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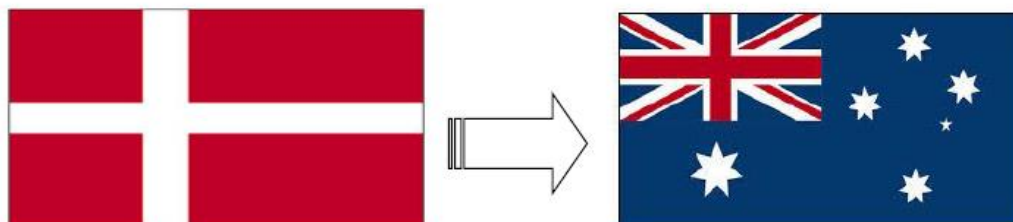
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Evaluating the consequences of imports on a local value chain: the case of Danish pig meat exports to the Australian market

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Abstract

Imports of pig meat into Australia have grown rapidly in recent years and now total around 150Kt pa (shipped weight). This is well over 300Kt in carcase weight terms, and makes up two-thirds of processed pig meat production and about half of domestic consumption. A recurring question is whether these trends have harmed the domestic pig industry and, if so, to the degree sufficient to warrant safeguard action under WTO regulations. While the Productivity Commission regularly examines the aggregate data to test this hypothesis, in this paper we investigate the value system that coordinates the imports of Danish pig meat into the Australian pig meat market, and we seek to identify which parameters impact this value system.

We find that the Danish pig meat industry built its current position in the Australian market (about 40Kt pa, mainly middles for bacon) based on the following determinants of value: economies of scale in production, processing and logistics; uniform quality of the middles; high food-safety and veterinary standards; the ability to supply a customised product "made to order"; and a long-term focus on the customer. Other contributing factors include Australians' strong preference for ham and bacon which means that Danish suppliers can obtain higher prices in Australia for middles than they can elsewhere, and the recent strength of the \$AU: the \$AU/Euro rate has fluctuated between 0.64-0.86 over recent years.

Import prices set domestic prices for manufacturing type pig meat, and imported products are typically cheaper than domestically produced pig meat suitable for manufacturing. Given the latitude allowed by the arguably ineffective country-of-origin labelling laws, cost efficient manufacturers will use imported product. This has resulted in a considerable degree of industry consolidation as well as a marked decline in the production of pigs more suitable for manufacturing pig meat in Australia. Those producers who are left have moved out of the processed market towards the fresh pork market and, to a lesser extent, towards export markets.

We also examine one of the dominant value chains in this system and analyse how it achieved and maintains success.

1. Introduction and Purpose

Agricultural and food networks worldwide have become increasingly private and powerful, closely coordinated or fully vertically integrated, self-regulated, global and experience-based (see Griffith et al. 2014 for a review). A new cohort of wealthier consumers is demanding new and different goods and services. The efficient delivery of this consumer food experience requires a very well-coordinated "value chain" or "value system". Following Porter (1985), we define a value chain as the value producing activities of one organisation, and a value system as the network of organisations and value producing activities, involved in the production and delivery of an offering to the end customer. We use the generic term "value chain" to refer to both unless we specifically wish to distinguish between them.

If chain or system coordination is to occur and be profitable, how should all the chain components and system partners be aligned (or be coordinated) to deliver food experiences that maximise consumer willingness to pay, and also be efficient? Sometimes we use theoretical models and simulation experiments to assess options in a conceptual way. More often than not, however, questions such as these are best answered by reference to case studies of actual firms involved in actual value chains and systems, and where there is a history of commercial relationships to examine and consider.

In this paper we investigate the value system that coordinates the imports of Danish pig meat into the Australian pig meat market, and we seek to identify which parameters impact this value system. We also examine one of the dominant value chains in this system and analyse how it achieved and maintains success. The paper is based on a review of the data and relevant literature, and interviews with companies and industry organizations.

