

International Stockfeed Industry Review

Key points

- Understanding the global stockfeed industry requires a detailed knowledge of livestock demand and grain supply.
- China accounted for half of global meat demand growth from 1980 to 2000. This has since slowed.
- Australia's stockfeed industry outlook has improved due to herd rebuilding efforts and huge east coast feed grain crops.

Summary

Few industries, either agricultural or not, rival the breadth and depth of the global stockfeed industry.

The stockfeed industry is directly exposed to global trends of population growth, rising incomes, and the westernisation of diets. These factors influence the global consumption of animal products which in turn influences the required inventory of livestock. Additionally, for the stockfeed industry, the *type* of animals that are consumed is just as important as the outright quantity because different animals consume different foodstuffs.

That is only the *demand* side of the equation. The *supply* of stockfeed is equally as relevant. It is also more volatile. Stockfeed, or fodder, includes things such as grains, oilseeds, hay and silage. The production of those crops fluctuates significantly because of variable seasonal conditions. This can create challenges for the stockfeed sector which has a less volatile demand profile. In addition to variable grain supply, the stockfeed industry competes with relatively new entrants for raw materials. Today in the United States, some 40% of domestically consumed corn is used in the production of ethanol. In Brazil and South East Asia huge swathes of land are used for biofuel production, not food production.

Despite the challenges and volatility that exist in global grain supply, global trends in the demand for animal products are encouraging. Population growth and the westernisation of diets in developing countries has underlined the United Nations' projection for global meat consumption to rise by 75% from 2005 to 2050. Intensive animal production systems are needed to achieve these projections, and these animals will increasingly be fed manufactured stockfeeds. Also, a relatively faster rate of white meat consumption growth, as opposed to red meat consumption growth, is supportive for manufactured stockfeed demand. This is because pigs and poultry are more likely to be fed manufactured stockfeeds than beef or lamb.

Against this backdrop, Australia has a dynamic stockfeed industry which uses around 9-10 million tonnes of grain per annum. The dairy and poultry industries are the largest consumers of Australian stockfeed, followed by the beef and pork industries. Of these, the poultry industry is the fastest growing and least volatile. The domestic manufactured stockfeed sector operates as part of the wider industry, and contributes around half of Australia's total stockfeed supply. In terms of raw materials, wheat is the most common grain used in the local stockfeed industry with 40% market share.

In recent years the local stockfeed industry has had a relatively tough time. But the future is brighter. The east coast droughts of the 2000's forced the liquidation of local livestock herds, while the grain price boom of 2007 and the Global Financial Crisis exacerbated the cull. But herd rebuilding has now commenced, in line with the elevated east coast rainfall, (relatively) less economic turmoil and stronger livestock prices. Further, the enormous east coast feed grain crop – which is the result of massive yields and recent grain quality downgrades – will underpin raw product supplies at reasonable prices. This large supply of east coast feed grains has helped insulate the local industry from rising global grain prices.

Report Structure

This report details breadth and depth of the global stockfeed industry, including a full analysis of livestock demand and stockfeed supply, with a focus on the Australian industry. The structure of the global industry is provided from page 2, including the relative consumption of different meat types. Production trends of the grains consumed in the global stockfeed industry are outlined on page 6. The near term outlook of the global industry, including current price incentives to feed livestock, is contained from page 8. A detailed assessment of the Australian stockfeed industry is provided from page 12, with near term projections of local livestock herd rebuilding activities and Australian grain production prospects from page 15.



Stockfeed Industry Review

Industry definition

The stockfeed industry is concerned with the production of fodder for livestock.

The stockfeed industry is concerned with the production of fodder for livestock. Fodder includes foodstuffs such as grains, hay, silage, oils and pelleted rations, and is distinct from foodstuffs such as pasture, native grasses that *forage* for themselves. Stockfeed (or fodder) can either be unprocessed (i.e. whole grains) or manufactured (i.e. compound pellets).

Varying degrees of sophistication are utilised in the production and distribution of stockfeed throughout the world. At its most basic level, the stockfeed sector includes a small peasant farmer who feeds their own animals grains that they produced on their own small plot of land. At the other end of the spectrum is the scientific production of compound feed rations, which include multiple inputs, which are then fed to animals under a controlled environment.

