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THE SINO-AUSTRALIAN CATTLE AND BEEF RELATIONSHIP

Assessment and Prospects

Brooke Edwards, Scott Waldron,
Colin Brown, John Longworth

China Agricultural Economics Group

School of Agriculture and Food Science,
The University of Queensland

THE UNIVERSITY OF QUEENSLAND
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Aerial view of herd of cattle grazing
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81 - 115 Broadway, Ultimo NSW 2007
t: +61 2 9514 8593
f: +61 2 9514 2189
e: acri@uts.edu.au

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ACRONYMS AND TERMINOLOGY

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
AQIS	Australian Quarantine and Inspection Service
AQSIQ	China's General Administration of Quality Supervision, Inspection and Quarantine
A$	Australian dollar
Breeder cattle	Male or female cattle used predominantly for breed purposes
Bovine	Animal in the sub-family bovinae, which includes cattle, buffalo and yak
BSE	Bovine spongiform encephalopathy
BTV	Bluetongue virus
CIQCID	China Inspection and Quarantine Services
cwe	Carcass weight equivalent
cwt	Carcass weight tonne
ChAFTA	China-Australia Free Trade Agreement
DAFF	Department of Agriculture, Fisheries and Forestry (Australia)
ESCAS	Exporter Supply Chain Assurance System
FAH	Food at home (consumption)
FAFH	Food away from home (consumption)
FAO	UN Food and Agriculture Organisation
Feeder cattle	Weaned animals of sufficient weight and maturity to be sent for finishing (usually in feedlots)
FMD	Foot and mouth disease
FTA	Free Trade Agreement
HGP	Hormone growth promotant
HRI	Hotel, restaurant and institutions trade

HS	Harmonised Commodity Description and Coding System (HS) code
IFPRI	International Food Policy Research Institute
kt	Kilotonne
MFN	Most Favoured Nation
MLA	Meat and Livestock Australia
MoA	Ministry of Agriculture of the People's Republic of China
MOFCOM	Ministry of Commerce of the People's Republic of China
MoU	Memorandum of Understanding
NVD	National Vendor Declaration
OECD	Organisation for Economic Co-operation and Development
OIE	Office International des Epizooties (World Organisation for Animal Health)
PEQ	Pre-export quarantine
RFO	Resident on farm of origin
RMB	Renminbi
SEA	Southeast Asia
Slaughter cattle	Cattle ready or sent to slaughter without significant periods of further feeding
SPS	Sanitary and phytosanitary
swt	Shipped weight tonne
USMEF	United States Meat Export Federation
US$	United States dollar
USDA	United States Department of Agriculture
Veal	Meat derived from calves
WTO	World Trade Organisation

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EXECUTIVE SUMMARY

The cattle and beef trade exemplifies Australia's agricultural integration into Asia, especially with respect to China. Beef exports to China increased 13-fold between 2011-12 and 2013-14 to become Australia's fourth largest export market, with projections that the trade could be worth a cumulative total of A$100 billion between 2014 and 2030. Additional stimulus was generated by the signing of the China-Australia Free Trade Agreement (ChAFTA) and a live cattle export protocol, with projections that it could lead to exports of one million head per year. The excitement in industry, government and the media was palpable and contagious.

The spike in activity and interest was driven by a coincidence of short-term drivers that have now levelled off, along with trade flows. In Australia, a drought-induced spike in slaughter numbers have been replaced by a trough in slaughter numbers as producers restock following improved rainfall. In China, the general slowdown in the economy and government limits on banqueting has limited growth in both beef consumption and prices. At the same time, Australia's dominance in the formal beef trade is being challenged by new entrants, especially Brazil.

The beef trade will fall back on a set of more fundamental, long-term drivers – which look strong under a 'normal' economic growth scenario in China. On the supply-side, Chinese cattle producers – who produce three times more beef than Australia – can be expected to continue to exit the industry to take up more lucrative opportunities in the economy, thus limiting domestic supply and capacity utilisation in China. On the demand-side, Chinese diets could be expected to diversify, though incrementally and not following Western consumption patterns.

Aware of the underlying supply-demand forces – and concerned about price inflation and the supply of staple foods for ethnic minorities – China has taken steps to liberalise and formalise cattle and beef trade policy. This is reflected especially in disease agreements, but also in tariff and quota regimes, including ChAFTA. However, even at peak trade flows, Australia only supplies about three percent of

China's beef, which barely registers as a contributor to China's price and food security concerns. As a result, the liberalisation of cattle and beef trading polices has been extended to a wide range of large and small beef producing countries that can be expected to erode Australia's market share into the future.

However, Australia retains some important policy-driven competitive advantages in China. Long-term biosecurity and animal health programs in Australia, the live cattle export protocol and ChAFTA place Australia in pole position in the formal market. Australia has also proven adept in managing trade challenges when they arise including plant accreditation, the suspension of the chilled and fresh beef trade and procedures on hormone growth promotants (HGPs). This reflects well on the competence of Australian agencies and the bilateral relationship.

This relationship will have to be maintained and strengthened as other challenges and opportunities arise. Opportunities for large-scale exports of live cattle, especially slaughter cattle, could bring the trade more in line with comparative advantage of lower cost pasture in Australia and labour in China. Chinese investment in the Australian beef industry – from farms to abattoirs and into China – will deepen linkages and trade. These trade and investment links will need to be managed and communicated well, including publicly within Australia. At the same time, understanding the dynamics, nuances and the heterogeneous nature of the Chinese cattle and beef industry will be critical if the Australian industry is to make the most of the opportunities.

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The authors are members of the China Agricultural Economics Group (CAEG) in the School of Agriculture and Food Science (SAFS) at The University of Queensland (UQ). Researchers from the CAEG have been investigating the Chinese beef industry and other ruminant livestock industries in China for more than 20 years.

Research partners in China include the Chinese Academy of Agricultural Sciences, the Chinese Academy of Social Sciences, the Chinese Ministry of Agriculture (MoA) and the Research Centre for the Rural Economy under the MoA. Many individuals within these partner institutions have worked closely with the CAEG and the authors would like to thank them for their expertise, cooperation and friendship. Particular mention should be made of Lu Xiaoping (formerly of the MoA), who facilitated much of our research on beef in China. We would like to acknowledge the time and hospitality of hundreds of interviewees throughout China from government departments, associations, abattoirs, feedlots, breeding and extension agencies, traders and farm households.

In Australia, we would like to thank the agencies and people that have supported CAEG research on beef in China. The Australian Centre for International Agricultural Research (ACIAR) have had a long-standing research program in China and, most recently, this report draws on data from an ACIAR project 'Regional beef markets and trade in China and Southeast Asia'. Strong institutional support has been provided by SAFS and UQ, while Meat and Livestock Australia (MLA) has funded previous research on China. For this report we are grateful for the expertise and data provided by: staff at MLA (especially Tim Kelf, Peter Weeks and Vivian Harris); representatives from commonwealth and state government departments; and several Australian beef and cattle exporters.

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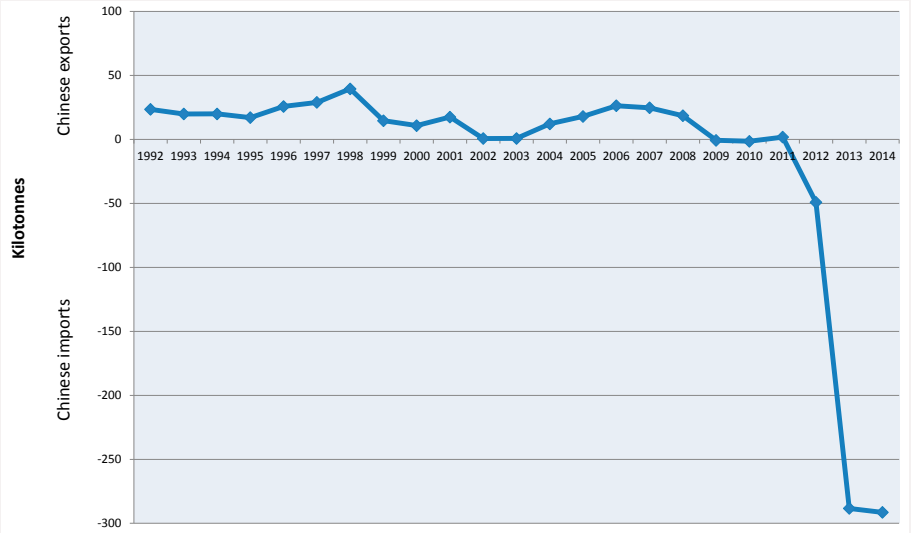
1. INTRODUCTION

1.1. The Chinese beef export boom

The Australian beef cattle industry has for two decades anticipated the rise of Chinese beef consumption and imports. After limited growth during most of this period, hopes were exceeded from about 2012 when trade exploded. This was driven by a powerful set of factors, especially those generated within China but also by the way Australia has positioned itself and responded to trade opportunities.

According to published statistics – which of course report only official or formal trade – China has historically been a small but consistent net exporter of beef. This changed abruptly in 2012, when net imports through formal channels grew to nearly 300,000 tonnes (Figure 1) and at least another one million tonnes through informal channels (see Section 3.6). Unprecedented economic growth, rising incomes and urbanisation have had a profound effect on the Chinese beef sector, on both the consumption and production sides. Chinese beef consumption (especially out-of-home banquet consumption) has increased dramatically in recent years. Simultaneously, domestic production – which is many times larger than Australia's – has rationalised as small-holders abandon cattle production in the millions to take up more lucrative jobs in factories and the cities. As a result, abattoirs struggle to source cattle and domestic beef prices have escalated making imported beef competitive not just on quality but also on price.

FIGURE 1. CHINESE NET BOVINE TRADE, 1992-2014

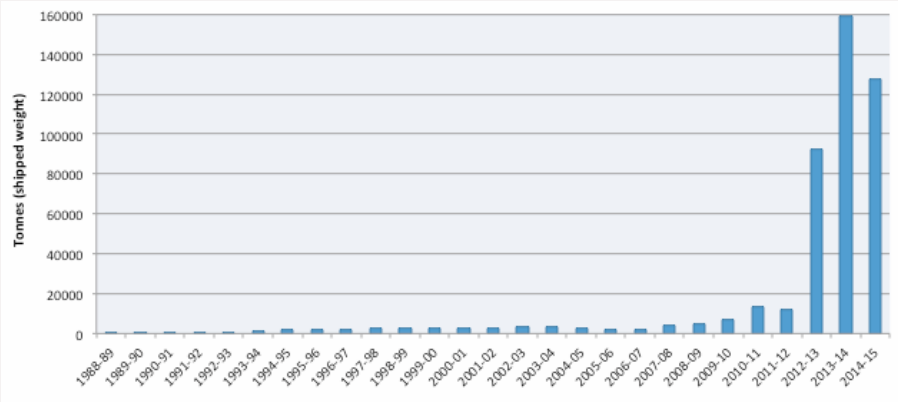


Source:
UN Comtrade
(accessed November 2015).

With other major beef exporting countries banned or restricted from the Chinese market due to 'mad cow disease' (bovine spongiform encephalopathy, or BSE) and foot and mouth disease (FMD), Australia was left as one of the few countries 'standing' with legal access to the Chinese market and in pole position to capitalise on the emerging opportunities. Exports grew 13-fold between 2011-12 and 2013-14 (Figure 2) and catapulted China to the fourth largest destination of Australian beef exports behind traditional established markets of Japan, South Korea and the United States. Other exporting beef countries – India, Brazil, the US – exported much more to China than Australia (at least one million tonnes combined in 2014) but 'informally' through third countries and smuggling channels.

FIGURE 2. AUSTRALIAN BEEF EXPORTS TO CHINA, 1988-89 TO 2014-15

Source: ABS (2015).



1.2. The public commentary

While the story of the rise of the Sino-Australian beef trade was important in itself, the environment in Australia in which it emerged magnified the story. Australia has long recognised the relationship between 'Australia and the Northeast Asian Ascendency' (Garnaut, 1989) but the relationship was reaffirmed more recently as 'Australia and the Asian Century' (Commonwealth of Australia, 2012).

This discourse became enmeshed with rhetoric that Australia would/could become the 'food bowl of Asia' (e.g. The Economist Intelligence Unit, 2014). This is despite the fact that Australian agricultural exports feed about 60 million people, less than one percent of the current Asian population. The rhetoric was not conducive to trade negotiations as it reinforced (ill-informed) perceptions in trade partners that Australia would swamp Asia with agricultural products and damage the livelihoods of millions of small domestic farmers. The message was recast to describe Australia as the 'delicatessen of Asia' supplying higher value, higher margin, niche products to the burgeoning middle class.

The cattle and beef industry has become a shining light in Australia's economic and agricultural integration into Asia, and China in particular. The iconic Australian industry is making inroads into China to fill the needs of a burgeoning aspiring middle class with an acquired taste for beef. Modelling forecasts that total beef exports from Australia to

China could reach a cumulative total of A$103 billion over the period 2014 to 2030 under a high productivity scenario (ANZ Bank, 2014). With exponential growth in the beef trade it seems that if ever the hopes of Australian agriculture in Asia were to be met it would be in the form of beef to China.

Celebration and expectations received a boost in 2014 and 2015 when the decade-long China-Australia Free Trade Agreement (ChAFTA) negotiations were finalised and announced. ChAFTA was widely regarded as a big win for the Australian red meat industry, expected to deliver an 'A$11 billion boost to the red meat industry' (Beef Central, 2014). From January 2016 tariffs for cattle, beef, hide and offal to mainland China are to be phased out over nine years, further boosting Australia's competitive position in the Chinese market.

In parallel, in 2014-15 long-awaited negotiations for a new live cattle export health protocol were finalised and announced. Australia has had an agreement for slaughter cattle since 1998 and there has been a strong trade in beef cattle for breeding and dairy cattle for many years. However, the new protocol allowed for export from northern Australia (north of the Bluetongue vector line) and makes Australia the first country to have official access for both slaughter and feeder cattle. This was heralded as delivering 'unprecedented access' to China (Farrell, 2015) and snowballed into claims Australia could export one million live feeder and slaughter cattle annually to the Chinese mainland, worth A$1 billion (e.g. Cullen, 2014; Massola, 2015). The claims circulated through the media, government and industry in Australia – and in China. This caught Chinese government and industry by surprise and again required smoothing over. The claims were clearly highly exaggerated given any realistic assessment of current commercial and logistical challenges under the negotiated terms of the protocol.

Another dimension to the bilateral beef relationship is the wave of Chinese investment in the Australian industry in recent years. Between late 2014 and late 2015 nine Chinese companies invested A$430 million in Australian beef properties and supply chain assets (Rowley, 2015; Beef Central 2015a, 2015b). The recent controversy surrounding Chinese bids for Kidman and Co. highlight the political

sensitivities of Chinese investment in Australian agriculture in 2015-2016. Australian investors like Andrew 'Twiggy' Forrest and Gina Rinehart are also seeking to capitalise on possibilities in the Chinese beef market (Burrell, 2014).

China provided much-needed good news for a beleaguered industry that had suffered years of drought, depressed cattle and property prices and uncertainty in major exports markets, especially Indonesia and Russia. The entry of China as a major trading partner was and is seen as important in growing and diversifying export markets, increasing competition, farm-gate demand and prices and providing a ready market for culled cows turned off in the drought.

For an idea of the fervour surrounding the Chinese (and, more broadly, Asian) beef and cattle market opportunities in 2014 and 2015, consider the following sample quotes (of which there are many more of a similar ilk):

> I simply don't think that we can oversell [the potential of] Asia, there is such strong demand for northern cattle and our beef in general. (Marshall in Bell, 2015).
>
> The market is so big, so what if Brazil gains access...There's such demand into those areas that another major beef producer gaining official access to China would have little impact on our [Australian] market prospects. (Australian trade source in Condon, 2015a).
>
> Where are all the cattle going to come from? (State government beef representative, personal communication, 2015).

While some industry and trade representatives took a more measured approach about China (e.g. see Penfold and Warriner in Schubert, 2014) many in the media and some in the industry got a bit carried away.

1.3. A more measured perspective

Analysis in this report suggests that in the longer-term much of the optimism surrounding the Australia-China cattle and beef relationship is warranted. Underlying changes in the Chinese market suggest that the long-term future of the export trade, especially for beef, is bright. Chinese consumers will no doubt consume more beef as part of the gradual diversification of diets. It is hard to see how the domestic Chinese beef industry can increase significantly in size or productivity into the foreseeable future. Australia is in pole position – geographically, for disease status and trade policy – to take advantage.

But the exponential growth in trade of the 2012-14 era is not sustainable. Net Chinese beef imports and Australian trade flows decreased in 2014-15 (see Figures 1 and 2) and declined again in the period January-April 2016 (ABS, 2016). Economic growth in China has slowed to around seven percent and policymakers aim to maintain this more 'normal' rate of growth. Chinese (in the mainland or elsewhere) are not traditionally big beef eaters and there is little evidence that they will adopt Western-style levels or styles of consumption. Anti-corruption measures (since 2013) have reduced banqueting, where a large amount of beef (and other luxury items such as seafood) are consumed.

Trade can be disrupted by policy measures, as occurred for fresh beef imports and hormone growth promotants (HGPs), plant certification, periodic crackdowns on smuggling (that indirectly affect the formal trade) or any number of disease, sanitary and phytosanitary (SPS) or animal welfare issues. The Sino-Australian live cattle export health protocol appears to have been concluded in such a way it makes the export of feeder or slaughter cattle at any significant scale very unlikely for both commercial and logistical reasons.

Importantly, as China liberalises its beef trade and disease policies, Australia is facing increased competition in the formal market from major new entrants, notably Brazil, and perhaps further competition from Uruguay, Canada, Argentina, the US and even India into the future. Australian cattle supply is expected to decline in the medium-term as the herd rebuilds from drought and high slaughter rates.

High demand and prices in other markets will mean that Chinese importers may struggle to source beef from Australia in the large volumes of recent years.

While industry and government are aware of these mediating forces, they are rarely raised publicly. A more measured assessment of opportunities from the rise of the China market may be that of a significant new buyer that adds competition, buoyancy and diversity to the existing export market. It is unlikely that – or it may be some considerable time until – China dominates the Australian export trade in the way Japan did in the 1970s and 1980s and the United States prior to that.

1.4. Report objectives and approach

As suggested above, directions in the Australia-China cattle and beef trade will not be linear and will be influenced by a myriad of factors. By documenting current and past trends and factors over extended time periods, this report aims to provide the Australian industry with much-needed perspective and context that may be useful for looking into the future. The report also collates and presents up-to-date information, some of which is not publicly accessible elsewhere. This aims to inform commercial and policy decision-making in industry and government.

The report also provides insights into the broader bilateral relationship, and contributes to public debate. Are the heights of export in recent years sustainable or re-attainable? Is the excitement from the media, industry and government justified, or is it wise to temper it? How is Australia progressing in the 'Asian Century', as the 'food bowl' or the 'delicatessen' of Asia? Did we get into this position due to good luck, good management – or both?

The report is subject to several limits. The comprehensive and meso-level analysis comes at the expense of detailed commercial and prescriptive analysis, which is not the aim of the report. The report focuses primarily on the beef trade, with some discussion of the live cattle trade, but does not consider offal, hides or other beef by-products or halal beef. While the report considers international competition in the Chinese market and domestic supply trends,

these are not addressed systematically or as dedicated sections of the report.

With regard to methods, the report draws on and cross-verifies multiple data sources. Statistical data is presented for Chinese and Australian exports. English and Chinese literature drawn on include industry reports, the media, academic sources and policy documents. The authors have conducted collaborative research on the Chinese beef industry and trade for over 20 years, involving years of fieldwork, many hundreds of interviews throughout China and publishing of numerous books, articles and reports.[1] Industry specialists, other researchers and government sources in both China and Australia were consulted about developments in recent years and to fill specific information gaps.

