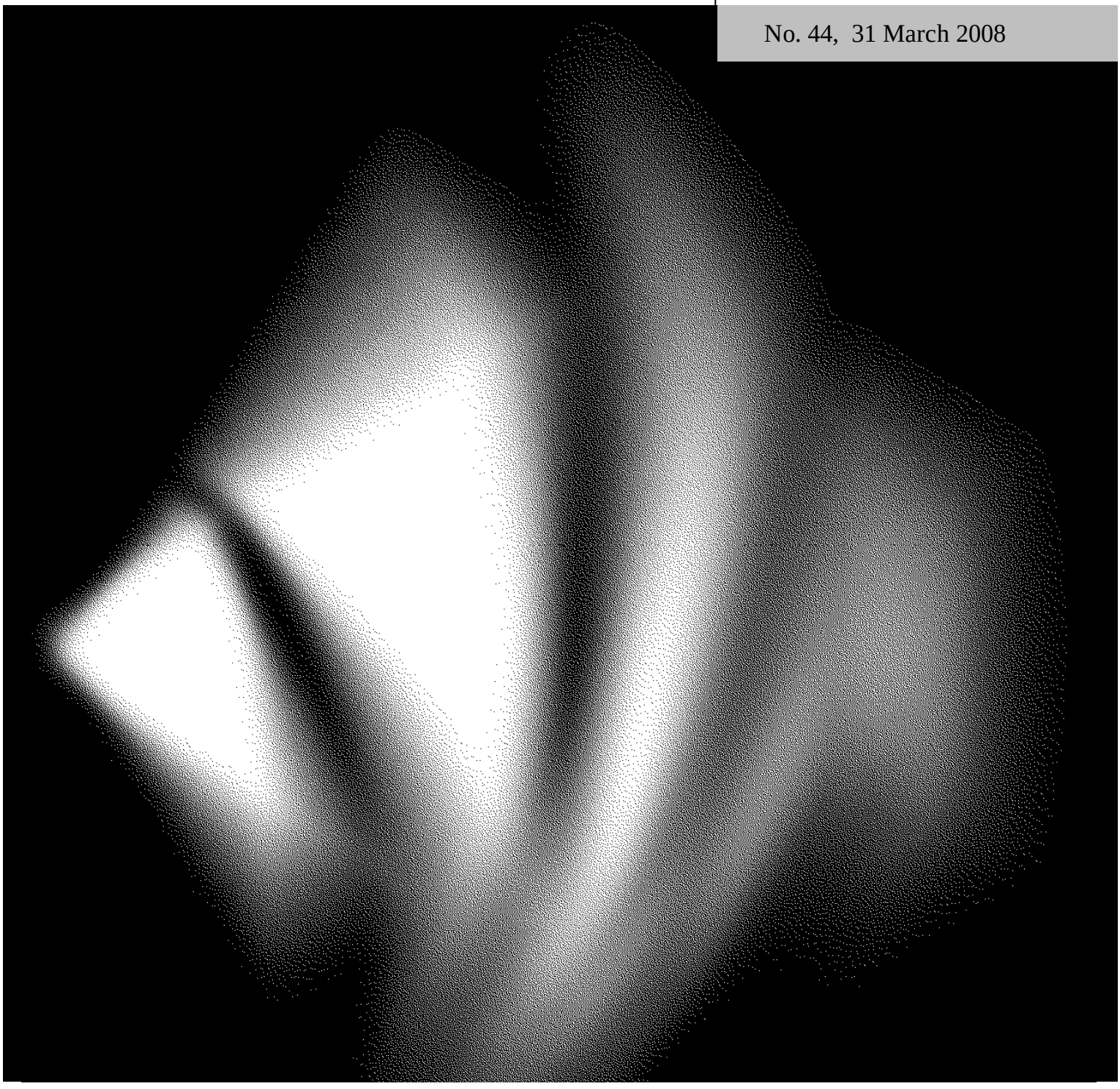
Australian Government
Productivity Commission

Safeguards Inquiry into the Import of Pigmeat

Productivity Commission
Inquiry Report

No. 44, 31 March 2008



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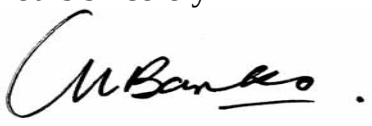
31 March 2008

The Honourable Wayne Swan MP
Treasurer
Parliament House
CANBERRA ACT 2600

Dear Treasurer

In accordance with Section 11 of the *Productivity Commission Act 1998*, I have pleasure in submitting to you the Commission's report: *Safeguards Inquiry into the Import of Pigmeat*.

Yours sincerely



Gary Banks AO
Chairman

Terms of reference

SAFEGUARDS INQUIRY INTO THE IMPORT OF PIGMEAT

Productivity Commission Act 1998

I, Peter Costello, Treasurer, pursuant to Parts 2 and 3 of the *Productivity Commission Act 1998*, request the Productivity Commission to undertake an inquiry into the question of whether safeguard action is warranted against imports of meat of swine, frozen, falling within tariff subheading 0203.29 of the Australian Customs Tariff.

The inquiry is to be undertaken in accordance with the World Trade Organization (WTO) safeguard investigation procedures published in the *Gazette* of S297 of 25 June 1998, as amended by GN39 of 5 October 2005.

The Commission is to report on:

- whether conditions are such that safeguard measures would be justified under the WTO Agreements;
- if so, what measures would be necessary to prevent or remedy serious injury and to facilitate adjustment; and
- whether, having regard to the Government's requirements for assessing the impact of regulation which affects business, those measures should be implemented.

In undertaking the inquiry, the Commission is to consider and provide an accelerated report on whether critical circumstances exist where delay in applying measures would cause damage which it would be difficult to repair. If such circumstances exist, and pursuant to a preliminary determination that there is clear evidence that increased imports have caused or are threatening to cause serious injury, the Commission is to recommend what provisional safeguard measures (to apply for no more than 200 days) would be appropriate.

In addition, the Commission is to have regard to the work being undertaken by the Cooperative Research Centre for an internationally competitive pork industry (Pork CRC) and examine and report on whether:

- there have been any changes that have taken place in the structure or operating methods of the industry since the Commission's August 2005 inquiry into the *Australian Pigmeat Industry*; and

- there are any immediate actions that could be taken to complement the work of the Pork CRC to alleviate the impact of changes in the price and availability of feed grains.

The Commission is to provide the accelerated report to the Government by 14 December 2007 and a final report by the end of March 2008. The reports will be published as soon as practicable.

The Commission is to consult widely, hold hearings and call for submissions for the purpose of the inquiry.

PETER COSTELLO

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Abbreviations and Acronyms

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ANZFSC	Australia New Zealand Food Standards Code
APIQ	Australian Pork Industry Quality Program
APL	Australian Pork Limited
ASX	Australian Stock Exchange
AQIS	Australian Quarantine Inspection Service
CITT	Canadian International Trade Tribunal
COAG	Council of Australian Governments
CSIRO	Commonwealth Scientific and Industrial Research Organisation
cwe	carcass weight equivalent
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DMBC	Danish Bacon and Meat Council
E5	Petrol containing 5 per cent ethanol
E10	Petrol containing 10 per cent ethanol
EC	Exceptional Circumstances drought assistance
EU	European Union
GATT	General Agreement on Tariffs and Trade

GM	genetically modified
IMF	International Monetary Fund
LPG	liquefied petroleum gas
OECD	Organisation for Economic Cooperation and Development
PC	Productivity Commission
Pork CRC	Pork Cooperative Research Centre
PPPI	Pig and Poultry Production Institute (South Australia)
PSE	Producer support estimate
R&D	Research and Development
RBA	Reserve Bank of Australia
SARDI	South Australian Research and Development Institute
US/USA	United States (of America)
USDA	United States Department of Agriculture
WTO	World Trade Organization

OVERVIEW

Overview

This report assesses whether action could and should be taken under World Trade Organization (WTO) rules to give local producers a 'breathing space' to adjust to import competition. These rules allow countries to take such 'safeguard' or 'emergency' action when a surge in imports can be shown to have caused, or threatens to cause, serious injury to the local industry. The Commission's 'Accelerated Report', released on 20 December 2007, assessed the case for imposing early provisional measures pending the inquiry being completed.

The report also looks at developments in the structure and operating methods of the local industry and whether more can be done to ease cost pressures, particularly high feed grain costs.

This is the second pigmeat safeguards inquiry conducted by the Productivity Commission. The first was undertaken in 1998, when imported cuts of pigmeat from Canada began to influence local prices significantly. In that inquiry, the Commission found that a tariff of 10 per cent (phasing out over 2 years) could be justified under WTO rules.

The Commission also has undertaken general reviews of the pigmeat industry in 1995 and 2005 (the former as the Industry Commission). These inquiries were also prompted by industry concerns about the impact of import competition.

The industry has been exposed to import competition since 1990

Until 1990, virtually no imports of pigmeat were permitted (except for canned hams). Since then, in line with Australia's commitments under the Uruguay Round (in particular, the WTO Agreement on Sanitary and Phytosanitary Measures), quarantine prohibitions on the importation of pigmeat progressively have been amended to permit duty-free imports of uncooked (frozen) and cooked pigmeat from several major exporting countries.

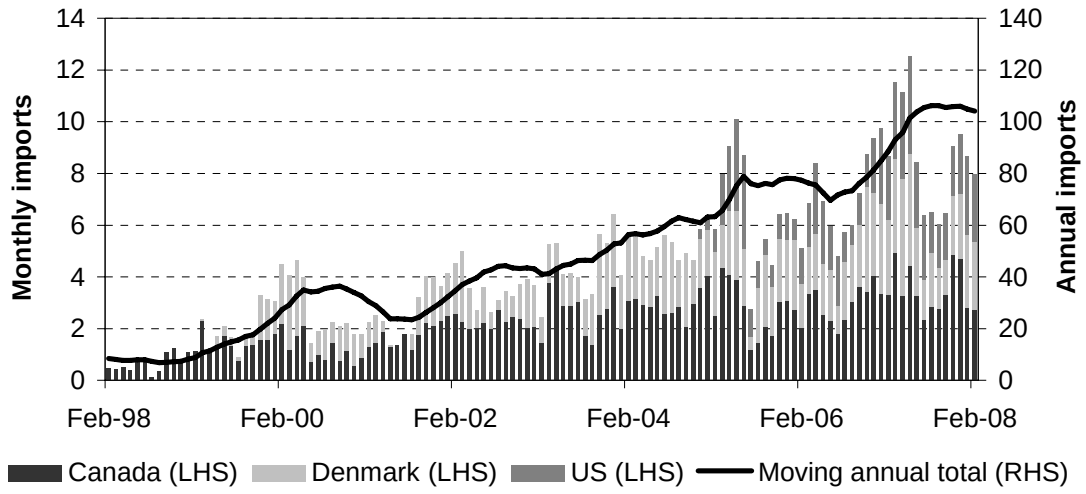
Current quarantine protocols require frozen pigmeat imports to be boned and, on arrival in Australia, cooked to specific temperatures in approved processing facilities, to minimise the risk of disease contamination. These requirements mean that imports of cooked and uncooked pigmeat comprise boned 'primal' cuts such as

legs, shoulders and middles, which can only be used by smallgoods manufacturers (mainly for ham and bacon). The fresh pork market, as well as smallgoods markets for 'ham-on-the-bone' and uncooked salami, continue to be supplied entirely from local production.

Imports of pigmeat have steadily increased …

Imports have increased steadily since the market was opened — first from Canada (mainly legs and shoulders for ham) in 1990, then Denmark (mainly middles for bacon) in 1997, and most recently the United States (mainly shoulders and legs) in 2004 (figure 1). By 2007, imports supplied about one-third of total domestic consumption.

Figure 1 **Import volumes have grown**
Tariff sub-heading 0203.29, kilotonnes



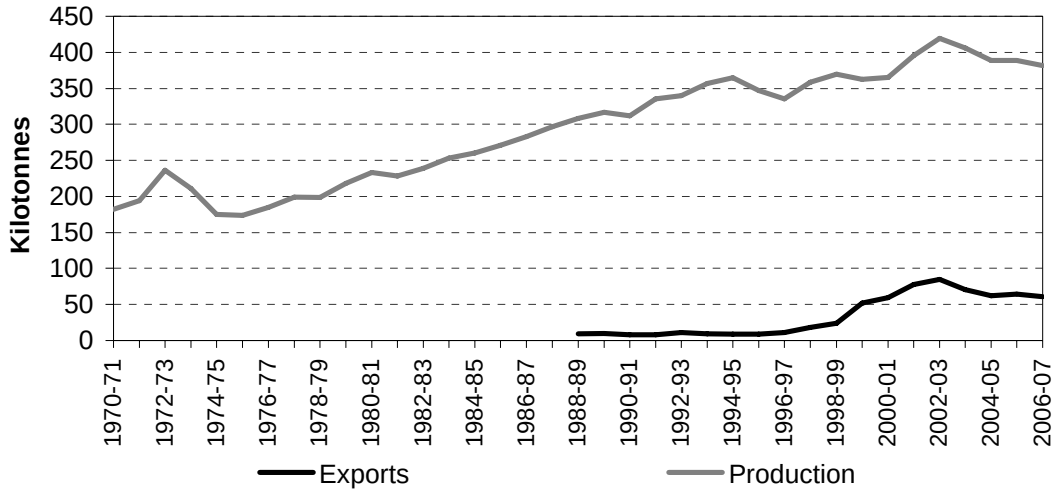
… while domestic production has been shifting to the fresh pork market

As the Commission observed in the 1998 safeguards inquiry, imports have fundamentally changed the Australian market by directly linking Australian producer prices to world pigmeat prices. Previously, the industry was fully protected from international competition, although domestic demand for fresh pork and even smallgoods was still affected by the prices of substitute meats such as beef and lamb (which are internationally traded).

That Australia is a net importer of pigmeat in part reflects cost differences. Canada, the United States and Denmark are very large producers and exporters, achieving much greater economies of scale and typically with access to cheaper and more energy-intensive feed grain than Australian producers. Despite persistent industry claims that exports to Australia are heavily subsidised, in 2005, the Commission found little evidence to support this. Pigmeat trade flows also reflect differences in tastes — Australians' preference for ham and bacon means that overseas suppliers can obtain higher prices here for some parts of the pig than they can elsewhere.

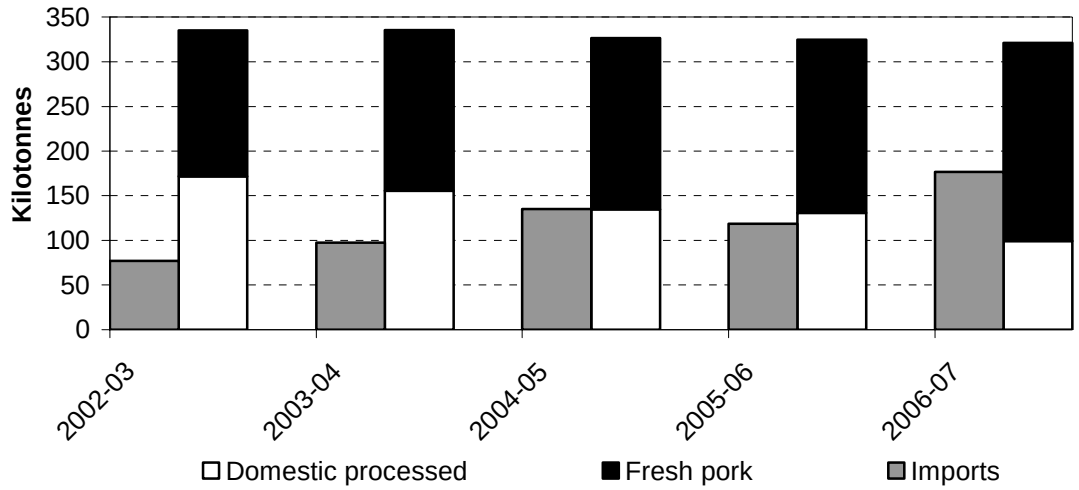
The opening of the market to imported cuts has essentially capped prices for equivalent locally-produced cuts at world prices. (Imported cuts comprise as much as 90 per cent of the value of a pig.) Import competition in the smallgoods manufacturing sector has encouraged domestic producers to switch to, and promote expansion of, the fresh pork market and, to a lesser extent, niche export markets. These expanding markets sustained steady growth in domestic production until 2002-03 — since then, a decline in exports has been mirrored in a fall in total output (figure 2).

Figure 2 **Pigmeat production and exports grew until recently**



With local producers supplying the faster-growing fresh pork market, demand for pigmeat by the smallgoods sector increasingly has been met from imports. Indeed, in recent years, with domestic output flat, imports in effect have met growth in total pigmeat consumption (figure 3).

Figure 3 **Market growth has been met from imports**

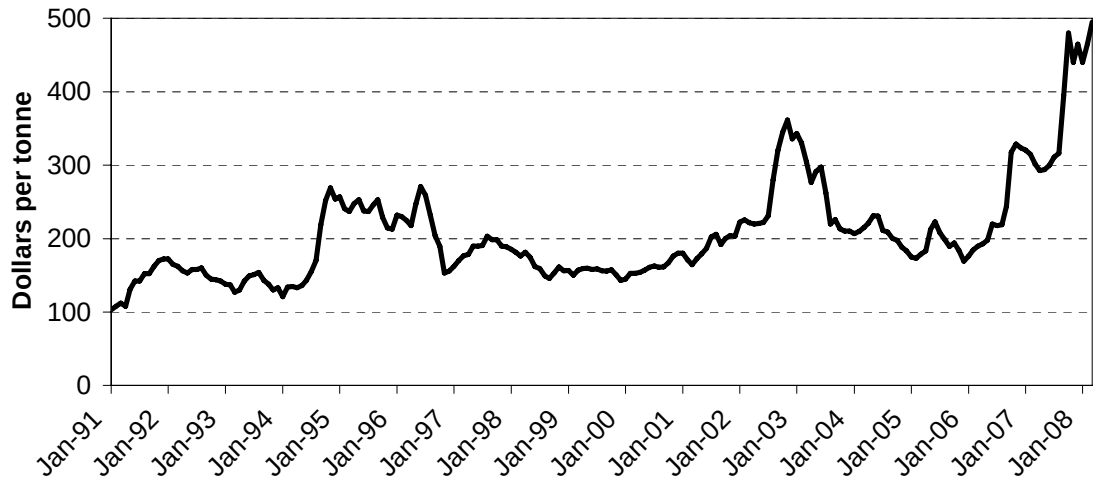


Why another safeguards inquiry?

In the second half of 2007, industry profitability slumped, with reported losses averaging around $20–$30 per pig:

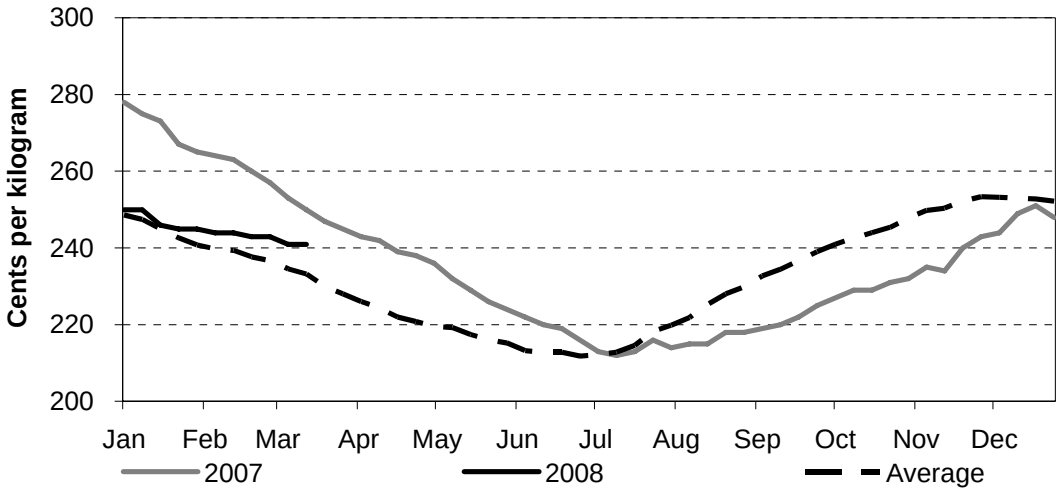
- Prices for wheat and many other grains soared to unprecedented levels in mid-2007. This was a consequence of the drought in Australia and supply problems in some other countries, as well as increased world demand (reflecting world economic growth and the impact of alternative energy policies).

Figure 4 **Feed wheat prices surged to record highs in late 2007**
January 1991 to March 2008



- The Australian dollar also strengthened markedly against several currencies, including the US dollar and the Japanese yen, making Australian pigmeat less competitive.
- While producer prices typically rise in summer and fall in winter, reflecting sow fertility cycles and higher demand in summer months (especially for Christmas hams), for several months in the second half of 2007, domestic prices were below their average level for that time of year, and well below the historically-high levels recorded in late 2006. That said, prices were higher than average for the year overall, and remain above average in March 2008.

Figure 5 **Baconer pig prices in 2007 dipped later than usual**
3 January 2003 to 14 March 2008



Seeking respite from this cost–price squeeze, the industry argued that the significant rise in imports in the first half of 2007 compared with the previous year, established a case for safeguard action, including provisional action to reduce pressure from imports until the inquiry was completed.

The high hurdles for safeguard action

Safeguard action under the WTO is intended to act as a safety valve in exceptional circumstances, providing an opportunity for industries to adjust to increased competition from imports associated with trade concessions.

Although WTO rules do not require that increased imports have been dumped or subsidised, they impose high hurdles, *all* of which must be met before action can be taken (box 1). (There are separate provisions dealing with so-called unfair trade.)

Box 1 **What is safeguard action and when can it be applied?**

Safeguard action is temporary, 'emergency action' (in the form of an increased tariff, a tariff–quota or quota) taken where a surge of imports causes or threatens to cause serious injury to a domestic industry.

1. The domestic industry must comprise at least a majority of producers of products like or directly competitive with imports.
2. Imports must have increased in absolute terms or relative to domestic production. The increase in imports must be the result of unexpected and unforeseen developments and be 'recent enough, sudden enough, sharp enough and significant enough'.
3. The industry must be suffering serious injury or such injury must be threatened. While not explicitly defined, 'serious' injury sets a higher threshold than 'material' injury. Factors such as changes in market share, sales, production, productivity, capacity utilisation, profits and losses and employment must be assessed.
4. Increased imports must be shown to have caused, or threaten to cause, serious injury. The impact of other factors must be separately identified and assessed.

Safeguard measures normally can apply for up to four years (including any provisional measures), and possibly up to eight years. Measures can only be applied to the extent necessary to prevent or remedy serious injury caused by increased imports and to facilitate adjustment.

These hurdles include properly identifying the goods in question and the producers comprising the domestic industry, confirming that imports have increased, demonstrating serious injury and establishing a causal link between increased imports and such injury.

Some additional hurdles apply because of undertakings Australia has made in bilateral preferential trade agreements. Of special relevance is the Australia–United States Free Trade Agreement, under which Australia *may* exclude imports from the United States from general safeguard action 'if they are found not to be a "substantial cause" of serious injury, or threat thereof'.

While the Agreement on Safeguards requires that that all interested parties be given an opportunity to present their views 'as to whether or not the application of the safeguard measure would be in the public interest', the criteria focus on the impact of imports on local producers. The Terms of Reference for this inquiry (reflecting gazetted Australian Government requirements) go further, requiring the Commission to subject any proposed safeguard measures to an assessment of the wider costs and benefits, including for consumers.

Have the hurdles been met?

In its Accelerated Report, the Commission found that most of the WTO hurdles had been met, but it could not substantiate a case for provisional safeguard measures. Preliminary analysis pointed to an unprecedented increase in feed grain prices, rather than increased imports, being the cause of the cost-price squeeze hurting pig producers and, indirectly, pigmeat processors.

Foreign exporters and their governments argued against those findings supporting particular safeguard criteria, but supported the negative finding on causation. Domestic producers argued the opposite.

The Commission reviewed and developed its analysis in the light of comments received on the Accelerated Report. But its earlier conclusions have been broadly affirmed: while there is clear evidence that imports have increased and that the domestic industry is suffering serious injury, higher feed costs, not increased imports, are the cause.

- The Commission did not accept legalistic interpretations advocated by some parties. For example, exporting countries argued for exclusion of pig producers from the 'industry' as defined for safeguard purposes. Defining an industry is never easy, but to exclude producers of the dominant ingredient in processed pigmeat makes little economic sense. Because of the ownership and structure of the local pigmeat industry, it makes little legal sense either.
- The Commission has also affirmed its conclusion that imports have increased significantly. On balance, it also considers that the sharp increase in import volumes in the first half of 2007 — arising from higher prices (reflecting worldwide supply shortages in 2006) and forward-buying by manufacturers — was not foreseeable.
- Although the Commission was criticised by exporting countries for not providing sufficient evidence to support its finding of serious injury, it has confirmed its preliminary assessment on this matter too. In doing so, it has applied standards of evidence routinely applied by other countries in WTO investigations. That said, the recovery in prices during the course of the inquiry (the normal 'Christmas' premium), and falling prices of sorghum following summer rains, have helped to improve producer profitability, or at least to reduce losses.

A link between increased imports and serious injury has not been established

The domestic industry argued that the Commission's reasoning on causation in the accelerated report was flawed for two main reasons:

- increased imports had caused serious injury because the high level of imports recorded early in 2007 had prevented domestic producer prices from rising in line with higher domestic costs, and had driven prices down to below average in the latter part of 2007, and
- imports must be either dumped or subsidised, because import prices had not risen in response to higher world prices for feed grains.

Australian Pork Limited (APL) asserted that if the Commission had followed the logic of its 1998 report, it would have found safeguard action warranted. But this assertion is not well founded. Indeed, the Commission has followed the same approach and applied the same 'model' of the industry as in 1998. The different conclusion in this report reflects different facts.

In 1998, following easing of quarantine requirements, cheaper imports had started to enter at levels that affected domestic price levels, with domestic producer prices falling to exceptionally low levels (in retrospect, the lowest recorded for nearly 20 years). Analysis showed that no other factors could adequately explain the price fall and the loss in industry profitability — feed costs were moderate and exchange rates favourable — although the Commission did note that a small part of the price fall was attributable to increased domestic production.

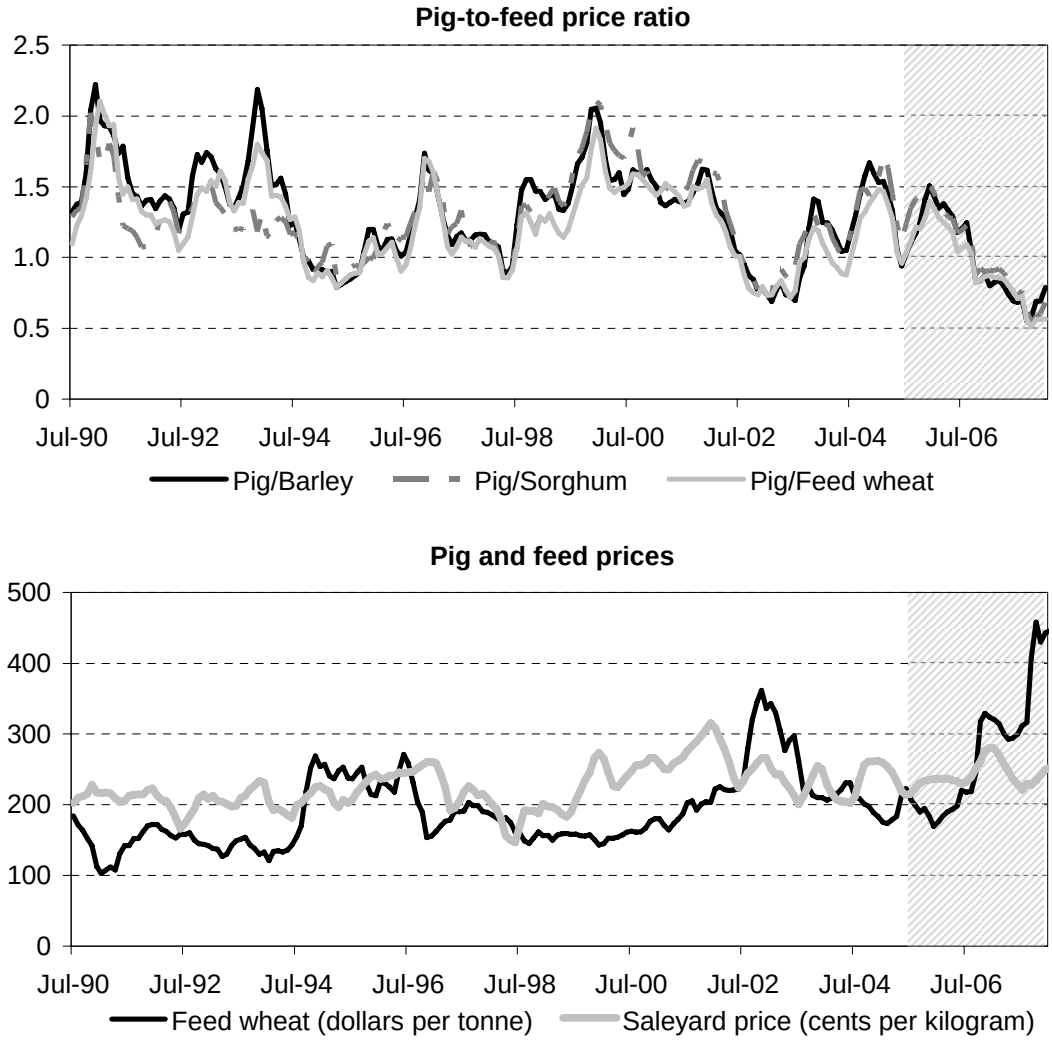
High feed costs are the problem this time

In contrast, analysis undertaken for this investigation clearly shows that higher feed costs have been the dominant cause of the recent and sudden decline in industry profitability. Without increases in feed prices, which have added around 70–80 cents per kilo to production costs since early 2006, domestic producers would not have sustained serious injury in 2007.

- As shown in figure 6, feed prices began to rise in the second half of 2006, adding about 30 cents per kilo to domestic costs. However, the impact was cushioned somewhat by unusually high prices at that time, caused by a shortage of pigmeat.
- In the second half of 2007, feed prices rose further, adding an additional 40 to 50 cents per kilo to costs. This cost increase coincided with a recovery in world pigmeat supplies and a return to close-to-average prices. The only difference was a short delay in the normal winter price trough. This delay brought prices higher than average in the first half of 2007 and a little below average in the second

half, but about 4 per cent higher than average for the full calendar year. In March 2008, contract prices for baconer pigs (which account for about 80 per cent of sales) were a little *above* their 5-year seasonal average.

Figure 6 **The pig-feed price ratio has plummeted**



Price 'capping' does not establish causation

It goes without saying that if pigmeat prices had been higher, injury caused by higher feed costs would have been moderated. Nonetheless, even without imports, the price sensitivity of consumers, given domestic availability of substitute meats, would limit the scope to pass on higher costs. Indeed, Commission modelling suggests that producer prices would rise by only around one-quarter of the full amount of any cost increases (box 2).

It also goes without saying that lower levels of imports, *all else constant*, would lead to higher prices (as was the case in 2006). But acknowledging that fewer imports *could* provide price relief is different from saying that increased imports have been a cause of serious injury. Empirical observation, as well as economic and econometric analysis, provide strong grounds for concluding that imports have risen to meet demand in the processed pork market as domestic supplies have shifted to the fresh pork market, with prices generally tracking close to average levels.

Box 2 **Econometric evidence that imports have pushed down prices and production is lacking**

The Commission undertook econometric modelling to help shed light on the issue of causation. While such modelling has limitations and is not definitive, the more robust results suggested that:

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

That world pigmeat prices have not yet risen to reflect higher world grain prices is not surprising. Barring other 'shocks' or policy interventions, this will occur only as world production is cut back to restore industry profitability. As in Australia, world pig production cannot be cut back instantaneously when costs rise relative to prices received. Moreover, as the Commission observed in the Accelerated Report, domestic feed grain prices appear to have risen much more than prices for foreign producers, reflecting the Australian industry's reliance on wheat. And while the Commission is critical of the European Union's decision in late 2007 to introduce export subsidies on some cuts of pigmeat, there is no evidence that prices of Danish middles exported to Australia have been affected.

Improving industry competitiveness

As for most other Australian industries, import competition is now a fact of life for the pigmeat industry. Many in the industry, while accepting this in principle, argued that temporary protection was needed to give producers time to put in place measures to improve competitiveness. However, the history of this industry and many others suggests that competition spurs more innovations and efficiencies than it impedes.

The pig growing section of the industry has undergone significant rationalisation and structural change over time. Currently there are fewer than 1900 pig producers, compared with around 7000 just 20 years ago. Producers also have adopted new technologies and operating methods, including improved risk management techniques, to improve productivity and product quality.

The primary processing part of the industry has also rationalised, with a number of plant closures leading to increasing concentration and specialisation. The top 20 abattoirs currently account for about 95 per cent of pigmeat.

The industry largely accepts the need for further rationalisation and efficiency improvement and has several strategies underway to do this, some in conjunction with government. However, as the Commission observed in its 2005 report, many programs (including those funded by the pig slaughter levy and matching government funds) are not routinely and independently monitored or evaluated.

Some regulations also appear to impose unnecessary burdens, or have unintended effects. For example, labelling laws requiring identification of imported products can unintentionally catch local pigmeat seasoned with brine containing imported chemicals. The industry's strategy of moving away from generic county-of-origin labelling and to 'brand' local pork seems to be a step in the right direction. Proper regulatory assessment and review processes should also be applied by government.

What can be done about higher feed costs?

Feed accounts for almost 60 per cent of the costs of producing a pig. Grains account for around 80 per cent of feed costs. The industry, through a variety of channels, including the innovative work of the joint government and industry funded Pork Cooperative Research Centre (CRC), is attempting to improve feed conversion ratios and feed efficiency.

Feed grain *prices* are another matter. Recent rises are in part attributable to drought, economic growth and changing tastes. But they also reflect impacts of quarantine restrictions on grain imports (especially during drought) and of ethanol policies overseas and, to a lesser extent, in Australia.

While the Australian Government cannot alter policies of foreign governments, it can use international forums to highlight the undesirable and unintended impacts of such policies. In Australia, a review of the wider impact of current and proposed domestic policies is urgently needed to determine the best way forward for ethanol policy, taking into account the impact on consumers and other industries, including grain users.

Some final observations on safeguards and industry assistance

Australian pigmeat producers, along with their foreign counterparts, are feeling the pressure of high feed grain prices. In the Commission's assessment, these cost pressures do not pass the test for safeguard protection against imports. To conclude otherwise would be to subvert the intent of safeguard action and to open the door to import protection being based on domestic cost disability.

The Commission is concerned that in this and other areas of the Agreement on Safeguards, creeping legalisms are undermining the proper role for safeguard provisions within a liberal trading order. If the Agreement is to continue to play a useful role, and avert a return to 'grey area' remedies, these developments will need to be addressed by WTO members.

The pigmeat industry is also seeking additional financial assistance of at least $80 million, equivalent to almost 10 per cent of its farm value added. This is intended not only to help those leaving the industry, but also those who have already left and, indeed, those staying. Many agricultural industries are facing a similar cost-price squeeze and other hardships, and it is not evident why pigmeat producers and processors should receive such special treatment. The industry already receives at least $7 million annually from the Australian Government for research and development, as well as around $3 million via drought relief and other programs. State Governments also provide support. Moreover, almost half the industry's domestic market remains immune from import competition.

In the Commission's assessment, further assistance is difficult to justify. Many Australian industries today face more intense international competition than in the past. Such industries have generally done best where they have focused their efforts on being more innovative and efficient, rather than seeking government support.

At the very least, the effectiveness of current government-funded programs should be evaluated before further assistance were contemplated, and any proposed new measures would need to be shown to be of net benefit to the Australian community, not just industry interests.

Findings and recommendations

Findings in relation to import safeguards

FINDING 2.1

For the purposes of this safeguards investigation, Australian-produced fresh pork cuts, and dressed carcasses and half-carcasses, are 'like or directly competitive with' pigmeat imported under tariff sub-heading 0203.29.

FINDING 2.2

Pig producers and primary processors produce products which are either like, or directly competitive with, imported pigmeat cuts.

FINDING 3.1

Import quantities have increased both in absolute and relative terms. On balance, consistent with the requirements of WTO case law, the increase in imports appears to have been 'recent and significant enough, and sharp and sudden enough'. The extent of the increase in imports in 2006-07 was in part a consequence of an unexpected fall *in imports in 2005-06.*

FINDING 3.2

While changes in quarantine arrangements affecting pigmeat imports should have been foreseen at the time Australia joined the WTO in 1994, the unusual recent pattern *of imports was a result of a number of unforeseen global and domestic developments.*

FINDING 3.3

Most pig producers are experiencing reduced profitability and many are suffering financial losses, resulting in reductions in breeding sows and employment levels, with consequent negative impacts on production expected in 2008. In the Commission's assessment, the pig farming part of the industry is accordingly suffering serious injury.

The evidence for primary processing is less consistent. Some operators have

reported increased profits, whereas others have reported lower profits, reflecting variations in throughput and industry rationalisation as well as 'one-off' events. Overall, with pig production levels steady so far, there is not clear evidence that the primary processing part of the industry is currently suffering serious injury. However, clear evidence exists that serious injury is 'threatened': pig production levels are set to fall, reducing profitability due to lower throughput and increased unit costs.

Overall, the domestic industry producing products 'like or directly competitive' with imported pigmeat is suffering serious injury or is under threat of serious injury.

FINDING 3.4

Increased imports have not caused and are not threatening to cause serious injury to the domestic industry. The overwhelming cause of serious injury has been higher domestic feed costs. The Commission accordingly finds that safeguard action against imports of frozen pigmeat is not warranted.

Other findings and recommendations

RECOMMENDATION 4.1

Governments should undertake periodic reviews of pig animal welfare regulation, to ensure that it is imposing the minimum compliance requirements necessary to achieve its objectives.

RECOMMENDATION 4.2

Commonwealth and State and Territory Governments should continue work on promoting consistency of regulations across jurisdictions, including more harmonised implementation and enforcement processes where appropriate. Some of the major 'hot spots' for reform identified by the pigmeat industry include animal welfare, OH&S, food and ethanol regulation.

RECOMMENDATION 4.3

Regular independent reviews are necessary to ensure that government R&D funding directed to the pigmeat industry delivers net benefits to the community, and continues to satisfy program criteria.

More detailed information needs to be provided by industry bodies on the performance of R&D projects that are funded by government, including evaluations of benefits and costs.

RECOMMENDATION 4.4

Industry programs that operate in conjunction with government support, such as initiatives funded by the pig levy, need to be regularly and transparently reviewed.

While noting APL's proposal to create a single industry levy, the Commission would see greater merit in the statutory levy system focusing on providing R&D, where the grounds for intervention are stronger.

RECOMMENDATION 5.1

There should be a review into the overall economic impact of current and proposed policies relating to ethanol. The review, which could encompass assistance for other biofuels, should consider the impact of policies promoting ethanol production on consumers and other industries, including grain users.

RECOMMENDATION 5.2

Quarantine arrangements should impose only the minimum requirements needed to satisfy objectives. As new options emerge for dealing with quarantine risks, arrangements should be reviewed to take them into account. The current Quarantine and Biosecurity Review is well placed to further explore these issues.

RECOMMENDATION 5.3

The remaining moratoriums on the commercial release of genetically modified canola should only continue if objective evidence indicates that the potential costs of GM canola are greater than its potential benefits. Current evidence suggests this is probably not the case.

FINDING 4.1

Australia's pig production and primary processing sectors have experienced further changes in structure and operating methods since 2005. There has been continuing rationalisation in the number of industry participants. In addition, processors have become more concentrated over time.

The industry has sought to improve the quality of pigmeat products. It has adopted technologies to improve efficiency and competitiveness. Many producers and processors have also embraced new methods of organisation, as reflected in greater integration of supply chains and better risk management techniques.

FINDING 4.2

Initiatives within the industry to develop brand labels that highlight specific product attributes — including under the 'Australian Grown' initiative — appear to be a more effective way of promoting domestic pigmeat products than relying on generic country-of-origin labelling.

FINDING 4.3

State and Territory drought assistance eligibility criteria that differ between pig producers and other agricultural interests have the potential to distort markets.

FINDING 5.1

Domestic support for the ethanol industry has the potential to raise domestic feed grain prices, and therefore have a negative impact on the pigmeat and other livestock industries.

FINDING 6.1

The original intent and role of WTO safeguard provisions within a liberal trading order are being undermined by reinterpretation and creeping legalisms. If the Agreement is to continue to play a useful role in facilitating trade liberalisation and averting a return to 'grey area' remedies, these developments will need to be addressed by WTO members.

Trade is also being distorted by foreign government actions such as export subsidies on pigmeat exports. The Australian Government should press for removal of such measures in the WTO and other forums.

FINDING 6.2

The Commission does not consider that the pigmeat industry has a strong case for additional government assistance. At a minimum, before any further assistance were contemplated, existing government-funded programs should be properly evaluated. Any proposal for additional measures would then need to be shown to be of net benefit to the Australian community, not just industry interests.

1 Introduction to the inquiry, and to the industry

1.1 What the Commission was asked to do

On 17 October 2007, the Australian Government sent the Commission a reference asking it to inquire into whether safeguard action under World Trade Organization (WTO) rules is justified against imports of 'meat of swine, frozen', falling within tariff subheading 0203.29 (see Terms of Reference, p. iv). Safeguard action is temporary, 'emergency action' (typically employing tariffs, tariff–quotas or quotas) where a surge of imports causes or threatens to cause serious injury to a domestic industry. Safeguard measures normally can apply for up to four years.