2. The Australian Pig Meat Market

Overview: An overview of the Australian pig meat market since 2005 is provided in Table 1. This shows an industry in decline from the point of view of domestic production. Breeding sow and gilt numbers have fallen considerably since 2005, continuing a longer-term trend of exit from the pig production sector. In the previous 20 years, more than half of all pig production enterprises were closed (Productivity Commission 2005). According to Australian Bureau of Statistics (2014a), there are only 500 business units currently engaged in pig farming, under the ABS definition of business unit. Most output is produced by a small number of large integrated production units. These units produce mainly larger porker-type pigs in indoor intensive systems for the domestic fresh meat market. However, there is a growing share of output produced in outdoor bred and free range systems (Australian Pork Limited 2012). Most producers who have exited the industry were producers of baconer style pigs or were small opportunistic producers.

Improvements in sow productivity and in carcase weight have partially compensated for lower breeding numbers such that total production has only fallen by around 10 per cent during this period. Exports have declined with output, at a slightly faster rate so that exports in 2013 were only 13 per cent of production. The gross value of production from pig farming remains steady at around \$900m per year (Australian Bureau of Statistics 2014b).

From the point of view of consumption however, the picture is completely different. Aggregate consumption has risen by more than 20 per cent and in 2012 and 2013 was approximately 600kt per year. This has been driven by a rapid and substantial rise in imports, up by more than 70 per cent during the period. Per capita consumption of all types of pig meat has increased since 2005, now averaging close to 26kg per person per year in 2012 and 2013.

With regard to prices, both farm and retail prices have trended up over the period 2005-2012, with farm prices rising at a slightly higher rate. Further details on supply, disappearance and prices in the Australian pig meat market are available from a range of government (ABARES 2013) and industry sources (Australian Pork Limited 2012).

Table 1. Australia supply and use of pig meat, and farm and retail pig meat prices, 2005-2013

	Unit	2005	2006	2007	2008	2009	2010	2011	2012	2013
Pig numbers	'000	2538	2733	2605	2412	2302	2289	2285	2138	2098
Breeding sows and gilts	'000	348	352	340	313	278	268	295	267	310
Slaughterings	'000	5372	5320	5327	4796	4500	4617	4663	4728	4777
Average slaughter weight	kg	72.7	71.9	72.2	71.9	71.9	73.4	73.8	74.4	75.3
Production	kt	390.3	382.7	384.6	345.1	323.7	338.7	344.3	351.7	359.9
Imports	kt	162.3	169.0	218.4	234.5	272.3	283.1	270.2	296.4	279.9
Exports	kt	64.7	67.2	60.8	55.3	45.4	50.1	51.4	46.2	46.6
Total consumption	kt	488.0	484.4	542.2	524.3	550.6	571.7	563.0	602.0	593.3
Consumption per person	kg	24.0	23.5	25.8	24.4	25.2	25.8	25.0	26.3	25.4
Over-the-hooks pig price	c/kg	233.5	246.0	243.3	276.6	337.9	278.1	279.3	277.3	300.3
Retail pork price	c/kg	936.9	963.5	983.7	1009.3	1068.8	1076.6	1091.1	1072.8	1083.1

Source: developed from ABARES (2014, Tables 128, 129 and 144)

Imports of Pig Meat into Australia

Prior to 1990 the Australian pig meat industry was largely self-contained, with only small quantities of imports of processed pig meat. Imports of frozen, uncooked pig meat began arriving in Australia from Canada in July 1990 following negotiations around free trade agreements. Boning of pig meat prior to export has been an additional import requirement since 1992 (Productivity Commission 2005). Subsequent amendments were made to quarantine regulations, particularly in relation to the WTO Uruguay Round Agreement on Sanitary and Phytosanitary Measures, that have since permitted import access to duty-free frozen and cooked pig meat from, in particular, Denmark in 1997 and the USA in 2004 (Productivity Commission 2008). The Netherlands was granted access in 2012 (APL 2013). Total pig meat imports into Australia since 1996 on a monthly basis and as a Moving Annual Total (MAT) are shown in Figure 1. Imports have grown rapidly and now total around 150,000 tonnes pa (shipped weight). This is well over 300Kt in carcase weight terms.