With regard to report structure, after this introductory chapter, Section 2 describes structures and trends in the Australia-China cattle and beef trade, which are forged by forces documented in subsequent sections. Section 3 documents developments in the Chinese beef sector (production, consumption, trade, policy) that are the major drivers of the trade trends. Section 4 discusses the policy settings and the bilateral relationship in which the trade has developed. The report concludes with a summary and discussion of what is understood about the drivers and nature of the emerging trade to date, comments on prospects for the future of trade, and draws out potential implications that may help inform Australian decision-makers as the trade progresses.

1.5 A snapshot of the Australia-China beef trade

Before proceeding to detailed analysis, Figure 3 provides a snapshot of the beef export trade from Australia to China in 2014.

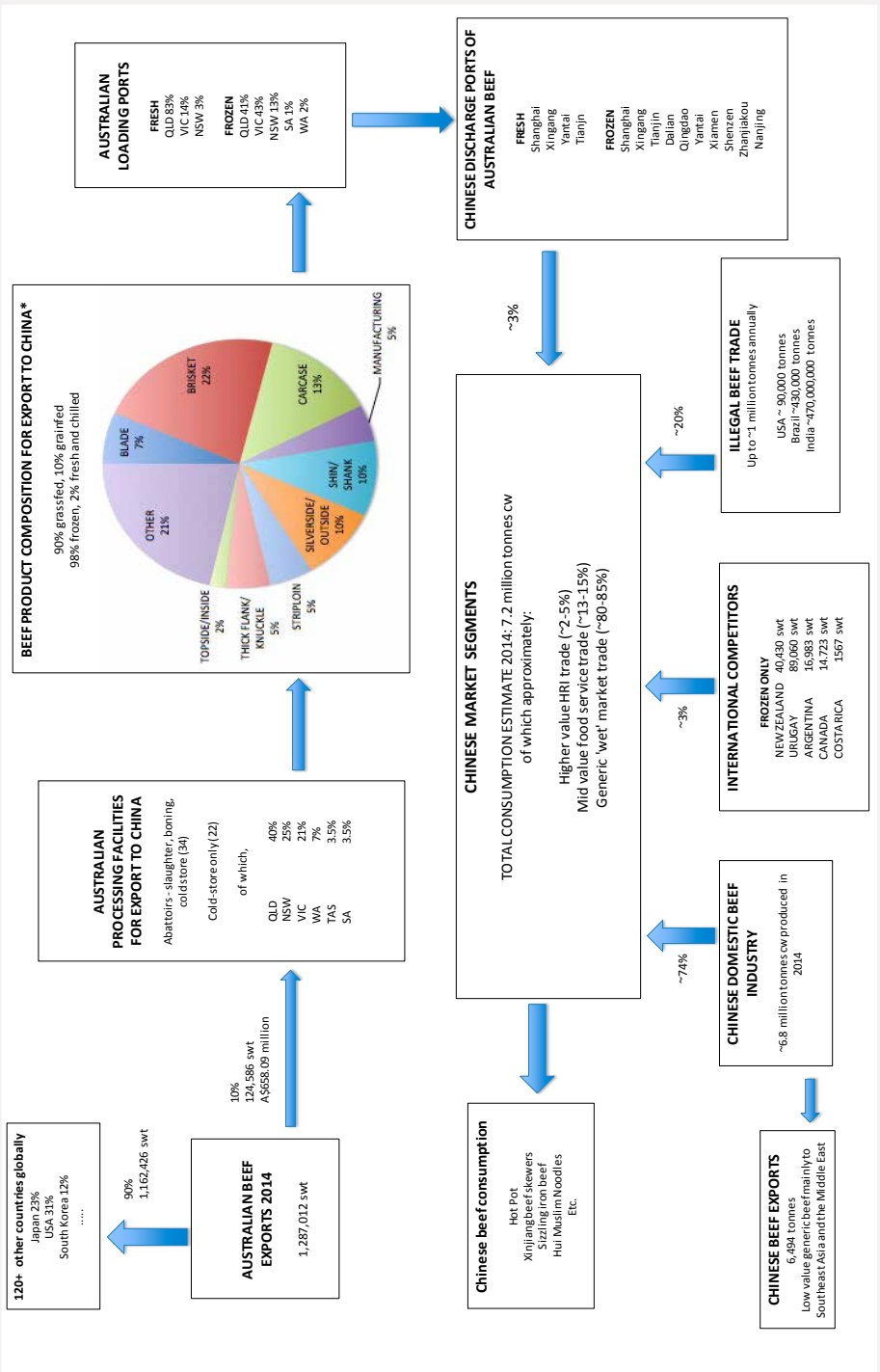
In 2014 about 10 percent of Australia's beef exports were sent to China mostly in the form of frozen, grass-fed beef of a variety of cuts and qualities. Most of these exports originated in Queensland, where the majority of Chinese-approved abattoirs and cold storage facilities are located. Product was offloaded in a number of Chinese ports (of which

[1] See China Agricultural Economics Group cattle and beef projects, The University of Queensland. <http://www.uq.edu.au/agriculture/caeg-cattle-and-beef-projects-5 >

Shanghai is the most significant) and distributed through low, mid and high-value beef market segments in China.[2] In 2014 Australian beef product made up about three percent of total beef consumption in China, other formal imports comprised about three percent, informal imports about 20 percent, while the domestic Chinese beef industry fed the remaining 75 percent of the market. China maintained a (very) small, low-value export trade to some countries in Southeast Asia and the Middle East.

[2] The relative importance of Chinese beef value segments for all product (not just Australian) are estimated based on a set of assumptions in Waldron (2010).

FIGURE 3. THE STRUCTURE OF THE BEEF EXPORT TRADE FROM AUSTRALIA TO CHINA, 2014



Sources:
ABS, DA, MLA, MLA Statistics database, UN Comtrade, Guo and Liang (2014) and Waldron (2010).

* Product composition breakdown is for the 2014-15 fiscal year.

2. THE SINO-AUSTRALIAN BEEF AND CATTLE TRADE

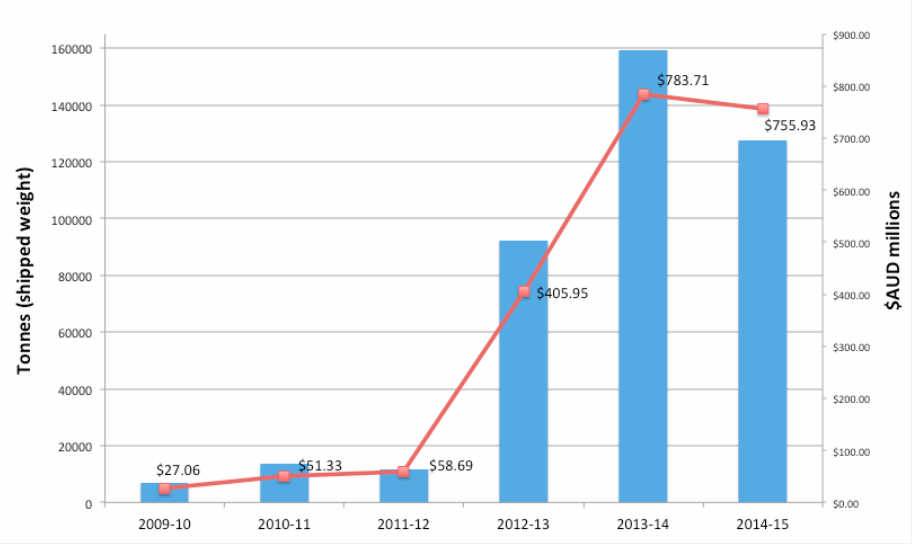
This section provides a descriptive ex-post review of the trade including escalation in trade volumes since 2011-12, drawing mainly on Australian Bureau of Statistics (ABS) trade data from 1988-89 to 2014-15.

2.1. Beef export volumes and market share

Beef exports to China have historically been modest, comprising less than one percent of total Australian export volumes. Prior to 2011-12 beef exports to China were less than 7,000 swt per annum but escalated and peaked in 2013-14 just below 160,000 swt. The rapid expansion is largely the result of structural changes restricting Chinese domestic beef production (see Section 3.2), increasing consumer demand for beef in China (Section 3.4) and a rapid increase in Chinese beef prices (Section 3.5) leading to a more liberalised Chinese beef import policy (Section 3.6). The expansion in trade has seen China become the fourth largest destination of exported Australian beef behind only the well-established markets of Japan, South Korea and the US.

A number of factors led to a slight decline in exports in 2014-15. The trade was disrupted by what Meat and Livestock Australia (MLA) describe as 'macroeconomic policies to non-tariff market access barriers' (MLA, 2015a) referring to the Chinese temporary suspension of Australian fresh and chilled beef products until mid-2014 and the enforcement of HGP-free beef requirements from May 2014 onwards. Other contributing factors were exceptionally strong US demand (MLA, 2015) and slightly lower overall Chinese legal/formal imports (see Figure 1).

FIGURE 4. AUSTRALIAN TOTAL BEEF EXPORT VOLUME (SWT) AND VALUE (A$ MILLION) TO CHINA, 2009-10 TO 2014-15



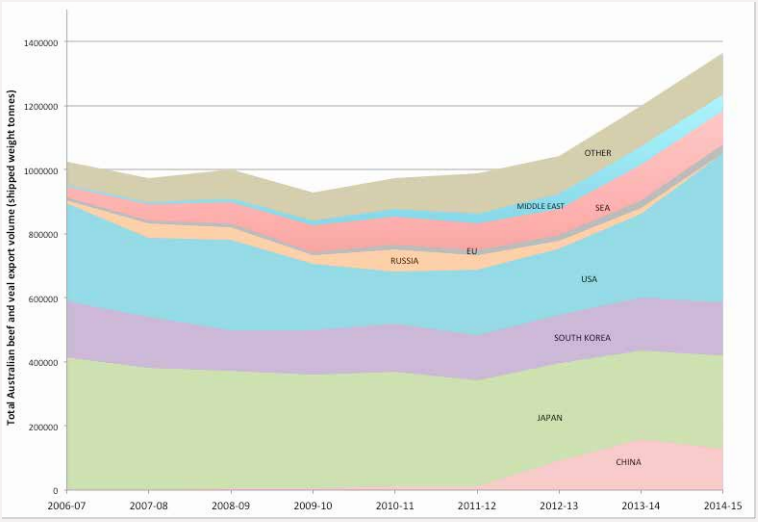
Source: ABS.

Greater export volumes going to China after 2011-12 coincided with a general increase in global demand for Australian beef (see Figure 5). Total beef and veal exports have exceeded one million tonnes annually since 2011-12, driven by strong international demand, particularly from the United States where dry domestic conditions inflated prices and constrained local industry production. Australian supply to meet international demand (including China's) was facilitated by above average cattle slaughter rates as a result of drought and destocking.

In a period of expansion of total Australian beef and veal exports, the share of exports destined for China increased from one percent to more than 13 percent in 2013-14. There has also been some slight reorientation in trade towards Southeast Asia and some industry commentators (e.g. Weeks, 2015) predict that 'Developing Asia' markets will be the successors of the more mature Northern Asian markets (Japan and South Korea) that were dominant in the 1990s.

FIGURE 5. TOTAL AUSTRALIAN BEEF AND VEAL EXPORT VOLUME (SWT) TO THE WORLD, 2006-07 TO 2014-15

Source:
Authors, based on ABS.



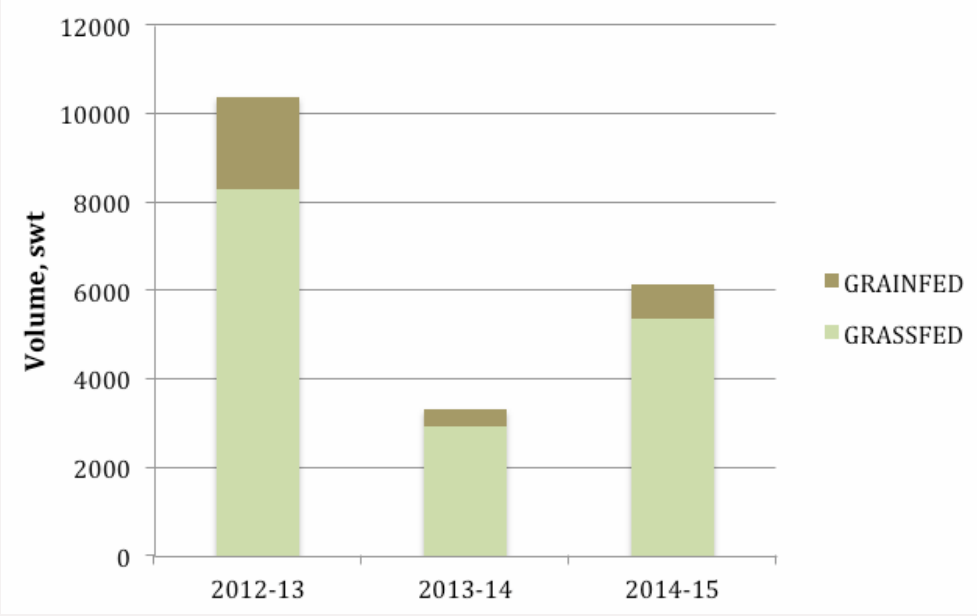
In 2014-15 most Australian beef product, both fresh and frozen, arrived via the port of Shanghai followed by other coastal city ports of Xingang, Tianjin, Yantai, Dalian, Quingdao and some other very small quantities to other locations (DA, 2014-15). Statistics on the marketing channels within China through which Australian product flows after being unloaded at the ports are not available.

2.2. Export composition and beef unit value

Frozen beef has historically accounted for about 90 percent of all beef exported to China and this remained unchanged during the recent expansion. Fresh and chilled beef products have rarely exceeded 10 percent of the total export trade to China and have been relatively volatile. Figure 6 shows the effect of the Chinese fresh and chilled ban (Section 4.2.2) from October 2013 to June 2014, with volume recovery beginning in 2015. As of September 2015, fresh and chilled exports to China were up 200 percent year-to-date following the lifting of the suspension (MLA, 2015c) and Australia is currently the only exporter in the world with legal access to the Chinese fresh and chilled beef market. Over 90 percent of exported beef product to China is grass-fed and exports are HGP-free as per Chinese import regulations. Figure 6 and Figure 7 provide details of the breakdown of chilled and

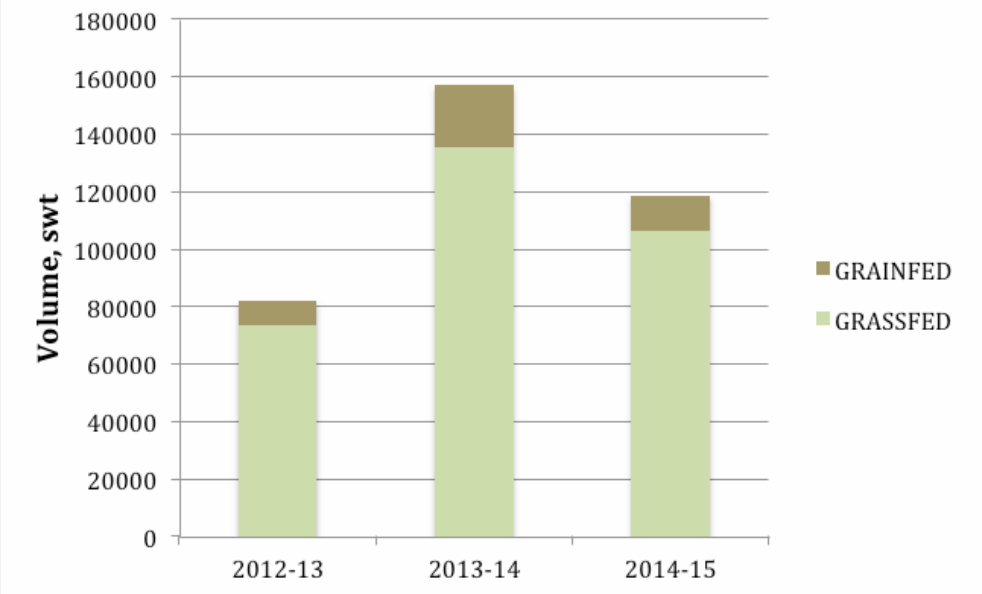
frozen beef exports to China by type of feed (grain-fed or grass-fed) over the last three financial years.

FIGURE 6. CHILLED BEEF EXPORT COMPOSITION TO CHINA, 2012-13 TO 2014-15



Source: MLA.

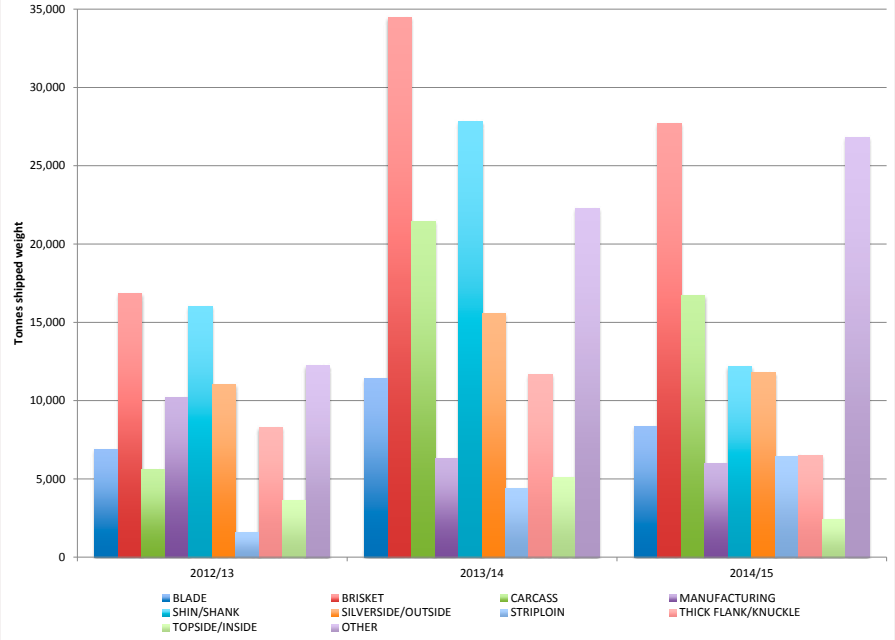
FIGURE 7. FROZEN BEEF EXPORT COMPOSITION TO CHINA (VOLUME, SWT), 2012-13 TO 2014-15



Source: MLA.

Prior to the recent rapid expansion, the small export trade has been mainly in the form of primal and other boneless cuts, mainly for the food service trade. In the period of rapid expansion, the composition of cuts has changed somewhat (although it is difficult to ascertain trends and reasons from just three years of data). Figure 8 shows cut composition breakdown from 2012-13 to 2014-15. Brisket, shin/shank, silverside/outside have been (and largely remain) the most popular cuts by total volume. However, there has been an increase in volumes and relative importance of several categories - most notably carcass, strip loins and 'other' cuts which are traded in volumes of less than 5,000 tonnes (including ribs, rump, tenderloin, thin flank, chuck etc.). There may be several explanations for this modest diversification in a wider range of cuts. Some sources speculate that the diversification in cuts exported reflects a diversification of market channels and end uses in China purchasing Australian beef product spurred on by greater Western-style meat consumption (Rabobank, 2015). It is, however, more likely that Chinese importers were simply buying any type of beef that they could secure to take advantage of favourable price alignments at the time (high Chinese prices). Furthermore, the drought-driven destocking in Australia at the time means that the full range of cattle were being turned off, including breeders and culled cows. With trade restrictions in the other price-sensitive markets of Russia and Indonesia, China provided an important outlet for cow meat and lower value cuts. These market segments are now under threat from the entry of Brazil into the legal/formal market (Condon, 2016).