Manufactured stockfeed, and their raw ingredients, are actively traded around the globe.

Global overview

Analysis of the stockfeed industry requires due consideration to the determinants of stockfeed demand, and the availability of stockfeed supply¹. Few industries rival the breadth and depth of the global stockfeed industry.

Global stockfeed demand

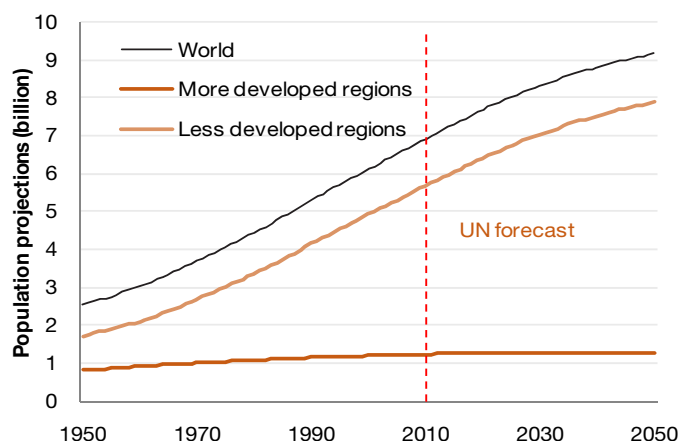
The demand for stockfeed is driven by the demand for intensively produced animal products.

The global use of stockfeed has expanded in-line with the increased intensity of livestock production, which is influenced by swelling per capita consumption of products such as meat, milk and eggs. The demand, and therefore inventory of, intensively fed animals is determined by factors such as:

- Population growth
- GDP (income growth per capita)
- Increasing food consumption
- Changing diets and cultural crosspollination
- Animal disease outbreaks (i.e. bird flu)
- Production costs (i.e. rising grain prices)
- Seasonal conditions
- Advertising (either positive and negative)

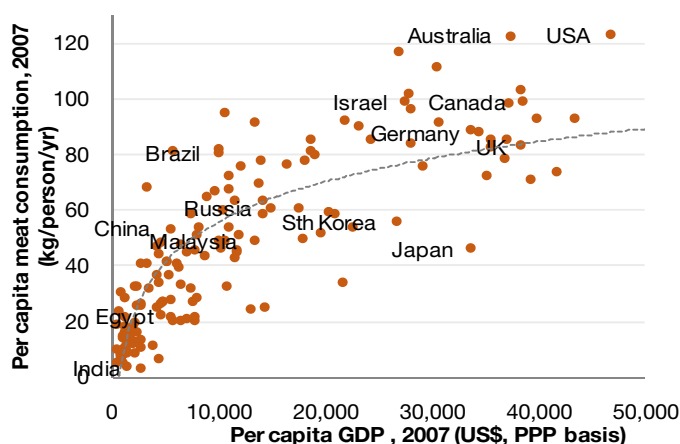
Of these, the most significant macroeconomic influences are population growth, rising incomes and the westernisation of diets. This involves greater per capita consumption of animal proteins.²

Figure 1: Global population growth



Source: United Nations and CBA

Figure 2: Meat³ consumption per capita versus income



Source: FAO, IMF and CBA

¹ Due to its disaggregated nature, sizing the global stockfeed market – on both the supply and demand side – is inherently difficult.

² A number of challenges have arisen in the global stockfeed industry, these challenges are identified in Appendix 1.

³ The term “Meat” in this report includes bovine, sheep & goats, pigs and poultry. It explicitly excludes fish and other seafood.

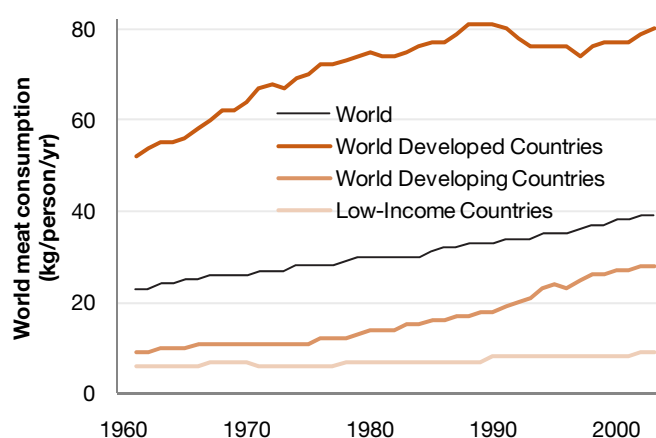


Population growth and changing diets underpin global food demand growth.