The completion date for the inquiry was the end of March 2008. The Commission also was asked to provide an 'accelerated report' by 14 December 2007, addressing whether *provisional* safeguard measures should be put in place. Provisional measures may be taken in 'critical circumstances' and pursuant to a preliminary determination that increased imports are causing or threatening such serious injury that delay would cause damage which is 'difficult to repair'. The accelerated report was publicly released on 20 December 2008 along with the response of the Australian Government (box 1.1).

The Terms of Reference require the Commission to conduct the safeguards inquiry in line with criteria set out in the Commonwealth of Australia Special Gazette No. S 297 (1998), as amended by No. GN 39 (2005), reprinted in appendix B. The criteria largely mirror the terms of the WTO Agreement on Safeguards. They stipulate that the Commission must:

- determine whether safeguard measures are justified under the WTO Agreement; and, if so,
- report on what measures would be necessary to prevent or remedy serious injury and to facilitate adjustment.

In addition, and going beyond what is essential under the WTO, the Terms of Reference require the Commission to consider (where measures are found to be justified) whether 'having regard to the Government's requirements for assessing the impact of regulation which affects business, safeguard measures *should* be implemented' [emphasis added]. Essentially, this requires the Commission to subject any proposed measures to a regulatory impact assessment of the community-wide costs and benefits.

Box 1.1 **The accelerated report on provisional safeguard measures**

The Commission was asked to provide an 'accelerated report' by 14 December 2007, as to whether *provisional* safeguard measures should be put in place. Provisional safeguard measures, normally tariffs, can be put in place for up to 200 days (during which time the full safeguard investigation can be completed).

In accordance with WTO rules, for the accelerated report the Commission was required to make a preliminary determination on whether increased imports were causing or threatening serious injury, and whether critical circumstances existed such that delay in applying measures would cause damage that was difficult to repair. The Commission met with around 30 organisations in several States, received 100 submissions and held public hearings prior to finalising the accelerated report (see section 1.4).

The Commission found that although the industry was suffering serious injury or under threat of serious injury, there was not clear evidence that increased imports were the cause of serious injury. In the Commission's preliminary assessment, the cost–price squeeze confronting producers was attributable principally to a sharp increase in the cost of feed grain in the second half of 2007.

Australian Government response

The accelerated report was signed on 14 December 2007 and delivered to Government. It was released publicly on 20 December. In a media release, the Minister for Agriculture, Fisheries and Forestry, Tony Burke, noted the Commission's finding that feed prices rather than imports were the principal cause of serious injury. He called on interested parties to make further submissions to the final report (Minister for Agriculture, Fisheries and Forestry, *Pigmeat Safeguard Inquiry*, Media release, DAFF07/0038, 20 December 2007).

Under WTO rules, a government can only take safeguard action (whether final or provisional) if the 'competent authority' it has nominated under the Agreement on Safeguards finds that action is justified. Moreover, while a government can choose not to act, if action is taken, it cannot impose measures greater than those considered appropriate by the authority (in this case, the Productivity Commission). Furthermore, as outlined in chapter 2, the Australian Government has made undertakings in some bilateral trading agreements which constrain use of safeguard measures against partner countries.

The Terms of Reference also requested that the Commission investigate recent changes in the structure and operating methods of the industry, and whether any immediate actions could be taken to complement the activities of the Pork Co-operative Research Centre (CRC) in order to alleviate the impact of changes in the price and availability of feed grains.

1.2 Reason for the inquiry

This is the second pigmeat safeguards inquiry conducted by the Productivity Commission — the first was undertaken in 1998 (PC 1998b). The Commission also undertook a general review of the pigmeat industry in 2005 (PC 2005), as did its predecessor organisation, the Industry Commission, in 1995 (IC 1995).

This and earlier inquiries have been prompted by industry concerns about the impact of import competition. Since 1990, Australian quarantine prohibitions on the importation of pigmeat progressively have been amended to permit imports of uncooked (frozen) and cooked pigmeat from several countries (box 1.2).

Current quarantine protocols require frozen pigmeat imports to be boned and, on arrival in Australia, cooked to specific temperatures in approved processing facilities to minimise the risk of disease contamination of the local industry. These requirements mean that imports of cooked and uncooked pigmeat comprise boned primal cuts such as legs, shoulders and middles, which can only be used by smallgoods manufacturers. The fresh pork market is supplied entirely from local production, as is the market for 'bone-in' hams and uncooked salamis.

This safeguards inquiry relates only to imports of *frozen* pigmeat falling within tariff subheading 0203.29 of the Australian Customs Tariff. These imports enter duty-free, with the zero rate bound under the WTO. Frozen pigmeat is imported almost entirely from Canada, Denmark and the United States

Box 1.2 **Chronology of quarantine changes for pigmeat imports**

- **Pre-1990:** No pigmeat imports permitted, except for canned hams.
- **From 1990:** New quarantine protocols progressively introduced, allowing imports of uncooked pigmeat under various conditions according to disease status of the exporting country:
  - *May 1990*: imports of uncooked pigmeat allowed from the south island of New Zealand.
  - *July 1990*: imports of uncooked pigmeat allowed from Canada, provided it is frozen for 30 days prior to importation.
  - *Late 1992:* requirements strengthened for Canadian uncooked pigmeat, requiring, in addition to freezing, that all imports are boned prior to export and processed (cooked/fermented) on arrival under quarantine control.
- **January 1995:** The WTO and its associated agreements came into force, including the Agreement on Safeguards and the Agreement on the Application of Sanitary and Phytosanitary Measures:
  - *May 1996:* imports of unfrozen pigmeat allowed from Canada, provided the meat is boned and cooked on arrival under quarantine control.
  - *November 1997:* imports of uncooked, boneless pigmeat are allowed from Denmark, provided the pigmeat is processed on arrival under quarantine control. Imports of *cooked* pigmeat allowed from Canada, provided the pigmeat is boneless.
- **May 2004:** A new quarantine policy is announced for pigmeat imports. It follows an import risk analysis by Biosecurity Australia, which recommended that pigmeat imports be permitted subject to conditions depending on the health status of the exporting country. Australia's new pigmeat quarantine policy recommended management measures such as: country, zone or herd disease freedom; testing of carcasses; cooking, freezing, curing or canning; boning; and the removal of certain parts of the carcass:
  - *May 2004:* imports of frozen cooked, boneless pigmeat are allowed from Denmark, provided major peripheral lymph nodes are removed.
  - *May 2004:* imports of frozen uncooked, boneless pigmeat are allowed from Canada and the United States, provided major peripheral lymph nodes are removed and the meat is processed on arrival under quarantine control.
  - *July 2004:* imports of cooked, boneless pigmeat are allowed from the United States, provided major peripheral lymph nodes are removed.

Sources: PC (1998b); PC (2005); AQIS (2007).

1.3 The Australian market for pigmeat: a snapshot

The market for pork encompasses fresh meat and manufactured pork (ham, bacon and smallgoods), with local pigmeat producers (pig farmers and primary processors) supplying both markets. Australian producers also export fresh pork. Imported cuts of pigmeat are used as inputs in the local manufacture of smallgoods but, as noted, quarantine restrictions prohibit imports of pork for the fresh meat market.

Pigmeat production is a relatively small part of the agricultural sector in Australia (box 1.3), and it is directed predominantly at the domestic rather than world market. While exports increased following opening of the domestic market to import competition in the mid-1990s, they remain a relatively small and, in recent years, static share of total output (figure 1.1). As discussed in chapter 5, the industry's domestic market focus largely reflects the lack of availability of cheap feed grain in Australia, which impedes international competitiveness.

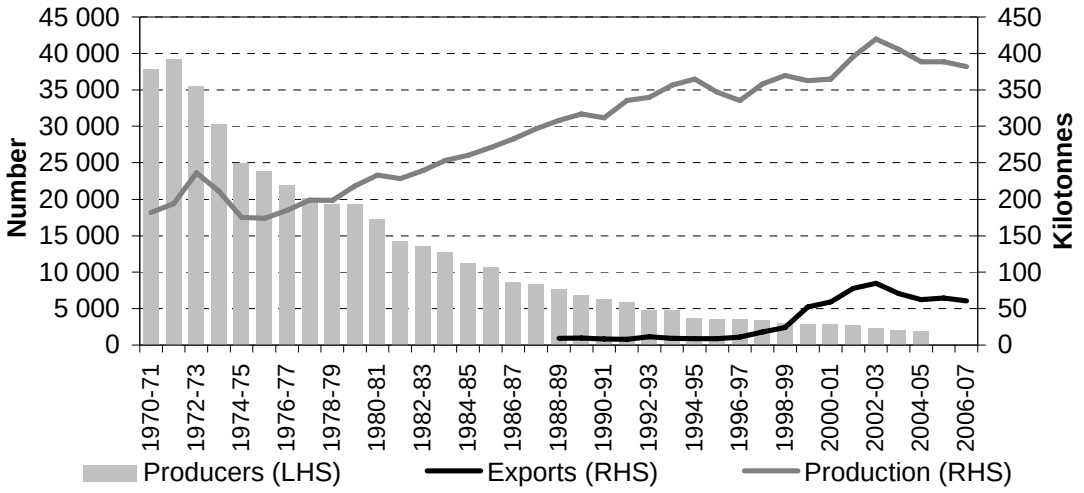
Box 1.3 **Selected industry statistics**

- It is estimated that there were 1900 pig producers in 2005, employing about 3200 people.
- In 2006-07, value added in pig farming accounted for just under 3 per cent of farm gross product and less than one tenth of 1 per cent of Australian GDP.
- Pig herds are concentrated in Australia's major grain growing areas.
- New South Wales is the largest pigmeat producer (around 30 per cent), followed by Queensland (25 per cent), South Australia (20 per cent), Victoria (15 per cent), Western Australia (10 per cent), and Tasmania (less than 1 per cent).
- There are no official statistics on specialist pig processing operations, but the top 20 pig abattoirs account for around 95 per cent of annual pig slaughters.

Imports, on the other hand, have increased steadily since the early 1990s when quarantine restrictions were first modified (box 1.2 and figure 1.2). Currently, imports supply roughly one-third of total domestic pigmeat consumption.[1] Australian production has also grown but has shifted to supplying the expanding fresh pork market and as noted above, to a lesser extent, export markets.

[1] Because imported pigmeat is frozen and boned, tonnages must be converted to a carcass weight equivalent and, hence, the import market share can vary with the conversion rate used (see box 3.2).

Figure 1.1 **Pig producers, pigmeat production and exports[a]**

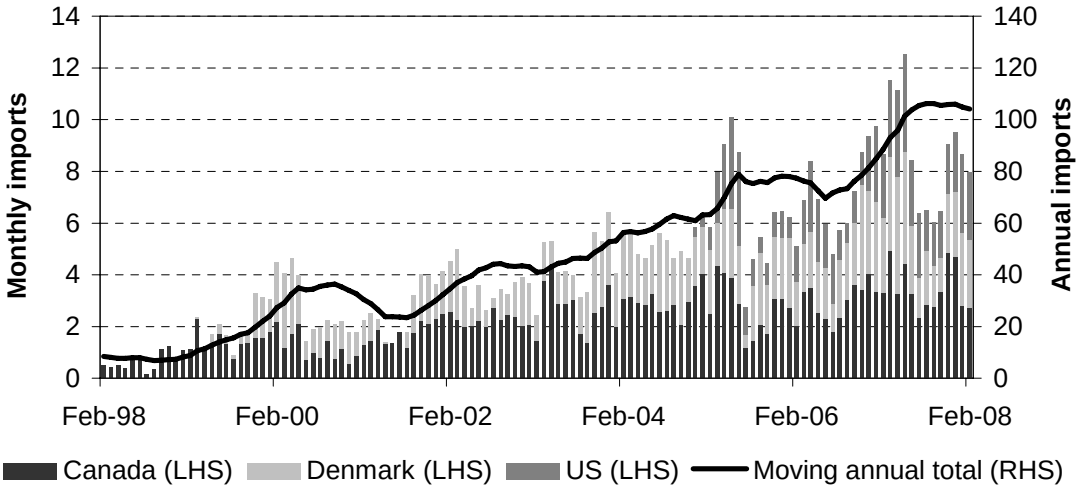


a Producer numbers are based on the number of establishments with breeding sows or gilts (intended for breeding) at the end of each financial year. Producer numbers are not available for 2005-06 and 2006-07. Export data are not available prior to 1988-89. Export volumes are carcass weight equivalent. A conversion factor of 0.8 is used.

Data sources: ABS, *Agricultural Commodities, Australia,* Cat. no. 7121.0; ABS, *Livestock and Meat, Australia*, Cat. no. 7218.0; ABS (unpublished); APL (2006b).

Figure 1.2 **Import volumes have grown**

Tariff sub-heading 0203.29, kilotonnes



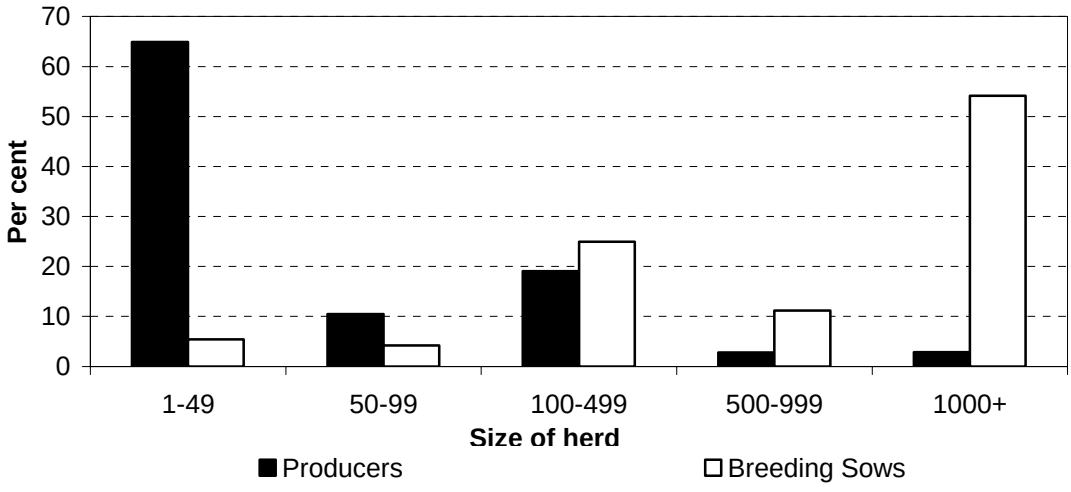
Data source: ABS (unpublished).

Like many agricultural industries, the Australian pigmeat industry has undergone structural change over several decades, with significant rationalisation of non-specialised smaller operators and increasing industry concentration and specialisation. This process has brought increases in both average herd size and productivity: since the mid 1970s pigmeat production has more than doubled whereas the number of producers has declined from over 25 000 to fewer than 2000 (figure 1.1).

The production of pigmeat in Australia has also become increasingly integrated, with around two-thirds of producers estimated to be involved in farming, slaughtering and primary processing (that is, boning and packing of carcasses for fresh meat supply or further processing). Several large pigmeat producers are also involved in ham, bacon and other smallgoods manufacture (see table 4.1).

Despite ongoing rationalisation in the pig farming segment of the industry, there remains a large number of small non-specialist producers, reflecting in part their ability to spread risk across different commodities. Around three-quarters of pig producers have fewer than 100 sows (figure 1.3). (Producers with fewer than 100 sows generally are considered to be non-specialist. Sometimes they are referred to as 'opportunistic' producers, increasing and reducing herds depending on prices for pigs relative to other commodities they produce.) In contrast, about 5 per cent of producers have more than 500 sows, and collectively own two-thirds of all breeding sows (and thus account for roughly two-thirds of production). The remaining 20 per cent of producers are smaller specialist operations with 100–500 sows, and collectively own around one quarter of all breeding sows.

Figure 1.3 **'W'-shaped distribution of operations by herd size**
June 2005 (excluding contract growers)



Data source: ABS (unpublished).

1.4 How the inquiry was conducted

The WTO Agreement on Safeguards requires that safeguard inquiries be conducted in an open and transparent manner, with opportunities for interested parties to present their views and to respond to the views of others. Reflecting these requirements, Commonwealth of Australia Special Gazette No. S 297 (1998) states that:

- reasonable public notice must be given to all interested parties in accordance with section 14 of the *Productivity Commission Act 1998* (Cwlth)
- the inquiry must involve public hearings or other appropriate means in which importers, exporters and other interested parties can present evidence and their views, including the opportunity to respond to the presentations of other parties and to submit their views, *inter alia*, as to whether or not the application of a safeguard measure would be in the public interest.

These requirements accord with the Commission's normal public inquiry procedures.

Public notification

The inquiry was advertised in the national press on 20 October 2007 and in major rural press and electronic media in the week following receipt of the Terms of Reference. The advertisements outlined the nature of the inquiry and invited parties to register their interest.

On 24 October 2007, a circular announcing the inquiry and calling for written submissions was released. In addition, an issues paper setting out matters about which the Commission was seeking comment and information, was sent to nearly 1000 individuals and organisations who had registered their interest or who were considered likely to have an interest in the study, including more than 400 regional media outlets. Both the circular and issues paper were placed on the Commission's website. All subsequent circulars were sent to those who had registered an interest and were also placed on the website.

As required by the Agreement on Safeguards, the Australian Government formally notified the WTO of the safeguards investigation on 20 October 2007. Embassies of major exporting countries were also notified directly.

Informal consultation

Informal meetings and visits were conducted in the early stages of the inquiry with individual producers and processors, producer organisations including Australian Pork Limited (APL), Australian and State Government departments and agencies, as well as representatives of relevant foreign governments. The Commission met with APL again in February 2008.

A complete list of those consulted is contained in appendix A.

Request for information

To supplement publicly-available data and other information, a request for information was sent to 11 major pigmeat abattoir/boning operations. The letter of request was placed on the website. Individual responses were treated as commercial-in-confidence, but the information has been drawn on in chapter 3.

Data provision

Key data series used by the Commission in its investigations were placed on the Commission's website and regularly updated to enable feedback and to facilitate their use by participants in the inquiry.

Submissions

A list of all submissions received is presented in appendix A. All were posted on the Commission's website as soon as they could be processed (usually the day of receipt). Where submissions contained commercial-in-confidence information, however, the relevant sections were not published.

Given the timeframe for the accelerated report, participants were requested to provide submissions by 30 November 2007, or earlier if they intended to present their submission at a public hearing. One hundred submissions were received prior to the accelerated report.

Following the accelerated report, the Commission received another 21 submissions, the last on 27 March 2008.

Box 1.4 An overview of participants' views

The Commission received 121 submissions in total — 100 were received prior to the accelerated report, and 21 after that report. Most focussed on safeguard matters.

- Of the 121 submissions received, around 75 were from individual producers, co-operatives or producer representative organisations. Virtually all argued that increased imports were the principal cause of reduced profitability and losses, and most, though not all, supported safeguard measures to reduce imports. The few who did not support safeguard measures generally advocated adjustment assistance or financial assistance for innovation.
- Submissions and evidence from most key primary processors of pigmeat generally supported the case for safeguard action, although those processors who also manufactured smallgoods from imported products, and organisations representing them, opposed measures that would increase the price of a major input.
- Submissions from State Governments provided evidence supporting the industry's case, but generally advocated policy reforms to address cost imposts or forms of assistance other than safeguard measures.
- Twenty submissions were received from representatives of industries in exporting countries and their governments, arguing that the circumstances did not satisfy the safeguard criteria.

Public hearings and transcripts

Public hearings were held in Sydney, Canberra, Brisbane, Adelaide and Melbourne in late November and early December 2007. Transcripts of the hearings were progressively posted on the Commission's website, with all transcripts available by 11 December. A list of participants at public hearings is provided in appendix A.

Modelling workshop

A modelling workshop was held on 17 March 2008 to present and discuss the Commission's econometric analysis. A list of attendees is contained in appendix A. The Commission engaged two external referees to comment on its methodology. Both referees attended the workshop and also provided written comments. Their written comments were posted on the inquiry website and are referred to in appendix C.

Release of reports

The Terms of Reference state that both the accelerated and final reports are to be published as soon as practicable. The accelerated report on provisional measures was released on 20 December 2008.

1.5 Structure of the report

The report is divided into two parts. The first part contains the safeguards investigation:

- Chapter 2 discusses the safeguards criteria and also defines the domestic industry for the purposes of the safeguards investigation.
- Chapter 3 assesses whether those criteria have been met in relation to imports of pigmeat and whether safeguard measures are warranted.

Part 2 of the report addresses the additional requirements in the Terms of Reference:

- Chapter 4 canvasses issues relating to changes in industry structure and operating methods since the Commission's 2005 inquiry.
- Chapter 5 addresses issues relating to feed costs and availability, in the context of the work of the Pork CRC.

In conclusion, chapter 6 raises some wider issues about the safeguard provisions and the application of safeguard measures, draws together policy recommendations formulated in chapters 4 and 5, and briefly discusses the industry's calls for various forms of financial assistance.

Three appendices supplement the report.

- Appendix A provides details of visits, hearings, submissions and participants at the technical roundtable.
- Appendix B reprints the relevant Commonwealth Gazettes, as well as GATT Article XIX.
- Appendix C presents the Commission's quantitative analysis.

2 Safeguards criteria and industry definition

This chapter briefly discusses the history and purpose of the Agreement on Safeguards and outlines the safeguards criteria and relevant case law. The domestic industry is then defined for the purpose of the safeguards investigation into pigmeat imports.

2.1 What is safeguard action?

Safeguard action is temporary, 'emergency action' and may be taken by a member country of the World Trade Organization (WTO) where a surge of imports causes, or threatens to cause, serious injury to a domestic industry. It allows a country to respond to unforeseen increases in imports where the increase was 'recent enough, sudden enough, sharp enough and significant enough'.

The WTO Agreement on Safeguards is one of a number of agreements concluded during the Uruguay Round of Multilateral Trade Negotiations. Its stated aim is to 'clarify and reinforce the disciplines of the General Agreement on Tariffs and Trade (GATT) 1994, and specifically those of its Article XIX' (Emergency Action on Imports of Particular Products).

The safeguard clause in Article XIX was conceived as a 'safety valve', intended to provide an opportunity for industries to adjust to unexpectedly increased competition from imports resulting from obligations entered into under the GATT. It allowed a degree of flexibility within the GATT framework, while highlighting the exceptional and temporary nature of such action.

In the 1970s and 1980s, there was a decline in the use of measures under Article XIX, replaced by increasing resort to so-called 'grey area' measures. These measures, including voluntary export restraints, were not required to meet the prerequisites for emergency action under Article XIX, and technically did not contravene other requirements under the GATT.

During the Uruguay Round of negotiations, Australia, with a number of other countries, advocated elimination of all 'grey area' measures. This group of countries

also argued for rigorous criteria to govern the application of emergency action, including the non-discriminatory most-favoured-nation principle, transparent procedures and sunset provisions (Snape et al. 1998 and Stewart 1993).

Most of these principles were adopted in the 1994 Agreement on Safeguards. A major feature of the Agreement is its proscription of 'grey area' measures. It also establishes procedural rules, seeks to clarify some of the ambiguities in Article XIX, and relaxes, but does not eliminate, the compensation requirements. Major requirements relating to how, and against whom, safeguard measures can be applied are summarised in box 2.1.

2.2 What are the criteria for applying safeguard measures?

Safeguard investigations and measures must comply with rules and criteria established under the WTO Agreement on Safeguards (1994), the GATT Article XIX on emergency action (1994), and subsequent WTO panel and appellate body decisions interpreting those requirements.

Member countries can only impose safeguard measures if the designated competent authority (the Productivity Commission in Australia) determines that safeguard measures are justified under the WTO agreement. Australia's procedures for safeguard inquiries are set out in the Commonwealth of Australia Special Gazette, No. S 297, Thursday 25 June 1998. In line with the Agreement on Safeguards, this requires that:

> … the product under reference is being imported into Australia in such increased quantities, absolute or relative to domestic production, and under such conditions as to cause or threaten to cause serious injury to the domestic industry that produces like or directly competitive products. (Commonwealth of Australia Special Gazette, No. S 297, 1998)

As clarified in subsequent WTO panel and appellate body decisions, these conditions must be read in conjunction with GATT Article XIX, which provides that action can only be taken if increased imports have occurred as a result of 'unforeseen developments'.

To assess the case for safeguard measures against pigmeat imports, the Commission has partitioned the criteria into five distinct and sequential steps:

- Define the domestic industry that produces 'like' or 'directly competitive' products.

Box 2.1 **When can safeguard measures be applied?**

Safeguard measures can be applied to the extent necessary to prevent or remedy serious injury that has been shown to result from imports and to facilitate adjustment.

Safeguard measures can include tariffs and quantitative restrictions. If measures are imposed they must be progressively liberalised in order to facilitate industry adjustment to import competition. They can be applied for up to four years, but can be extended up to eight years if circumstances are such that action is still warranted.

A country applying safeguard measures must "endeavour to maintain a substantially equivalent level of concessions and other obligations … between it and the exporting Members which would be affected by such a measure … Members may agree on any means of trade compensation for the adverse effects of the measures on their trade." If agreement is not reached, the exporting country can unilaterally suspend application of substantially equivalent concessions (in other words, respond in kind). However, this right can only be exercised by the exporting nation if a safeguard measure has been in place three years, or if safeguard measures are imposed against imports which have increased relative to domestic production but have not increased in absolute terms.

Measures cannot discriminate between countries, except under a preferential agreement or where a quota is imposed and quota shares are allocated on agreement:

- Under the Australia–United States Free Trade Agreement, Australia may take general safeguard action against imports from the United States, but it may exclude them from such action if they are found not to be a 'substantial cause' of serious injury, or threat thereof.
- Trade agreements between Australia and New Zealand preclude any action against imports from the other country, and special provisions also apply to imports from Thailand and Singapore. However, these arrangements are irrelevant in the context of this inquiry into pigmeat imports.
- In addition, safeguard measures cannot be applied against imports from a developing country member of the WTO, unless they represent over 3 per cent of total imports, or unless imports from WTO developing countries represent over 9 per cent of all imports of the product.

Disputes arising from application of safeguard measures are subject to WTO dispute settlement procedures.

- Assess whether there has been an increase in imports of the product under reference in absolute terms or relative to domestic production.
- Establish whether the increase in imports was due to unforeseen developments.
- Establish whether there is threatened or actual serious injury to the domestic industry.
- Establish whether the increased imports *caused* or are *threatening to cause* serious injury.

In addition, before safeguard measures can be implemented in Australia, regard must be given to the Government's requirements for assessing the impact of regulation which affects business (box 2.2).

Box 2.2 **Requirements for assessing the impact of regulation which affects business**

Under the Terms of Reference for this inquiry, the Commission must also have regard for the Australian Government's requirements for assessing the impact of regulation which affects business. The new requirements for regulatory impact analysis are set out in the Best Practice Regulation Handbook (Australian Government 2007).

Key principles include that:

- governments should not act to address 'problems' until a case for action has clearly been established
- a range of feasible policy options must be identified and their potential community-wide costs and benefits assessed
- only the option that generates the greatest net benefit for the community, taking into account all the impacts, should be adopted.

Which domestic industry produces 'like' or 'directly competitive' products?

The Agreement on Safeguards defines the 'domestic industry' as comprising the producers of 'like or directly competitive products', or those whose collective output constitutes a major proportion of the total domestic production of those products. Thus, the essential first step is to establish which domestically-produced goods are *like* or *directly competitive* with imports.

Like or directly competitive goods

The term *like or directly competitive* is contained in Article XIX of the GATT. The term *like product* occurs in several articles of GATT 1994 in addition to Article XIX.[1] These include Articles I, III, VI, XIII, and XVI, which relate, respectively, to most-favoured-nation treatment, national treatment, anti-dumping and countervailing duties, quantitative restrictions, and subsidies. As noted by Jackson, an internationally recognised authority on trade law, '… there is no precise

[1] GATT 1994 comprises the original GATT 1947, as amended, together with relevant Understandings and Agreements negotiated during the Uruguay Round of Multilateral Trade Negotiations.

definition of "like products" or similar phrases and that same term, when used in different clauses of the General Agreement, can have different meanings' (1969, p. 263).

In the context of anti-dumping and countervailing inquiries, the term *like product* consistently has been interpreted as an identical product and was defined thus in the 1994 WTO Agreement on Anti-dumping and Countervailing Duties (Article 2:6). A similar definition is included in the general procedures for safeguard inquiries issued by the Australian Government:

> **Like product** means a product which is identical, i.e. *alike in all respects* to the product under consideration, or in the absence of such a product, another product which, although not alike in all respects, has characteristics *closely resembling* those of the product under consideration. (Commonwealth of Australia Special Gazette, No. S 297, 1998) [emphasis added]

With regard to GATT Article I (most-favoured-nation rule), *like* products generally are regarded as those which fall within the same tariff classification (Jackson 1969, pp. 263–4).

Article XIX and the Agreement on Safeguards use the explicitly broader expression — *like or directly competitive*. Jackson (1997) has noted that:

> This inclusion is clearly appropriate, because the objective in the escape clause is to ascertain when the imports are harming domestic industry, and obviously competitive products can so harm. (p. 189)

On the question of which products can be construed as 'directly competitive' with others, he observed that 'GATT jurisprudence being so sparse, considerable leeway seems to exist for interpreting this phrase' (p. 189).

In some contexts — for example, GATT Article III, which concerns national treatment on internal taxation and regulation — *directly competitive* has been interpreted as encompassing goods with distinct physical characteristics, provided they compete for the same market (for example, different types of alcoholic spirit).[2] Here, the objective was to ensure that national taxes or regulations do not act as *de facto* barriers against imports by discriminating between competing goods.

In the context of safeguard action, the objective is to permit action against imports which cause serious injury to a domestic industry, properly defined. In its 1998 safeguards inquiry (PC 1998b), the Commission noted that several foreign governments seemed to accept this broader, contextual interpretation. For example, the United States Trade Act of 1974 stated that:

[2] WTO, Appellate Body, *Japan – Taxes on Alcoholic Beverages* (DS 8).

> An imported article is 'directly competitive with' a domestic article at an earlier or later stage of processing, and a domestic article is 'directly competitive with' an imported article at an earlier or later stage of processing, if the importation of the article has an economic effect on producers of the domestic article comparable to the effect of importation of articles in the same stage of processing as the domestic article. (US *Trade Act of 1974*, Section 201)

Producers of like or directly competitive products

Defining who comprises the producers of like or directly competitive products has been subject to interpretation through various WTO panel and appellate body decisions.

The Canadian International Trade Tribunal's (CITT) safeguards inquiry into imports of boneless beef in 1993 (CITT 1993), found that the high degree of economic interdependence between cattle producers and slaughterers and boners justified inclusion of cattle producers in the 'domestic industry'.

However, the WTO Appellate Body, in considering an appeal by Australia against the imposition of safeguard measures by the United States on imports of Australian lamb in 2001, considered that US lamb growers and feeders did not produce 'like' products. In that case, the domestic industry was deemed to comprise only lamb meat producers — that is, 'packers and breakers'. (*US – Lamb* (DS 177, 178)).

In the *US – Cotton Yarn* case (pursuant to the Agreement on Textiles and Clothing[3]), the United States defined the domestic industry to exclude vertically integrated firms that produced cotton yarn only for internal use.[4] This position was rejected by the WTO Panel and Appellate Body. They found that while imports and captive domestic products may not have been in the same market place, they were 'like' products and that imports affected the price of 'like' domestic products through implicit competition. As a result, vertically-integrated domestic firms producing cotton yarn for their own use were included in the domestic industry (Sykes 2006).

Have imports increased?

Under WTO provisions, there must be evidence that imports of pigmeat have increased either in absolute terms *or* relative to domestic production. While a

[3] The Agreement on Textiles defines the domestic industry using language almost identical to the Agreement on Safeguards.

[4] *US – Transitional Safeguard Measure on Combed Cotton Yarn from Pakistan* (DS 192).

timeframe for the increase in imports is not specified in the Agreement on Safeguards, a rule of thumb is to focus on the last five years for which data are available, to assess both the trend rate of increase and absolute quantities of imports (Sykes 2003). Further, a WTO appellate body has ruled that, in its words, 'the increase in imports also must be recent enough, sudden enough, sharp enough and significant enough' (*Argentina – Footwear* (DS 121)).

The Commission notes that the Panel in *US – Line Pipe* (WT/DS 202/R) found that 'there is no need for a determination that imports are presently still increasing' — in effect, just that they have *increased*.

Whether imports have been dumped or subsidised is not relevant for safeguard measures, except to the extent that such policies drive an increase in import volumes.

Was the increase in imports a result of 'unforeseen' developments?

As noted earlier, case law since the inception of the WTO in 1994 has affirmed that the original GATT Article XIX and the Agreement on Safeguards comprise a 'package' of requirements — that is, the Agreement on Safeguards does not supplant GATT Article XIX, but clarifies and reinforces it. Consequently, the requirements of both must be met.

While the Agreement on Safeguards is silent on the matter, Article XIX provides that WTO members may only take emergency action if, as a result of 'unforeseen developments and the effect of obligations incurred by a WTO member', imports cause or threaten serious injury. Case law has interpreted this to mean that a requirement for the application of safeguard action is that the trading developments could not reasonably have been foreseen or expected by negotiators when the obligations under the GATT were incurred; in this case, 1994.

In practice, the requirement that an increase in imports be due to unforeseen developments has been interpreted quite broadly. The GATT Working Party report on *Withdrawal by the United States of a Tariff Concession under Article XIX* stated:

> … the term 'unforeseen developments' should be interpreted to mean developments occurring after the negotiation of the relevant tariff concession which it would not be reasonable to expect that the negotiators of the country making the concession could and should have foreseen at the time when the concession was negotiated. (GATT/CP/106, report adopted on 22 October 1951)

This case concerned imports of hatters' fur into the United States. While the Working Party found that a change in fashion — which had led to a surge in imports of hatters' fur — was not an 'unforeseen development', it determined that

the *extent* of change, in this particular case, could not have been foreseen at the time the tariff concession was made. On this basis, the Working Party found that the requirements of Article XIX had been fulfilled. According to Jackson, this broad interpretation of 'unforeseen developments' suggests that '… the prerequisite cause of "unforeseen developments" has been essentially "read out" of the GATT agreement' (Jackson 1997, p. 187).

A range of unforeseen developments has been cited in support of other safeguard actions since the inception of the WTO:

- The South–East Asian Financial Crisis (*US – Steel* (DS 248, 249, 251, 252, 253, 254, 258, 259)). This was subsequently challenged and a WTO Panel (later affirmed by the Appellate Body) found that 'although it describes a plausible set of unforeseen developments that may have resulted in increased imports to the United States from various sources, it falls short of demonstrating that such developments actually resulted in increased imports into the United States causing serious injury to the relevant domestic producers'.
- Increased use of trade defence instruments by the United States and the consequent reduction in exports to the United States (*EC – Certain steel products* (DS 260)).
- Failure to achieve forecast exports coupled with exchange rate changes (*EC – Farmed salmon* (DS 326, 328)).

Participants in this inquiry expressed a wide range of views on how the requirement for unforeseen developments should be applied in relation to this investigation. These views are presented in chapter 3.

Is the domestic industry suffering 'serious injury', or is it threatened?

In order to find serious injury, it must be shown that the industry in general, or those producers whose collective output constitutes a major proportion of domestic production, have been affected.

The Agreement on Safeguards provides no clear guidance about what constitutes serious injury, although it is consistently interpreted as being a more demanding test than the 'material' injury test applied in anti-dumping and countervailing cases. The Agreement on Safeguards and subsequent interpretations of it require that all factors listed must be assessed: namely, the share of the domestic market taken by increased imports; and changes in the levels of sales, production, productivity, capacity utilisation, profits and losses and employment. Evidence regarding these factors is presented in chapter 3.

Have increased imports *caused* or *threatened to cause* serious injury?

The Agreement on Safeguards stipulates that imports must be entering '*under such conditions* as to cause or threaten to cause serious injury to the domestic industry' [emphasis added]. Various panel and appellate body interpretations of the italicised phrase suggest this requires analysis of the conditions of competition in the domestic market (for example, *Argentina – Footwear* (DS 121), Panel Report) as well as a 'coincidence of trends'.

A number of WTO rulings have debated whether imports, in and of themselves, must be sufficient to cause serious injury. As it stands, it appears that there is no requirement that imports alone have to cause serious injury.[5] Instead, imports, together with other factors, must be found to cause serious injury.

Nevertheless, WTO case law suggests that any safeguard measures imposed can only reflect the extent of serious injury caused by increased imports, not by other factors.[6] This requires that the impacts of 'other' factors be separately identified and quantified.

The Agreement on Safeguards specifies that 'all relevant factors' should be considered. This term was interpreted by the *US – Wheat Gluten* (DS 166) Appellate Body, to mean that a national authority must identify all such factors irrespective of whether they were raised by an interested party.

2.3 Which Australian industry produces 'like' or 'directly competitive' goods?

To define the domestic industry it is necessary first to establish which domestically-produced goods are *like* or *directly competitive* with the goods under reference. The 'domestic industry' comprises producers of these products.

The Commission heard conflicting views from participants in this inquiry on the appropriate definition of 'like' and 'directly competitive' products and the 'domestic industry'. A summary of views is presented in box 2.3.

5 WTO Appellate Body *US – Wheat Gluten* (DS 166) and WTO Appellate Body *US – Lamb* (DS 177, 178).

6 WTO Appellate Body *US –Pipe Line* (DS 202, 214).

Goods under reference

The goods under review are frozen pork falling within tariff sub-heading 0203.29 of the Australian Customs Tariff. This covers frozen, boneless cuts of 'meat of swine', as well as some 'bone in' cuts (table 2.1). Imports under this sub-heading enter free of duty and this zero rate has been bound under the WTO since 1 January 1995. Current quarantine restrictions limit imports within this sub-heading to *frozen boneless* cuts from Canada, Denmark, the United States, Finland and Sweden.

Table 2.1 **Goods under reference**
Australian Customs Tariff, Schedule 3

Reference no.	*Statistical Code*	*Goods*	*Rate*
0203		**MEAT OF SWINE, FRESH, CHILLED OR FROZEN:**	
0203.1		- Fresh or chilled:	
0203.11.00	*07*	-- Carcasses and half-carcasses	Free
0203.12.00	*08*	-- Hams, shoulders and cuts thereof, with bone in	Free
0203.19.00	*09*	-- Other	Free
0203.2		**- Frozen:**	
0203.21.00	*10*	-- Carcasses and half-carcasses	Free
0203.22.00	*11*	-- Hams, shoulders and cuts thereof, with bone in	Free
0203.29.00		**-- Other**	**Free**
	30	***With bone in (excluding salted, dried or smoked ham (0210))***	
		Boneless (excluding salted, dried or smoked ham (0210)):	
	40	***Leg cuts***	
	41	***Middle cuts***	
	42	***Shoulder cuts***	
	45	***Other***	

The majority of these imports are boned legs, shoulders and middles from Canada, Denmark and the United States.[7] These cuts are typically referred to as primal and sub-primal cuts and, together, comprise most of the value of a pig. On arrival in Australia, they must be cooked at licensed premises to meet quarantine conditions and therefore can only be used by the smallgoods manufacturing sector (mainly for production of boneless hams and bacon), and not sold as fresh meat.

[7] It should be noted that a large volume of imports enters under the classification 'other'. This is presumed to include a mixture of the three cuts and other meat, such as trim.

Box 2.3 **Participants' views on 'like' and 'directly competitive' products and the 'domestic industry'**

The **Government of Canada** (subs. 29, AR107), and **Canada Pork International** (sub. 66), argued that the domestic industry comprises producers of frozen and de-boned pork, that is, abattoirs and boning rooms. They excluded 'growers and feeders' of pigs from the industry definition (subs. 66, AR107), citing the WTO Appellate Body ruling in the *US – Lamb* case (DS 177, 178).

The **Ministry of Foreign Affairs of Denmark** (subs. 20, AR111) and the **Danish Bacon and Meat Council** (DMBC) (sub. AR110) also cited the *US – Lamb* case to argue that pig farmers should not be considered part of the domestic industry. The DMBC defined the domestic industry as 'integrated de-boning and processing facilities' (sub. 32) while the Ministry of Foreign Affairs of Denmark contended that imports only compete directly in the market for processed meats.

The **Australian Meat Industry Council**, on behalf of independent retail butchers and smallgoods manufacturers (but not processor members, see sub. AR116), also suggested that Australian fresh pork meat and bone-in products are not directly competitive with imported boneless products and that '… imported pig meat primals are not the same product that is being marketed by the Australian pig grower' (sub. 35, p. 8).

The **Delegation of the European Commission** (subs. 30, AR120), also citing the *US – Lamb* case, argued that the domestic industry should include only producers that produce a 'like' or 'directly competitive' product. As a result, they contended that pig farmers should not be considered part of the domestic industry.

Also drawing on the *US – Lamb* ruling, **MinterEllison** (subs. 43, AR117), representing the United States National Pork Producers Council, the American Pork Export Trading Company, the American Meat Institute and the United States Meat Exporters Federation, contended that the domestic industry includes only boning rooms. They argued that the only 'domestic products that are like or directly competitive with the specified imported goods are primal and sub-primal pigmeat cuts' (sub. 43, p. 12), and that these products are produced by boning rooms. They further stated that, 'neither pig producers, nor abattoirs, nor small goods producers are part of the domestic industry' (sub. 43, p. 12).