FIGURE 8. TOTAL BEEF EXPORTS TO CHINA BY CUT COMPOSITION BREAKDOWN (VOLUME, SWT), 2012-13 TO 2014-15



Source: MLA.

Remarks: 'Other' includes cuts less than 5,000 tonnes (Ribs, chuck roll, cube roll, intercostals, ribs, rump, short ribs, tenderloin, thin flank).

Also notable is the increase in the carcass trade (darker green bar) that requires further butchering in China (see also Nason, 2013a; Marshall, 2014). With major differentials in slaughter costs between Australia and China – especially the much lower labour costs in China – and with very low capacity utilisation in Chinese processing facilities (see Section 3) the potential exists for the carcass trade to expand. Recent increases appear to be a result of high demand for a full range of cuts (see above) and cost savings for Australian exporters (Marshall, 2014). However, industry commentary suggests that this is not likely to be a longer-term trend given likely lower efficiency and less favourable margins (Nason, 2013a) including higher unit transport costs and shrinkage. The possible further development of the carcass trade also poses questions about the use and potential abuse of the 'clean, safe and imported' claims attached to Australian beef.

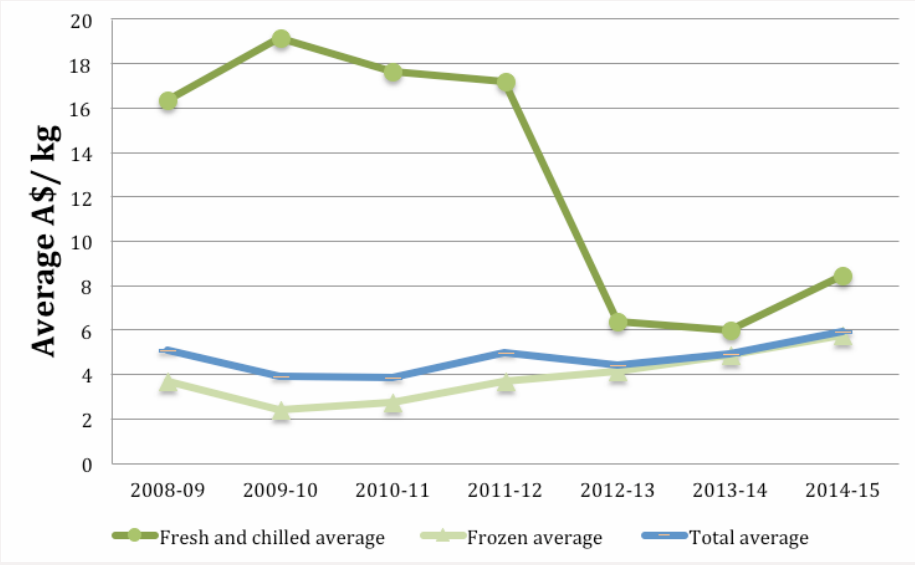
Statistics on the average unit value of beef also provide insights into the nature and composition of the trade (Figure 9). Fresh and chilled

beef has traditionally been a much smaller but higher value form of product than frozen beef. Differentials declined sharply from 2011-12 with the rapid total volume increase in exports of chilled product, especially in the proportion of bone-in cuts (from six percent to 31 percent) and decline in 'primal cuts' (from 85 percent to 62 percent) which appears to be responsible for the dilution in fresh and chilled unit value in 2012-13. Primal cuts have resumed as the main portion of chilled cuts in 2013-14 and 2014-15 and the unit value has improved marginally in 2014-15. The nine-month ban during 2013-14 (see Section 4.2.2) appears to have had relatively little effect on the fresh and chilled unit value (A$6.38 in 2012-13 and A$5.96 in 2013-14).

At the same time, the average price of frozen product has almost doubled across the five-year period between 2009-2010 and 2014-2015. While this may be significant it has to be assessed relative to modest Australian inflation and increases in Chinese prices of 62 percent across the same period. Similarly, rising global beef prices in recent years generally are likely to be at play here.

FIGURE 9. NOMINAL UNIT VALUE OF BEEF EXPORTS TO CHINA, 2008-09 TO 2014-15

Source:
ABS (various years).



In summary, there is some evidence of cut diversification in the last few years that may perhaps be a result of specific orders for growing higher value markets. However, unit values (especially in the chilled trade) of the recent higher volumes of beef being imported into China

from Australia suggest that most of the extra beef is not going into this traditional 'high-value' market segment. The diversification of cuts is likely to represent overall increase in demand from Chinese importers for all beef and full range of cuts.

Beef offal has historically been a significant export item to China and increased roughly in line with the overall beef export trade volume, rising from 986 swt to 6,179 swt in the peak year of 2013-14 (MLA statistics database). Veal accounts for a negligible component of the overall beef trade to China, only appearing in very small quantities in frozen boneless form.

2.3. Source of exports

Figure 10 illustrates the source of Australia's Chinese beef exports by state as a percentage of the total trade since 2010-11. Until recently, Queensland and New South Wales dominated the Chinese trade. However, the recent trade expansion has seen growth in exports from southern states, possibly the result of reorientation in supply following the May 2014 Chinese enforcement of HGP-free beef imports. Victoria and South Australia as of 2014-15 accounted for 40 percent of the exported volume to China rising from a low of seven percent in 2011-12. Since May 2014 Victoria has consistently supplied greater volumes than New South Wales.

FIGURE 10. PERCENTAGE SHARE OF CHINESE BEEF EXPORT TRADE BY AUSTRALIAN STATE, 2010-11 TO 2014-15

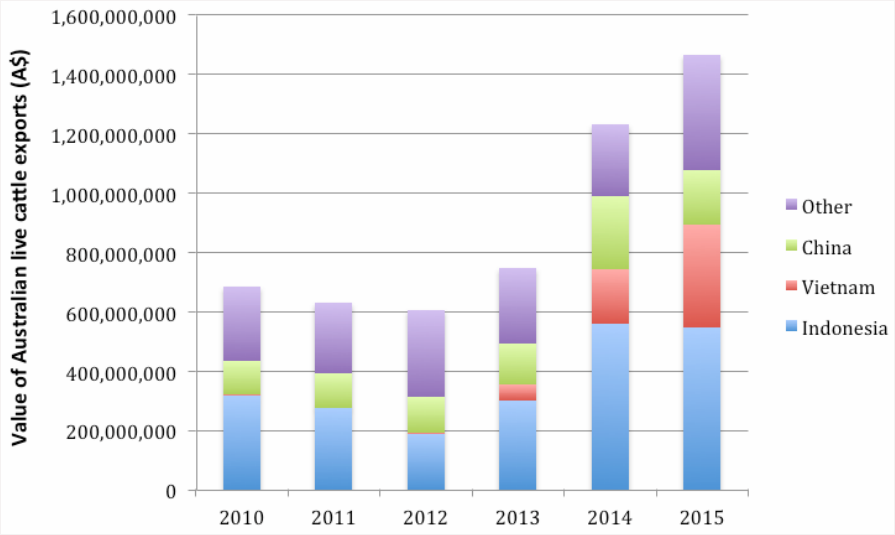
Source: ABS.

2.4. Live cattle exports

Australia exports over a million head of live cattle annually, mainly to Southeast Asia. Seven new live export markets have opened up recently for Australian feeder and slaughter beef cattle, including China (Farrell, 2015). Chinese market access was negotiated through the bilateral Australia-China live cattle health protocol agreement. The new live cattle health protocol was signed on June 20 2015 and the first symbolic shipment of live feeder cattle (175 Angus and Angus cross steers) departed via air on October 20 2015 (Nason, 2015c). This newly negotiated agreement is discussed in Section 4.1.2.

FIGURE 11. VALUE OF AUSTRALIAN LIVE EXPORT BY DESTINATION, 2010-2015

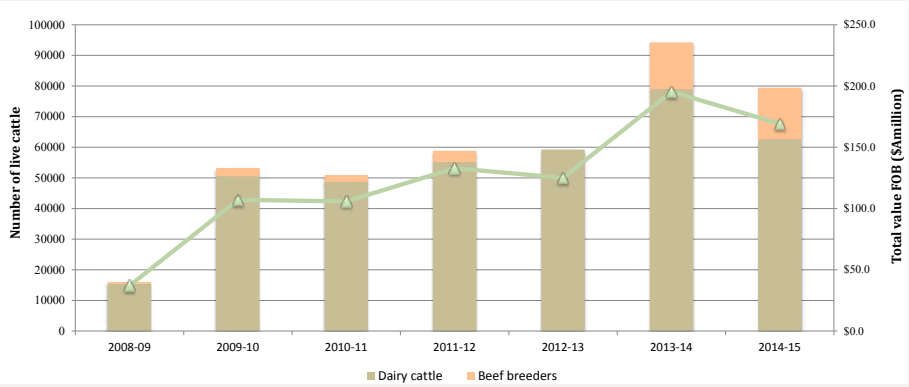
Source:
MLA statistics database.



Remarks: China percentage share of total value of trade in parenthesis.

The trade in feeder and slaughter cattle complements the substantial export of dairy and breeding cattle to China that has already been established since 2001 (see Figure 11 and Figure 12). Indeed, the export of all types of live cattle from Australia to China represents 12-20 percent of the total value of all live cattle exports, behind only Indonesia and, more recently, Vietnam. China is Australia's largest export market for live dairy cattle with many thousands of head being shipped to China annually for households, dairies and breeding stations. For a long time, a smaller but increasing number of purebred beef cattle destined for herd improvement have been sold to China each year (Figure 12).

FIGURE 12. LIVE CATTLE EXPORT FROM AUSTRALIA TO CHINA 2008-09 TO 2014-15



Source:
MLA (2014) and
MLA statistics database.

2.5. Trade summary

While the chilled trade was interrupted by a Chinese suspension in the 2013-14 financial year, exports to China peaked at just below 160,000 swt, China becoming our fourth largest market. This occurred in the context of expanding and diversifying global exports for Australian beef and high slaughter numbers in drought conditions. Reduced demand from China led to a decline in 2014-15 volumes. The export data shows an increasing proportion of cattle sourced from southern states and a steady upward trend in volume and value in the existing live dairy and breeder cattle trade to China. In total value, the export of live cattle to China trails behind only the Indonesian and Vietnamese trades.

The recent expansion in exports of beef product to China was dominated by frozen grass-fed product with a full range of cuts but especially the low-value cuts of brisket, shin/shank or silverside and a large proportion of cow meat. The value of beef exported to China has declined for fresh and chilled beef in recent years, and increased for frozen beef, but at very low rates relative to inflation and Chinese prices. There has been a discernible increase in the carcass trade, though this is not necessarily a longer-term trend, and a decline in manufacturing-grade beef heading to China. Because of the nature of the beef industry (where a full range of products are 'reverse manufactured' and must all be sold) and the nature of the Chinese market (where beef has a wide range of end uses) there has been no discernible trend toward higher value markets. For the beef trade as a

whole, the notion that Australia is or should become the 'delicatessen of China' is not particularly applicable or even desirable.

Record export volumes over the last three financial years including to China (Figure 5) arises not just from strong international demand, but also from supply-side factors. The period 2012-2015 was marked by drought in much of northern Australia, leading to high turnoff and slaughter rates. The average national cattle turnoff was 36 percent for the second consecutive year in 2015 and female slaughter was substantially above average at 51 percent in the 10 months to October 2015 (Thomas, 2015b). Supply will be constrained in the short to medium-term as the herd enters a necessary post-drought rebuilding phase in 2016 and grows gradually back towards approximately 28 million by 2020 (Thomas, 2015a). Constrained supply and high prices in Australia are all likely to contribute to diminishing export volumes and market share in China.

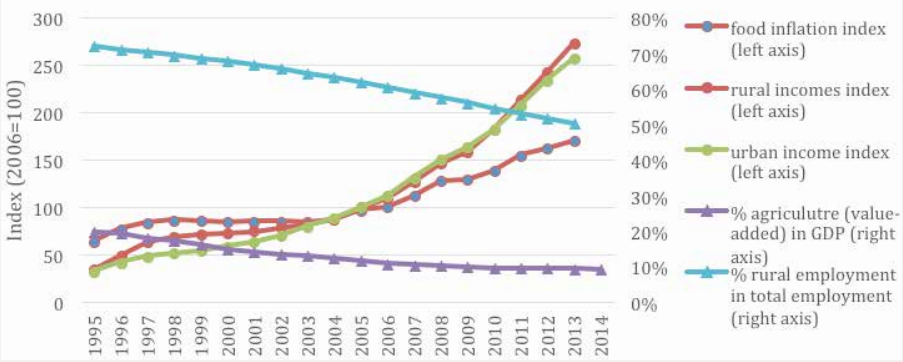
3. THE CHINESE BEEF INDUSTRY

Developments in Sino-Australian trade flows and agreements have been driven predominantly by deep-rooted economic and industry change within China. This is overviewed in this section through consideration of Chinese beef production, consumption, prices and trade.[3]

3.1. Macroeconomic drivers of change

China of course has undergone an economic transformation of historic proportions. With an average annual growth rate of 9.5 percent sustained over the last two decades, and a population of 1.3 billion, there have been major ramifications domestically, internationally and for the agricultural sector. Macro indicators of change in Chinese agriculture are shown in Figure 13.

FIGURE 13. INDICATORS OF AGRICULTURAL TRANSFORMATION IN CHINA, 1995-2014



Source: Calculated from data reported in World Development Indicators (accessed October 8 2015) and China Statistical Yearbook (various years).

Economic growth has rapidly increased average incomes for both rural and urban residents.[4] China conforms to the 'iron law of development' where, as an economy develops, the proportion of the working population in agriculture and the proportion of GDP derived from agriculture diminishes (Schultz, 1968). Economic growth has also increased food prices at a rate above CPI, especially in 1994-5

[3] This section draws on a large body of previously published research, especially Longworth *et al.* (2001), Brown *et al.* (2002), Waldron and Brown (2007), Waldron (2010), Waldron *et al.* (2014) and Waldron *et al.* (2015).

[4] However, rural residents' wages are just 33 percent of their urban compatriots and China ranks 91st in the world in terms of income equality (UNDP Human Development Indicators, 2015).

and during the international food price spikes of 2008-9. Beef (and also mutton) prices have outstripped general food prices (Section 3.5).

These macro-economic trends have forged developments in the Chinese beef industry. Urbanisation and growing urban incomes have increased demand and prices of beef, more so than the cost of inputs such as corn (see Figure 20). However, these favourable alignments of costs and returns in beef production have been overridden by even higher relative increases in the value of rural labour (i.e. the opportunity costs of labour for cattle production). Together with resource constraints (grazing land), technological change (replacement of draught cattle with mechanical cultivation) and long cattle cycles (compared to smaller animals), the supply response to higher beef prices has been muted, especially from small-holders and in the cow-calf sector.

3.2. Chinese beef production and structures

The Chinese beef industry is the third largest in the world, producing almost three times as much beef as Australia. Contrary to widespread perceptions that the Chinese industry as a whole is in decline, beef production increased by about 1.5 percent per annum ((compounded) between 2000 and 2013). The industry is becoming increasingly efficient and commercialised, especially in the cattle fattening sector, and some of the China's abattoir, cold chain, retailing and integrated operations are world class.

However, China faces major supply-side constraints, especially in the cow-calf sector. Virtually all cow-calf operations in China are households, with few large-scale, extensive beef cattle breeding operations in China even on State farms. As mentioned, increasing opportunity costs of labour have made small-scale cow-calf operations increasingly unattractive in much of China. With increasing rural incomes, subsidies used widely in the past to stimulate the beef cattle breeding sector have become a blunt policy instrument. In more remote production areas where off-farm employment is not so readily available, 90 percent of grasslands previously used for grazing have become degraded to some extent and in response government has banned grazing for all or part of the year in many pastoral areas

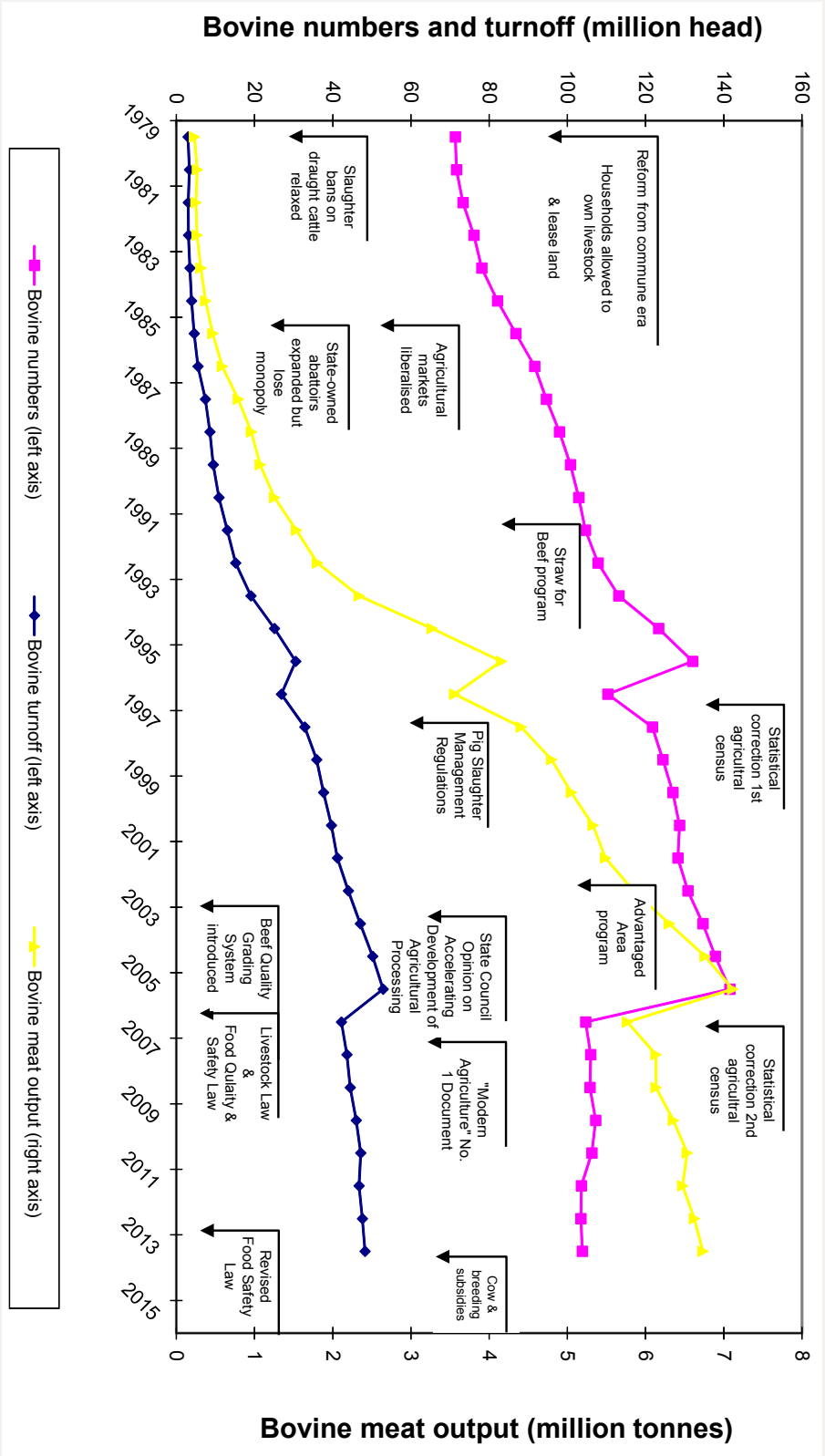
(Brown *et al.*, 2008). China will continue to face tight constraints in the cow-calf sector, which flows on to under-utilisation in feedlots and abattoirs and growing pressure for increased imports of beef and cattle.

