the developments in pork demand and consumption will not be uniform in China, not even within the large northern/central cities where there should be continuing strong growth of disposable income.

Indeed, the demand for pork will evolve differently in each of the 5 consumer Lifestyle Groups (demand segments) that we have detected in our Focus Groups.

Assuming that the Chinese economy will successfully manage its economic transition over the next 10 years, then these differences will accentuate as retailers and slaughterers/packers increasingly segment and target their product offer and marketing mixes along the lines of our Lifestyle Groups.

But more important still, over this period and probably beyond, we will see consumers themselves actually moving in a relatively linear way *between* the Lifestyle Groups, and this trend will be even further accelerated by the imminent arrival of Generation Z as housewives and mothers.

Summary of the main pork consumption trends:

The more "traditional" our Focus Group interviewees are (in the sense of practicing traditional Chinese cuisine), the more they think that pork is a "universal" center plate protein solution, due to its:

- Taste: everyone likes it and it goes well with all vegetables,
- Uses: it can be used in almost all recipes,
- Price: the price of pork has always been stable and reassuring.

The main fear of those who buy pork on the covered market (the majority of "traditional" consumers) is that it rapidly loses its freshness, and they see this in its deteriorating color and smell.

The only way to ensure freshness is to buy the meat every one or two days on the covered market, preferably in the morning. Gas packaging and rapid delivery through the internet only accentuate the problem for these ladies, since packaged meat is too enclosed to be fresh ("*like an unaired kitchen*") and these consumers don't trust sell-by dates.

However, our interviewees with a more modern lifestyle indicate that they are increasingly substituting other meats (particularly "*fish and eggs*") for pork. This is generally for nutritional reasons, since "*pork is fatty*" and they are happy to try other center plate protein solutions.

The more "modern" the consumer, the less important and valorized pork is for her.

"Traditional" consumers represented the highest number of pork buyers in our Focus Groups, but this category will decrease as younger generations become wives and mothers. "Traditional" lifestyle consumers are the ones who would be most affected by ASF (especially if it became a health scandal), since they valorize and rely so heavily on pork and its affordable price.

The group of consumers – "Convenience" and "Modern" – that increasingly demand products that save them time in preparing the meal will grow significantly in the future as more and more women with children work.

A market demand segmentation by consumers' Lifestyle approach to pork:

We have found 5 consumer Lifestyle demand segments among our interviewees. We have built these segments up from our ladies' reactions during the Groups and they are to be seen in a series of key differences that depend on the aspirations, anxieties and possibilities of the members of each Lifestyle Group.

These 5 Lifestyle Groups, more or less large, are the demand segments which suppliers and retailers should target today, and which will develop into the demand segments of 2030 and beyond.

We have summed them up in the table below, where each Lifestyle Group is shown with its optimal marketing mix (the grey-header columns) and other key information for supplier access to the segment.

Table 6.2: The key features of each of the 5 pork consumer Lifestyle Groups

Lifestyle Group	Definition of the Group	Key	Product	Distribution	Price	Packaging	Communi- cation	Likely Future Development	Market Entry Argument	Reaction to Imports
1 Strictly Traditional	My mother taught me to cook and, like her, I buy all my meat on the covered market	Highly competent cooks who are spend a long time cooking	Large pieces of meat that they cut up themselves	Only buy from the covered market	Prices are well known and judged to be stable. They won't buy promotions	All industrial packaging is refused	The images around "traditional cuisine"	This generation will likely be the last. They will be profoundly shaken by any ASF scandal or price hike	The freshness of the product	These ladies will buy imported pork, especially if the authorities give reassurances concerning its healthiness
2 Less Traditional	I've rather forgotten what my mother taught me. I still buy on the market but I also visit the supermarket	Meal preparation is still based on the traditional model, but the ladies here doubt their own cooking abilities	They ask the butcher to cut up large pieces for them	The covered market mainly, but now and then will buy from the supermarket's service counter	Prices are well known but they will buy promotions	Won't buy prepacked	The reassurance of the brand / store-brand. Strongly influenced by information on the internet	Ill at ease as they are, they may well migrate to the following lifestyle groups (below). They will use internet to decide how to react to ASF	Solutions to their instability, to be communicated on the internet	They will react differently depending on how the ASF disaster develops
3 Traditional Convenience	I still cook the way I learned, but I want cooking to be simpler and quicker	It's still traditional cooking but the ladies here are looking to simplify considerably	They are looking for meat products that simplify / shorten the preparation time which is otherwise too long	They buy from all types of retail outlet	They are willing to pay a higher price for a more convenient product. Promotions are welcome	Advocate packaging especially for individual portions	The demand a lot of information	They are looking for solutions and they give themselves the means to find these solutions. They will have the same approach to ASF.	A really convenient product. Neither truly excellent nor deficient (in taste or healthiness)	The packs must have a brand and that brand must allow the importer to guarantee that the meat is OK
4 Modern Convenience	I'm no longer willing to spend the time cooking. I'm happy when it's quick	The fact of working after marriage and having children means there is no place for traditional cooking	Easy products to cook; innovative, exotic	Primarily the supermarket, but they also buy on the internet	Will pay a high price, but also look for promotions	It must be packaged	They want to be comforted in their choice of a modern lifestyle	They are proud of their lifestyle and this group will grow as more and more women with children continue to work. ASF will not be important for them; they will simply stop eating pork	Modernity and technology. These ladies will understand that gas packing will keep the meat fresh for longer	If convenience products from abroad, with all the necessary health guarantees, are proposed to these ladies during ASF, they will rapidly start buying pork again
5 Totally Modern	I don't know how to cook and both cooking and meat shopping must be quick	They have completely broken with tradition and are influenced by foreign dishes	Ready to eat	Internet for now and the supermarket to stock the fridge	Not worried about the price	Individual portions	In tune with the times	Unlikely to be affected by food scares or ASF	Ready to eat	Positive, especially if it is a visibly "modern" product

These Lifestyle pork demand segments are not static, they evolve over time as consumers' economic and social environments and their aspirations develop.

The schematic representation below presents the Lifestyle segments according to their degree of "modernity" (top to bottom on the right axis) and the retail outlets from which the ladies in each segment buy their pork products (left to right on the bottom axis). This is a two-dimensional way of further summarizing the information in the table above, but with the added advantage of showing how the segments are positioned today and how they are likely to develop in the future.

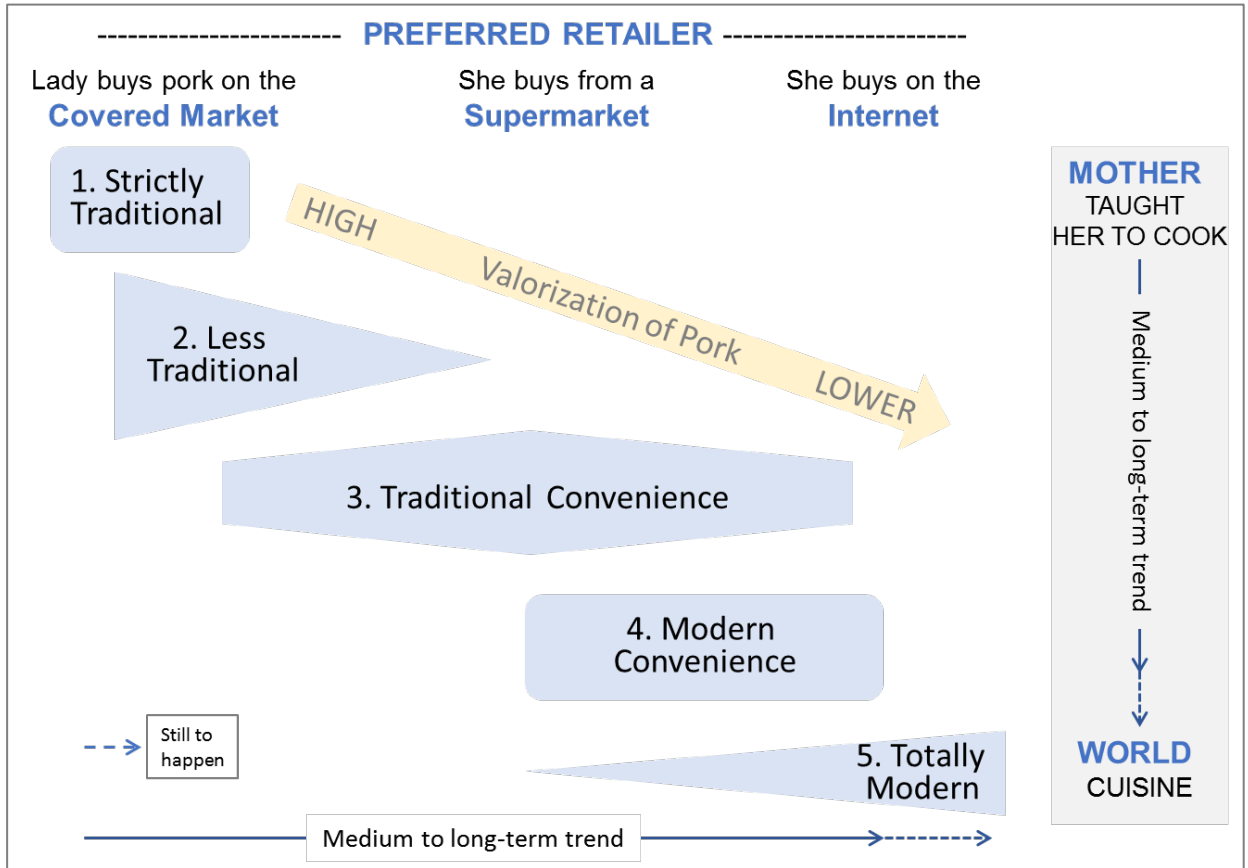
Reading the graph below:

The Strictly Traditional segment at the top left on the on the graph here reflects a group that is strongly influenced, indeed almost exclusively, by the culinary tastes and practices of pre-modern China, say the 1980s and before. In our consumers' speech we can see the strong influence of this segment's mothers (skills, fears, recipes etc.) and this leads to each lady in this Lifestyle Group only buying pork from the covered market.

The complete opposite to this is to be found bottom right, in the Totally Modern segment, where traditional Chinese cuisine and the parameters governing our Traditional consumers counts for nothing in these ladies' choice of product. They naturally buy their (generally to some degree processed) pork products on the internet for home delivery, and wouldn't dream of buying unpackaged meat on the open market.

In between these extremities – and remembering that the Totally Modern segment is still small and in formation – lie the three other quite large segments whose key characteristics are explained in the table above and in chapter 5 below.

Figure 6.1: Schematic Pork Demand Segmentation & Trends by Consumer Lifestyle Group / demand segment



As the Traditionalists gradually disappear (a maximum of two generations should suffice, and the transition should be largely complete by 2040) leading to Modern Convenience becoming the main segment, the impact will be felt throughout pork consumption and retailing. This will not be unlike the changes in pork consumption in several northern EU countries during the years of strong economic growth in the second half of the last century.

The progression over time from left to right and top to bottom here will have major consequences, the main ones of which are listed below:

Above all, we will see a devaluing / devalorization of pork for consumers. This is already the case with the Modern Lifestyle segments. The more it is packed, prepared, processed, the more pork will be regarded as just another meat, and then as just another center plate protein. This is not negative in itself, opening the door to more innovative, packaged, added value pork products ...

The great risk, of course is that this natural process could be shut off by the fallout, if it is badly managed, of ASF, which could let other proteins into the space hitherto belonging to pork. Some of our ladies were already making contingency (substitution) plans for this.

The progression away from Traditional demand will lead to a growing acceptance of packaged pork, particularly for time-saving, pre-cut and ground products.

Brands should also flourish and there is already a degree of brand-awareness among pork consumers. This may be a slaughterhouse's or a retailer's brand, but the important element is that, as in post-war Western Europe, it is a guarantee of quality (hygiene) and consistency. So in the case of pork, a brand, even a foreign one, will be accepted providing that the taste is not too strong, the price is reassuring (neither too high nor too low) and the freshness (healthiness) of the meat is guaranteed.

The cuts of pork offered to consumers will increasingly target the end-uses, the recipes for which they will be used: wok, soup, braised etc. The key here is that the consumer will no longer have to choose the type of pork cut herself and she will welcome the brand's or the store brand's targeted offer.

If China succeeds its economic transition in the medium term, and if GDP-PPP reaches the levels of Taiwan and Korea within 20 years, we will see a considerable development of consumer demand for added value and meal-need-adapted pork products.

All other things being equal (trade disputes, protectionism), there is no reason why a number of these should not come from the USA, providing they target the "right" demand segments with products adapted to Chinese needs (as Danish Crown adapted its product to the needs of Japanese further processors). An ASF scandal could be such an importer's friend.

6.4 SOME MEDIUM TO LONG-TERM RECOMMENDATIONS FOR NPB'S EXPORTER MEMBERS

US exporters must first and foremost convince themselves that they really do wish to take a durable position on the Chinese market and that they are willing to commit significant product and resources.

This is because, if their intention is to sell pork through retail, it will be necessary to create some form of branded presence, and a brand cannot survive if supply is irregular or sporadic.

A US supplier must therefore decide which consumer segments (Lifestyle Groups) it wishes to target and set up a marketing and logistics infrastructure in China allowing it to service this.

Although the US supplier will work with Chinese retailers, wholesalers and e-platforms, nonetheless a hands-on presence in the market will always be necessary.

The continuing Chinese consumer requirement for "freshness" will pose a serious problem for a US importer wishing to sell through retail. At present frozen pork is not popular with consumers, and a thawed product sold as fresh even less. This is unlikely to change much in the medium term at least.²

Thought should be given to supplying chilled half carcasses or sub-primers from the US to a cutting and packing plant in China. The plant may or may not be owned by the supplier, but it would supply packed product to retail under the supplier's brand.

It should be considered whether such chilled half carcasses could also be supplied, possibly branded, to covered markets and foodservice, as part of medium-term ASF response, even if not as a long-term strategy.

The impending ASF disaster could (trade wars allowing) create real opportunities for US suppliers to take a serious foothold in the Chinese market. Since foreign pork is accepted by consumers, ASF could well be a one-off window of opportunity to get a foothold in the market, taking market share and adding value at the same time.

However, ASF is clearly only a medium term opportunity, not long term one. This means that, once there is some clarity (in a year?) it will be advisable for a US importer into China to create country of origin and specific brand awareness as soon as possible, so that the trust and positive image built up during ASF will carry on in consumers' minds even when the crisis is over.

² Note: Danish Crown's retail packing operation in Shanghai thaws imported frozen pork, but this is not made this clear to the consumer. The hope is the Totally Modern consumer segment will accept a modern solution... but it's too early to say yet.

Since it is likely, and probably advisable, that a serious US importer into China will target the "Convenience" and the "Modern" consumer Lifestyle Groups, it will be essential to have a well-structured consumer information and reassurance program ready.

This will involve partnerships with e-retailers (as Danish Crown is doing) but also a strong presence on social media and the major blogs, sending out messages that the targeted consumers want to hear. WeChat is the key channel currently.

Initially, in the eventuality of an ASF scandal, these messages will involve reassurances about disease-free breeding, traceability and hygiene and an odor-free product, but from the outset they should also contain brand-differentiating lifestyle messages.

The image ultimately to be built up will be that of modern convenience products positioned as the working woman's friend and evolving with her needs.

Finally, only an approach based on satisfying the clearly defined needs and aspirations of a sizeable number of consumers can succeed.

It will be impossible to be all-things-to-all-men, nor is this desirable from a branding and a marketing point of view. A US importer must determine which demand segment is the best for him and not be distracted.

As pork consumption declines nationwide, clear messages and transparency will be absolutely essential in order to be credible with consumers and to create perceived value in China.

6.5. THE DETAILED FINDINGS OF THE CONSUMER RESEARCH

6.5.1. THE IMAGE OF MEAT FOR CONSUMERS

Meat is clearly of importance for our interviewees and this is evident right from the start of each focus group. It is the basis of every family's diet.

Most of our interviewees believe in the following, basic nutritional principles:

- Health: *"The whole family, adults and children, must eat meat every day, it's good for their health".*
- Happiness: *"One cannot be happy without eating meat". "My children eat a lot of meat and if there is not enough, they complain".*
- Regularity: *"You need meat at every meal". "You cannot live without meat".*

- Filling stomachs: *"Meat allows you not to feel hungry for a long time" - "If there is no meat, you want to eat again after the meal, and you won't last through the day"*.

Our interviewees remark that meat is always accompanied by vegetables and that this makes the dish more balanced.

The word "meat" covers a range of products, including fish, and eggs also seem to be included.

Eggs are often cited because they are easy to cook, they are digestible and especially they make for visually attractive dishes: *"I made tomatoes with eggs; it's a red and yellow dish; it's attractive, my child likes this dish a lot"*.

Meat is split by our interviewees into two basic types:

Red meat:

- Beef: sometimes beef is considered healthier than pork. *"Beef gives you muscles"*. The fat is visible, but it can be removed or you can choose a piece without fat.
- Sheepmeat: the smell can quickly become unpleasant. *"Sheepmeat smells strong"*.
- Rabbit and venison are also included in this category.

White meat: Poultry is classified in this category but also fish and other seafood including crab. These are good alternatives: *"Once a week, it's fish"*. *"When we want a blander diet, it's fish."*

Pork seems to be somewhere in between the above two categories...

6.5.2 PORK IS A "UNIVERSAL" MEAT

Pork is universal in the sense that it can be used in almost all meal situations, thanks to:

Its taste: it is not so bland as to have no taste but it is not too distinctive like beef which can displease some people. The taste of pork is standard; there is little variation so there is little risk. *"It's reassuring that there is little variation."* Children appreciate it as much as their grandparents.

The approval of the dish by the family is implicit and not explicit. None of our interviewees expects to receive explicit compliments on her cooking, but she simply notes whether the dish is all eaten up or not. If it is all eaten then this is perceived as an encouragement to keep this recipe. *"When I make a dish such as caramelized pork with sweet and sour sauce for the family and I find that they liked it, that they eat everything in the dish, then I get a feeling of success and pleasure knowing that it's good for the family."*

So, everyone loves pork: "some people do not like rabbit, others don't like sheepmeat".

Pork goes well with all vegetables and carbohydrates as well as with all sauces, from the spiciest to the lightest. Everything goes well with pork; *"all vegetables do not go well with chicken, far from it"* and, moreover, *"when I'm cooking pork, it smells good, while sheepmeat smells strongly during cooking"*.

Pork fat has a good taste and the following recipe was cited very often: "The meat is cooked first in order to bring out the fat into the pan and then the meat is removed and I cook the vegetables in the fat so that they taste better. When the vegetables are almost cooked, I put the meat back and finish cooking the two together."

Every part of the pig can be eaten, but younger women are less enthusiastic about pigs' trotters, tails, heads and cheeks than their elders. Above all, they don't really know how to cook these products.

Its texture: pork is easy to chew, so it is considered pleasant. *"Beef is hard to eat, it needs to cook longer."*

All the different dishes it can be used in: the recipes can be relatively quick to prepare when the pork is cut into small pieces and they can be very easy to cook, or, on the contrary, they can be very sophisticated and take a long time to prepare. Pork's many recipes are known to all our interviewees, even if they don't use them all – e.g. sautéed, braised, as stuffing for dumplings or steamed buns, or in soup.

Even those less skilled in cooking manage to vary their dishes with pork.

Its price: so far, the stable price of pork has been reassuring. Our interviewees do not expect surprises in the price of pork, although the younger ones remark that older people are more price sensitive.

The pig is considered to be a good animal because it eats everything, unlike cattle that only eat grass.

Health concerns regarding pork appear at two levels:

- **Negative**, related to fat content. Excess consumption of pork gives you diabetes and cholesterol as well as blood pressure. Pork makes you fat, "*it is fatter than beef or mutton*". Sometimes the fat is visible and can be removed. One woman says, "*Do not buy sow meat because it is not good for you*".
- **Positive**, due to its curative or preventive virtues. Although these virtues are generally defended by traditional-leaning interviewees, even more modern interviewees find specific health virtues in pork:

"I give pork ribs to my young children; it gives them the calcium to grow".

"Pork is a red meat so it regenerates the blood in humans".

"Pork liver is good for the eyes".

"Pig's feet strengthen the activity of the kidneys".

"Pig trotter soup allows young mothers to produce more milk".

Currently, the freshness of pork is a big worry.

Interviewees believe that the meat can only be kept for two days maximum.

Un-fresh meat is unfit for consumption. This is a key obstacle to the acceptance of meat sold on self-service counters.

This deterioration is noticeable:

From the smell: an unpleasant odor quickly develops, a symptom of decomposition.

By the color: dark spots develop. This is all the more negative since interviewees want the meat to look good; they want the dish to look good on the table. An unpleasant color is immediately noticeable.

Without being able to explain why, one woman says: "*When I buy pork at the indoor market, I have to eat it immediately, otherwise it turns. When I buy pork at the supermarket, I keep it for a few days.*"

Organic meat was mentioned by two people with very different opinions:

One woman who prefers organic (but if there is no organic available, she will buy the normal product anyway) states that: "*organic is better, it is healthy, the texture of the meat is better. In the supermarket, we can see the difference in raw meat, organic is more attractive than non-organic; cooking, taste and texture are different*".

While the other lady told us: "I do not trust organic because I have a friend who sells organic products and he just puts an organic label on the ordinary product, that's all."

ASF: Most of our interviewees have heard of this.

But it is not the only problem there has been for farm animals; “we have also had mad cow disease and bird flu.”

Like any scare, there is a lot of discussion on social network. It's inevitable when you breed animals intensely: "the pigs are concentrated together so there is transmission of the disease; we can attempt to prevent it but we cannot avoid it 100%".

According to our interviewees, the disease is presumed to come from Africa or Russia.

For them, the consequences of the epidemic are:

Herd reduction: "swine fever will kill many pigs".

Price increases: "the price of pork will increase at the end of 2019. This will be aggravated by the trade dispute between China and the US."

Officially, there is no danger to humans:

- *"they try to encourage people to continue eating pork by saying that the virus is not deadly for humans".*
- *"We think about it but we have to trust the authorities who carry out the controls; it's up to them to check, we have no way of checking".*
- *"You should have a health and disease control book for each pig like there is for children; it is reassuring especially for imports".*
- *"It takes specialized people who control diseases and put a label on the ear and a stamp on the skin with a certificate of good health."*

The breeding conditions for pigs must be "normal"; this means they must avoid the two extremes:

Abuse: good living conditions result in good quality pork. Pushed too far, bad conditions endanger the health of the consumer: *"if the breeder only thinks of money and mistreats his pigs, they can become depressed. The meat of a depressed pig is inferior but it does not endanger the health of the consumer. The danger is the animal dying of disease."*

"Mummy's pet": interviewees are shocked at the idea of a strong relationship between the pig and the breeder in the way that one might have with a dog. Such an attitude is foreign to Chinese culture: *"my grandparents fed the pig and did not look at it; they were not mean but they had no feelings for it". "It's pointless to stroke them."* The purpose of a pig is to be eaten and there is no other relationship.

Interviewees expect a neutral attitude from the farmer based simply on the idea of doing his job well: raising pigs for sale; making sure they are fed correctly, "*however the farmer feels, it doesn't mean he'll give less food to his pigs*". The farmer just has to respect the rules since there are strong regulations governing his activity.

The only "human" element that can improve the life of a pig is to play music to it.