Conversely, **APL** (sub. 41), argued that the *US – Lamb* ruling provides no limiting authority as to the analysis of like or directly competitive products for safeguard action. They asserted that the term 'directly competitive' is sufficiently broad to compare processed imports and fresh domestic pigmeat, based on the end uses and demand relationship. Furthermore, due to the high level of vertical integration in the industry, they argued that there is no identifiable separate domestic industry producing only boned cuts of pork. They claimed 'processors and pig farmers are often one and the same' (sub. 41, p. 36) and, as a result, pig farmers as well as processors should be included in the domestic industry.

As noted by MinterEllison (sub. AR117) and the Delegation of the European Commission (sub. AR120) it is necessary to determine goods that are 'like' and 'directly competitive' with the goods under reference based on their competitive relationship.

The Commission considers that domestically-produced boned legs, shoulders and middles are 'like'; that is, virtually identical with imported cuts:

- In line with its 1998 safeguards inquiry, the Commission considers that freezing does not change the nature of the imported product compared with pork produced in Australia. Moreover, domestically-produced cuts are often frozen for storage to facilitate matching of supply and demands (for example, see B. E. Campbell, sub. 31).
- Both domestic and imported cuts are used by the smallgoods manufacturing sector to produce similar final products and thus mainly compete on price.
- Although several participants observed some difference in product consistency, this generally referred to products meeting processor specifications for cut, fat and size (see Primo Smallgoods, sub. 21) rather than any inherent differences in taste that would be noticeable to a final consumer. In other words, imported and domestically-produced cuts essentially are interchangeable for the purposes of manufacturing smallgoods and, indeed, often are mixed in the production process such that final products are labelled as being 'made from local and imported' product.

The Commission also notes that some 'other' *bone-in* cuts fall within tariff sub-heading 0203.29, which is a well-accepted criterion for defining a 'like' product.

Importantly, the Commission also considers that domestically-produced whole and half dressed carcasses, as well as other bone-in cuts, are *directly competitive* with imported boneless primal and sub-primal cuts. Smallgoods manufacturers often cut and bone the carcass themselves, or contract this task out to boning rooms. So when buying meat for manufacturing, smallgoods manufacturers choose between, on the one hand, domestically-produced dressed carcasses and half-carcasses which are bone-in, as well as boned cuts; and on the other, imported frozen boned middles, legs and shoulders (see, for example, Houston Pork Wholesalers, sub. 72). From the downstream manufactures' viewpoint, that the products are at somewhat different stages of processing, frozen or unfrozen, is largely immaterial — carcasses and half-carcasses and bone-in cuts are directly competitive with boned imported cuts.

Responding to the Commission's accelerated report, MinterEllison (sub. AR117) and the Delegation of the European Commission (sub. AR120) argued that the

Commission incorrectly identified carcasses and half carcasses as directly competitive with imported cuts. Specifically, MinterEllison disagreed with the Commission's assessment that the requirement to bone out a carcass is 'largely immaterial' and instead they considered that it requires 'considerable resources to transform a carcass' into a product competing directly with imports.

However, the Commission stands by its preliminary assessment because manufacturers do not just buy boned cuts: they buy both carcasses and a wide range of boned cuts (with varying amounts of trim). The choice depends on the demand for different parts of the pig and the relative prices of carcasses and cuts.

FINDING 2.1

For the purposes of this safeguards investigation, Australian-produced fresh pork cuts, and dressed carcasses and half-carcasses, are 'like or directly competitive with' pigmeat imported under tariff sub-heading 0203.29.

Domestic producers of like and directly competitive products

'Like' products — that is, boned cuts of pork — are prepared and sold to downstream manufacturers and other users by either vertically-integrated farming/abattoir/boning operations or independent boning room operators. This group comprises specialist pig boning operations such as B. E. Campbell (which buys carcasses from pig producers) and abattoir/boning rooms of vertically-integrated operations such as QAF (which is responsible for around 18 per cent of Australia's pigmeat production; QAF, sub. 73), Big River Pork and Linley Valley Pork. In some cases, boning operators are contracted by manufacturers to break carcasses to their specifications.

In the Commission's assessment, while pig farmers do not produce 'like products' as defined, they do produce products that are 'directly competitive' with imported cuts. Pig abattoirs in Australia generally provide a slaughtering service for a fee, but do not assume 'ownership' of the pig. Ownership is transferred to a processor (which may be integrated with the abattoir) or wholesaler 'over the hook', and after the carcass has been weighed and inspected. In other words, unless part of a vertically-integrated operation, the pig producer generally contracts to have the pig slaughtered, *then sells a dressed carcass, not a live pig*, to a wholesaler, processor or manufacturer. Consequently, pig producers are paid on a hot standard carcass weight basis, not on the basis of live weight. For vertically-integrated pig-farming and processing operations, abattoir services are often provided 'in-house' (albeit sometimes at 'offsite' locations).

In both cases, however, the 'producer' of the carcass is effectively the pig owner/grower. To argue that only abattoirs produce carcasses would be akin to arguing that trucking companies produce the goods they are paid to deliver. The activity, and value-added, of abattoirs is slaughtering *services*, not the production of pigmeat. Although imported pork also embodies slaughtering services — and to this limited extent, competes directly with abattoir operations — it mainly comprises pigmeat, and pigmeat is produced and sold in carcass form by pig growers.

Both MinterEllison and the Delegation of the European Commission refer to the *US – Lamb* Appellate Body ruling to argue that the level of vertical integration in the industry is irrelevant to the definition of the domestic industry. They cite paragraph 90 of the ruling which states:

> If an input product and an end-product are not "like" or "directly competitive", then it is irrelevant … that there is a continuous line of production between an input product and an end-product, that the input product represents a high proportion of the value of the end-product, that there is no use for the input product other than as an input for the particular end-product, or that there is a substantial coincidence of economic interests between the producers of these products.

The Commission's reasoning, outlined above, is not inconsistent with this argument. The 'producer' of a carcass is found to be the pig owner/grower whether they comprise part of a vertically integrated operation or not.

MinterEllison also suggested that contractual arrangements (other than vertical integration) that provide for change of ownership once a pig has been processed should not be the basis of the Commission's analysis of the relevant industry. Once again, however, the basis for the Commission's conclusion is that carcasses and half carcasses are directly competitive with imported cuts, and pig growers produce and sell these carcasses.

FINDING 2.2

Pig producers and primary processors produce products which are either like, or directly competitive with, imported pigmeat cuts.

The remaining criteria used to assess whether safeguard measures against pigmeat imports are justified are addressed in the following chapter, using the definition of the domestic industry established above.

3 Assessing the case for safeguard action

This chapter assesses the case for action under the World Trade Organization (WTO) Agreement on Safeguards. First, it analyses the market for pigmeat in Australia. Second, using the definition of the domestic industry established in chapter 2, it addresses the remaining four criteria for safeguard action. It concludes with the Commission's findings on whether the conditions for safeguard action have been met.

3.1 The market for pigmeat

The main products made from pigs in Australia are primal cuts of meat, commonly categorised as shoulders, middles and legs. They can be sold as joint products — whole or half carcasses — or as individual cuts. Other parts of the pig are sold as offal.

Locally-produced pigmeat is either sold in the fresh pork market or used in the manufacture of bacon, ham and smallgoods (the processed pork market). Meat from a single pig is often sold into both markets. The market to which the meat is sold generally depends on the relative prices for pigmeat in the fresh and processed markets.

As outlined in chapter 1, since 1990 imports of boned, frozen cuts of pigmeat have been allowed from selected countries, subject to numerous quarantine protocols. However, as noted in the Commission's 1998 safeguards inquiry (PC 1998), imports probably did not begin to influence domestic prices until 1997-98, when an informal arrangement between major pigmeat processors not to use imported product collapsed.

Ever since, Australian producer prices for pigmeat, whether in the fresh or processed markets, have been linked to world prices. As the range of imported cuts has expanded (from legs to middles and shoulders) such that imported cuts represent a high proportion of the weight and value of a pig, this price link has strengthened. The operation of the market, with imports available, is described in box 3.1.

Box 3.1 **The market for pigmeat with (limited) import competition**

- The (partial) opening of the market to imports effectively caps producer prices of directly competitive cuts.
- The opening of the market to imports, or a decrease in import prices, encourages domestic producers to switch supply from the processed market to the fresh meat or bone-in processed markets. This depresses prices in those markets to the point that producer returns eventually equalise across baconer and porker markets. Domestic pigmeat supply will fall in response.
- Demand for Australian pigmeat is affected by domestic demand and the demand for exports. An increase in demand for fresh pork will cause a greater share of domestic production to be channelled to the fresh pork market, resulting in more imports. An increase in demand for cuts that can be imported will effectively be met from imports (at given prices). Either way, imports will increase.
  - Conversely, a decrease in demand for fresh pork will depress prices and lead to a switch to the processing market and a reduction in imports.
- The scope for a rise in pigmeat prices in response to a rise in domestic costs will be moderated by the availability of imported cuts, as well as the price of substitutable goods, such as beef, lamb and chicken. With imports, more of the adjustment will be through reduced output than higher prices.
- Besides quarantine controls, the supply of imports is determined by international trade policies, supply and demand factors, bilateral exchange rates and transport costs.
  - For example, if international demand increases for particular cuts, prices of other jointly produced cuts could fall, decreasing Australian import prices.

Importantly, direct competition between domestic and imported cuts of pigmeat in the processing sector has encouraged domestic producers to switch supply to, and promote expansion of, the domestic fresh pork market and export markets. Competition has also promoted efficiency and quality improvements.

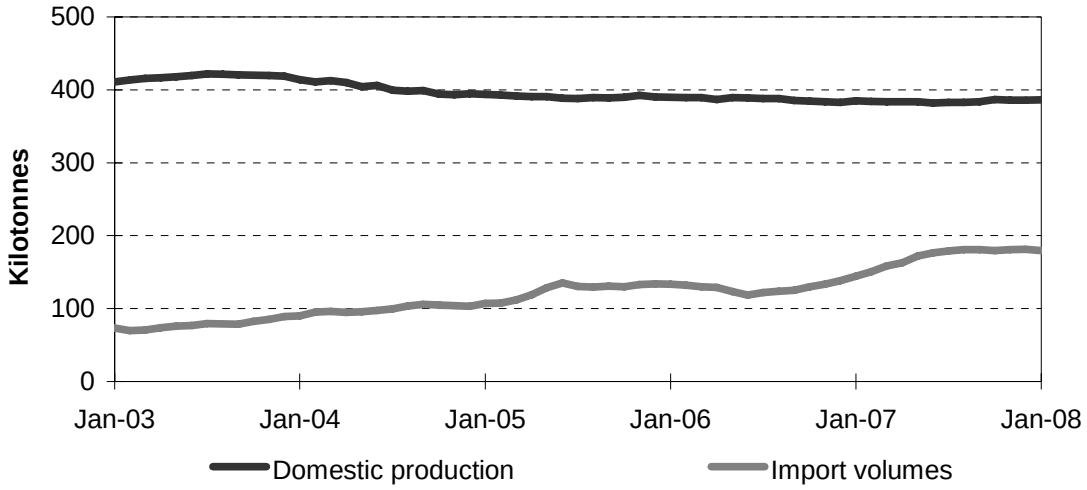
In the absence of growth in domestic production in recent years (figure 3.1), imports have effectively met market growth in total pigmeat consumption (with domestic producers increasingly supplying the fresh pork market).

3.2 What has happened to imports?

Imports from Denmark, Canada and the United States under tariff sub-heading 0203.29 totalled 104 000 tonnes in the financial year 2006-07, roughly 50 per cent higher than in the previous financial year and one-third higher than in 2004-05 (the previous highest level of imports). Imports in January 2008 were more than double

those in January 2003, and 2.4 times higher on a year-on-year basis. Imports have fallen since the record high levels reached early in 2007, with imports in the first two months of 2008 around 10 per cent lower than in the same months in 2007. As a result, the moving annual total has stabilised since the middle of 2007.

Figure 3.1 **Domestic production and import volumes[a] over the past 5 years**
Moving annual total



a Carcass weight equivalent, see box 3.2.

Data source: ABS (unpublished).

Domestic production in 2007 was marginally higher than in 2006, but lower than in previous years. Consequently, imports (converted to a carcass weight equivalent (cwe) basis — see box 3.2) expressed as a ratio of domestic output have increased significantly since 2002. The moving average share of imports to domestic production has increased from a little over one-third to just under one-half in the last year.

Was the increase 'recent enough, sudden enough, sharp enough and significant enough'?

As noted in chapter 2, it also must be demonstrated that the increase in imports has been 'recent enough, sudden enough, sharp enough and significant enough', although there do not appear to be objective standards for making this assessment.

Box 3.2 **Converting imported boneless pigmeat to its carcass weight equivalent**

Imported pigmeat is boneless, whereas Australian production is expressed in terms of its carcass weight (which includes bones). Imports therefore need to be converted to their carcass weight equivalent (cwe).

Inquiry participants have used a range of conversion factors:

- APL recommended a conversion factor of 0.56 (import volumes divided by 0.56).
- In their report prepared for APL, Mounter and Wijeweera used a conversion factor of 0.8 for middles and 0.56 for all other cuts (sub. 41, attachment II).
- MinterEllison used a conversion factor of 0.78 (sub. 43, p. 30).

The Commission, in its 2005 review, used a factor of 0.56 for leg cuts and 0.65 for middles, based on meat yields from Australian pigs.

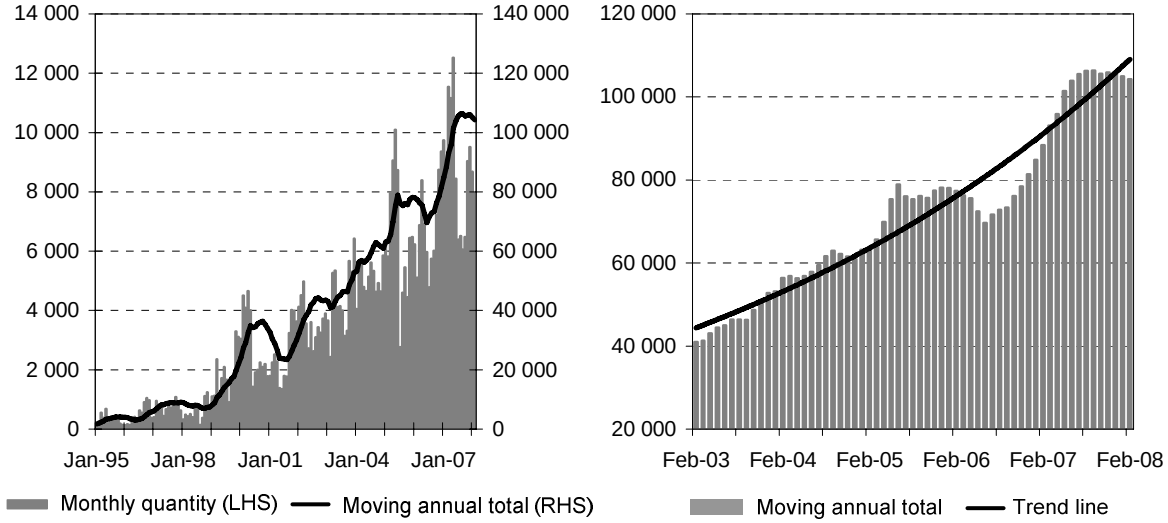
Using a different conversion factor for each cut of meat is problematic because the majority of pigmeat imported in 2006-07 was classified as 'other' than shoulders, middles or legs. However, where middles are separately identified, the higher conversion factor seems appropriate. In this report, a conversion factor of 0.65 is used for identified middles, and 0.56 for all other cuts (including those classified as 'other').

Applying this method, the conversion factor has been relatively stable for the last five years, between 0.58 and 0.60. As this conversion rate is at the lower end of estimates, when expressed as cwe, import volumes and market shares are likely to be an upper estimate. However, provided the composition of imports has not changed much, the percentage increase in imported pigmeat will be the same regardless of which conversion factor is used.

As shown in figure 3.2, imports have increased continuously since 1995, except for brief downturns in late 1998, 2001 and, most recently, in 2006. The increase in the moving annual total of imports in 2007 appears sharper than previous average annual growth. However, the 50 per cent increase in imports for 2006-07 was inflated because imports in 2005-06 were relatively low, partly due to legal action against changes in quarantine arrangements in 2004 (which was initially successful in 'setting aside' the quarantine changes, but overturned on appeal), and partly to international factors .

The right-hand chart in figure 3.2 shows the moving annual total of imports since February 2003. The fitted trend line to this chart shows that the import growth rate over the past five years has been increasing slightly. Imports have grown at an increasing rate, both over a one-year and five-year period. The ratio of imports to domestic production has also grown at a faster rate in recent times. As already noted, imports were equal to almost one-half of Australian production in 2007, compared with around one-third in 2006.

Figure 3.2 **Import volumes[a] have grown at an increasing rate**



a Tonnes, standard weight.

Data source: ABS (unpublished).

FINDING 3.1

Import quantities have increased both in absolute and relative terms. On balance, consistent with the requirements of WTO case law, the increase in imports appears to have been 'recent and significant enough, and sharp and sudden enough'. The extent of the increase in imports in 2006-07 was in part a consequence of an unexpected fall *in imports in 2005-06.*

3.3 Was the increase in imports due to unforeseen developments?

As set out in section 2.2, the safeguards criteria must be read in conjunction with GATT Article XIX. This requires that the increase in imports be the result of 'unforeseen developments'.

Some participants in this inquiry advocated a strict interpretation of the unforeseen development requirement. For example, MinterEllison, acting for the United States industry, argued that:

> In this inquiry, the developments that may be alleged to have led to an increase in imports, such as the appreciating Australian dollar, fluctuating feed costs and the removal of quarantine restrictions on imports of the specified goods from the United States, were readily foreseeable at the time of the Uruguay Round, when the obligations relevant to this inquiry were undertaken. (sub. 43, p. 9)

In contrast, APL argued that virtually none of the changes to quarantine restrictions or subsequent market developments could have reasonably been foreseen in 1994 when Australia became a signatory to the WTO:

> We believe that the increase in imports is the result of a number of unforeseen developments … the way that the Australian dollar has strengthened over the last period, the fact that we have been undergoing the worst drought in 100 years in this country and the impact that that has had on our costs of production and the global competitiveness of our product, the differentials in price that have existed between what the exporting countries to Australia can afford to place on their product, their prices, compared to what we consider to be prices driven by reasonable costs of production plus reasonable margins and perhaps, most importantly, the area of quarantine, where since 1994 there have been a series of relaxations of Australian quarantine brought about by a number of different situations, and I think in particular since that period Australia has had to look at its obligations under the SPS agreement and has had to change the way it approached quarantine. The way that that happened was not foreseeable in that it would require an assumption that the Australian quarantine regulations before that time were unlawful under World Trade Organization rules. (trans., p. 97)

The Commission does not accept that it was reasonable to assume that because Australia joined the WTO, its quarantine arrangements must have met the requirements of the new Sanitary and Phytosanitary Agreement. Indeed, a government report in 1996 had called for a broader approach to Australia's quarantine than 'a border or "barrier" approach' which, it claimed, had prevailed in the past (Nairn et al. 1996). Moreover, Australia's quarantine restrictions on imports of pigmeat (as well as a number of other commodities) had previously been criticised by trading partners (Snape et al. 1998). Furthermore, quarantine reviews had resulted in imports of frozen pigmeat from New Zealand and Canada being permitted from 1990 (see box 1.2), four years before Australia joined the WTO.

Nonetheless, although in the Commission's view further market opening could have been foreseen, with consequent increased import competition, whether developments generating the *extent* of import growth since 2004 and, in particular, the increase in the first half of 2007, could have been foreseen is moot.

Changes in quarantine arrangements

In a review of pigmeat quarantine arrangements in 2004 (prior to imports from the United States being permitted), Biosecurity Australia (2004) projected that *unrestricted* pigmeat imports (that is, imports in the absence of quarantine restrictions such as post arrival processing) would range from a minimum volume of 50 000 tonnes, with a 'most likely' volume of 90 000 tonnes, to a maximum of

150 000 tonnes.[1] These scenarios were used to model disease risk, which provided a basis for determining quarantine protocols.

Actual imports in 2006-07 totalled 104 000 tonnes, about 15 per cent above the 'most likely' scenario, but well within the range specified. However, imports in fact are not 'unrestricted': only some countries meet quarantine requirements and all imports must be cooked, either in Australia or prior to export. This assessment is reinforced by the USDA (USDA 2005, cited in PC 2005, p. 31) which reported that:

> [The US Embassy in Canberra] expects that US imports will reach 10 000 [metric tonnes] in 2005, nearly seven per cent of total imports. It is expected that most of the growth in imports from the United States will come at the expense of Canadian product. (pp. 3, 21)

The prediction of 10 000 tonnes proved to be low — the actual amount was almost double at 18 553 metric tonnes, before climbing to 19 208 metric tonnes in 2006 and around 28 000 metric tonnes in the ten months to October 2007, equal to around 29 per cent of total imports. Moreover, the evidence suggests that US imports have not simply displaced Canadian imports — Canadian import volumes have remained steady at around 35 000 metric tonnes. MinterEllison's assertion that the rise in the United States' share of total imports at the expense of Canada's share demonstrates displacement (sub. 43, p. 36) fails to take into account absolute import quantity growth.

International factors may have contributed

The increase in imports from the United States has been assisted over the past two years by the appreciation of the Australian dollar against the US dollar (around 20 per cent). Over the same period, the Australian dollar has been relatively steady against the Danish Kroner and Canadian dollar (see figure 3.10).

The greater than anticipated increase in imports following the 2004 quarantine review also may have resulted from the deepening of the market, which allowed importers to increase their reliance on imported product.

[1] These estimates in part were based on New Zealand's experience. At public hearings in Canberra, Mr Knud Buhl, Director of International Affairs, Danish Bacon and Meat Council, suggested that Biosecurity Australia's projections could not have assumed unrestricted imports, because New Zealand also imposed processing requirements on pigmeat imports (trans., p. 144). However, Biosecurity Australia states that it used information relating to the 12 months prior to that country imposing processing controls on pigmeat imports (2004, p. 36).

Production levels in exporting countries increased

Pigmeat production increased by around 7 to 8 per cent in Denmark and the United States over the past five years, but has fallen slightly in Canada. Much of the increase in production in Denmark and the United States (3 percentage points) occurred in the last 3 months of 2007, when exports to Australia were steady.

One possible explanation for increased production in the United States is growing international demand, particularly from China. Exports of all pigmeat from the United States to China increased by 130 per cent in 2007 compared with 2006. Exports of frozen cuts (under tariff classification 0203.29) increased by 158 per cent. Although it has not been possible to obtain data, anecdotal evidence suggests that China primarily demands middles. Due to joint production of different cuts of a pig, this might have contributed to increased exports of legs and shoulders from the United States to Australia.

The impact of recent changes in foreign government assistance is unclear

In the Commission's 2005 report, the Organisation for Economic Cooperation and Development (OECD) producer support estimates for pigmeat producers were presented (PC 2005, p. 56). Compared with a producer support estimate of 3.59 per cent for Australia, the estimate was marginally lower for the United States at 3.56 per cent, and higher for Canadian producers at 8.45 per cent. The producer support estimate for pig producers in the European Union as a whole was much higher, 23.93 per cent, but assistance to Danish producers was found to be relatively low (PC 2005, p. 60). Although the OECD has released updated data for agricultural assistance, due to methodological changes, producer support estimates are no longer calculated by commodity (such as pigmeat).

Since 2005, there have been some changes in foreign government assistance, particularly in Denmark. The European Union introduced export subsidies in November 2007 equating to roughly A$0.50 per kilo for carcasses and A$0.30 per kilo for middles, replacing a Storage Aid Scheme briefly introduced in October 2007. De-boned middles (the cut typically exported to Australia) do not attract the export subsidy directly, but increased production of subsidised cuts might lead to increased exports to Australia.[2] Nevertheless, since the introduction of the subsidy, import volumes from Denmark have not increased unseasonally.

[2] All else equal, the subsidies will increase production of carcasses, leading to an increase in exports. However, because the subsidies only apply to certain exports, producers could substitute away from certain cuts (such as de-boned middles) into selling cuts that attract the subsidy. Consequently, at this stage, the net effect on export volumes *to Australia* is ambiguous.

Canadian producers have also made recent appeals to the Canadian Government for assistance. The Canadian Government has provided a number of measures (such as deferred interest repayments, Targeted Advance Payments, vaccination programs and a Cull Breeding Program), and several provincial governments have introduced loan programs with favourable interest rates. However, calls for increased income stabilisation have so far not been met, and the Cull Breeding Program will act to reduce production and increase prices, thereby helping Australian producers.

Although the latest US Farm Bill has not been finalised, the Commission understands that changes affecting the US pigmeat industry will not have much effect on overall support for producers. As such, support for US pig producers will remain around, or slightly below, that for Australian producers.

Domestic factors have also played a part

The rise in feed grain prices which began in early 2006, driven by drought in Australia as well as international factors, has acted to constrain the competitiveness of Australian pigmeat producers relative to imports (which, as discussed below, tend to be produced with lower-cost feeds), such that imports have supplied expanding local demand for pork.

The sizeable increase in imports during the first half of 2007 appears to reflect 'pre-emptive' buying of imports by smallgoods manufacturers, following relative scarcity of imports and consequent unusually high prices in late 2006, with large amounts of stock being placed in freezers. These reactions of importers, which the industry clearly had not anticipated, displaced the normal pattern of imports and prices over the course of 2007, and appear to have delayed somewhat the usual increase in prices prior to Christmas.

FINDING 3.2

While changes in quarantine arrangements affecting pigmeat imports should have been foreseen at the time Australia joined the WTO in 1994, the unusual recent pattern *of imports was a result of a number of unforeseen global and domestic developments.*

3.4 Is the industry suffering serious injury, or is it threatened?

In order to find serious injury, a list of factors must be assessed (section 2.2). It must also be shown that the industry in general, or those producers whose collective output constitutes a major proportion of domestic production, have been affected. In 2005, there were estimated to be 1900 pig producers in Australia, while the ABS estimates there were around 300 000 breeding sows in 2006. The top 20 abattoirs account for about 95 per cent of pig slaughters (chapter 4).

The Commission estimates that it received submissions from producers representing around one-third of pig production and more than half of primary processing. This evidence supplemented data from official sources and other evidence provided by industry organisations and State Governments providing broader industry information.

Production levels

Production has declined slightly over the last five years (see figure 3.1) and is expected to decline further in 2008 because of planned de-stocking. However, production for the domestic market (total production less exports) has remained relatively stable up until January 2008. The lag between reductions in sow numbers and slaughter numbers means that production will not fall for several months and could even increase in the short term if unmated sows are slaughtered.

Based on survey data, APL estimates that 27 per cent of producers are considering exiting the industry. These producers are mainly at the smaller end, and their reasons for exiting were not sought. Consequently, it is not clear whether they were closing their operations or selling or transferring them.

According to the same survey, 32 per cent of producers are estimated to be de-stocking. Sow numbers were expected to be 8 per cent lower in January 2008 compared with January 2007. Evidence from individual producers was consistent with this, although a number of those who made submissions, or who appeared at public hearings, stated that they intended to ‘hang on’ for a while before making a decision to exit the industry or to de-stock. The Victorian Farmers’ Federation (sub. 13) claimed that, in Victoria, 28 pig producers had left the industry or had downsized (a total reduction of 6000 sows), or are considering their options (another 4500 sows were considered to be ‘at risk’). Furthermore, most of the 16 000 sow reduction announced by QAF will occur in Victoria (box 3.3).

Box 3.3 **Australia's biggest pigmeat producer cuts production**

QAF Meat Industries is the largest pigmeat producer in Australia. Its operations include pig production, slaughtering and boning. QAF represents about 18 per cent of domestic pig production and 10 per cent of primary processing.

QAF announced a 30 per cent cut in production for 2008, amounting to a reduction of 16 000 sows and 300 000 pigs produced. Staff numbers will be reduced by 200 (20 per cent) across pig production and abattoir operations. QAF expects the reduced capacity utilisation to increase unit costs by 5 per cent for pig production and 10 per cent for abattoir operations.

Source: QAF (sub. 73).

Evidence submitted by primary processors also corroborates currently steady production, but with the expectation that declining sow numbers will result in a 10–20 per cent fall in pigmeat production over the next 9 to 12 months.

Consumption and sales

Consumption of domestic and imported pigmeat has increased about 25 per cent in the last five years, in line with national income. Consumption per capita has increased almost 20 per cent, and pigmeat has increased from roughly 18 to 20 per cent of meat consumption.

However, exports of pigmeat have decreased about 25 per cent in the last five years, albeit from an all-time high in 2002-03. The peak in exports reflected favourable exchange rates as well as disease outbreaks in other exporting countries (PC 2005, p. 25). As a result of lower exports, a greater share of production is supplying the domestic market.

The demand for fresh pigmeat has grown faster than the demand for processed pigmeat in recent years (figure 3.3). In 2006-07, fresh pigmeat represented about 45 per cent of consumption, up from 39 per cent in 2002-03. Per capita consumption of fresh pigmeat has increased by around 40 per cent since 2002-03, partly in response to the industry's marketing efforts (APL, sub. 41).

The combination of steady domestic production and growing consumption indicates a shift in sales. Due to quarantine restrictions, all of the growth in fresh pigmeat consumption has been met by domestic producers. The proportion of domestic production going to the fresh market has increased, from 45 per cent in 2003-04 to 59 per cent in 2006-07. With reduced supplies of domestic pigmeat to processing, the 'gap' has been met by imports.

A number of domestic pig producers argued that they have been 'driven out' of the processed market. Pricing structures have changed toward lighter carcasses with less back fat, more suitable for the fresh market (subs 31, 37, 38, 57):

> We are forced to sell our pigs at a lighter weight; processors do not need the heavier carcasses of either our bacon pigs or sows for smallgoods manufacture as they are able to use the imports. Even though we are selling these lighter weight pigs at a higher price, ie. $2.65 for a porker compared with $2.30 for a baconer, we are losing money. (BroadAcres Piavella Pty Ltd, sub. 57, p. 8)

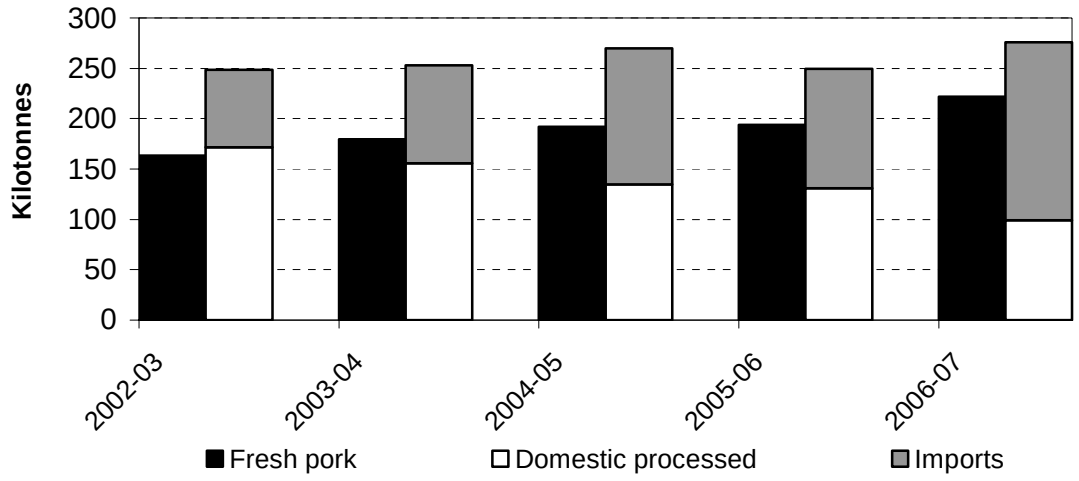
On the other hand, the Australian Meat Industry Council argue that because of the shift of domestic producers to the fresh market, 'the obvious conclusion is that the large smallgoods companies have imported pig meat to make up the shortfall from domestic production' (sub. 35, p. 10).

Whether some domestic producers have deliberately shifted to the fresh market seeking higher prices, or pricing structures have induced other producers to grow lighter pigs, the effect is the same. As explained in section 3.1, domestic production will shift to the fresh market because of higher relative prices, until returns are equalised across the two markets.

The market share of imports

Since 2002-03, the import share of the processed pork market has increased substantially, from 31 per cent to 64 per cent (cwe basis). In terms of the total Australian market for pork, imports now account for around 36 per cent, compared with less than 20 per cent in 2002 (figure 3.3).

Figure 3.3 **Fresh and processed pork consumption[a], by source**



a Apparent consumption, calculated as domestic production plus imports (cwe basis), minus exports.

Data source: APL (unpublished).

Productivity and capacity utilisation

Pig producers have achieved some productivity gains in the last five years, including improvements in fertility and feed efficiency, as well as reduced mortality (see chapter 4). However, other countries have achieved similar gains.

As noted above, some producers have switched their production from baconers to porkers, which has decreased the size of their pigs and consequently increased unit costs. However, the decision to switch to porkers relates to higher relative prices in the fresh retail market.

Many pig producers who are de-stocking and some primary processors who have reduced throughput have reduced their capacity utilisation. However, some rationalisation, as well as a fire at the Port Wakefield processing facility in South Australia, led to increased capacity utilisation for some operations. Given anticipated falls in domestic pigmeat production, there is a strong expectation that capacity utilisation will fall in 2008, resulting in higher unit costs and lower productivity, particularly for processors, reflecting a loss of scale economies.

Profitability

In the short run, the production of pigmeat is relatively 'inelastic'; that is, it cannot be altered much in response to changes in demand or other shocks. This means that in response to a market 'shock', prices tend to overshoot their long-run level, and can impose large losses on owners of specific or 'sunk' capital in the industry. Over time, production will be cut back in response to lower prices and some growers and processors could be expected to leave the industry, or at least output levels will be reduced. As a result of this longer-term adjustment, the price of pigmeat will rise to a new 'equilibrium' price.

Perhaps not surprisingly, given production lags, much of the evidence regarding injury received by the Commission focused on reductions in profitability and financial losses. Many pig producers claimed that currently they were incurring losses of between $5 and $50 per pig. Other pig producers claimed a 'reduction in revenue' of $30 to $60 per pig, although this was relative to prices in late 2006, which had reached a four-year high.

The current concerns about profitability were first expressed only after mid-2007. APL's first media release in two years about distress in the industry is dated 10 September 2007. The timing of these concerns coincides with seasonal prices falling below the average of the last five years, as well as a sharp increase in feed costs. These factors are discussed further in section 3.5.

In the accelerated report, average losses were estimated to range from $20–$30 per pig (PC 2007a, p. 30). Since then, prices increased somewhat in December but, as usual, began to fall after the Christmas peak. While prices were below average in late 2007, in March 2008 they were around 5 cents per kilo *higher* than the seasonal average (the average price over the last five years for the same time of year). But wheat prices remain high and have even increased slightly, although falls in sorghum and barley prices might provide an opportunity to reduce costs.

Overall, the evidence of losses at current prices remains persuasive. Combining evidence from an array of sources, average losses are estimated to range from $20–$30 per pig. Such losses do not appear to be within 'normal' cyclical bounds. APL survey data also show that 73 per cent of pig producers extended debt levels in the past 12 months to keep existing operations running (not to expand them).

Evidence on current profitability of primary processors was less consistent, with some reporting profit increases and others profit reductions. But all expect a reduction in profits in 2007-08: based on responses to the Commission's request for information, an average reduction in profits of around 50 per cent is anticipated.

Employment

In 2006, 3200 persons were employed in pig farming operations (ABS unpublished data). More recent data are not available, but employment in the pig farming sector is closely related to the number of sows. Hence, employment losses in this sector precede falls in production. About half of the pig producers who gave evidence to the inquiry reported reducing employment in 2007, by between 10 and 40 per cent. Several reported cancelling contract grower arrangements.

Primary processors were expecting to reduce their workforces by between 10 and 20 per cent in 2008. For example, QAF announced that it will reduce the number of shifts at its processing plant in Corowa in 2008 (see box 3.3). Submissions also indicate reduced shifts or employment in processing facilities in New South Wales, Queensland and Western Australia (subs. 31, 73, 75, 79, 92).

FINDING 3.3

Most pig producers are experiencing reduced profitability and many are suffering financial losses, resulting in reductions in breeding sows and employment levels, with consequent negative impacts on production expected in 2008. In the Commission's assessment, the pig farming part of the industry is accordingly suffering serious injury.

The evidence for primary processing is less consistent. Some operators have reported increased profits, whereas others have reported lower profits, reflecting variations in throughput and industry rationalisation as well as 'one-off' events. Overall, with pig production levels steady so far, there is not clear evidence that the primary processing part of the industry is currently suffering serious injury. However, clear evidence exists that serious injury is 'threatened': pig production levels are set to fall, reducing profitability due to lower throughput and increased unit costs.

Overall, the domestic industry producing products 'like or directly competitive' with imported pigmeat is suffering serious injury or is under threat of serious injury.

3.5 Have increased imports *caused* or *threatened to cause* serious injury?

As set out in section 2.2, the safeguards criteria require that the *increase* in imports, not the *presence* of imports, must be the cause of serious injury or threat thereof. The safeguards rules also require that other factors that 'are causing injury to the domestic industry at the same time ... shall not be attributed to increased imports' (Commonwealth of Australia, Special Gazette No. S297, 1998).

The remainder of this section examines data relevant to these two requirements. Econometric and economic analysis are then used to help assess the causal link between increased imports and serious injury.

Effect of imports on domestic prices

The key mechanism through which increased imports cause injury to a domestic industry (though simultaneously bringing gains to consumers) is by *driving down the market price*. Initially, this will reduce profitability of the domestic industry, inducing a reduction in output until profitability is restored at the lower price. In short, lower import prices and higher import volumes expand the market, but also crowd out higher cost and less competitive domestic production. Therefore, a key question is what impact the *increase* in imports has had on domestic prices.

The Commission's analysis of recent trends in import and domestic prices suggests that, despite increased imports, import prices (as measured by unit values[3]) have

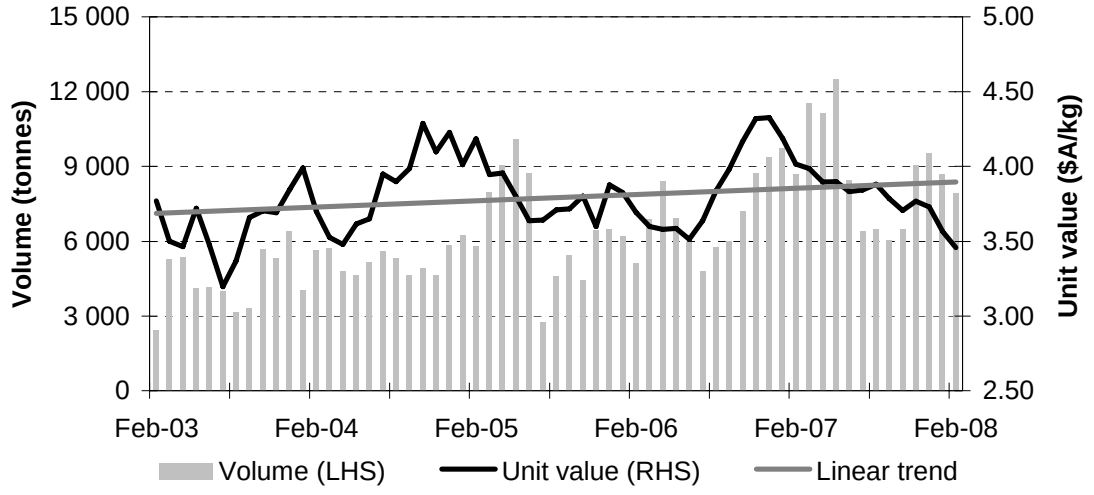
[3] Unit values are not traded prices, however, which could be higher or lower depending on market conditions at the point of sale. Nevertheless, on average over time they provide a good indication

increased on average over the past five years, notwithstanding the recent fall (figure 3.4). Furthermore, domestic producer prices, which are heavily influenced by import prices, have remained within normal annual cyclical bounds.

Import unit values

The quantity and average unit value of total pigmeat imports are shown in figure 3.4. The average unit value of imported pigmeat was around $3.50 in February 2007. This was down from a peak of a little over $4.30 in December 2006 (a 20 per cent decline). However, the average unit value in December 2006 was high compared with the experience of the past five years — indeed, the average unit value of imported pigmeat in December 2006 was at its highest since 2002. That said, import values have fallen in the latter half of 2007, which is atypical compared with patterns in previous years.