3.2.1. Domestic production

Key trends and events in the development of the Chinese beef industry are shown in Figure 14, and summarised briefly here. In the pre-1979 central planning era, China already had a large cattle herd. Communes owned cattle for draught purposes in agricultural areas, with bans on the slaughter of productive animals leaving only sick or injured animals for slaughter. With de-collectivisation in the 1980s, households began raising cattle for their own draught purposes in small-scale crop-livestock systems but also to periodically generate cash income from the sale of surplus animals.

Whereas industry expansion was facilitated by liberalisation measures of the 1980s, it was driven by pro-active industry policy in the 1990s. The 'Straw for Beef' program was introduced to utilise China's 500 million tonnes of crop residues (especially straw) as feed for cattle. Notwithstanding the low efficiency of conversion by which straw – even if ammoniated or ensiled – is converted into beef, the program was implemented across vast areas of China and millions of households (Longworth *et al.*, 2001).

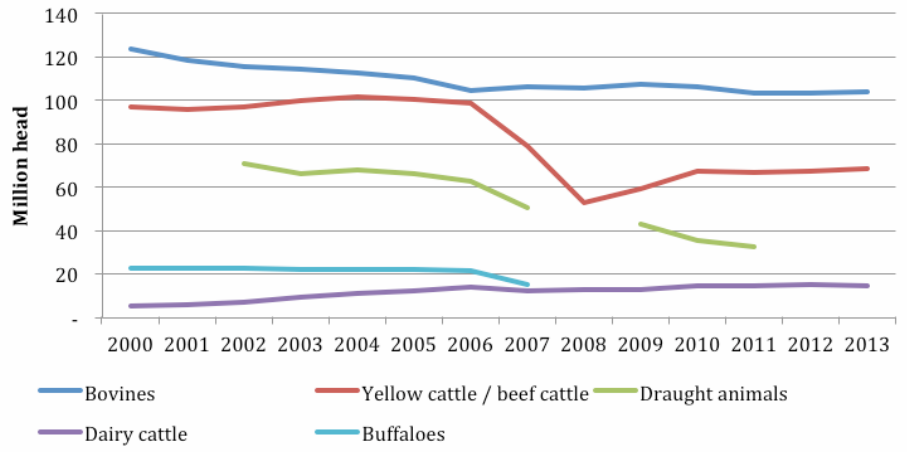
FIGURE 14. PRODUCTION TRENDS AND POLICIES IN THE CHINESE BEEF INDUSTRY, 1979-2013



Source:
China Livestock Yearbook (various years) and authors.

Caught up in the fervour of the 'Straw for Beef' program, and to increase their chances of promotion, local officials reported inflated output figures. In China's 'bottom-up' statistical collection system this fed up into inflated national level statistics. The extent of the over-reporting was revealed in the First National Agricultural Census conducted in 1997 when survey teams descended down to the villages to independently collect data. In the wake of the census national cattle numbers were revised downward by 16.5 percent, turnoff by 28 percent and beef production by 23 percent. The census figures were then used to retrospectively revise statistics for the preceding three years. Upward trending national production indicators in the 2000s were revised down to an even greater extent following the Second National Agricultural Census of 2007, by 26 percent for cattle numbers, 20 percent for turnoff and 19 percent for beef output. This underscores the need to critically read and cautiously use Chinese livestock statistics, and it will be interesting to see if the statistical methods and reporting have improved by the next agricultural census in 2016-17.

FIGURE 15. COMPOSITION OF THE CHINESE BOVINE HERD, 2000-2013



Source:
China Livestock Yearbook (various years).

Remarks: The statistics have excluded various types of bovines from certain dates forward, namely buffalo (from 2008) and draught cattle (from 2012), while yak are not included. The large decrease in beef cattle numbers in 2007 was due to the revision in the 2006 Agricultural Census and the large decrease in 2008 was due to a statistical re-designation of 'yellow cattle' (which included draught and beef cattle) to 'beef cattle' (which excluded draught cattle). The number of different types of bovine numbers do not, however, always sum with total bovine numbers.

One of the trends that emerged from (post-census) data is the declining bovine stock numbers which by 2010 were back at around the levels of 1990. In addition to statistical anomalies, the declines are also real, as agricultural households that had entered the industry in the 1990s left in the 2000s and farm mechanisation reduced the need for draught cattle. The number of draught animals (of all types) in China dropped from 71 million in 2002 to 43 million in 2009 (see Figure 15). However, the number of dairy cattle increased by nine percent per year over the period to reach 15 million, the male calves (and culled cows) from which enter the beef market.

Urban and work migration had a large effect on the industry – while 74 percent of China's population lived in rural areas in 1990, only 46 percent did in 2013 (NBS, 2011). Most working age farmers in eastern and central China have access to off-farm work in higher growth sectors of China's economy. Becoming increasingly conscious of the (opportunity) cost of their labour, households increasingly value the time they put into livestock production which makes cattle production in small-scale systems unviable (Longworth *et al.*, 2001; Waldron, 2010). Of the 15.5 million households that turned off one to 10 head per year, one-quarter exited the cattle production sector between 2003 and 2013 (China Livestock Yearbook, various years).

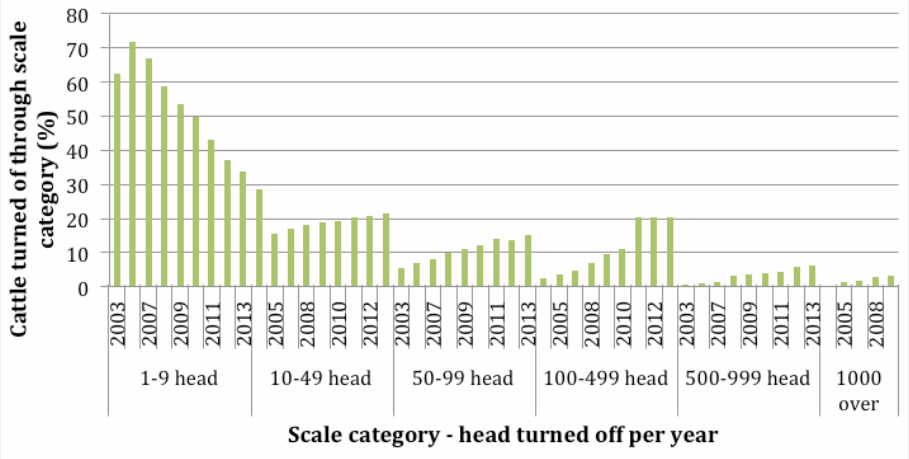
Importantly the cattle production sector that has emerged from rationalisation is becoming more commercialised. Although bovine numbers decreased by an average of 1.6 percent per year between 2000 and 2013, bovine turnoff increased by 1.5 percent per year, up from 31 percent in 2000 to 46 percent in 2013. Similarly, beef production also increased by an average of 1.8 percent per year over the period, higher than the rate of growth of turnoff due to increased carcass weights. However, average carcass weights in China are still low (139kg) and have plateaued since 2007. The data suggests that producers have increased calving and survival rates and responded to economic incentives to turn cattle off at younger ages and lighter weights for slaughter or for fattening in more efficient feeding households or feedlots.

Structural change in the production sector is exemplified by the case of Shandong Province in the Central Plains crop-livestock zone of

the country which contains (and is close to) numerous large urban and industrial centres. Shandong, which once had the biggest cattle herd of any province in China, has now declined to sixth position, although the bovine herd has stabilised at around five million head and the province remains the second biggest beef producer (after neighbouring Henan). Once a major cow-calf production area, the province is increasingly importing feeder cattle from other provinces for feeding and slaughter to service provincial and nearby (e.g. Beijing) markets.

Scale of production data (China Livestock Yearbook, various years) reports the proportion of beef cattle turned off through cattle-raising farms or feedlots that fall into different size categories. Data for Shandong for the years 2003 to 2013, shows a sharp decline in the proportion of turnoff coming from the smallest size group. Indeed, in Shandong households that turned off one to nine head per year represented only 34 percent of all cattle turned off in 2013, a large reduction from the 72 percent this size category turned off in 2005 (Figure 16). In contrast with the sharply declining trend for the smallest sized producer group, there has been a steady increase in the proportion of total turnoff from each of the larger-size categories which are made up of the bigger feeding households and feedlots.

FIGURE 16. SCALE OF CATTLE PRODUCTION IN SHANDONG PROVINCE, 2003-2013



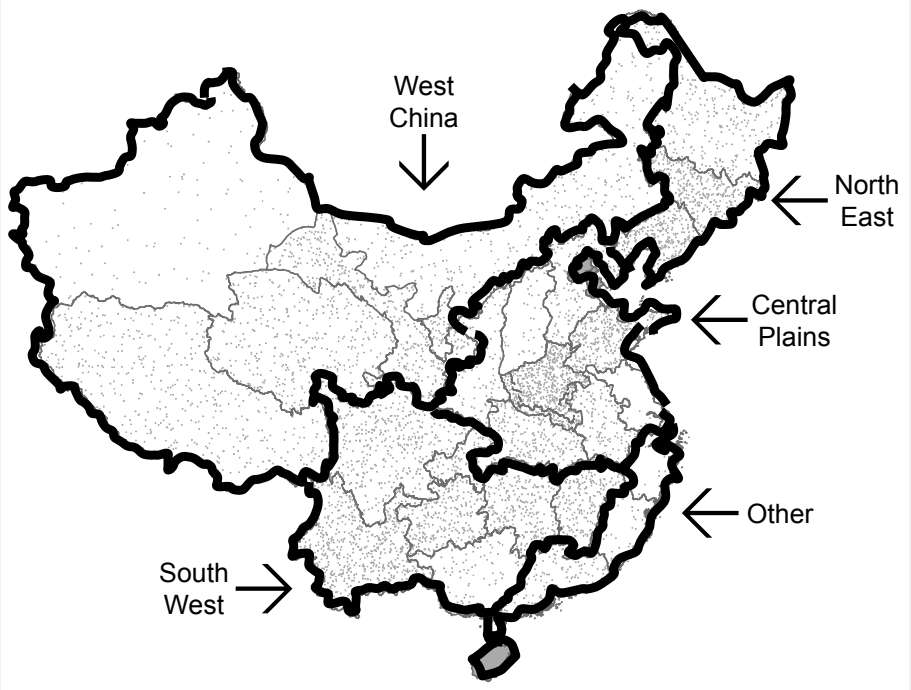
Source:
China Livestock Yearbook (various years).

Within China as whole, feedlots (that turn off more than 100 head per year) accounted for only seven percent of domestic turnoff in 2003, but this number had nearly trebled by 2013. There are now more than 1,000 large feedlots in China (turnoff >1,000 head) and about 30,000 in smaller categories (100–1,000 head).

3.2.2. Regional distribution

Within the Chinese industry, there are marked regional differences in the agro-climatic conditions and production systems. The distribution of cattle is shown in Figure 17. Cattle are concentrated in the intensive cropping areas especially in the Central Plains provinces (Shandong and Henan) and the Northeast (Jilin and Liaoning). There are low cattle numbers and hence densities of cattle in the 'other' southeastern provinces. Larger cattle herds are distributed over a vast area in the more extensive grazing systems of the northwest. Beef cattle densities in the southwest are formed by diverse areas of intensive crop-cattle systems and grazing systems on more mountainous areas.

FIGURE 17. 2013 BEEF CATTLE DISTRIBUTION BY PROVINCE IN CHINA



Source: Map generated by authors.

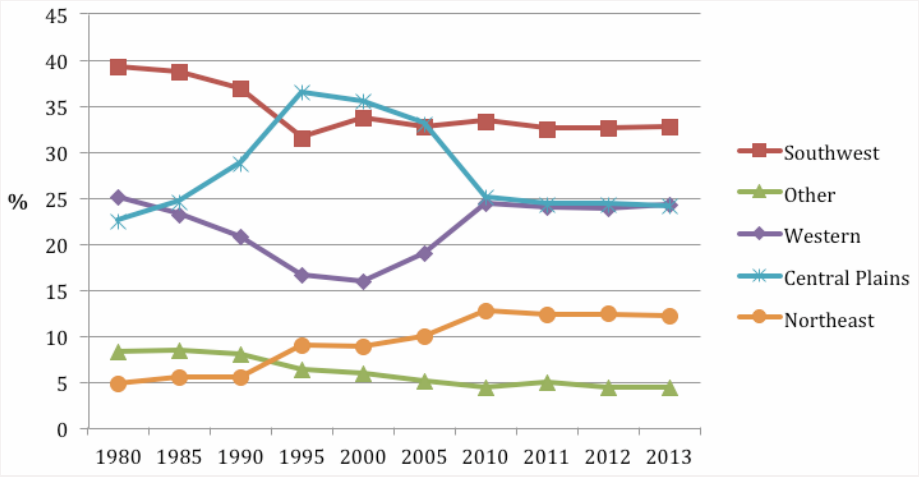
Remarks: Data from China Livestock Yearbook (2011). One dot equals 10,000 beef cattle. Bovine numbers are distributed evenly over the provinces in the map, whereas in reality they are usually concentrated in particular pockets in the province. Southwest provinces are Guizhou, Sichuan, Guangxi, Yunnan, Jiangxi, Hunan and Chongqing; Other provinces are Shanghai, Guangdong, Hainan, Zhejiang and Fujian; Western provinces are Tibet, Qinghai, Gansu, Inner Mongolia, Ningxia and Xinjiang; Central Plains provinces are Hubei, Henan, Anhui, Shandong, Jiangsu, Shanxi, Hebei and Shaanxi; Northeast provinces are Jilin, Liaoning and Heilongjiang.

Figure 18 shows changes in the relative importance in the number of all bovines (not just beef cattle) between 1980 and 2013. The broadest trends shown in the figure are that bovine numbers increased and then decreased rapidly in the Central Plains areas between 1980 and 2010, with inverse trends in Western areas. Developed parts of China (Central Plains, and especially 'other' provinces, play a small and diminishing role in the cattle industry while relatively undeveloped areas play a significant and growing role. There have been more gradual changes in other regions. Interestingly, the relative importance of the regions appears to have stabilised since 2010 to 2013 (although this is a short period in the overall reporting period).[5]

[5] It should also be noted that the horizontal axis is not continuous and changes from five year intervals before 2010 to one year intervals thereafter.

FIGURE 18. PERCENTAGE OF CHINESE BOVINE HERD IN FIVE REGIONAL BEEF ZONES, 1980-2013

Source: China Livestock Yearbook (various years).



3.3. Policy and industry settings

China has implemented a series of programs and policies toward the production and processing sectors (Figure 14). Major interventionist policies to stimulate the cattle production sector over the 1990 to 2010 period include the 'Straw for Beef' program, the 'Advantaged Area' program and the 'Livestock Small Area' program. After years of lobbying from industry, in 2014-15 the Central Government agreed to fund subsidies for cow-calf production (RMB500/head for producers with more than 10 head) which was later extended to larger-scale producers of any kind (>30 head). This most recent round of subsidies are not having as much effect as the earlier rounds in the current era of high rural incomes and opportunities.

China has throughout the post-reform era sought to build and modernise the marketing and processing sectors. These sectors have been and remain dominated by small-scale, fragmented structures but the Central Government provides the environment for local government to modernise the structures through various measures.[6] Backyard slaughter has over time been incrementally banned in most cities, replaced by certified or mechanised plants, while 'dragon head enterprises' (abattoirs and feedlots) are 'encouraged' to set up links and contracts with cattle producers. There has been strong

6 See Figure 13 for 'Opinion on Accelerating Agricultural Processing' and various 'Number 1 Documents'.

regulatory attention and investment by the state in marketplaces and cold chains. While some of these measures have led to over-investment and over-capacity, it has also led to a strong base of beef industry infrastructure that does not exist in other developing Asian beef industries (Waldron *et al.,* 2014).

This is particularly the case in the processing sector, which is dominated by state or shareholder enterprises that form a large network of up to 2,000 abattoirs and contain much of China's slaughter and cold storage capacity. In addition, there are perhaps 20 modern abattoirs in China that are large by Chinese (but not world) standards, take ownership of cattle and beef (i.e. they are not service kill plants) and use international-level technology.[7] Together with challenges in accessing and maintaining sales in the premium beef market, low capacity utilisation is exacerbated by limited supply (i.e. high price) of slaughter cattle. The import of Australian feeder and slaughter cattle could potentially alleviate this constraint, although the vast majority of existing Chinese abattoirs are located in inland China, far away from port and quarantine facilities, and regulations to constrain animal movement may preclude access to imported cattle. China has also sought to develop what can be called 'facilitative policies' or 'soft infrastructure' for industry development. This includes various beef grading systems designed to develop a common language (for cut description) and quality characteristics.[8] Uptake and acceptance has proven slow and partial, partly because of the large range of cuisines in China. The lack of widely accepted standards is problematic for many buyers (from chefs to restaurant chains to supermarkets) that lack certainty when buying domestic product and provides an incentive to turn to imports that use well-established and understood standards.

As recently as 2015 China has issued and revised food safety laws and a bewildering array of standards which continue to garner limited

[7] Fifteen 'modern' abattoirs interviewed are: Sishui and Xisen in Shandong; Bangjie, Luohe and Shunaghui in Henan; Dexin and Haoyue in Jilin, Fucheng and Hu'an in Hebei; Kangda, Yuxiangyuan and Jinwei Furen in Beijing; Caoyuan Xingfa and Ke'erqin in Inner Mongolia; Hualing in Xinjiang; Yurn in Jiangsu; and Xin'ao in Sichuan.

[8] These include: 'Beef quality grades' (Ministry of Agriculture, 2003); slaughter standards (Ministry of Commerce for the General Food Company abattoirs); and the standard 'Frozen Beef' by the General Administration for Quality Supervision, Inspection and Quarantine, 2004) and others.

acceptance and public acceptance.[9] As a result, Chinese abattoirs seek to differentiate their product through company branding (i.e. trust in famous brand names) while numerous importers and retailers emphasise source of product (e.g. Australian grass-fed beef). This is clearly a major source of competitiveness for Australian beef – and a major source of premiums (Longworth *et al.,* 2001). The lack of an effective 'standardised' beef grading system will become a bigger issue over time as the Chinese beef market becomes more segmented, commercialised and consumers demand more specific qualities and characteristics in their purchases (Waldron and Brown, 2007).

Poor food safety is an endemic problem in China, underscored by numerous well-known malpractices and cases. This includes the injection of water into beef to increase weight and juiciness (slaughter to retail stages), the use of growth promotants (e.g. Clenbuterol Hydrochloride at production stages), the sale of meat from other animals labelled as beef, expired meat for fast food outlets (Evans, 2014) and unhygienic and extremely dated smuggled meat (Middlehurst, 2015). Chinese consumers turn away from domestic product when scandals are publicised and are generally demanding safer food. Positive perceptions of the safety of Australian beef clearly act as a major source of competitive advantage, but also highlight the importance (and challenges) of maintaining this record and perception.

3.4. Chinese beef consumption

3.4.1. Beef consumption levels

The structure of food demand in China is changing. Chinese consumers are increasingly moving away from traditional grains and vegetables towards greater consumption of meat, dairy, eggs, oil and fruit (Jiang *et al.,* 2013; Hovannisyan and Gould, 2011; Rae, 2008). Within meat consumption there is a substantial increase in beef consumption, though from relatively low levels. Income growth and urbanisation are well-established macroeconomic forces influencing

[9] These include the Non Public Hazard products *(wugonghai chanpin)*, Green Food *(lvse shipin)*, Organic Food *(youji shipin)*, Rest Easy Foods *(fangxin shipin)*, Eco-Friendly Food *(huanjing youhao shipin)*, Service Promised Foods (zhiliang sanbao), and China Top Brand *(zhongguo mingpai)*.

these changing dietary patterns (Jiang *et al.,* 2013; Liu *et al.,* 2009; Hovannisyan and Gould, 2011; Rae, 2008). Growing incomes and bigger urban populations have increased food availability, accessibility and diversification. As a result of these macroeconomic forces and associated developments in food markets, the Chinese population consumes more and a greater variety of meat both in-home and out-of-home (Ma *et al.,* 2006).