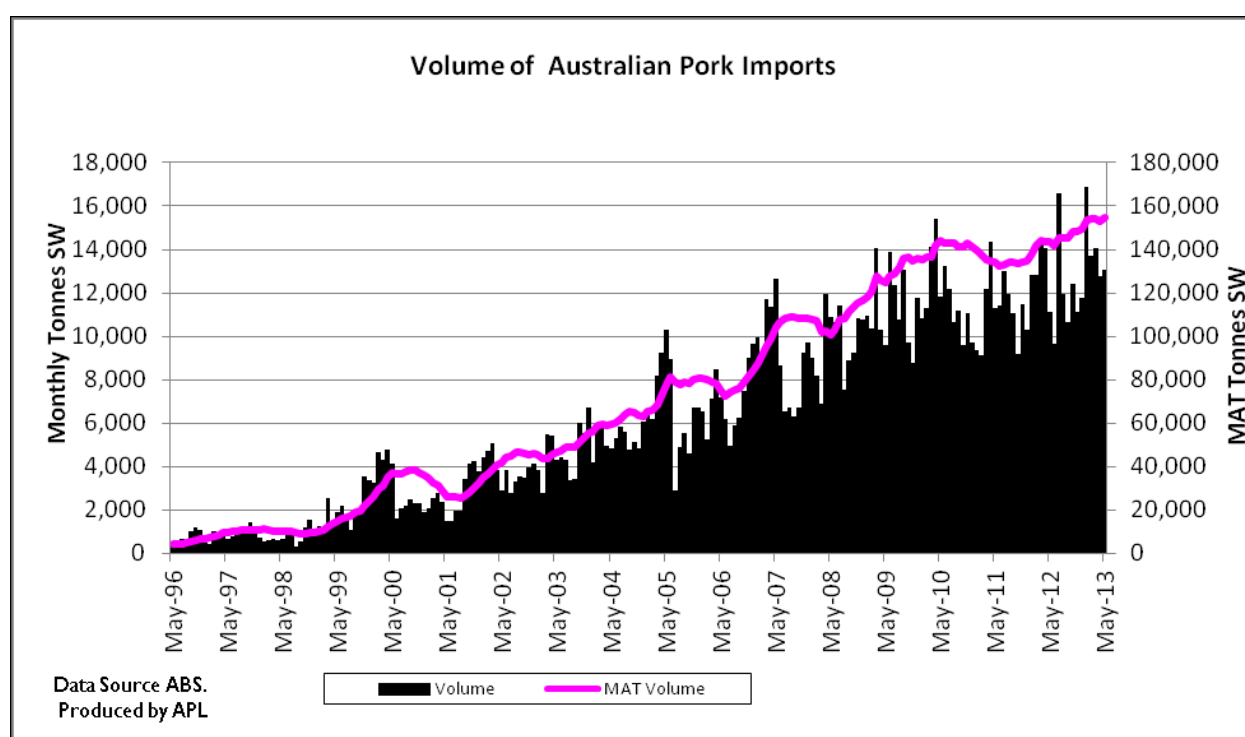


Figure 1. Australian total pig meat imports, 1996-2013

Quarantine protocols require frozen pig meat imports to be cooked on arrival to minimise the risk of disease, particularly the risk of porcine reproductive and respiratory syndrome (Productivity Commission 2008). Therefore, all imported pig meat goes into manufactured products; all uncooked pig meat sold in Australia (as fresh pork or uncooked ham) must be of domestic origin. Imports make up two-thirds of pig meat processed domestically, and almost half of aggregate domestic consumption.

Almost all frozen pig meat imports within the Australian Customs tariff subheading 0203.29 (frozen retail cuts of meat of swine), which account for approximately 90 per cent of all pig meat imports, originate from the USA, Canada and Denmark. In 2011-12 imported pig meat volumes (shipped weight) from the USA, Denmark and Canada were approximately 58,000 tonnes (41 per cent and stable), 40,000 tonnes (28 per cent and stable) and 30,000 tonnes (19 per cent and decreasing), respectively (Australian Pork Limited 2011-2012). The Netherlands has emerged as a significant exporter in the last few years, at around 11 per cent of total imports.

The volume shares of the major import suppliers, from 2004/05 to 2012/13, are shown in Figure 2.

Canada supplies mostly legs for hams, Denmark mostly middles for bacon, and the US a mix of cuts and carcasses. The volume share for particular types of cuts is shown in Figure 3 for a recent month.

In May 2013, average import prices were the US \$AU3.09/kg, Canada \$AU3.26/kg and Denmark \$AU3.83/kg. Domestic wholesale prices are more than \$4/kg.