Figure 3.4 **Import unit values and volumes over the past 5 years**
February 2003 to February 2008

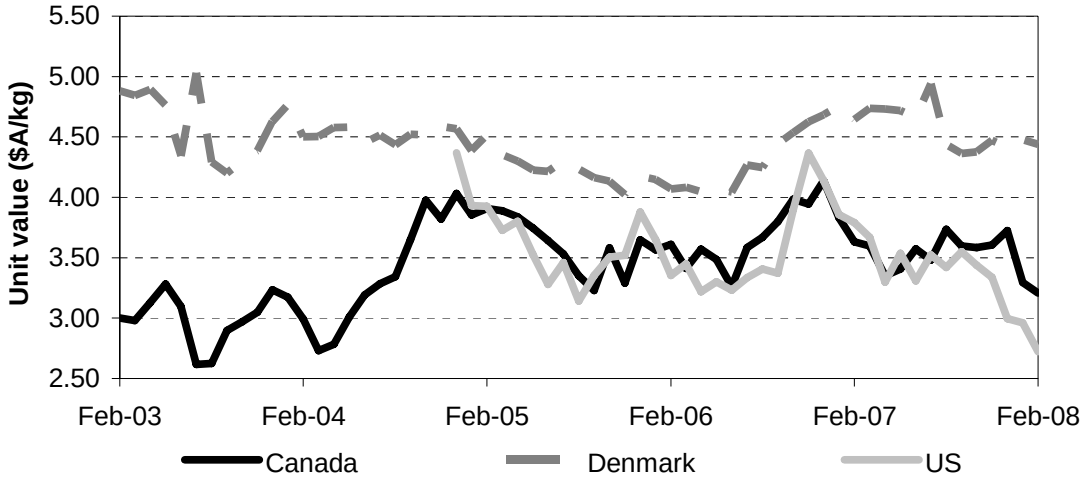


Data source: ABS (unpublished).

Figure 3.5 shows how import unit values (averaged across different cuts) have changed for the three countries from which Australia almost entirely sources its imports. The series for the United States commences in December 2004, the month in which Australia first imported pigmeat from the United States.

of price movements, provided the composition of imports and nature of each product remains relatively consistent. This is supported by the fact that import unit values and domestic prices have closely tracked one another. Finally, the unit values reported will systematically understate actual import prices because they exclude freight and insurance costs and any importers' margin.

Figure 3.5 **Import unit values of the 3 supplying countries**
February 2003 to February 2008



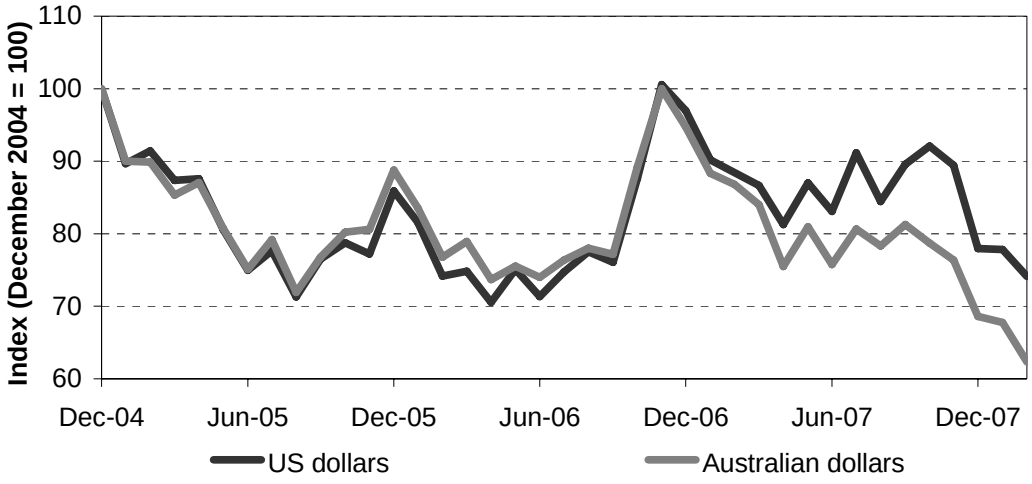
Data source: ABS (unpublished).

Danish values have been consistently higher than those for US and Canadian imports. This premium for Danish product probably reflects both its quality and type (middles). Current import unit values for Denmark are down on their 2006-07 highs, but are at their 5-year average and well above previously recorded lows.

Import unit values for US and Canadian imports are broadly similar, presumably reflecting the comparable nature of their exports and the level of integration of the US and Canadian markets. Import unit values for US and Canadian imports have declined since their highs at the end of 2006. However:

- while unit values of imports from the United States have fallen significantly, much of this can be attributed to the appreciation of the Australian dollar against the US dollar. Import unit values expressed in US dollars have fallen since late 2007, but remain above levels recorded in previous years (figure 3.6)
- Canadian import unit values remain have also fallen in 2008, but are above levels recorded in previous years. The recent divergence of Canadian and US import unit values reflects the sharp weakening of the US dollar.

Figure 3.6 **Import unit values of US imports in Australian and US dollars**
December 2004 to February 2008



Data source: ABS (unpublished).

Domestic pigmeat prices

As shown in figure 3.7, domestic prices for baconers and porkers have fallen from comparatively high levels in late 2006. The peak prices in late 2007 were about 30 cents per kilo lower than in the previous year, about 5 cents below peak prices in 2002, 2003 and 2004, but well above 2005 prices. The 2007 trough in prices was around 5 to 10 cents higher than in 2003, 2004 and 2005, but 10 cents lower than 2006. In year average terms, domestic prices have increased since 2002-03. APL forecasts this trend to continue over 2007-08 (sub. 41, p. 41).

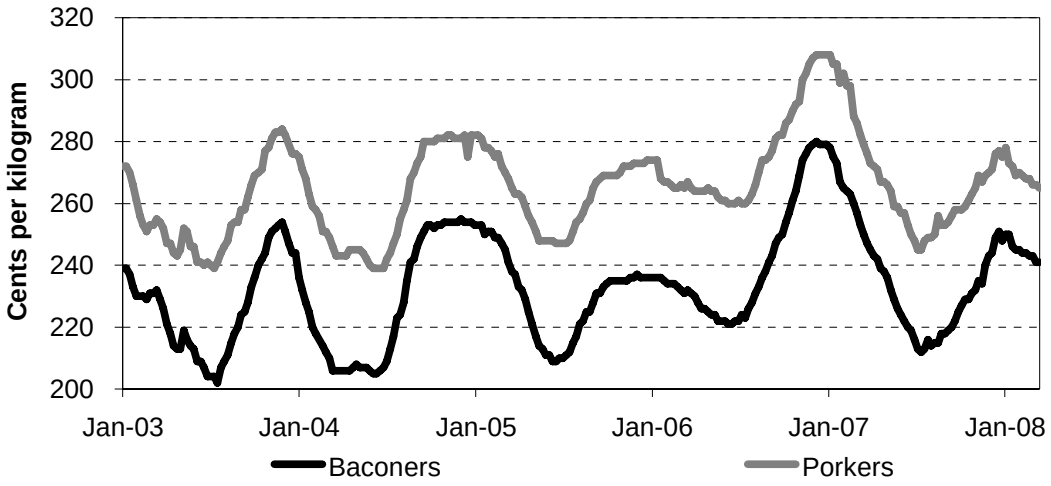
As foreshadowed in the accelerated report (PC 2007a), the increase in pig prices in the lead-up to Christmas 2007 was somewhat later than normal (figure 3.8). A widely cited reason for this is that smallgoods manufacturers had large amounts of imported pigmeat in storage, acquired early in 2007 following a period of relatively low import supplies and high domestic prices in late 2006. Manufacturers clearly are prepared to pay a 'risk premium' to ensure supplies of pigmeat, but they may have 'overbought' last year. Such actions might have temporarily suppressed domestic prices somewhat, but by 2008 prices were above the seasonal average.

Although pig prices were around 10 to 15 cents per kilo lower than average for several months in the second half of 2007, prices were around 15 to 20 cents per kilo *higher* than average in the first half of 2007.[4] Over the entire year, prices were

[4] Prices were also well above average in the second half of 2006.

around 4 cents per kilo *above* average, and have remained above average in 2008.

Figure 3.7 **Weekly contract prices for baconers[a] and porkers[b]**
3 January 2003 to 14 March 2008

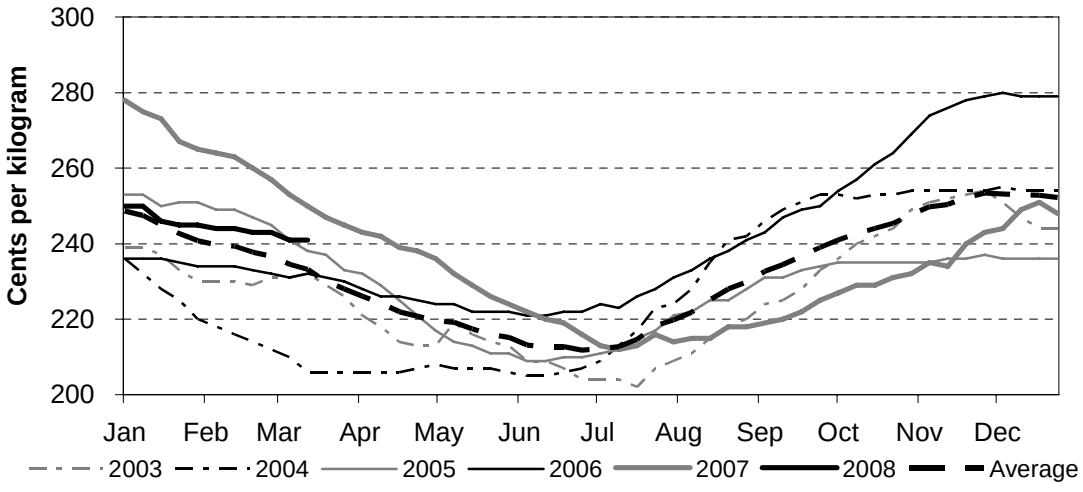


a 60-75kg, 12-13mm back fat. **b** 45-60kg, 11-12mm back fat.

Data source: APL (unpublished).

Put another way, the price cycle in 2007 appears to have been around 4 to 6 weeks later than in previous years. The trough in prices was delayed a few weeks, and prices in early December 2007 were the same as average prices for late October.

Figure 3.8 **Seasonal pattern of weekly baconer[a] prices**
3 January 2003 to 14 March 2008



a 60-75kg, 12-13mm back fat.

Data source: APL (unpublished).

Why haven't import unit values increased with rising international feed costs?

APL argued that imports are causing injury by constraining the ability of domestic producers to pass on higher costs (sub. AR118, pp. 5, 9). Further, APL asked why, given the increase in grain costs worldwide, foreign producers have not passed on their costs in the form of higher prices for their exports to Australia (which would have allowed Australian producers to increase their prices).

That world pigmeat prices have not yet risen to reflect higher world grain prices is not surprising. Barring other 'shocks' or policy interventions, this will only occur as world production is cut back to restore industry profitability. As in Australia, world pigmeat production cannot be cut back instantaneously when costs rise relative to prices received. There is evidence that pig producers in countries that are net exporters of pigmeat, such as Canada, Denmark and the United States, are currently suffering reduced profitability or losses due to high grain costs.

Although pig prices in Canada and the United States are currently lower than a year ago, this reflects production decisions made prior to the increase in feed costs in 2007. However, pig prices can be expected to increase as planned production cuts flow through.

Other nations are also taking steps to cut production. As noted earlier, Canada recently announced a plan to pay pig producers $225 plus the cost of slaughter and disposal for any sow or boar slaughtered, provided these pigs do not enter the food chain. The intent of the program is to reduce Canada's breeding herd by 10 per cent (Agriculture and Agri-food Canada 2008).

Finally, it should be noted that the ability of producers to pass on rising costs is constrained in all countries by the availability of substitutes, particularly other meats. An example of this can be seen in the reported inability of major processors to pass on higher costs to consumers in the United States (Sterrett 2008). This also constrains the ability of foreign producers to increase the price of cuts exported to Australia.

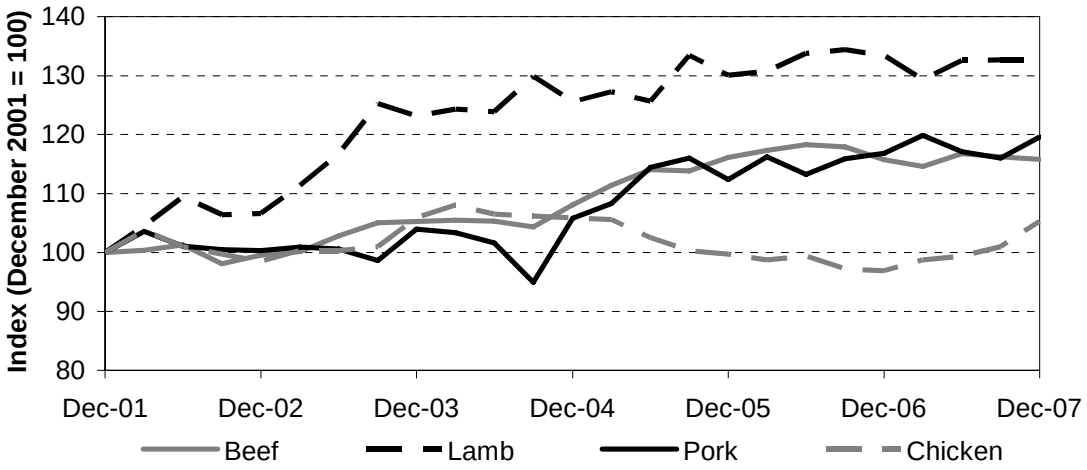
The role of other factors

The safeguard criteria require that the role of factors other than increased imports must be explored in assessing injury causation. Possible 'shocks' driving lower profitability include reductions in local and export demand for Australian pigmeat, and cost increases.

Diversion of Australian exports into the domestic market can suppress prices. As discussed in section 3.4, exports have fallen from record highs in 2002-03. However, because total production fell by a similar amount, such that production for the domestic market has been relatively stable, there is no evidence that falling exports have depressed pigmeat prices.

Retail and producer prices of pigmeat can also be influenced by changes in the retail price of substitute meat products, which affect consumer demand. As shown in figure 3.9, the retail price of pork generally has moved in line with lamb and beef, with prices of all three meats trending slightly upwards since 2005. There is no evidence that other meat prices have reduced demand for pork and depressed pigmeat prices, thereby causing serious injury to the industry.

Figure 3.9 **Australian retail meat price trends**



Data source: ABARE (unpublished).

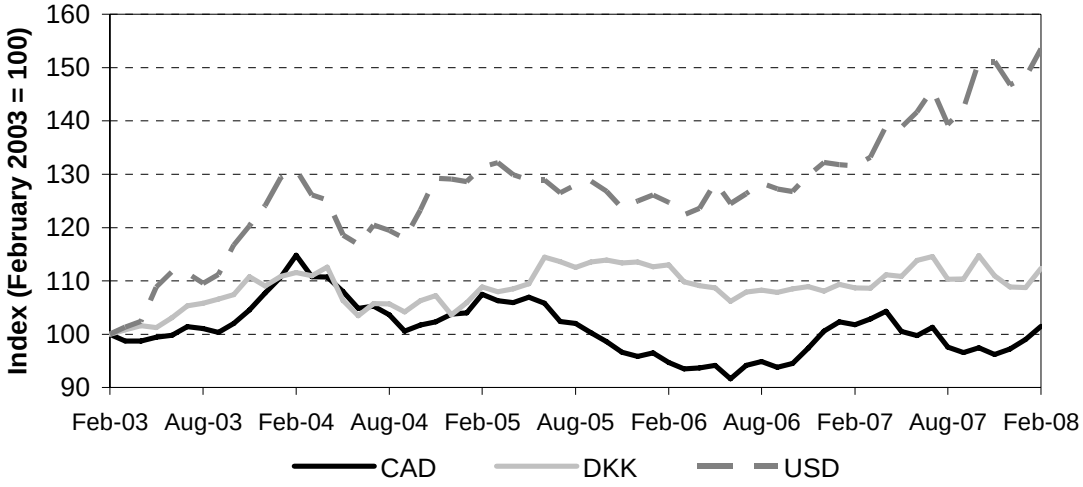
Exchange rates

As discussed above, appreciation of the Australian dollar against the US dollar of around 10 per cent since the middle of 2007 will have reduced the Australian dollar price of imports from the United States by around the same amount (figure 3.10). At the same time, currency appreciation against the Japanese Yen and some other currencies will have tended to reduce demand for Australian pigmeat exports, encouraging diversion of local production to the domestic market and potentially placing downward pressure on prices.

The Australian dollar has moved little overall against the Danish Kroner and the Canadian dollar in recent years. Therefore, the bilateral exchange rates with these

countries will not have had much impact on import unit values. However, the Commission understands that the Canadian and US pigmeat markets are essentially inter-linked to the extent that Canadian prices track US prices (in US dollars). As such, Canadian import unit values have fallen somewhat to maintain competitiveness with similar US cuts.

Figure 3.10 **Bilateral exchange rates with major importing countries**
Foreign currency per Australian dollar



Data sources: x-rates.com; RBA (2007).

Feed costs

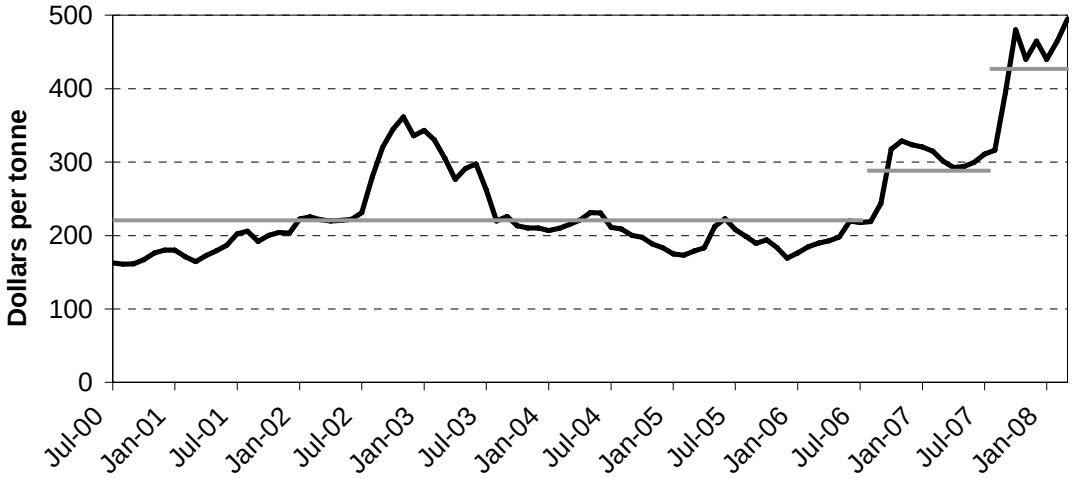
Feed costs typically account for around 55 or 60 per cent of a pig producer's total costs, with grain representing 80 to 85 per cent of these costs. Grain costs soared to record highs in late 2007. Major factors behind these price increases are bad weather (particularly the drought in Australia), growing worldwide demand (and government support) for ethanol, and strong economic growth in China and India (see chapter 5).

For much of 2007, grain costs were similar to those prevailing at the time of the 2003 drought. However they rose to record levels in October, with feed wheat peaking at $A480 a tonne (figure 3.11). The price dropped back to between $A400 and $A435 a tonne in November, but rose again in December to $A465 per tonne, and increased again in March 2008. Even $A400 represents more than a doubling in price since May 2006.

There is evidence that Australian producers, largely dependent on wheat, are being disadvantaged more than foreign competitors (especially the United States and

Canada) who are able to use other crops, particularly corn. Wheat prices have increased more than corn prices since late 2006, both in absolute and relative terms. This has exacerbated an inherent advantage held by North American producers, as corn was already significantly cheaper than wheat (PC 2005). This is discussed further in chapter 5.

Figure 3.11 **Feed wheat prices[a] have jumped not once but twice since 2006**
July 1990 to March 2008



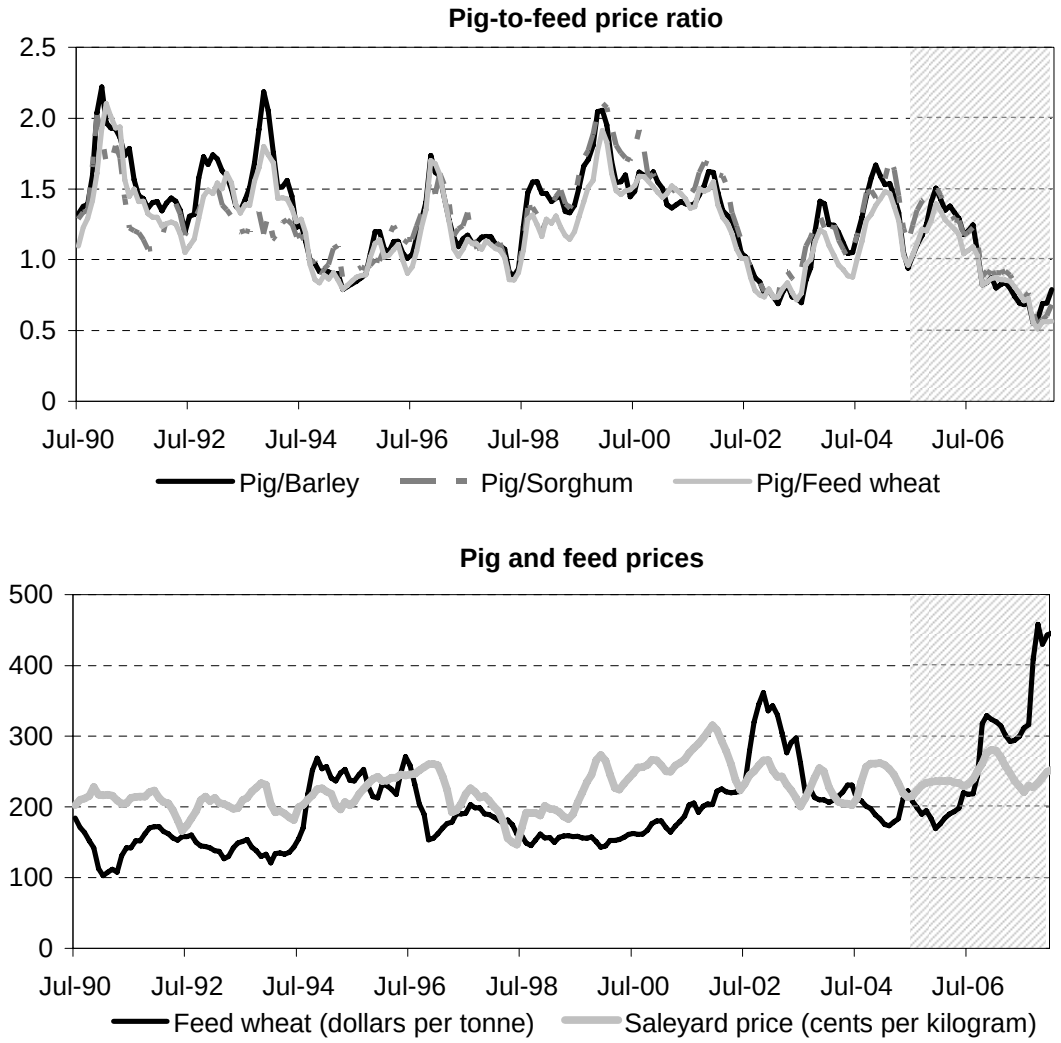
a Based on average quote for delivery, Sydney. Grey lines represent averages over the relevant period.

Data sources: ABARE (unpublished), The Land (various issues).

APL estimates that higher feed costs (averaging $280 per tonne) added about 20 to 30 cents per kilo (depending on feed conversion efficiency) to domestic costs in 2006-07 (to about $2.50 per kilo cwe), compared with average feed costs over the previous six years. However, feed costs further increased sharply in the first few months of 2007-08, adding another 40 to 50 cents per kilo. The average cost of feed wheat since July 2007 is over $420 per tonne, around $200 per tonne higher than its average cost before June 2006.

This means that costs of production in January 2008 were 70 to 80 cents per kilo higher than in early 2006, more than $50 for an average-sized pig, and well above average prices received of $2.50 per kilo. This has driven pig/feed price ratios to record lows (figure 3.12) and significantly reduced profitability. Given that current losses are estimated to range from $20–$30 per pig, without additional feed costs, many if not most pig producers would likely be making a profit.

Figure 3.12 **Pig and feed price movements**
July 1990 to January 2008



Data source: ABARE (unpublished).

Econometric and other economic analysis

To help shed light on the issue of causation, the Commission undertook econometric modelling, which uses historical data to help understand how various aspects of the market for pigmeat are related, such as domestic prices and production, import volumes and unit values, and feed costs. APL also provided its own econometric analysis, which was updated to take into account concerns the Commission raised in the accelerated report. Detailed results from the Commission's modelling, and that provided by APL, can be found in appendix C.

Although modelling results can help understand the market, they are limited by the available data, and vary according to the assumptions used in the model. Hence, caution should be used in applying estimated quantitative relationships between imports and the domestic industry, and other relationships. Having said that, there were some consistent results across various models, and those relevant to the issue of causation are presented below.

Increased import volumes were estimated to have only a small effect on prices

As noted earlier, imports can cause harm to a domestic industry principally by driving down domestic prices and profitability, precipitating a contraction in production. The Commission's modelling provided some evidence that increased imports led to a small decrease in domestic prices, but the effect was delayed by up to 3–4 months and transitional. (In some of the models used, the relationship was not statistically significant and was sensitive to the period being investigated.) For example, when analysing the relationship between imports and domestic producer prices since 2000, modelling suggested that a 10 per cent increase in import volumes led to a temporary decrease in domestic prices of around 0.5 per cent.

These results are consistent with observation. For reasons outlined earlier, there was a large increase in imports at the beginning of 2007, and consequently prices fell slightly below their seasonal average levels for some months at the end of the year. However, the effect was small and temporary, with domestic prices subsequently rising *above* normal seasonal levels.

Increased imports did not reduce domestic production in the model

Changes in domestic production can be used as a guide to measure changes in output and employment numbers in the industry. For example, if production fell, it is likely the industry would suffer employment losses (a 'rule of thumb' is that every 100 sows requires one full-time worker).

None of the modelling (in the Commission's analysis or that provided by APL) showed that increased imports had led to a decrease in domestic production. (In fact, some results suggested a counterintuitive *positive* effect on production.) Thus, while import volumes have increased markedly since around 2000, this appears not to have been to the detriment of domestic production. This is probably because production has been able to divert to the fresh domestic and export markets (the modelling does not differentiate markets). The modelling does not clarify whether imports have *caused* this switch, or if it reflects industry attempts to expand the fresh pork market (or both).

Results suggest that import prices, not volumes, were the main driver of domestic prices

All models showed a strong link between domestic prices and import prices (as measured by import unit values). Domestic and import prices can only be 'out of alignment' in the short-run: otherwise arbitrage opportunities open up, encouraging manufacturers to switch supply to the cheaper source.

In the model, a 10 per cent decrease in import prices is estimated to reduce domestic prices by around 5 per cent. Moreover, this effect occurs almost immediately.

Modelled feed price increases could not be fully passed on, with or without imports

A number of participants said that, in the absence of imports, producers would be able to recover the increased costs of production from rising feed prices. But the model indicated that only *some* of the increase in feed costs can be recovered by price rises even without import competition. Prior to 2000, a 10 per cent increase in feed prices was estimated to lead to a 1.3 per cent increase in domestic prices. With import competition, the price increase received was around 0.5 per cent. Full cost recovery would require an increase in output prices of around 5 per cent. In short, without imports, producers received price compensation equivalent to about one quarter of the feed cost increase. With import competition, they receive about 10 per cent.

Estimated econometric relationships are consistent with imports meeting market growth (at broadly constant prices)

Modelling results suggest that imports have not driven prices down significantly, but that they have met market growth while domestic production has remained fairly stable. As noted previously, pigmeat consumption has increased by 25 per cent in the last five years, while import unit values and domestic prices have remained fairly stable. Processed pork consumption increased by around 40 000 tonnes, fresh pork consumption increased by around 70 000 tonnes, and import volumes increased by around 112 000 tonnes. In other words, the evidence of imports having only a small effect on prices and production is consistent with an increase in demand driving increases in imports (see appendix C.6).

An increase in processed pork consumption will be met predominantly by imports, because import supply (sourced from several large exporting nations) can respond more easily to demand increases. An increase in fresh pork consumption will encourage domestic producers to switch to supplying the fresh market, with imports meeting the shortfall in the processed market.

The modelling also supports the contention that higher costs have been a major cause of serious injury because prices cannot rise by the full amount of the cost increase. This is the case both with and without imports, although as expected, the availability of imports places additional constraints on price rises.

The Commission's assessment

As discussed in section 3.4, the majority of the evidence establishing serious injury centred on reduced profitability and financial losses, leading to planned cuts in production and unemployment. These concerns only became widespread in the second half of 2007. Domestic prices were around 10 cents per kilo below the seasonal average in the second half of 2007, although the evidence indicates that this was because normal seasonal price rises in the lead up to Christmas were later, rather than smaller, than usual.

There is some evidence that the unusual pattern of imports in 2006 and in early 2007 contributed to the unusual pattern of prices in the second half of 2007.[5] However, this temporary change in the seasonal price pattern, in and of itself, would not have caused serious injury. Furthermore, to the extent that increased imports in early 2007 drove lower prices in late 2007, compounding for a time the harm caused by higher feed costs, the effect was temporary and relatively small.

Although domestic prices are currently lower than the unusually high levels at the same time last year, they are *above* the seasonal average of the past five years. This, together with evidence that trend import unit values have risen since 2002 (despite significant currency depreciation against the US dollar), suggests that other factors are responsible for the current profit squeeze. In particular, higher production costs have been driven by a sharp rise in feed costs since mid-2007, equivalent to cost increases of 40 to 50 cents per kilo, which, together with increases in feed costs in mid-2006 of about 20 to 30 cents per kilo, have increased costs in total by 70 to 80 cents per kilo or $50 per pig.

Most submissions and other evidence given to the inquiry from pig producers and processors recognised that rising feed costs were a major cause of the industry's problems, but they blamed imports for effectively capping their ability to raise prices. By the same token, many acknowledged that if feed prices were, say, around $250 per tonne (which is still above the average for the past five years), they would be profitable at current pig prices.

5 There is also evidence that it was the unusually high prices in 2006 that caused the unusual pattern of imports in 2007.

As discussed in section 3.1, the *availability* of imported pigmeat limits the duration and extent of any upward movement of domestic prices, as well as the potential for increased prices driven by higher domestic costs. But this 'price capping' effect is to be expected and has been building for more than fifteen years, since import competition was first permitted (see PC 1998).

The Commission does not accept the argument that such 'price capping' is a result of the recent *increase* in imports — that is, a view that with fewer imports, prices would be higher and, therefore, *increased* imports are *causing* serious injury. It is always the case that import competition constrains or suppresses domestic prices (that is the main source of the gains from trade); but it does not follow that imports must consequently be the cause of serious injury. In the present case, this would be akin to blaming domestic competition from other meats for suppressing cost-driven price increases in a protected domestic market. (As discussed earlier, the Commission's modelling indicates that even without import competition, local producers could expect to receive a price increase equivalent to around one–quarter of the increase in their costs.)

That increased imports have caused serious injury by suppressing the ability of domestic producers to pass on cost increases has never been successfully argued in a safeguards case (Sykes 2006, p. 188). As discussed further in chapter 6, acceptance of such logic would lead to import protection being based on domestic cost disability which, in the Commission's view, never has, nor should be, the rationale for emergency action under the WTO.

FINDING 3.4

Increased imports have not caused and are not threatening to cause serious injury to the domestic industry. The overwhelming cause of serious injury has been higher domestic feed costs. The Commission accordingly finds that safeguard action against imports of frozen pigmeat is not warranted.

Because the Commission considers that clear evidence of causation from increased imports to serious injury is wanting, it has not considered what safeguard measures would be appropriate to remedy serious injury, or, as would have been required by the Terms of Reference, whether those measures should have been implemented.

Whether any other policy responses are appropriate is considered in the following chapters.

4 Developments in industry structure and operation

The Terms of Reference instruct the Commission to have regard to the work being undertaken by the Pork Cooperative Research Centre (Pork CRC) and examine and report on whether:

- there have been any changes that have taken place in the structure or operating methods of the industry since the Commission's 2005 inquiry into the Australian pigmeat industry; and
- there are any immediate actions that could be taken to complement the work of the Pork CRC to alleviate the impact of changes in the price and availability of feed grains.

This chapter analyses the background, and key aspects, of changes in operational methods and structure affecting the pigmeat industry since 2005, including the role of government in facilitating such changes. Issues regarding the cost and availability of feed are discussed in chapter 5.

4.1 Background to recent developments in structure and operation

The Commission's 2005 report into the Australian pigmeat industry provides the background for the analysis presented in this chapter. After examining the broad market environment affecting the pigmeat industry, its competitive situation and outlook, the report found that the industry had been affected by pervasive structural and operational changes:

> Australia's pig production and primary processing sectors continue to experience significant structural change, as in many other countries. Pigmeat production has increased, while the number of pig producers has declined substantially. The primary processing sector has also become more concentrated, with many abattoirs becoming more specialised. (PC 2005, p. xxxiv)

These changes were driven, in part, by trends in business competitiveness. For example, it was found that changes in grain prices and availability have significant effects on pigmeat business costs (chapter 5).

Governments and industry have worked in partnership over many years to address the potential opportunities and challenges posed by structural and operational change, and developments in the feed grain market. For example, the Australian Government established the Pork CRC to conduct research to improve industry efficiency (box 4.1).

Box 4.1 **The Pork Cooperative Research Centre**

In December 2004, the Australian Government announced the establishment of a Cooperative Research Centre (Pork CRC).

The objectives of the Pork CRC are to reduce pig herd feed costs, improve herd feed conversion efficiency and demonstrate the health benefits of consuming nutritionally enhanced pigmeat products. The Pork CRC conducts three broad research programs:

- Program 1: Securing more reliable and consistent supplies of protein and energy for pig diets.
- Program 2: Improving herd feed conversion efficiency.
- Program 3: Enhancing capacity to deliver nutrients that promote health and well-being through pork.

It is expected that these research and other activities will lead to reduced production costs in the industry, as well as increase the demand for niche Australian pork products.

The Pork CRC is supported by Australian Government funding of $25.8 million over seven years, and is complemented by an additional $55.8 million from industry participants (including pig producers and processors, feed and therapeutic manufacturers and suppliers, New Zealand Pork Industry Board, State Governments and universities). The Pork CRC is constituted as a company limited by guarantee and is governed by a nine-person board.

Sources: Nelson (2004); PC (2005).

The activities of the Pork CRC complement activities undertaken within the pigmeat industry to adjust to structural and operational changes.

4.2 What are the key changes since 2005?

As illustrated by a number of submissions, pigmeat producers continually refine their operating methods to reduce costs and improve sales. In addition, changes in the overall composition of the industry have taken place in response to internal and external economic pressures.

The causes and consequences of changes in structure and operating methods are complex and typically inter-related. For example, they encompass market influences such as the introduction of new technologies and responses to changes in consumer tastes, as well as government influences including changes in trade and investment barriers and regulations (PC 1998a). There is no single indicator that would capture the extent to which these changes have occurred.

The number of pigmeat industry participants has fallen

The Australian Bureau of Statistics (ABS) has not published information on changes in the number of pig producers in recent years. The most recent data, for 2004-05, indicate that the number of pig producers across Australia (1923 establishments) had declined by about 4 per cent compared to the previous year. This represented a continuation of the adjustment experienced by the industry prior to the liberalisation of Australia's pigmeat quarantine arrangements. As noted in chapter 3, information received by the Commission during this inquiry suggests that the number of pig producers has declined since 2004-05 and is expected to decline further in 2007-08.

In general terms, the distribution of pig producers remains skewed in favour of small herds (with fewer than 100 sows) (chapter 3). Many of these smaller producers typically attain their incomes from other agricultural activities — such as grain production or dairying — and, as in the past, opportunistically enter the market when pig prices are high and exit when prices are low.

Notwithstanding this, and despite some annual variations in pig producer numbers, the overall trend has been in favour of larger herd sizes over time. This is reflected in the greater number of producers with 100 sows or more — representing about 25 per cent of total producers as at June 2005 compared with about 18 per cent at June 1998 (ABS unpublished). Herd consolidation has been accompanied, to some extent, by the emergence of more specialised, integrated production units within the industry.

There are no official statistics available on the number of specialist pigmeat processors, since many facilities slaughter more than one species of animal. Nonetheless, business counts data from the ABS reveals that there were 546 meat processing establishments across Australia in 2006-07 — down from 669 in 2003-04 (ABS 2007a).

Supplementary information provides some indirect evidence of rationalisation in domestic pig processing in recent years. According to information provided by the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF),

over 50 abattoirs that process pigmeat have ceased payment of the pig slaughter levy since March 2005, although this could overstate the actual number of abattoir closures as the data include changes in ownership. Since 2005-06, only two of these abattoirs were among the 20 largest, suggesting that most closures were of smaller facilities (DAFF, pers. comm., 17 January 2008).

Employment in the industry has also fallen

Estimates from the 2006 ABS Census of Population and Housing indicate that approximately 3200 people were directly employed by pig producers (chapter 3), compared with about 3500 in 2001 (there is no official data on employment in primary processing). Reductions in employment have been evident for some time, with expectations that additional jobs could be shed in the industry during 2007-08 (chapter 3).

The availability and cost of skilled labour have been raised as concerns by the industry in recent years. Economy-wide factors have played a part in affecting labour availability and costs, as well as industry-specific challenges associated with attracting labour to work in pig farms and processing plants located in rural and regional areas.

While there are no official data on labour costs in the pigmeat industry, unpublished survey information provided by Australian Pork Limited (APL) suggests that average total labour costs (including on-costs) have increased from about $458 per sow in 2004-05 to about $483 per sow in 2006-07.

Some pig producers have sponsored migrant employees on Temporary Resident 457 visas to help address labour shortages:

> Westpork employs 60 people. With record low unemployment rates in Western Australia finding staff has been extremely difficult. Fortunately we have been able to bring in skilled workers under the 457 visa program to fill the void of local staff. (Westpork, sub. 3, p. 4)

The PPC-Linley Valley Pork abattoir in Western Australia also employs foreign guest workers (Craig Mostyn Group 2006).

To address skills deficiencies, APL and other bodies provide education and training programs (including scholarships) for young people interested in working in the industry.

Recent investment trends have been mixed

Although there are no official data on business investment or changes in capital stock, there is some evidence of continuing investment.

Notable projects in recent years include:

- reconstruction of the Primo processing facility in Port Wakefield, South Australia, at a cost of about $28 million, in 2007-08
- the completion in 2007 of a $4 million pork boning line at the PPC-Linley Valley Pork abattoir in Wooroloo, Western Australia.

A number of submissions have also referred to infrastructure upgrades undertaken in response to changing regulatory obligations — for example, in the areas of animal welfare and environmental amenity (subs. 16, 38, 52, 80, 92).

However, given the sensitivity of investment to the perceived economic outlook of the industry, the Commission has also received reports from some industry participants that their investment plans have been deferred (either temporarily or permanently):

> Our plans to expand the piggery via eco shelters … are on hold because of the downturn in profit from the piggery. (Ludale Pty Ltd, sub. 22, p. 1)

Production, consumption and export patterns have changed significantly

The structure of production and changes in demand (including in export markets) can have significant implications for the long-term viability of the pigmeat industry.

The domestic market for pigmeat is highly competitive. Consumer demand for pork is sensitive to variations in its own retail price, as well as to prices of substitute meats such as beef, lamb and chicken. Growth in consumer incomes also affects the demand for pigmeat and other meats (Sheales, Ashton and Apted 2004).

As noted in chapter 3, Australian consumption of pigmeat has increased from about 421 000 kilotonnes in 2002-03, to about 512 000 kilotonnes in 2006-07. However, with import competition for processed pork products, pig producers have increasingly 'switched' their production and marketing efforts away from processed outputs towards the fresh pigmeat market.

Together with the shift of domestic production to satisfy consumer demands for fresh pigmeat, there has also been a long-term trend towards the production of leaner pigs to meet consumer preferences for pork products with less fat (for example, 'rind-on' bacon with little fat). In general, Australian pigs are grown to a

weight that is, on average, smaller than those grown in overseas competitor markets. For example, the average carcass weight for pigs in Australia of about 73 kilograms in 2002 compares to about 77 kilograms in Denmark, and about 86 kilograms in Canada and the United States (Sheales, Apted and Ashton 2004). This trend has tended to increase unit costs for the industry:

> To meet the specifications of the Australian domestic market, BPA [Burnett Pork Alliance] has decreased the slaughter weight of pigs and … decreased the back fat measurement of slaughter pigs. These changes have enabled BPA to meet the tighter market specifications, however lighter pigs and a reduced P2 measurement increases the cost of production. (Burnett Pork Alliance, sub. 8, p. 3)

A number of inquiry participants called for alternative pig payment systems that provide sufficient feedback to producers to improve yield and quality. In particular, they stated that a major problem with the current P2 system is that it bases payment to producers on weight and fat, rather than on lean meat demanded by buyers. The APL Strategic Plan for 2005–2010 identifies a need to improve market signals through the implementation of lean meat yield measurement systems (APL 2005b).

The operating environment for the pigmeat industry has also been affected by consumer demands for 'cleaner, greener' meat alternatives. In response, a number of producers have introduced 'free range' pork products onto the market, where the general movement of pigs is unhindered by cages, sow stalls or farrowing crates. Similarly, some producers have developed 'pasture production' systems whereby pigs spend time in open paddocks. Some producers are also selling organic pork products which are free of chemicals and other residues.

Consumer preferences have influenced production behaviour in other ways in recent years. For example, the development of 'moisture infused pork' products, which are processed with water and salt for greater meat tenderness, has become more commonplace in Australia. Pigmeat has also been produced and processed to avoid or remove evidence of 'boar taint'.[1]

The Commission's 2005 report into the Australian pigmeat industry stated that one of the defining features of change in the industry had been its increasing integration into the global pigmeat market. Apart from import competition for the domestic market, '[e]xports of pigmeat increased substantially from $56 million in 1997-98 to $195 million in 2003-04' (PC 2005, p. xix).