It is not straightforward to quantify per capita beef consumption levels in China. Official consumption data based on household surveys under-reports beef consumption by not considering out-of-home consumption. Official urban consumption data for beef has not been reported since 2010 and rural consumption for beef has not been reported for 2013. However, data for the purchases (not consumption) of beef and mutton (lumped together) has been continued. While these official survey-based Chinese consumption statistics are flawed, they are very large surveys conducted over many years and are therefore valuable indicators.

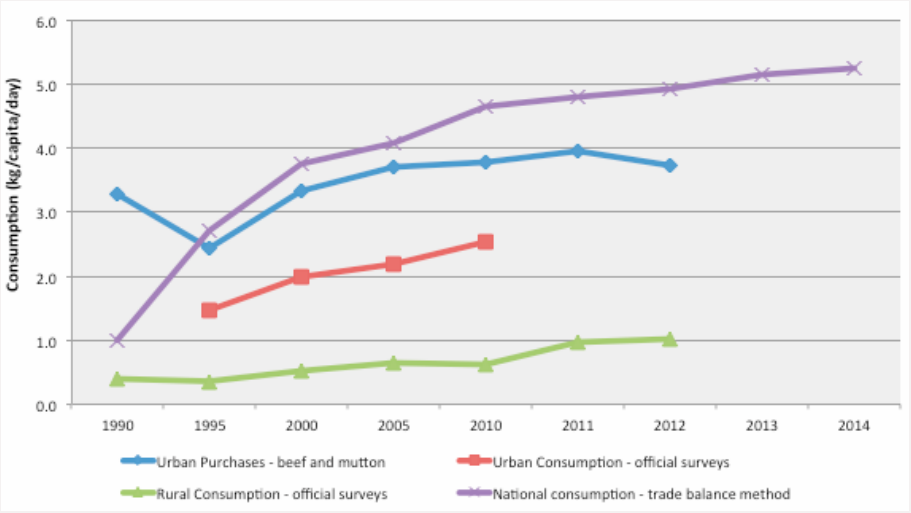
To partially address the deficiencies of the surveys series, a 'trade balance' method provides an alternative consumption estimate. The trade balance is calculated as domestic beef production, plus net trade divided by the national population, which is the equivalent of 'per capita supply' used by the UN Food and Agriculture Organisation (FAO) and other agencies. This method is subject to inaccuracies as it is based on official production data (which overstates supply) and does not account for informal imports (so understates supply). Nevertheless, the data provides an indication of trends in per capita consumption of beef in China.

Official statistics presented in Figure 19 report that urban in-home per capita beef consumption increased to 2.5kg per year. In-home beef consumption has increased to 1kg for rural residents (that account for 47 percent of the Chinese population). The trade balance calculations (that notionally include both in-home and out-of-home beef consumption) suggest a national average per capita supply of beef of 5.4kg in 2014. If illegal beef smuggling of one million tonnes (Section 3.6.2) is considered, this national average would be 5.9kg.

Much-needed data on out-of-home consumption is reported in Bai *et al.* (2012) based on surveys conducted between 2007 and 2010. The surveys were conducted in summer (which is not necessarily peak season), and in relatively developed cities (which may be higher than most cities). Their results suggest that average total beef consumption (both in and out-of-home) is high (4.5-7.7kg) compared with the official survey data shown in Figure 19. Furthermore, out-of-home consumption is significant at around one-third of total average household consumption. This implies that up to 30 percent can be added to the official survey data – which only takes account of in-house consumption – for the urban Chinese residents shown in Figure 19. The out-of-home consumption of rural households would be less than for urban households making the difference in average per capita consumption (after allowing for out-of-home consumption) between urban and rural households greater.

Higher incomes, accessibility and exposure to modern markets in urban areas explain the higher per capita consumption in the urban Chinse populations (Rae, 2008). However, the official statistics suggests rapid growth in in-home rural beef consumption, at least in 2011. In contrast, in-home urban *purchases of beef and mutton* (lumped together) decreased from 4kg in 2011 to 3.7kg in 2012, possibly due to rapid price increases. From 2013, out-of-home consumption of beef and mutton has been affected by the anti-corruption campaign of the Xi regime, when stricter regulations were applied on banqueting and business claims.

FIGURE 19. PER CAPITA CONSUMPTION IN CHINA BASED ON DIFFERENT SOURCES OF OFFICIAL DATA, 1990-2014



Source:
China Statistical Yearbook, China Livestock Yearbook and China Customs Yearbook (various years).

Thus, while significant increases in annual per capita Chinese beef consumption have occurred, the trends are not exponential or linear. Chinese per capita consumption of beef is very low relative to Western levels of beef consumption (e.g. Australian annual consumption is just under 30kg per capita) which is sometimes cited as 'evidence' of the potential growth in the Chinese market. However, consumption in developed ethnic Chinese economies may provide a more reliable indicator of future consumption levels in China. For example, in Taiwan the annual per capita beef consumption was only 4.4kg in 2012 (MLA Statistics database). Beef is a relatively small component of total meat consumption in China and the demand for other meats is expected to grow substantially more quickly than beef demand. US Department of Agriculture (USDA) forecasts that pork and poultry consumption will increase by 6.6kg and 2.7kg per person by 2023-24, compared to 0.85kg for beef over the same period (Hansen and Gale, 2014).

While there are some limits to the increase in per capita consumption, Chinese population growth will increase aggregate demand for beef – at least in the medium term. This is partially reflected in forecasts that project modest increases in aggregate demand. OECD-FAO (2015) and USDA (2015) forecast that total national Chinese beef consumption will reach eight million metric tonnes or greater by 2024. This however represents an increase of only 1.5 percent over

2012 levels of reported production and net trade. By 2014, official production, net trade and informal trade may have already reached eight million tonnes. Rabobank (2015) estimates that aggregate beef consumption will continue to grow at 2.2 percent per year adding two million tonnes to demand by 2025. This would mean that the rate of growth in the next decade is likely to be less than half the 4.8 percent growth rate in total annual consumption experienced across 1996-2014.

3.4.2. Beef market channels

For commercial, trade, research and policy purposes, it can be misleading to look at the beef industry as a monolithic whole. While the industry is dominated by low-value generic product, beef in China is becoming an increasing differentiated product, and the industry structure is becoming more specialised and segmented. Three industry segments were identified in Waldron (2010): the mass, generic 'wet' beef market (80-85 percent); the mid-value supermarket, retail and mid-range food service trade (13-15 percent); and the smaller, higher value 'hotel, restaurant and institutions' (HRI) trade (two to five percent). In more recent years, there has probably been some shift in relative importance from lower to higher value markets. It is also important to note that these categories are not necessarily discrete. For example, wet markets sometimes contain franchised stalls of abattoirs that sell expensive beef. Many supermarkets and restaurants purchase their beef from wet markets (Waldron, 2010; 2015). An e-commerce marketing channel has emerged in recent years where beef is marketed directly to Chinese customers.[10] E-commerce is emerging in large urban centres where cold storage networks are becoming more sophisticated and widespread and may prove to be a significant channel for some Australian beef exports in the future.

While it is widely assumed that Australian beef is traded into higher value markets, data is not available on the channels through which imported beef flows to final consumers. Data presented on product composition and value (Section 2.2) suggests that a wide range of

[10] See, for example, Locke (2015).

imported cuts from a wide range of cattle are distributed through a wide range of channels in China.

3.4.3. Consumer preferences and tastes

Overall, Chinese consumers have a relatively positive perception of beef as being a relatively lean, safe, fresh and healthy[11] protein that tastes good. Other quality characteristics (juiciness, colour, intramuscular fat) are not important in most Chinese cuisine where beef is heavily cooked or sauced (e.g. 'five spice' stewing dishes, 'sizzling iron beef', Xinjiang skewers, Hui Muslim noodles, many Korean dishes). Quality characteristics are, however, important for other styles of eating that have emerged in recent years, especially in urban areas. Particular characteristics can be important for hot pot restaurants and chains (sometimes integrated within companies that own abattoirs) which have proliferated over the last 10 to15 years, where consumers can eat large quantities of beef and mutton with different characteristics (e.g. some chains infuse fat into lean beef). Hot pot consumption has decreased more recently due to aforementioned limits on banqueting. A range of foreign restaurants and chains where beef is the main item on the menu are also expanding, including Japanese/Korean barbeque, Brazilian beef, American fattened beef and Australian steakhouses.

Chinese consumers have traditionally spent very large amounts of time buying and cooking food, including beef. However, younger and wealthier time-scarce Chinese consumers in both small and large cities are increasingly seeking beef purchasing methods that are convenient and less time consuming. As a result, they are buying more 'processed or semi-processed' beef products (Liu *et al.,* 2009; Peng *et al.,* 2005; Wang, 2015; Zhou *et al.,* 2012; Rae, 2008). As mentioned above, cold chains are expanding and e-commerce is growing. The modernisation of beef retailing and consumption will, however, be an incremental process, which remains 'traditional' (Peng in Gyton, 2015). Traditional Chinese culinary and attribute preferences are likely to underlie consumption in aggregate well into the future.

[11] Beef is considered on average to be a healthier, 'leaner' option amongst Chinese consumers and there is increasing consumer awareness of this 'lower fat animal protein' option relative to 'fattier' traditional pork (Frederick and Li, 2015).

Beef is a normal economic good in China. That is, as incomes rise so does beef consumption, though there is likely to be some saturation in quantity at the highest income levels (Liu *et al.,* 2009; Burggraf *et al.,* 2015; Doug and Gould, 2007; Gale and Huang, 2007). Similarly, as incomes rise more beef is consumed away from home (Bai *et al.,* 2013). Beef is relatively price elastic both to its own price and to the price of substitute meats. Higher beef prices and lower prices for substitute meats will both lead to a decrease in the quantity of beef demanded. (Liu *et al.,* 2009; Burggraf *et al.,* 2015; Bai *et al.,* 2013). Anecdotal survey results from Liu *et al.* (2009) show that higher income Chinese consumers are willing to pay modest premiums for safer goods and other research suggests more generally that greater food and meat quality is demanded as Chinese incomes rise (Gale and Huang, 2007). This suggests that in the higher end of the market there is potential for premiums but we should be wary of overall price-sensitivity of Chinese consumers to beef. There is a need for further understanding of Chinese beef price-sensitivity as this has implications for the typically higher-value Australian product.

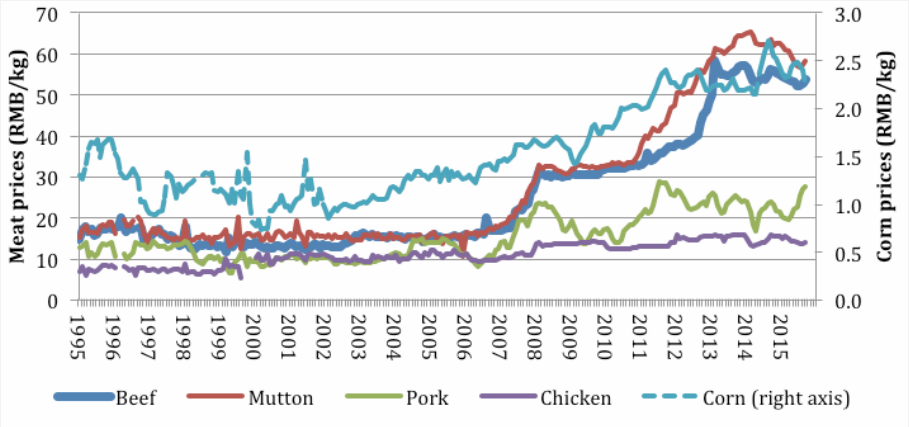
3.5. Beef prices

Supply constraints (Section 3.2) and growing beef demand (Section 3.4) have placed strong upward pressure on beef prices in recent years, illustrated for Beijing in Figure 20.[12] Such considerable price change is a clear indicator of the abovementioned fundamental structural change affecting China. Generic beef (and mutton) prices remained low and stable through the 1990s and the first half of the 2000s but began to increase rapidly in 2006 to 2008 in line with food price spikes in China and internationally, and expansionary monetary policy and wages. Beef prices peaked in 2013 before stabilising in 2015. At RMB54/kg this equates to approximately US$12/kg of generic, undifferentiated 'beef'. Subdued prices are now being reflected in lower cattle prices. Mutton prices climbed with beef and

[12] The data is collected by the Ministry of Agriculture in 'observation points' (wholesale markets) throughout China based on daily sales but averaged over monthly periods to province level to represent the monthly average prices for generic types of livestock products, including bovine meat. Prices are for generic 'beef' and don't reflect premiums or discounts in differentiated markets but nevertheless provide a good indicator of overall price levels. For price data differentiated by type of product and retail channel see Waldron (2010). For information about regionalisation of beef markets and the extent of price integration across regions and markets in China see Brown *et al.* (2002).

peaked higher and later but then corrected sharply in 2014-15 due partly to a supply response (with shorter breeding cycles and higher lambing rates). Pork prices declined over the period for the same reasons and because of state storage and production (sow-breeding) subsidies. Corn prices declined compared to beef prices from 2012 to 2013, spiked in mid-2014 and have since declined (with volatility) over 2015. The relative price of beef and corn is an important determinant of the viability of commercial cattle fattening.

FIGURE 20. MONTHLY MEAT AND CORN PRICES IN BEIJING, 1995-2015



Source: China Livestock Yearbook (various years) and Ministry of Agriculture <www.jgsb.agri.gov.cn>.

Remarks: Prices for pork and corn are for Beijing. Prices for beef, mutton and chicken are for Beijing (1995-2013) and then China (2014-15).

The rapid and sustained rise in beef prices in China since 2008 – relative to international prices – has driven the rapid increase in the formal and informal trade in cattle and beef. It has also been the key factor in the liberalisation in China's international trade policy as detailed in Section 3.6.5.

3.6. International trade and policy

The alignment of constrained domestic production, increased consumption and increased prices have forged trade flows and trade policies in China, as detailed below.

3.6.1. Formal beef imports

Compared to the domestic industry, China has historically had a very small cattle and beef international trade sector. As shown in Figure 1, China was until recently a small net exporter of beef, sending modest quantities of low-value frozen beef to Southeast Asia and importing only modest amounts (tens of thousands of tonnes) of beef. This changed dramatically from 2011 when exports fell to a few thousand tonnes and imports escalated to nearly 300,000 swt in 2013 and 2014 (Figure 21). In addition this was supplemented by at least one million tonnes imported through the informal border trade (Section 3.6.2).

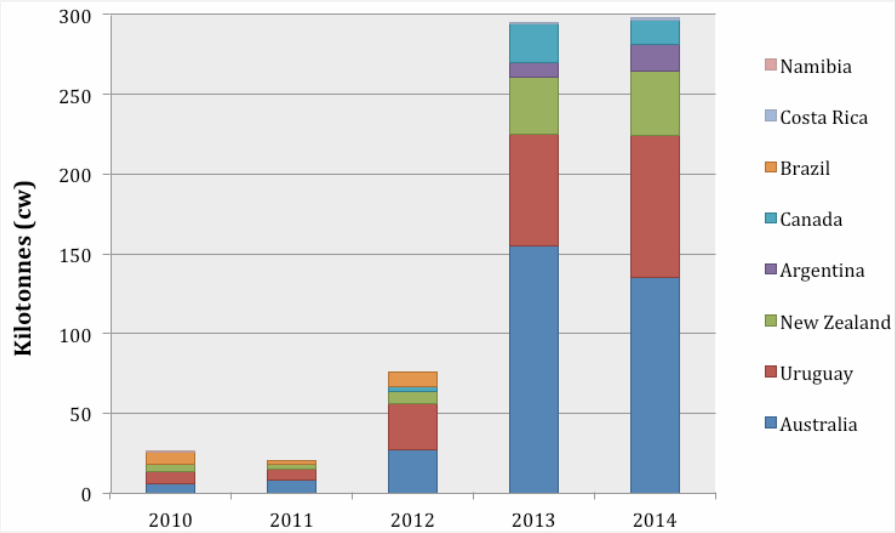
Of total beef imports in 2014, 99 percent was frozen and on average was worth US$4.30/kg. The other one percent of imports was fresh or chilled beef (three kt) which sold for an average of US$7.20, significantly lower than the US$18/kg paid for imported chilled and frozen beef in 2011. This suggests that the demand for imported both fresh/chilled and frozen beef in the China is price sensitive and that a significant proportion is destined for the low-value mass-markets or for processing.

Sources of formal imports are determined largely by disease status. China does not formally import cattle or beef from countries with cases or antibodies to BSE and, until recently, countries free of FMD without vaccination. As discussed below, policy on FMD has been relaxed (to FMD-free areas with vaccination) and applied for Brazil. As of late 2015, seven nations that conform to Chinese laws legally exported beef and veal to China: Australia, Uruguay, New Zealand, Argentina, Canada, Costa Rica and Brazil.

With regards to beef import costs, legal imports of beef into China are subject to 13 percent VAT import duties and most nations[13] are subject to Most Favoured Nation (MFN) tariffs ranging from 12-25 percent depending on type of beef product (WTO, ND.).

[13] New Zealand and Costa Rica have existing bilateral Free Trade Agreements with China with beef tariff elimination schedules in place, joined by Australia in 2015 with the signing of ChAFTA.

FIGURE 21. CHINA FORMAL BEEF IMPORTS BY SOURCE, 2010-2014



Source:
UN Comtrade.

3.6.2. Informal beef imports

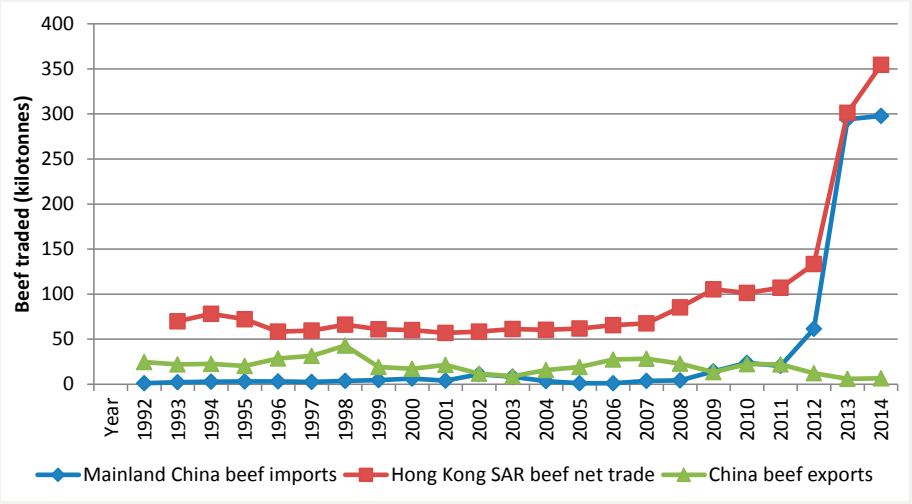
The smuggling – or the 'grey trade' – in both beef and live cattle has in recent years been much larger than legal imports. To capitalise on high demand and prices and to circumvent disease restrictions and tariffs imposed by China, traders in countries with no or limited formal/legal access to China (the US, Brazil, Canada and carabeef from India) have smuggled cattle and beef through third countries (Hong Kong, Vietnam and other bordering countries including Thailand). These illegal trade flows have entered the mainland of China by road and boat.