Our interviewees distinguish three types of pig fattening:

In the wild: a pig living freely in the wild. "*At least he has a sportive life.*" It might almost be a zoo: "*I saw three pigs running wild in a tourist park.*"

The "wild" pig is a black breed; its meat is much better but its price is very high.

A woman talks about her visit to southwest China: "*I saw Zang Xiang pigs whose meat is lean. But the pig eats everything; we do not know what it eats, whether it's good or not for human health. It might eat something poisonous for man.*"

The traditional method (used by peasants): this is a way of breeding that is dying out because, as one interviewee explains, there is less and less space available, leaving room only for breeding chickens

But some of our ladies have known this type of farm and they are not very complimentary:

"I saw a farm in the countryside, it smells very bad and it is very dirty".

"There was one next to my house, but the villagers chased the breeder away because of the very unpleasant smell".

"Twenty years ago in the countryside, each family owned 1 or 2 pigs that lived on the farm; they ate the pork at Chinese New Year".

On modern farms. Information on modern breeding comes mainly from documentaries broadcast on TV. This information is considered credible.

Our interviewees' description was very precise, we assume because there had been a recent TV program on the subject. "*There are large farms with large buildings. They are specially designed for pigs. I saw sows surrounded by their piglets. The floor is cement and the pigs are in cages. There is a pipeline to evacuate the slurry and an automatic system to feed the pigs.*" "*There are two rows of pigs on each side and the food is distributed in the middle automatically; no one gives them their food*".

Pig feed is important and varied: "*I have the feeling that pig nutrition has changed with a wider variety of products available*".

Pigfeed may be:

Modern: *"they add special ingredients to accelerate growth". "They use industrial foods in bags"*.

Some interviewees think that corn is not the best food for pigs. They suspect that corn makes the pigs fat and that makes the humans who eat it fat as well.

"Because of the feed, the pig grows fast; now we sell pigs at 3 months and piglets become pigs and this is worrying". Worse still: *"we put hormones and water in the stomach of the pig, which is very bad."*

Recycled waste: *"many farms take the left-overs from restaurants"* say some interviewees, adding that these are mainly from large restaurants so that the food products concerned are probably of good quality. Giving pigs leftovers is considered economic good sense: *"it avoids waste"*.

But this mustn't involve products over their best-by date. Pigfeed has an impact on human health.³

The slaughter of the animal always generates its usual reaction of consumer horror.

Some interviewees do not want to know the details. They only want to see the resulting meat cuts. *"If I knew the details, I would not eat pork anymore."* Others have witnessed the slaughter of a pig in the family.

Without going into the sordid details, our interviewees came to agree that death comes from an electric shock.

Imported meat: in general, our interviewees have little knowledge of livestock breeding abroad so they don't really have an opinion.

What they remember most of all is the distance and transportation time which reduces the meat's freshness and increases the cost. They think that the only way round this is to freeze the meat but, on the other hand, they only want to buy fresh meat.

Some think that meat produced elsewhere is better; as the saying goes: the moon is rounder abroad than in China: *"外国的月亮比较圆"*

What they would like is: a better diet for the pigs, less hormones, more cleanliness (*"in China, it's noisy and untidy"*), and older pigs for better meat quality.

³ Note: Following the outbreak of ASF, swill feeding was banned in China in October 2019... but it continues due to its economic advantage.

Again, they rely on the Chinese authorities: "*for imported products, there is a control at the border, it is more secure.*"

Our ladies couldn't name the best producers of pigs, but they gave us some of their preconceptions regarding the following countries:

- **The USA:** interviewees imagine vast spaces and therefore free-range pigs. "*The Americans are rich so the meat is of good quality since they can afford to apply very high quality standards*". "*But they mostly eat beef and chicken so they are good at breeding these animals*". Nevertheless: "*I saw on TV that in response to the US measures, China wants to cancel the purchase of several million yuan of pork, so the US is an exporter.*" Fears are that GMO feed is used in the USA, but also that the Americans keep the best meat for themselves and that they export the meat that doesn't meet their quality criteria.
- **South America:** this is the realm of beef, with very large, wild spaces. Cattle live here in liberty; they move a lot and are happy, so the product is more expensive.
- **England:** the English are polite, well educated, so they are nice to their pigs.
- **New Zealand** is very good at raising sheep.
- **The Japanese** are very strict on the quality of their products but they have no room to raise pigs.
- **In Canada** they have a lot of room and few people so the pig lives in freedom.
- **In Europe** the quality is not good because all their efforts are "*focused on migrants*". They do not have time to control their pig farms. They mostly eat beef.
- **In Spain** pigs eat acorns in the forests and the meat is good. There is Spanish ham.
- **In Germany** they like to eat pork. They consume dishes with whole hocks. Production is strictly controlled, it's the norm. All of Europe relies on German pig-breeding. Those who like to eat pigs raise them well.
- **In South Korea** they like BBQ ribs.

It is clear that these perceptions of the different national origins do not correspond to the reality of pork production ... but they really are what consumers believe. They must therefore be taken into account and leveraged in any future US pork marketing campaign.

6.5.3 THE SEGMENTATION & FUTURE OF DEMAND BY LIFESTYLE GROUPS

Methodological note:

The lifestyle demand segments below were initially constructed by Gira from the final question in each focus group session in which the moderator asked each interviewee to choose, from among a set of 15 pork product photos, the three products that they believed would grow most in the future, along with the three products that they expected to decline the most.

From these answers, we have been able to place each interviewee in one of 5 Lifestyle Groups (representing different demand segments).

From the speech of those interviewees making up each Lifestyle Group, we have then been able to determine the distinctive, optimum marketing mix – product, distribution, price, packaging and communication – relevant for each group. These indications are of great value for anyone wishing to sell pork to these Lifestyle Groups today, but also, taken together, they show the way future pork demand is likely to develop.

To underline the importance of the differences between these segments / Lifestyle Groups, we have given each one a name that summarizes its key characteristic.

The results are shown below. Each Lifestyle Group/demand segment is a separate potential target for sellers of pork; they should adapt their offer to the specific marketing mix of whichever segments they decide are the most advantageous ones for them.

Equally important in the context of this study's 10 and 20 year forecasting horizon, is the probable evolution of these demand segments in the future, and this is discussed under "Likely future development" at the end of the description of each demand segment below.

The 5 demand segments that result from our analyses are:

The "Strictly Traditional" consumer group

Definition: *my mother taught me how to cook and, like her, I buy all my meat on the covered market.*

The Strictly Traditional pork buyers and consumers in our focus groups are married women who reproduce the culinary model of their parents or even of their grandparents. They know how to cook and are happy to explain many recipes in detail.

They know the countryside where the peasants raise pigs and they know how to kill a pig. They favor small-scale breeding where the pig is not badly treated: "I *heard on TV that the meat of an animal that was maltreated was not good.*"

For this category of women, pork is a fundamental part of the daily diet and is, according to them, more than half of their protein intake, with fish in second place and eggs third.

They do not work so they can spend a long time preparing meals and the weekend is often when they spend the most time cooking and when they cook the largest quantities: *"I have the time to make stews with pigs' trotters or tails, and vermicelli or Chinese cabbage soups"*.

In this stable situation, this group cannot even imagine a major pork crisis. What could stop them eating pork at affordable prices? They rely totally on the authorities: *"I have great confidence in the Chinese authorities' controls."*

Products:

These ladies are knowledgeable enough to ask the butcher for a specific cut of meat. And they are unhappy if the butcher gives them another cut.

They choose large pieces like belly of pork or ribs that they then cut up themselves. At a pinch they may ask the butcher to cut it up but, in this case, they will insist on professional cutting with regular sized pieces, good bone alignment and *"no strange bits"*. They refuse that their piece of meat should be cut by a machine.

They know how to prepare traditional products such as pork trotters which, even for them, is long and difficult: *"we have to remove all the hairs"*.

When they cut the piece of meat themselves, one part is for immediate consumption and the other is for cooking later. The recipe has already been decided on for the latter piece and it is kept in the refrigerator.

They are not against fat; indeed they want pieces with a mixture of fat and lean. *"We must be able to see the fat"*. When they buy pallet of pork, the meat must be naturally lean. They are scared that low-fat pork may contain poison due to the utilization of Clenbuterol.

Freshness is the fundamental criterion of choice for them. The ideal is meat bought in the morning and consumed the same day, but this is not possible for two reasons: they buy large pieces, and to buy every day is too time-consuming.

The absolute requirement for freshness has the following consequences:

- They refuse frozen or thawed products.
- They feel that an imported product cannot be fresh because of the transport time.
- Pre-sliced meat may be spoiled.

- Even with guarantees of freshness, they take many health precautions:
- They wash the meat before cooking.
- They put the meat in boiling water to get the blood out.
- They cook the meat for a long time with high temperatures: *"it kills the microbes"*.

Distribution:

For fresh products, including pork, interviewees in this Lifestyle Group mainly buy at the covered market and they will preferably buy in the morning so as to have the best quality products.

They often go to the same butcher whose products they know.

They consider the butcher's recommendations worse than useless. *"You must never listen to the butcher because he's just trying to sell you a bad piece of meat."*

The supermarket is only visited as a distraction but almost never to buy fresh products. *"I do not go to the supermarket to buy food; we just go for a walk with the kids"*.

The main criticism of supermarkets is the lack of freshness. *"In supermarkets, everything is refrigerated, it's not very fresh", "the pig's trotters stay on the counter for a long time"*.

The other criticism of the supermarket is the lack of hygiene: *"in supermarkets, everyone touches the meat"*, while on the market: *"the seller forbids customers, even and especially children, to touch the merchandise "*.

The market is favored because it is in the morning that the butcher cuts the carcass of the pig slaughtered the day before. By noon, he has sold almost all the pieces; he sells what's left of the meat in the afternoon, and by the evening everything has gone.

Price:

The price is well known because the purchases are made frequently: *"at the market, the meat is sold 40 yuan per kilo in the morning and 36 yuan in the afternoon"*.

It seems that in this Lifestyle Group, the older our interviewees are, the more the prices are memorized and judged to be stationary.

The fact that prices are stationary and have been for some time is a major element of reassurance for these buyers, to the extent that, if prices were to rise sharply, they would find themselves in a state of disarray, unable to decide what to do.

Currently, even price promotions are worrying. For these ladies a promotion is just a clearance sale: *"it is to get rid of old meat that is not fresh."*

Packaging:

For them, there is an unbreakable rule: no packaging. *"I have never bought packaged meat."*

Packaging is:

A cheat: *"I have the impression that there is too much water in pork"*

Confinement of the meat: all that is closed-in is unhealthy: *"the packaging encloses the microbes and creates a soup of bugs". "It is enclosed as if in a kitchen that is never aired".*

An obstacle to being able to judge the quality of the meat: *"we cannot see it entirely". "We cannot smell whether the meat has a bad odor".*

Communication:

For them, the messages must guarantee the continuity of their culinary traditions and habits.

Likely future development:

This group will decline in importance due to the generation effect, as the transmission of this time-consuming and complicated culinary knowledge decreases more and more. Producing this type of cuisine is impossible if the lady works.⁴

This group of consumers is very likely to be severely shaken by an ASF crisis which will undermine their fundamental understanding of pork – its universality and its affordable price.

The "Less Traditional" consumer group

Definition: *I have forgotten quite a lot of what my mother taught me about cooking; I continue to buy at the covered market but I also visit the supermarket*

⁴ Their beliefs about packaged meat will also be challenged by the growing retail offer following the move to more centralized slaughter and cutting which ASF is accelerating. By 2040 the covered markets may or may not still be around, but if they do survive, they will certainly be selling pre-packed meat.

The Less Traditional Lifestyle Group are often married with children. The arrival of their offspring obliges them to cook in a "serious" way. They do not work, they are housewives, and this allows them to devote time to cooking.

What sets them apart from the previous Lifestyle Group is that, although they have followed the traditional pattern after marriage, and especially after the arrival of their first child, of stopping work and staying at home, nonetheless they have not received the full culinary education from their mothers that would have allowed them to be "Strictly Traditional".

"Previously I lived at my mother-in-law's house and she cooked for us. But for the last few months we have had our own house and I have recently been doing the cooking myself. My husband cooks but he comes back late during the week so I cook."

Often, these ladies doubt their own culinary ability:

*"My mother is very good at sour ribs but I never succeed, I don't know why."
"I tell my child that I am going to prepare a new dish and he tells me that I will not succeed so I give up."*

This category of women uses pork less than the previous group. They talk more often about beef.

Nevertheless, pork is important: *"we grew up with pork, we've been eating pork since we were very small, and it is adapted to Chinese cooking. We can eat beef but I always come back to pork"*.

These people are unsure of themselves; they ask a lot of questions:

At home: "Before going shopping, I think about what we are going to eat. I look at what's left in the kitchen and I make a shopping list and then I think of the details of my shopping trip."

In the store: "I tell the butcher what I want it for and he suggests a cut to me". Although they remain traditional in outlook, they may try new recipes even if they are not convinced by the result: *"I tried to make a carp with cumin"*.

They are sensitive to the latest ideas: *"today they recommend we should eat white meat, that is to say carp, poultry, fish, seafood and crab"*.

In the eventuality of an ASF crisis, they will adapt to it better than the previous group. They are considering substituting other meat, particularly beef.

They will try to choose a branded or store- branded product (see Distribution below) that guarantees the safety of the pork: "the specialist professionals must control the diseases and put traceability labels on the pig's ear and a mark on the skin; it is a certificate of good health."

Note that for this Lifestyle Group, trust has passed from the "authorities" of the Strictly Traditional ladies to the branded "producer/retailer" here.

Products:

As we have seen, the choice of products is premeditated and depends on:

The time it takes to prepare: *"If I have time, I buy pork belly, otherwise I buy ground meat; in this case, I ask the butcher to mince the meat for me and to make meatballs".*

The intended use: *"I know what I want to make and I ask for a product that's good for that".*

They want a balance between lean meat for health and fat for taste. If they have to, they will melt the fat to make lard. In any case, the fat must not be dominant.

They ask the butcher to cut the meat himself because *"I don't know how to use a knife well".*

Faced with an imported product, the attitude is to test it without any prejudices.

They would like to eat pork from black pigs but the price is prohibitive. They only eat pig's trotters rarely.

Distribution:

The ladies in this Lifestyle Group buy their meat predominantly on the covered market, but they prefer to buy from stalls there that only sell the products of a given slaughterhouse under its own name or brand. They believe that the quality is better from these individual slaughterer-owned market outlets than from the supermarket.

They may even buy from temporary street markets: *"Just down from where I live there are peasants who come to town early in the morning. By 11 am, everything has been sold, but it is mostly poultry and rabbits.*

Nevertheless, they visit supermarkets on weekends, where they mainly buy meat from the counter service butcher. A lady will ask the butcher to *"suggest a tender part or a good piece of meat".* The purchase is more spontaneous than with the Strictly Traditional Lifestyle Group.

Our interviewees in this Lifestyle Group complain that pork rapidly smells bad. They would like it to keep longer but they are not yet ready to buy prepacked meat.

But on the other hand, they complain that their visits to the market are so frequent because they insist on having the freshest meat.

The need for freshness makes it unthinkable that these ladies should purchase pork on the internet where nothing seems fresh – neither the storage, nor the logistics, nor the time the meat takes to arrive at the buyer's home.

Price:

The price is well known: 40 yuan per kilo on the covered market.

For the same product, the ladies in this Lifestyle Group say the price is more expensive at the supermarket: 60 yuan per kilo. In the case of one lady, she had read the price of 60 yuan on the photos of the packaged product that our moderator had shown to the interviewees. The price difference only confirmed to her how right she was to buy on the covered market.

These ladies state that on the covered market the prices are stable and they are considered affordable.

If prices were to rise, they say that they will reduce their consumption of pork.

If they consider the freshness to be OK, they will be interested by the following types of price promotion:

- Reducing the normal price: "less x%",
- Accompanying gifts: a pack of spices to go with the meat,
- Extra weight, but this obliges them to store the extra meat in the freezer.

Packaging:

Our ladies say they are basically negative about packaging, but above all they want to remove any fear of a lack of freshness: "*on this package, they indicate the date of printing of the label; it is really not enough*".

They remain traditional, but they are less competent than the Strictly Traditional group of ladies: "*I avoid packaging because I do not know how to choose the pieces*". Luckily the butcher is there to advise.

Communication:

On the covered market, the brand or the slaughterhouse name represents a guarantee that reassures them.

Since they are unsure of themselves, these ladies require a lot of information at the point of sale: recipes, cooking tips, Q codes and even "*a medical certificate for the butcher who touches the meat*".

They also use the internet: they often connect to blogs (e.g. TIKTAK) because there are a lot of recipes and, above all, they can see the finished, cooked dish. The visual aspect is very important.

They also read the comments of other internet users. Since they have lost the knowledge of their mothers and grandmothers, the internet becomes their main source of inspiration and it will certainly play an important role for them in their response to the ASF crisis. But that doesn't mean they'll buy their raw meat there.

Likely future development:

Unlike the previous Lifestyle Group, this group is unstable and a good number of its members will migrate to the following groups. The members of this group are not proud of themselves.

The "Traditional Convenience" Lifestyle Group

Definition: *I continue to cook as I learned to do, but I want things to be simpler, faster; I buy my meat everywhere.*

Traditional Convenience ladies are those who still have knowledge of traditional Chinese cooking but who feel that the preparation time is really too long. They recognize the benefits of convenience products, primarily pre-sliced and ground meat.

But they also see an opportunity to vary their meals: "*I do not want to always eat the same thing*". They are looking for ideas that increase the pleasure of eating. For example, one lady tried a Hong Kong dish (pork ribs with pressed garlic and spices). The only difficulty she had was to find the right packet of spices ready for use.

For this Lifestyle Group, pork is just one meat among others. Some say they have reduced the amount of pork consumed in favor of beef for taste reasons. For them, the decline in the taste of pork is linked to the industrialization of production: "*a pig can live much older but we kill it young to speed up production; it is fatter than before because we give it hormones to make it grow quicker*".

In the event that prices should rise significantly because of ASF, substitution by other proteins will be rapid: "*instead, we will eat beef, poultry, rabbit*".

To underline what will happen in this Lifestyle Group, one of them said: *"I have already modified my recipes; we can cut the pieces of beef like we do pork and cook it the same way. I have also replaced pork with rabbit and I asked the butcher to debone the rabbit"*.

Products:

The ladies in this Lifestyle Group are not interested in further processed products because they are still in a world of traditional cooking, but they are happy to buy products that avoid the long preparation time when getting the meal ready: they will buy raw meat already cut into small slices or ground meat. Sometimes they need very finely cut sticks of pork.

It's not always that the ladies don't *know* how to prepare the meat correctly. Indeed, one of them told us that she knows how to use a knife well: *"when I cut the meat myself, it is well cut"*. They say it's simply that they don't want to waste their time doing it.

Indeed, if the preparation and cooking are felt to take too long, then our ladies may simply not buy the raw product at all: *"I do not cook pig's trotters; if we do eat it, I buy it ready prepared or we go to a restaurant"*.

Distribution:

This group of ladies frequents all types of retail channels

The covered market, where they regret that they spend too much time buying vegetables. They always go to the same butcher for rapidity's sake and they usually buy cuts of meat. The choice of meat is decided in advance and the act of shopping is perceived as a chore.

The supermarket is the weekend visit and it's a pleasure. The purchase is spontaneous *"when I go to the supermarket, I have no idea in advance what I'm going to buy. I look at the meat and if I think it's good, I'll buy it."* Our ladies buy packaged pork here.

They trust the supermarket since there is a lot of choice and a rapid turnover of products. *"In the supermarket, the meat is more standardized than the on the covered market thanks to the brands"*.

The internet: buying here is exciting; our ladies will test a product here especially if there are promotions. They may also be attracted by new products. But the fundamental brake on buying here remains always the fear of a lack of freshness.

Price:

The price of pork is less well known to these ladies than to those in the previous Lifestyle Groups, and it is generally said to be 52 yuan per kilo.

They are starting to recognize that in the supermarket, prices are more transparent because they can see the price and weight of each product printed on the packaging: *"at the market, if I ask the butcher for 20 yuan of meat, he will give me a piece that costs 30 yuan. They force you to buy it and it means that there are leftovers that we cannot finish.* Self-service packaging means shoppers can buy a product at a specific price for a meal: *"I spend 5 to 6 yuan for a meal but I have to take care that the piece is not too small".*

The price of packaged products is recognized to be higher, but it is the price for the service rendered. Our interviewees explain it as the price of the workforce and the price of the packing itself, but they also accept a price difference because the product is already prepared, it is better presented, and *"at home I spend less time".*

As we have seen, all promotions are welcome.

Packaging:

This Lifestyle Group of ladies is beginning to recognize the value of packaging; they appreciate the:

Cleanliness: *"in the summer, the covered market is hot and there are plenty of flies, it's not clean; the supermarket is cool and the packaged meat is protected".*

Security: *"there is a quality control before putting on the shelf"*

Speed: *"at the market or at the service counter in the supermarket, you have to wait and be patient; self-service is fast".*

Ease of choice: *"it's easier to choose your meat when it's packaged because you can see it; at the covered market, I don't know what to order".*

Nevertheless, they ensure that the meat is consumed quickly after purchase.

But there always remains a doubt about the honesty of the retailer since he might change the best-by dates.

Communication:

The package allows manufacturers and retailers to communicate a lot of information on the good health of the animal, the fat content of the meat etc.

Likely future development:

This Lifestyle Group is going to grow strongly because they are looking for solutions and they are giving themselves the means to find these solutions.

For example, if there is an ASF scandal, they will find a lot of alternative, non pork solutions.

The "Modern Convenience" Lifestyle Group

Definition: *I do not want to spend time preparing the meal; the pleasure is when it's quick and when I find what I want at the supermarket and on the internet.*

Modern Convenience lifestylers do not like to cook, but they are obliged to because of their children. *"I do not enjoy cooking and I need simple things to prepare." "I refuse to think too much about cooking." "For me, preparing, peeling and washing are too complicated."*

They are working women.

Nevertheless, the presence of a child requires them to be attentive to what's in the products they buy: *"for the health of my children, I look at the composition and if there is too much rubbish in the yogurt, then I do not buy it not because my child is too young (3 years old).*

Their problem is: *"I cook slowly and it takes 2 hours, it's very long"*. And they do not want the smell of cooking in the house.

Pork is no more valorized by this consumer group than another food product.

Sometimes they tell us: *"I think more and more about fish"*. And it is difficult to find the lean pork that she must have because *"my husband plays sport"*.

These interviewees seem more sensitive to animal welfare, wishing the pig a peaceful life and a peaceful death. *"If the animal dies in pain, it releases toxins harmful to human health"*.

They have a positive appreciation of foreign products: *"we think pig breeding abroad is cleaner, better organized, healthy and bright; in China, it's ugly, it's dark, it's noisy and badly organized."*

For these people, an ASF pork crisis will be just another food scandal, but they will stop all consumption of pork.

Products:

The products chosen by the ladies in this Lifestyle Group are:

Easy to prepare: *"to go quickly, I buy pigs' ears that are already marinated; it's easy to cook"*. Pork is bought in strips or chopped

Exotic: *"I cook French bread"*. *"I tried Thai dishes"*

Colorful: the lady looks closely at the meat's color, but her attention is less focused on freshness than on the fear that the meat will be hard: *"if the meat is too white, I'm afraid it will be hard after cooking, so I choose darker meat and I have the impression that the meat will be tender"*.