- Global population is expected to lift from 6.9 billion people in 2010 to 7.65 billion by 2020, representing a growth rate of 1.1% pa. This equates to an additional 766 million people over 10 years, of which 735 million will be added to less developed regions.
- The United Nations, in their 2009 report “*How to feed the world, 2050*”, noted that economic development and increasing rates of urbanisation in the developing world will result in a sharp increase in food demand. The demand for income sensitive products (i.e. oils and meat) will grow at a faster rate than staples such as grain. From 2005 to 2050, the UN has forecast:
 - Total food production will need to rise by 70%.
 - Meat production will need to grow by 75%.
 - Cereal production will need to grow by 43% (in part driven by biofuels).

The importance of the developing world to global meat consumption has increased over the past two decades, with most of the world’s food consumption growth during that period occurring in developing nations. This trend is expected to continue because per capita consumption of meat in the developed world appears to have peaked and population growth has slowed.

Figure 3: World per capita meat consumption by region



Source: UN FAO and CBA

China accounted for half of global meat demand growth from the 1980s.

Within the developing world, the vast majority of meat consumption growth since 1980 can be pinpointed to a single market. From 1980 to 2003 Chinese meat consumption expanded by 57 million tonnes, accounting for 60% of total growth in developing nations. China accounted for 50% of global meat consumption growth for the period.

The concentration of global meat consumption growth in China raises some important questions. Will China’s consumption of meat continue to grow at the rate previously observed? Is there any other market ready to take China’s place their consumption growth does moderate?

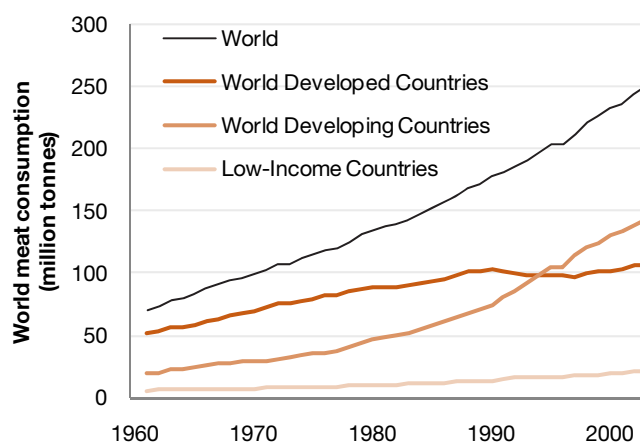
Put simply, we expect the rate of Chinese meat consumption growth to slow. Their per capita rate of meat consumption is already high if compared to nearby developing nations. China’s per capita consumption of meat at 54kg/pp/yr easily exceeds the global average of 40kg/pp/yr, and Japan’s consumption of 46kg/pp/yr. Reflecting this, China’s rate of per capita consumption growth has already slowed to 1.1% pa (2000 to 2007) after surging by 6.5% pa during the 1990’s. Also, China’s rate of population growth has slowed markedly because of the single child policy. We believe that the Chinese will demand more value added meats as their incomes grow.

Increased attention must be diverted to other growth markets as China slows.

Attention must increasingly be diverted to other growth markets. It is unlikely that any one market has the ability to fill the void⁴. Rather, any slowdown in Chinese growth must be offset (probably only partially) by the combined growth of a large number of second tier nations. Our focus here includes Russia, Brazil, Vietnam, Indonesia, Pakistan and Mexico. The US will remain an important growth market because of strong population growth.

⁴ India is unlikely to take over from China because their population is largely vegetarian due to cultural/religious reasons.