The extent of smuggling through Hong Kong can be quantified with customs statistics (Figure 22). Volumes of imports into Hong Kong have increased roughly in line with direct imports to the mainland (Figure 21), almost all of which is frozen and from countries without access (Brazil, the US) or with only partial access (Canada) to the mainland market but which can export to Hong Kong. Part of the large increase in beef imports in to Hong Kong can be explained by decreases in modest live cattle exports from mainland China in to Hong Kong as well as by an increase in official re-exports of beef form Hong Kong to other Asian countries, especially Vietnam. However, total domestic consumption in Hong Kong is unlikely to have changed much (around 60,000 tonnes per year). Thus, up to 300,000 tonnes of

beef imported into Hong Kong may have been smuggled from Hong Kong into mainland China in 2014 (although this trade is reported to have declined in 2015 with the crackdown on illegal smuggling).

FIGURE 22. BEEF IMPORTS AND EXPORTS, MAINLAND CHINA AND HONG KONG SPECIAL ADMINISTRATIVE REGION (SAR), 1992-2014.

Source:
UN Comtrade (2014).

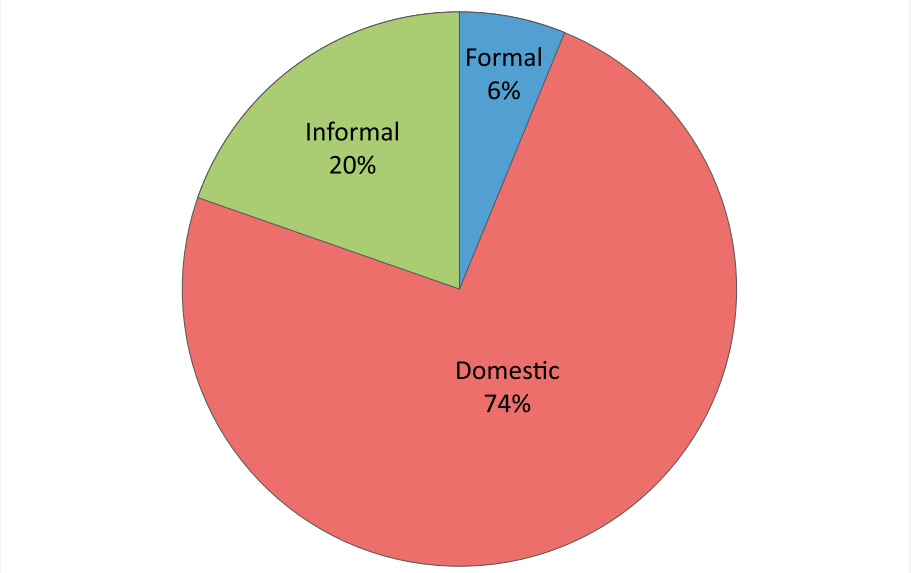


While not appearing in official Vietnamese data, informal exports from Vietnam to mainland china are likely to be higher than through Hong Kong. The main smuggling route is through Mong Cai which lies over the Beilun River from Dongxing in Guangxi Province. Mong Cai is only 135 kilometres from Hanoi and Hai Phong International Port and is reportedly one of the wealthiest cities in Vietnam. Along with a large number of other products, frozen bovine meat is taken across the narrow river crossing by small boats and picked up by a plethora of Chinese traders in small cars and vans. Product can be plain packed in India, or re-labelled in Vietnam or China. Smuggling requires the direct or tacit assistance of authorities from both countries.

In one highly-publicised raid on smuggled beef from Vietnam, 100,000 tonnes, said to be worth US$0.5 billion, was seized in 14 provinces (from Guangxi and Guandong to Jiangsu, to Chongqing and Hunan) involving 20 smugglers (CCTVNet, 2014). In another small but unusual case, 100 tonnes of beef from Japan was smuggled through Cambodia and Laos to Yunnan and Shanghai.

The Chinese government reported that the sources and magnitude of smuggled beef was 430,000 tonnes from Brazil, 90,000 tonnes from the US and 470,000 tonnes from India in 2013. Thus the total illegal imports in 2013 may have been about one million tonnes. There have been estimates of double this amount (Guo and Liang, 2014) and there are 'unofficial' studies and discussions within government in China that even this latter amount is understated. Even one million tonnes of smuggled beef would account for approximately 20 percent of beef supply in China, with formal imports making up six percent (of which three percent is Australian) and 74 percent from domestic production (Figure 23). Unlike the situation before 2012, the volume of imported product through both formal and informal channels is now likely to be having a significant impact on the price of beef on the mainland.

FIGURE 23. ESTIMATED PROPORTIONS OF DOMESTIC BEEF AND FORMAL AND INFORMAL IMPORTS INTO CHINA, 2014



Source:
OECD-FAO, MLA and UN Comtrade.

Remarks: Based on 7.2 million tonnes cwe total domestic beef consumption in 2014 (UN Comtrade; OECD-FAO) and one million tonnes of informal beef imports (Guo and Liang, 2014) converted to cwe.

China has sporadically considered and actually interrupted the informal beef and cattle trade for years but not in a concerted way, partly due to price inflation concerns. However, pressures to act mounted due to high profile food safety cases and the anti-corruption campaign of the Xi regime which extended to border and inspection authorities. Crackdowns on smuggled beef (and other goods) were imposed on the Hong Kong trade (January 2015) and then Vietnam

(April 2015) in an environment of strained relations between Vietnam and China. The crackdowns extended from border areas to domestic wholesale markets. In general though, policy edicts from Beijing are not systematically enforced by officials at local levels, nor do they curb the incentives of traders in the grey trade. A considerable informal trade is still occurring.

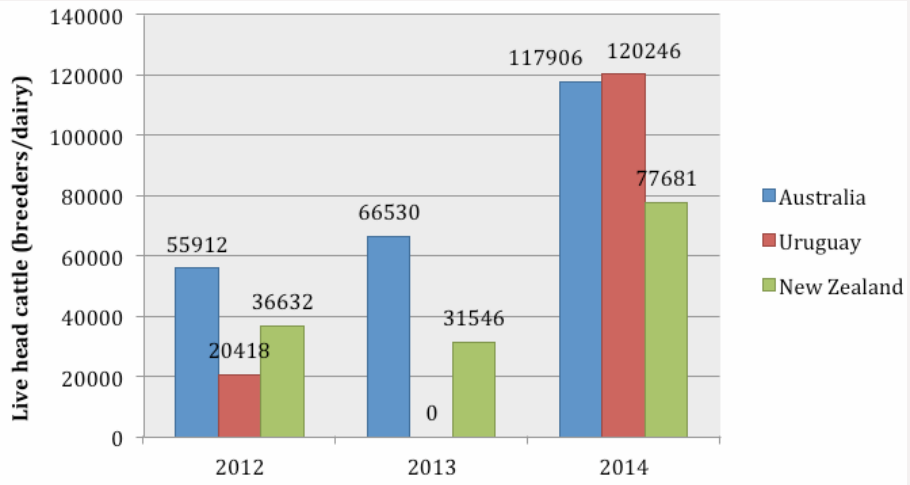
3.6.3. Formal live cattle imports

As well as beef, China has become a significant importer of live cattle. The majority of live cattle imports are dairy cattle but there is also an expanding trade in breeding beef cattle. In the formal trade, China imports live dairy and breeder cattle from Australia, New Zealand and Uruguay, with new market entrants from Chile (Li and Frederick, 2015; MLA, 2015b) and possibly Mexico (MLA, 2015b).

Live breeder and dairy cattle imports increased over recent years to reach nearly 300,000 head in 2014 (Figure 24).[14] Frederick and Li (2015) report the trade to be down in 2015 due to tight world supply but they expect growth again in 2016. Much larger numbers of cattle enter China illegally (See Section 3.6.4).

FIGURE 24. OFFICIAL LIVE CATTLE IMPORTS INTO CHINA BY COUNTRY, 2012-2014

Source: Frederick and Li (2015) and MLA Statistics database.



[14] Data records of live cattle imports into China are disjointed and not widely reported, but are collated as completely as possible in Figure 24.

As reported in Section 2.4, China is Australia's largest destination of live dairy cattle and a small but increasing market of live beef breeders. The recent finalisation of the live cattle export health protocol between Australia and China has paved the way for importation of slaughter and feeder cattle into China that could conceivably come from northern Australia. In practice, the current conditions of the protocol effectively preclude a commercial trade (see Section 4.1.2 for examination of the new health protocol).

3.6.4. Informal live cattle imports

As recently as 2008 slaughter and feeder cattle were smuggled out of China into the Mekong but the flow has since reversed – at scale. Estimates below suggest that in recent years 100,000 cattle may have entered China from Vietnam in 2014, 100,000 directly from Burma and perhaps 150,000 indirectly from Burma through Thailand and Laos. If 350,000 cattle entered China through border trade, at (a generous) assumption of 200kg carcass weight, this may equate to 70,000 tonnes of beef (bone-in) which is clearly much smaller than the grey trade for beef.

The main border post in Vietnam is in Cao Bang City on the Bang Giang River, about 30km away from the border with China. Cattle are sourced from Tra Linh market and walked across the border (nearby to the official border post). There are two other border crossings at Quang Ninh and Lang Son that trade mostly buffaloes and pigs, and smaller number of cattle. Many of the cattle are from Laos and Cambodia and are trucked to Cao Bang through the provinces of Nghe An and Thanh Hoa.

It is probable that larger numbers of cattle are sourced from Burma. One source in Yunnan said that 100,000 head were sent directly across the border at Ruili into Yunnan in 2013. Thailand officially imported 204,000 head from Burma in 2013. According to one report (Ainsworth, 2015) about 120,000 head of cattle and buffalo passed through Mae Sot on the Burma/Thai border. Large numbers are transported to Vietnam (through Cambodia and Laos) but the majority are probably re-exported to China through the Mekong to Xishuangbanna in Yunnan Province. Other cattle enter through Laos. The trade of live

cattle from Burma and Thailand is periodically interrupted due to prices, crackdowns and the local 'security environment'.

3.6.5. China's trade policy and the future

While China has adopted an increasingly liberal beef and cattle trade policy for several years, this was ratified at the highest levels in September 2014 when the State Council, led by Premier Li Keqiang, announced that China would increase imports of beef and mutton.[15] This is reflected in various trade agreements, especially in disease protocols. China maintains that it is not relaxing disease control standards but has shown more of a willingness to recognise and incorporate international standards (e.g. on area vs country recognition of zones). At the same time, heightened attention to food safety, animal disease and corruption in China has seen periodic crackdowns on illegal smuggling of cattle and beef. The result is what can be seen as an incremental (slow-moving but discernible) liberalisation and formalisation of trade policy.

This is reflected in China's negotiations with major international beef exporters. Australia has been the major beneficiary of trade liberalisation in this era, in terms of both trade flows and in trade deals (see Section 4). China is, however, conscious of the limited supply capacity of Australia, which even in years of high slaughter numbers and imports has virtually no effect on domestic prices. Unless prices deflate over a considerable period, it could be expected that China will continue to work with a range of countries – large and small – on trade policy and biosecurity to secure and diversify supply of beef and cattle into the long-term.

Brazil did not have formal access to the Chinese market during the boom import years. Brazilian exports to China were suspended in 2012 due to a case of atypical BSE (and another was recorded in

[15] An announcement was made by the State Council, which coordinated between relevant agencies including the Ministry of Commerce (MOFCOM), the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) and the Ministry of Agriculture (MOA). A government communiqué said that the meeting discussed ways to 'determine the import policy measures to strengthen and promote the further opening [of trade]' and that import promotion strategies needed to 'strengthen technology, products and services imports…meet the demand of domestic production and consumption, improve product quality, and promote entrepreneurship and innovation' (Reed and So, 2014).

2014). The main cattle production areas of Brazil are declared FMD-free zones with vaccination. However, vaccinations stalled in some areas in the drought of 2012 and a case of FMD appeared near the Brazil-Paraguay border. One small Brazilian state is declared FMD-free without vaccination and Brazil aims to soon become FMD-free on a national basis. Brazil gained access to the Chinese market in mid-2015. After delays and uncertainty, 16 Brazilian plants have now been accredited and Chinese importers have been very keen to secure supply channels and relationships, including by offering high prices. Brazilian exports increased to exceed Australian monthly export volumes in August and September 2015 (ABARES, 2015) and there are forecasts that Brazilian exports to China will reach 200,000 swt in 2016 (MLA, 2015e). This will be higher than Australian exports at their peak. Brazil is only accredited for the export of frozen beef to China at this stage.

In May 2013, China and India signed a memorandum of understanding (MoU) to facilitate the export of buffalo meat from India to China, but measures to formalise the trade have since stalled. India is classified as FMD-endemic and controls the disease by vaccination but is reported to lack sufficient vaccine and programs (International Meat Secretariat, 2012). In 2014 India was the world's largest bovine meat exporter with 1.5 million tonnes.

The US was suspended from the Chinese trade in 2003 over BSE detection and has not yet resumed trade (Frederick and Li, 2015). China has offered partial resumption of trade with strict conditions but the US has declined to proceed with the trade without full access.

China's trade policy is and will be formed by a set of (mainly domestic) strategic considerations that then flow on to international relationships. Trade policy (and domestic support policies) are informed by periodic projections of domestic net supply. For instance, in the lead up to WTO accession in 2002 detailed projections on the trade balance for all agricultural commodities to 2005 and 2015 were conducted (Ministry of Agriculture, 2001). For livestock products, it was projected that dairy and wool were likely to be the largest net trade deficits, followed by beef and sheep meat, while imports of poultry, eggs and pork were likely to be minimal. That is, at that

time, beef was regarded as a 'mid-level' deficit livestock commodity. Domestic policies were set accordingly.

The most recent projections were reported by the China National Reform and Development Commission (2013), which found a net deficit (imports) of just 60,000 tonnes by 2020.[16] This is unrealistic. The measures the Commission proposed will impact on investment and activity in the beef industry, but are likely to be overwhelmed by the broader economic forces and incentives at play. For comparison, the USDA and the International Food Policy Research Institute (IFPRI) forecast a Chinese beef supply deficit of between 425,000 metric tonnes and 930,000 metric tonnes to 2024 (USDA, 2015; IFPRI, 2015).

Another reason for the liberalisation of cattle and beef trade policy is that it is not – in relative terms – socially, politically or strategically sensitive, at least on the production side. Unlike the national staples of grain and pork, beef is not seen as central to food security concerns in China. While cattle and beef production is a significant activity for some agricultural areas and ethnic Hui populations, it is much less politically important than wool and cashmere, which are produced in pastoral areas of Western China by ethnic Mongolians, Hui, Uyghurs, Khazaks and Tajiks.

While beef is not particularly important on the production side, it is significant on the consumption side. Price increases for beef and mutton have recently outstripped all other food types, especially leading up to 2014, which attracted close attention at all levels. China has a recent history (1989) of political instability due to inflation. More specific to the commodity, beef and mutton are classed as a staple food for ethnic minorities especially in Western China (Mongolians, Hui, Uyghurs, Khazaks, Tajiks) and unaffordable prices of staple foods are not conducive to State–minority relations. China seeks to manage beef and mutton prices in ethnic minority areas by storing reserves of frozen beef and mutton for strategic distribution to major

[16] The report claims that domestic measures to increase productivity and efficiency (through breed improvement, increased scale of production, links with agribusiness, disease control and disaster management) will increase Chinese beef output to 7.9 million tonnes by 2020 (an average annual increase of 1.9 percent). Beef consumption is estimated as 5.49kg per capita (an annual increase of 1.13 percent) and with a population of 1.45 billion people, consumption would be 7.96 million tonnes. That is, the shortfall (which would be met by imports) is estimated to be just 60,000 tonnes.

wet markets at subsidised prices. More recently, other measures have been flagged by the State to reduce prices including an early warning price information system, strengthening market supervision on product hoarding and collusion and curbs on exports. These measures are becomingly less and less effective in curtailing powerful structural forces and food price inflation, which has forced the State to relax formal import policy and tacitly allow informal imports. As discussed below, this provided a favourable environment to conclude negotiations on ChAFTA and other agreements, especially for cattle and beef (Section 4).

3.7. Summary

From an already large cattle herd, China has sought to proactively expand and develop its beef industry – with mixed results. The Chinese beef industry has been overtaken by economic forces that could not have been forecast by even the most optimistic economic planners. This has irreversibly downsized the cow-calf sector, but also created downstream industry structures – in fattening, processing, cold chains and retailing – that are light years ahead of other developing Asian countries. The other effect of sustained economic growth is that beef consumption has increased faster than domestic production, leading to rapid increases in prices and imports (both formal and informal) and has forced liberalisation and diversification in China's trade policy. While these forces are structural, it is important to note that are not linear or exponential. For example, prices and imports were very high from 2012 to 2014 when economic growth and conspicuous consumption (banqueting etc.) by officials and others were at their peak, but these pressures have already levelled off. Furthermore, there are now new cost-competitive entrants (such as Brazil) in the beef importing business that will bring further complexity to the trade.

4. SINO-AUSTRALIAN BEEF POLICIES

This section reviews the bilateral policies, agreements and protocols that govern physical trade. Major economic forces and structural change in China (Section 3) provided a highly conducive environment in which to finalise the China-Australia Free Trade Agreement and live cattle health protocol in 2015. However, the relationship has also been tested through several disturbances including the 2014 HGP concerns, the 2013-14 chilled and fresh beef trade suspension and delays in plant audit and accreditation. These issues have been mostly worked through and mainly satisfactorily resolved, reflecting well on the relationship. There are also other aspects to the relationship such as foreign investment and animal welfare standards that are raised briefly herein but require further contemplation.

Before turning to these dimensions of the Sino-Australian beef relationship it is worth emphasising the importance of Australia's disease status. Australia is classified by the World Organisation for Animal Health (OIE) as a 'negligible BSE risk status' and 'FMD-free where vaccination is not practised status' and has eradicated others diseases like brucellosis and anthrax. Due to an island geography and an investment in animal health and disease control, Australia has unparalleled access to international beef and cattle markets, including China. That is a major source of international competitive advantage.

4.1. Bilateral trade agreements

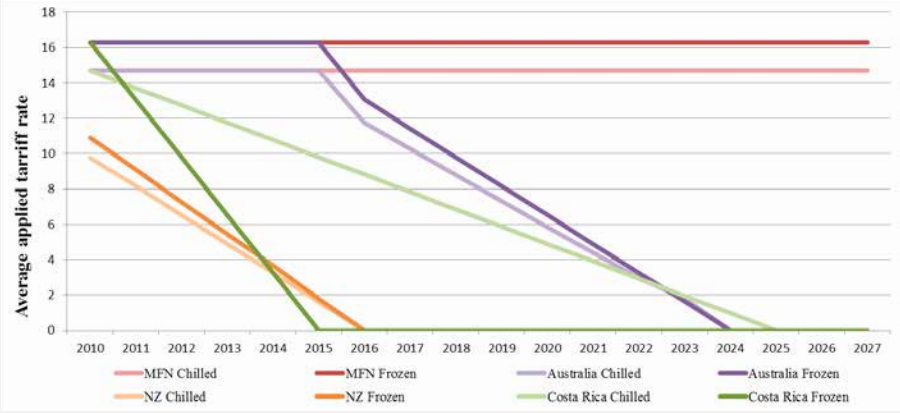
4.1.1 China-Australia Free Trade Agreement

After 10 years of negotiations, ChAFTA negotiations were finalised in November 2014 and signed in June 2015. Agriculture – or, more specifically, some agricultural industries such as wool and sugar – were major sticking points but became less problematic over the course of the negotiations especially with structural change in the Chinese economy (see Section 3.1). As mentioned in Section 3.6.5, beef was not a major strategic concern for China, and indeed escalating prices enabled the negotiation of particularly favourable terms for beef tariffs. To underscore how fortunate the timing was,

by the time the ChAFTA was finalised, beef (and mutton) prices had plateaued and the relevant committees in China were reconsidering the Australian offers on cattle and beef.