Economic Impact of Imports on the Australian Pig Meat Value Chain

As shown in Figure 1, the growth of imports has been rapid and substantial and, as shown in Table 1 and elsewhere, the domestic production sector has been contracting. Prompted by domestic industry concerns about the impact of import competition, the Industry Commission and its successor the Productivity Commission undertook general reviews of this issue, and/or specific safeguard enquiries, in 1995, 1998, 2005 and 2008. In its most recent analysis, the Commission confirmed that imports had increased and that serious injury to the domestic pig meat industry could be demonstrated, but they could not confirm a causal link between increased imports and such injury. The econometric evidence presented suggested that:

- import volumes had only a very small (often statistically insignificant) adverse effect on prices,
- increased imports had not reduced domestic production,
- import prices, not volumes, had exerted the main influence on domestic prices, and
- higher feed prices had hurt the industry because producers were unable to pass them on fully, with or without imports.

3. The Danish Pig Meat Market

Overview: An overview of the Danish pig meat market since 2003 is provided in Table 2.

Table 2. Denmark supply and use of pig meat, and farm and retail pig meat prices, 2003-2013

	2003	2009	2010	2011	2012	2013
Number of farms with pigs, of which	11,110					3,855
With pigs and sows	4,757					1,454
With sows only	1,220					434
With pigs only	4,558					1,746
Slaughterings (m)		19.3	20.2	20.9	19.4	19.0
Exports of piglets (m)		7.0	7.5	8.0	9.2	9.6
Production (kt)*	1762	1585	1668	1720	1669	1589
Producer price (DKK/kg, incl. all payments)			9.93	10.86	12.07	12.17
Exports pigmeat (kt)*	1450	1446	1515	1595		
Consumption pork/head (kg)		10.63	10.49	9.83	9.64	10.36
Consumption pigmeat /head (kg)	74.3					36.2
Consumer price, tenderloin (DKK/kg)					62.69	49.83