[1] Australian producers generally do not castrate male pigs, with the result that most male pigs are slaughtered before they reach sexual maturity in order to avoid 'boar taint' (an unpleasant odour that can be released during cooking) in pigmeat products (Sheales, Apted and Ashton 2004).

Since August 2005, the overall trend for Australian pigmeat exports (by volume) has remained relatively stable — although exports have softened over the course of 2007 (chapter 3). While there are a number of factors contributing to this trend, the appreciation of the Australian dollar over the past twelve months, together with the resurgence of production within some Asian countries after disease outbreaks in the late 1990s, have been central. Nevertheless, the industry notes that some of Australia's export markets have remained solid over the past year:

> The stronger Australian dollar (A$), which developed during the year, put pressure on export volumes, but it is heartening that our Singapore business has held up under this pressure. Our core advantages, as a supplier into this market, remain as the proximity to airfreight in fresh product, our high pig health status and the image and loyalty generated through the AIRPORK brand. (APL 2007a, p. 3)

The industry is pursuing economies of scale

The industry has tended to become more efficient overall as the number of larger operations has increased and smaller enterprises have left the industry. Larger operations tend to have a production cost advantage through their ability to realise higher outputs per unit of fixed costs. Therefore, trends in achieving economies of scale have significant implications for the competitiveness and efficiency of pigmeat enterprises.

As noted above, Australian pigmeat production is increasingly characterised by the prevalence of larger producers. A number of submissions to the inquiry have referred to efforts by individual producers (including contract growers) to increase the scale of their operations (box 4.2).

There has also been an increasing concentration of primary pigmeat processors across Australia. From 2003-04 to 2006-07, the five largest abattoirs increased their share of the national pig slaughter from about 53 per cent to about 60 per cent, while the 20 largest abattoirs in Australia increased their share from about 91 per cent to about 95 per cent (DAFF, pers. comm., 15 January 2008).

Despite the efforts of the domestic industry to increase its scale, it remains very small in comparison with its international competitors. The average herd size of Australian pig farms was about 150 sows in 2002. This compares to producer herd sizes of 1200 in Denmark, 1100 in Canada and 800 in the United States (APL unpublished).

Box 4.2 **Economies of scale in Australian pig production**

While there remains cyclical variability of production in response to market conditions, a number of producers tendered evidence stating that they have increased the scale of their operations. Efforts to increase scale have typically taken place over a lengthy period of time:

- 'Westpork was formed in 1985 by building a 400 sow farrow to finish facility. … Today Westpork operates 7,500 sows (including unmated gilts)'. (Westpork, sub. 3, p. 4)
- 'The period 2002–2007 has been a period of rapid growth for Ludvigsen Family Farms. We have expanded from 850 to 1400 sows'. (Ludvigsen Family Farms, sub. 17, p. 3)
- One member of the Dalby Focus Group stated that '[w]e settled in Gayndah in 1987 and expanded the herd from 150 sows to 450 sows'. (Dalby Focus Group, sub. 36, p. 15)
- 'We have been very successful in our efforts to increase production and have almost doubled our sow numbers since 1999'. (Salt Lake Bacon, sub. 52, p. 1)
- '[Since 1979] the enterprise has grown from 100 sows to 650 sows producing two-week-old weaners for QAF under contract'. (Maysleith Farms Pty Ltd, sub. 83, p. 3)

Domestic pigmeat processors are also relatively small from an international perspective. QAF Meat Industries — Australia's largest processor — has an average throughput of about 18 200 pigs per week, followed by Swickers (14 400), Big River Pork (11 500) and PPC—Linley Valley Pork (9600). In the United States, Smithfield Foods' pork segment processes about 500 000 pigs per week. The Danish Crown processing plant in Horsens, Denmark, processes about 78 000 pigs each week. In Canada, the Maple Leaf pork processor in Brandon, Manitoba, processes about 75 000 pigs each week, while the OlyWest processor in Winnipeg, Manitoba, has a processing capacity of about 45 000 pigs per week.[2]

It is widely acknowledged that the Australian pigmeat industry is characterised by limitations of scale:

> [the Australian pigmeat industry] lacks scale, and does not have sufficient horizontal or vertical integration or modern processing plants running at high capacity utilisation. (APL 2005c, p. 6)

[2] The data quoted in this paragraph are based on Commission estimates, and are drawn from inquiry submissions and/or hearing transcripts (for domestic enterprises) or from online material (for international enterprises).

While many Canadian, Danish and US businesses have been able to achieve economies of scale (in both pig production and processing), the pursuit of similar scale economies will be difficult to match profitably in Australia in the short term. Indeed, it has been argued in recent years that some Australian pigmeat abattoirs and boning rooms continue to retain excess capacity, which may have the effect of increasing per unit costs and making the sector less competitive than would otherwise be the case (PC 2005).

The industry has become more integrated and specialised

Many Australian pigmeat businesses have become increasingly integrated over time. For example, some producers have formed horizontal linkages by either merging or forming cooperatives and alliances. In addition, some entities have become vertically integrated with ownership or contracts across the supply chain. For example, the Australian Pork Farms Group is part of an integrated pigmeat supply chain consortium, with a majority shareholding in Auspork Ltd (a marketing and abattoir–owning firm based in Laverton, Victoria) as well as shares in the Big River Pork abattoir in Murray Bridge, South Australia (sub. 33). In some cases, linkages extend from pig production through to the processing of pigmeat into bacon, ham and smallgoods (table 4.1).

Table 4.1 **Vertical integration of selected large pigmeat processors[a]**
2006–07

	State	*Pig farm operations*	*Abattoir*	*Boning room*	*Associated smallgoods operations*
Big River Pork (Auspork, GWF, B.E. Campbell, others)	SA	No	Yes	Yes	No
Burrangong Meat Processors	NSW	No	Yes	No	No
Cassino RSM (Northern Co-operative)	NSW	No	Yes	Yes	No
Diamond Valley Pork	Vic	No	No	Yes	No
KR Castlemaine Foods	Vic	Yes	Yes	Yes	Yes
Port Wakefield (Primo Australia)	SA	No	Yes	Yes	Yes
PPC-Linley Valley Pork (Craig Mostyn Group)	WA	Yes	Yes	Yes	No
QAF Meat Industries	NSW	Yes	Yes	Yes	No
Swickers Kingaroy Bacon Factory (Hans)	Qld	Yes	Yes	Yes	Yes

a Processor size is based on pig slaughter levy data collected by the Australian Government Department of Agriculture, Fisheries and Forestry.

Source: APL unpublished; PC (2005).

The use of contracts has increased in the Australian pigmeat industry, across all stages of the supply chain. Apart from pigs produced by a vertically-integrated business, most are sold by direct consignment. Many pig producers sell a carcass that must be within a tightly specified weight range and fat level, or bear a heavy price discount. Another common practice is for abattoirs to kill pigs under contract for producers, manufacturers or wholesalers (without ownership changing hands), and the producers, manufacturers or wholesalers then on-sell the processed pigmeat (PC 2005).

In addition to pig producers that directly breed and grow out their own pigs ready for slaughter, some farms specialise in either breeding, weaning, growing out or finishing pigs for other producers (or processors) under contract:

> Contracting (or grow out of pigs) is a very successful risk management strategy (especially in biosecurity) and also capital leveraging strategy. It also facilitates the supply of specialist housing and infrastructure requirements which can be met directly. It also allows innovation costs to be met more quickly. (Victorian Farmers Federation (VFF), sub. 13, pp. 4–5)

According to APL, there were about 480 contract pig growers across Australia as at June 2004 (APL 2006b). The growth of contract growing is underlined by information presented to the inquiry that about 35 per cent of the national production stock has been transferred into the hands of contractors over the past decade (VFF, sub. 13).

Some processors have also contracted out the growing of pig herds. For example, 70 per cent of pigs processed by B. E. Campbell were acquired through contractual arrangements (sub. 31). These pigs are sourced from growers in New South Wales, Victoria, Queensland and South Australia.

A number of advantages have been cited by industry participants in support of more integrated supply chain linkages. These include greater security in sale and supply, the achievement of greater economies of scale and the ability to coordinate certain innovations such as product quality improvements and tailored marketing. Other benefits could also accrue — for example, the Dalby Focus Group of producers based in Queensland provided the Commission with detailed information on the group's financial and operating results against a range of industry benchmarks (sub. 36). However, these and other benefits should be weighed against potential risks such as the reduction of operator flexibility in the face of changing market conditions.

In conjunction with trends towards increasing integration, producers and processors have also tended to become more specialised in their operations. For example, as noted above, some producers are becoming specialised in certain aspects of pig

growth or are selling brands of pigmeat with certain attributes (for example, free range pork). On the processing side, some facilities have gained accreditation to process pigmeat for export markets — there are currently 11 pig abattoirs and boning rooms with AUS-MEAT export accreditation status.

The industry has a variety of risk management strategies in place

As noted in the Commission's 2005 report, changes in the structure of pig production — including the move towards specialisation in production and processing — have been accompanied by changes in the level of risks faced by the industry. Some major forms of risk include business risk (arising from uncertainties in future input and output prices and natural events that affect expected production or market opportunities), financial risk (where the expected availability and cost of finance might not materialise) and sovereign risk (where governments could change policy settings that affect the profitability and survival of the business) (PC 2005).

In general, large-scale specialist producers and processors do not have the same flexibility as smaller diversified operators to adjust their operations in response to price and other market fluctuations. Further, supply chain integration implies that pig production and processing cycles must be carefully sequenced to maintain throughput and avoid production bottlenecks. In these cases, producers have limited flexibility in timing their sourcing of inputs such as feed grain and labour.

The capital intensity of pig farms and processing plants typically means that operators have large amounts of sunk capital, and must continue to generate cash flow to service debts. Therefore, such enterprises are sensitive to changes in prices and costs. In addition, the specificity of capital in the industry suggests that it is difficult for operators to adjust their size, or reallocate scarce resources to other agricultural activities, if market conditions change dramatically. These and other factors heighten the risks associated with large, unanticipated variations in prices of inputs and outputs (PC 2005).

In recent years, there has also been a growing awareness of potential risks attributable to animal disease outbreaks, food scares and bio-terrorist activities (APL 2005a, p. 14).

A number of risk management strategies have been employed by industry participants. Fixed or forward price contracts have become more commonplace to help smooth fluctuations in pig or feed prices. Specifically, a number of producers have sought and achieved long-term supply agreements with processors, and have also entered into contracts with grain farmers or companies that produce pre-mixed

pig feeds (chapter 5).[3] The use of futures or options markets are also used to hedge against detrimental input or output price movements, as well as exchange rate fluctuations.

In recent years, APL has complemented these activities by providing regular market intelligence to members, as well as information on available risk management strategies to address conditions such as drought or feed grain prices. In conjunction with government, APL has also introduced quality assurance programs to help manage food safety risks and, through it, improve pork quality — these include the Porksafe 'crisis management' system and the Australian Pork Industry Quality Program (see below).

The industry has experienced significant technological change

A key source of change in the pigmeat industry is the adoption of new or improved technologies. By utilising inputs and other resources more efficiently, technological change can play a critical role in facilitating industry competitiveness and productivity growth. Further, technologies that alter pig breeding, production and management techniques have implications for the biological performance and well-being of pig herds.

Some examples of technological advances in Australian pig production in recent years include:

- the development of methods to improve pig herd feed conversions, including the use of new feed ingredients (for example, plant extracts and different grains) and other compounds (such as cytokines), improvements in the metabolic efficiency of pigs (for example, by manipulating feed intakes for weaners and growers) and new feed intake and wastage measurement technologies (Campbell 2006).
- improvements in pig health management through the use of vaccines and probiotics to ameliorate the risk of disease outbreaks on farms.
- the application of new pig housing technologies where, for example, feeding, watering, climate control and waste disposal are largely carried out by automated equipment (OECD 2003). These technologies have been accompanied by other improvements in animal husbandry practices, such as the use of multi-site, single sex or phase feeding facilities to promote herd health and product quality.

[3] Long-term grain storage is another option open to some producers, including during periods of relatively low grain prices.

Primary pigmeat processors are also adopting new and improved technologies to reduce costs and improve pigmeat quality. For example, B. E. Campbell has invested in Danish pigmeat processing equipment, packaging facilities and an information technology system to help manage their supply chain relationships (sub. 31). The PPC-Linley Valley boning room in Western Australia incorporates processing automation technologies, carcass testing techniques such as the use of chromameters to monitor pork colour, and differential pigmeat chilling regimes suited for various export markets (Western Australian Pork Producers' Association, sub. 92).

Pig genetic technologies

An issue raised by the industry during this inquiry relates to access to imported pig genetic material. Improved genetics can potentially raise the productive potential of pig herds through improved growth rates, feed conversion, meat quality, disease resistance and reproductive performance.

While Australian producers currently rely on domestic gene sources for their herds, the importation of pig genetics has been banned (except for one importation from Norway) since 1995 on quarantine grounds. According to Sheales, Apted and Ashton (2004), there is a significant trade in genetic material between Europe and North America which, in effect, creates a larger gene pool from which producers can improve desirable genetic traits. For example, the Danish Bacon and Meat Council suggested genetic improvements led to an average herd feed conversion rate of 3.6 in Denmark, compared to about 4 in Australia (trans., p. 141).

A number of submissions to the inquiry suggested that Australia's restriction on pig genetics sourced from overseas presents competitive disadvantages for the domestic industry (box 4.3).

Biosecurity Australia is preparing a final import risk analysis report on pig semen from all countries. A draft paper was released in 2000 which proposed the selective importation of material. In its representations to Biosecurity Australia on this issue, APL raised concerns that the draft import risk analysis did not adequately address the potential quarantine risks posed by the importation of genetic material (APL 2002). APL has argued that the introduction of diseases borne by imported genetic material into Australia, such as Porcine Reproductive and Respiratory Syndrome Virus and Aujeskys disease, could have a detrimental impact on the fresh pigmeat market.

FINDING 4.1

Australia's pig production and primary processing sectors have experienced further changes in structure and operating methods since 2005. There has been continuing rationalisation in the number of industry participants. In addition, processors have become more concentrated over time.

The industry has sought to improve the quality of pigmeat products. It has adopted technologies to improve efficiency and competitiveness. Many producers and processors have also embraced new methods of organisation, as reflected in greater integration of supply chains and better risk management techniques.

Box 4.3 **Participant views on pig genetic quality in domestic and international markets**

A number of participants considered that restrictions on the importation of pig genetics into Australia disadvantages the domestic industry.

> Due to superior genetics, in particular with Danish pigmeat, processors are able to attain a higher yield processing certain cuts of imported pigmeat (such as Danish pork middles) versus domestic pigmeat. This is due mainly because of the *superior meat quality* brought about by genetics. (Primo Smallgoods, sub. 21, p. 3)

> The major pork exporting nations … have access to porcine genetics that are unavailable to Australian producers due to Australian quarantine restrictions. … Lack of access to advanced porcine genetics is a major impediment to productivity improvement within the Australian pork industry. (Department of Primary Industries, NSW, sub. 76, p. 10, 14)

The Australian Meat Industry Council (sub. 35) and the Queensland Departments of Primary Industries, and Tourism, Regional Development and Industry (sub. 79) raised similar concerns.

However, the view that quarantine restrictions on imported pig genetic material poses as a disadvantage to Australian pig producers is not universal:

> Over the last eight years, the major emphasis in our genetic program has been on product quality. Genetic lines produced at QAF have been successfully marketed in the United States. We therefore reject strongly the assertion that one of the major drivers for imports is improved product quality because of the superior genetics available overseas. (QAF Meat Industries, sub. 73, p. 3)

> Australia has equal quality and suitable genetics to rival any international benchmark. (Deni Piggery, sub. 94, p. 1)

4.3 What impact do regulations have on industry structure and operations?

As for other industries, pig producers and processors are obliged to comply with the regulations of Commonwealth, State and local government authorities. The regulatory environment within which pigmeat businesses operate can affect their ability to operate in an efficient and competitive manner.

Animal welfare

The compliance costs associated with animal welfare regulation (box 4.4) have been raised by some pigmeat industry participants. For example, animal welfare regulations that necessitate changes to the capital structure of existing premises — for example, alterations to housing arrangements to provide pigs with more space — have the potential to increase industry costs.

Box 4.4 **Model Code of Practice for the Welfare of Animals (Pigs)**

The Model Code of Practice for the Welfare of Animals (Pigs) (the Code) was established in 1989. It is intended as a guide for people responsible for the welfare of pigs under both intensive and extensive production systems. It outlines the responsibilities of those involved with pigs, including their accommodation, food, water and special needs. Another code applies to the transportation of pigs.

Over time, the Code has become increasingly prescriptive. For example, the latest revision outlines minimum dimensions for sow stalls and farrowing crates, minimum space allowances for pigs, the duration of time for sows to be confined in stalls and 'competency' standards for pig farm workers.

While it is not compulsory for State Governments to adopt the Code, in practice most jurisdictions have incorporated the Code into their respective Prevention of Cruelty to Animals legislation.

The Code is subject to a review process every five years. Reviews, and any subsequent revisions, are developed by an Animal Welfare Group appointed by the intergovernmental Primary Industry Ministerial Council body, in conjunction with Commonwealth and State agencies, CSIRO, the veterinary profession, industry, researchers, retailers, processors and animal welfare groups. The Code was last reviewed in 2007.

Source: APL 'Model Code of Practice for the Welfare of Animals (Pigs)' website.

As noted by APL, with reference to pig housing specifications:

> [there is] the matter of practical implications of trying to change dimensions of pig housing enclosures inside existing buildings. These facilities are literally "set in

> concrete" and also are supported by purpose built feeding, watering and drainage systems positioned very precisely to cater efficiently to the animals' requirements. (sub. AR118, pp. 34–35)

Additional expenses are also potentially incurred by producers in training staff to cope with changes to animal welfare regulations.

The pigmeat industry has highlighted tensions that can arise when regulatory settings change from voluntary industry self-regulation towards more formal, 'black letter' forms of animal welfare regulation imposed by governments. For example:

> Under South Australian law, the new edition of the Pig COP [Code of Practice] was automatically regulated under POCTA [Prevention of Cruelty to Animals] after it was endorsed by the Primary Industries Ministerial Council (PIMC). This 'entire code' regulation includes recommended practice and also the guidelines (these were never written to be or intended to be regulated), which poses risk to pork producers, particularly given the South Australia system of third party prosecutions for animal welfare. (APL 2007e, p. 12)

In a submission to this inquiry, APL noted that the more prescriptive nature of regulation in this area also has implications for the cost competitiveness of the industry:

> … producers have limited capacity to fund animal welfare changes as required by Primary Industry Ministerial Council and to be regulated by state governments. … proposed changes to the Code will not secure a price premium from consumers nor will there be an increase in productivity which would provide the funds to make these infrastructure changes. (sub. AR118, p. 35)

The Commission notes that APL has called on governments to provide support (payments of $125 per sow, up to $187 000 per herd/site) for farm infrastructure adjustments to meet animal welfare standards and regulations under the new code (sub. AR118).

While not endorsing this request by industry for additional funding, the Commission nonetheless considers that governments should ensure that regulation affecting the pig industry is the minimum necessary to deliver the objective of maintaining animal welfare. In particular, the Commission supports the sentiment expressed by APL that:

> … pig farming operations need flexibility to accommodate animal welfare requirements via an outcome-focused model that allows them a range of methods to comply depending on the individual freedoms and constraints of their operations. (sub. AR118, p. 35)

Some inquiry participants claimed that there were cost advantages for pigmeat imports that do not meet Australia's animal welfare standards (subs 33, 36, 38, 76).

However, the Commission notes that governments in some competitor countries, particularly in the European Union, apply stringent regulation in this area, and that individual producers overseas have also announced voluntary programs to improve animal welfare (Humane Society of the United States 2007).

RECOMMENDATION 4.1

Governments should undertake periodic reviews of pig animal welfare regulation, to ensure that it is imposing the minimum compliance requirements necessary to achieve its objectives.

Environmental amenity

A range of environmental regulations, most existing prior to 2005, have also been placed on the pigmeat industry. These typically govern issues such as odour emanating from facilities, disposal of waste and other by-products, the contamination of ground and surface waters and (in the case of extensive pig production) erosion and land degradation.

Some concerns have been expressed about overly prescriptive regulatory requirements in this area. In particular, APL has stated that pig producers face increasing barriers to entry and expansion as a consequence of such regulation (APL 2007e). The industry also claimed difficulties in complying with pollution and residue reporting standards, and privacy concerns with business information being published by government agencies.

Industry participants have also referred to the use of development approvals by local governments to ensure that new piggeries are located further from residential areas on environmental grounds (Welsman 1999).

Labelling

Pigmeat producers, processors, wholesalers and retailers use labels to convey information about their products. In some cases, labelling information is required by law or industry-specific regulation such as the Australia New Zealand Food Standards Code (ANZFSC). Businesses can also voluntarily use labels to promote specific attributes of their goods.

A number of submissions have criticised inadequate or inadequately enforced country-of-origin labelling of manufactured pigmeat products (bacon, ham and smallgoods).

For example, the Burnett Pork Alliance noted that:

> It is impossible to identify which meat products are made from solely Australian produced pigs. Correct labeling would allow Australian consumers to support the local industry. Current labeling only states the obvious, "made from local and imported product." Consumers are none the wiser because of current labeling standards. (sub. 8, p. 9)

The Dalby Focus Group stated that:

> Whilst recognising that APL's promotional focus is on fresh pork and bone-in Christmas hams, the group at times query whether they are actually supporting Canadian, Danish and/or American pig farmers particularly when the labelling regulations are so misleading. (sub. 36, p. 8)

Similarly, the Government of South Australia observed:

> On the demand side, actions such as labelling of fresh and frozen pork as Australian or imported would do much to raise consumer awareness about the country-of-origin of the products they are consuming, as well as enable them to make informed choices. This would allow for increased differentiation of the domestic product. (sub. 50, p. 12)

Houston Pork Wholesalers (sub. 72), Windridge Farms (sub. 80) and the Tasmanian Pork Alliance Inc. (sub. 91) raised similar concerns. Further, APL observed that:

> … it would not have been foreseen that Australian labeling laws and consumer protection authorities would not prevent certain forms of import practice. For example, one processor is currently inserting Australian bones into imported boneless legs which would naturally create the expectation that the meat itself was Australian. (sub. 97, p. 18)

As noted above, claims on labels about pork products are subject to government regulation and legislation, and market responses. The *Trade Practices Act 1974* (Cwlth) (TPA) does not require goods to be labelled with their country of origin. However, labels must accurately reflect the contents and attributes of the products concerned, and not mislead or be likely to mislead or deceive. The TPA also contains specific prohibitions against the making of certain false or misleading representations. State and Territory Fair Trading Acts contain provisions for the accurate labelling of goods (PC 2005).

Commonwealth and State consumer protection authorities play an active role in enforcing country-of-origin regulations. For example, the relevant authority in New South Wales is reportedly investigating allegations about misleading labels being attached to processed pigmeat (APL, sub. AR118).

In addition, the ANZFSC contains a standard (1.2.11) on the country-of-origin labelling of food (for Australia only). From December 2006, a specific subclause of the Standard requires that, for fresh and preserved pork, labels (on or in connection

with the display of food) must identify the country (or countries) of origin of the food, and contain a statement indicating that the foods are a mix of local and/or imported foods (where applicable) (Food Standards Australia New Zealand).

Under the general provisions of the TPA, for a food product to be labelled as 'Made in Australia', it must be substantially transformed in Australia and have at least 50 per cent local content. For a product to carry a 'Product of Australia' label, a producer must be able to show that Australia was the country of origin of each significant ingredient and all, or virtually all, processing occurred in Australia.

In a submission to the inquiry, APL raised difficulties faced by the industry in applying the TPA's 'Product of Australia' term for processed pork products:

> The intent is that the 'Product of Australia' tag be reserved for products that have no, or virtually no, imported content. However, small goods processed in Australia from 100% Australian pork are currently unable to use this label as brine, an essential ingredient in curing pork, includes imported chemicals that are unavailable locally. (sub. AR118, p. 55)

Further, APL states that the 'Made in Australia' label allows for imported raw materials to be sold in processed pork products, leading to confusion for consumers regarding the country of origin of products with this label.

In response to the problems posed by inconsistencies in the application of country-of-origin labelling standards, the industry has been proactive in developing a market-based consumer brand and certification system for Australian pork. With the support of the Australian Government, food growers (including the meat industry) launched a new 'Australian Grown' labelling scheme in July 2007. For a product to be affixed with an Australian Grown green-and-gold kangaroo logo, each significant ingredient has to be grown in Australia and all, or virtually all, of the processes involved in production of the good must occur in Australia. Where a product contains imported components, qualified claims are available. Businesses can also apply country-of-origin labelling voluntarily if they consider the benefits outweigh the costs (APL 2008a).

The Commission considers that developments within the Australian industry to develop brand labels for their pigmeat products represents the most effective response to the issues raised about the uncertainties of country-of-origin labelling.

Concerns have also been raised by industry regarding 'free range' and 'organic' labelling attached to (local or imported) pigmeat products (APL 2007e). There are currently no published definitions or standards for organic food production. However, Standards Australia indicated in 2007 that they will develop a new national standard for organic fruit and vegetables, meat and processed foods.

In relation to 'free range' pigmeat products, APL observed that a plethora of standards have been produced by supermarkets, animal welfare groups and other bodies:

> These variations in the definition of 'free-range' can confuse consumers and demonstrate the extra resources the pig industry has employed by having developed independent free-range standards. (APL 2007e, p. 16)

In addition to the work of Standards Australia on organic food labelling standards, the Australian Competition and Consumer Commission has recently targeted the prevention of misleading claims regarding the use of the terms 'free range' and 'organic' in food labelling (Burke 2006).

FINDING 4.2

Initiatives within the industry to develop brand labels that highlight specific product attributes — including under the 'Australian Grown' initiative — appear to be a more effective way of promoting domestic pigmeat products than relying on generic country-of-origin labelling.

Interjurisdictional inconsistencies

Finally, pig producers and processors have expressed concerns regarding regulatory inconsistencies across governments. Differences in regulatory definitions, compliance requirements and administration have posed difficulties for industry participants with respect to animal welfare, occupational health and safety, food safety and ethanol regulation (APL 2007e).

For example, the industry and governments have been collaborating on the development of a new pigmeat product traceability standard — known as the PigPass National Vendor Declaration (NVD) — encompassing all elements of the industry supply chain. However, as noted by APL in its submission to the Commission's Review of Primary Sector Regulatory Burdens:

> actual delivery of shared goals has been difficult. APL notes the difficulty experienced with the voluntary PigPass NVD program in coordinating the process of securing multi-agency involvement and support. (APL 2007e, pp. 12–13)

The Commission notes that there has been a new focus within COAG and relevant Ministerial Councils (such as the Primary Industries Ministerial Council) on harmonising regulation as well as strengthening regulation–making and review processes. However, in most areas there has been little progress in implementing changes.

RECOMMENDATION 4.2

Commonwealth and State and Territory Governments should continue work on promoting consistency of regulations across jurisdictions, including more harmonised implementation and enforcement processes where appropriate. Some of the major 'hot spots' for reform identified by the pigmeat industry include animal welfare, OH&S, food and ethanol regulation.

4.4 What are the impacts of government and industry programs?

Initiatives by governments and industry organisations can play a potentially significant role in facilitating adjustment and easing transitional pressures in the pigmeat industry.

Government programs

Drought assistance

Drought conditions can have pervasive economic, environmental and social impacts. The extent to which pigmeat producers are affected depends, in part, on their production systems and management strategies. In particular, conditions that raise feed grain prices increase production costs and can affect the economic viability of piggeries (chapter 5).

Governments provide extensive drought assistance programs for agricultural industries. The pigmeat industry is eligible for Australian Government Exceptional Circumstances (EC) assistance in drought affected areas. Data from DAFF on EC interest rate subsidies paid to pig producers show that 71 applicants received over $2 million in 2006-07. In 2004-05, 70 applicants received about $1.5 million in interest subsidies. In 2006-07, 86 applicants received over $868 000 in income support (DAFF, pers. comm., 3 December 2007). These data understate the amount of Commonwealth drought assistance to the pigmeat industry, as information on recipients in Victoria, Western Australia and Tasmania is excluded.

APL has noted that EC assistance is not available for producers operating outside drought-declared areas (but who are adversely affected by drought-influenced market conditions). Their ability to access EC assistance is dependent on a regional industry application (APL 2008b). However, this concern was addressed to some

extent with the announcement by the Australian Government in October 2006 to extend (or reinstate) EC assistance in 44 regions for all agricultural producers. This extension was followed in September 2007 by an announcement to provide an additional $714 million in EC funding.

States and Territories also provide funding to assist farmers suffering from drought conditions (APL 2008d). In New South Wales, for example, rebates are provided for the costs of transporting water and fodder for stock, and to move stock for slaughter. Other forms of assistance include interest rate subsidies, direct household relief payments, waivers or deferments for other costs and financial counselling. Similar schemes are available in other jurisdictions.

Some drought assistance schemes have the potential to impact on the market for feed (chapter 5). In particular, distortions can be introduced into feed markets where some producers are eligible for assistance while others are not. Currently, under some State and Territory programs intensive agricultural activities, such as pig production, are ineligible for feed transport subsidies that are available to broadacre primary producers (APL 2007e).

Further, some types of pig producers are ineligible to receive certain drought assistance. For example, the New South Wales transport subsidy scheme is only extended to free-range pig producers (Department of Primary Industries, NSW 2008a). The Victorian Farmers Federation (sub. 13) also noted that contractors are ineligible to receive Commonwealth EC or other drought assistance funding, since they are typically not deemed to be farmers under program guidelines.

Interjurisdictional differences in drought assistance funding and assessment procedures (including the treatment of contract pig growers), and the complexity of application processes, have also been cited as problems by the industry (APL 2007e).

FINDING 4.3

State and Territory drought assistance eligibility criteria that differ between pig producers and other agricultural interests have the potential to distort markets.

Research and development (R&D)

Governments have developed a range of programs to facilitate and encourage R&D activity. Programs include tax concessions, patent protection systems and R&D levies on beneficiaries of the research (such as the R&D component of the pig slaughter levy). In general terms, the rationale for these programs is that funding by

government is required to overcome potential underinvestment in research by businesses. Governments also provide extension services to help ensure the potential benefits of R&D are realised.

The Pork CRC supports R&D activities in the pigmeat industry under three programs that relate to pig diets, feed conversion efficiency and pork quality.

APL receives funding from the Australian Government for R&D activities. Some recently completed and current research projects undertaken by APL include:

- quantifying the impact of respiratory diseases, such as *M. hyopneumoniae* and *P. multocida*, on various pig herd efficiency indicators
- investigations into the effect of maternal nutrition for piglet birth weights
- the applicability of needle-free injection methods for leptoerysipelas vaccination
- the relationship between improved methods of drinking water supply and the performance of lactating sows and their litters
- the development of best-practice guidelines for the management of spent deep-litter bedding.

These activities are largely funded by a statutory pig slaughter levy (see below). Additional research-specific funds are also received from the Australian Government. In particular, APL receives additional support through the reimbursement of 50 per cent of eligible R&D expenditure. The amount of matching funds that APL receives is limited by the lesser of three caps:

- 0.5 per cent of the gross value of production of the pork industry calculated at the end of each financial year as an average of the last three years; or
- 50 per cent of the amount spent on the eligible R&D activities in a financial year, where unmatched amounts can be carried over and claimed in the next financial year; or
- the cumulative R&D levy income received by the Commonwealth since APL commenced in 2001 (APL 2007c).

APL has noted that in 2005-06 the claimable R&D funding limit changed from the gross value of production cap to the accumulated R&D levies cap (that is, 70 cents per carcass since inception of APL). According to APL, 'this had the effect of reducing the government's R&D contribution by around $0.8 million per annum, or claimable R&D activities by $1.6 million' (APL 2007c, p. 6).

The States and Territories also provide resources towards pigmeat industry R&D. For example, the New South Wales Department of Primary Industries pig research facilities, based in south-western Sydney, are currently engaged in research on pig

disease management and quantifying meat yields using new technologies (NSW Government, sub. 76).

In addition to work undertaken by the South Australian Research and Development Institute (SARDI) in pigmeat industry R&D activities, the South Australian Government played a major role in the establishment of the Pig and Poultry Production Institute (PPPI) in 1996. The PPPI undertakes R&D activities in nutrition, health, housing, production, welfare and meat hygiene for the pig industry (and chicken meat and egg industries). Other State Governments perform similar R&D and extension activities.

There is little information on the impact and effectiveness of pigmeat industry R&D activities. The APL website, for example, provides a listing and brief description of completed, existing and new research and innovation projects, while its newsletters provide only summary information regarding program performance. The APL 2006-07 Annual Report provides only high-level information on R&D activities, and does not include detailed reports of R&D project performance.

In its 2005 report, the Commission expressed concern that the benefits and costs of APL's R&D program did not appear to be routinely evaluated and publicly reported. This situation does not yet appear to have been addressed. Since funds are contributed by both government and pigmeat businesses (through levy payments), it is important that the effectiveness of R&D programs are transparently and independently assessed. Similarly, there appears to be a lack of published evaluations of pigmeat industry research undertaken at the State level.

RECOMMENDATION 4.3

Regular independent reviews are necessary to ensure that government R&D funding directed to the pigmeat industry delivers net benefits to the community, and continues to satisfy program criteria.

More detailed information needs to be provided by industry bodies on the performance of R&D projects that are funded by government, including evaluations of benefits and costs.

Other government assistance

The pigmeat industry has received other forms of assistance from Commonwealth, State and Territory Governments. These include grants to assist producers and processors to expand facilities and adopt new technologies, implement new business practices and develop export markets.

Assistance has also been provided in the past to address specific adjustment difficulties faced by the industry. For example, the South Australian Government provided $100 000 to assist workers displaced by the February 2007 fire at the Primo Australia processing facility at Port Wakefield. Pigmeat industry workers also benefit from education and training services provided by governments.

These expenditure programs are supported in some States by overarching industry development strategies (box 4.5) or formal consultative mechanisms (such as the NSW Pork Industry Taskforce) to enable the industry to provide input into government policy making.

Box 4.5 **State Government pigmeat industry strategic plans**

Some States and Territories have developed strategies to support pig producers and processors. For example, in 2004, Primary Industries and Resources South Australia (PIRSA) developed the *South Australian Pork Industry Strategic Plan for 2010*. The plan set out a preferred future for the industry, and a number of targets such as:

- increasing gross food revenue to $668 million
- increasing the number of sows in production to 76 300 (equivalent to 27 000 marketable pigs per week)
- adding value of dressed weight carcasses to $2.70 kilograms (cwe)
- increasing dressed carcass weight to 72 kilograms
- ensuring the availability of skilled industry management and staff
- improving industry-community relations.

Policies outlined to help deliver these targets include processed food investment attraction, supporting new product development, prioritising extension and education programs, and encouraging industry specialisation and supply chain integration.

In its submission to the inquiry, the South Australian Government noted that 'up until the 2006/07 financial year, the SA pork industry has been steadily working towards achieving the targets in the SA Pork Industry Strategic Plan for 2010. Nevertheless, the industry is currently facing a number of challenges that have the potential to significantly impact the industry both immediately and into the future' (Government of South Australia, sub. 50, p. 4). According to the PIRSA 2006-07 Annual Report, the Department had undertaken a review of the plan.

Other States have developed similar industry plans in the past. In 2001, the Queensland Government launched the *Queensland Pig Industry Development Strategy* that aimed to treble pig production to around 4 million pigs per annum over 4-6 years, while the Western Australian Government has sought to attract investment in the State's pigmeat industry.

Sources: Government of South Australia, sub. 50; PIRSA; Department of State Development, Queensland.

Some of the targets presented in these plans appear to be largely aspirational in nature. For example, there were about 669 000 pigs in Queensland (including about 70 000 breeding sows and gilts intended for breeding) for the year ending 30 June 2007 (ABS 2007b). This is significantly less than the 4 million pig production target outlined in the *Queensland Pig Industry Development Strategy*.

Total government assistance to the pigmeat industry

Public information accessed by the Commission suggests that pig producers and processors receive significant financial support from the Australian Government (table 4.2). It is estimated that the pigmeat industry receives about $10 million each year ($7 million for R&D and $3 million for drought and other assistance).

Table 4.2 **Selected Australian Government assistance for the pigmeat industry[a]**

2006-07 (unless otherwise specified)

Program	*Status*	*Funding ($m)*
Drought assistance		
Exceptional Circumstances program[b]	Ongoing	2.9
Research and development		
Pork CRC	2005-06 to 2011-12	25.8
Australian Government matching R&D funding	Ongoing	3.4
Other		
Advancing Agricultural Industries program	Ongoing	0.4
AusIndustry Industry Cooperative Innovation Program	Ongoing	0.4
Austrade Export Market Development Grants	Ongoing	0.2

a This table does not provide information on all Australian Government programs, or of assistance provided by State and Territory Governments. Therefore, the data in this table understate the quantum of government assistance provided to the pigmeat industry. **b** Includes interest subsidies and income support assistance.

Sources: APL (2007a); APL (2007b); AusIndustry (2006); Austrade, pers. comm., 22 February 2008; DAFF, pers. comm., 3 December 2007; PC (2005).

The OECD measures the monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures that support agriculture — this is referred to as the 'producer support estimate' (PSE). In 2003, the overall PSE for Australian pigmeat producers was 3.59 per cent, which was comparable to the United States (3.56 per cent) but lower than in Canada (8.45 per cent) and the European Union (23.93 per cent) (PC 2005). The OECD estimate for the European Union should be interpreted with caution, however, because it is not a measure of assistance within individual member countries, such as Denmark. In its 2005 report, the Commission found that assistance to Danish pig producers was comparable to support for Australian producers (PC 2005).

Industry programs

In addition to government programs and other initiatives, the Australian pigmeat industry has established its own strategies and actions to target different aspects of enterprise operations and broader structural change.

Marketing

Since its inception, APL has undertaken an array of marketing activities on behalf of the Australian pig industry. These activities are funded by the statutory pig slaughter levies collected by DAFF. In the year to 30 June 2007, APL spent about $5.8 million on domestic marketing and about $800 000 on export marketing activities (APL 2007a). Some of the major marketing initiatives by APL in 2006-07 to promote an awareness and interest in pork included:

- the 'Easy Peasy Pork' advertising campaign launched in May 2006. This strategy focussed on increasing sales for 'hero' cuts and meals such as the 'Midweek' or 'Mini' roast, and for barbeque meals through summer. This was complemented by in-store and promotional support for retailers (such as supermarkets and independent butchers) to improve sales through Christmas and summer seasons
- advertising of pork cooking aids, such as the MasterFoods 'Pork Choices' range, on television, accompanied by in-store activities in supermarket fresh meat sections
- the launch of the 'PorkStar' marketing program, aimed at promoting a greater awareness and demand for pork by chefs in the food service industry
- a Chinese 'Year of the Pig' marketing program in 2007, including a national roadshow to media, butchers and key food service contacts.

APL also conducts marketing campaigns in export markets, such as Singapore, to raise awareness of Australian pork products (APL 2007a).

While the efforts of APL in increasing the demand for pigmeat have been acknowledged (Australian Meat Industry Council, sub. 35, Tasmanian Island Pork Alliance Inc., sub. 91), some industry participants expressed concerns that APL's promotions to increase pork's share of overall meat consumption may inadvertently promote the consumption of imports. However, information provided in the APL 2006-07 Annual Report indicates that it has in place strategies to target its promotional efforts towards the fresh pigmeat market.

In addition to APL's marketing efforts, several larger pigmeat producers have their own programs for marketing and market development. For example, AusPork

Australia handles the purchasing, processing and marketing of fresh quality assured pork cuts and pig carcasses, and owns a share in the Big River Pork abattoir in Murray Bridge, South Australia (subs 18, 33).

Quality assurance

Since 1997, the Australian Pork Industry Quality Program (APIQ) has been Australia's main quality assurance program for pigmeat producers. The program covers food safety, biosecurity and animal welfare, and is based on the Hazard Analysis Critical Control Point system of risk management. APIQ is a voluntary program administered by APL. In its 2006-07 Annual Report, APL noted that the APIQ will be subject to a review process.

Individual producers seek certification under the APIQ at their discretion, after considering the relevant benefits and costs of the procedures involved.

Research and development support

APL complements its R&D program with a range of measures, including scholarships for postgraduate research students and awards to encourage individual producers to adopt new research techniques and technologies in their operations. The industry association has also developed extension and training manuals for different segments of the pigmeat industry.

Several larger pig producers and processors undertake their own R&D initiatives. QAF Meat Industries, for example, has a pig genetics program to continually improve herd selection and breeding outcomes (sub. 73).

Environmental management

The industry association has facilitated and undertaken several projects to improve natural resource and environmental management since 2002. APL also provides environmental stewardship awards for individual producers recognised as leading the field in terms of implementing natural resource and environmental management best practices across Australia.

Industry self-funding arrangements

The primary source of funds for APL is a statutory pig slaughter levy (currently $2.525 per pig), levied under the *Primary Industry (Excise Levies Act) 1999*.[4] APL receives $2.35 of the levy, consisting of $1.65 for marketing activities and 70 cents for R&D. The remaining 17.5 cents is for the Pig Monitoring segment of the National Residue Survey.

An issue raised by the industry in recent years relates to the structure of the pig slaughter levy. APL has argued that the levy funding split between marketing and R&D reflects historical factors arising from the existence of the Pig Research and Development Corporation and the Australian Pork Corporation until 2001. In a December 2007 submission to DAFF, APL stated that the:

> R&D levy amount is arbitrary, out of date and does not track inflation. This is having a negative impact on APL's ability to spend industry funds in a flexible manner enabling the maximum return on investment for levy payers. (APL 2007c, p. 4)

More generally, APL noted that the amount of funds received via the levy are reduced when domestic production volumes decline (sub. AR118).