Australia and China ratified ChAFTA and it began with year two tariff eliminations implemented on January 1 2016. The elimination schedule phases out tariffs on beef and offal (ranging from 12-25 percent) and feeder/slaughter cattle (10 percent) over a nine-year period.[17] A 'discretionary safeguard' upper quota limit of 170,000 tonnes of beef – in line with the peak of the trade in 2013-14 – applies but increases over time. Two existing competitors in the legal beef export market, New Zealand and Costa Rica, have existing FTAs with China that also include beef tariff elimination schedules. As of 2016 New Zealand has zero tariffs on all products and Costa Rica has zero tariffs on frozen products from 2015 (Figure 25). Australia is, therefore, a number of years behind these competitors but retains an advantage over other competitors – Uruguay, Brazil, Canada and Argentina – that are subject to standard MFN tariff rates.[18]

FIGURE 25. ESTIMATED (AVERAGE) CHILLED AND FROZEN TARIFF ELIMINATION ON BEEF EXPORTS TO CHINA (2010-2027)



Sources: Authors calculations based on WTO Tariff download facility, DFAT (ND), NZFAT (ND) and Ministry of Commerce PRC (ND).

Remarks: Assumes ChAFTA implemented year two reductions as of January 1 2016 as reported by Condon (2015d). Assumes no change to currently applied MFN rates. Costa Rica tariff elimination calculated by author according to tariff elimination schedule notes (Ministry of Commerce PRC, ND).

17 Live dairy/breeder cattle already have zero percent MFN applied tariffs.

18 The President of the Rural Association of Uruguay commented 'he wanted to see the government work toward free trade agreements that would make Uruguay's meat industry more competitive. Abattoirs paid import tariffs in 2013 that totalled 17 percent of the value of meat exports...' (Gilbert, 2014).

4.1.2. Live cattle health protocol

Australia has had a protocol for the export of live cattle to China for many years. In 1997 a protocol was negotiated for the export of slaughter cattle to China, which was completed in April 1998. An import license was issued for a large prospective deal to export to – and slaughter in – an area of southern China (Foshan or Beihai), but the investment plans and the deal disintegrated before any cattle were shipped (Longworth *et al.*, 2001). There has been no (official) export of live slaughter cattle since, although there has been frequent shipments of Australian 'breeding cattle', imported duty free. Some of these cattle may have been used as slaughter cattle according to some sources.

In parallel with ChAFTA, negotiations for the live cattle health protocol for the export of live feeder and slaughter cattle from Australia to China were finalised in November 2014 and formally ratified on June 20 2015. The 2015 protocol extended the previous 1997 protocol by including slaughter and feeder cattle. While the 1997 protocol specifies that cattle were to be sourced from Bluetongue virus (BTV) free zones, the 2015 protocol allows cattle from areas north of the Bluetongue vector line (which runs roughly from Broome to Newcastle) subject to numerous conditions.

The agreement means that Australia is the only country in the world able to legally export feeder and slaughter cattle to the Chinese mainland (Farrell, 2015). However, the protocol contains a large number of restrictions imposed both by China (concerned mainly about transmission of Bluetongue to the domestic cattle and sheep herds) and Australia (predominately animal welfare concerns) that limit prospects for trade.

There are differing age, quarantine, and transport and slaughter rules for cattle depending on their source (ie. from southern Australia below the Bluetongue line or from northern Australia above the vector line) and their destination in China (where Bluetongue risks in the colder northern areas are lower than warmer southern China).

TABLE 1. MAIN PARAMETERS OF THE 2015 SINO-AUSTRALIAN ANIMAL HEALTH PROTOCOL

	Northern China	Southern China
Northern Australia	Feeder and slaughter cattle must be resident on farm of origin (RFO) for three months, and seven days in pre-export quarantine (PEQ) in Australia.	> Slaughter cattle three months RFO, 60 day PEQ in a Bluetongue-free zone (i.e. southern Australia), tests for Bluetongue virus (BTV). > Feeder cattle not permitted.
Southern Australia	Feeder and slaughter cattle three months RFO, seven days PEQ.	> Slaughter cattle three months RFO, seven days PEQ. > Feeder cattle three months RFO, 30 days PEQ, BTV test.

Source:
Nason (2015a; 2015b)

While the protocol makes it technically feasible to export a wide range of cattle from a wide range of areas, in practice exporters will struggle to aggregate and supply significant numbers of cattle on a commercial basis. For all areas, quarantine and testing costs are high. Requirements for cattle to be on farm of residence for at least three months precludes the export of trade cattle (assembled shortly before the shipment). Restrictions and costs for export from northern Australia to southern China makes the trade unviable. Export cattle are expensive to buy and ship from southern Australia.

There are a number of other logistical constraints in China:

> There are limits to the distance that cattle can be transported in China before slaughter or feeding (50km). The vast bulk of China's feedlot and abattoir facilities are located inland and new facilities and chains will have to be built. The protocol is unlikely to solve China's problems with chronic under-capacity of existing facilities.

> Restrictions in current facilities in China limit the number of cattle that can be handled in any one lot, which limits the size of shipments and increases per unit costs.

> Cattle from one shipment cannot be mixed with cattle in a feedlot from another shipment.

> The imported cattle cannot be fed or processed with local cattle.

> Australia requires the development of Exporter Supply Chain Assurance System (ESCAS) supply chains for feeder and slaughter cattle in China.

While two planeloads of cattle have been delivered under the protocol,[19] investigation and negotiation on trade opportunities by state governments and companies in Australia and counterparts in China have been slow. One industry commentator believes that for the time being, the live feeder and slaughter trade to China can only develop as a niche trade rather than a trade of any substantial volume. Another commented that only Australian exporters with existing live dairy and beef breeder cattle export trade experience will be able to manage the complex protocol (Nason, 2015a). Australian trade officials were also said to have agreed to the currently negotiated terms on the basis that the opportunity for concessions on Bluetongue might not arise again for years. At least this agreement would provide a basis for renegotiation into the future.

As part of a massive, orchestrated, international program to increase supplies of primary products, China may also be opening the doors to the primary, early-stage products of cattle and beef. However this is being done incrementally, with fall back positions to 'manage' the trade. This is a far cry from the 'one million head to China each year' initial rhetoric of some Australian government and media spokespeople when the new Sino-Australian protocol was first announced.[20]

[19] A load of live cattle departed via air on October 20 2015 under the new protocol consisting of 175 Angus and Angus cross steers with further air transport to in late 2015 followed by sea transport early 2016 (ABARES, 2015). This was 'designed to test the supply chain system'. Others report that there are '...no pipeline of known shipments under preparation' (Nason, 2015c). That is, the shipment was purely symbolic and industry representatives do not envision another load for perhaps at least 12 months (personal communications with industry).

[20] In a year of high turnoff, Australia exported a total of 1.3 million head to all destinations in 2014. Thus, if 'one million head per year' were to be exported to China, a large majority of Australian live cattle exports would be destined for China. This would also mean major diversion away from established markets, especially Indonesia that takes cattle from northern Australia, has abundant feed sources for feedlots in the north of the country, low slaughter costs and similar drivers of beef demand to China.

4.2. Beef-specific market access issues

In addition to broader trade and disease protocols, there are a range of 'lower level' import policies and procedures that have required the attention and management of Australian authorities to maintain the beef trade.

4.2.1. Hormone growth promotants

In May 2014 Chinese authorities informed the Australian Department of Agriculture, Fisheries and Forestry (DAFF) that they would begin enforcing their long-running but sporadically enforced HGP-free beef import requirements (Seng, 2015). In the midst of endemic food safety problems in China and Russian claims of trenbolone (a synthetic HGP) residues in Australian beef, the Chinese government sought greater assurance on the HGP-free status of Australian exports to China through port-of-entry testing of Australian shipments (Seng, 2015; Condon, 2014b). The Chinese announcement resulted in a significant drop in monthly beef exports from May 2014 but export volumes recovered by March 2015 (ABS, ND).

Australia responded by adding a section to the (already existing) National Vendor Declarations (NVDs) whereby producers now declare the presence of any HGP prior to exportation (Cawood, 2014). Australia's response appears to have been quick and effective in addressing Chinese concerns allowing export volumes to recover relatively quickly. The management of this issue appears to be a good example of a positive bilateral trading relationship. This is recognised by competitors including the US Meat Export Federation, citing the case as an example of Australian competence in doing business with China and meeting expectations as a customer of value (Seng, 2015).

It could be argued that the continued use of HGPs in the Australia industry reduces Australia's competitive position in China. Uruguay, for example, promotes their beef industry as 100 percent free of growth promotants and antibodies (Dyson, 2013). Industry observers in the US are concerned that widespread use of HGPs in the US may hinder negotiations on market re-entry into China (Freifelder, 2014). While the 2014 incident caused no lasting problems for Australia with the export trade to China, continued use of HGPs in the Australian

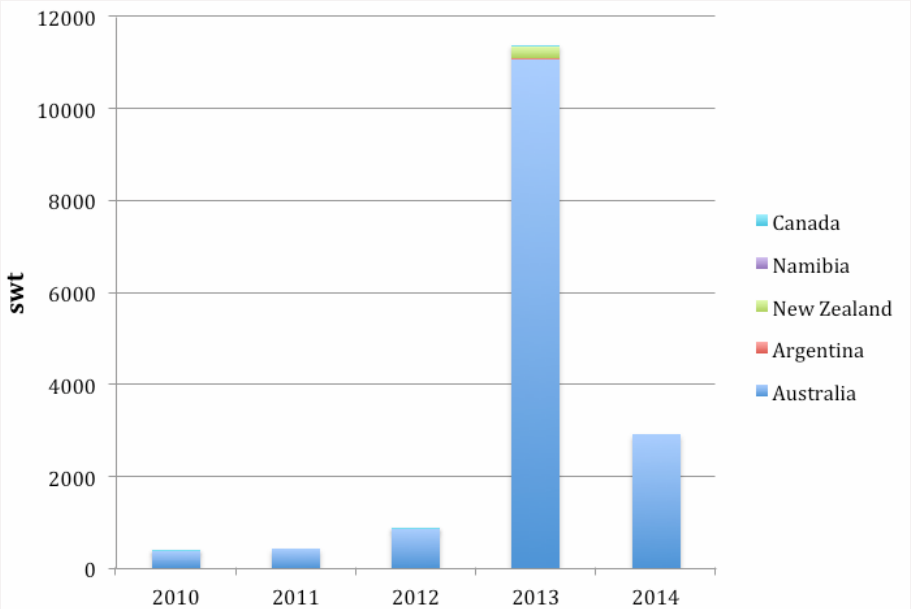
industry will require vigilance to ensure that product destined for China complies with Chinese requirements.

4.2.2. Chilled and fresh beef suspension

Another disruption to the trade was the blanket suspension on the import of all chilled and fresh beef product into China in 2014. As a result, the dramatic increase in chilled imports into China in 2013 – predominately from Australia (99 percent) – was wound back in 2014 (Figure 6 and Figure 26).

Australia – and other countries – have exported beef to China for many years under a broad 'beef' protocol that was understood to include both frozen and fresh/chilled product. In August 2013 China suspended all imports of fresh/chilled beef on the pretext that these were not covered under the beef protocol and food safety concerns. However, DAFF received no official report of such concerns and shipments en route were allowed to continue to their Chinese destinations (Vidot, 2013). There was some speculation that the suspension was politically motivated ahead of resumption of FTA negotiations (Beef Central, 2013; Vidot, 2013). Given the sudden rise in exported chilled beef product from Australia to China in 2013 (see Figure 26), one media report described it as the Chinese government attempting to 'put the handbrake on things a little' (Beef Central, 2013). More strategically, there may also have been concerns about too great a dependence on a single source of imports (although Australia now accounts for virtually all chilled/fresh imports into China). Perhaps most plausibly, an Australian trade representative in Beijing thought that China customs did not have sufficient cold storage facilities, staff and systems to cope with the large influx of fresh/chilled product, and sought to bring the flow back to more manageable levels until capacity was developed.

FIGURE 26. IMPORTS OF 'FRESH AND CHILLED' BEEF INTO CHINA, 2010-2014



Source: UN Comtrade.

Remarks: HS020110, HS020120, HS020130 categories included.

In July 2014 the ban was lifted on Australian fresh/chilled product and trade has slowly began to rebuild, but from only 10 accredited plants (ABS, ND; Condon, 2014c). Australia is the only country to have renegotiated access. New Zealand, the only other supplier of notable volume, has not yet regained access because, believes an Australian Beijing-based trade representative, its priorities lie in dairy. Despite nine months of suspended trade, Australia was able to meet the requests of China and emerge in a strengthened competitive position in this higher value segment of the market.

4.2.3. Plant accreditations

Plant accreditation is a major factor in access to and expansion of the export market to China. As of June 2015 Australia had 56 facilities accredited for the export of beef to China, more than any competitor (see Table 2).

These facilities currently include both integrated and non-integrated facilities, previously an issue of contention.[21] Facilities are approved for frozen and/or chilled beef and some include the allowance for export of frozen beef offal products (especially heart and kidney). A total ban on head, feet and alimentary tract product remains in place (MLA, 2016).

TABLE 2. NUMBER OF BEEF EXPORTERS AND COLD STORE FACILITIES WITH CHINESE EXPORT APPROVAL, 2015

Source: CNCD (ND).

	QLD	NSW	VIC	WA	TAS	SA
Slaughter, Boning, Cold Store	14	9	5	2	2	2
Cold Store only	8	5	7	2	0	0

Australia has been able to secure plant accreditation due to technical competence, sound working relationships and a lot of perseverance and patience. Accreditation is a long, drawn-out process. Many facilities wait years for inspection and approval – or are still waiting – and some were delisted in 2010 and re-listed again in 2014. Following the fresh and chill ban/suspension, only 10 Australian plants have been re-accredited for the export of fresh/chilled product, providing only 'partial access' to the Chinese market.

Like the Chinese suspension on fresh/chilled beef, various explanations have been offered for the disrupted access. There are claims that China uses plant accreditation as a non-tariff barrier to manage trade on 'non-scientific' grounds. While this is probably right, it is also probably linked to limits in logistics and capacity. China applies individual, in-person inspection audits of all abattoirs and cold-storage facilities applying to export beef to China – as opposed to 'systems accreditation' that Australia has lobbied for. China simply does not have the capacity to send a large number of inspectors and auditors around the world to process the applications of a very large backlog of international applicants. Given that Australia already has

[21] Previously, non-integrated facilities were banned. That is, product could only be stored in a cold-storage facility that was owned by the exporter and could not be stored in a shared facility amongst exporters for fear of product mix-up. This created inefficiencies given the use of consolidated cold storage facilities for Australian product near ports. However, according to MLA (2016) both integrated and non-integrated facilities are currently approved for export to China.

a disproportionately large number of accredited plants, meeting additional accreditation requests from Australia is probably not a high priority for China.

As China seeks to increase and diversify beef sources, Brazil has become a higher priority. While it has not been a smooth or straightforward accreditation process for Brazil either – exporters there have also been frustrated - 16 Brazilian facilities have been accredited in the last 12 months with more likely to come. While Australia has been successful in accreditation of plants to date, getting additional plants accredited may take new levels of diplomacy, technical expertise and patience.

4.3. Other dimensions of the relationship

A range of other issues – some of which are controversial – that are also impacting on the Sino-Australian beef relationship are discussed briefly here.

4.3.1. Collaborative industry activities

Favourable trade and technical agreements have been made possible by a culmination of structural forces, especially on the Chinese side. However, as also highlighted in this report, technical, administrative and diplomatic competence is required to reach agreement on complex issues, especially in animal health and hygiene, quarantine and shipping. There have, of course, been cases of strained institutional and personal relationships but generally positive outcomes no doubt reflect a good relationship both government-to-government and between relevant agencies.[22]

It is significant that Australian industry bodies (especially the MLA) have maintained a long-standing commercial presence (including an office) in China. The engagement focuses on areas of immediate benefit to the Australian industry (promotion of Australian beef, cooking classes, basic reporting, some logistics) and some (low cost) funding of students. The 'direct' and 'short-term' approach is largely a function of the MLA structure, which is funded and reports to levy-

[22] On the Australian side this includes DAFF, AQIS, DFAT and in China MoA, MOFCOM and CIQCID, AQSIQ.

payers who are cattle producers. It differs to the longer-term and more substantive collaborative research and development activities undertaken by some other countries – especially France and Canada – in breeding, animal nutrition, traceability, processing technologies and conferences and research with companies, associations and universities. Knowledge of the Chinese beef industry is not well entrenched in Australian government and industry and for key industry players in China there is nothing 'special' about the Sino-Australian beef relationship. Australia may have to seek deeper engagement with China to capitalise on more sophisticated opportunities in China.

Chinese stakeholders would undoubtedly like to see Australia to do more of these longer-term relationship-building activities which would help deepen the relationship and generate longer-term benefits for both countries. However, these same stakeholders accept the 'direct' problem-solving Australian approach which seems to have created a healthy, cooperative Sino-Australian beef and cattle trading relationship.

4.3.2. Chinese foreign investment in Australia

Market developments have seen a substantial increase in actual or planned Chinese direct foreign investment in Australian agriculture, in the beef industry in particular. Between late 2014 and late 2015, nine Chinese companies invested A$430 million in Australian beef properties and supply chain assets (Rowley, 2015; Beef Central 2015a, 2015b) and further investment activity is anticipated in the coming years given Chinese policy and the recently negotiated Free Trade Agreement. A string of headlines and widespread debate have followed.[23]

Chinese companies with diverse backgrounds have looked to Australia as part of a broader Chinese movement to 'go out', to diversify (into agriculture and overseas), secure supply of raw materials and to capitalise on recent high consumption and prices for beef in China (and to own a farm). There has been interest in cattle stations (breeding

[23] These include 'Chinese industrialist pays $47 million for Gulf property', 'Chinese investor plans to spend $100m on beef', 'NAPCo shareholder sells Roma holding to Chinese interests for $28m' (Beef Central, 2015d) and 'Selling Kidman to the Chinese is 'complete madness', says Dick Smith' (*Australian Financial Review*, 2016).

to backgrounding and finishing), feedlots, processing facilities and integrated operations, with links back to China (imports, processing, distribution etc.).

While these investments seem large and are highly publicised in Australia, the significance has to be put in context. First, Chinese owners lack the expertise required to run the companies and need to keep existing or employ other experienced Australian managers and staff to run them. Second, the timing and scale of Chinese investment in Australian agriculture is relatively recent and small compared to other foreign investors in Australia and small relative to Chinese investment in other non-agricultural industries (Rowley, 2015). Third, the Australian rural property sector (and agribusiness in general) needs capital investment, especially given high levels of rural debt. Fourth, the Chinese foreign investment links into Australia – from cattle production to processing and exports – are most likely to lead back to China and increase integration into the Chinese market.

4.3.3. Animal welfare

Animal welfare standards for cattle within China are, in general, not high at least by Australian standards. Cruelty occurs in multiple parts of the chain: production (under-feeding or watering and tethering by the nose is widespread); marketing (loading, unloading and trucking with rudimentary facilities); and slaughter (especially in small slaughterhouses). China has for many years drafted an animal welfare law but has not introduced it because of the logistics of implementation, especially as the industry is dominated by small-scale, fragmented operations involving millions of chain actors.