New: *"If there is a new product entering the market, I'll try it; if it's not a good experience, I won't buy it again."*

Distribution:

These ladies do not go to the covered market; it takes too long and it's tedious. They also complain that on the market:

The sellers don't care: *"there is no one to listen to my complaint; no employee takes responsibility"*.

The prices are fixed on the basis of how much they think a given customer will pay: *"the prices are not indicated; you have to ask the seller and he'll tell you the price he wants"*.

Quality is not guaranteed: *"I am told to go to the stall where there is a long line of little grannies; the meat must be good, but are we sure we will be served as well as they are?"*

These ladies buy their pork at the supermarket, for the large majority. That is where they find the choice they want, can complain in the case of defective products, see that there are serious checks and good quality, and find clearly indicated prices.

They value the brands they buy and are in turn valorized by the brand: *"at Young Hui, I feel that the meat is very beautiful; it gives the impression of being good quality fresh meat"*.

On the internet, frequently. They have no problem buying whatever they choose. They mention Tao Bao (Alibaba) and Jing Dong (JD.com) or Hemaquan in this context.

They appreciate the attractive presentation of the products on the net, but the price is high: *"pork is sold more than 60 yuan per kilo"*.

When the product is delivered, our ladies are not disappointed: "the products we receive are well presented and well cut with a good distribution between fat and lean; they are well designed products." They can choose the exact weight they want, for example: "100g is the quantity for a meal" and they can see the price for that weight in advance.

The products are ready to use: "I buy pork belly on the internet; it is cut into large cubes; when I get it, I can put it in the pan as it is, with salt".

For these ladies, the freshness of the meat is guaranteed: "if I buy the meat in the morning at a store and I take it to work for the whole day, it will not be fresh in the evening, so I buy it on the internet. I order it in the afternoon and as soon as I go home, I phone them and it is delivered in ½ hour".

They buy both chilled and frozen meat.

Price:

These ladies are happy to pay high prices for the service rendered but, in return, they also happily shop around for any promotions. *"I go to Ito Yokado (a Japanese chain) because there are many special offers. Sometimes there's 40% off."*

Packaging:

These ladies cannot imagine meat being sold without packaging. They favor individual portions: one product for one meal, which also allows the refrigerator or the freezer to remain clean.

Communication:

They like reading information about the products as long as it is positive, fun and it does not make them feel guilty about the non-traditional nature of what they are buying.

They look at the internet to find products that are even easier, even readier to eat: *"on blogs, I look for recipes for lazy people; I found an automatic pan for cooking rice"*.

Likely future development:

This group will grow as more women with children go back to work, and as today's younger, even more internet savvy generations start families.

The "Totally Modern" consumer Lifestyle Group

Definition: *I do not know how to cook and even the shopping must be quick.*

The Totally Modern lifestyle ladies are working, single or married women. In our focus groups they did not have children.

Their main constraint is time because they are used to working overtime.

On the other hand, they have good incomes and the free time they do have is devoted to modern activities: gym, travel, watching foreign TV programs, reading and listening to music. Even taking care of the dog: *"I prepared pork meatballs with carrots and Chinese cabbage for my dog."*

The time devoted to preparing and cooking meals is greatly reduced: *"during the week I do not have the time and I take just 30 minutes for the 3 meals"*.

Taste is not essential in the choice of products: *"when I'm at home, I prefer dishes with not too much taste and not too much meat, no soy sauce, not too salty"*.

We are a long way away from traditional Chinese cuisine. Our ladies talk about snacking.

Unlike other groups, pork is not valorized at all: *"eating pork makes you fat; I don't eat pork when I'm on a diet"*.

Products:

These ladies favor ready-to-eat products and prepared meals: *"I ordered a ready meal to be delivered to the apartment and they gave me a free can of Coca Cola with it. But I do not drink it so I used it to cook chicken legs."*

They say that steak is easy and quick to prepare, but since it is not eaten with chopsticks, it means they also have knives and forks at home.

Distribution:

These ladies mainly buy on the internet. But they will also go to the supermarket in order to stock up. In fact, they transform their refrigerator or freezer into a home store, so they can choose what to eat at the last moment: *"I buy what I want and I store it randomly; then I choose what I want from the fridge later, depending on how I feel."*

Price:

Their income level allows them not to care about the price, in the knowledge that food is not a significant part of their budget.

Packaging:

All meat is bought packed; it can't be otherwise since they want individual portions.

Communication:

They will be open to messages about a modern, cosmopolitan life, free from all tradition.

Likely future development:

This is currently only a small group. Their lifestyle, if the national economy allows it to develop, will do so mainly via social networks.

They already show some striking similarities to young, professional middle-class US consumers.

Even by 2040 this segment will not represent the majority of the Chinese market, but it will have become considerably more important and will clearly indicate the development trend.

An ASF crisis will not interest or affect them.

7) THE MAIN FORCES FOR CHANGE & TRENDS IN THE CHINESE PORK MARKET TO 2040

OVERVIEW:

As part of the process of understanding the developments likely to take place in the Chinese pork industry to 2040, Gira has examined an extensive range of “Forces for Change”.

We have narrowed this down to 53 relevant Forces for Change that will affect pork consumption through 2040. There is some overlap, but this reflects the nature of these drivers as they will impact at various points along the supply chain.

These are the factors expected to have an impact on Chinese pork supply and demand, and hence on consumption, over the next 20 years. Understanding the impact of these Forces for change and the timing of their influence on the market is a key step in interpreting and benefiting from the developments of the Chinese pork market over the next 5, 10 and 20 years.

Pork consumption has been used here as the “view point” or base from which we measure the individual forces for change. Something that increases pork consumption will be in blue in what follows, even if such a force that is "good" for domestic production might at the same time be "bad" (negative) for imports.

To gain a better perception of the relevance of each one of the Forces for Change assessed, Gira gave each one a relative weighting:

- This was done by scoring them on a scale between 1 and 5 for the *likelihood* of the Force actually happening (1 = low probability to 5 = highly likely).
- and a score of 1 to 5 for the *strength or importance* of the impact it would have on the pork consumption if it did happen (1 = minor to 5 = major).
The scores for each of the above were derived from a common consensus of the Gira consultants involved in the study, based on their research and on our operator and expert interviews.
- These 2 scores were then multiplied together to give a final score for each Force for Change of between 1 and 25.

The scores for the Forces for Change were also separated between those that will have a positive and those with a negative future impact on pork consumption. The scores are shown alongside the title throughout the chapter – in **red** for forces leading to a **decline** in consumption, in **blue** for those that should **increase** it.

The individual Forces for Change, all 53 of them, were then grouped together within the Categories to which they logically belong, and the aggregate scores for each Category was calculated.

Thus, for example, our experts gave a score (importance x probability) of +16 to Rate of urbanization, indicating that it will have a moderate impact on increasing future pork consumption.

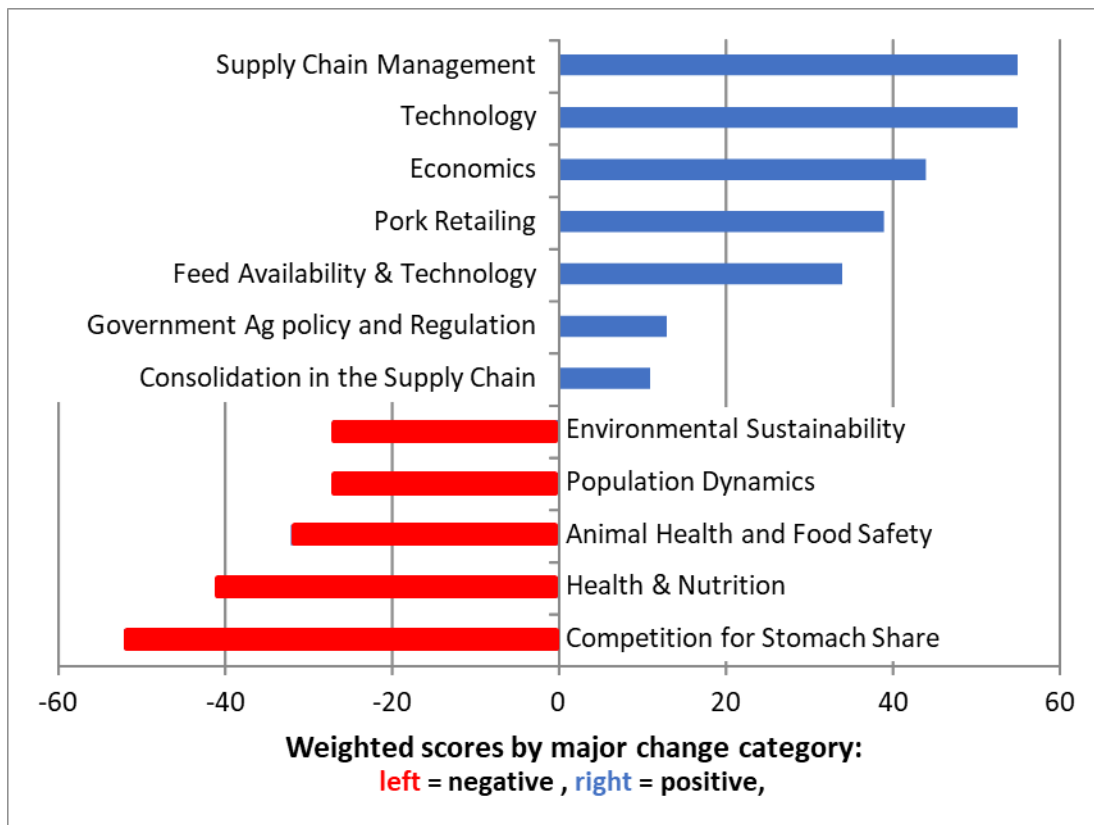
Rate of urbanization was then grouped together with Declining population, Household sizes and Ageing population to form the Category Population Dynamics. The aggregate score for this Category is -27, indicating that population changes overall, and in spite of Urbanization being positive, will be a significant negative force in long-term pork consumption.

Our aim here was to judge the impact on the overall pork market of each Force for Change, and to illustrate the relative strength (importance) of each one.

KEY CONCLUSIONS OF FORCES FOR CHANGE

The resulting scores aggregated by Category are significant in themselves, allowing us to see at a glance on the figure below the relative importance of what will be the main Forces for change and the biggest issues facing the Chinese pork chain over our time horizon.

Figure 7.1: Key Categories of Forces for Change – weighted scores



In a market that has seen 20 years of strong growth, it is a stark contrast that the next 20 years will see pork having to fight hard to defend its market.

It is notable that of the 12 Categories of Forces for change, the strongest forces that will reduce consumption are:

- *Competition for Stomach Share* (-52): consumers will increasingly be able to afford other meats, thanks to increased incomes and to increased availability. Pork will lose market share primarily to chicken and fish.
- *Health and Nutrition* (-41): suggesting that change in perceptions around health will influence food choices, and importantly, lead to a reduction in pork consumption. In a market of 1.3 bio people small changes to diet make a very big difference in terms of total meat consumption.

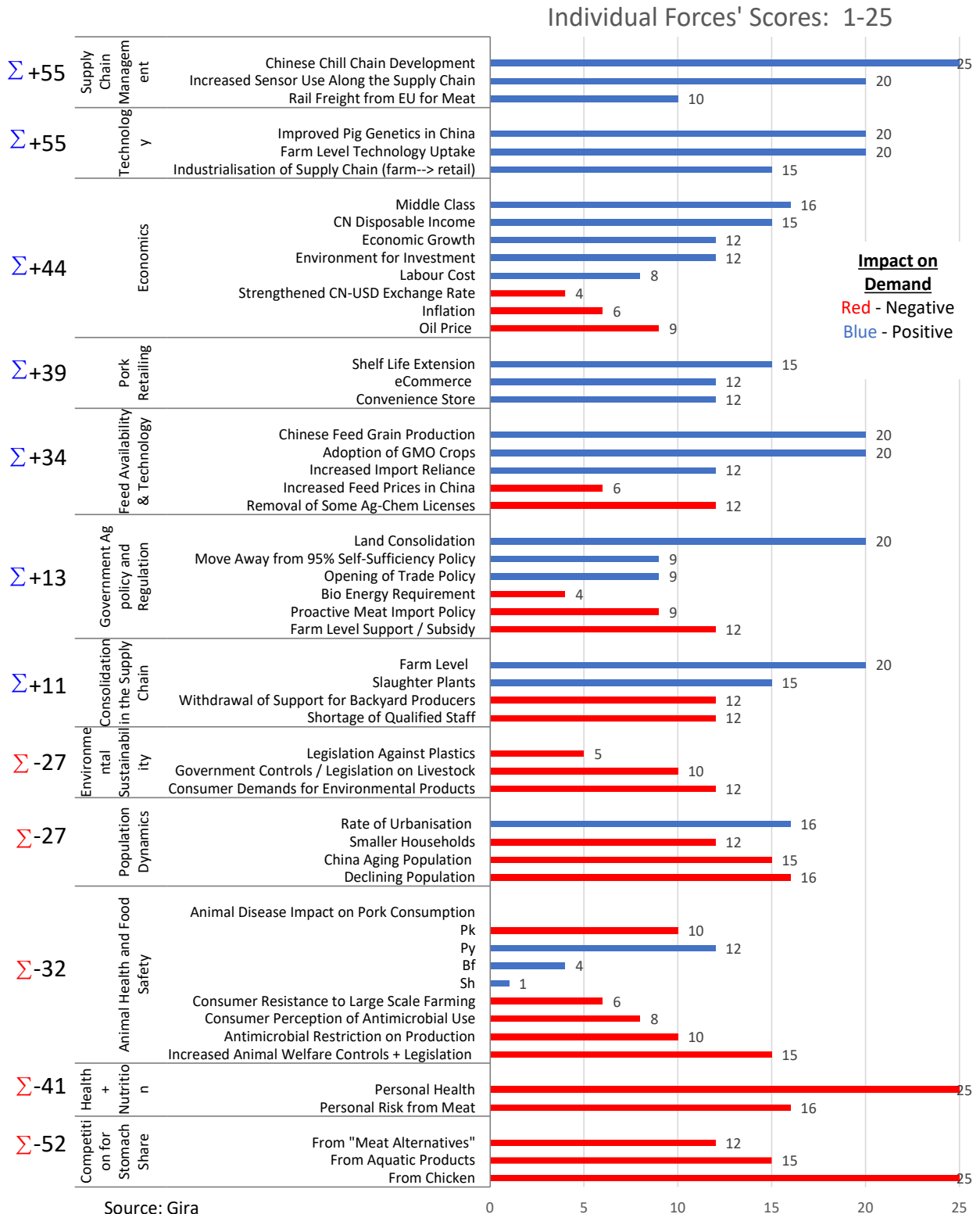
But it's not all negative, and there are strong signals that will slow the decline in overall consumption in the long term. Most notable among these are:

- *Technology* (+55): With gains at all stages of the supply chain helping to reduce wastage, improve efficiency and ultimately control pork prices. It will also help reduce food scares, and foster public confidence in the meat supply chain. China's rebuilding efforts post-ASF will allow the industry to incorporate the latest technology in the process, leaping ahead of today's position.
- *Supply Chain Management* (also +55): closely linked with Technology, and delivering many similar gains. The removal of the backyard farms, and integration and ultimately consolidation along the supply chain will deliver cost reductions that will be passed through to the consumer, thus stimulating consumption... even if probably at the loss of unit margins along the chain.

Ultimately the number and relative strength, positive and negative, of the Forces for Change point to a market in a state of rapid transition, which has only been accelerated by the ASF crisis.

These Forces will shape the outlook over the next 20 years, with the biggest changes driven by investments probably to be made in the next 5 years.

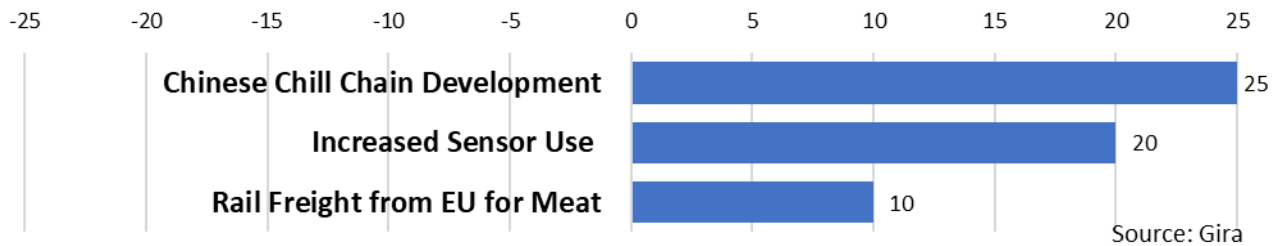
Figure 7.2: Key Forces for Change on Chinese Pork Consumption to 2040: grouped by Category, with each Category's total (Σ)



We will now look in detail at each of the Forces for Change. They are presented below within their respective Categories and in the order that the Categories appear on Figures 7.1 and 7.2 above:

A: SUPPLY CHAIN MANAGEMENT:

Figure 7.3: Supply Chain Management Ranking



CHINESE CHILL CHAIN DEVELOPMENT (25)

Significant investment in developing a robust and versatile chill chain is underway in China. Whilst this already exists for the leading tier 1 cities, it is less developed in tiers 2 and 3, where much of the pork is still supplied as hot half carcasses on the day of slaughter, even if from a large slaughter plant.

ASF will be a significant accelerator to a trend already in motion. And there will be a significant change in the supply structure by 2030 to connect new pig production regions with major markets. In the initial phase this will still focus on half carcasses, delivered to wholesale points around the major cities.

Figure 7.4: Hema's "One Day Fresh" Brand



Explanation: Hema's "1 Day Fresh" brand has a different number for each day of the week. Products are industrially packed, but can only be sold on the right day. The idea is to be clear to skeptical consumers about the quality and freshness of the products.

By 2040 this supply system will have reached all major urban conurbations in China, allowing for rapid supply of meat via modern retail and eCommerce. The system will be far more focused on industrially retail packed cuts, and the half carcass trade will fade rapidly after 2030. The cost of developing this is being born by modern retail and meat companies, often in partnership.

Major components already exist (cold storage, highways, railways) but the soft skills needed to manipulate stock and read market fluctuations still need considerable investment.

INCREASED SENSOR USE ALONG THE SUPPLY CHAIN (20)

Although covered in other areas of modernization, it is worth reiterating that a multitude of low-cost sensors is being embedded in China's new chill chain, from slaughter plant to retail outlet. The fact that much of this infrastructure is being rebuilt in the wake of ASF and the internet connectivity that links them will make a significant improvement to supply chain management.

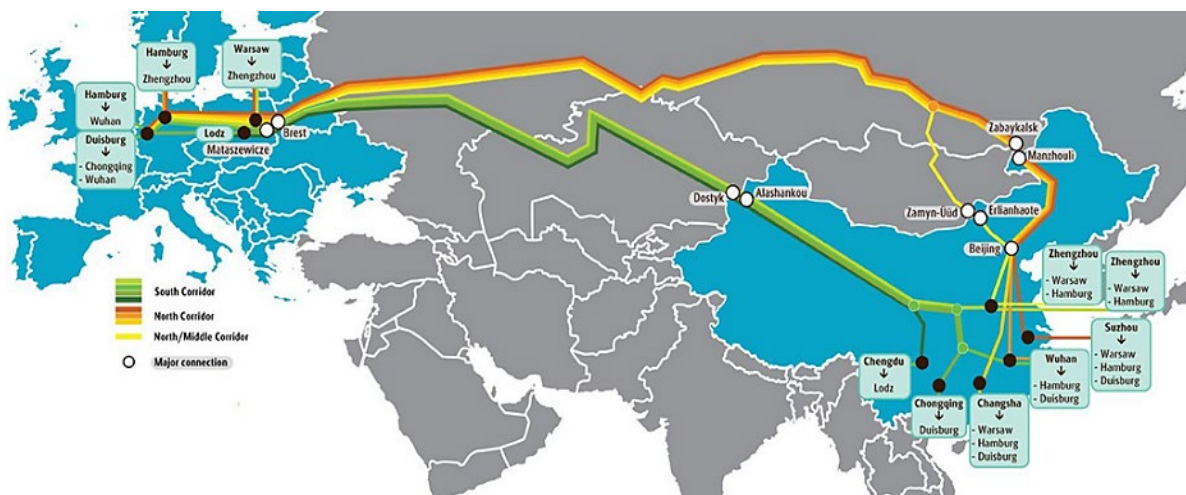
Whilst these sensors are already being trialed, the reach of their insight is still limited to the newest supply chains, and therefore they will only have a limited impact by 2025. From 2025-30 the spread of these networks and the understanding on how to manipulate them and use the insights gained will improve. The biggest gains are likely to come between 2030-40 as these networks become truly universal in China, allowing for highly efficient stock management and servicing of eCommerce orders. They will help to significantly reduce costs and ultimately to promote pork consumption.

RAIL FREIGHT FROM THE EU FOR MEAT (10)

China’s global resource strategy is a reality under the much discussed “1 Belt 1 Road” policy. An element of this is the rail link between China and Europe, allowing (with some gauge changes) a rail shipment to move from Hamburg (Germany) to Chengdu in 15-20 days (in theory 8 days, but not in reality yet).

An attractive idea for the future for short shelf life products. This system operates today for shelf stable products, and saves considerable time verses sea freight. Cost-wise it is cheaper than air freight and whilst normally more expensive than sea freight, but with the subsidies available to Chinese companies it is cheaper than sea freight from Europe.

Figure 7.5: China EU Rail Link



But there are issues, and very few chilled or frozen shipments have been made from Europe to China via rail so far. Notably:

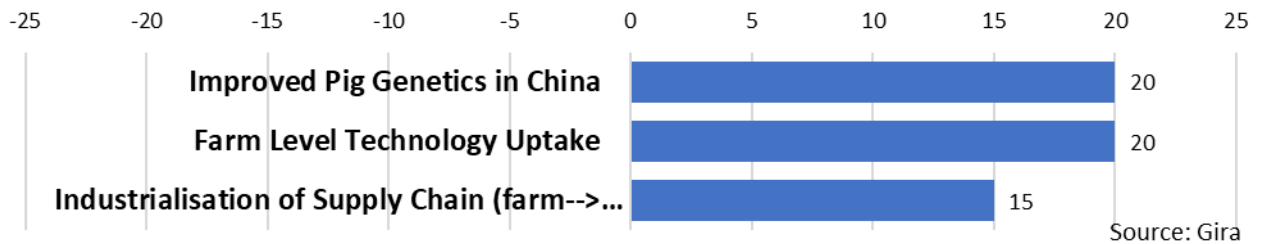
- Russia will not allow European pork to transit Russia by rail, due to ASF in the EU!
- Technical difficulties of long-range rail freight – currently including maintenance of reefer units.

These problems will block any significant growth to 2025 in pork transiting by rail, but the technical issues should be overcome between 2025-30, although the Russian issue will likely remain.

Between 2030 and 2040, it is probable that the Russian transit question will be resolved, or a way around may be found (through Turkey), allowing chilled pork exports by rail from the EU to China. It will have a positive effect on demand in China, with the EU able to focus specific cuts into the market.