A survey of producers undertaken for a recent review of APL's activities found that 54 per cent of respondents believed that APL did not offer value for the levies they paid (Hassall and Associates 2007). Further, the review found that 'the strategic planning process used by APL does not explicitly estimate the value of APL activities to levy payers' (Hassall and Associates 2007, p. 35).

In recent months, APL has proposed removal of the split between marketing and R&D levies. This would result in a single 'industry levy' of $2.35 per carcass. APL suggests that the removal of the split would enable a more flexible approach to how levies are spent (with no increase in levies payable by producers). In addition, the cumulative R&D levy income cap would no longer apply, and thus potentially enable APL to claim matching government payments on additional R&D expenditure (APL 2007c).

The Australian Government continues to provide statutory power for a pigmeat industry R&D levy to ensure that beneficiaries contribute towards the costs of R&D activities.

[4] While producers (the person who owns the pigs at the time of slaughter) are liable to pay the levy, processors pay the levy on behalf of the producer (and can recover the amount of levy paid from the producer, by offset or otherwise) (DAFF 2007).

In the Commission's view, however, the rationale for a statutory levy for marketing purposes on similar grounds is more tenuous. The Commission notes the increasing trend within the industry towards tailored labelling and marketing of pigmeat products, by individual pigmeat industry operators and alliances alike. In these circumstances, the case for a levy to fund industry-wide, generic marketing is weakened.

Further, the persistent lack of detailed and robust information on the impacts of APL's marketing activities appears symptomatic of the general difficulties faced when evaluating the outcomes of generic pigmeat marketing in a changing industry environment.

RECOMMENDATION 4.4

Industry programs that operate in conjunction with government support, such as initiatives funded by the pig levy, need to be regularly and transparently reviewed.

While noting APL's proposal to create a single industry levy, the Commission would see greater merit in the statutory levy system focusing on providing R&D, where the grounds for intervention are stronger.

5 Feed costs and availability

This chapter concentrates on issues relating to the cost and availability of feed for pig producers. The work of the Pork Cooperative Research Centre (Pork CRC) in improving feed efficiency rates is also discussed.

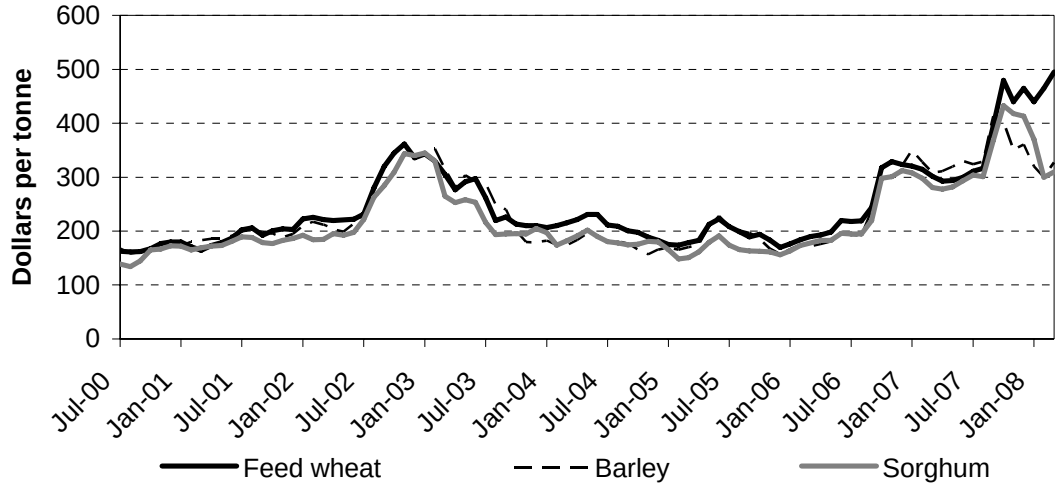
5.1 Feed price trends

Issues relating to feed are important because feed costs typically account for around 55 or 60 per cent of a pig producer's total costs (with grain representing 80 to 85 per cent of feed costs). Grain costs soared to record highs in late 2007 and this trend has continued into 2008. Major factors behind recent price increases are bad weather (particularly the drought in Australia), growing worldwide demand (and government support) for ethanol, and strong economic growth in China and India.

For much of 2007, grain prices were similar to those prevailing at the time of the 2003 drought. They reached record levels in October, however, with feed wheat peaking at $A480 a tonne, before dropping back to between $A400 and $A435 a tonne in November. Feed wheat prices increased again in December, to $A465 per tonne, then settled around $A440 a tonne through January 2008 before increasing to $A465 again in mid-February. More recently, prices of around $A500 a tonne have been recorded. This compares with a price of $A198 a tonne in May 2006 (figure 5.1).

The United States Department of Agriculture (USDA) has projected that United States wheat stocks at the conclusion of 2007-08 would be their lowest for 60 years, and global stocks are projected to be at their lowest level for 30 years. However, the USDA also projected global wheat production would rise during February, with increased production in Argentina and the former Soviet Union states expected to offset reductions in Afghanistan (USDA 2008).

Figure 5.1 **Prices of selected feed grains**
July 2000 to March 2008



a Based on average quote for delivery, Sydney.

Data sources: ABARE (unpublished), The Land (various issues).

While wheat prices have remained high, prices of other crops have fallen somewhat from their October peaks, following heavy rains in Australia in late 2007 and early 2008. In particular, sorghum prices have fallen from around $A430 a tonne in October 2007 to around $A300 a tonne in March 2008 (figure 5.1). ABARE has projected that sorghum production in 2007-08 will be around 80 per cent higher than in the previous year (ABARE 2008a). Prices for feed barley have fallen broadly in line with sorghum. Recent media reports suggest that 'stockfeed buying of wheat has all but stopped' (The Land, 20 March 2008, p. 60) in response to recent trends in feed grain prices.

While the outlook for grain prices is uncertain (and they have recently displayed similar volatility to that experienced on global stock markets), the most commonly held view is that high grain prices are likely to persist for some time yet. The Reserve Bank of Australia recently commented that:

> The combination of poor harvests in several major food-producing countries, high energy prices and continued strong demand for farm produce suggests that it is likely that relatively high global food prices will be sustained in the near term. This is consistent with the high level of futures prices for many agricultural goods. (RBA 2008)

Further discussion of recent rises in feed costs and their impact on the pigmeat industry is contained in chapter 3.

5.2 Are Australian producers disadvantaged?

There is evidence that Australian producers, largely dependent on feed wheat, are being disadvantaged more than foreign competitors (especially in the United States and Canada) who are able to use other crops. Yellow corn is used extensively to feed pigs in North America, but is not available on a cost-effective basis in Australia. On the Chicago spot market, wheat prices have risen around 113 per cent since October 2006, while corn prices have increased by around 80 per cent (although the last three months have seen corn prices increase 42 per cent, while wheat prices have only risen 23 per cent) (ABARE 2007c, 2008b).

Table 5.1 **Wheat and corn prices, Chicago Board of Trade**

	Wheat ($US/tonne)	*Corn ($US/tonne)*
October 2006	183.81	119.39
August 2007	254.59	132.03
September 2007	318.67	141.19
October 2007	313.69	140.58
November 2007	319.30	150.98
December 2007	339.68	168.47
January 2008	339.81	192.38
February 2008	364.31	195.67
March 2008	392.23	214.47
Change October 2006 to March 2008	**113.4%**	**79.6%**

Source: ABARE (2007c, 2008b).

These price trends (and particularly those between October 2006 and late 2007) have exacerbated an inherent advantage held by North American producers, in that corn was already significantly cheaper than wheat before recent relative increases in the wheat price. North American grown yellow corn also has slightly more digestible energy than wheat (PC 2005).

This inherent disadvantage faced by Australian producers was noted by some participants. Calco Enterprises observed:

> 4 weeks ago we paid $445/tonne for feed grain. At the same time feed corn in the USA was trading at $A145/tonne. This must be addressed at a Government/Trade level if the Australian pig industry is to be allowed to compete fairly and prosper. (sub. 48, p. 6)

And Dugald Walker stated:

> American pig producers have inherent advantage with access to 'Chicago' priced stock feed grain supply. Some N. American producers will have additional advantage as 'Chicago' price may be reduced by freight and handling charges to make FOB. (sub. 85, p. 2)

A report produced for APL in 2005 also noted the importance of relative feed prices:

> Australian pig price/feed price ratios need to be competitive with those seen in comparator countries. This certainly means better access to feed at import parity prices for Australian pig producers in times of drought. Australian pig meat processors, and their added value activities and employment, could be put at risk if domestic pig producers do not have the same access to feed at competitive prices as their competitors. With a liberalized pig meat import market, the industry risks seeing global pig price variability alongside domestic feed price rigidity. This could have a disastrous impact on Australian pig producers' and pig processors' margins. (APL 2005a)

In August 2007, in a submission to a Victorian Parliamentary Committee looking at biofuels, APL stated:

> Feed grain costs are a key competitive disadvantage for Australian pork producers. With biofuel production increasing with consumer interest and uptake via ethanol content mandates and government encouragement to industry, demand for feedgrain for human consumption and livestock production will increase grain prices. (APL 2007f, p. 116)

A further issue confronting local pig producers is the lack of specialist feed grain in Australia. Wheat, barley and sorghum are deficient in lysine, for example, which assists in converting food energy into protein rather than fat. Therefore, Australian pig producers typically need to add lysine into pigs' diets, possibly through feeding products such as soybean meal (PC 2005).

As part of the Commission's 2005 inquiry into the pigmeat industry (PC 2005), Professor Clair Nixon from the Mays Business School at Texas A&M University was contracted to provide information on pigmeat industry assistance in Canada, the European Union and the United States. His comments on feed grain availability in Australia are also relevant in the current environment:

> The challenge Australia faces in the international pig market is being competitive from a feed cost standpoint. It is basically a geographical issue for Australia. The key ingredients in North American pig feed are corn and soybeans. The corn belt of the United States and significant portions of Brazil have the climate and soils that are conducive to producing massive quantities of feed grain at relatively low costs. The European Union has instituted government policies that provide for lower cereal grain costs to pig producers within the member countries. There is not enough reliable rainfall in Australia to embark on large scale corn and soybean production. In addition to these natural restrictions on the production of corn and soybeans in Australia, there are significant quarantine restrictions on the importation of feed grain into Australia, which are intended to prevent the entry of plant diseases and weeds. This policy has left pig producers in a difficult position because it drives up the cost of feed grain. If Australia wants to be a big pig exporter, it needs to look closely at its grain program — it is all about low cost feed. (Nixon in PC 2005, p. 260)

5.3 Reducing the cost of feed

There are various options available to pig producers in response to higher feed prices. This section discusses two of the most important — improving feed efficiency and risk management.

Improving feed efficiency

One way of adjusting to higher feed prices, and of making the industry more internationally competitive, is improving feed efficiency rates. This is a major focus of the work of the Pork CRC. Specifically, the Pork CRC's objective is to reduce the herd feed conversion ratio (that is, the kilograms of feed used per kilogram of dressed carcass weight) from 4.2 to 3.6. The Centre's other work is discussed in chapter 4.

The work being done by the Pork CRC to improve feed efficiency rates includes:

- improving the measurement of feed intake
- developing ways of manipulating feed intake
- programs to improve pig production efficiency
- techniques to manipulate pig growth
- research into pig nutrition.

A number of participants referred to the feed efficiency work of the Pork CRC. The Government of SA said:

> On the supply side, continued and perhaps increased support of research and development programs such as the Pork Cooperative Research Centre, with a focus on cost-reductions and innovations in production would contribute to making the industry more competitive and, over time, better able to deal with import shocks in the future. (sub. 50, p. 12)

While Windridge Farms noted:

> Any improvements in feed efficiency and costs will have a significant impact on our ability to compete. The focussed research and development … being carried out by the Pork CRC will help but research takes time, particularly to be fully commercialised, and improvements tend to be small and incremental – not enough to make up for depressed prices at a time of higher costs. (sub. 80, p. 3)

As an example of the type of work done by the Pork CRC, one recent study found links between the energy content of the diet offered to gilts during their first lactation and their subsequent fertility and longevity. Specifically, it was found that

raising the digestible energy level of the diet to 14.4 MJ/kg or higher would increase the number of gilts successfully having a second litter by around 30 per cent, lowering gilt replacement costs and increasing reproduction rates (sub. 97, p. 71).

Another recent study found that supplementing the diet of gestating sows with the amino acid Arginine starting on day 16 or 17 of pregnancy for between 10 and 14 days increased the size of litters by approximately 1.5 pigs on average (sub. 97, p. 71).

There is further discussion of the role genetics can play in improving the efficiency of the Australian pigmeat industry in the preceding chapter.

Risk management

As noted by the Commission in 2005, pig producers have various options for dealing with the risks associated with feed prices. Principally, they can enter into contracts with suppliers, they can choose to buy feed when it is relatively cheap and store it, and they can use futures and options markets for grain (PC 2005).

A number of participants referred to their use of risk management techniques. For example, Calco Enterprises noted:

> In 2005 we built a bulk grain shed which holds 500 tonne of grain, on top of our existing 800 tonnes of grain storage. This allows us to store 18 months worth of grain and buy in grain when it is at the lower end of its trading range. Grain futures are used from time to time if we are looking to buy grain at a later date (sub. 48, p. 6).

The South Australian Farmers Federation also provided an example:

> Farm 2 has historically bought their grain in the spot market at harvest. Their strategy is to 'over buy' by 50 percent (of their annual requirement) when prices are in the lower deciles, and 'under buying' (by 40 percent) in years when prices are in the higher deciles. They believe that this has produced acceptable smoothing of grain prices up until this current year. They also retain a production capacity for growing a portion of their grain requirements. (sub. 38, p. 16)

Inevitably, though, there are costs associated with risk management. For example, storage costs are very high, and there would be liquidity or financing problems with large purchases of grain for many producers.

Moreover, to take advantage of periods of low grain prices, in addition to having storage facilities, a pig producer would require the means to convert the grain into pig feed. There would also be risk of the grain deteriorating, and possibly interest expenses relating to the purchase. Relatively few piggeries would have the resources to take up the storage option (PC 2005).

There are also problems with contracts, given production uncertainties faced by grain producers. Geoff Edgerton, A.J. Edgerton and Co. / Glenita Stud noted:

> We have only once signed a risk management contract, with disastrous results. Small producers like us don't have the knowledge to compete with processors. This year a lot of producers signed contracts with a grain merchant to receive grain from the merchant and when prices went up and he could not supply, he went into receivership and the purchasers were left with worthless bits of paper. (sub. 27, p. 4)

And Windridge Farms reported similar problems:

> Unfortunately to date we have found it has not been possible to obtain enough similar contracts from grain producers. Most grain growers were only willing to sign contracts a few weeks before harvest this year. This stems from their significant production risk – unpredictable weather determining if they will have any product to sell at all. We have developed new plans on this front in the last 6 months and hope we will be able to contract a greater volume of grain for longer time periods in the future. (sub. 80, p. 4)

Some concerns were also expressed about the functioning of futures markets. The Stock Feed Manufacturers' Council of Australia observed:

> The limited availability of grain within the Australian market results in a less than desired level of liquidity within futures trading markets as operated by ASX. Unlike the USA, larger end users can be greatly limited in what risk management can be taken to reduce cost rise risk exposure. (sub. 49, p. 5)

APL has also suggested that the single-desk wheat marketing arrangements have stifled the development of sophisticated secondary markets in Australia, adding to risk management difficulties for Australian producers (APL 2007d).

As the Commission observed in 2005, all risk management options involve costs and benefits, and producers are typically aware of these. Therefore, if a producer has chosen not to adopt a particular strategy, this is probably because the likely costs of that strategy are perceived to be greater than the potential benefits, rather than because it was unaware of the potential strategy, or because of regulatory impediments or other market failures (PC 2005).

With the possible exception of the single-desk (discussed later in the chapter), there are probably no major regulatory issues relating to risk management. To the extent that some businesses may benefit from greater information or skills training with regard to risk management, there may be an educational role for industry bodies.

5.4 Factors affecting prices and availability of grain for pigmeat producers

A number of factors affect the price and availability of feed for Australian pig producers. Some relate to developments in grain markets, such as increasing world demand and competition from other domestic users (for example, feedlots). Other factors are policy related. In many of these areas, reforms could be considered that would potentially benefit Australian pig producers and the economy more generally. This section also discusses potential unintended consequences of some policies, which are either currently in place or proposed.

Ethanol policies

Ethanol is produced from the fermentation of feedstocks such as sugar or grain materials and is blended into petrol for use as a fuel or used in industrial applications. The domestic production and distribution of ethanol has received significant government support in Australia, particularly since the Government's announcement in 2001 of a target of at least 350 million litres of biofuels in the domestic fuel supply by 2010.

Ethanol, biodiesel and LPG are effectively excise free until 30 June 2011. Ethanol blended with petrol for use as a fuel attracts excise at the same rate as petrol. However, a subsidy (equal to the excise rate) is provided to domestic ethanol producers, removing any incentive to import the fuel. (The current taxation arrangements are basically equivalent to a significant tariff on imported ethanol.) After June 2011, the previous government intended that excise would be phased in such that ethanol would have a 12.5 cents a litre excise by 2015 (Australian Government 2004).

The Biofuels Taskforce report of 2005 found that biofuels, such as ethanol, cost more to produce than petroleum fuels, and barring unexpected scenarios, even in the long term would generally remain uncompetitive with conventional fuels without assistance. The taskforce also found that subsidised ethanol grain plants have the potential to raise feed grain prices in the short and medium term (by increasing the demand for grain).

A number of participants commented on the relationship between biofuel production and higher grain prices (box 5.1).

Box 5.1 **Participants' views on biofuel production and grain prices**

The Australian Meat Industry Council (on behalf of independent retail butchers and smallgoods manufacturers) observed:

> The redirection of food grade grain to ethanol production, now supported in some States by legislation, at a time of serious drought requires immediate intervention by Government. This strategy has effectively added to the problems faced by pig producers in the last two years. (sub. 35, p. 15)

The Stock Feed Manufacturers' Council of Australia stated:

> The biofuels industry needs to be economically viable without the need for accessing Government support or mandating the inclusion of ethanol in motor fuel. Whilst the volume of grain going to ethanol is currently small in volume terms, there is great concern that Government incentives would have a detrimental effect upon the stockfeed and livestock industries. (sub. 49, p. 6)

Better Blend Stockfeeds observed:

> Local events generally have little impact on the price we pay for our raw materials. However, the doubling of the world corn price in response to demand for biofuel production in the US coupled with a chronic shortage of locally produced grain and a reduction in world grain stocks has seen unprecedented increases in local grain prices and as a consequence the high price of pig feeds. These are events entirely beyond the control of local stakeholders and in part are a direct, if perhaps unintended consequence of political actions (e.g. to mandate subsidised ethanol production) by other key players in the global grains market. (sub. 58, p.1)

Canada Pork International said:

> World grain prices are at record levels, so feed costs have increased sharply, at a time of low pork prices. The reasons for increased grain prices are well known, and are drought and poor crops in major world suppliers, plus ethanol driven demand for grain. (sub. 66, p. 4)

The High Commission of Canada stated:

> … feed prices have been pushed up by the increased world demand for grain corn for use in energy related production – in part driven by programs which encourage the use of corn as a feed-stock for ethanol production. (sub. 93, p. 3)

The Organisation for Economic Cooperation and Development (OECD) has also noted that support for the ethanol industry has the potential to harm farmers involved in livestock production:

> Crop farmers will certainly benefit from the higher prices coming from increased demand for biofuels. But with contemporary technologies and current public support policies these are mostly cereal and oilseed producers in OECD countries. Livestock producers, whether inside or outside the OECD area, who use the same cereals and oilseeds as animal feed do not benefit from this support. Hence, they will face higher costs and reduced incomes despite lower protein feed prices due to the additional supply of feed by-products from biofuel production. Also, the industrial demand for biofuels crops may be less price sensitive than traditional food and feed demand, which would add to price instability in world cereal markets. (OECD 2007, p. 6)

Following the Biofuels Taskforce report, in September 2005 the Australian Government reaffirmed its commitment to achieve the target of at least 350 million litres of biofuel production by 2010. A Biofuels Action Plan was announced in December 2005, encompassing volumetric goals, marketing strategies and other initiatives drawn up by oil companies and petrol retailers to encourage the uptake of ethanol.

Additional initiatives announced by the Government included measures to encourage users of Commonwealth vehicles to purchase E10 (a blend of 10 per cent ethanol with petrol), vehicle testing of E5 (a blend of 5 per cent ethanol with petrol) and E10 blends, and increases in fuel quality compliance inspections to ensure ethanol blends meet fuel quality standards (Howard 2005).

In August 2006, the Australian Government announced the Ethanol Distribution Program, with funding of $17.2 million, to run from 1 October 2006 to 30 June 2007. The Howard government had further pledged to continue the program until 30 June 2009. The program aims to increase sales of E10, with grants payable to service stations putting in place infrastructure for ethanol fuel sales, and further grants for service stations meeting 'predetermined sales targets'.

In November 2006, the Government announced funding of $7.72 million to support research into biofuel production technologies. The funding is for the construction of two pilot scale facilities and related university laboratory infrastructure to develop 'novel' biofuel production technologies (PC 2007c).

Support for ethanol a global trend with impacts on world food markets

The OECD has estimated government support for the biofuels industry in OECD countries to be worth between $US13 billion and $US15 billion (OECD 2007).

The United States and the European Union provide the most generous incentives. In the United States, blenders receive a tax credit of $0.51 per gallon of ethanol sold against their income tax. There is also a $0.54 a gallon ($0.15 a litre) tariff on ethanol imports. Several states mandate that a 10 per cent ethanol blend must be added to gasoline to make it burn more efficiently, and other states have additional tax incentives. At the federal level, the 2005 Energy Policy Act set a target for renewable fuels to reach 7.5 billion gallons by 2012 (or around 10 per cent of the total expected gasoline use). The 2007 Energy Independence and Security Act increased the biofuels target to 36 billion gallons by 2022.

Most European Union countries offer fuel tax exemptions for biofuels (representing a significant benefit, given high fuel taxes) and research subsidies. The average tariff on ethanol imports is $0.19 a litre. The targets of individual countries vary, but

are typically close to the European Union current voluntary, and somewhat ambitious, target of biofuels comprising 5.75 per cent of total fuels by 2010. The European Union also has a legally binding target of 10 per cent by 2020 (IMF 2007).

Higher ethanol production in the United States was projected by the International Monetary Fund to account for 60 per cent of the global increase in corn consumption in 2007. According to the USDA, the amount of corn used to produce ethanol in the United States is likely to increase from 14 per cent of total United States production in 2005-06 to 30 per cent by 2010-11.

Similarly, increasing use of soybean and rapeseed oil in producing biofuels in the United States and the European Union has accounted for the bulk of demand growth for these crops in recent years. Strong expansion in biofuel production has also indirectly buoyed prices of other nonfuel-related food items by providing incentives for farmers to switch away from other crop plantings and by increasing the cost of livestock feed.

The International Monetary Fund has suggested developments on world food markets 'already warrant a re-examination of policy frameworks and may call for coordination at the international level' (IMF 2007, p. 15). Particular problems were seen to emerge where one country's policy of promoting biofuels while simultaneously protecting its farmers could increase another (likely poorer) country's import bills for food and pose additional risks to inflation or growth:

> This impact would be mitigated if the United States and the EU biofuel-producing countries reduced barriers to biofuel imports from developing countries (such as Brazil) where production is cheaper, more efficient and environmentally less damaging … Such a shift in policies could also provide opportunities for other developing countries with potential comparative advantage in producing biofuels to enter the industry. (IMF 2007, p.15)

Impact of ethanol industry support on pig producers

There is potential for the Australian Government's support for the ethanol industry to increase feed grain prices. This potential is related to the extent to which ethanol producers use feed grain to produce ethanol, as distinct from other inputs (although livestock producers' costs could also be impacted to a limited extent by increased demand for land, water or other inputs from an expansion in ethanol production). The price effect would also be dependent on the amount of ethanol produced from feed grain.

Currently, the effects of Australian Government support for ethanol on the feed price are likely to be minor (as inputs other than grain are used domestically to

produce ethanol). Policies supporting biofuels pursued by other nations (particularly the United States and the European Union) have, however, increased world grain prices and therefore it is foreign support for the ethanol industry that is likely to have adversely affected the pig meat industry, both in Australia and globally.

There is, however, potential in the longer term for domestic support for the ethanol industry to raise domestic feed grain prices, and therefore directly affect the pigmeat and other livestock industries.

FINDING 5.1

Domestic support for the ethanol industry has the potential to raise domestic feed grain prices, and therefore have a negative impact on the pigmeat and other livestock industries.

The Commission also notes that there have been various suggestions that governments should mandate a minimum ethanol requirement in petrol. The New South Wales Government introduced a 2 per cent ethanol volumetric mandate in October 2007 (meaning ethanol should make up 2 per cent of wholesale petrol sales), and Queensland is committed to a 5 per cent ethanol mandate from 2010.

APL has expressed concerns about ethanol mandates:

> … a decision to mandate will provide only limited short term and heavily subsidised employment opportunities, while destroying real jobs in the economy. Rural and regional economies will suffer in the medium and long terms because of the destabilizing impacts of short term employment and the even greater ramification of loss of industries associated with consumable grain and feed grain production and processing as subsidised biofuel plants take over grain production and markets. (APL 2007f, p. 11)

In recommending against an ethanol mandate for Victoria at this time, a recent Victorian Parliamentary Committee report listed among its concerns that:

> … rising international demand for biofuels and biofuels feedstocks could place considerable upwards pressure on biofuels prices, the net effect of which would considerably outweigh benefits to Victorian producers and consumers. (Parliament of Victoria Economic Development and Infrastructure Committee 2008, p. 155)

Policies of mandating ethanol content in petrol, especially to the extent that they distort prices (by potentially forcing oil companies to purchase ethanol at relatively high prices), have the potential to harm the pig meat and other livestock industries. These harmful effects would be reduced if ethanol imports were allowed under the same excise arrangements as applied to domestic production.

RECOMMENDATION 5.1

There should be a review into the overall economic impact of current and proposed policies relating to ethanol. The review, which could encompass assistance for other biofuels, should consider the impact of policies promoting ethanol production on consumers and other industries, including grain users.

Wheat marketing arrangements

Historically, the Australian Government and most State and Territory governments maintained statutory monopoly grain marketing authorities to operate within their respective jurisdictions and into export markets. The single-desk arrangements for wheat would have had the greatest impact on pig producers, as wheat has been a commonly used feed for pigs.

The major justification for single desk marketing arrangements is that monopoly selling is likely to maximise returns to grain growers relative to more competitive sales arrangements. Typically, single desk marketing arrangements have effectively represented taxation of the domestic market and subsidisation of exports (PC 2000).

Domestic marketing arrangements have been gradually deregulated. However, there are potential costs for domestic consumers stemming from single-desk export marketing arrangements, as the Commission has previously noted.

Single-desk export selling, in theory, can inflate the domestic price because producers receive an average price for exports. If these average export returns to producers can be raised by capturing 'premiums' in some export markets, this higher average price will tend to be charged to domestic consumers. The problem is that charging this average price on the domestic market is not in the national interest — the domestic price exceeds the prevailing 'world' price and disadvantages consumers and other user industries. If export premiums are negligible, however, domestic prices will not be significantly distorted.

Export monopoly powers may also give a single desk an advantage over rival traders in the domestic market because other traders cannot spread risk and costs over the domestic and export markets. To the extent profits from the single-desk marketing authority's value adding activities are 'bundled' in the commodity price received by growers (owners), they may also be discouraged from using other traders. Thus, the single export desk, in practice, may retain some domestic market power (PC 2000, p. xxiii).

The Stock Feed Manufacturers' Council of Australia suggested single-desk export arrangements for wheat distort domestic markets:

> Removal of wheat export single desk control and allowing more parties to operate will increase the number of entities accumulating wheat. This will provide a greater number of potential sellers during dry years as these marketers will have the option of supplying into the domestic market rather than committing to export sales. The SFMCA believes that [a] wheat single desk leads to market distortion as well as limiting capacity to access more efficient grain marketing for growers specifically and more widely the supply chain. (sub. 49, p. 6)

A 2000 review of the *Wheat Marketing Act 1989* (Cwlth) concluded that it could not find 'clear, credible and unambiguous evidence that the current arrangements for the marketing of export wheat are of net benefit to the Australian community' (Irving et al 2000, p.6). It considered, however, that it would be premature to repeal the Act at that stage and recommended that the question should be revisited in 2004. However, the subsequent 2004 review did not examine whether the single-desk arrangement should continue.

The Commission considers that the single desk export arrangement historically in place for wheat, combined with quarantine barriers preventing importation of wheat (discussed later in the chapter), has increased the scope for price rises during droughts to prices that exceed world parity.

AWB had its power to veto wheat exports removed in 2006, with bulk wheat export licences issued to other companies. (Exports of wheat in bags or containers have been fully deregulated.) Current arrangements for bulk exports require the Federal Agriculture Minister to make decisions based on public interest criteria after taking advice from the Export Wheat Commission, AWB and from the Department of Agriculture, Fisheries and Forestry. Recently, bulk wheat export licences were allocated to three organisations in addition to AWB (namely Glencore, Louis Dreyfus and Graincorp).

Draft legislation to further reform bulk wheat export arrangements was released in March 2008. Under the proposed changes, scheduled to take effect from mid-2008, a new body titled Wheat Exports Australia would have responsibility for accrediting exporters and monitoring export contractors. To gain accreditation as a wheat exporter, applicants must meet probity checks and, where an applicant operates a port terminal facility for bulk grain, it must have a third party access agreement in place (Burke 2008). It is anticipated that the new arrangements would result in a substantial increase in the number of wheat exporters, which in turn is likely to have positive spin-offs for competition and prices in domestic grain markets.

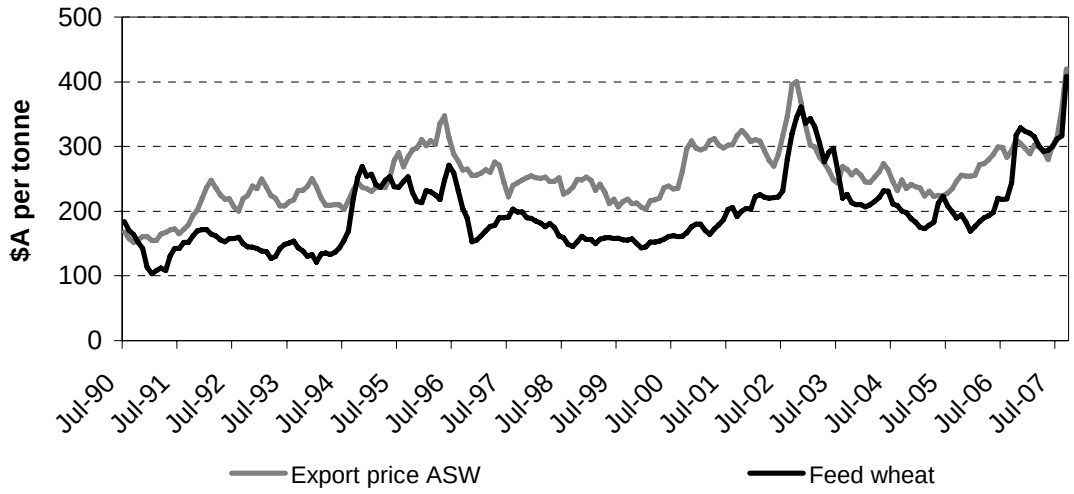
Quarantine laws

There are strict quarantine restrictions on importing grain into Australia. Potential dangers from imported grain include germination of spilled grain, release of weeds, release of pathogens and release of insects (Macarthur Agribusiness 2003, p. 72). Any imported grain must be used in only metropolitan and 'inland' areas. Unprocessed grain can only be imported under strict conditions and must be treated in metropolitan areas according to Australian Quarantine and Inspection Service protocols.

Given Australia's status as a grain exporter, quarantine restrictions on grain imports mainly impact during periods of drought (unless particular types of grain are not produced in Australia or are only produced in very small quantities), as producers are likely to pay the prevailing 'world price' for grain at other times. During drought, local supplies are limited and prices typically approach, and sometimes exceed, world parity prices (figure 5.2).

Figure 5.2 **Export price for Australian standard wheat[a] and price of feed wheat[b]**

July 1990 to September 2007



a Eastern states price. **b** Delivered Sydney price.

Data source: ABARE (unpublished).

Some inquiry participants noted the impact of quarantine restrictions on local feed grain prices.

Primo Smallgoods stated:

> … the importation of cheaper food grains, which is prohibited, would probably go a long way into helping the growers lower their costs of production. (sub. 21, p. 5)

And the Stock Feed Manufacturers' Council of Australia said:

> It is of note that the Australian pig industry has been exposed to having to compete with pigmeat imports, whilst at the same time not having capacity to readily access global raw materials to enable it to limit feed grain cost increases during periods of supply shortage. (sub. 49, p. 5)

Even where importation of grain is permitted, transport and processing costs make it a very expensive option (and not really an option for rural based pig producers due to AQIS protocols). As Dugald Walker observed:

> Quarantine restriction and freight cost makes grain imported into Australia so expensive it is essentially precluded from use. (sub. 85, p. 2)

As with the 2005 inquiry into the pigmeat industry, the Commission has not been presented with any evidence to suggest that quarantine requirements were excessively strict. However, the Commission reiterates that quarantine arrangements should impose only the minimum requirements needed to satisfy quarantine objectives. As new options emerge for dealing with quarantine risks, arrangements should be reviewed to take them into account.

The current Quarantine and Biosecurity Review, headed by Roger Beale and due to report by the end of July 2008, is well placed to further discuss these issues.

RECOMMENDATION 5.2

Quarantine arrangements should impose only the minimum requirements needed to satisfy objectives. As new options emerge for dealing with quarantine risks, arrangements should be reviewed to take them into account. The current Quarantine and Biosecurity Review is well placed to further explore these issues.

Genetically modified grain

There are differing views within the industry about whether allowing genetically modified (GM) crops would be a positive or negative, with fears of lost export opportunities being balanced against potential cost reductions in feed. In a submission to the Commission's 2005 pigmeat inquiry, APL suggested the impact on the industry could be negative, particularly in the Japanese export market.

A report released last year by ABARE found that consumers with a preference for products from livestock not fed on GM materials represented a niche market, largely confined to dairy products. It found Canada's export trade in meat products has grown strongly since the introduction of GM grains and oilseeds in the United States and Canada in 1996, despite dependence on the use of GM feedstuffs, particularly canola.

The report also found that even in the European Union, livestock production is heavily dependent on the use of GM feedstuffs, particularly soybean meal and corn gluten feed, as it is increasingly difficult for EU livestock producers to source non-GM protein meals given that the main soybean exporters — the United States, Brazil and Argentina — are producers of GM soybeans.

Overall, the ABARE report found that marketers of GM canola and of livestock products based on feed of GM materials were unlikely to be disadvantaged, notwithstanding small niche markets that pay premium prices for certified non-GM canola. It added that, in deciding whether to commercialise a GM crop after it has been approved for environmental release, market access issues need to be weighed against the agronomic benefits (such as higher yields or reduced inputs) and environmental benefits (such as reduced chemical use), as well as the costs associated with keeping GM and non-GM separate in the handling and storage process (ABARE 2007b).

A number of GM canola varieties with herbicide tolerance were approved for commercial release at the Commonwealth level in 2003 by the Gene Technology Regulator. However, until recently there were moratoriums on the commercial release of GM canola in all States and Territories of Australia, with the exception of Queensland and the Northern Territory (which are not canola producers). In New South Wales and Victoria, the moratorium ended at the end of February 2008.

A recent panel report on the impact of the moratorium in Victoria found it had imposed a direct cost of $60–65 million on the Victorian economy for 'no observable market advantage'. It further found that extending the moratorium for a further eight years would directly cost the Victorian economy $110–115 million, in addition to indirect costs such as environmental costs and reduced research and development expenditure (DPI Victoria 2007).

RECOMMENDATION 5.3

The remaining moratoriums on the commercial release of genetically modified canola should only continue if objective evidence indicates that the potential costs of GM canola are greater than its potential benefits. Current evidence suggests this is probably not the case.

6 Additional considerations

In conclusion, this chapter raises some wider issues about the safeguard provisions and their application, draws together policy recommendations formulated in chapters 4 and 5, and briefly discusses the industry's calls for various forms of financial assistance.

6.1 Safeguards: interpretation and application

Much has been written regarding the various requirements before safeguard action can be taken under the World Trade Organization (WTO) and how they should be interpreted. While this report is not an appropriate place to discuss such issues in depth, the Commission's two safeguards inquiries into pigmeat imports have highlighted a number of issues which it considers warrant attention.

What is the purpose of the safeguards agreement?

As outlined in chapter 2, safeguard action under the WTO, and previously the GATT, was intended to provide short-term respite from unexpected increases in imports, which cause serious injury to an industry following opening of its market to (increased) import competition. The original rationale for such an 'escape' clause was that it would encourage countries to agree to more trade liberalisation than otherwise, while confining action to exceptional circumstances. It seems, however, that this simple logic is being lost under the weight of creeping, legalistic reinterpretation.

The link to market opening has weakened

First, and perhaps most importantly, the direct link to a market opening initiative has all but disappeared. This removes a clear, observable 'base-case' for comparative purposes and provides scope for safeguards to be imposed when markets long open to international competition face difficulties.

While the Commission accepts that local pigmeat producers have every right to argue for safeguard protection and stresses that its current finding rests on the facts of this particular case, the reality is that the local industry has faced direct import

competition since the 1990s. The ramifications of becoming integrated into world markets, including impacts of supply and demand shifts and price volatility, should therefore come as no real surprise, although the precise nature of those shocks may not be foreseeable. Previous Commission reports, in 1995 and 1998, cautioned the industry that import competition would limit scope for price increases and require ongoing productivity improvements. If any industry considers that protection is readily available when import competition intensifies or other market shocks occur, the incentive for them to prepare for such eventualities is reduced.

Defining the industry

As outlined in chapter 2, the Agreement on Safeguards requires that the domestic industry comprise at least a majority of producers of products 'like' or 'directly competitive' with imports. While the inclusion of the term 'directly competitive' would appear to enable a reasonably broad definition of an industry (such that producers suffering serious injury due to increased imports could be included), case law has progressively imposed a narrower interpretation.

While this may reflect a desire to limit use of safeguard measures, arguably it does so in a way that strays from the intention of the Agreement, which is to provide an avenue of redress for industries suffering serious injury from trade impacts in their markets. For example, if domestic prices of pigmeat cuts were to fall as the result of import competition, local pig producers would be directly and immediately affected, as would primary processors. Pig production is not incidental to the production of boned cuts: it is the major contributor to value-added in primary cuts. (In the present case, at least, the Commission considers that the 'legalities' were able to be met.)

Attributing causation

Interpreting the causation test has loomed large in this inquiry. Most recent case law seems to suggest that imports do not have to cause serious injury in their own right, but simply be a contributor to serious injury, provided all other contributing factors can be identified and separately quantified (*US – Wheat Gluten* (DS 166)), to ensure that any safeguard action is limited in proportion to the separate contribution of imports.

In principle, it might appear that this makes the causation test easier to meet, because imports only have to contribute to, rather than *cause* serious injury. In practice, however, the test becomes much more difficult to meet because the effects of all contributing factors arguably are virtually impossible to quantify separately to a standard that would satisfy it.

More fundamentally, this interpretation appears to be at variance with the original intention that safeguard measures are only warranted where an import surge causes serious injury in its own right, justifying a reinstatement of some protection for a short period.

Should 'price capping' pass the causation test?

Australian Pork Limited (APL) and its consultants argued that the Commission had erred in rejecting their argument that the price constraining or 'price capping' effect of imports caused injury.

The first issue is the likely magnitude of such an effect. As discussed in chapter 3, price capping in this market was to be expected, but it has not occurred to the extent implied by APL. Domestic pigmeat does not just compete with imported pigmeat. It also competes with other meats (beef, lamb, chicken) which, according to the evidence, consumers regard as close substitutes. Commission modelling based on historical data is consistent with this, indicating that even without direct import competition, producer prices could only rise by about one-quarter of the amount of any feed cost increase. With imports, results suggest that the amount recovered is about one-tenth of a given cost increase.

More fundamentally, sanctioning action against price capping *per se* would seem at odds with the logic of safeguard provisions. Indeed, to argue along these lines is to argue against trade liberalisation, because the gains from trade come from the price-suppressing effect of import competition. WTO safeguard provisions are intended to act as a safety valve when the impact of import competition is more serious for a local industry than initially expected, but not to penalise imports for doing precisely what they are expected to do. While the former application can be seen as facilitating trade liberalisation, the latter effectively undermines it.

The Commission understands that an inability to pass on cost increases due to the presence of imports has not been successfully argued in a safeguards case, although it is not absolutely clear that cases have failed for this reason alone (Sykes 2006, p. 188). In the Commission's view, it is imperative that such arguments do not prevail. For much of the 20th century, Australia applied protection based on industry-by-industry assessment of their 'domestic cost disability', which had the effect of discouraging innovation and competitiveness of local production. The price capping rationale for safeguard protection could lead to similar undesirable outcomes.

Would safeguard measures have helped or hindered?