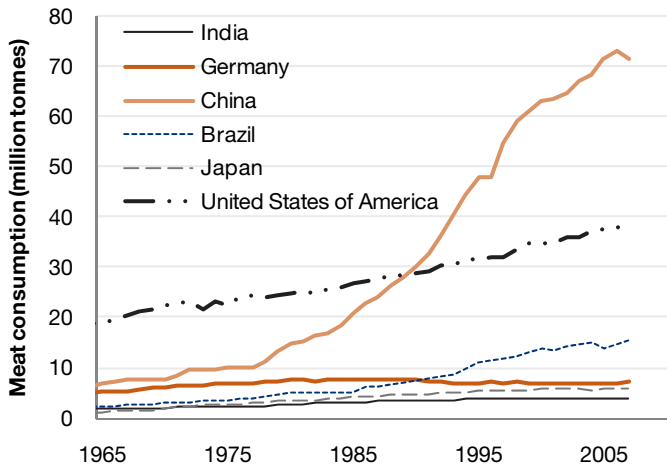
Figure 4: World meat consumption by region



Source: UN FAO and CBA

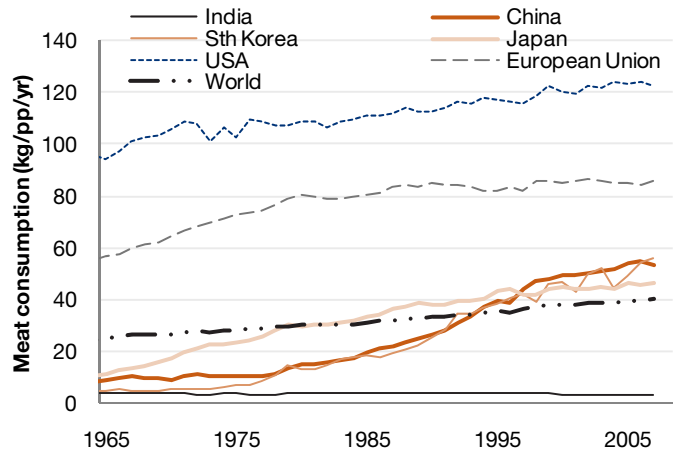


Figure 5: Total meat consumption by country



Source: UN FAO and CBA

Figure 6: Per capita meat consumption by country



Source: UN FAO and CBA

Global meat consumption by type

The type of meat is as important as the quantity of meat.

Not only is the aggregate level of meat demand important for the stockfeed industry, but so is the composition of that demand by meat type. This relative importance arises for two main reasons:

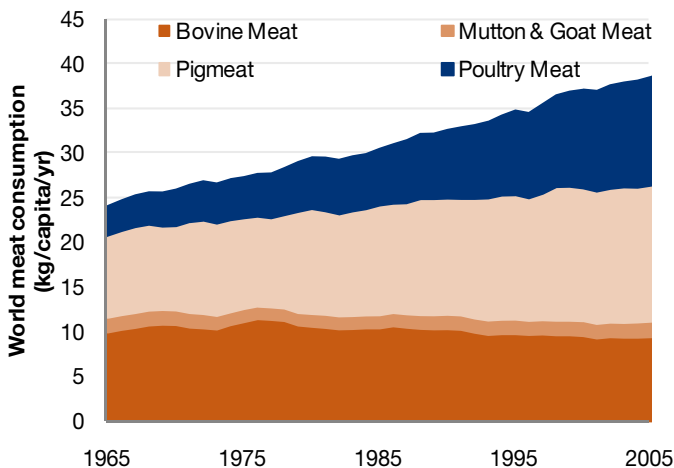
- Different animals utilise different production systems (i.e. pasture fed cattle verse grain fed pigs)
- Different species have different capacities to convert feed into meat (feed conversion ratio, FCR). Ruminants have a poorer FCR than monogastrics. The FCR of cattle is ~8:1; sheep is ~7:1; pigs is ~3.5:1; poultry is ~2.5:1 and the salmon FCR is as low as 1.2:1.

White meat has taken over from red meat.

There has been a shift in the relative consumption of meat types over the past 40-50 years.