B: TECHNOLOGY IN THE PIG SUPPLY CHAIN:

Figure 7.6: Technology in the Supply Chain Ranking



IMPROVED PIG GENETICS IN CHINA (20)

In 2018 modern pig genetics were increasingly available across China, although far from the normal, with local crosses more common as they fare better under poor backyard management. ASF has hit the breeding herd hard, but it has had a bigger impact on the less formal sectors, clearing out breeding stock, accelerating a process of modernization that was already underway. Replacement breeding stock will be a big part of the rebuilding effort, imported from the EU and US. Producers will increasingly be focusing on improved genetic performance as this will be more visible in the new large-scale integrations.

Notable gains will come in piglets per sow, daily live weight gain and FCR, but the industry will need to learn the soft skills needed to maximize potential of these high-performance breeds. This will slow the development curve.

The period to 2030 will benefit from the biggest change in genetic performance, as the weaker genetics of the backyard are removed, and fresh genetics are imported. This will provide a sharp step up in performance.

The period 2030 to 2040 will still see gains in genetic performance, but these will be more incremental across a range of performance measures. This will be an essential part of maximizing returns on the new large-scale farms.

The impact will be improved efficiency and lower cost pork, but maybe at the expense of traits that traditional consumers valued (taste, smell, texture). Overall it will have a positive effect on production costs and therefore on consumption.

FARM LEVEL TECHNOLOGY UPTAKE (20)

New large-scale pig farming enterprises are looking to optimize their new farms with state-of-the-art technology. The drive for technology is both to improve efficiency and to differentiate themselves in the market, with traceability and consumer assurance important measures.

Building new large-scale farms today, in the wake of ASF, with little infrastructure in place means that they can start from a position of optimization for the future. There are a multitude of technologies used here, but underlying it all is the fact that sensor technology (cameras, thermometers, ID readers...) has become very low cost. But learning to understand and leverage the information obtained may be more complicated than operating it!

There is a clear expectation that this will improve efficiency, reduce waste and mismanagement, and lead to greater control over costs... all positive for consumers. There is a clear step change (as in genetics), with the removal of backyard production (basic and very traditional) a major contributor.

The biggest gains as with genetics will come in the period to 2030, as new farms are built, and mega investments come to farming in China. Post 2030 gains will continue as implanted technology is better utilized, but it won't see the step change currently underway.

INDUSTRIALIZATION OF SUPPLY CHAIN (FARM TO RETAIL) (15)

The drive for modernization and large-scale production is moving farming away from consumers (already in process before ASF, but now accelerated). This will necessitate the development of new slaughter plants (in the new pig producing regions) and also the supply chain to move chilled pork from slaughter plants to the city depots and on into retail.

There are a range of logistics efforts being developed within China to cater for this need and also for the eCommerce supply channel. These will be fine-tuned over the next decade. But the old wet market supply system will still exist in the midterm, supplied from modern slaughter plants with hot half carcasses initially, then chilled sub-primers and eventually packaged meat.

From 2030 to 2040 it can be expected that modern supply channels will be well established, having displaced the local kill and wet market model that will be fading strongly from 2025-30.

The impact on demand will be positive, although not smooth, with the modern supply chain and industrialization ensuring supply at lower cost, and capable of feeding imported pork into the domestic market alongside local products. It will be crucial here to minimize food safety problems and to convince consumers that products are safe.

Figure 7.7: Carrefour Beijing Supply Chain Assurance – June 2019



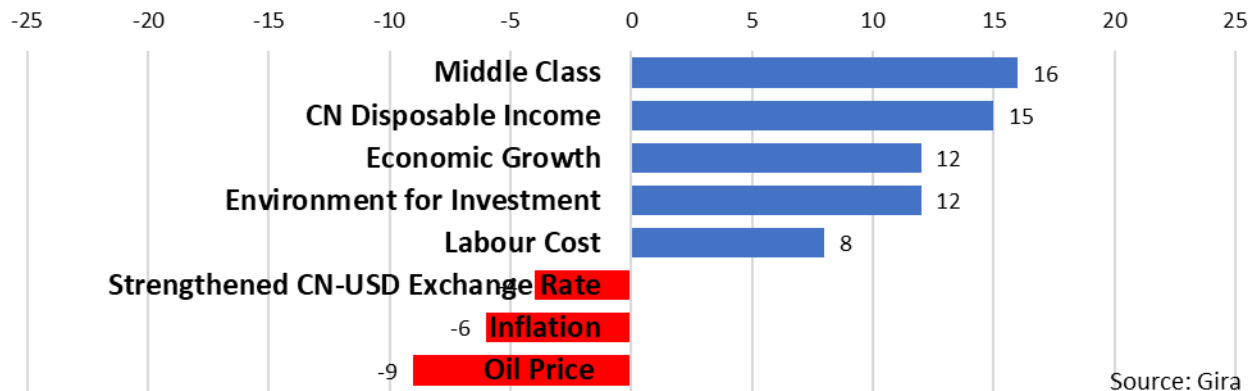
C: ECONOMICS:

Table 7.1: Chinese Economic Assumptions – a Reminder

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018e	2025f	2030	2040	CAGR		
																25/18	30/25	40/30
Real GDP change (% p.a.)	+14.20	+9.60	+9.20	+10.61	+9.50	+7.90	+7.80	+7.30	+6.90	+6.59	+6.86	+6.60	+5.40	+5.00	+3.04			
PPP GDP (USD per cap.)	6,821	7,583	8,303	9,252	10,290	11,252	12,265	13,327	14,157	15,417	16,696	18,120	26,000	31,600	44,000	+5.3%	+4.0%	+3.4%
Average Inflation (% p.a.)	+4.80	+5.90	-0.70	+3.30	+5.40	+2.65	+2.62	+1.99	+1.44	+2.08	+1.56	+2.19	+3.00	+2.50	+2.00	+4.6%	-3.6%	-2.2%
Exchange Rate (CNY/USD,ave.)	7.61	6.95	6.83	6.77	6.46	6.31	6.20	6.14	6.23	6.60	6.76	6.85	6.90	6.80	6.80	+0.1%	-0.3%	...
Unemployment Rate (%)	4.0	4.2	4.3	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.9	4.0	4.1	4.2	4.5	+0.4%	+0.5%	+0.7%
Population (mio head)	1,321.3	1,328.0	1,334.5	1,340.9	1,347.4	1,354.0	1,360.7	1,367.8	1,373.5	1,379.0	1,390.1	1,397.0	1,434.0	1,447.0	1,424.9	+0.4%	+0.2%	-0.2%

Source: Gira compilations, estimates and forecasts based on; OECD, IMF and World Data Bank

Figure 7.8: Economics Ranking

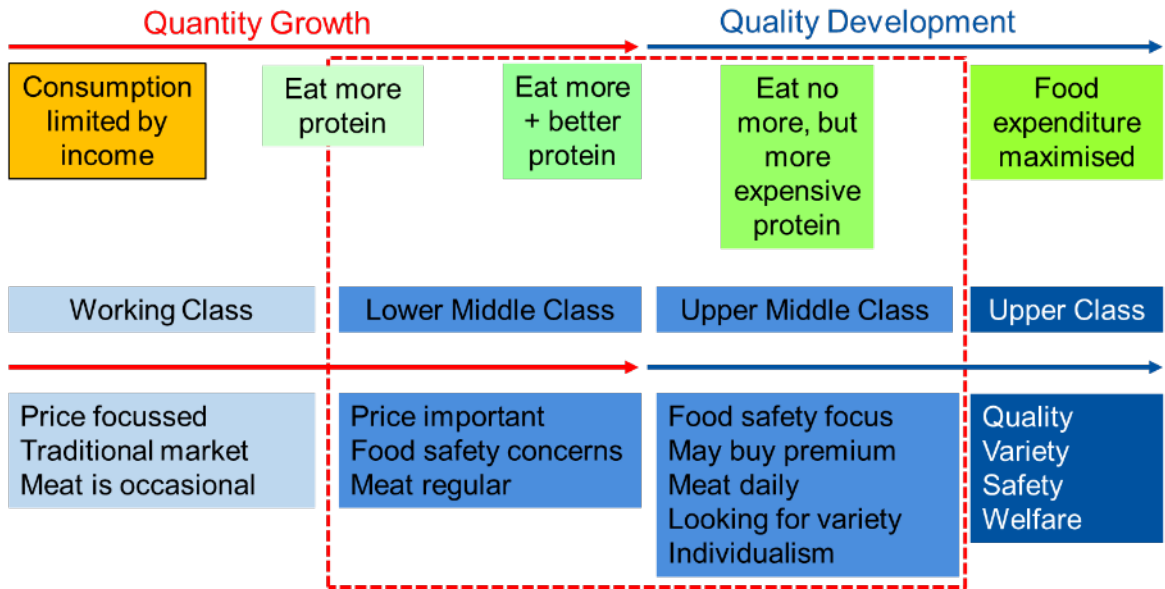


Source: Gira

MIDDLE CLASS (16)

The description as "middle class" is a simplified way to describe the middle-income bracket, but is poorly defined in most countries. In the meat context in China we are specifically considering the effect that income has on consumer purchase decisions.

Figure 7.9: Impact of Class on Meat Purchase



A growing middle class is linked to wage growth, as well as to improved education. It is seen widely as a market for increased meat consumption, as well as leading to an increase in sales through modern channels. China's Lower middle class is already significant, and this is driving changes in meat buying habits; but in the phase to 2025 there will be further development of the Upper middle class. This will greatly increase by 2030, significantly changing the priorities of the household meat buyer. The "stories" that surround the meat will become more important, as will factors of its consumption that reflect on lifestyle.

The outlook to 2040 is for strong growth in China's already large middle class, further stimulating demand for meat, and in particular for further growth of the Upper middle class. It will also have a strong influence on where the consumer shops.

The caveat for pork consumption growth is that some consumers will look to diversify their protein intake and expand their consumption of other meats, limiting the potential upside for pork. The upside is that Chinese middle-class consumers will start to look for differentiated pork, which may be imported, but it will also focus on production systems, such as antibiotic free (currently seen in eggs), or black pigs.

DISPOSABLE INCOME (15)

A significant factor associated with the growing middle class, and driven by increased wages, is rising disposable incomes. It is a key driver of increased meat consumption (along with availability), and is the key factor in the previous figure.

Growth in disposable incomes will, however, be tempered by inflationary pressure. The impact of increased disposable income on meat consumption is nuanced. Higher income individuals look to buy more differentiated meat products (free range, organic, or premium brands), but not necessarily more in volume terms, whilst low income households will buy more meat. But aggregated out, this is expected to have a positive effect on meat and pork demand in China.

The biggest gains in volume terms for pork (and meat more generally) will come in 2018-30, as disposable income growth is still in the bracket where increased income leads to increased consumption.

Between 2030-40 disposable income growth will have a reduced volume impact on pork consumption as volume demand is saturated (especially in the Upper Middle and Upper Classes). Increased income will instead be spent on high value meats, or not on food at all.

ENVIRONMENT FOR INVESTMENT (12)

Chinese pork production and the supply chain to deliver it to the consumer are in need of industrialization. Whilst the process had started slowly and accelerated in 2014, the current ASF crisis has highlighted the need for investment. The reality is that there is a significant need for capital, and the investment environment for private investors is complicated by Chinese land laws regarding the use of land as security for borrowing.

The expectation is that the need to improve the supply chain will lead to government incentives for investors, and a softening of current restrictive land laws. The benefits will favor domestic, rather than international investors, limiting the upside. International investors will remain wary of the way regulations will continue to favor Chinese companies, and this will remain true until at least 2030, after which the market may begin to soften for international operators, and there may be more wholly owned internationally based investment to 2040.

An easing of laws on investment and land will have a positive impact on the availability of domestic pork in the market. The strategy for dealing with ASF is likely to lead to some easing of these regulations.

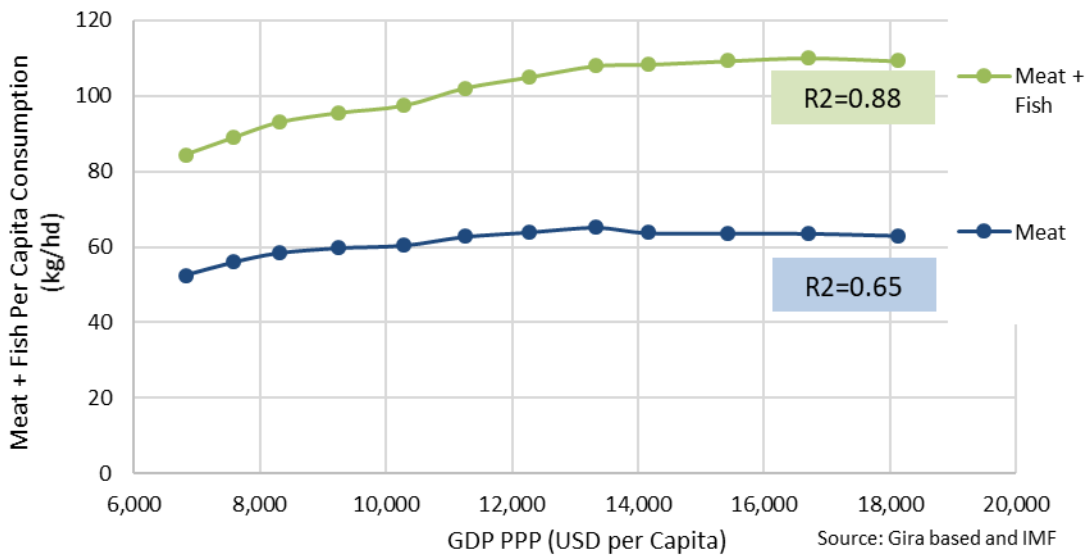
The positive impact of a better investment environment climate on pork consumption will slow after 2030, as the huge investments made before then (partly as a result of ASF) will already be in place, so that new investors will need to compete far harder with established operators.

ECONOMIC GROWTH (12)

China's GDP growth rate has been high over the last decade, and whilst most financial analysts consider it to be overstated, and slowing, it is still the envy of most developed markets. Whilst the 20 year outlook is challenging, the forecasts all suggest continued growth at quite a high level, although below those of the last decade.

In terms of spending, a proxy for GDP in PPP, we would expect growth of 75% through 2030 compared to 2018 and more than doubling through 2040 to levels currently around those of the UK and France. There should be considerably more money available for food.

Figure 7.10: Per Capita GDP PPP vs Meat & Fish Consumption, 2007-18



Economic growth translates into increased disposable incomes which leads to increased meat consumption. Given the average per capita GDP PPP for China, this will translate into a medium rate demand growth for protein. This is a slightly simplified view, with different classes (income brackets) behaving differently. Whilst per capita meat consumption will increase, the upper middle class and above will also increase their tendency to consume higher quality cuts and more differentiated buying options, which translates as less pork for them, and more beef and chicken.

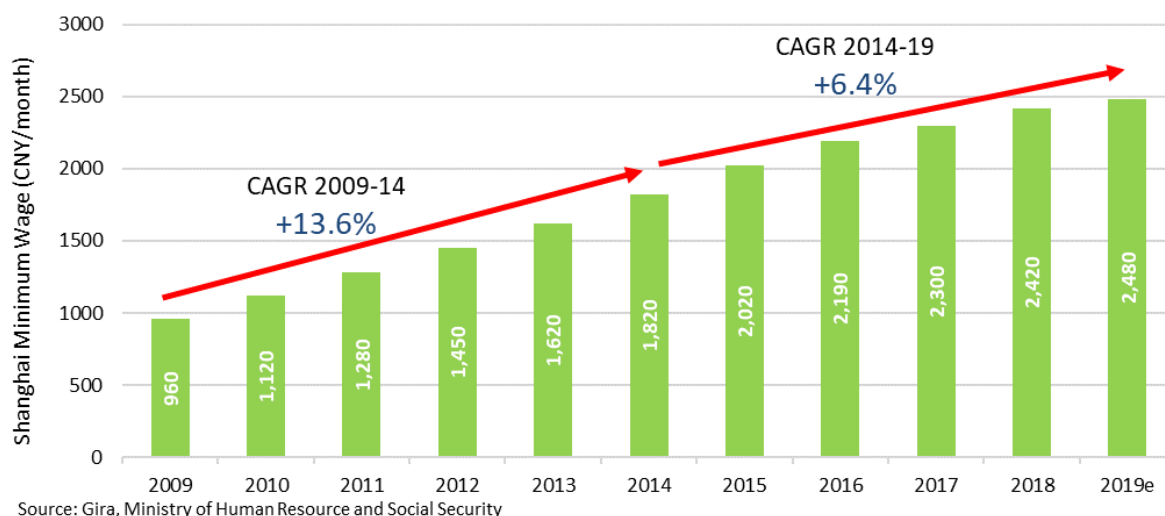
The GDP forecast used for this study indicates that today's strong growth will gradually slow over the next 20 years, as the economy grows. This will lead to a weakening (although still positive) effect on meat consumption, notably after 2030.

LABOR COST (8)

In the short-term increased wages are leading to increased disposable incomes, driving increased consumption of all products, including meat. As more of the population migrates from poorly paid or subsistence rural work to factory work in the cities, average wages rise. There is already strong evidence that a shortfall in unskilled labor has led to increases in Chinese wages at all levels, as factories compete for available labor. This is driving up costs all along the meat chain, as unskilled labor becomes harder to find, harder to retain and more expensive. These costs ultimately are passed on to the consumer, increasing prices.

The immediate impact of increased wages is positive on meat and pork demand in developing markets such as China, with the effect most pronounced in the lower income households, where meat consumption is still low.

Figure 7.11: Shanghai Minimum Wage, 2009-19



Basic labor rates are set by the government via minimum wage levels. These are regional, and vary significantly between cities, and regions; Shanghai’s minimum wage in 2019 is RMB 2,840 (USD 401) per month, compared to just RMB2,200 (USD 311) in Beijing. This reflects the very different living costs (especially rent) between the major regions.

Whilst minimum wage growth is slowing, in part to dampen inflation, average wages continue to grow across the country, and fastest in the poorest regions. The impact to 2040 is therefore expected to be:

- 2025 – higher salaries a widespread driver for increased pork consumption.
- 2030 – impact weaker but still significant, as more of the population are already in income brackets where increased income is spent on "luxuries" and not meat.

- 2040 – impact is weak and concentrated on the poorest and most remote regions. Major cities only show growth in the poorest sections of the community.

EXCHANGE RATE (RMB vs USD) (4)

The working assumption for the RMB is that it will strengthen slightly to 2025, then weaken to 2040 against the USD. This reflects the strength of the US economic outlook, and mid-term uncertainty in China. The RMB should in 2040 be just slightly weaker than it was in 2018.

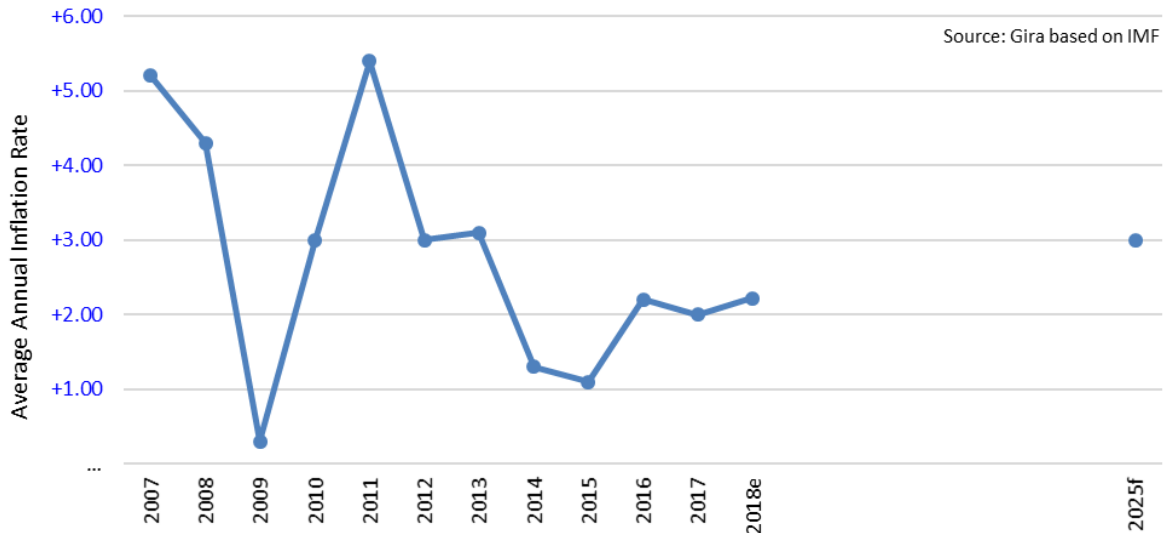
The strength of the Chinese renminbi against the USD effects a range of factors in the Chinese economy and has a complicated relationship throughout the meat supply chain. Firstly, a weak currency has helped Chinese exports grow globally, driving growth in the manufacturing sector, and increasing jobs and disposable incomes. But as the RMB strengthens, this effect weakens and Chinese goods become less competitive, so manufacturers move production to other markets, with the loss of jobs.

The Chinese government will therefore try to balance the economy and control any currency strengthening. A small weakening is expected by 2040. This therefore will have a limited impact on meat consumption, although a weaker currency means increased prices for imported products (meat or feed) in local currency terms. This will therefore have a small negative impact on pork demand.

GENERAL INFLATION (6)

Inflationary pressures are a serious and long-term concern for the Chinese government, with food prices of key concern. Pork is the major meat and a sensitive issue; pork prices are thought to contribute 3.1% to the CPI calculation. Due to increased raw material and labor costs, inflation is expected to increase, although for the very long term the Party forecasts very moderate inflation to 2040 (below current levels), and therefore with a lower impact than it has currently.

Figure 7.12: Inflation 2007-25f

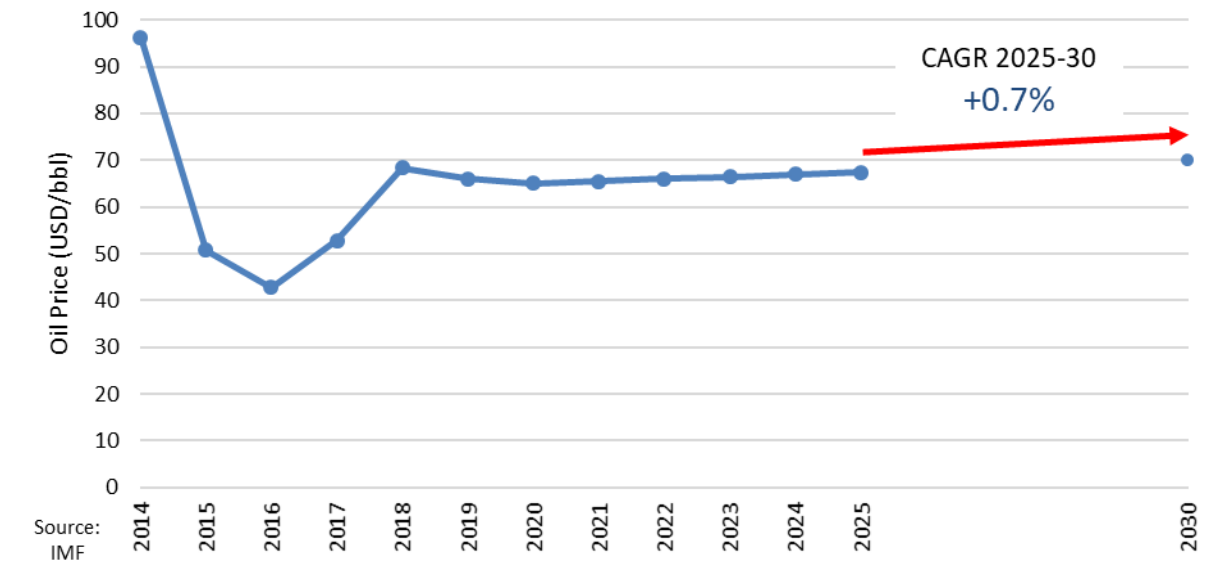


Inflation increases pressure on disposable income, and therefore can have a negative effect on meat purchases. Whilst it is relatively low over the forecast period it is expected to trend above current levels and in the region of 3% to 2030. A slowing economy will contribute to the impact on inflation on consumers, so the government will continue to work hard to keep it at a low level.