APL has alleged in public comment that the Commission, as an advocate of trade liberalisation, would never find in favour of safeguard measures under the WTO. On the contrary, in its 1998 safeguards investigation, the Commission did find that safeguard measures would be justified, because on that occasion no other factors could adequately explain the price fall and loss in industry profitability. In the current inquiry, the Commission has rejected safeguard action because market circumstances do not meet the WTO safeguards criteria.

The Commission notes that the nature of the market for pigmeat is such that even if safeguard measures were justified and import restrictions imposed, production and prices could not increase by much. Just as imports appear not to have led to large reductions in domestic prices or production, a reduction in imports would not lead to large increases in prices or production. This is because consumer demand is highly sensitive to price changes. Even a modest increase in prices for processed pork products would lead to a large reduction in sales, and thus in the profitability and production of smallgoods manufacturers. Indeed, in such circumstances, there would be some prospect that retailers would respond in part by importing *cooked* pigmeat.

And while domestic producers would increase sales in the processed pork market, to some extent this would be at the expense of sales in the fresh pork market, thereby raising prices and reducing demand. This would put at risk the long-term and apparently successful industry strategy of expanding demand for fresh pork.

Beyond impacts on the industry are wider impacts on the community and the economy, notably consumers and other industries competing with the pigmeat industry for resources. The WTO Agreement on Safeguards does not *require* action, even if all criteria are satisfied. Some countries admit public interest considerations — for example, the President of the United States can veto a decision of the International Trade Commission on such grounds. In Australia, the Productivity Commission is required to assess the net impacts of any proposed safeguard measures on the wider community. This provision has the advantage of providing useful information to assist government decision-making, though it did not require activation in this case.

Complications are created by preferential trading agreements

An important objective in developing the new WTO Agreement on Safeguards was to move away from the widespread use of *de facto* (‘grey-area’) measures that ‘managed’ trade in a discriminatory way, such as bilateral voluntary export

restraints. Hence, the agreement stipulates that measures should be applied on a non-discriminatory basis. (The only exception provided is for developing nations, where they contribute a small share of total imports.)

However, the proliferation of preferential trading arrangements since the inception of the WTO in 1995, which often contain exemptions from WTO safeguard measures, is compromising this objective. For example, although not invoked in the current inquiry, the Australia–United States Free Trade Agreement (AUSFTA) contains a clause that allows either partner not to apply general safeguard measures if exports from the other are not a major cause of serious injury. The Closer Economic Relations Agreement between Australia and New Zealand prohibits either country from applying safeguard measures against the other. While such exemptions might appear to be pro-trade by restricting the application of safeguards, they can intensify preferential treatment and the potential for costly trade diversion from non-member to member countries.

Foreign support for WTO rules is selective

Throughout this inquiry, governments of exporting countries have urged the Commission to comply strictly with the letter of WTO safeguards law (as they interpreted it). Yet, while calling for Australia's compliance, some countries have at the same time introduced measures to assist their own pigmeat producers, which appear to flout WTO rules. The European Union's recent introduction of export subsidies for certain cuts of pigmeat is a case in point.

The Commission understands why Australian pigmeat producers feel aggrieved at these actions by foreign governments. While they do not constitute an argument for Australia to apply safeguard measures or subsidies of its own, they clearly make it more difficult to win public support for more measured policies. The Australian Government should use WTO and other forums to press for removal of these trade-distorting measures.

FINDING 6.1

The original intent and role of WTO safeguard provisions within a liberal trading order are being undermined by reinterpretation and creeping legalisms. If the Agreement is to continue to play a useful role in facilitating trade liberalisation and averting a return to 'grey area' remedies, these developments will need to be addressed by WTO members.

Trade is also being distorted by foreign government actions such as export subsidies on pigmeat exports. The Australian Government should press for removal of such measures in the WTO and other forums.

6.2 Measures to improve industry competiveness

Identifying what can be done to bring about improvements in the underlying competitiveness of the local pigmeat industry is important for its longer-term prospects, given that, over time, market pressures may well intensify as competitors improve their efficiency.

As documented in chapter 4 and in the Commission's 2005 inquiry, the pig growing part of the industry has undergone significant rationalisation and structural change (currently there are fewer than 1900 pig producers compared with around 7000 just 20 years ago). Producers also have adopted new technologies and operating methods, including improved risk management techniques, to improve productivity and quality. The primary processing part of the industry has also rationalised, with a number of plant closures leading to increasing concentration and specialisation — the top 20 abattoirs account for about 95 per cent of pig slaughters.

The industry appears largely to accept the need for further rationalisation and efficiency improvement and has several strategies underway to do this, some in conjunction with government. However, as also highlighted in chapter 4, many programs (including those funded by the pig slaughter levy and matching government funds) are not routinely and independently monitored or evaluated. Proper evaluation is essential to ensure that funds are being applied in a way that delivers maximum net benefits.

As discussed in chapter 4, some regulations also appear to impose unnecessary burdens, or have unintended effects:

- Labelling laws requiring identification of imported products can unintentionally catch locally-produced pork seasoned with imported chemicals contained in brine. The industry's strategy of shifting to brands for local pork, including the 'Australian-grown' label, appears to be a step in the right direction.
- Animal welfare codes and environmental regulations inevitably impose costs on producers. It is important that governments ensure that regulation achieves objectives in the least-cost manner over time. Excessively onerous regulation could have perverse outcomes — for example, by encouraging non-compliance.

Focusing on feed costs is important

As discussed in chapter 5, feed accounts for almost 60 per cent of the costs of producing a pig. Grains account for around 80 per cent of feed costs. The industry, through a variety of channels, including the innovative work of the joint government and industry funded Pork Cooperative Research Centre (CRC), is

attempting to improve feed conversion ratios and feed efficiency.

Feed grain *prices* are another matter. Recent rises are in part attributable to drought, global economic growth and changing tastes, but also to impacts of quarantine restrictions on grain imports (especially during drought). Ethanol policies overseas, and to a lesser extent in Australia, have also contributed.

- While the Australian Government cannot do anything directly to alter policies of foreign governments, it can use international forums to highlight the undesirable and unintended impacts of such policies. In Australia, a review of the wider impacts of current and proposed domestic policies would help to determine the best way forward for ethanol policy, taking into account effects on consumers and other industries, including grain users.
- Just as quarantine restrictions on pigmeat have been liberalised in line with scientific assessment, and protocols altered as circumstances change, restrictions on imports of feed grains should be periodically re-assessed. The current Quarantine and Biosecurity Review is well placed to explore these issues further.
- Subject to proper evaluation, access to cheaper feed grains could also be assisted by removal of bans on genetically-modified crops.

6.3 Is additional assistance warranted?

Representatives of the pigmeat industry and several State Governments have called for financial assistance for the industry. State Governments and processors generally advocated additional research funding and adjustment assistance as an alternative to safeguard measures, whereas pig producers and APL saw additional programs as complementing safeguard action.

As summarised in box 6.1, APL advocated an assistance package comprising a number of measures which they costed at just under $80 million. (This appears to be a lower bound, as some measures have not been costed.) Assistance of this magnitude would represent almost 10 per cent of value added in pig farming, a rate of assistance well in excess of the average for all agriculture of around 4 per cent (PC 2007c).

Box 6.1 **The assistance package sought by APL**

APL (sub. AR118) sought assistance including an additional $10 million over five years for the Pork CRC and another $80 million for:

- Animal welfare stewardship payments ($10.9 million), including for:
  - assistance for constructing and converting sow housing and group housing, for growing pigs, to support the new animal welfare standards and regulations. Payment of $125 per sow, matched on a dollar for dollar basis up to $187 500 per herd. (Contract growers would be eligible for support for constructing and converting group housing, but this is not included in the cost estimate.)
  - support for developing a training and competency assessment scheme and subsidies for Environmental Impact Assessments and Statements.
- Exit/retirement support ($28 million) and sustainability assistance ($17 million):
  - Viability Assistance would provide Farm Restructure Loans to producers assessed as competitive using a Competitiveness Audit and who are not accessing existing government schemes. Payments of $400 per sow (as at 1 September 2007) and up to $100 000 per site.
  - In addition, a sliding scale on a per sow basis would be applied over and above these payments. This measure was not costed.
  - Producer Exit Assistance for entities deemed uncompetitive by a Competitiveness Audit. Payments of $800 per sow, up to $100 000 per site. Payments would be reduced by $2 for every $3 of net assets in excess of $200 000 on sale of the farm.
  - Retirement Assistance for entities retiring within 18 to 36 months from June 2008, and retrospective payments for entities which ceased production after 1 September 2007. Payments of up to $800 per sow, capped at $200 000. A Remote Area Allowance would be available for eligible producers.
  - In addition, grants of $5500 for a Competitiveness Audit or for obtaining retirement advice; and site rehabilitation assistance for those exiting the industry.

Other requests include environmental stewardship payments ($15.3 million), funding of consumer education and a product labelling campaign ($4.0 million), funding of animal health ($0.8 million), supply chain management ($950 000) and product quality improvements ($1.5 million).

Some of APL's proposed assistance would augment existing programs, notably an additional $10 million for the Pork CRC. While that body appears to be undertaking worthwhile research, any additional funds should only be provided on the basis of a program audit and assessment of the potential returns (ideally relative to other research funding options in the agricultural sector).

About $10 million is proposed to match investment by pig farmers to implement the animal welfare code for pigs. As discussed, the most appropriate policy approach is

to design regulation such that objectives are achieved in least-cost ways. One of the problems with providing such assistance, is that producers who have already made investments to comply with regulation requirements will effectively be disadvantaged.

APL has also proposed several programs to assist producers remaining in, retiring from or exiting the industry. Maximum payments range from $100 000 for those remaining in or exiting the industry to $200 000 for retirees.

The Commission accepts that the pigmeat industry is facing considerable difficulties at present coping with cost pressures in a competitive market. However, many agricultural and non-agricultural industries are facing a similar cost-price squeeze and other hardships. It is not evident why pigmeat producers and processors warrant special treatment to deal with commercial pressures. As observed in 2002 when reporting on the citrus industry (PC 2002), structural change in response to changes in market conditions is essential for a well-functioning, productive economy. Moreover, risk is a normal part of business activity and is most efficiently taken into account when commercial decisions are made. Market prices will then reflect relative risks of various activities.

The experience with adjustment assistance programs, both in Australia and overseas, is that they can encourage otherwise unviable producers to put off decisions to leave, impeding overall industry performance. And in an industry such as pigmeat, where pig herds are periodically run down and later repopulated, exit assistance would prove especially difficult to administer and target effectively.

On the whole, the measures that the industry is seeking are difficult to justify and out of step with assistance given to most other Australian industries. It should also be borne in mind that, unlike most Australian industries, the pigmeat industry currently has almost half its domestic market insulated from import competition through strict quarantine rules.

The Commission understands that pig producers (along with other primary producers) have access to exceptional circumstances programs, including up to $150 000 in exit assistance if the farm is located in a declared area. They are also eligible for advice, re-training and relocation grants. Not all piggeries are within declared areas. However, introducing generous assistance potentially for all pig producers, representing almost 10 per cent of value-added in pig production, would introduce new distortions, by favouring pig farming over other industries, many of which are also suffering from the impacts of higher feed prices.

FINDING 6.2

The Commission does not consider that the pigmeat industry has a strong case for additional government assistance. At a minimum, before any further assistance were contemplated, existing government-funded programs should be properly evaluated. Any proposal for additional measures would then need to be shown to be of net benefit to the Australian community, not just industry interests.

APPENDIXES

A Public consultation

The Commission received the terms of reference for this inquiry on 17 October 2007. Following receipt of the terms of reference, the Commission placed notices in the press and appropriate publications inviting public participation in the inquiry. Information on the inquiry was also circulated to people and organisations likely to have an interest in it. The Commission released an issues paper in October 2007 to assist inquiry participants in preparing their submissions. An Accelerated Report was released on 20 December 2007.

The Commission received a total of 121 submissions during the inquiry —100 were received prior to the release of the Accelerated Report and a further 21 following its release. Those who made submissions are listed in table A.1.

The Commission visited or otherwise discussed the issues involved with a number of individuals and organisations (table A.2). Public hearings were held in Sydney, Canberra, Brisbane, Adelaide and Melbourne. A list of those individuals and organisations who presented at the public hearings can be found in table A.3. A modelling roundtable was held on 17 March 2008, a list of organisations who attended can be found in table A.4.

A request for information was sent to 11 major pork abattoir/boning operations, a list of those organisations who were sent a copy of the request is reproduced in table A.5.

The Commission thanks all those who have contributed to the inquiry.

Table A.1 **List of submissions**

Individual or organisation[a]	*Submission number*[b]
A.J. Edgerton & Co / Glenita Stud	27, AR119
Albacroe Pty Ltd	51
Alister Piggeries	42
Auspork Limited *	67
Australian Food and Grocery Council	89
Australian Meat Industry Council (on behalf of the independent retail butchers and the smallgoods manufacturers)	35, AR116
Australian Pork Farms Group	33
Australian Pork Limited	41, 97, AR118
Bailey Creek Piggeries	6
Baker, B.T. & A.R.	10
B.E. Campbell (NSW) Pty Ltd *	31, AR105
Better Blend Stockfeeds	58
Bimbi Bacon	25
Blantyre Farms Pty Ltd	74
Bordervale Piggery *	19
Breakout River Meats Pty Ltd	47
BroadAcres Piavella Pty Ltd	57
Burnett Pork Alliance Pty Ltd	8
B.W. & L.M. Greenaway & Sons *	68
Calco Enterprises	48
Canada Pork International	66
CHM Alliance Pty Ltd	99
Clancy, PJ & JM	26
Cool-off Pty Ltd	5
Corackerup Farming	4
Corowa Shire Council	78
Dalby Focus Group	36
Danish Bacon and Meat Council	32, 100, AR110
D.C. and S Miles Pty Ltd	14
Delegation of the European Commission to Australia	30, 86, AR120
Deni Piggery	94
Drew, G, N & J	61
Evans, W.T. & G.I.	15, AR106
Facy, BL & A	60
Food and Beverage Importers Association	84
Gawler Baconer Enterprises	37
George Western Foods Limited	AR114
Gjadick Pork Pty Ltd	34
Government of Canada (High Commission of Canada)	29, 93, AR107
Government of South Australia	50
Gregor, KA & CL	44

(Continued next page)

Table A.1 (continued)

Individual or organisation[a]	*Submission number*[b]
Gunpork Joint Venture	18
Hans Continental Smallgoods *	53
Heinfeiff	62, AR108
Houston Pork Wholesalers	72
IAS Management Services	64
Inglegreen Pastoral Company	9
Inverary Berkshires	AR102
J.W. & G.E. Bourke Pty Ltd	2, AR104
Jemco Agencies Pty Ltd	77
Kia-Ora Piggery Pty Ltd	AR115
Leon's Pork Pty Ltd *	39
Link Farm Enterprises	82
Ludale Pty Ltd	22
Ludvigsen Family Farms	17
Lynch, TD & RA *	28
Maysleith Farms Pty Ltd	83
McColl Partnership	24
Ministry of Foreign Affairs of Denmark	20, AR111
Minter Ellison	1, 43, 87, 95, 98, AR103, AR117, AR121
Mondoro Pty Ltd *	11, AR109
Mullan, BS & AL	55
Mundigo Pty Ltd	63
Nakhla, R	46
Northern Co-operative Meat Company Ltd	75
NSW Department of Primary Industries	76
NSW Farmers' Association	96, AR113
NSW Pork Industry Taskforce, Members of the	88
Parish Rural Pty Ltd *	56
Parsons, G & D	70
Paterson, NT & RM *	23
Pork Queensland Inc	12
Primo Smallgoods	21
Provimi Australia *	81
QAF Meat Industries Pty Ltd	73
Qld Department of Primary Industries & Fisheries; and Qld Department of Tourism, Regional Development & Industry	79
Queensland Natural Pork Holdings (Marketing) Pty Ltd	16
Reed, TG & FL	90
Riverhaven Enterprises Pty Ltd	65
Salt Lake Bacon	52
Scharffetter, C & I	45
Shenandoah Estate	AR101

(Continued next page)

Table A.1 (continued)

Individual or organisation[a]	*Submission number*[b]
South Australian Farmers' Federation	38
Stock Feed Manufacturers' Council of Australia	49
Tarree Pastoral	54
Tasmanian Island Pork Alliance Inc	91
Tatong Pork	71
The Australian Pig Breeders' Association Ltd (WA Branch)	7
The Government of New South Wales	76
The Manintveld Farm Trust	59
Victorian Farmers' Federation	13
Walker, Dugald Mr	85, AR112
West Australian Pork Producers' Association	92
Westfarm Piggery	40
Westmill Products	69
Westpork Pty Ltd	3
Windridge Farms	80

[a] An asterisk (*) indicates that the submission contains confidential material not available to the public. [b] AR indicates submission received after the Accelerated Report.

Table A.2 List of visits

Individual or organisation
Australian Bureau of Agricultural and Resource Economics
Australian Pork Limited
Corackerup Farming
Craig Mostyn Group
Dardanup Butchering Company
Delegation of the European Commission to Australia
Department of Agriculture, Fisheries and Forestry (Cwlth)
Dorsogna Ltd
Embassy of the United States of America
Government of South Australia
Great Southern Pig Company
High Commission of Canada
KR Castlemaine Foods Pty Ltd
Milne Agri Group (Australia Natural Pork and Mt Barker Free Range Chickens)
NSW Farmers' Association
NSW Pork Industry Taskforce
Parish Rural Pty Ltd
Pork CRC Ltd
Portec Australia
PPC/Linley Valley Pork
QAF Meat Industries Pty Ltd
Royal Danish Embassy

(Continued next page)

Table A.2 (continued)

Individual or organisation
South Australian Farmers' Federation
The Australian Pig Breeders' Association Ltd (WA Branch)
Wandalup Farms
West Australian Pork Producers' Association
Westmill Products
Westpork Pty Ltd
Windridge Farms

Table A.3 **Public hearing participants**

Individual or organisation
Sydney, 27 November 2007
Cando Livestocks
Bimbi Bacon
Wilmeat Pty Ltd
B.E. Campbell (NSW) Pty Ltd
NSW Farmers' Association
Inglegreen Pastoral Company
Heather Brae Pig Stud
Leon's Pork Pty Ltd
Canberra, 28 November 2007
A.J. Edgerton & Co.
Delegation of the European Commission to Australia
Windridge Farms
Australian Pork Limited
High Commission of Canada
Danish Bacon & Meat Council
Ministry of Foreign Affairs of Denmark
Brisbane, 29 November 2007
Mondoro Pty Ltd
Northern Co-operative Meat Company Ltd
Alister Piggeries
Dalby Producers
Pork Queensland Inc
Gjadick Pork Pty Ltd
Adelaide, 3 December 2007
Parish Rural Pty Ltd
Australian Pork Farms Group
Ludvigsen Family Farms
South Australian Farmers' Federation

(Continued next page)

Table A.3 (continued)

Individual or organisation
Melbourne, 4 December 2007
JW and GE Bourke Pty Ltd
D.C. and S Miles Pty Ltd
Minter Ellison
Victorian Farmers' Federation
Gunpork Joint Venture

Table A.4 **Modelling roundtable participants**

Individual or organisation
Australian Bureau of Agricultural and Resource Economics
Australian Pork Limited
B.E. Campbell (NSW) Pty Ltd
Danish Embassy
Government of Canada
Monash University
University of Melbourne
White & Case LLP

Table A.5 **Request for information**

Organisation
QAF Meat Industries Pty Ltd
Derby Industries Pty Ltd (Pork Division)
Primo Smallgoods
KR Darling Downs
GWF Meat and Dairy
Hans Fresh & Swickers
Ridders Fresh
D'Orsogna Limited
B.E. Campbell (NSW) Pty Ltd
Northern Co-operative Meat Company Ltd.
Big River Pork

B Commonwealth Gazettes and GATT Article XIX

This appendix consists of:

- the *Commonwealth of Australia Gazette*, 'Establishment Of General Procedures For Inquiries By The Productivity Commission Into Whether Safeguard Action Is Warranted Under The Agreement Establishing The World Trade Organization', No. S 297, Thursday, 25 June 1998;
- the *Commonwealth of Australia Gazette*, 'Amendment of general procedures for inquiries by the Productivity Commission into whether safeguard action is warranted under the Agreement establishing the World Trade Organization', No. GN 39, 5 October 2005; and
- GATT 1994 Article XIX.

Commonwealth of Australia Gazette

No. S 297, Thursday, 25 June 1998
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SPECIAL

ESTABLISHMENT OF GENERAL PROCEDURES FOR INQUIRIES BY THE PRODUCTIVITY COMMISSION INTO WHETHER SAFEGUARD ACTION IS WARRANTED UNDER THE AGREEMENT ESTABLISHING THE WORLD TRADE ORGANIZATION

1. In order to comply with the requirements of the Agreement Establishing the World Trade Organization (WTO Agreement), and in particular the Agreement on Safeguards (Safeguards Agreement) and Article XIX of the General Agreements on Tariffs and Trade 1994 (GATT 1994), this notice establishes the general procedures for inquiries into safeguard action by the Productivity Commission (Commission) in respect of a reference under Parts 2 and 3 of the *Productivity Commission Act 1998.*

2. A reference under Parts 2 and 3 of the *Productivity Commission Act 1998* in respect of safeguard action will designate the product being imported and request an inquiry and report by the Commission on:

(a) whether the conditions are such that safeguard measures would be justified under the WTO Agreement;

(b) if so, what measures would be necessary to prevent or remedy serious injury and to facilitate adjustment; and

(c) whether, having regard to the Government's requirements for assessing the impact of regulation which affects business those measures should be implemented.

3. A "**safeguard measure**" means a measure provided for in Article XIX of GATT 1994, the rules for which are established by the Safeguards Agreement. A safeguards measure would be in the form of a quota, a tariff quota, or an increased level of tariff.

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Conditions

4. The Commission is to report on whether the product under reference is being imported into Australia in such increased quantities, absolute or relative to domestic production, and under such conditions as to cause or threaten to cause serious injury to the domestic industry that produces like or directly competitive products.

5. Safeguard measures have to be applied to a product being imported irrespective of its source, except:

(a) product determined to be of New Zealand origin pursuant to the Australia New Zealand Closer Economic Relations Trade Agreement, which shall be excluded from the inquiry; and

(b) product originating in a developing country Member of the WTO shall be exempted from such measures as long as its share of imports of the product concerned does not exceed 3%, provided that developing country Members of the WTO with less than 3% import share collectively account for not more than 9% of total imports of the product.

Inquiry

6. Reasonable public notice must be given to all interested parties in accordance with section 14 of the *Productivity Commission Act* 1998. The inquiry must involve public hearings or other appropriate means in which importers, exporters and other interested parties can present evidence and their views, including the opportunity to respond to the presentations of other parties and to submit their views, *inter alia*, as to whether or not the application of a safeguard measure would be in the public interest.

7. In accordance with section 12 of the *Productivity Commission Act* 1998 a report shall be published promptly setting forth the Commission's findings and reasoned conclusions reached on all pertinent issues of fact and law. The report will include a detailed analysis of the case under inquiry as well as a demonstration of the relevance of the factors examined. All factors specified in these procedures must be considered.

8. Any information which is by nature confidential or which is provided on a confidential basis shall, upon cause being shown, be treated as such by the Commission. Such information shall not be disclosed without permission of the party submitting it. Parties providing confidential information may be requested to furnish non-confidential summaries thereof or, if such parties indicate that such information cannot be summarized, the reasons why a summary cannot be provided. However, if the Commission find

that a request for confidentiality is not warranted and if the party concerned is either unwilling to make the information public or to authorize its disclosure in generalized or summary form, it may disregard such information unless it can be demonstrated to its satisfaction from appropriate sources that the information is correct.

Determination of Serious Injury or Threat Thereof

9. "**Serious injury**" means a significant overall impairment in the position of a domestic industry.

10. "**Threat of serious injury**" means serious injury that is clearly imminent, in accordance with the provisions of paragraphs 13 and 14. A determination of the existence of a threat of serious injury shall be based on facts and not merely on allegation, conjecture or remote possibility.

11. In determining injury or threat thereof, a "**domestic industry**" means the producers as a whole of the like or directly competitive products operating in Australia, or those whose collective output of the like or directly competitive products constitutes a major proportion of the total domestic production of those products.

12. "**Like product**" means a product which is identical, i.e. alike in all respects to the product under consideration, or in the absence of such a product, another product which, although not alike in all respects, has characteristics closely resembling those of the product under consideration.

13. In the inquiry to determine whether increased imports have caused or are threatening to cause serious injury to a domestic industry, the Commission shall evaluate all relevant factors of an objective and quantifiable nature having a bearing on the situation of that industry, in particular, the rate and amount of the increase in imports of the product concerned in absolute and relative terms, the share of the domestic market taken by increased imports, changes in the level of sales, production, productivity, capacity utilization, profits and losses, and employment.

14. The determination referred to in paragraph 13 shall not be made unless this inquiry demonstrates, on the basis of objective evidence, the existence of the causal link between increased imports of the product concerned and serious injury or threat thereof. When factors other than increased imports are causing injury to the domestic industry at the same time, such injury shall not be attributed to increased imports.

Application of Safeguard Measures

15. A safeguard measure can only be applied to the extent necessary to prevent or remedy serious injury and to facilitate adjustment. If a quantitative restriction is used, such a measure shall not reduce the quantity of imports below the level of a recent period which shall be the average of imports in the last three representative years for which statistics are available, unless clear justification is given that a different level is necessary to prevent or remedy serious injury.

Provisional Safeguard Measures

16. A reference can also be made to the Commission for an accelerated report to determine whether critical circumstances exist where delay in applying measures would cause damage which it would be difficult to repair. The Commission will report to the Minister on whether there is clear evidence that increased imports have caused or are threatening to cause serious injury. If the Commission finds that such circumstances exist, then it will also recommend what provisional measures would be appropriate for up to 200 days. Such measures should take the form of tariff increases unless that would not be sufficient to prevent serious injury. The provisional measures would be revoked when the Government reached a decision on the imposition of safeguard measures following the receipt of the report by the Commission.

Duration and Review of Safeguard Measures

17. The Commission shall also make recommendations about the duration of the measures up to a four year period. The period is to include any period where provisional measures have been in place.

18. Where safeguard measures are imposed, the Minister may refer to the Commission for inquiry and report the question of the extension of the period for safeguard measures beyond four years and up to eight years.

19. The inquiry by the Commission to advise whether the safeguard measure continues to be necessary to prevent or remedy serious injury and whether there is evidence that the industry is adjusting shall be in conformity with the procedures set out above. A measure so extended is not to be more restrictive than it was at the end of the initial period, and should continue to be liberalized.

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Amendment of general procedures for inquiries by the Productivity Commission into whether safeguard action is warranted under the Agreement establishing the World Trade Organization

In order to comply with the requirements of the Singapore Australia Free Trade Agreement, the Australia United States **Free Trade** Agreement and the Thailand Australia Free Trade Agreement, this notice amends the General procedures for inquiries by the Productivity Commission into whether safeguard action is warranted under the Agreement establishing the World Trade Organization Instrument.

Note The general procedures were published in Commonwealth *Gazette* No S 297 of 25 June 1998, and notified to the World Trade Organization. The general procedures relate to inquiries into safeguard action by the Productivity Commission in respect of a reference under Parts 2 and 3 of the *Productivity Commission Act* 1998.

Amendments

(section 3)

[1] Paragraph 5 (a)

omit

which shall be excluded from the inquiry; and

insert

which shall be excluded; and

[2] Paragraph 5 (b)

omit

imports of the product.

insert

imports of the product; and

[3] After paragraph 5 (b)

insert

(c) product determined to be of Singapore origin pursuant to the Singapore Australia Free Trade Agreement, which shall be excluded; and

(d) product determined to be of United States origin pursuant to the Australia United States Free Trade Agreement, which may be excluded if those imports are not a substantial cause of serious injury**, or threat thereof**; and

(e) product determined to be of Thai origin pursuant to the Thailand Australia Free Trade Agreement, which may be excluded if those imports are not a cause of serious injury **or threat thereof or of serious damage or actual threat thereof**.

GATT 1994 Article XIX

Emergency Action on Imports of Particular Products

1. (a) If, as a result of unforeseen developments and of the effect of the obligations incurred by a contracting party under this Agreement, including tariff concessions, any product is being imported into the territory of that contracting party in such increased quantities and under such conditions as to cause or threaten serious injury to domestic producers in that territory of like or directly competitive products, the contracting party shall be free, in respect of such product, and to the extent and for such time as may be necessary to prevent or remedy such injury, to suspend the obligation in whole or in part or to withdraw or modify the concession.

(b) If any product, which is the subject of a concession with respect to a preference, is being imported into the territory of a contracting party in the circumstances set forth in sub-paragraph (a) of this paragraph, so as to cause or threaten serious injury to domestic producers of like or directly competitive products in the territory of a contracting party which receives or received such preference, the importing contracting party shall be free, if that other contracting party so requests, to suspend the relevant obligation in whole or in part or to withdraw or modify the concession in respect of the product, to the extent and for such time as may be necessary to prevent or remedy such injury.

2. Before any contracting party shall take action pursuant to the provisions of paragraph 1 of this Article, it shall give notice in writing to the CONTRACTING PARTIES as far in advance as may be practicable and shall afford the CONTRACTING PARTIES and those contracting parties having a substantial interest as exporters of the product concerned an opportunity to consult with it in respect of the proposed action. When such notice is given in relation to a concession with respect to a preference, the notice shall name the contracting party which has requested the action. In critical circumstances, where delay would cause damage which it would be difficult to repair, action under paragraph 1 of this Article may be taken provisionally without prior consultation, on the condition that consultation shall be effected immediately after taking such action.

3. (a) If agreement among the interested contracting parties with respect to the

action is not reached, the contracting party which proposes to take or continue the action shall, nevertheless, be free to do so, and if such action is taken or continued, the affected contracting parties shall then be free, not later than ninety days after such action is taken, to suspend, upon the expiration of thirty days from the day on which written notice of such suspension is received by the CONTRACTING PARTIES, the application to the trade of the contracting party taking such action, or, in the case envisaged in paragraph 1 (b) of this Article, to the trade of the contracting party requesting such action, of such substantially equivalent concessions or other obligations under this Agreement the suspension of which the CONTRACTING PARTIES do not disapprove.

(b) Notwithstanding the provisions of sub-paragraph (a) of this paragraph, where action is taken under paragraph 2 of this Article without prior consultation and causes or threatens serious injury in the territory of a contracting party to the domestic producers of products affected by the action, that contracting party shall, where delay would cause damage difficult to repair, be free to suspend, upon the taking of the action and throughout the period of consultation, such concessions or other obligations as may be necessary to prevent or remedy the injury.

C Econometric analysis

C.1 Introduction

The Commission undertook econometric modelling to help inform its deliberations on whether imports have caused injury, and to examine how other market linkages operate. This appendix contains a description of the data, model specification and results from the modelling. APL also submitted its own econometric analysis (sub. AR118, annex G), and some of the key results from that analysis are noted below.

Results presented in this appendix have benefited from suggestions made by two independent referees. The independent referees appointed to review the Commission's econometric modelling were Professor Brett Inder, Head of the Department of Econometrics and Business Statistics at Monash University, and Associate Professor Kalvinder Shields, from the University of Melbourne. (Both referee reports were placed on the Commission's website. Hard copies can be provided upon request.)

Preliminary results were presented at a workshop held on 17 March, 2008. Participants included the two referees and representatives from APL, MinterEllison and relevant foreign embassies (a list of attendees is in appendix A, table A.4). A summary of suggestions made by the referees and workshop participants, and the Commission's responses to them, is provided in box C.2.

The outline of this appendix is as follows. A description of the data used in estimation is presented in section C.2. Two types of econometric models were used by the Commission:

- a vector autoregressive (VAR) model; and
- an inverse demand model.

The specification and results for the VAR model are presented in section C.3, and for the inverse demand model in section C.4. Section C.5 contains a summary of findings. These are used to inform a partial equilibrium model of the pigmeat industry in section C.6. Detailed estimation output is presented in section C.7.

C.2 Description of the data

A range of variables was used in the two different model specifications. A description of these variables, and an explanation of why they are relevant for the issue of safeguards, is presented below.

Variables used in the VAR model

Variables used in the estimation of the VAR model were:

- Import volumes (cwe)
- Import unit values
- Domestic production
- Domestic weighted saleyard price of pigs
- Feed wheat prices

Domestic saleyard and feed wheat price data were obtained from ABARE. Other variables were sourced from the ABS. All data were monthly, covering the period from August 1990 to November 2007. Data for the above variables are presented in figure C.1.

The saleyard price reflects the average price that producers receive for selling their pigs (for the fresh and processed market). This price will directly affect the revenue of producers and, therefore, their profitability. (At the workshop, some participants stated that a better price variable would be the contract price for pigs, as most pigs are sold on a contract basis. The Commission investigated the difference between contract prices and the saleyard price variable used in estimation and found that they were almost identical).

Feed wheat prices were included in the estimation because they are a major cost of production for pig producers. Thus, any increase in feed costs might be expected to cause an increase in pig prices. However, the availability of other meat products, as well as competition with other suppliers (including imports), may limit the extent to which feed cost increases can be passed on to producer prices. Other feed cost variables could be used (for example, sorghum or barley), but these have typically moved closely with feed wheat. Furthermore, feed wheat was the main source of feed used by pig farmers in the estimation period August 1990 to November 2007 (chapter 5). Figure C.1(a) shows that the cost of feed increased rapidly since about 2006.

Domestic production is included in the analysis. Production *directly* affects producers' sales revenue and it can also *indirectly* capture other manifestations of injury. For example, if production decreases, then it is likely the industry will experience employment losses. Other industry data that could be used to assess injury (such as employment) were not used directly in the estimation, because they were not available on a monthly (or even quarterly) frequency.

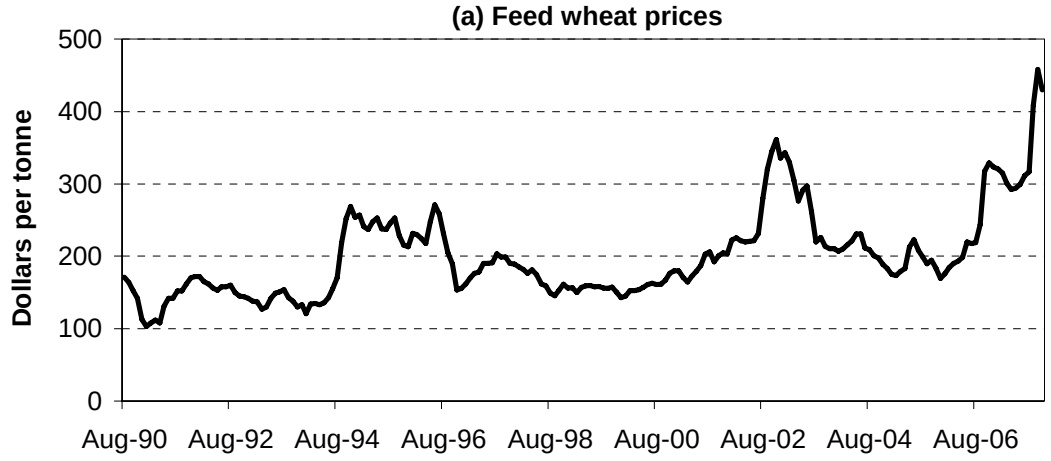
Import volumes were converted to a carcass weight equivalent (cwe) for comparison with Australian production. A factor of 0.56 was used.[1] Domestic production has remained fairly stable over the sample period, whereas imports have steadily increased, especially since 2000 (figure C.1(c)). This suggests that imports, not domestic production, have met the growth in total demand for pigmeat.

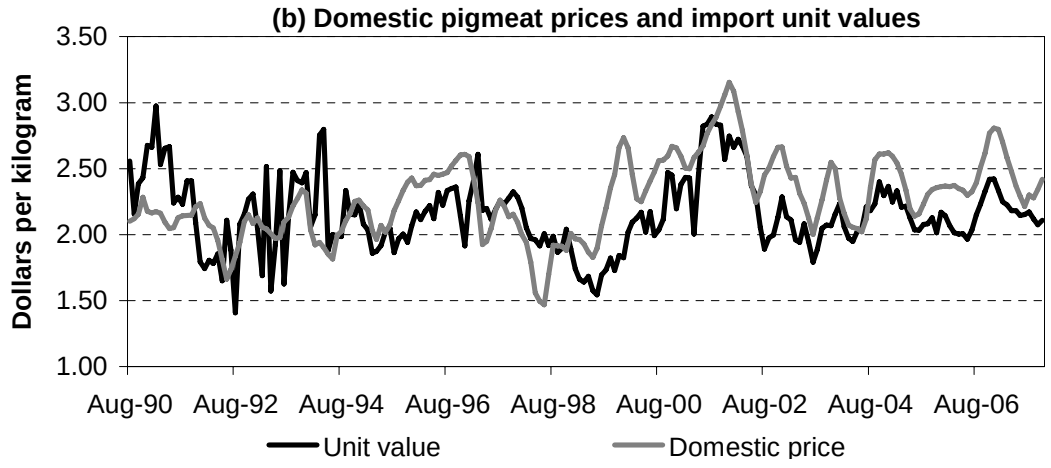
Import unit values were included as a variable to measure the price of imported pigmeat. Manufacturers may choose how much to import by comparing prices of locally produced pigmeat with imported cuts. Import unit values were derived as the value of imports divided by volume (after volumes were converted to cwe). The price at which Australian processors buy and sell imported pigmeat may differ from its import unit value. However, *changes* in import unit values should better reflect *changes* in imported pigmeat prices, compared with using other proxies (for example, exchange rates do not capture the seasonality of pig prices).

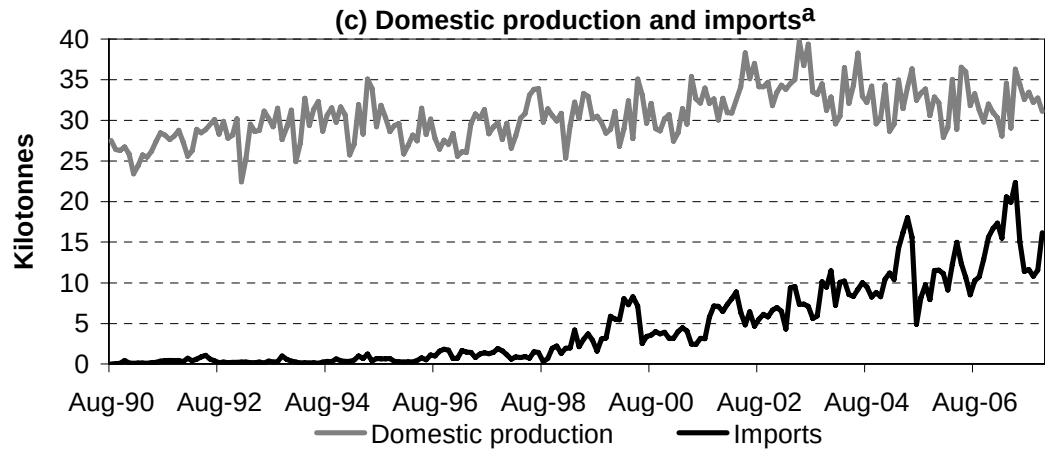
Domestic prices and import unit values have moved closely together (figure C.1(b)). Thus, Australian prices appear to be linked to movements in overseas pig prices. This suggests there is a global supply price which determines the price of pigmeat for small producer countries, such as Australia. Domestic prices have usually been slightly higher than import unit values, which may reflect that additional costs of importing, such as freight and insurance, are not captured in the value of imports. Also, the imputed import unit value will be greater, the larger the conversion factor that is used. A conversion factor of 0.56 was used in the modelling, which is at the lower end of conversion factors that have been used in analysis of the industry (see box 3.2). Therefore, the import unit values used in the econometric modelling below are likely to be a *lower* estimate of the price of imported pigmeat.

[1] Although different factors could be used, it should not matter when examining the *percentage change* in imports, if the proportion of cuts has remained stable (see box 3.2).

Figure C.1 **Main variables used in the econometric estimation**
Sample period, August 1990 to November 2007







a Import volumes and unit values are in carcass weight equivalent terms. A conversion factor of 0.56 is used.

Data sources: ABS (unpublished); ABARE (unpublished).

Variables used in the inverse demand model

In addition to the above variables, an inverse demand model estimated with *monthly* data included domestic production of beef and lamb, and household income. All these variables were obtained from the ABS. (Household income was converted from a quarterly frequency, using linear interpolation.)

An inverse demand model with *quarterly* data was also estimated. This model included retail price and production data for pork, beef and lamb, provided by ABARE. Retail meat prices were included because the price of other meats may influence the retail price of pork and, in turn, producer prices.

Retail price variables were not included in a quarterly VAR model because it would have limited the explanatory power of the model. There would have been fewer observations available with quarterly data and there are more coefficients to be estimated in the VAR model, compared with the inverse demand model.

Testing the data for stationarity

When estimating regressions with time series data, it is necessary to control for any variables that are non-stationary. To help achieve stationarity, all variables used in estimation were converted to natural logarithms. Augmented Dickey-Fuller tests were conducted to test for stationarity over the period 1990–2007. Under a number of different lag lengths, tests showed that only import volumes were not stationary (table C.1).