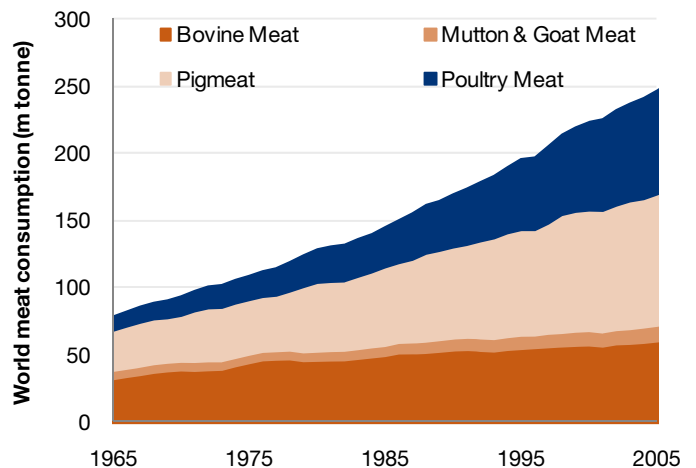
- In 1960's, total meat consumption per person was 23kg/pp/yr, of which bovine contributed 9.3kg (41%), pork 8kg (35%), poultry 2.9kg (13%). The remaining 1.9kg was lamb and goat.
- By 2007 global per capita meat consumption had expanded to 40kg/pp/yr, representing growth of 1.2% pa. But per capita consumption of red meats (beef, lamb and goat) was virtually unchanged for the period, while poultry consumption surged by 3.3% pa to 12.6kg. Pork consumption grew by 1.4% pa to 15kg/pp/yr and is now the most widely consumed meat globally with 38% market share, now followed by poultry (31%), bovine (24%) and lamb/goat (5%).

Figure 7: World per capita meat consumption by type



Source: UN FAO and CBA

Figure 8: World meat consumption by type



Source: UN FAO and CBA



Different regions consume different sources of protein.

Intriguing dynamics emerge at a regional level regarding the consumption of various meat types, yet a common thread links all regions. That is, the share of *Red Meats* (i.e. beef and lamb) in the consumption basket has declined at the expense of *White Meat* (i.e. poultry and pork). Since 1990:

- **European** poultry consumption per person has expanded by 1.4% pa while beef consumption per person fell 1.9% pa. In Europe, white meat contributes 75% of total meat consumption.
- **North American** poultry consumption grew 1.5% pa while beef consumption fell by 0.3% pa. White meat now contributes 65% of total meat consumption.
- **Asian** poultry consumption surged by 5% pa while beef consumption grew by 3% pa. Pork contributes half of Asian meat consumption, followed by poultry meat with 28%.
- **African** poultry consumption per capita has grown by 2% pa versus total meat consumption growth of 0.5% pa. In Africa, bovine is still the most important meat class with 38% market share, followed by poultry with 30%. Pork has only 7% market share in Africa, largely due to the importance of the Islamic faith in the region.