OIL PRICE (9)

The oil price allows a simplified view of the impact of China’s growing energy needs, which OPEC have forecast as increasing by ~21% from 2015-40, an increase equivalent to +1.5% p.a. The advantage of using the oil price as a measure is it can be translated directly into an element of cost of pork production, whilst energy requirements may be offset by other factors. Oil is expected to increase its share of Chinese energy needs by 2040 to 19.5% (modest growth), while gas and nuclear are the biggest winners, and coal the biggest loser (down from 60.9% in 2020 to 47.5% in 2040).

Figure 7.13: Global Oil Price Outlook, 2014-30



The global oil price is expected to increase modestly to 2030 and follow a similar trend to 2040, although there is the potential for spikes over the 20-year time frame. The pervasion of other energy generating technologies will however act to reduce the impact the oil price has on the global and Chinese economy, and therefore on Chinese pork demand.

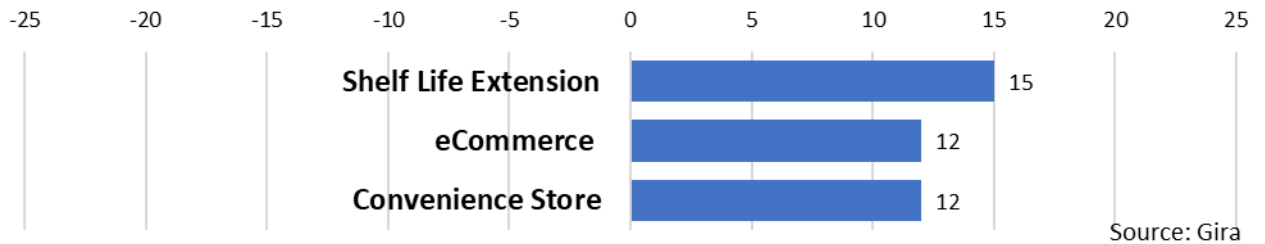
Increased oil prices will add costs to the supply chain, notably in transportation, but also in: feed costs, agrichemicals, and packaging. Some of this increase will be offset by improvements in the efficiency of vehicles, as well as an increase in electricity generation from other sources, the impact is modest though, due to the slow rate of growth in price. What is notable is the boom in petroleum demand for China's massive and expanding personal vehicle fleet, the growth of which has slowed in recent years, and the transition to and development of new electric based solutions, which could offset the impact.

More notably, increased oil prices also have an inflationary impact adding to the cost of living in all areas, this will have a negative effect on disposable income.

Therefore, oil price increases will have a progressive negative impact on meat demand at a consistent rate throughout the time frame 2025 / 2030 and to 2040, unless there are exceptional events leading to spikes in the oil price beyond those forecast, which would be more negative for meat demand in China.

D: PORK RETAILING AND DISTRIBUTION:

Figure 7.14: Pork Distribution in China Ranking



SHELF LIFE EXTENSION (15)

This is still a sensitive issue in China, with most consumers preferring to buy unpackaged meat so that they can check the freshness by touch and smell. The advent of the modern chill chain will necessitate more packaging, as will online purchasing. Buying habits will evolve away from the current traditional model, to one of trust in the retailer. For this to happen smoothly the modern retailers must build and maintain consumer trust in the quality and safety of their products, an area of weakness to date! The advent of packaging will automatically mean extended shelf life beyond today's level.

This is already starting today, and some growth will be seen by 2025. The biggest changes come from 2025-30 with the second phase of this process. This is the advent of new or improved packaging, and of better practice in the slaughter and cutting plants. Both of these will lead to extended shelf lives.

Extended shelf life will help significantly with controlling waste and managing the extended geographic supply chain. This will control costs and increase availability and therefore promote consumption, although it could also negatively impact the need for production volume growth.

E-COMMERCE (12)

The development of China's internet industry coupled with smart phone connectivity means that China's online shopping infrastructure is already leading the world. In 2018, 50% of China's population had a smart phone, projected to pass 60% as early as 2023! This means that the consumer connectivity for eCommerce already exists.

Significant challenges remain to be solved, but there are a number of Chinese companies working on a range of solutions for meat in eCommerce; from international sourcing to Online to Offline distribution (O2O), it will become a major part of distribution by 2040. Hema (a grocery chain) are already offering 30 minute delivery if you live within 3km (1.86 miles) of any of their stores!

Whilst this will change the way the market communicates meat offers, it will have a more limited impact on overall consumption, as it will largely just represent a shift in buying channels. For importers and small domestic producers, it may allow easier access to a wider market with lower initial costs, a positive influence on supply and therefore consumption. The main impact will come after 2025, but well before 2040, with early adopters able to reap the benefits of differentiation, but being exposed to the higher costs of being at the leading edge.

CONVENIENCE STORES (12)

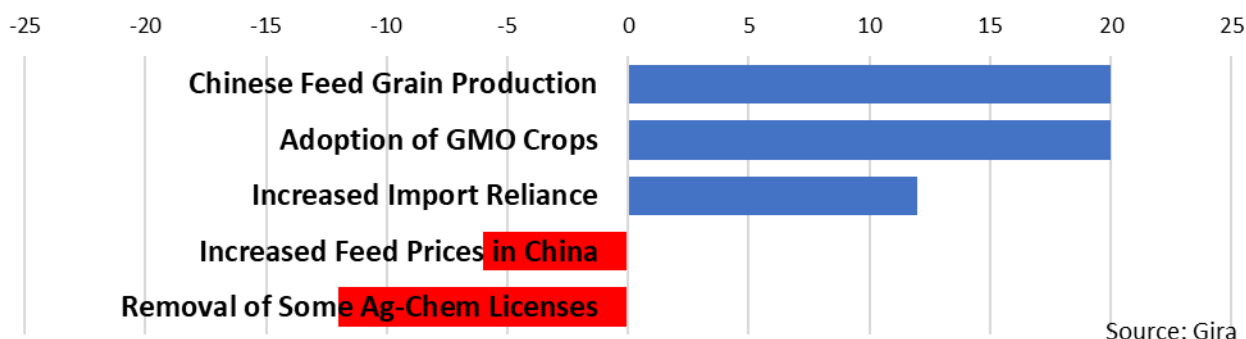
The current retail model in China is based on an evolution of the wet market (different levels for different city levels), some with refrigeration and packer brands, others just a wooden board. But in 2019 consumers were still doing much of their meat shopping at wet markets on a regular basis. Apartments are not big enough for large fridges, so shopping must be done regularly. This need to shop often is further reinforced by the value put on freshness, meaning not storing at home for days before consumption.

This lends itself to an evolved convenience store format (beyond the current 7-11 store offer), with a basic range of chilled meat on offer which may be augmented by an online offer which can be delivered to the store for collection. These outlets will play an important part in managing the modernized supply chain and distribution, and will facilitate lower cost availability of pork. The impact is therefore positive on consumption, although this will be somewhat offset by the fact that it replaces the wet market and other existing distribution models.

The trend to convenience stores has started to accelerate in the last year, with growth expected in leading cities first, and then spreading to 2nd and 3rd tier cities over time. Therefore, the impact on pork consumption will strengthen throughout the time period, but be strongest around 2030.

E: FEED – AVAILABILITY & TECHNOLOGY:

Figure 7.15: Feed – Availability and Technology Ranking



CHINESE FEED GRAIN PRODUCTION (20)

An increase in modern commercial and large-scale livestock production is necessitating an increase in the use of commercial feed and feed ingredients. This growth has to cover both expanding production and replace more traditional feeds (notably swill for pigs, banned in October 2018, but still used in 2019), and crop residues fed on smallholdings. There will be a decline in feed demand in 2019-21 due to the reduction in pork production resulting from ASF.

The long-term increase in demand for feed will be met by both an increase in imports of feed grains and also an increase in domestic production; as farms consolidate, and technology improves, there will be a steady increase in yields. This will help offset rising production costs, and help keep feed costs in line with the rest of the global market (they will still rise). Therefore, the increase in Chinese grain production will be important in controlling feed costs and therefore prices of finished pork, promoting consumption growth.

This will have less of an impact up to 2030, when the reduced herd will significantly limit feed grain demand in China. After 2030, with the pig herd at a new maximum and increased demand from fish and poultry, feed grains will be a more significant factor in production costs.

ADOPTION OF GMO CROPS (20)

At the time of writing, China remains highly restrictive regarding the use of GM crops in-country, and has a lengthy approval process for trials. New GM technology (variations of CRISPR) are already being trialed in China, but have not yet resulted in products approved for the food chain. As the science for GMO and variations becomes clearer it is thought that China will soften (if not actually reverse) its position, thereby adding another tool to the feed cost control process. This would be positive for pork consumption.

In the period to 2030 this will have a limited impact, as the technology is likely to be only just available before 2030. It will therefore have a far bigger impact post 2030, as it gains real traction in the Chinese market.

INCREASED FEED GRAIN IMPORT RELIANCE (12)

Whilst feed production will rise and remains an important part of the supply balance, import volumes will grow at a faster rate (post-ASF), taking a larger share of the overall market, and will therefore be key to the development of modern livestock production. China already has most of its available arable land in production, and whilst yields will increase, they alone cannot supply the increase in demand for feed from across the livestock and aquaculture industries.

Imports are likely to focus on specific parts of the feed ration, with soybean (crushed or whole) likely to remain an important import. Imports of feed off the world market are likely to be lower cost than domestic supply in the long run (despite shipping costs), and it will help control feed costs as they provide an alternative source when domestic demand peaks. This will therefore help control costs, and thus promote consumption of pork.

INCREASED FEED PRICES IN CHINA (6)

Overall it is expected that feed prices in China will increase. This reflects increased global demand, increased controls and land pressure on supply growth. Chinese feed prices will increase above the rate of inflation and become closer to global markets, and there will be less price support for Chinese farmers as we move towards 2040.

But the belief is that these feed cost increases will not be out of line with current trends, and that, given increased exposure to world markets (at the end of the 2018-19 China – US trade war), the impact will be in line with other global markets.

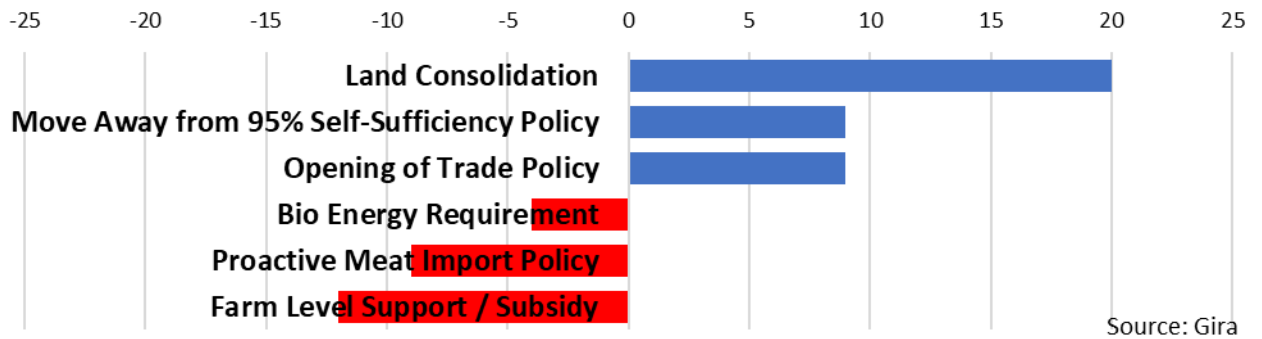
REMOVAL OF SOME AGRICULTURAL CHEMICAL LICENSES (12)

As is being seen in Europe and other global markets, there is an increasingly hard line on use of agrichemicals with concerns over their impact on human health and the environment. China starts from a less regulated position than the West, with many outlawed products still available on the black market. In addition, many of the sprays are used beyond their intended doses. Just actually regulating the existing market will change the process, adding costs.

Ultimately, in the period to 2030 China will both improve the use of existing licensed products and begin to tighten up on what products are approved. Post 2030 it will rescind some existing licenses, reducing the tools for modern commercial production, adding costs, with a negative effect on the pork market.

F: GOVERNMENT AGRICULTURAL POLICY AND REGULATION:

Figure 7.16: Government Agricultural Policy and Regulation Ranking



LAND CONSOLIDATION (20)

Currently most of Chinese agricultural land is utilized, but much is broken up into small plots, managed by individual households. Where the farmer has migrated away to the town or city, they lease it to neighbors. This allows for small and often disjointed land accumulation, but without the development of large-scale farms or even fields!

Figure 7.17: Typical Field System in the Yellow River Delta – May 2019



As part of food security planning, the central government will need to accelerate the process and allow large farms to lease bigger areas of arable land. This process would allow for more intensive farming, which would increase yields and production, and therefore help control feed costs, with a positive impact on consumption.

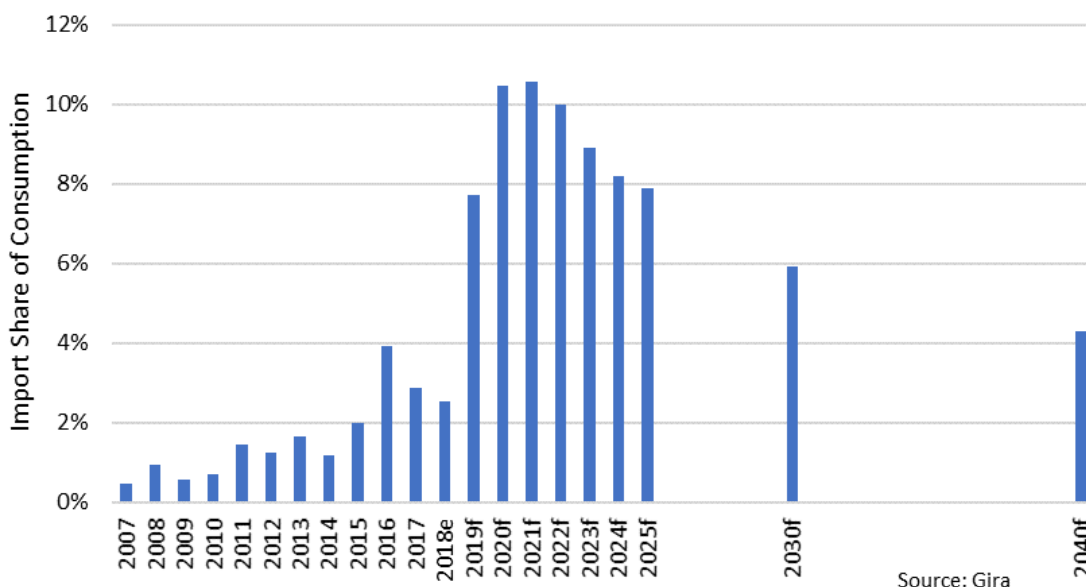
ASF will intensify the need for larger plots of land for larger pig farms, as well as the disposal of manure. It is therefore likely that there will be a considerable change in the period to 2030, driven by this restructuring. However, the limit of the powers of central government over the regions, especially on land ownership, will limit this process.

From 2030 onwards this process is likely to accelerate as a higher proportion of the population is urbanized, and as the rural working class are aging. This will make it easier to assemble large blocks of land, the impact of which will be seen in economies of scale.

MOVE AWAY FROM THE 95% SELF-SUFFICIENCY POLICY (9)

Long standing Chinese policy has attempted to limit pork imports to only 5% of consumption. The reality is that they are already above this, given the much-reduced production level in 2019 due to ASF, but will this influence long term government thinking? It is likely that the government will officially hold the 5% limit as part of the stimulus and support package to encourage investment in new large-scale pig production. Unofficially they may well relax enforcement of this whilst supplies are tight (the period to 2025) but they will look to limit trade to nearer the 5% mark as soon as domestic production recovers.

Figure 7.18: Pork Imports Share of Consumption - Projection



To 2025 the expectation is therefore that there will be considerably more pork imported than the 5% allocated, reflecting a sharp decline in production and an increase in imports.

2025-30 the balance will move back in favor of domestic production, with import volumes decreased to maintain the impetus for continued investment in rebuilding the domestic industry (whilst balancing consumer price sensitivity).

From 2030-40 this continues (after the recovery of production), with imports falling back, ultimately below 5% of the market. But volumes should stay above 2018 import volumes, meaning more, lower priced pork available in the market, and therefore increased consumption as imports help control domestic prices.

OPENING UP OF TRADE POLICY (9)

Specifically, this will be with respect to the tight limitations currently placed on pork imports. The present system is very controlling, and is designed to allow the Chinese government to limit imports when domestic pork prices fall, protecting producer prices. The system is not precise and works by limiting “grey channel” imports and also by insisting on approval of countries and slaughter plants.

The current ASF crisis will force an easing of some of the more restrictive practices, with more countries approved, and more plants within those countries also approved. But it is unlikely to significantly change the government's stance on: regionalization, Ractopamine, and the lack of Minimum Residue Levels in their standards. Therefore, the view is cautiously optimistic that there will be freer trade, but realistic in recognizing that there will not be unfettered access. This will lift consumption by keeping lower cost foreign pork in the market.

The period to 2030 will see bigger adjustments, whilst post 2030 regulations will stabilize as domestic production peaks and could even become protectionist at times.

BIO ENERGY REQUIREMENTS (4)

In the last 20 years Bio-fuels have become a strong competitor for animal feed, and have helped drive costs up. They are most notable for the use in energy generation and also for inclusion in road fuels. Currently China has a very limited biofuel policy, but there have been several efforts to expand it, and it is likely to increase its share of road fuels to 2030.

Over the period to 2040 biofuels will remain, but will contribute only minor increases to the market, as the world moves to other renewable energies, and combustion engines become either more efficient or are replaced with electric motors. Low level negative impact on pork demand can be expected as bio-fuel will compete for some feed grains, adding cost (but as we see in the US, modern feed technology can utilize by-products).

PROACTIVE MEAT IMPORT POLICY (9)

China operates a flexible policy of controlling meat import flows (especially pork) based on local market prices. The policy aims to manage the pork price within a band (which is increasing with inflation), where a low retail / producer price leads to a reduction in access for imports, decreasing supply and increasing prices, whilst high domestic pork prices lead to a slackening of import controls.

Due to the sensitive nature of the pork price, these mechanisms will remain in place in the long term, and will remain an important tool in China's supply balance. It should be noted that they will not be sufficient to counter the shortfall in supply created by ASF in 2019-21. They will have a negative impact in the long term on pork consumption as they will reduce the periods when consumer pork prices are very low, but the impact will be tempered as they are already actively used so there will be little change in the future.

It is highly unlikely that China will abandon the practice of controlling imports in the period to 2030. Whilst possible post 2030, this also remains unlikely.

FARM LEVEL SUPPORT / SUBSIDY (12)

Subsidy and support payments to farms are not common in China, but programs supporting vaccination, insurance and producer prices have been ongoing. These have had some success in stimulating and supporting existing production, but often lack sufficient central funding to be significant.

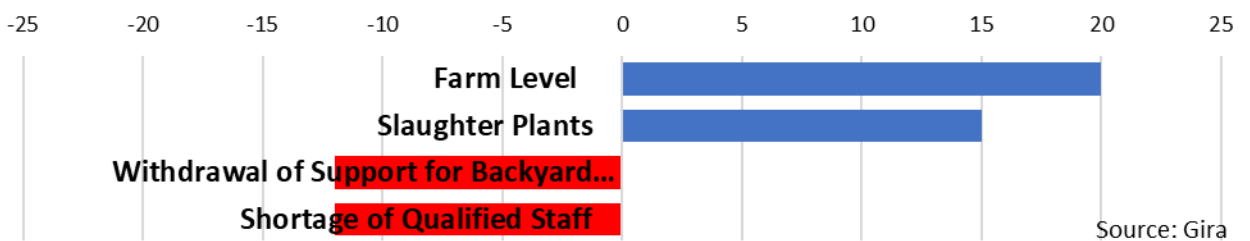
In the case of ASF, compensation payments were mandated by central government, but not centrally funded. Payments have not been made due to a lack of funds at a regional level, and this limited the impact on controlling the spread of the disease.

To 2030 there will be some short-term increase in subsidy around the recovery from ASF, but it will be directed to large scale investments, and most likely based on financial support or direct investment.

Post 2030 there will be less direct support for pig farming, reflecting the transition away from backyard production and less political pressure to support rural inhabitants. Declining farm support will reduce the availability of pork in rural outlets, and is likely to increase costs there, with a negative impact on demand.

G: CONSOLIDATION IN THE PORK SUPPLY CHAIN:

Figure 7.19: Consolidation in the Pork Supply Chain Ranking



FARM LEVEL (20)

The clear out of backyard farms due to ASF in 2018-19 is opening the market to large scale commercial farms. Large scale farm investments have previously been disrupted by the flexibility of the backyard producers to enter the market during periods of high prices, and leave when prices were low. This led to rapid swings in price and significant volatility in the market. Today's commercial operators are already investing in large scale pig farming sites, a process which will accelerate over the mid-term to 2025 and then slow to 2030.

The system will be near maturity by 2030 after an accelerated transformation due to ASF. The result will be a Chinese pig industry which has just a few very large farming companies, many of which will be integrated through to slaughter, cutting and packing. These farms will be large (US scale) operations, employing modern farming practices. There will also be some international farming operations in the market, typified by best practice farrow to finish operations, mainly single site.

The impact of large modern farms and an absence of small backyard producers will be for pork supply to recover from the depths of ASF), and it will moderate price fluctuations. This is a positive driver for pork consumption as better planning and market management will result. This will be clear in the industry structure from 2030-40.

SLAUGHTER PLANTS (15)

As the farms are migrating to new areas away from the consumers, new slaughter plants will be built to process the pigs near to the farms. These will be larger scale than the traditional, city limit operations of 2018, and by supplying pork through the chill chain they will displace the smaller local slaughter plants that were key to the backyard / wet market supply model. This is again positive for the consumer; with increased accountability and better management, they will produce a more consistent supply of pork, and this will dampen price fluctuations, promoting consumption.

The majority of this transition will be underway by 2025, and complete by 2030, with modern slaughter plants taking a branded and national position with the major retailers. The period post 2030 will lead to further consolidation in the slaughter market as these operators compete with each other for market share and high value retail contracts.

WITHDRAWAL OF SUPPORT FOR BACKYARD PRODUCERS (12)

This is a complicated issue from all sides, with the historic position of the Chinese government being to protect rural income (to keep the rural population in place) and therefore the backyard farmer. This position is already being backed away from as the central policy now favors urbanization, although some aspects of rural support still exist in 2019.

ASF means that from a pork production position, support will focus on helping these small farmers re-establish themselves with incomes not based on pig farming. They are unlikely to return to pigs.