Table C.1 **p-values for Augmented Dickey-Fuller unit root tests**

Null hypothesis: variable contains a unit root (is not stationary)[a]

Variable	*1 lag*	*2 lags*	*3 lags*	*4 lags*	*5 lags*	*6 lags*
Log production	0.000	0.014	0.001	0.002	0.011	0.017
Log import volume	0.067	0.275	0.612	0.542	0.504	0.527
Log domestic price	0.000	0.001	0.009	0.024	0.062	0.192
Log import unit value	0.000	0.008	0.003	0.010	0.017	0.003

[a] A low p-value indicates the variable is stationary.

Source: Productivity Commission estimates.

Although imports were not stationary, first-differenced data were *not* used in the final estimation. At the workshop, the referees noted that there are potential misspecification issues when using differenced data in a VAR model. Furthermore, the existence of unit roots is not problematic if the VAR is stable. For robustness, tests or residual plots were conducted for each model to determine if non-stationarity was likely to be a problem afflicting the results.

C.3 VAR model estimation and results

The VAR model is a general framework often used to explore macroeconomic relationships with time series data. It was used in econometric analysis conducted for the 1998 safeguards inquiry, and was used in modelling done for APL for the current inquiry. This section describes the VAR model structure and estimation results. Some results are also compared with those obtained from APL.

VAR model structure

The VAR model specification can be written as:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \beta_1 y_{t-2} + ... + \beta_p y_{t-p} + \beta_{exog} + \varepsilon_t \qquad \text{(Equation C.1)}$$

Where:

- y_t is a vector containing the four *endogenous* variables used in estimation: domestic production, prices, import volumes and import unit values. A variable is said to be endogenous if it is determined within the system. In this framework, each endogenous variable is a function of lagged values of itself and all other endogenous variables.
- β_{exog} is a vector of *exogenous* variables. These variables are not assumed to be a function of other variables. Exogenous variables used were seasonal dummy variables, a linear trend term, and feed prices.
- ε_t is a vector of stochastic error terms.

At the modelling workshop, it was suggested that, if possible, an explanatory variable be used rather than a trend term. The model was estimated with household income used as a proxy for growth in demand for pigmeat. Qualitative results did not change with this variable (the results are not shown here).

APL estimated a VAR model, but with slightly different specifications. Box C.1 summarises their framework and key results.

Box C.1 **APL's econometric analysis**

APL submitted econometric analysis undertaken by Stuart Mounter and Albert Wijeweera from the University of New England (sub. AR118, annex G). This analysis updated modelling that was submitted before the accelerated report. The update took into consideration reservations the Commission had with the initial modelling, as well as comments from an independent referee (Dr Alicia Rimbaldi).

The analysis was conducted with the same VAR model specification shown in equation C.1, and one lag length was chosen. The sample period was January 1999 to November 2007.

Endogenous variables used in estimation were: production; imports; Sydney wholesale carcass price; national average baconer contract price; and, retail prices of pigmeat, beef, lamb and poultry.

Exogenous variables were feed prices and bilateral exchange rates between Australia and Denmark, and Australia and Canada. A trend term and seasonal dummies were also included.

Compared with the Commission's VAR analysis, APL's modelling benefitted from having retail prices of pigmeat and other meats. However, it did not include import unit values.

Key findings were:

- An increase in import volumes had a negative effect on both producer price variables. The effect was temporary and of largest magnitude 3 months after the increase in imports.
- Retail prices for pigmeat remained unaffected by an increase in import volumes.
- An increase in domestic pig prices had a large positive effect on import volumes.

There were also some counterintuitive results:

- An increase in import volumes had a *positive* effect on production.
- An increase in the contract baconer price had a *negative* effect on production.

Separate VAR models were used for the period 1990–2007 and 2000–2007. For the most robust results, the full sample should be used. However, using the full sample to determine long-term relationships between the variables does not necessarily reflect what has recently occurred in the industry. Understanding what happened in the market over 2000–07 is of interest, because safeguard action can only be taken for an increase in imports that has occurred *recently*.

The choice of lag length, *p*, was determined using tests that aim to maximise a model's goodness of fit and minimise its complexity (that is, the number of coefficients in the model). A model with two or three lag lengths was optimal under the relevant tests (see table C.4 for lag order selection test results). Results reported

below are for a model with 2 lag lengths, but models with more lags were also examined because two months might be too short to capture the dynamic present in the data. Furthermore, there was evidence of autocorrelation in the residuals when estimated with 2 lags. This was not a problem with 4 lags (table C.5). Although not presented here, models with 3 or 4 lags did not change qualitative results. That is, the statistical significance of the parameters of interest were unchanged. All models satisfied stability tests, suggesting stationarity is not a problem (see table C.6). (All models were estimated with the program Stata, version 10.0.)

Granger causality

Granger causality tests can be performed to determine if changes in one endogenous variable can explain changes in another. Granger causality results for the model estimated for 1990–2007 are in table C.7.

Caution should be used when stating that a variable 'Granger causes' another variable in a *multivariate* VAR framework. By way of example, suppose there are 3 variables x, y and z. Assume that x causes y, and y causes z. In that case, x causes z indirectly, through its effect on y. However, a test of causality between x and z might not show a statistically significant relationship.

Although pairwise causality tests cannot always be used to determine which variables cause changes to others, the existence of some causal relationships in the data suggests that a VAR framework, which allows for each variable to explain others, is an appropriate specification.

Coefficient results

Estimated coefficients and their significance can be used to examine the direct effect one variable has on another. Unlike Granger causality tests, coefficients also show the *direction* (positive or negative) of each effect.

Estimated coefficients for the period 1990–2007 are provided in table C.8. Lagged values for each endogenous variable were significant in explaining their current values. Other parameters that were statistically significant are mentioned below.

- Import volumes: An increase in production had a negative effect on import volumes. Domestic prices had a positive effect on import volumes, suggesting manufacturers import more when domestic prices increase. Import unit values had a negative effect on import volumes.
- Import unit values: Domestic prices had a positive effect on import unit values. This is consistent with Australia being a small producer whose prices are influenced by a global price. Import volumes had a negative effect on import unit values.

The cost of feed was included as an exogenous variable. There was no evidence that an increase in feed costs caused an increase in domestic pigmeat prices.

Impulse response functions

A coefficient estimate shows only the effect that one variable directly has on another variable. By itself, this does not capture the effect that one variable has on another variable through its interactions with all other endogenous variables. Therefore, impulse response functions are used in analysis of VAR models, because they allow for interactions among variables when a shock occurs.

Impulse response functions were used to examine the effect on domestic prices and production from a shock that increases import volumes by 1 per cent. Other relationships were also examined. All results below were for the estimation period 1990–2007, unless otherwise stated.

Imports had a small negative effect on prices

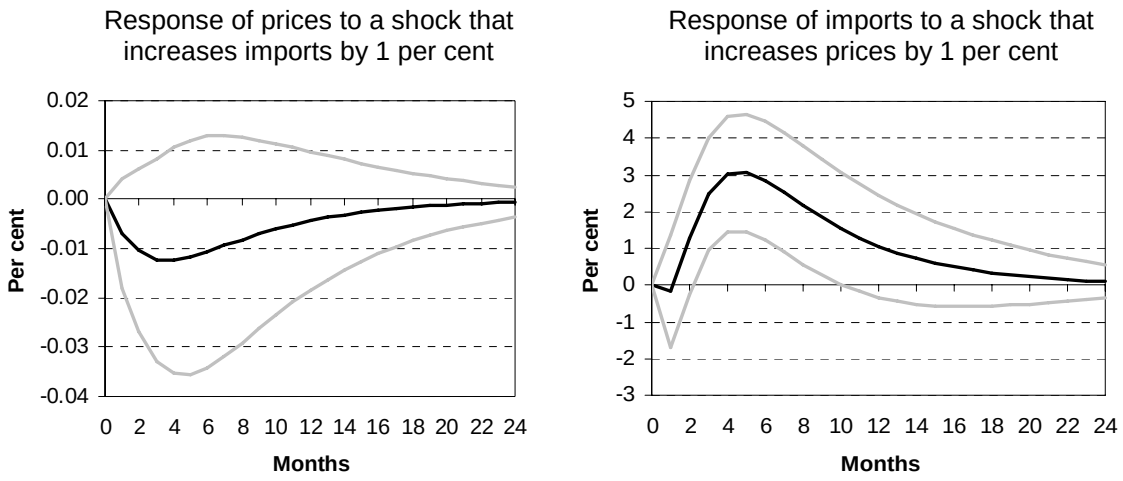
VAR model results showed only *weak* evidence that a shock that increased import volumes have a negative effect on domestic prices. The Commission's modelling did not show a statistically significant negative effect, although APL's modelling did. The effect was greatest (in absolute magnitude) after about 3 months in APL's modelling and 4 months in the Commission's modelling (see left panel of figure C.2). However, in both models the magnitude of the effect was very small. The decrease in price (from a shock that increased imports by 1 per cent) was around 0.10 to 0.15 per cent, based on the Commission's and APL's modelling. Once again, the results from the Commission's modelling were not statistically significant (this was also the case when estimated over the period 2000–07).

Imports did not have a negative effect on production

There was *no* evidence that a shock leading to increased imports caused production to decline. Indeed, results showed a positive effect (although *not* statistically significant). VAR model results submitted by APL also showed a positive effect, which was statistically significant. (These counterintuitive findings might reflect that the data are not fully capturing how the market works.)

Figure C.2 **The relationship between domestic prices and imports**

Impulse response functions for the estimation period 1990–2007[a]



[a] In the graphs, the black line represents the point estimate, and grey lines are the 95 per cent confidence intervals. Data underlying these graphs are in table C.9.

Source: Productivity Commission estimates.

Higher domestic prices caused a large increase in imports

In its accelerated report, the Commission noted that increases in imports appear to follow increases in domestic prices. To examine this further, the effect on import volumes from a shock that leads to an increase in domestic prices was examined (right panel, figure C.2). The effect of higher prices on import volumes was much larger in magnitude than the effect of import volumes on prices (note the scale of the axis in figure C.2). Furthermore, this effect was statistically significant from months 3 to 10 after the shock that increased prices occurred. APL's modelling showed a similar response for import volumes following a shock that increased the national baconer contract price. Thus, import volumes appear to be highly responsive to domestic pig prices.

Domestic prices and import unit values may influence each other

There was *some* evidence that domestic prices affect import unit values, and vice versa. When estimated over the period 2000–07, a shock that led to an increase in import unit values led to a (statistically significant) increase in domestic prices. However, this did not hold for the estimation period 1990–2007. A shock that increased domestic prices also led to higher import unit values (in both estimation periods).

C.4 Inverse demand model

An inverse demand model was used as an alternative specification to the VAR model, to check the robustness of results. If results under different model specifications consistently show that imports affect prices, then this could provide stronger evidence of causation from imports to domestic prices or production.

Model specification

The inverse demand model estimated was a one-equation model of the form:

$$price_t = \beta_0 + \beta_1 prod_t + \beta_2 Mvol_{t-p} + \beta_3 Mprice_t + \beta_4 Beef_t + \beta_5 Lamb_t + \beta_6 Other_t + \varepsilon_t \quad \text{(Equation C.2)}$$

In this model, it is assumed that domestic production (*prod*) and imports (*Mvol*) affect domestic price, but not vice versa. Thus, the inverse demand model has more specific assumptions regarding the causality between variables than the VAR model does. Using lagged (rather than current) import volumes was suggested at the workshop, because it may take time for imports to be processed and influence domestic prices. The VAR model results also showed a delayed effect of imports on prices. Beef and lamb production were also included as explanatory variables.

A 'pure' inverse demand model assumes that only production affects prices. However, other factors that might influence domestic price were also included in the estimation. These variables included import unit values (*Mprice*), seasonal dummy variables and household income (as a proxy for market growth).

The model was estimated separately with monthly and quarterly data, because some variables were not available on a monthly frequency. The variables used in each model are mentioned below. Inverse demand models were estimated using ordinary least squares regression.

Results with monthly data

In addition to the variables used in the specification above, the monthly model also tested whether feed costs influence pig prices. The monthly model was estimated over different time periods, and with different lag lengths for imports. Results are presented in table C.2 for a model estimated with a 3 month lag for imports. A check of the residual terms suggested that the results for the period 2000–07 are the most reliable (see figure C.4 for a graph of residuals for the estimation periods 1990–99 and 2000–07).

Table C.2 **Monthly inverse demand model coefficients**

Explanatory variable[a]	*1990–99*	*2000–07*	*1990–2007*
Log feed	0.128**	0.053*	0.086***
Log pork production	-0.668***	-0.105	-0.175
Log beef production	-0.302*	-0.028	-0.219*
Log lamb production	-0.017	0.124*	0.119
Log imports (lag 3 months)	0.002	-0.040*	0.031***
Log unit value	0.130*	0.545***	0.427***

*** significant at 1 per cent, ** 5 per cent and * 10 per cent. [a] Model specification also included a constant, household income and seasonal dummy variables. Full estimation output is in table C.10. Coefficient values are the percentage change in domestic pig prices from a 1 per cent change in the explanatory variable.

Source: Productivity Commission estimates.

Local factors had a stronger influence on prices before 2000…

Most coefficients in this model, when estimated over various time periods, were of the correct magnitude and statistically significant. Feed price had a positive effect on pig prices, and production had a negative effect (although this effect was not always significant). Interestingly, production and the cost of feed appeared to have less of an influence on pig prices in the more recent 2000–07 period. In 2000–07, the effect of feed on pig prices was smaller (compared with 1990–99), while production had no statistically significant effect. This suggests that other factors may have become more important in explaining pig prices during this period.

…with global factors having a stronger effect on prices since 2000

Of the other factors considered, the main driver of domestic prices appears to be import unit values. In 2000–07, a 1 per cent increase in import unit values led to a 0.54 per cent increase in price. In comparison, a 1 per cent increase in import volumes led to prices falling by just 0.04 per cent. The effect of import unit values on domestic prices was much larger in 2000–07, when imports had a greater share of the market, compared with 1990–99. This result is consistent with Australia being a small producer globally, whose price moves in line with changes in the world market.

The 3 month lagged import volume had a statistically significant negative effect on prices for 2000–07. However, the effect of an increase in import volumes on domestic prices was much smaller than the effect of import unit values on prices. Different lag lengths for imports were tried in estimation. A 3 or 4 month lag of import volumes gave very similar results. (Some workshop participants suggested using 1 or 2 lag lengths, which resulted in no significant effect on prices. However,

a 3 month lag provided the best goodness of fit.)

Results with quarterly data

The inverse demand model was also used to examine the effect that *retail* prices of pork and other meat products have on domestic producer prices. As mentioned, retail price data were quarterly, so this model was estimated with quarterly data only. Results for this model are presented in table C.3.

Table C.3 **Quarterly inverse demand model coefficients**

Explanatory variable[a]	*1990–99*	*2000–07*	*1990–2007*
Log pork retail price	1.657**	0.233	0.852*
Log pork production	-1.241***	0.200	-0.016
Log beef retail price	1.900**	0.529	-0.086
Log beef production	-0.211	0.133	-0.347
Log lamb retail price	-0.265	-0.663	-0.510
Log lamb production	-0.699**	-0.115	-0.180
Log import unit value	-0.239*	0.536***	0.486***
Log imports (lag one quarter)	-0.049**	-0.012	0.025

*** significant at 1 per cent, ** 5 per cent and * 10 per cent. [a] Model specification also included a constant, household income and seasonal dummy variables. Detailed estimation output is in table C.11. Coefficient values are the percentage change in domestic pig prices from a 1 per cent change in the explanatory variable.

Source: Productivity Commission estimates.

Although this specification gives insight into the effect that retail prices have on producer pig prices, it should be treated with caution. Results were not as consistent with theory (particularly the effect of import volumes on prices), compared with those from the monthly model. This may have occurred because the data series were quarterly, leaving fewer observations (around 30) when estimated over 2000–07.

Results with quarterly data showed that lagged import volumes had a negative effect on domestic prices in 1990–99. However, import volumes did not affect prices when estimated over other periods.

Prior to 2000, an increase in the *retail* price of pork and beef had a positive effect on domestic pig prices, while production had a negative effect on domestic prices.

Over the period 2000–07, production and retail prices of pork and other meats did not have a significant effect on domestic prices. As in the monthly inverse demand model, changes in import unit values were the main driver of domestic price changes in 2000–07.

C.5 Summary of the econometric results

This section presents a summary of the econometric modelling results presented above.

The modelling benefited from suggestions made at a workshop and referee comments. Box C.2 provides a list of suggestions and how the Commission responded to them. In most cases, the revised results were more consistent with theory than the preliminary results, and can help inform how the market operates. However, some caution should be used with applying the quantitative parameters, because they were sensitive to the model specification and time period used in estimation. Some results were also counterintuitive.

Have imports caused injury?

With regard to the issue of causation, there was no econometric evidence that increased import volumes caused a decrease in domestic production. Moreover, some modelling results showed that increased imports caused an *increase* in production. These results may arise because the models did not adequately capture overall growth in demand for pork.

Some model specifications showed that increased import volumes lowered domestic prices. Results provided by APL showed that a shock that caused an increase in imports caused a temporary decline in prices, which was of largest magnitude 3 months after imports increased. The Commission's VAR model analysis showed a similar effect, but it was not statistically significant. However, the inverse demand model estimated with monthly data showed that import volumes (lagged 3 or 4 months) had a statistically significant effect on prices in the period 2000–07. (A 10 per cent increase in import volumes caused a 0.4 per cent decline in domestic prices, in the inverse demand model).

Even for those models which did suggest that greater import volumes caused a decline in price, the effect was always small, especially compared with other variables that affect domestic prices. When applying the model results to the current situation, the increase in imports at the beginning of 2007 *may have contributed* to prices being slightly below their seasonal average at the end of the year, but import volumes were unlikely to be the major cause. Since the end of 2007, prices have returned to their normal cyclical levels, in line with the modelling which predicts that any effect import volumes have on prices is temporary.

Overall, the Commission does not consider that the modelling results provide evidence that increased import volumes have caused lower profitability and injury.

What else can be said about how the market operates?

The modelling suggests that an increase in domestic prices caused an increase in import volumes, and that this effect was much larger than the effect of increased imports on prices. This indicates that import volumes are very responsive to changes in domestic prices. It is also consistent with data showing that price rises have typically *preceded* increased import volumes in recent years.

Import *unit values*, not volumes, appear to be the main driver of domestic prices. The effect of an increase in import unit values on domestic prices was found to be much larger than the effect of other variables on domestic prices, and statistically significant in almost all model specifications chosen.

Results from the inverse demand model provided additional insight into how the Australian market changed as it opened up to import competition. When estimated over the period 1990–99, domestic production, feed costs and retail pork prices all had a significant effect on domestic prices. However, these variables had a much smaller effect on domestic prices in 2000–07.

For the period 2000–07, *global* factors had a greater impact on prices than they did over the period 1990–99. The main driver of domestic prices in 2000–07 were import unit values. Import *volumes* had only a small negative effect on domestic prices in 2000–07. In summary, the econometric results, while not definitive, provide support for the proposition that, as Australia became more integrated with the world market, its pigmeat prices became more closely linked with international prices.

Box C.2 **Suggestions from referees and the modelling workshop**

The Commission presented findings from its preliminary econometric analysis at a workshop on 17 March 2008, and had two independent referees review its work. A summary of the recommendations, and the Commission's response, are provided here.

VAR model structure: Using economic theory to determine which variables are co-integrated, and further developing the VECM, might provide more robust results.

Response: Cointegration between two variables requires that they are not stationary. However, most variables were stationary, so no prior theoretical assumption regarding which variables were cointegrated could be made. Therefore, a VECM with no assumptions regarding cointegrating vectors was modelled. Cointegrating vectors were sometimes found, depending on sample period and specification. However, most qualitative results were unchanged, so the VECM was not explored further.

VAR simulation: to examine the effect of imports, a VAR model could be simulated from 2000, using import volumes that occurred in 2000 to predict what prices would have been since that time.

Response: In communications with referees since the workshop, it was determined that simulation requires parameters in the model to be statistically significant. As many parameters were *not* significant, including the effect of imports on prices, the simulation was not conducted.

Inverse demand model: Re-estimate with lagged imports and two-stage least squares.

Response: Models were re-estimated with a monthly (or quarterly) lag. Two-stage least squares was not used due to the short time available to re-estimate the model.

Trend term: Including a linear trend term was not considered to be a good proxy for market demand growth.

Response: Household income was used instead and qualitative results did not change. (The inverse demand model results presented in this appendix include estimation with the income variable, but due to limited time the VAR model results do not.)

Price variable: Contract prices should be used instead of saleyard prices, because most pigs are sold on a contract basis.

Response: Weekly contract prices were converted to a monthly equivalent and were almost identical to saleyard prices. Thus, results should remain unaffected by the choice of price variable.

Diagnostic results: Reporting more diagnostic tests or residual plots would help inform if stationarity was a problem, and provide insight for further improvements.

Response: Updated results included autocorrelation tests for the VAR model, and plots of residual terms for the inverse demand model. Non-stationarity of data did not appear to be a problem with the inverse demand model. The VAR model was estimated with different lags when autocorrelation was a problem, and qualitative results did not change.

C.6 Economic analysis of the pigmeat industry

In the previous section, some qualitative findings from the econometric modelling were discussed. These findings can be used to help construct a partial equilibrium model of the pigmeat market.

A stylised model of the pigmeat market

A partial equilibrium model of the processed market can be constructed using some of the qualitative findings from the modelling in this appendix:

- *Demand* for pigmeat is likely to be relatively elastic, because of the availability of other meat products. The Commission's modelling did not explicitly measure a demand elasticity, but estimates available in the literature (Griffith et al. 2001) suggest demand is elastic (elasticity of around 1.5).
- *Domestic supply* is likely to be relatively inelastic in the short run, due to lags in production changes, but somewhat elastic in the long run.
- *Foreign export supply* (or domestic import supply) is likely to be more elastic than domestic supply, given the wider availability of imports. Furthermore, modelling submitted by APL and conducted by the Commission both found a very large response of import volumes from a change in domestic prices.

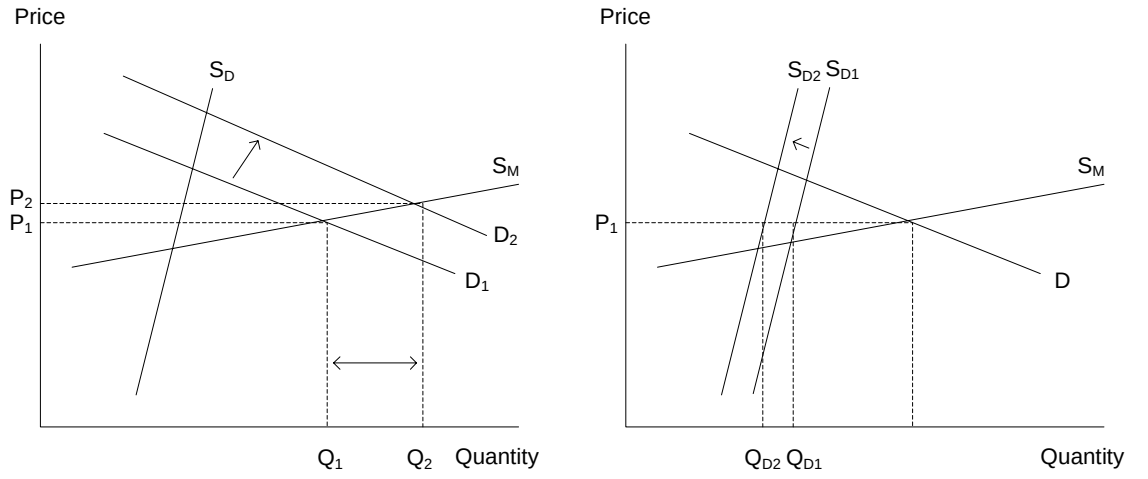
Using this information, a stylised partial equilibrium model of the pigmeat market can be illustrated as in figure C.3. For imports to have increased, either domestic demand must have risen, the price of imports fallen (lowering the foreign export supply schedule), or domestic supply contracted.

As noted in chapter 3, over the past 5 years the price of imports has remained within normal cyclical levels. Domestic supply has also been largely unchanged. However, pigmeat consumption has increased by 25 per cent in that time. Processed pork consumption increased by around 40 000 tonnes, fresh pork consumption increased by around 70 000 tonnes, and import volumes increased by around 112 000 tonnes. In other words, the evidence is consistent with an increase in demand having caused an increase in imports, rather than a downward shift in the foreign export supply schedule.

The effect of an increase in demand for pigmeat can be analysed using the information above. An increase in *processed* pork consumption, which creates an outward shift of the demand curve, is shown to be met predominantly by imports, because import supply is more elastic and can respond more easily to demand increases (figure C.3, left panel).

An increase in *fresh* pork consumption will encourage domestic producers to switch to supplying the fresh market. This can be shown as a contraction in domestic supply to the processed market, leading to an increase in imports (figure C.3, right panel).

Figure C.3 **Partial equilibrium model of pigmeat for processing**



Q Quantity. **P** Price. **D** Demand. **S_D** Domestic supply. **S_M** Supply of imports. **Q_D** Quantity of domestic meat.

The findings from this analysis are consistent with that of Australia being a small world producer and price taker. The increase in import volumes most likely represents their responsiveness to changes in domestic demand (or relative prices), rather than import volumes causing changes to domestic prices and production. In this sense, greater import volumes are symptomatic of changes in market conditions, not the driver of such changes.

How would safeguard protection affect the market?

The above partial equilibrium analysis can also be used to anticipate the effects of measures to restrict imports. An increase in import prices, as a result of a tariff or quota, would significantly reduce the quantity of pigmeat demanded. Domestic production in the short run would be relatively fixed, with existing producers capturing higher prices. Eventually, domestic supplies to the processed market would increase, but overall pigmeat consumption would be significantly lower.

Domestic production would also shift from the fresh to the processed market, raising prices in the fresh market. Fresh pork consumption would fall, as consumers shift to other meats.

C.7 Econometric output

This section contains econometric output for the VAR model and inverse demand models that were presented above.

Table C.4 **VAR lag order selection criteria tests**

Estimation period, August 1990 to November 2007

Lag	*Log likelihood*	*LR*	*FPE*	*AIC*	*HQIC*	*SBIC*
0	177.69		2.00E-06	-1.77	-1.75	-1.71
1	668.17	980.94	1.60E-08	-6.61	-6.48	-6.28
2	733.88	131.43	9.50E-09	-7.12	-6.88	**-6.52***
3	767.95	68.14	0.00	-7.31	**-6.95***	-6.44
4	791.70	47.50	7.30E-09	-7.38	-6.92	-6.25
5	807.32	31.25	7.30E-09	-7.38	-6.81	-5.98
6	826.71	38.77	7.10E-09	-7.42	-6.74	-5.74
7	840.19	26.97	7.30E-09	-7.39	-6.60	-5.45
8	860.88	41.37	7.00E-09	-7.44	-6.54	-5.23
9	882.07	42.38	6.70E-09	-7.49	-6.49	-5.02
10	901.27	38.39	6.50E-09	-7.52	-6.41	-4.78
11	911.53	20.53	7.00E-09	-7.46	-6.25	-4.45
12	955.24	**87.41***	**5.30E-09***	**-7.75***	-6.42	-4.47

***** Indicates optimal lag order selected by the criterion.

Source: Productivity Commission estimates.

Table C.5 **Lagrange multiplier test for autocorrelation**

Null hypothesis: no correlation at lag order[a]

	Estimation: 1990–2007, 2 lags		*Estimation: 1990–2007, 4 lags*	
Lag	*Chi²*	*Prob > Chi²*	*Chi²*	*Prob > Chi²*
1	75.216	0.000	21.218	0.170
2	37.698	0.002	18.502	0.295
3	75.344	0.000	22.006	0.143
4	16.996	0.386	23.632	0.098
5	14.614	0.553	18.410	0.300
6	47.428	0.000	27.352	0.038
7	32.970	0.007	18.702	0.284
8	8.449	0.934	5.715	0.991

a A low probability value indicates the presence of autocorrelation in the residuals.

Source: Productivity Commission estimates.

Table C.6 **VAR stability condition check**

Estimation period, August 1990 to November 2007

Model with 2 lags		*Model with 4 lags*	
Eigenvalue	*Modulus*	*Eigenvalue*	*Modulus*
0.838	0.838	0.929	0.929
0.772	0.772	0.877	0.877
0.688	0.688	0.825	0.825
0.550	0.550	-0.450 + 0.623i	0.769
-0.480	0.480	-0.450 – 0.623i	0.769
-0.259	0.259	0.724	0.724
0.176 + 0.136i	0.223	0.379 + 0.508i	0.634
0.176 – 0.136i	0.223	0.379 – 0.508i	0.634
		-0.383 + 0.473i	0.609
		-0.383 – 0.473i	0.609
		0.101 + 0.354i	0.368
		0.101 – 0.354i	0.368
		-0.306 + 0.202i	0.367
		-0.306 – 0.202i	0.367
		0.153 + 0.268i	0.309
		0.153 – 0.268i	0.309

Source: Productivity Commission estimates.

Table C.7 **Granger causality test results from VAR model[a]**

Estimation period, August 1990 to November 2007

	Model with 2 lags		*Model with 4 lags*	
Null hypothesis	*Chi*^{2}	*p-value*	*Chi*^{2}	*p-value*
Domestic price does not cause domestic production	2.053	0.358	5.084	0.279
Import volumes does not cause domestic production	0.514	0.773	1.647	0.800
Import unit value does not cause domestic production	0.334	0.846	2.831	0.587
Domestic production does not cause domestic price	2.719	0.257	5.437	0.245
Import volumes does not cause domestic price	1.644	0.440	5.150	0.272
Import unit value does not cause domestic price	1.128	0.569	7.791	0.100
Domestic production does not cause import volumes	3.226	0.199	4.224	0.377
Domestic price does not cause import volumes	14.223	0.001	21.871	0.000
Import unit value does not cause import volumes	7.269	0.026	6.322	0.176
Domestic production does not cause import unit value	0.459	0.795	2.642	0.619
Domestic price does not cause import unit value	23.398	0.000	27.912	0.000
Import volumes does not cause import unit value	6.898	0.032	11.466	0.022

a A low p-value indicates that the relevant variable does Granger cause the other.

Source: Productivity Commission estimates.

Table C.8 **VAR model, estimation output**

Estimation period, August 1990 to November 2007, 2 lags

Explanatory variable	*Log production*		*Log domestic price*		*Log import volumes*		*Log import unit value*	
	Coef.	*p-value*	*Coef.*	*p-value*	*Coef.*	*p-value*	*Coef.*	*p-value*
Log production								
Lag 1	0.151	0.023	0.034	0.398	-0.892	0.073	0.030	0.787
Lag 2	0.306	0	-0.063	0.113	0.270	0.582	-0.074	0.503
Log domestic price								
Lag 1	-0.139	0.186	1.321	0	-0.167	0.832	0.016	0.931
Lag 2	0.111	0.326	-0.377	0	1.470	0.084	0.363	0.058
Log import volumes								
Lag 1	0.006	0.514	-0.007	0.212	0.568	0	-0.007	0.647
Lag 2	-0.002	0.849	0.003	0.566	0.010	0.875	-0.023	0.091
Log unit value								
Lag 1	0.023	0.576	0.012	0.629	0.030	0.922	0.421	0
Lag 2	-0.017	0.671	-0.025	0.291	-0.678	0.021	0.133	0.045
Log-linear trend	-0.001	0.825	0.002	0.263	0.081	0	0.009	0.034
Log feed	0.060	0.002	-0.002	0.871	0.094	0.514	-0.068	0.037
January	-0.137	0	-0.026	0.015	0.058	0.652	-0.029	0.329
February	-0.090	0	-0.009	0.44	0.009	0.954	-0.031	0.349
March	0.054	0.005	-0.018	0.132	0.255	0.077	-0.013	0.699
April	-0.036	0.052	-0.032	0.005	0.217	0.12	-0.047	0.137
May	0.049	0.009	0.001	0.92	0.236	0.094	-0.020	0.523
June	0.040	0.037	-0.010	0.377	0.172	0.225	0.034	0.293
July	-0.033	0.091	0.041	0	0.362	0.012	-0.001	0.974
August	-0.034	0.063	0.035	0.002	0.139	0.311	0.015	0.623
September	-0.024	0.178	0.015	0.152	0.345	0.008	0.063	0.033
October	-0.055	0.001	0.019	0.07	0.417	0.001	0.029	0.32
November	-0.048	0.004	0.029	0.005	0.292	0.02	0.005	0.864
Regime[a]	0.047	0.004	0.006	0.538	0.353	0.004	-0.017	0.524
Constant	5.376	0	0.692	0.177	4.429	0.482	1.307	0.359

a A dummy variable to allow for a structural break was included. It took the value zero from 1990 to 1998, and 1 from 1999 onwards. This was to control for the increase in imports that occurred from 1999. As expected, it was positive and statistically significant in the import volume equation.

Source: Productivity Commission estimates.

Table C.9 **Impulse responses and accumulated impulse responses**

Estimation period, August 1990 to November 2007, 2 lags

Period (month)	*Impulse responses*			*Cumulative impulse responses*		
	Effect of import volumes on:		*Effect of prices on:*	*Effect of import volumes on:*		*Effect of prices on:*
	Prices	*Production*	*Imports*	*Prices*	*Production*	*Imports*
1	-0.007	0.006	-0.167	-0.007	0.006	-0.167
2	-0.010	0.004	1.280	-0.018	0.010	1.113
3	-0.012	0.004	2.487*	-0.030	0.013	3.599
4	-0.012	0.003	3.019*	-0.042	0.016	6.619*
5	-0.012	0.002	3.051*	-0.054	0.018	9.670*
6	-0.011	0.002	2.839*	-0.065	0.020	12.510*
7	-0.009	0.001	2.519*	-0.074	0.021	15.028*
8	-0.008	0.001	2.175*	-0.082	0.022	17.204*
9	-0.007	0.001	1.845*	-0.089	0.022	19.049*
10	-0.006	0.000	1.547*	-0.096	0.022	20.596*
11	-0.005	0.000	1.287	-0.101	0.023	21.882*
12	-0.004	0.000	1.064	-0.105	0.023	22.946*
13	-0.004	0.000	0.877	-0.109	0.023	23.823*
14	-0.003	0.000	0.721	-0.112	0.023	24.544*
15	-0.003	0.000	0.591	-0.115	0.023	25.135*
16	-0.002	0.000	0.484	-0.117	0.023	25.619*
17	-0.002	0.000	0.397	-0.119	0.023	26.016*
18	-0.002	0.000	0.325	-0.120	0.023	26.341*
19	-0.001	0.000	0.266	-0.122	0.023	26.606*
20	-0.001	0.000	0.218	-0.123	0.023	26.824*
21	-0.001	0.000	0.178	-0.124	0.023	27.003*
22	-0.001	0.000	0.146	-0.125	0.023	27.149*
23	-0.001	0.000	0.120	-0.125	0.023	27.269*
24	-0.001	0.000	0.099	-0.126	0.023	27.368*

* indicates significant at 5 per cent

Source: Productivity Commission estimates.

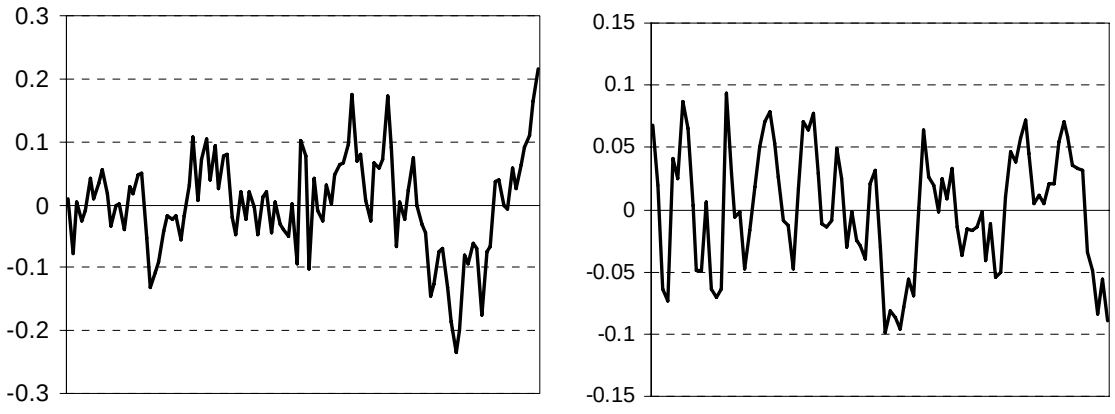
Table C.10 **Monthly inverse demand model, estimation output**

	1990-99		*2000-07*		*1990-2007*	
Explanatory variable	*Coefficient*	*p-value*	*Coefficient*	*p-value*	*Coefficient*	*p-value*
Log feed price	0.128	0.011	0.053	0.060	0.086	0.005
Log pigmeat production	-0.668	0.001	-0.105	0.363	-0.175	0.134
Log beef production	-0.302	0.086	-0.028	0.797	-0.219	0.060
Log lamb production	-0.017	0.898	0.124	0.077	0.119	0.101
Log import volumes (lag 3 months)	0.002	0.866	-0.040	0.070	0.031	0.002
Log import unit value	0.130	0.065	0.545	0.000	0.427	0.000
Jan	-0.168	0.001	-0.033	0.288	-0.071	0.040
Feb	-0.089	0.089	-0.061	0.101	-0.051	0.180
Mar	-0.025	0.628	-0.067	0.108	-0.048	0.217
Apr	-0.109	0.025	-0.084	0.018	-0.095	0.007
May	-0.044	0.419	-0.107	0.019	-0.072	0.083
Jun	-0.085	0.077	-0.108	0.006	-0.113	0.002
Jul	-0.032	0.510	-0.087	0.026	-0.062	0.092
Aug	-0.021	0.659	-0.050	0.189	-0.027	0.453
Sep	0.010	0.843	-0.049	0.173	-0.029	0.432
Oct	0.003	0.955	-0.068	0.085	-0.028	0.485
Nov	0.042	0.420	-0.029	0.483	0.027	0.506
Log household income	0.242	0.050	-0.057	0.443	0.032	0.665
Constant	11.909	0.000	3.522	0.041	5.349	0.000
Other diagnostics						
No. of observations	110		95		205	
R-squared	0.544		0.749		0.593	
Adjusted R-squared	0.453		0.690		0.554	

Source: Productivity Commission estimates.

Figure C.4 **Monthly inverse demand model, plot of residuals**

Estimation period: 1990–99 (LHS); 2000–07 (RHS)



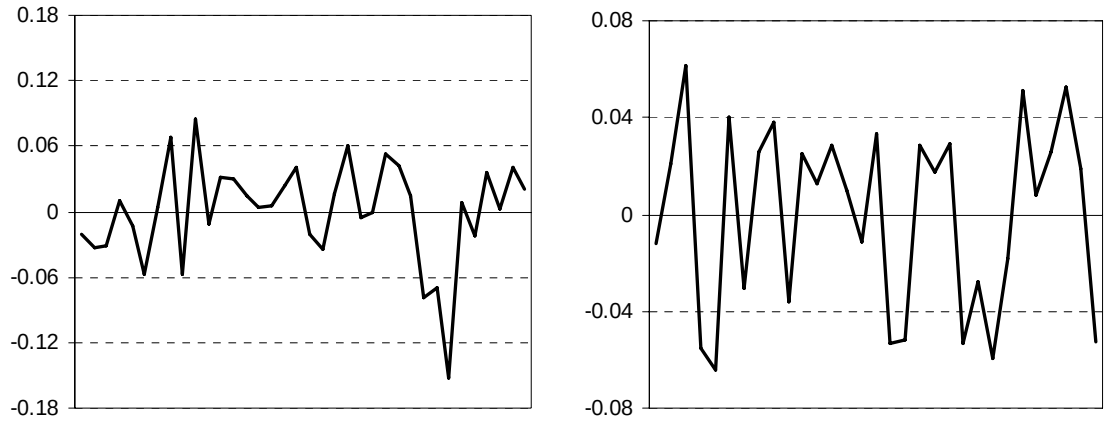
Source: Productivity Commission estimates.

Table C.11 **Quarterly inverse demand model, estimation output**

	1990-99		*2000-07*		*1990-2007*	
Explanatory variable	*Coefficient*	*p-value*	*Coefficient*	*p-value*	*Coefficient*	*p-value*
Log retail price - Pork	1.657	0.028	0.233	0.693	0.852	0.07
Log production - Pigmeat	-1.241	0.008	0.200	0.634	-0.016	0.951
Log retail price - Beef	1.900	0.017	0.529	0.585	-0.086	0.806
Log production - Beef	-0.211	0.517	0.133	0.599	-0.347	0.168
Log retail price - Lamb	-0.265	0.568	-0.663	0.221	-0.510	0.115
Log production - Lamb	-0.699	0.013	-0.115	0.663	-0.180	0.419
Log import unit value	-0.239	0.082	0.536	0	0.486	0
Log import volume (lag one quarter)	-0.049	0.037	-0.012	0.848	0.025	0.305
Log household income	0.174	0.715	0.139	0.631	0.279	0.315
Mar	-0.183	0.003	-0.012	0.789	-0.039	0.385
Jun	-0.127	0.077	-0.096	0.089	-0.062	0.138
Sep	-0.055	0.288	-0.057	0.187	-0.021	0.553
Constant	7.416	0.218	-2.438	0.735	4.417	0.233
Other diagnostics						
Number of observations	36		31		67	
R-squared	0.837		0.829		0.655	
Adjusted R-squared	0.751		0.716		0.578	

Source: Productivity Commission estimates.

Figure C.5 **Quarterly inverse demand model, plot of residuals**
Estimation period: 1990–99 (LHS); 2000–07 (RHS)



Source: Productivity Commission estimates.

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