*Source: Danish Agriculture and Food (2014), FAOSTAT (2015)**

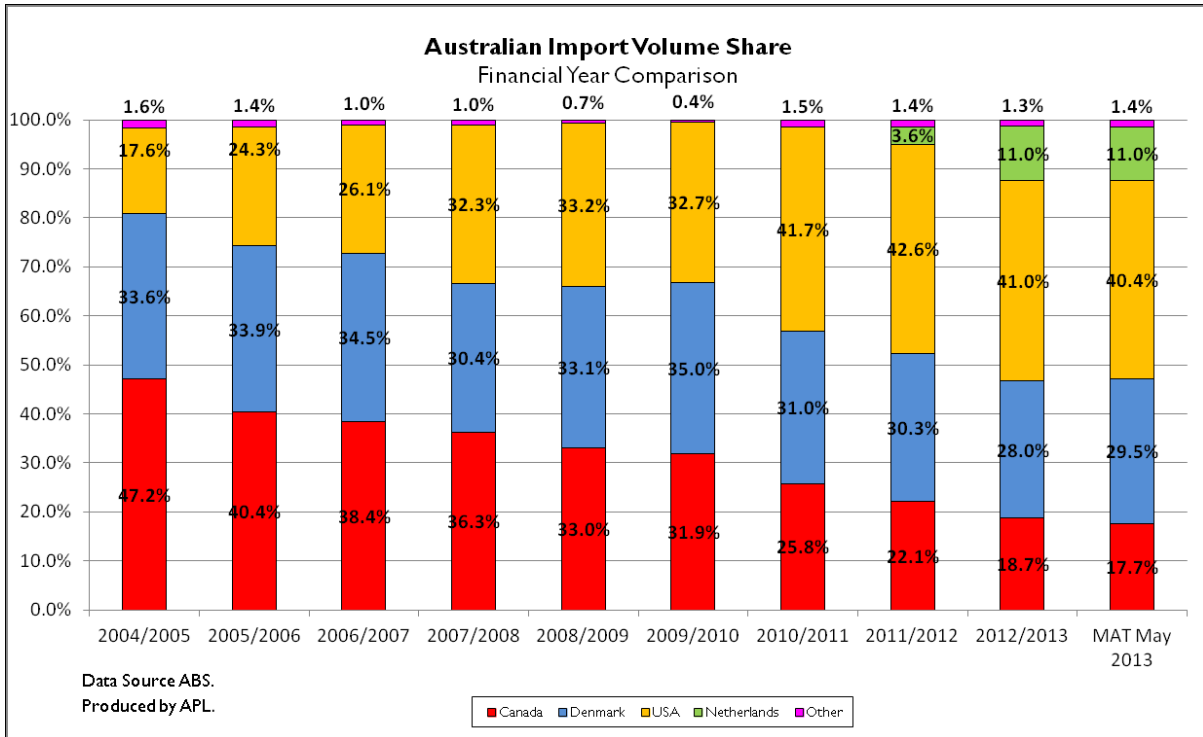


Figure 2. Australian pig meat imports, 2004/05-2012/13, volume shares

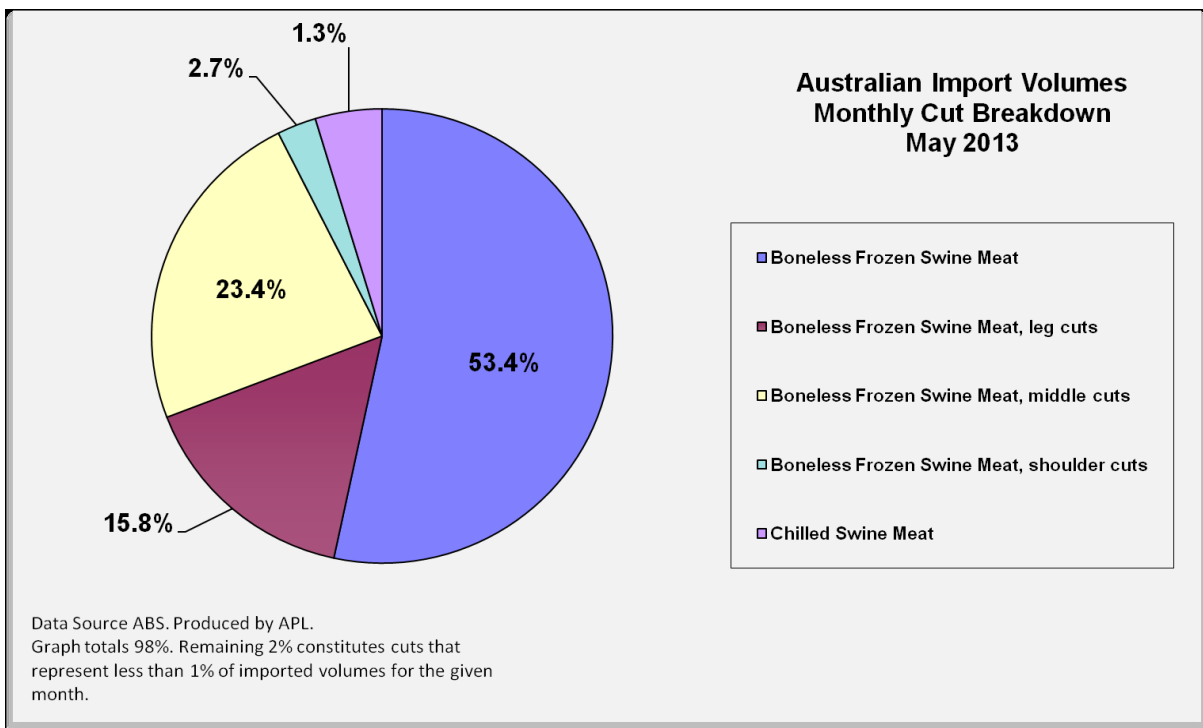


Figure 3. Australian pig meat imports, May 2013, volume share by cut

Denmark is a relatively small producer of pig meat by world standards but among the largest pig meat exporters (Danish Agriculture and Food 2014). The production of pigs and pig meat has been a major source of income for Denmark for many years. Around 4,000 pig farms in Denmark produce approximately 28 million pigs annually. The production sector comprises businesses of many sizes, but it is heavily skewed towards the large intensive systems. The smallest 41 per cent of farms produce only 5.5 per cent of output, while the largest 34 per cent of farms (with more than 5,000 pigs) produce over 77 per cent of output (Danish Agriculture and Food 2014). The Danish pig industry is among the world leaders in areas such as breeding, quality, food safety, animal welfare and traceability. Danish pig production is characterised by high food safety standards and good animal health. Environmentally sustainable production methods are key to Danish pig production.