Questions have been raised about how Australian cattle exported to China will be treated, especially if the 2015 live cattle protocol leads to an expansion in numbers (e.g. O'Sullivan, 2014). These concerns are based possibly on practices in the Chinese domestic market (above) and certainly on reports of mistreatment of Australian animals in other countries (e.g. Indonesia and Vietnam). In these other export markets, Australian cattle – mainly feeder cattle – enter into overseas feedlots, and are then mainly sold to small-scale individual butchers that slaughter in rudimentary (municipal) service slaughter facilities.

Given the way any large-scale importation of slaughter and feeder cattle into China will be organised, these cattle will almost certainly enter modern supply chains in China, and not small-scale, fragmented chains. The cattle will be required to be held in quarantine and sent to nearby (within 50km) accredited large feedlots or abattoirs, with little or no scope for 'leakage' to non-accredited buyers. Unlike other developing Asian industries, modern abattoirs in China take ownership of cattle and are responsible for all aspects of the slaughter process – from cattle holding, slaughter and butchering – in centralised and highly-capitalised facilities. This means that installation, monitoring and enforcement of ESCAS systems should be more effective in China than other export markets. It is also easier to manage animal welfare for slaughter and feeder cattle in these structures than it is for breeders (sent to breed stations throughout the country) or dairy cattle (to dairies and households). In the wake of the Sino-Australian protocol there has been discussion about joint training (in cattle handling and slaughter) and joint venture investments which would increase the chances of adoption of approved practices.

4.4. Summary

Many countries (including the US, Brazil, India – and no doubt also Australia) have sold very large volumes of beef (and cattle) into China in recent years without formal market access. The informal trade may have some cost advantages. Smuggled beef avoids formal Chinese import duties (tariffs or VAT) and these are generally higher than the official duties along transit routes (Vietnam, Hong Kong, Thailand) especially if the product is classified as being for re-export. Against this there are a range of other 'border costs' and costs can be high if product changes hands many times over long distances. It is possible that smuggled beef is precluded from some end-uses (e.g. higher value restaurants) where raw material certification is required. Furthermore, the informal trade can be periodically interrupted and Chinese authorities have signalled a move toward trade formalisation over the longer term.

Achieving and maintaining formal access to the Chinese beef and cattle market is, therefore, an important competitive advantage for Australia, especially as tariffs are to be phased out. This has been

possible most fundamentally due to Australia's long-term animal health and biosecurity program. However, Australia has responded to challenges and demands from China – even those that didn't seem valid on scientific grounds – with considerable investment in time and resources and technical and administrative competence. As noted by the United States Meat Export Federation (USMEF) (with respect to Australia):

> ...China's import conditions are stringent, but China is not lacking for suppliers willing to meet its demands. (Seng, 2015).

It will be interesting to see how other countries meet these demands into the future. They will be encouraged by China's willingness and indeed efforts to diversify import sources. However, China will also continue to 'strategically manage' the trade in response to conditions in China (that might include low prices, the plight of the local industry, food safety issue or administrative issues). The Sino-Australian cattle and beef relationship is healthy and professional but there is nothing exclusive or special about it.

5. ASSESSMENT AND PROSPECTS

Based on the information and analysis in Sections 2 to 4, this section seeks to answer some the questions posed at the beginning. Are the heights of export in recent years sustainable or re-attainable? Is the excitement from the media, industry and government justified or is it wise to temper it? How is Australia progressing in the 'Asian Century', as the 'food bowl' or the 'delicatessen' of Asia? Did we get into this position due to good luck, good management – or both?

The 13-fold increase in Australian beef exports to China between 2011-12 and 2013-14 was driven by a unique concurrence of both long-term and shorter-term drivers. As the short-term drivers are exhausted, trade volumes have returned to more sustainable levels based on more fundamental (and powerful) drivers. Short of a major shock, these will continue into the foreseeable future. Without full understanding of the dynamics, many commentators became overly-optimistic which can distort policy and commercial decisions and public debate and perhaps lead to complacency.

The Sino-Australian cattle and beef relationship provides some tangible insights into the broader bilateral relationship and our economic and agricultural integration into Asia, the subject of much public and professional discussion. Detailed examination of the trade conforms to expectations that China is transforming and that Australia is well placed to capitalise with a complementary economy and, indeed, beef industry. Australia has both the commercial and administrative capacity to capture a major share of new agricultural trade opportunities that emerge in Asia – sometimes remarkably suddenly as with the Chinese beef story. At the same time, however, the beef industry does not fit squarely with many generalisations about the role of Australian agriculture in Asia and China such as Australia having a major role to play in supplying either exponentially-growing mass markets or small rapidly growing high-value niche markets.

5.1. Longer-term drivers

The increase in trade and the healthy outlook for the future are based on long-term fundamental drivers, especially sustained economic growth and urbanisation in China which has had two effects. First, Chinese diets have diversified and increased demand for beef in both urban areas (around 3.4 percent per annum, 2000-2013)[24] and rural areas (about six percent), with the largest increases in out-of-home consumption. While increases in consumption of beef may have levelled off, a general diversification of the Chinese diet that includes beef could be expected to continue into the future.

Secondly, broad-based economic growth has meant that millions of Chinese farmers throughout the country have exited cow-calf production to take up more lucrative off-farm work. As a result, the Chinese bovine herd contracted by 1.3 percent per annum between 2000 and 2013. China does not yet have significant numbers of large-scale cow-calf production units with the capacity to increase efficiency or respond to higher prices. On the other hand, downstream sectors of the chain – fattening, slaughter and marketing – are becoming increasingly efficient and commercialised, especially compared to other developing countries. However the contracting domestic cattle herd has led to under-capacity in these sectors. Nevertheless, domestic beef production increased by around 1.5 percent per annum from 2000-2013 due to higher turnoff and heavier slaughter weights. Clearly, there are limits to how long these sources of increased domestic production will continue to expand domestic production if the national herd continues to contract.

Alignments in domestic demand and supply led to beef price increases of 21 percent per annum between 2000 and 2013 which makes beef, along with mutton, amongst agricultural commodities in China with the highest price increases. This is of concern to policymakers because of overall food price inflation effects, but especially because beef, and mutton are staple foods for ethnic minorities in Western China (Mongolians, Hui, Uyghurs, Khazaks and Tajiks). Unless there is a major shock, underlying domestic demand-supply conditions suggest that beef will continue to be subject to upward price pressures.

[24] All annual average increases are compounded.

Policy mechanisms used by China in the past to manage prices (farmer subsidies, price and storage subsidies and the introduction of modern technologies) are becoming increasingly blunt policy instruments, overwhelmed by larger economic and social forces. As a result, China is strategically liberalising cattle and beef trade policy.

Due to geographical, agro-climatic and biosecurity systems, Australia has been a major beneficiary of these economic and policy settings. Australia has a comparative advantage, especially in early stages of cattle production and in transport costs. Furthermore, the bilateral beef and cattle relationship has been cemented in recent years through broader trade agreements (ChAFTA and the live cattle protocol) and industry specific agreements (fresh/chilled beef, HGP accreditation and plant accreditation). Controversial issues that could potentially obstruct the trade (animal welfare and Chinese investment in the industry) are unlikely to be major sticking points if discussions are based on sound rational argument and indeed could further deepen the linkages.

5.2. Shorter-term drivers

The recent exponential increase in beef exports to China especially to 2013 were not just a result of longer-term, structural forces (above), but also shorter-term forces that are unlikely to be replicated. GDP growth in China averaged 8.5 percent between 2010 and 2014, reflected in high consumption, especially out-of-home conspicuous consumption and banqueting. Beef is a significant item in banquets in China, especially for hot pot but also other ethnic and western cuisines. This period of high out-of-home consumption has moderated with slowing economic growth (6.5 to seven percent) and with the anti-corruption campaign of the Xi regime, under which stricter regulations on official banqueting were implemented.

The period of high exports to China also coincided with dry conditions, destocking, high slaughter rates and low beef prices in Australia. This provided Chinese importers with a ready supply of a full range of Australian cattle types and beef products. This was fortunate for Chinese importers, especially with other major suppliers (the US, Canada, Brazil, India) excluded from the formal Chinese market. It

was also fortunate for Australian exporters given the low demand from the US and embargoes to the Russian market.

These international forces have now changed. Widespread recent rain in northern Australia, restocking, lower slaughter numbers, record cattle prices and recovery in some markets (the US) will restrict supply for Chinese importers. Knowledgeable Chinese stakeholders that inform and make trade policy are well aware of Australia's limited supply of beef and cattle – regardless of weather conditions – which hardly register as a means of addressing China's food security and inflation. This has seen a liberalisation and diversification of China's trade policy for formal imports (through disease protocols and accreditation) that has already seen Brazilian export volumes overtake Australia. Further opening and new entrants can be expected.

In the meantime, China will continue to 'strategically manage' domestic pressures through trade policy, for both the formal trade (disease status, accreditation etc.) and the informal trade (crackdowns and periodic implementation of official policy). If and when conditions change – especially through large informal beef inflows and high prices – China may agree to renegotiate the animal health protocol with Australia to make the export of feeder and slaughter cattle commercially viable from northern Australia. This would help to expand and reorient the trade more in line with comparative advantage (Australia in cattle and China in processing).

5.3. Australia's agricultural integration into Asia and the region

The cattle and beef trade provides concrete insights into the broader Sino-Australian relationship and much of the public debate that surrounds Australia's agricultural integration into China and Asia. However, as findings vary by commodity, the insights from beef do not necessarily tell the whole story, which would require more comparative analysis.

5.3.1. *Australia in the Asian Century*

The Australian cattle and beef industry has long been integrated into the Asian region and trade flows have increased enormously over the last two decades. The proportion of frozen beef exported to (East and Southeast) Asia increased from 31 percent in 1994 to 44 percent in 2004 and 54 percent in 2014 (UN Comtrade, accessed April 2016). The proportion of all live cattle exported from Australia into Asia actually declined from 95 percent in 1994 to 86 percent in 2004 and 2014.

However, over this period, the composition of trade with Asia changed. Whereas Japan and South Korea accounted for around 90 percent of Australian frozen beef exports in 1994 and 2004, this declined to 53 percent by 2014. In that year the 26 percent exported to China was the equivalent of South Korea and three-quarters of that exported to Japan (UN Comtrade, accessed April 2016). More in-depth examination of the trade confirms many of the expectations that China is transforming and Australia is well placed to capitalise, with a complementary economy and indeed beef industry. However, the composition and the conduct of the trade has not proceeded in a way implied by the broader rhetoric.

5.3.2. *The food bowl of Asia*

While China is the third biggest formal importer of beef in the world, and would be the biggest if informal imports were included, and Australia is the second biggest formal exporter, but perhaps third biggest if informal exports are included, Australian beef is hardly going to meet the red meat protein requirements of the country. Of all beef consumed in China in 2014, about 74 percent derives from domestic production, at least 20 percent from informal imports and only about six percent from formal imports, of which only half – three percent – is from Australia (Figure 23).

However, market share in China – or even volumes – is not necessarily an indicator of success or even an objective of the Australian industry. Large beef exporters do not aim to sell to specific markets but to the highest bidder or most reliable customers over a large range of beef and offal products. The beef industry is highly globalised and fluid and while there are significant (disease and SPS) barriers to trade,

product can be frozen and transported over long distances and time periods. That is, the Australian beef industry can be depressed but have increasing exports and market share in China (as occurred in 2011-13) or, conversely, thriving but have declining exports or market share in China (as is the case in 2016). Thus, China should be seen as another 'normal' (but important) market alongside Australian mainstay beef markets of Japan, the US and South Korea that can add buoyancy or fill gaps.

5.3.3. The delicatessen of Asia

It is commonly stated that Australia is not involved in, nor should it seek to compete in the generic low-quality mass market in China but instead on niche or higher value (priced) products. In principle, this is an appealing idea. Within the broader Chinese beef market, there are multiple market segments and sources of premiums, especially related to food safety, but also quality characteristics, convenience and branding. Australia can supply these markets, legally.

While Australian beef does have a presence in higher value beef markets in China, this has been only a small part of the Sino-Australian trade. There is no evidence that higher value cattle or beef (cuts) are an important or growing part of the trade. Chinese importers have sought to buy the full range of products (from all cattle and all cuts) for the full range of markets and end-uses in China (Chinese cuisine, manufacturing, processed foods etc.). Indeed, in recent years the per unit value of fresh/chilled beef exported to China has decreased and has been stagnant in real terms for frozen beef. China is still predominantly a market for low-value product, reflected in the composition of Australian beef exports to China.

This has been a major benefit to the Australian industry, especially in a period of high turnoff and culling in Australia and restrictions in the traditional markets for lower value product (Russia and Indonesia). 'Whole carcass utilisation' is a major determinant of profitability for processors[25] and Chinese importers have been competitive buyers of

[25] Products such as livers can be worthless in Australia but has a value in China. Brisket worth around A$2 in Australia can be worth two or three times this much in China and Japan (used for shabu shabu etc). Trimmings that can make up 10 percent of meat yield is used mainly for sausages etc. in Australia can be sold as a meat product in China.

a wide range of products. There is no shortage of buyers (domestic or international) for higher value cuts (fillets etc.) from higher value cattle.

Nevertheless, with a range of lower cost suppliers in the Chinese market (domestic product, informal imports and Brazil) Australia will increasingly struggle to compete on a cost basis in China, especially as cattle supply in Australia tightens. Over time it may become necessary to focus on higher value or niche products into China, and sell other products to other countries when and if they emerge or trade becomes more open.

5.3.4. Good luck or good management?

The spike in trade in 2011 to 2013 was caused by a coincidence of factors mainly in China, in Australian climatic conditions and in the global beef market. This amounts to a lot of good luck. However, Australia had to be in a position to take advantage of opportunities through good management.

It is disingenuous for any particular party, director or CEO to claim exclusive credit for the boost in trade – or, indeed, the conclusion of ChAFTA – which were driven by changes mainly in China. However, Australian systems have proven robust over extended periods. This is particularly the case for Australian animal health and biosecurity systems (in this case FMD and BSE). The relationship has been tested through several disturbances including the 2014 HGP concerns, the 2013-14 chilled and fresh beef trade suspension and ongoing issues with plant export audit and accreditation. These issues have been worked through and mainly satisfactorily resolved, reflecting well on the relationship. This is no doubt helped by long-standing technical cooperation and communication between government agencies (in agriculture, quarantine and foreign affairs) and at industry, company and personal levels.

As the trade falls back on more fundamental drivers, as new international competitors enter the Chinese market and as new and unforeseen challenges arise, the trade will depend increasingly on good management. Different or more sophisticated strategies can be formulated from a closer understanding of the dynamics and the

heterogeneous nature of the Chinese industry and closer relationships and activities may be required. Measures to facilitate a more liberal animal health protocol (for exports from north of the Bluetongue line) and to facilitate Chinese investment in the Australian beef industry would deepen the trade but would have to managed well, especially publicly in Australia.

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ABOUT ACRI

For the first time in its history, Australia's most important economic relationship is with a nation very different in governance, politics and values. In the past, Australia's dominating economic relationships have been with the British Empire, the United States and Japan.

Today our most important economic partner is China.

China contributes now more to world economic growth than any other country. China absorbs 34 percent of Australian goods exports. By 2030, 70 percent of the Chinese population is likely to enjoy middle class status: that's 860 million more middle class Chinese than today.

In 2014 the University of Technology Sydney established the Australia-China Relations Institute (ACRI) as a think tank to illuminate the Australia-China relationship.

Chinese studies centres exist in other universities. ACRI, however, is the first think tank devoted to the study of the relationship of these two countries.

The Prime Minister who opened diplomatic relations with China, Gough Whitlam, wrote in 1973: 'We seek a relationship with China based on friendship, cooperation and mutual trust, comparable with that which we have, or seek, with other major powers.' This spirit was captured by the 2014 commitments by both countries to a Comprehensive Strategic Partnership and the 2015 signing of a Free Trade Agreement.

ABOUT THE AUTHORS

Associate Professor Colin Brown

Colin Brown is an associate professor in agricultural and resource economics in the School of Agriculture and Food Sciences at The University of Queensland. Colin has been involved in agricultural economics research in China since 1990 and, in particular, research on ruminant livestock industries, integrated crop-livestock systems, grassland management, rural development and food safety. He has conducted one month's fieldwork each year in China since 1990 in 16 provinces, autonomous regions and municipalities both in agricultural and pastoral areas. He is currently involved in grassland research in Inner Mongolia and Mongolia and on livestock forage research in Tibet. He has written over 10 books, 50 articles, 30 book chapters, 20 major reports and monographs and 30 conference papers, most of which relate to China.

Brooke Edwards

Brooke is an agricultural economist with applied economic experience in the sugarcane and beef industries of Queensland. In 2011 she graduated with a Bachelor of Economics from The University of Queensland and continued postgraduate education in 2013 with a Masters degree in Agricultural and Food Economics from the University of Bonn, Germany and the Swedish University of Agricultural Sciences, Sweden. Brooke's thesis for the degree is related to and has informed the research in this report. With professional experience in the public service and academia, Brooke is continuing her career as an analyst for Sugar Research Australia, an industry-owned research and development organisation.

Emeritus Professor John W Longworth

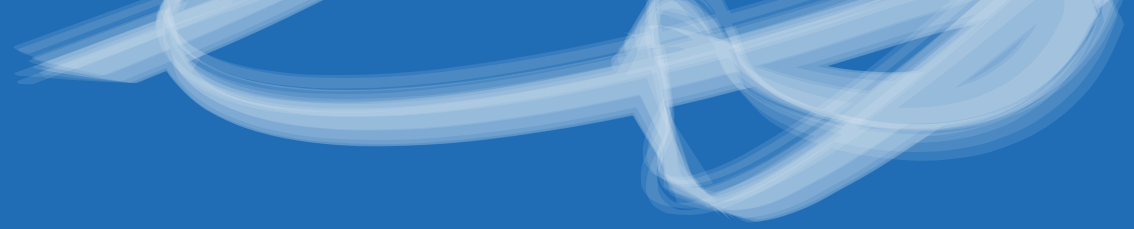
With a farming background, John is well-known in Australian academic and agribusiness circles as a 'muddy boots' agricultural economist. For more than three decades John has researched the Chinese and Japanese agricultural sectors. His research has focused on domestic issues in these countries that impact on Australian agricultural exports to these nations. He has published more than 10 books and over 150 research papers on these and other topics.

In Australia John's research contributions have been acknowledged by a number of awards, including the Farrer Medal and the Institute of Agricultural Science Medal for Research. He is a Fellow of both the Academy of Social Sciences in Australia and the Australian Institute of Agricultural Science and Technology. He is also a Distinguished Fellow of the Australian Agricultural and Resource Economics Society.

Internationally, John is one of Australia's best-known agricultural economists. He was World President of the International Association of Agricultural Economists for three years, a Visiting Professor at Kyoto University (three times) and a Visiting Scholar at Chicago University.

Dr Scott Waldron

Scott grew up on a cattle property, has undergraduate degrees in international business and Asian studies (China and Indonesia), has a PhD in agricultural economics and is fluent in Mandarin Chinese. Before joining The University of Queensland, Scott worked for the Economist Intelligence Unit and an agricultural consulting company in Beijing. At The University of Queensland Scott has conducted 18 collaborative projects on ruminant livestock in China, Southeast Asia and the Pacific. As a livestock economist Scott's role in projects has been to investigate ways to improve farm incomes, value chain functioning and trade and development outcomes. The research approach is highly collaborative, multidisciplinary, fieldwork-intensive and applied. He has published nine scholarly books - three of which have been translated - and more than 30 peer-reviewed journal articles and book chapters.



UNIVERSITY OF TECHNOLOGY SYDNEY

Australia-China Relations Institute
University of Technology Sydney

PO Box 123
Broadway NSW 2007
Australia
e: acri@uts.edu.au
w: www.australiachinarelations.org

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