Figure 9: European per capita meat consumption by type

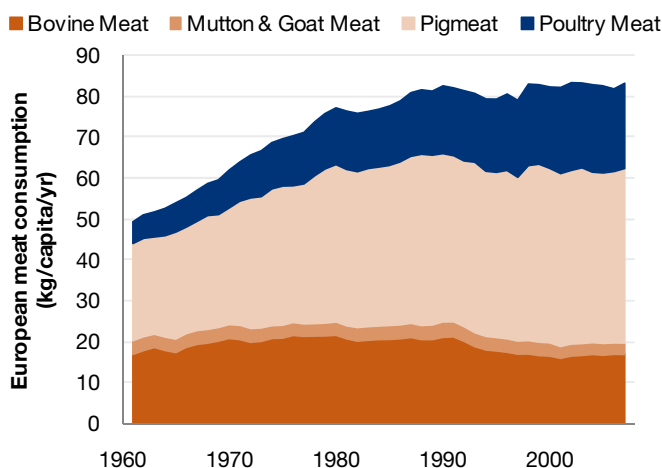


Figure 10: North American per capita meat consumption

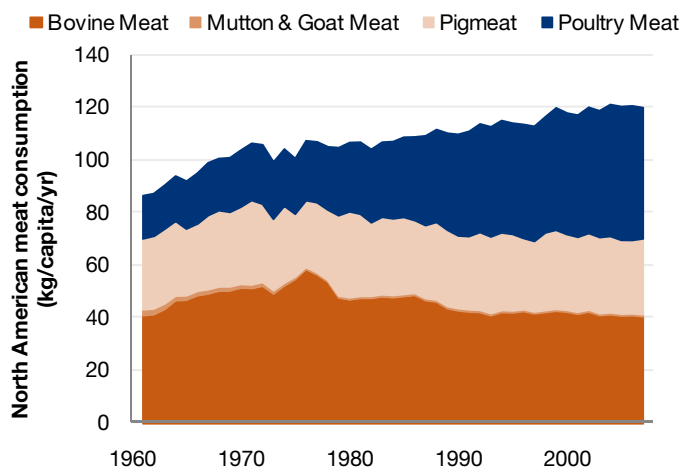


Figure 11: Asian per capita meat consumption by type

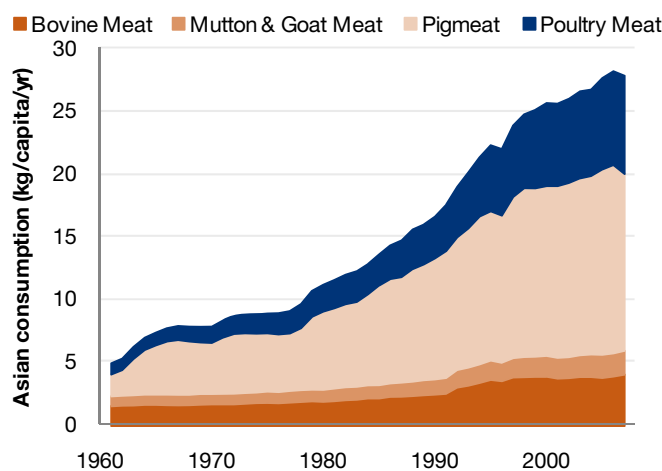
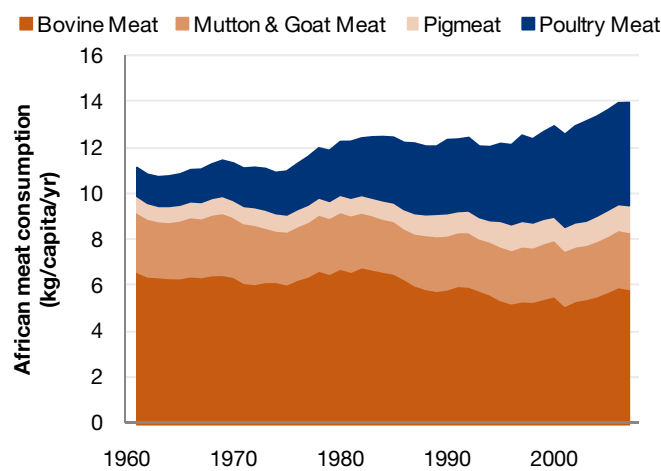


Figure 12: African per capita meat consumption by type



Source: UN FAO and CBA

Source: UN FAO and CBA

The rise of white meats is positive for the manufactured stockfeed sector.

We believe the global trend of increasing white meat market share will continue, with important implications for the stockfeed sector. On one hand, pigs and poultry require less feed to produce a unit of meat. But on the other, the production systems used to rear pigs and poultry are generally more intensive than those used in red meat production. Furthermore, poultry and pigs are more likely to consume pelleted (or manufactured) feeds rather than whole (or cracked) grains that are



common in the beef feedlot sector. Overall, we view the shift towards intensively produced white meats as a positive development for the manufactured stockfeed sector.