By 2030 the support for the backyard pig producer will have been removed, and many of the farmers will have consolidated or abandoned farming altogether. There is likely to still be some rural support, probably targeting feed grain and vegetable production.

The modern commercial system will thus be able to plan better than it could with the presence of small-scale farms in the system, a positive for consumption. But it will also reduce pork in the rural market, where a modern chill chain infrastructure is still some way off, but will be established between 2030-2040. The elimination of backyard production will add costs to pork in rural areas, detracting from consumption. In isolation this is likely a negative for consumption, but is part of the wider modernization of the industry.

SHORTAGE OF QUALIFIED STAFF (12)

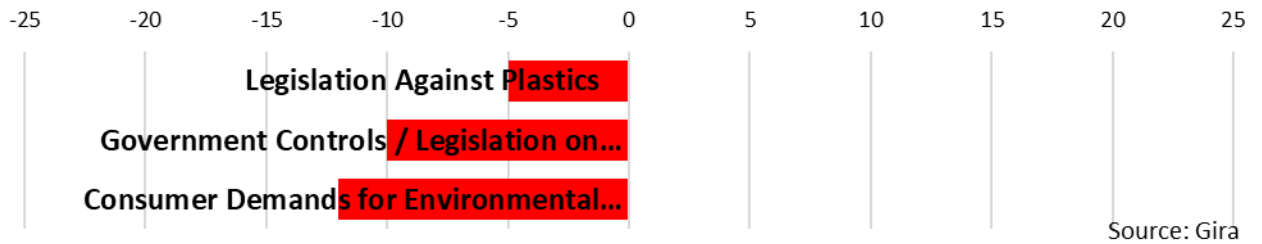
Whilst farming is still a major activity for many rural Chinese, they have a lack of education in modern farming techniques and practices. These issues are particularly acute in farm management. Suitable staff will continue to be hard to find, difficult to educate, and tricky to retain! This will add cost to production not seen in today's supply chain, a negative for demand as it adds cost to the system and will lead to breakdowns in quality and food safety.

The impact of this will be felt acutely to 2025 as modern commercial farming tries to expand rapidly. It will cause significant setbacks, and some losses, and is ultimately one of the limiting factors in the rate of recovery.

From 2025-30 there will be a wider knowledge base and more training, but the problem will persist as expanding commercial farms absorb available staff. Post 2030 the problem will be reduced, but will be complicated by the need to attract high quality staff to rural jobs in a country that still favors urban living.

H: ENVIRONMENT AND SUSTAINABILITY:

Figure 7.20: The Environment and Sustainability Ranking



LEGISLATION AGAINST PLASTICS (5)

Whilst this is a hot topic today in the West, it has had limited to no impact in the Chinese market yet, with consumers associating extra packaging as protecting a better-quality product.

Figure 7.21: Excessive packaging – Beijing 2019



But the issue is developing in China, with several cities starting to implement recycling. Mid 2019 Shanghai launched a city-wide recycling scheme, separating waste into 4 bins (including toxic and recyclable). The issue is currently focusing on waste disposal issues rather than sustainability in itself, but this will inevitably follow.

China will have an advantage as alternatives to plastics are already in development for Western markets (notably the EU), meaning that China will be able to adopt or copy these solutions; the impact will therefore be more limited in China. However, solutions add cost, so there will be a small negative impact as a result, most likely after 2025, becoming institutionalized from 2030-40.

GOVERNMENT CONTROLS / LEGISLATION ON LIVESTOCK (10)

The Chinese government is steadily increasing its controls on livestock production. To date the biggest impact has been in the enforcement of environmental protection legislation, which accelerated the decline in production from 2014-18. Plans to remove antibiotics by 2020 clearly signal that they will exercise further controls to protect consumers.

Environmental policy in China is set by the National People's Congress and managed by the Ministry of Environmental Protection. It is then enforced at a regional level, leading to huge disparities in interpretation and enforcement. Some have likened the Environmental policy in China to the US of the 1970s. However, things are definitely changing, in part because the government is aware of how finite their natural resources are... water has been the key influencing factor in recent years. The problem will remain that any law imposed by central government will not be enforced evenly across the country.

Developments to 2030 will be offset by the rapid restructuring of the pork farming industry in the wake of ASF. But new farm locations are likely to have to meet higher environmental controls.

Through 2040 it is expected that there will be a steady and progressive increase in control mechanisms, and better enforcement of them nationally. This will add cost to the system, and thus could raise prices with a negative effect on consumption. On the positive side, this should reduce the number of opportunist pig farms, limiting the disruptive production swings and leading to more predictable development patterns.

CONSUMER DEMANDS FOR ENVIRONMENTALLY FRIENDLY LIVESTOCK PRODUCTS (12)

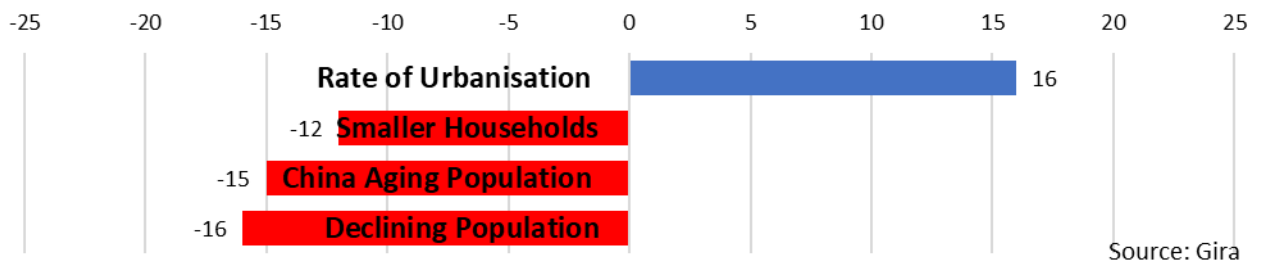
Currently demand for environmental livestock products is negligible, with those existing examples about the eating quality of the product, rather than the environmental impact of the production system. As Chinese consumers become more affluent, and as awareness of production standards in other parts of the world grows, there will be increased demand for environmental protection (focused on the immediate Chinese landscape). This will feed through to pork products with claims around sustainability.

Demand is currently low for these products and will develop in the very premium end of the market first, from 2020-30. They will account for small volumes, and will need additional marketing to support higher price points.

2030-40 this is expected to become more mainstream. This will add cost to production, and increase differentiation in the pork range. It will benefit from some retail and food service chains enforcing production standards down the supply chain, especially those with international sustainability pledges.

I: POPULATION DYNAMICS:

Figure 7.22: Population Dynamics Ranking



RATE OF URBANIZATION (16)

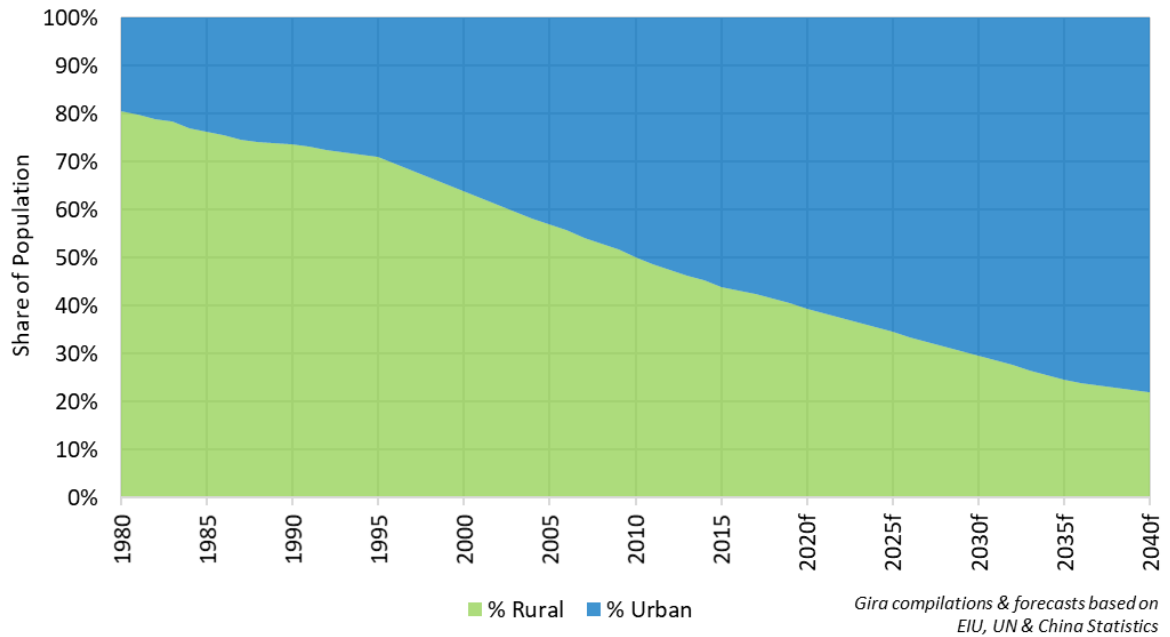
China has seen rapid growth in its urban populations, due to the movement of rural inhabitants to cities. The current rate is approximately 1% of change per annum, and is a major contributor to economic growth, as incomes in urban environments are higher, and food self-sufficiency (whole or partial) is not possible.

In China urbanization happens through 2 mechanisms:

- Traditional geographic migrations due to the lure of higher incomes and a better quality of life in urban centers.
- Reclassifying rural settlements as urban (an important differentiation in China), which typically happens when they achieve either a certain size or a certain economic scale.

Urban inhabitants on average have higher wages, and therefore higher disposable incomes, and they always consume more meat.

Figure 7.23: Urbanization 1980-40f



After a prolonged period of futile resistance to urban migration, the Chinese government has removed many of the barriers. This was done because they recognized the value of higher income urban consumers to the overall economy, especially as government policy aimed to develop economic growth that was less dependent on manufacturing for export. It is also an important factor in limiting the high rural / urban wage gap.

However, rural inhabitants moving to cities are still classified differently; their children are not entitled to the same level of education, and they're not eligible for the same level of services (medical etc.). If this was changed there may be a short-term increase in the rate of urbanization, but the reality is that this would likely be a paper work reclassification for inhabitants already in the cities... but counter to this, others, who have urbanized, are retaining their rural paperwork to maintain their rights to land.

The most rapid part of the transition has already happened, and 59% of the population was classified as urban in 2018. The rate of population transfer is now expected to start to slow, reaching 65% by 2025, 70% by 2030 and 78% by 2040.

So an increased urban share of the population is expected, and it will grow meat consumption, but the slowing rate of the transfer means that it will contribute less to growth in the future than it has done over the last decade and more.

Urbanization will therefore:

- Have a significant contribution to increased pork consumption from 2018-30.

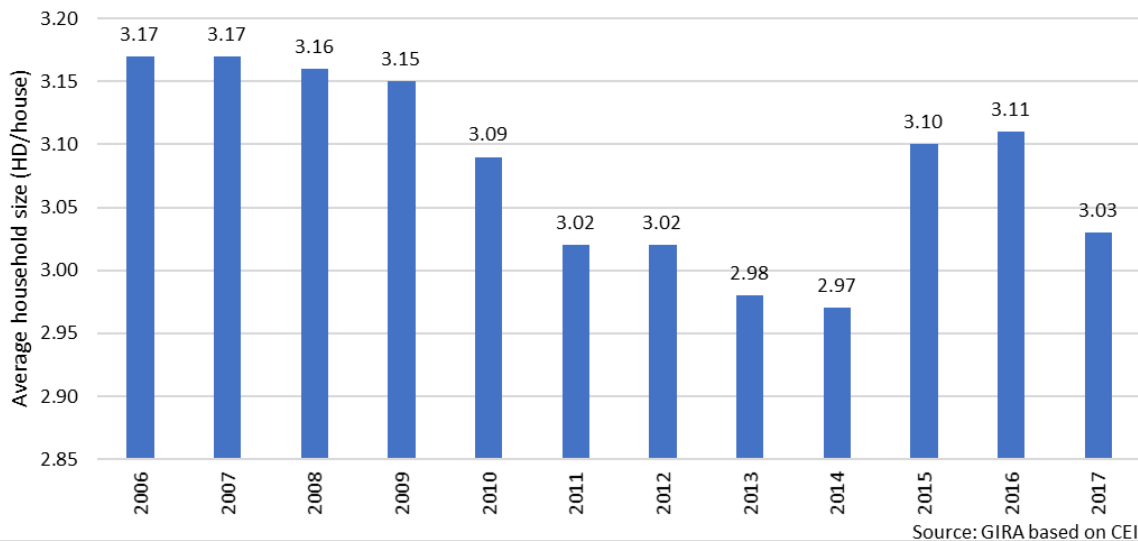
- But growth will decline post 2030, but still be positive.

SMALLER HOUSEHOLDS (12)

China's traditional household structure was 3 generations, with grandparents looking after the children, whilst the parents worked. In urban areas, smaller modern apartments have changed this structure, resulting in less multigenerational households. This phase is largely complete in tier 1 and 2 cities, but there is still some scope in the wider population from 2018-30. Its impact in the future will be lower than historically.

China's household size has been in slow decline over the last decade. The increase in 2015 was an anomaly, and in part reflects the removal of the single child policy in October 2015. As we have seen, the reality is that the removal had a relatively limited impact.

Figure 7.24: Household Size, 2006-17



The next phase of household reduction is starting, with a move towards a more western model, where people leave it longer before marrying and having children. This will lead to more single or shared households, a phenomenon that will be more prominent from 2030-40. The current model sees many twenty-something single Chinese still living with their parents.

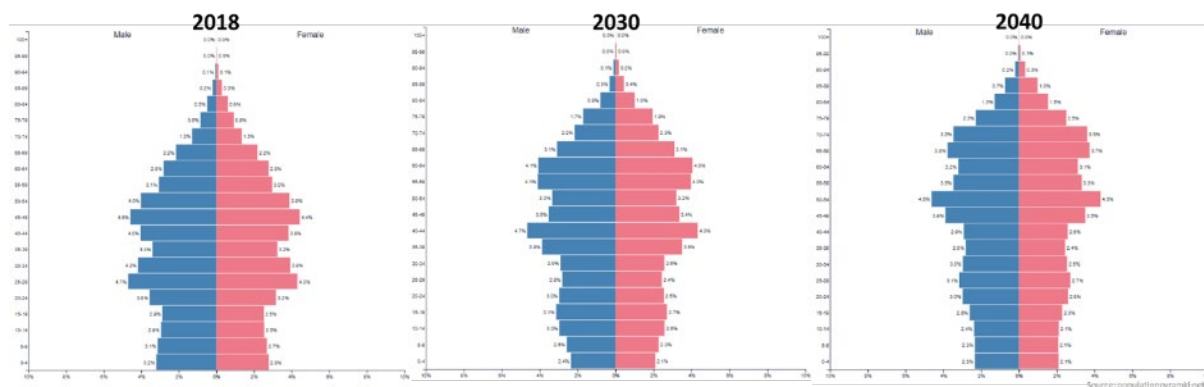
This trend leads to more single young professionals, and they have a different demand dynamic. This typically entails spending on higher added value products, more out of home eating, and less time available for meal preparation. So a negative for consumption volumes is a positive for total spend! They are also more influenced by consumer trends, and have contributed heavily to the high churn rate of consumer products on the market.

As this phenomenon develops through 2025-30-40, it will also promote issues associated with livestock and meat, including, but not limited to: sustainability, the environment, animal welfare, personal health etc., the impact of which can generally be expected to be negative on consumption.

CHINA'S AGING POPULATION (15)

The decline in China's birth rate, and improved social and health care (although strong rural / urban disparities will continue to exist), are contributing to an aging population. This process will become more pronounced from 2030-40 as the population starts to decline.

Figure 7.25: Population Pyramids – 2018 / 2030 / 2040



The impact on pork demand of this increasingly top-heavy "pyramid" will be negative, with older consumers looking for lower calorie diets, ease of digestibility, typically lower meat content, and an increased preference for fish. Product innovation will slow in this phase as well, as older consumers favor products they know and trust.

China still has a low retirement age: 50 for women (55 for female civil servants) and 60 for men. This is already being questioned and it is likely that the age will be increased at least twice over the next 20 years. A higher retirement age will maintain disposable incomes for longer, as well as maintaining consumption, since active employees will need more food. It may also help delay the impending issues of social support for the elderly.

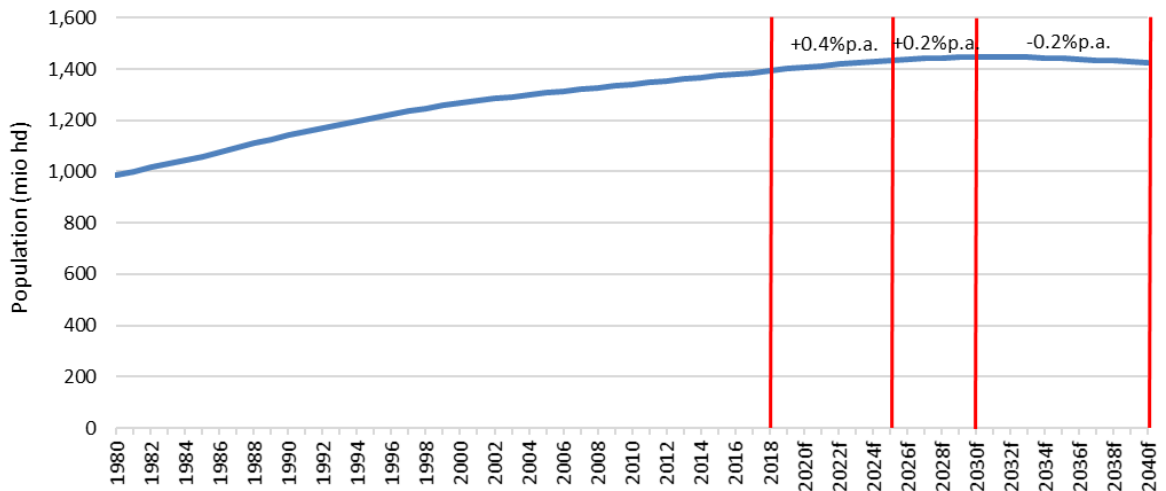
The rate of aging will accelerate as the population starts to decline, so whilst these trends will develop between 2018 and 2030, they will become more pronounced from 2030 onwards.

By the older generation in 2040 will be today's 40-50 year olds, and they will have spent much of their working life exposed to China's economic boom. They will largely be tech savvy, and their eating habits will have adjusted to the modern pace of life, with urban inhabitants well-adjusted to modern retail and probably to eCommerce. Traditional tastes will still exist with them, but traditional recipes and the willingness to spend time cooking are not being passed down, and so tastes will change.

DECLINING POPULATION (16)

The generally accepted view is that Chinese population growth is currently slowing and will fall into decline in the near future. 2030 is forecast by most to be the peak population. This situation is due to a combination of factors, and will happen in spite of the removal of the one-child policy in October 2015. An increasingly middle-class society has become used to the cost structures around a single child household (both in terms of affording the best for the child, and their own lifestyles), and few are prepared to go back to larger families.

Figure 7.26: Population 1978-40f



The phase of increase from 2019 to 2025 and 2025 to 2030 is one of slowing growth. From 2030-40 the population will start to decline. This transition period will manifest itself in a number of ways, proxies for which can be seen in the slow decline in Japan today.

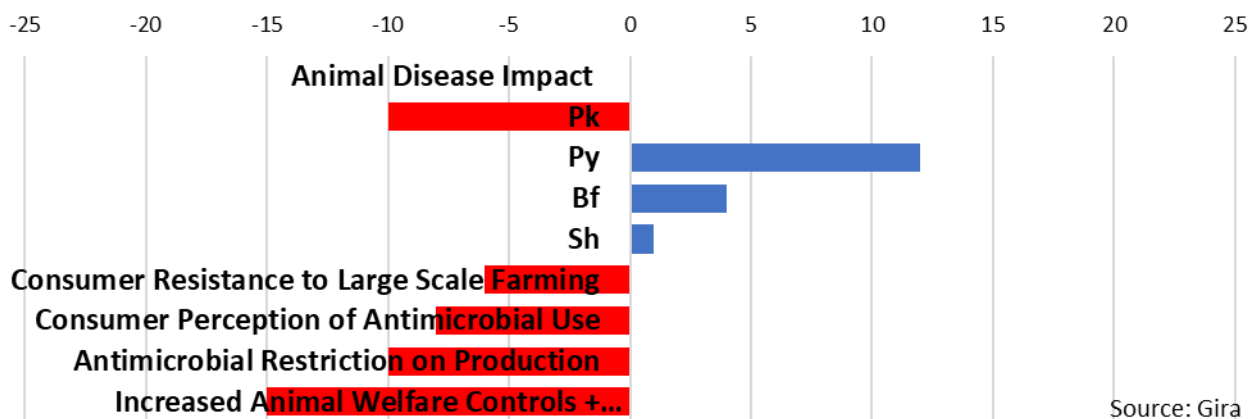
The impact from 2030-40 is that a declining population will reduce the available market for pork, although the rate of decline is expected to be gradual.

The strongest impact on pork consumption will come from the change in the age profile of the population, which will age more quickly, and therefore lead to a change in their dietary requirements in which pork will probably figure less predominantly.

There will also be some secondary economic pressure as an aging population will increase the burden on the social system, and may well require increased taxation to support pensions and health care, thus decreasing amounts available for personal consumption. It will also necessitate a rise in the age of retirement.

J: ANIMAL HEALTH AND FOOD SAFETY:

Figure 7.27: Animal Health and Food Safety Ranking



ANIMAL DISEASE IMPACT ON PORK CONSUMPTION & MEAT SUBSTITUTION
- PORK (10) + POULTRY (12) + BEEF (4) + SHEEPM EAT (1)

Note this does not include ASF – that is covered separately.

This is a complicated issue, with a two-dimensional impact:

- Human health risk (real or perceived), with consumers avoiding the product.
- Loss of supply due to the mortality of the animals and the empty period on farm that follows (as for ASF today in China).

The impact on pork consumption depends on the species infected by the disease, and on their importance in the human diet.

For disease issues in pigs, there is a twofold negative impact on pork consumption:

- There is less meat available, making it more expensive, limiting consumption volumes as pork becomes too expensive.
- There is likely to be a decrease of demand due to health fears (justified or perceived); ASF has led to a decline in pork demand in China in 2019 due to health fears, but there is no human health problem... the issue is trust!

But if there were another significant pig disease in the wake of ASF, it would have significant implications for the industry beyond just the 2 impacts mentioned above. It would negatively impact post ASF restructuring and financing the redevelopment of production, leading to an even more prolonged downturn in consumption.

For diseases in other species (not pigs) the impact is generally positive for pork demand, as we have seen in HPAI in the chicken industry over the last decade. A disease reduces the availability of the competing meat, and can make it more expensive compared to pork.

The impact of disease is hard to forecast as the timing of its occurrence and the species impacted are not predictable. It is highly likely that there will be further widespread disease outbreaks over the time horizon of this study. It is also likely that there will be at least one year where chicken is impacted by HPAI, maybe more.

CONSUMER RESISTANCE TO LARGE SCALE FARMING (7)

China is at a very different stage in the large-scale agriculture discussion to the US or the EU, in part because much of pork (and meat generally) production is still channeled through the small-scale sector. But things have been changing and the ASF will accelerate the shift to large modern pig farms.