While there are a substantial number of live piglets exported, mainly to Germany, most pigs are slaughtered at the two co-operative abattoirs Danish Crown and Tican Fresh Meat. The Danish pig meat slaughtering and processing sector is very advanced technically. The industry currently consists of 2 major cooperatives and 7 privately owned businesses. Danish Crown operates plants in 7 locations. As an indication of the scale of the sector, one of the Danish Crown plants has the capacity to process 4.8 million pigs per year (or more than the total number of pigs slaughtered in Australia every year). Danish pig slaughterings are around 19 million head per year, average carcass weight is 83kg and the approximate farm price is \$AU2.45/kg.

Domestic per capita consumption of all pig meat has halved in the last decade, although consumption of fresh pork has remained fairly stable in recent years.

Danish Exports of Pig Meat

More than 85 percent of Danish pig meat production is exported and this industry is thereby essential to the Danish economy and the balance of trade. Exports of pig meat are around 1.9 million tonnes and account for almost half of all agricultural exports and for more than 5 per cent of Denmark's total exports. Danish pig meat is exported to more than 140 countries, with the largest markets in terms of volume being Germany, UK, Poland, China, Japan, Italy, Russia, Sweden and Australia. More than 70 percent of Danish pig meat production is exported to other EU countries, and the remainder is exported to countries outside the EU. Exports to Australia (about 40,000 tonnes per year) represent just 2 per cent of Danish pig meat exports.

The export strategy of the Danish pig meat industry is to export a specific cut to the market where the highest price can be obtained on the spot market or by contract. Thus, predominantly, outside of the EU, backs go to Japan and the UK; ribs go to the US; middles go to Australia; and by-products go to China. While these markets tend to be the main destinations, variations in exchange rates have a strong impact on each market's profitability, and much also depends on the activities of the other major exporters such as Canada, the US and the Netherlands.

The Danish Value Chain for Pig Meat Exported to Australia

The main exporters are the two large cooperatives, Danish Crown and Tican Fresh Meat. There is therefore strong vertical integration with the production sector, and this enables efficient completion of the certifications required for exporting to Australia. The main export items are backs for bacon production and other specific cuts and bulk products, however specialised processed meat products are gaining importance. For example, the Friland company exports organic and free range pig meat products to Australia.

The Danish pig meat industry built its current position in the Australian market based on the following determinants of value:-

- Economies of scale in production, processing and logistics,
- uniform quality of the middles,
- high food safety standards,
- high veterinary standards: approved for Australia since 1997, and also for the US and Japan,
- customised product "made to order",
- knowledge about the yield from the specific cut for the bacon manufacturing process, and
- long-term focus on the customer.

4. Price Competitiveness of Domestic Pig Meat vs. Imported Pig Meat

That Australia is a substantial net importer of pig meat in part reflects cost differences. Canada, the United States and Denmark are very large producers and exporters, achieving much greater economies of scale. Canada and the US typically have access to cheaper and more energy-intensive feed grain than Australian producers, so their cost of producing pigs is less. Denmark on the other hand has economies of scale in processing and distribution, plus a strong focus on traceability and food safety standards.

Pig meat trade flows also reflect differences in tastes - Australians' strong preference for ham and bacon means that overseas suppliers can obtain higher prices in Australia for some parts of the pig than they can elsewhere. Denmark ships middles to Australia for bacon production, but other parts of the carcass to other markets around the world. Further, changes in exchange rates since 1990 have been a major determinant of where imports have come from.

Australian fresh meat consumers are very conscious of specific attributes such as "welfare-friendly", "antibiotic-free", "hormone-free", etc., and there is a significant amount of store branding to alert consumers to the attributes being offered. However, country-of-origin labelling laws are very non-specific for manufactured pig meat: all that is required to be stated on the pack is "Made in Australia from local and imported ingredients".

5. Changes in Value Chain Structure

In the bacon, ham and smallgoods market, Australian manufacturers operate as both "cost efficient" and "quality conscious" depending on the type of product (Chopra and Meindl 2013). Different manufacturers choose different strategies depending on their market sector and their brand identity – some manufacturers have different strategies for different parts of their product line.