The perception today of most Chinese consumers is that large scale pig producers have quite good control over production standards, often along with a brand; this induces consumer trust and therefore a perception that food safety levels are higher. Moreover, consumers believe strongly that pigs are just "industrial" animals, a raw material, and therefore very different to pets. Therefore, intensive production is OK and there is currently no serious consumer discussion on animal welfare.

This position is supported by the development of the dairy industry and the shift to integrated milk supply chains in response to the melamine scandal of 2008. Very large-scale farms (often 20,000 head) have appeared, replacing the 3-5 head herds. This has led to improvements in safety and quality, a message well received by consumers, even if they still do not entirely trust it!

There is relatively low resistance to large scale farming in China. There will be very little pressure on the issue to 2025 (a time when many more large pig farms will be built), although some resistance will develop to 2030, primarily from those who live near these new large farms. Post 2030, higher animal welfare standards will begin to be demanded, but it is expected they will remain at a low level compared to Western practices.

CONSUMER PERCEPTION OF ANTIMICROBIAL USE (8)

Increased awareness in consumers of antimicrobial resistance, and the awareness of the use of antibiotics in farming will continue to spread. As in other markets, there will be pockets of consumers who actively look for alternatives, but this sector is expected to be small. In China there is little consumer demand for their removal.

The national program to eliminate antibiotic use in pigfeed by 2020 will have a significant negative impact on availability, and a wider program on limiting the types of therapeutic antibiotics used is likely to follow. Consumer reaction is likely to be strongest between 2025-30, when it will likely manifest itself to pig producers in the demands of meat buyers in the major retailers and QSR chains.

ANTIMICROBIAL RESTRICTION ON PRODUCTION (9)

This is a complicated issue, made more difficult due to the currently fragmented nature of China's livestock farms. The Chinese government announced in 2016 that it is aiming to eliminate the use of antibiotics in livestock feed by 2020, but didn't announce until 2018 the timetable for how this might be achieved. The plan included 100 farms being designated as a pilot program (although this may be disrupted by ASF).

The removal of antibiotics from large scale pig farms will add cost to production, both in terms of improving infrastructure to mitigate outbreaks, and also from the losses due to reduced disease resistance in the animals. There is however, plenty that can be done to limit the impact, ranging from better biosecurity (already improving due to ASF), changing feed rations and using lower stocking densities. All these need better management, and add cost. Management skills will be a major issue in implementing these changes.

The expectation is that post 2020 there will be some residual use with antimicrobial feed additives sold on the black market for some time afterwards. Ultimately, they will be removed from the main supply chain, but this could take until post 2030.

The removal of antibiotics will add cost and impact negatively on supply in the first instance. But the investment in increased farm scale will offset the worst of the impact. The most pronounced effect will be from 2019-30 (probably 2025-30), after which it will become negligible with all producers respecting the same rules.

INCREASED ANIMAL WELFARE CONTROLS & LEGISLATION (15)

China has historically had low animal welfare controls compared to the US or EU. In part this was due to the backyard nature of the livestock industry, and in part to public disinterest. Interest in farm animal welfare remains relatively low, and legislation to control welfare remains limited, and it is even more poorly implemented.

But some awareness of animal welfare issues does exist, and videos were circulating as early as 2009 that raised some concern with younger consumers. But by and large the impact has been very limited to date. The subject will become more important through 2040, with influences from international animal welfare groups. However, the comparatively low starting point of today's perception compared to Western standards will greatly limit the impact on future pork production.

It should be noted that animal welfare issues will be taken increasingly seriously by the big slaughterer/branders in China, and it is they that are likely to drive change in production standards in the direction of global best practice.

The influence of animal welfare on pork production will be limited to 2025 as there are more serious issues in the supply chain, but it will become more prominent after 2025, and will add cost to production.

In the period 2030 to 2040 it is highly probable that the industry will face increased welfare requirements. Some will be via legislation, but the most significant controls will be imposed by the major brands (Retail and QSR) in order to protect their brand image. Enforcement will be via audits.

The impact on the industry will be increased cost of production. Animal welfare will be less of an issue for consumers than in the US.

K: HEALTH AND NUTRITION:

Figure 7.28: Health and Nutrition Ranking



Source: Gira

PERSONAL HEALTH (25)

There is some link here to the “Personal Risk from Meat” issue above, but the decisive factor here is about how consumers want to look and feel. A significant driver for this today comes from how people feel they are viewed on social media, and the way images on social media are changing the concepts of personal health and physical fitness. This is already a common concept in the US, and is developing in the wealthier parts of the 1st and 2nd tier cities in China. Note that in order to follow the trends in this area, Chinese social media platforms should be followed closely.

Figure 7.29: A WeChat Advert for Nike



Explanation: Fitness advert for Nike, pushed out through WeChat to a wide consumer base. Image driven with some description.

Key impacts on pork consumption through the long term will be an increase in Flexitarian diets, mainly in the younger generations and middle and upper social classes, where dietary fads will impact meat demand most strongly. The net impact is negative in the youth category, reducing overall demand since no aesthetic, cosmetic or energetic attributes have ever been valorized for pork.

This trend is developing now and will have an increasing impact to 2025. But its impact will be most notable post 2025 when a larger share of the population will be aware of it (currently this is not an issue for older generations).

Post 2030 the impact of this trend should be more measured. However, it will remain important in the choices consumers make, involving less pork and less meat, but the biggest change will already have happened.

PERCEIVED PERSONAL RISKS FROM MEAT (16)

The issue here is split into two areas, which are becoming more prevalent globally due to the wide circulation of information on social media.

The first area is actual health issues, separated into 2 groups:

- Over-consumption of meat and processed meat products; these can be long term issues.
- Food safety fears linked to meat scandals; these generally have only a short-term impact, linked to the severity of the issue, deaths, and how the media treat the affair. In China this remains a massive issue, but largely due to food fraud rather than fear of animal disease.

Consumers in China are erring on the side of caution after a series of significant food safety issues – the first 9 months of 2016 saw 500,000 reported incidents! Trust in the food supply chain is low, with the result that imported foods are seen as safer than domestic products.

The second aspect is the reaction to non-existent but perceived issues, also stirred up by increased social media activity and a lack of consumer trust in food safety. A good example here is the fall in pork demand in 2019 due to ASF fears, despite the clear (and correct) messages from the government that ASF poses no human risk. There will be many more food safety scandals in the mid-term, and whilst their impact is mostly short lived, taken together over time they have a long-term negative impact on the industry and on meat demand.

As modern systems and traceability develop in the Chinese food system, the impact of these events (perceived and real) will weaken. The effect of any health / sanitary breakdowns in the pork chain will therefore be stronger to 2030, when trust is still evolving.

Post 2040 modern supply chains should be in the hands of large companies, who increasingly understand the value of their brand, and are prepared to pay extra to protect it rather than cut corners. This will lead to a period of increased trust, and will mean that breakdowns when they do occur, will have a lower and shorter impact on pork consumption.

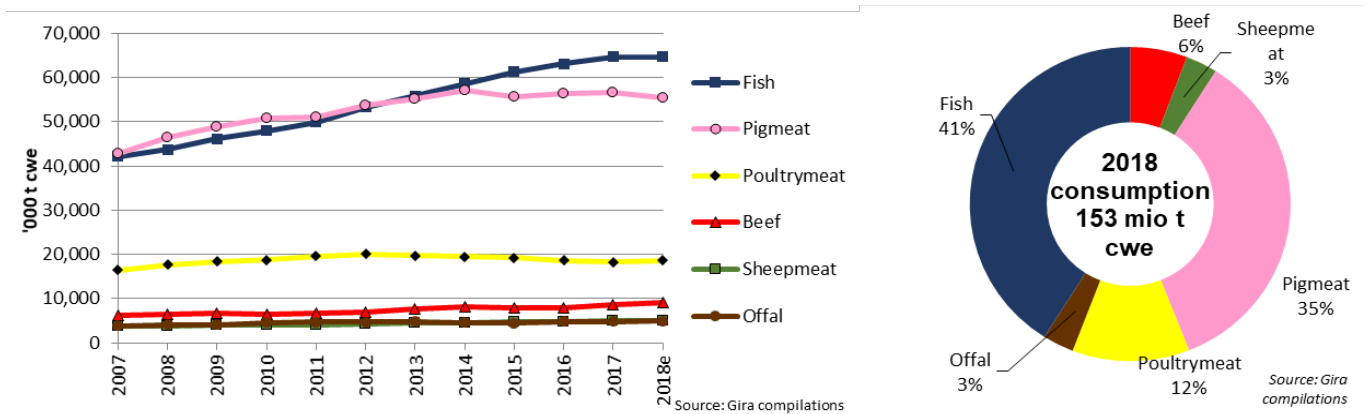
L: COMPETITION FOR STOMACH SHARE:

Figure 7.30: Competition for Stomach Share Ranking



Source: Gira

Figure 7.31: Chinese Meat and Fish Consumption 2018



Source: Gira compilations

MEAT ALTERNATIVES (12)

These already have a cultural position in Chinese cuisine through tofu, and there are a number of products that are meat free and that are popular because of their low price rather than from concern over animal welfare or the environment. Modern meat alternative products are beginning to enter the Chinese market in 2019 and will increase market share, especially whilst pork remains relatively expensive to 2025.

However, demand will be limited as meat consumption remains aspirational in China, and the majority of consumers are still looking for more. Environmental concerns are present, but remain a weak motivating factor in China.

The strongest impact will come between 2030 and 2040 as attitudes over the environment, health and animal welfare continue to develop. Demand will also benefit from a copying of Western trends and menus. The impact on pork consumption here will be negative but most likely focused on the very top of the market in the 1st tier cities. Its overall impact will be limited.

AQUATIC PRODUCTS (15)

Fish is already the major protein source (with a bigger volume than pork), but it covers a wide range of species; marine and freshwater, fish and shrimp, shellfish, and other aquatic products. As with chicken, it will benefit from the ASF induced pork shortage and high pork prices, and like chicken it has a comparably low price point.

Significant investment in fish farming is ongoing, and has been increased by ASF issues. There will be more (and cheaper) fish available by 2025, and the trend will continue to 2030, during which period it will compete most strongly with pork. Its already strong cultural position and widespread availability will lead to an increase in consumption to 2040, offsetting pork demand.

CHICKEN (25)

Traditionally pork has been the dominant meat, and it is expected to remain this way to 2040. But it will lose market share compared to 2018. This is a trend already underway before ASF, as consumers looked to broaden their diet, but it will be accelerated due to high pork prices and consumer uncertainty resulting from ASF. Pork farmers are already finishing chicken in their pig barns, increasing availability and keeping prices low.

Figure 7.32: eCommerce Chicken Breast Advert – Jan 2019



The most notable winner will be chicken (both modern white feathered broilers, and the Chinese yellow feathered variant), owing to its low price and availability. The growth of chicken has been ongoing, but cultural perceptions (a strong preference for pork) and a series of food scares (HPAI + out of date products) have held it back.

Recent and ongoing promotions focusing on its lean nature have seen rapid growth in chicken, even chicken breast. A prolonged pork shortage and high prices due to ASF will give chicken a pronounced price advantage.

The growth of chicken's market share will be strong to 2025, after which returning pork volumes will recover some market share to 2030. After 2030 there will be a continuation of the pre-ASF trend, with pork continuing to lose market share to chicken. The long-term balance of meat consumption will have changed, and pork will never recover the share of meat consumption it had in 2018.

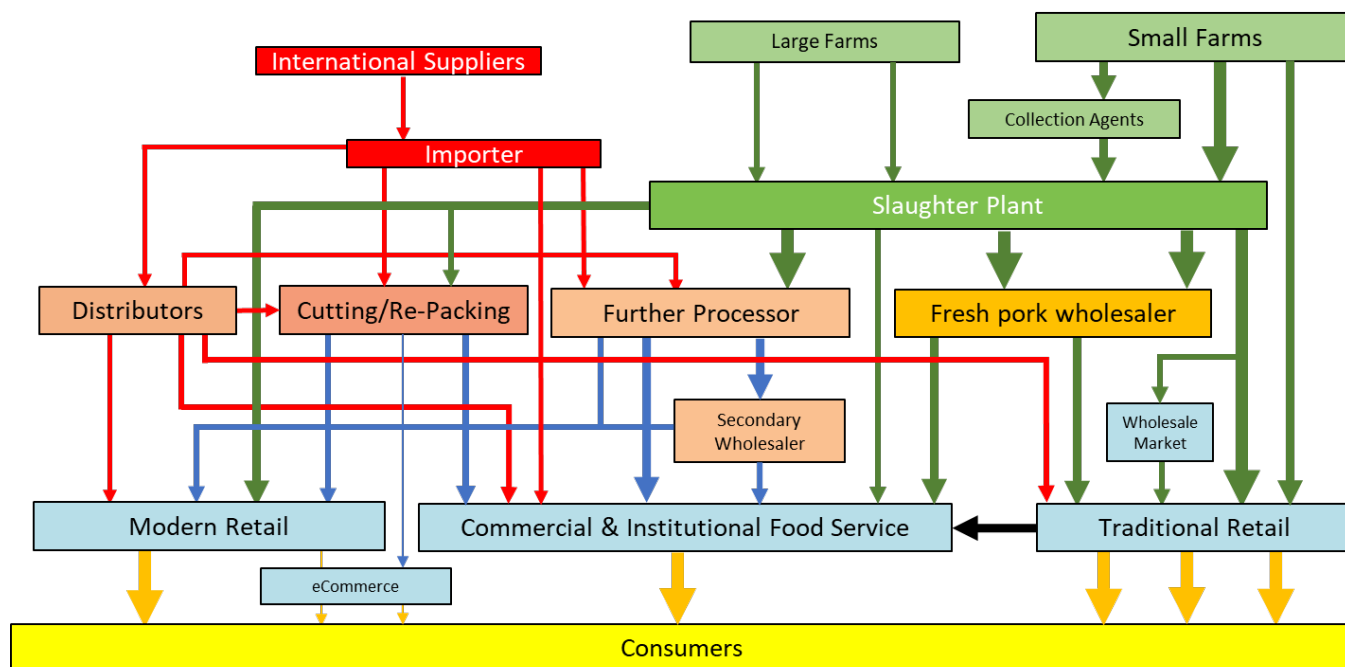
8) **A PHOTO OF THE CHINESE PORK MARKET TO 2040**

China's current pork supply chain has been evolving to cope with the massive pressures it is now exposed to from a vast and increasingly urbanized population. The historical challenge has been the need to move meat from the backyard farms to city center residential areas with little or no chill chain.

But today there are still huge variations within China between the supply chains for 1st tier cities, for lesser urban areas and for rural towns. The ongoing economic growth continues to drive investment in all areas, and this will make the rapid transformation of China's post ASF industry possible.

The developments over the period to 2040 will result from a process of integration and consolidation at all levels of the supply chain, taking advantage of investing in the latest technological infrastructure, without the impediment of existing modern retail structure built in a pre-eCommerce world, where the store requirements were different.

Figure 8.1 The Chinese Pork Supply Chain in 2018



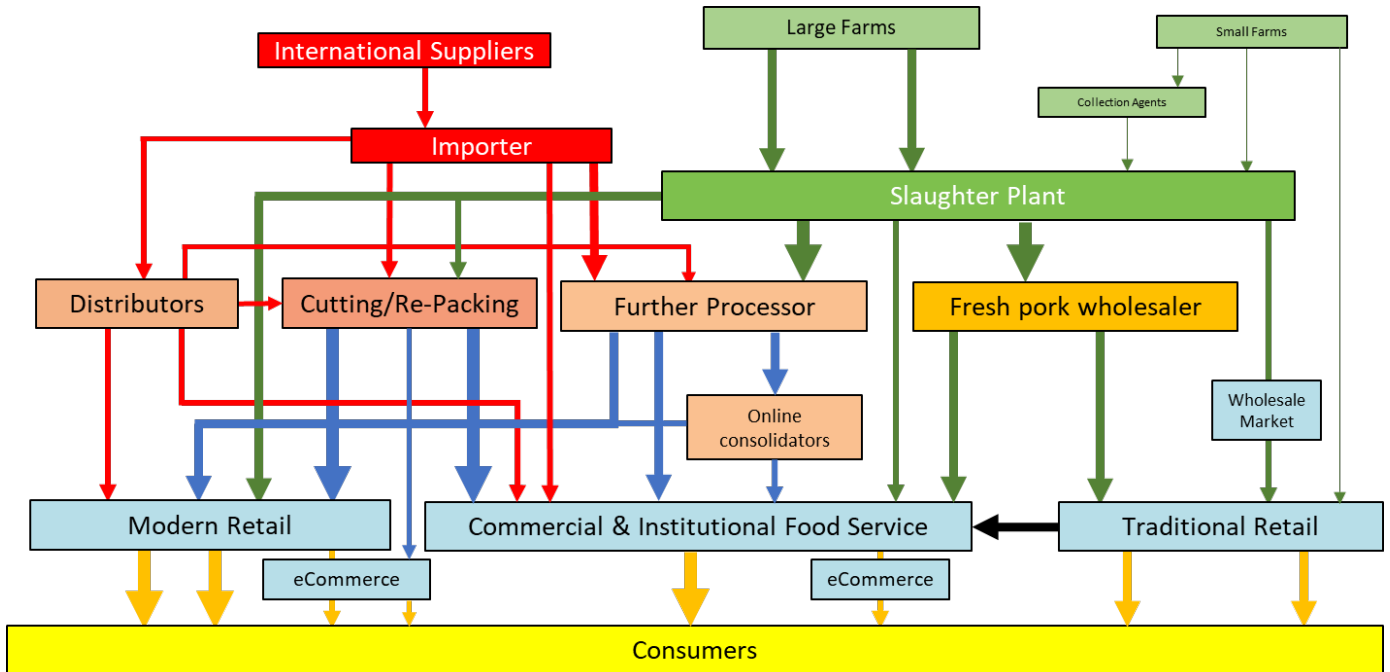
2018 – The structure of the supply chain for pork in China has been slowly modernizing, but in 2018 it was still largely dependent on very traditional elements when it came to moving pork from small scale backyard and semi commercial farms (together around 44% of all pork consumed today) to the consumer. Currently the primary supply route for pork is from backyard farm to a small local slaughter plant, and then on to a wholesale point for distribution to the wet market, which supplies both retail and food service customers. Very little of the total pork thus moved is ever refrigerated.

But in parallel to this, modern chilled supply chains have evolved to manage distribution to both modern retail and commercial food service, but in reality, this is still a very low share of the overall pork market (maybe around 10-20%). It is important though, since these modern buyers are the ones investing in developing the infrastructure for the future: cold storage, refrigerated trucks and in-store refrigerated storage. But these investments add costs beyond those needed for the traditional supply chain, added to which consumers still trust traditional hot meat more than packaged meat.

Imported pork has a low share of the overall pork market, and so far, largely sells via Chinese wholesale centers. These break the bulk shipments and often sell product by the box (usually 25kg). From here it can make its way to small scale food service (chains or independent) or to the local wet market.

There are also currently a few pork importers who specialize in larger volumes for the further processing industry, where product can be cut (sometimes processed) and packed for the local market. These products are usually sold in modern retail (and eCommerce) or through larger chain restaurants. There is rarely any visibility to the end consumer of the pork's origin nor any indication if it was previously frozen.

Figure 8.2 The Pork Supply Chain 2025



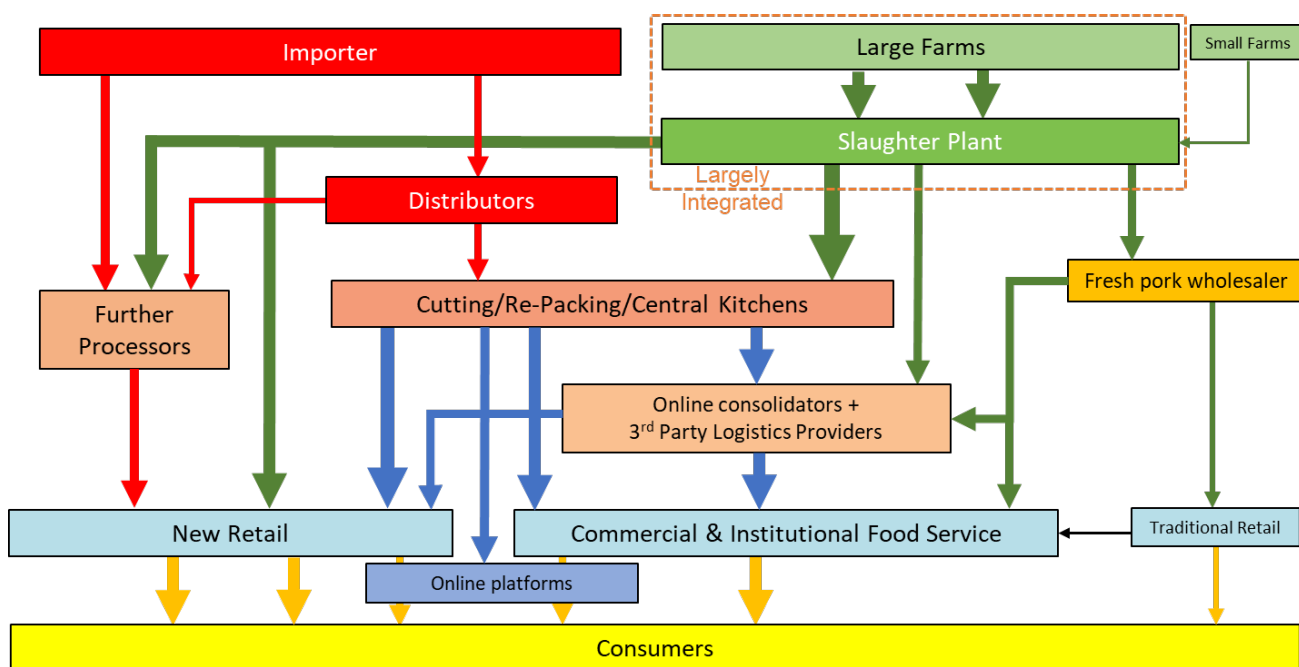
2025 – ASF will by then have accelerated the development of modern supply chains, primarily by removing the backyard farmer and some of the smaller commercial growers. This has put most of pork production into larger farms, either integrated or contracted to modern slaughter plants. These modern plants in 2025 will still be developing and expanding their chilled chains (bigger volumes and also longer geographic reach), and so large volumes will still be being sold from modern slaughter plants onto traditional wet markets (although most will have on-stall refrigeration, even in lower tier cities). Rural retail will still have some direct supply from farms, but this will be a very small share of the overall market.

The development of the chill chain and increased consumer trust will be significant in increasing volumes through modern retail and food service, further decreasing the share of traditional channels. eCommerce will also increase its market share for meat, as urban consumers become more time sensitive and as trust in the modern supply chain increases.

Imports will have reduced in volume from the peak of 2022-25 following the depths of the ASF crisis, but will remain higher than in 2018. Importantly, the period of increasing volumes will have established improved supply chains, more infrastructure, and better handling mechanisms.

Imported pork will therefore have better overall market penetration. It is likely though, to still be most significant in further processing.

Figure 8.3 The Pork Supply Chain 2030



2030 – The modern Chinese supply chain is now established, and the majority of pork passes through it. Very little meat is supplied from traditional farms, and this is not of consequence to the overall market. This is the period that will have seen the biggest shift in how pork moves and how consumers interact with the market...