Import prices set domestic prices for manufacturing type pig meat, and imported products are typically cheaper than domestically produced pig meat suitable for manufacturing. Given the latitude allowed by the weak country-of-origin labelling laws, cost efficient manufacturers will use imported product. This has resulted in a considerable degree of industry consolidation.

This has led to a marked decline in the production of pigs more suitable for manufacturing pig meat in Australia and, for those producers who are left, a shift in domestic production out of the processed market towards the fresh pork market and, to a lesser extent, export markets. Average prices for exports tend to exceed average prices for imports.

Some quality conscious manufacturers have made a decision to use only domestically-produced pig meat in their manufactured products, and this enables them to use the label "Australian pork".

6. Primo Case Study

Primo Smallgoods was founded in 1985, opening a small plant in Sydney (Primo 2015). Since then the company has become a national brand with processing and distribution facilities in most states. In 2009, Primo bought out their largest competitor (Hans Continental Smallgoods), and it is now the largest bacon, ham and smallgoods manufacturer in Australia with 4,000 employees. It also owns the largest food manufacturing plant in Australia and one of the largest pig slaughtering facilities, and is the major supplier of high quality delicatessen products to the Australian food retail chains. In 2011, Primo accepted Affinity Equity Partners as a major shareholder in partnership with the founding Lederer family. In March 2015, Affinity Equity Partners and the Lederer family sold the Primo Group to JBS Australia which is the largest fresh meats processor in Australia and is a division of JBS, the world's largest processor of fresh meats.

JBS Australia's proposed acquisition of Primo raised concerns among industry participants of less competition in northern New South Wales and Queensland fat cattle markets. JBS Australia operates two plants in southern Queensland with beef processing capacity at Dinmore and Toowoomba while Primo has a beef processing plant at Scone in New South Wales. However, the Australian Competition and Consumer Commission (ACCC) determined the Primo acquisition would be unlikely to have significant competitive impacts within the beef industry, citing the distance between the JBS and Primo processing facilities and the existence of alternative abattoirs and supermarket chains within the region as constraints to increased market share (ACCC 2015).

According to JBS, Primo will continue its operations as a standalone business and the acquisition is a part of JBS' expansion into growing Asian export markets (JBS 2015). Primo produce 9 separate product categories: the bacon category has 11 different product types ranging from specialty products like Beechwood smoked bacon to economy bacon rashers (see Figure 4).



Figure 4.
Example of primo bacon pack

Primo achieved its success initially by tapping into the expanding Australian market for European speciality delicatessen products and by producing high quality consistent output that met customers' needs. They focused on developing economies of scale and vertical integration back into livestock slaughtering so they had greater certainty of access to carcasses for their processing plants. They were obviously aware of the opportunities afforded by the pig meat import regulations, and due to their scale they could then negotiate directly with suppliers in exporting countries. Primo is a major customer for Danish middles and is said to have a close and strong relationship with the Danish cooperatives.

7. Conclusion

In the bacon, ham and smallgoods market, Australian manufacturers operate as both "cost efficient" and "quality conscious" depending on the type of product. In the cost efficient segments, input prices are a key issue: import prices compared to the local production prices, and price competition among exporters. With little restriction from country-of-origin labelling laws, domestic manufactures source ingredients from lowest cost suppliers. In the quality conscious segments, Australian manufacturers need regular supplies of consistently high quality inputs that will maintain and build their brands.

Denmark is a major player in both markets as they can provide customized products of high food safety standards and consistent quality as important raw materials for bacon production. They can also do this at low cost because they have designed and built a very efficient global value chain: a global focus on markets; efficient processing and logistics; knowledge of customer requirements; a traceability system from gate to plate; pigs produced according to a Code of Conduct; and a skilled farm production sector that can deliver optimal weight and lean meat percentage.

This trade has resulted in some major changes in the domestic value chain structure: Australian pig meat production has declined overall, production of manufacturing types of pigs has declined even faster, and the manufacturing sector has consolidated.

These trends are set to continue in the future. Imports will account for an even larger share of local supplies, as imports are forecast to grow about 10 per cent in coming years. Competition among all countries exporting to Australia will intensify, but Denmark can still obtain relatively high prices in this market because of their capacity to efficiently deliver high quality product through their international pig meat value chain.

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