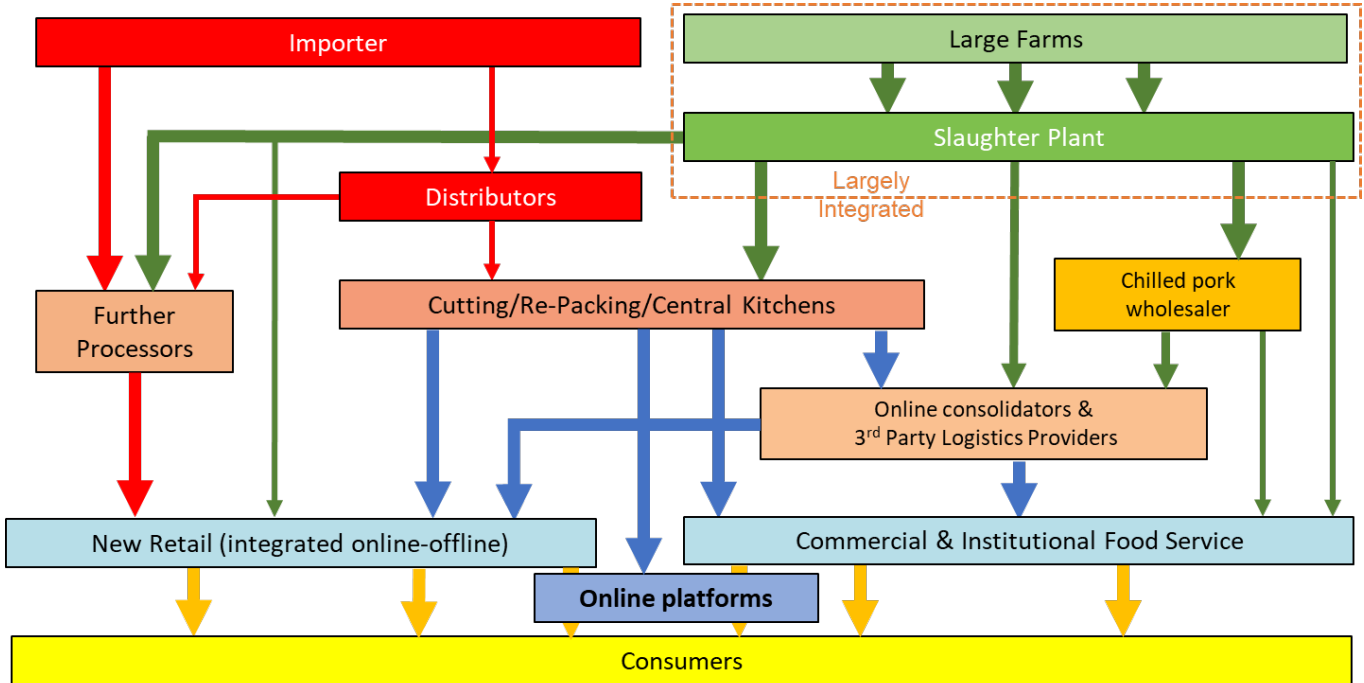
The modern supply chain will be far simpler than that of 2018; with the loss of the traditional sector, and even the wet market pared back to low volumes centered on the rural population, there are far fewer, but much larger key operators.

This is further compounded by increased integration from farming with slaughter and of slaughter with further processing and cutting. Onward distribution is now controlled by either the major modern retail chains (including eCommerce) or the leading food service operators. Their supply chains rely on computer controlled cold storage that manages product flows to minimize waste, and maximize efficiency. Key to all this will be the consumer interface via eCommerce, reducing the role of physical stores but necessitating delivery nodes close to consumers. Online platforms will have become established as a major route to market (these are eRetailers with no physical, bricks & mortar presence).

Cold chain efficiency and eCommerce mean that retail will rely on industrially consumer packed meat, and this will have required significant investment in equipment and infrastructure. This is only possible as changing consumer attitudes to meat purchasing (moving away from warm meat and accepting prepacked) pass responsibility for quality assurance and availability to the retailer. Most importantly this means that avoiding food scandals becomes paramount to maintaining customer trust, and therefore loyalty ... increasingly like in today's developed Western economies.

Import volumes will have reduced by 2030 from the ASF peaks, but will still be significant. Importantly, they will have become established as part of the supply chain for food service (cut to specific needs) and further processors (low cost, good quality raw material). There will be another, lower volume but higher value market in selling imported chilled meat to retail; here the US could build a branded position, as could several EU meat packers.

Figure 8.4 The Pork Supply Chain 2040



2040 – The pork supply chain by 2040 will be a honed version of 2030, where mega cities rely on very efficient supply chains operating through highly automated distribution centers and eCommerce networks.

One of the major changes will come in the number of operators at each level of the chain, with the period from 2030-40 typified by significant consolidation at each level. This will be necessitated in the meat sector by a slowdown in the growth of meat consumption; companies will therefore want to expand and preserve profit margins by horizontal and vertical integration.

As part of this process there will be a high level of alignment between the new wave retailers and the supply base in China. But this will not preclude imported pork products, especially if they use well-supported local brands, although they will increasingly need to differentiate themselves and demand is likely to be for specific cuts – either strongly favored Chinese cuts or those specifically for US dishes. This will be more important by 2040 as, by then, Chinese domestic pork production should be more efficient and closer in cost of production to the USA or Europe, so that fighting on price (with the cost of transport) will be very difficult for imports.

Food service will present good opportunity for imports, providing they can compete on price and guarantee quality. Volumes will be significant and increasingly sold direct to the distributors for the key food service chains.

By the end of our time horizon, the Chinese pork supply chain should look very much like that in the USA and parts of the EU, only potentially the operators will be much bigger. However, it will have the advantage over importers that it will be more modern and will be perfectly adapted to the evolving needs and perceptions of Chinese consumers country-wide. If any doubt persists about this forecast, the reader should look at how the top two Chinese dairies have already developed, in a market that is even more heavily reliant on imports.

9) THE MARKET OPPORTUNITIES: “GAPS” AND PITFALLS FOR SUPPLIERS

The focus of this study has been the long-term structure of the Chinese pork market and its evolving needs by 2025, 2030 and 2040. The severity with which ASF has taken hold in 2019 means that the short term opportunities in the Chinese pork market will be hugely distracting to all those able to access them, and global prices and trade patterns will be disrupted.

ASF must not become an excuse to US exporters to take their eyes off the long-term ball. While the short-term opportunities must be exploited, they must also allow serious exporters to set up sustainable operations for the future in China itself. Good end-user relations (and possibly brands) built up during ASF will increase US exporters' credibility for the long term, when the market and competition will "normalize".

Historically the major opportunity for imports has been in supplying three main market areas:

- Further processing, a small area of the market on the rise, and which has increasingly looked to lower cost imported raw material over expensive and often inconsistent local pork.
- Food service, where price is key. This has favored institutional food service, but there is also good demand from smaller outlets supplied from freezer wholesale centers.
- Traditional retail, for selected cuts. These are not declared to the retail shopper as imported, much less thawed, but they allow cuts like feet and ribs to be supplied at a lower cost.

Whilst the opportunities of supplying the huge Chinese pork market with cuts of low value in their origin markets are obvious, there have also been ongoing and significant pitfalls for suppliers – from rejected shipments, banned plants and lost payments... to buyers arguing over quality and content. Ultimately the profitability has outweighed the costs.

Pre-ASF key cuts for the Chinese market have been mainly: ribs, bellies, feet, deboned masks and livers. Other opportunities are plentiful and can be drawn from less usual cuts, with little value in the exporter's domestic market.

The key to successful selling in China though, is that *if a premium price is desired in your export market then you cannot treat the products you're intending to sell as just low value byproducts of your slaughter plant*. It costs more to produce these cuts, but value is always lost by poor presentation and finishing from plants that see them as simply unwanted, maybe even by-products. In reality *they are undervalued assets to be valorized*, as the tailored production and marketing by packers such as Danish Crown have shown in Asia.

As the Chinese market has grown in scale, it has become more professional at its core (although there are still plenty of opportunists operating), and this trend will continue. Simple but very important factors already for importers include:

- Stronger boxes that can tolerate the physical manhandling that a non-mechanized deliver chain necessitates.
- Highly visible plant numbers; they are more important than company brands.
- Consistent cutting of the product in the box, e.g. feet all the same length.
- Good in-box presentation; preferably not block freezing, although this depends on the product and price point.

These simple factors make significant the difference in the salability of the product further down the Chinese supply chain, and are very important in today's fragmented market. The relationship with large commercial buyers for further processing is different, often simpler, but more margin focused.

Value can be further added by making the meat boxes better than the average. Some notable possibilities are:

- Strongly colored / branded boxes that stand out in a warehouse of boxes from all over the world!
- The brand should create touch points with Chinese culture / buyers, and these may be different from the presentation of your core international brand.
- IQF and / or individual wrapping on higher priced products (high priced for china, not in origin markets). This makes the product more flexible in selling to small restaurants and retail outlets.
- Smaller boxes for high value items like ribs, bellies, 15kg or 20kg, again improving flexibility.

These solutions are not for all cuts, or all end customers, but need to be part of a portfolio of measures to position the exporter brand in China in the long term.

Figure 9.1: Cranswick Country Foods (UK) Brands



Explanation: The logo on the left is Cranswick's new corporate logo, whilst the old logo on the right continues to feature on meat boxes destined for China. The old logo is emotive, and speaks of the origins in the UK... it tells a story that is still relevant in China.

The Chinese market has been developing rapidly; it will become increasingly sophisticated dependent on the supply channel and market area pork is destined for. These changes will happen progressively but the next step will be masked by the frenzied imports in to the ASF black-hole.

The need to be better and be perceived as better will become more important as China reduces its cost of production. A more integrated pig industry, with larger farm scale, and the introduction of modern technology and breeds will reduce costs. Costs savings will be incremental, but ultimately will become closer to those of US and EU producers by 2040. Importantly the cost of production in China will not go below the US as a reliance on imported feed ingredients (notably the protein part) means that feed costs will be higher. Also, the lack of soft (human) skill sets in managing and maintaining a modern pig farm will always hamper the Chinese industry, and whilst they will improve considerably, a gap to best practice will still exist in 2040.

The period from the present to 2025:

This period will be marked by the shortfall in domestic pork production, especially to 2023, and the resultant very high prices in the Chinese market. This combination will lead to a range of measures by the Chinese government to alleviate high pork prices in China. A part of this will be to increase imports of pork, by lowering the barriers to imports; less inspections of containers, more countries approved and more new plants approved... and the approval process will be expedited.

In the initial phase 2019-22 Chinese import volumes will increase sharply, importers in China will not be selective on specific cuts (although the current preferred selection of feet, bellies, deboned heads and ribs will still attract the best premiums). Products will remain primarily frozen for the time being, since the import chain in China is not efficient enough to reliably handle chilled. Inconsistent clearance times (as high as 45 days currently) mean that chilled is likely to be an airfreight business for the immediate future.

This cuts i.e. not half carcasses, trade to China will take all qualities of product and is an opportunity for all suppliers, but reputations developed during this period will continue when the market settles back to the new normal (lower volumes, more competition) and traders in China will remember the good suppliers more favorably than the bad. Reputation is very important in China, takes a long time to build and can be lost on one shipment.

During this period there will also be bouts of government buying, this will favor half carcasses, which will be fitted into the existing traditional supply chain and be used to alleviate price stress in key months (holidays etc.). This buying of half carcasses will be both central government led and provincial government facilitated, meaning competing orders from different regional governments. Volumes are likely to be very high, and could distort exporters' markets. Care must be taken in handling these as demand from buyers and their companies' payment systems may not always be on the same level.

More importantly the trade will likely be sporadic, with strong months and low months, making it difficult for suppliers to manage without building stocks. It should, however, be profitable!

The end of this period will be one of falling import volumes as domestic production recovers and rebuilds its new market position. Import prices will subside from the frenzy of the early ASF years. Volumes will however still be high.

The Chinese government will then start enforcing import regulation more stringently, inspections will look for small issues, and slaughter plant delisting will become more common. The market will look to find a new balance between imports and domestic producers. Notably the trade will shift back to cuts and offal, away from half carcasses.

This is when reputation and relationships built in the ASF period will be most valuable.

The period 2025-2030:

A difficult phase in the Chinese pig industry, as domestic production recovers to a new peak, before *returning to the slow declining trend already seen prior to ASF*. Domestic production will peak well short of 2018 levels, meaning there will still be plenty of market for imports, but those imports will be increasingly challenged by domestic product, and volumes will fall.

During this rebalancing phase it will be necessary for importers to market their pork ever more strongly. Demand for carcass cuts will still be high, but quality, consistency and service will become more important. Processors will value a competitively priced and consistent product from importers, allowing them to balance still relatively expensive domestic pork (although domestic prices should decline relatively towards 2030).

Advances in modern retail and eCommerce, combined with less disruption from ASF, will promote the development of differentiated imported pork at retail. This could be exploited by US exporters to piggyback on the already strong reputation of US beef for quality.

The best import markets will be the 1st and 2nd tier cities, and will be best focused on special retail relationships. Care must be taken to deal as direct as possible with the end retailer, and to foster relationships with the retail buyers in the specific chains, even if they are eCommerce platforms. This period will see an increase in the convenience pork and ready meal offer, perhaps in combination with delivered food service offers. Consumers will be rapidly moving away from home cooking from basic ingredients. This opens the door to more complex meal solutions.

Offal / variety meat will become increasingly specialized. Its role as a mass market product will have taken a serious knock during the ASF crisis, and consumers will return to meat rather than offal products which are harder to prepare. However, import prices should remain good compared to country of origin.

The half carcass trade *will have faded towards zero, unless there are further domestic supply complications.* Importers should be looking ever harder at how to add value and establish USPs with their in-market customers as competition for fading import volumes will be tough.

The period 2030-40:

The modern Chinese meat chain will reach maturity, and the supply relationships will have become well established. Competition between the large retail and food service chains will be high, leading to consolidation of the client base for meat traders. It is also likely that their scale means that retailers and foodservice may well deal directly with export slaughter plants.

The evolution of the chill chain in China will make it possible to supply chilled pork from the US, although this will probably need to compete with European imports by rail. However, more efficient shipping and port clearance facilities will make this possible within the shelf-life constraints.

Further processing will have become a significantly larger market for imported pork, with products for both retail and food service. Differentiation even here will be important, and suppliers will need to deal with increasingly complex corporate requirements on sustainability, the environment and animal welfare laid down by the major chains.

Consumers will have passed the responsibility for food safety and quality selection on to the retailer and this means that in turn *the retailers will expect more from their supply chain.* There is some opportunity here for imported meat to build on its already positive image, but the pitfall of getting this wrong will have more significant consequences than currently.

10) **RECOMMENDATIONS FOR US PORK SUPPLIERS**

The US at the time of writing is penalized by the US/CN trade war, and as a result is paying 50% more tariff than those importers operating under most favored nation status (MFN). There are already clear signs that there are ways around the punitive tariffs for Chinese import companies, and that this is allowing some US pork into the market. It is also known that Chinese buyers are interested and exploring supply from the US, although the time frame and solution for a resolution is unknown. There may be temporary steps from China to allow short term imports of large volumes. This study assumes that sooner rather than later a resolution will be forthcoming.

There is a significant opportunity for US pork exporters in China, heightened by the current ASF crisis. However, US exporters should be aware that *US pork has some drawbacks compared to competing European and Brazilian pork. If US exporters can work around or eliminate these issues, it will allow the significant US price and efficiency advantages to be maximized.*

Beta Agonists:

Beta agonists use (referred to by many in China by the brand name Ractopamine) is a major issue for Chinese importers; they are forbidden in China with no minimum residue levels (MRL) set for imports. This means that *any* residue level will lead to a ban, if China wants it to. In the past some exporters have gambled that beta agonist reared pork will go untested or undetected, or that an importer will be able to manage the inspection process. However, even if 95% of tainted shipments were getting by it would not be worth the risk to the overall market. One ractopamine tainted shipment will result as a minimum in a plant being blocked, and could jeopardize the entire market for all US exporters. Whilst this may be allowed to slide in the height of the ASF crisis, it will be used to restrict access as prices start to decrease. If there is any method for exposing and punishing exporters who ship pork produced with Ractopamine to China, the Chinese authorities are likely to exploit it.

The Product's Physical Appearance:

Fast, efficient slaughter and processing in the US is ironically a drawback for some Chinese export purposes. European plants are generally smaller, with slower lines, which allows them to customize product for the Chinese market, either with better / more accurate trimming, or extra cutting / preparation.

US exporters should consider ways to work around this problem, even if they need to slow lines while running product for China, or putting in extra capacity on certain parts of the line. Of course, that would reduce the tremendous efficiency that makes US pork so price competitive, but on balance Chinese margins should make it worthwhile, especially in the immediate future. The history of Danish exports to Japan proves this point.

The preparation and presentation of product is important, and often ignored by US exporters. But in order to command premiums on otherwise low value cuts, US plants need to be more careful. It is clear from the industry in China that whilst US product is viewed favorably on price; it competes poorly on physical appearance. Retail customers in China still shop by look, feel and smell... it is therefore important to all buyers to get this right.

The Chinese market still commands a strong price on offal items, notably feet and head meat, but also livers, kidneys and a variety of other parts. Like the muscle cuts, these all need to be treated with "respect", well prepared and presented. All buyers at any level want to believe the product they are buying has been well cared for, but the only evidence most have is its physical appearance on opening the meat box!

Packer Brands:

US pork has a much weaker branded position in China, apart from the Smithfield processed meats brand. This will not be a significant break in the initial import rush due to ASF, but branding will be essential in holding market share as the wave subsides 3-4 years later.

US packers should therefore work on developing a visible B2B branded position; these are surprisingly valuable, with even smaller wholesale market buyers able to identify good plants from bad by their plant numbers, buying their products preference, and therefore at a premium.

Service, support and client relationships will take time, and ultimately do not make a product immune to import competition, but they help, and buyers in the market will build relationships and positions of trust.

The upcoming period of large volumes and high prices to China will give the opportunity to US packers to build brands and bridges in the market that will be valuable in the longer term.

Physical Infrastructure:

Infrastructure for moving frozen meat within China is already extensive and the development of modern retail out to the lower tier cities is driving further investment by both the retailers and third party chill chain logistics operators. Indeed, the market may soon become crowded. A US exporter does not need to own his own cold chain warehousing, as this will not be the bottleneck in the mid to long term.

Agreements with high quality providers of serviced cold storage space, who can move your product rapidly to the client will be vital for servicing a market where response time is becoming increasingly important. Avoid the low-end freezer center offers, they will not provide the service that will be needed.

Short term, and entirely due to ASF, there will continue to be a major issue with customs clearance when landing product into China. This is due to the 100% container inspection and sampling process (containers are held until samples have been tested).

Spreading US shipments across ports and especially to the north will help in the initial onset of this process, but shipping routes from the US west coast still favor ports around Shanghai. Ports in the south are currently slow, and local intelligence needs checking regularly for when this situation changes. It is possible that US exporters could invest in bonded warehousing, but the reality is that even if the bottle neck persists (it is likely that the Chinese government will waive testing to free it up), it still takes at least 3 years to build a new site, by which time the situation will be returning to normal.

National Branding:

Exporters should build on their US national pork brand as well as creating a Chinese corporate one. There is some “me to” marketing for US pork from the work done in establishing a high reputation for US beef in the market, both with consumers and the trade. This would help fight the perception which came out in our consumer interviews that the US is a “beef country,” whereas Germany, Denmark and Spain are “pork countries.” But on the plus side, the US is seen as a green and clean provider of meat.

The Chinese pork market will be receptive to differentiated products at all levels always providing they are adapted to Chinese distributors' and consumers' needs. These do not have to be actual systems (yet) but could be as simple as a box showing a pig under an acorn tree! Imagery is important in China, and associated meanings of marketing graphics and logos should be explored.

In fact, in their B2B marketing, US packers should consider “branding” their plant numbers, much in the way that Penfolds winery brands its bin numbers. Many Chinese commercial buyers are familiar with plant numbers and know which ones they trust. This would especially be the case in the future if a US plant was adjusting its runs to meet Chinese standards.

Physical Presence in China:

China is a complex market and one where regulation and the interpretation of regulation is continually changing and is always slanted to the benefit of China. For US suppliers to be able to invest in the Chinese market and maintain a long-term position, they need a real framework in place on the ground in China.

This should be established at 2 levels:

National representation, to manage marketing intelligence, overall impact analyses, share marketing and research resources, and be able to put a united US Pork perspective to both the US government and also for those access issues in China that will become increasingly important. This overrides the issues of companies focusing exclusively on their own short-term best interests. This is already the role of USMEF, where the combined resources of beef and pork will continue to benefit both. However, the considerable increase in sales potential due to ASF, within a very short time frame, could imply a need for increased resources for USMEF specifically for pork.

Individual exporting slaughter company offices. This is becoming a necessity if sales are not just to remain "spot"; not purely as a marketing ploy, but also to allow rapid responses to large customers' needs and problems as they arise. It also means that product specifications and logistics can be managed directly, hands-on, and it will build those personal relationships and trust that will be essential in the post-ASF period. A local presence on the ground is invaluable for both supplier and client, and it sends out a very positive signal about your long-term intentions for the Chinese market; you are investing for the future, not just offloading product!

Final Thoughts:

China's huge market of 1.3 mio consumers offers great opportunities, but it can turn on a dime, often against market sentiment due to outlying issues and political sentiment. So, US exporters must not become over-exposed, and must have alternative outlets for when (not if) the market occasionally turns.

The pork import market will grow strongly through 2025, but then contract. But even then import volumes will remain well above 2018 levels, and will therefore remain a significant balancing outlet for world trade.

US exporters must remain alert and manage risk and investment accordingly. The fact that the US pork industry is much less China-dependent than any of the other major exporters might well give significant added flexibility in the longer term.

In the meantime, capitalizing on the short-term Chinese import volume surge, whilst positioning for a smaller but more sustainable and differentiated longer term position in the market must be the objective of any serious long-term exporter to that country.

APPENDICES

A: PROFILES OF THE PORK SUPPLY CHAINS IN BEIJING AND CHENGDU

There are 2 significant separate reports, one on each of Chengdu and Beijing. These formed the base for the majority of the research program, as laid out in the original RFP. They contain added detail on the situation in each city, and how they and their associated supply chains will develop.

They have allowed us space for increased detail beyond that that can be put in the main body of the report.

B: BRIEF ALTERNATIVE SCENARIOS

As part of the program Gira examined a number of alternative scenarios. It should be noted that at the outset of the project ASF was developing in China, and the depth of the crisis hadn't materialized, although suspicions at Gira were erring on the side of significant disruption. This has meant that much of the modeling concentrated on how the Chinese pork industry would develop in the immediate aftermath of ASF, and to what level the initial recovery would reach. These in turn dictate the outlook to 2030 and 2040. There remains significant uncertainty as to how the ASF crisis will eventually play out, and this must be factored in to all business plans.

In all cases the outlook for imports is for a short-term boom, followed by a fading in volume terms, and increased competition for the import market. Domestic production recovers to a level well below its pre-ASF level. The significant difference is in the short term, whilst long term projections remained similar.

C: CONSUMER GROUP MATERIAL

The images and briefing material used in the consumer group program is available in a separate PDF document. The material selected was photographed for Gira in Beijing in March / April 2019, and selected to provide touch points and ques for discussion around the pork supply chain. High quality versions are available on request.

Ends