Global stockfeed supply

Raw materials at a global level

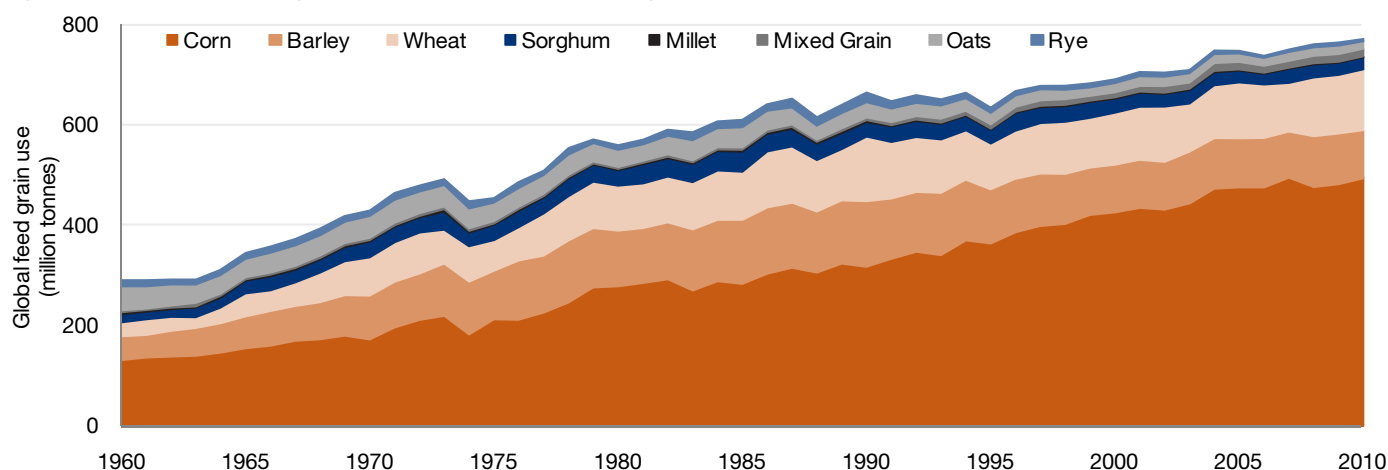
Grains, oilseeds, hay, silage, and trace elements are key ingredients used to produce stockfeed.

Corn is the most important feed grain.

According to the USDA, over 774 million tonnes of grain⁵ will be used for livestock feeding purposes in 2010/11. Over the past decade stockfeed demand for grain has expanded by 1% pa. Corn is the single most important feed grain globally with 64% market share, followed by feed wheat (15%), barley (13%), sorghum (3%) and oats (2%).

Global oilseed meal production for 2010/11 is forecast around 250 million tonnes, and virtually all is used for stockfeed purposes. Global oilseed meal consumption has expanded by 4% pa since the mid 1970's. Soybean meal accounts for 70% of global consumption of oilseed meal followed rapeseed meal with 15% market share.

Figure 13: Global coarse grain used for livestock feeding (million tonnes)



Source: USDA and CBA

Stockfeed industry concentration and key countries

The US is the most important corn producer.

The US, China and the EU-27 dominate coarse grain production and consumption. The US is the largest producer of coarse grains with 31% market share, followed by China (16%) and the EU-27 (13%). The US is also the largest consumer of coarse grains with 27% market share, again followed by China (15%) and the EU-27 with 13% market share. Finally, the US is the largest exporter of coarse grains with nearly 50% market share.

Figure 14: Coarse grain producers

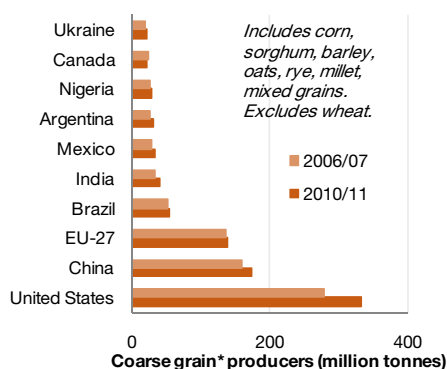


Figure 15: Coarse grain consumers

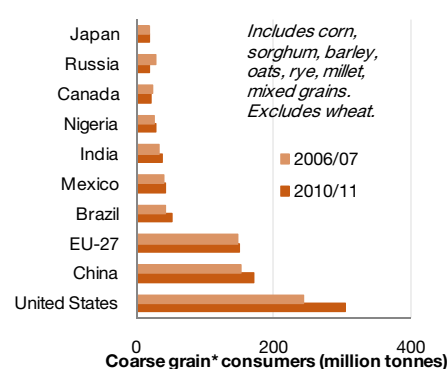
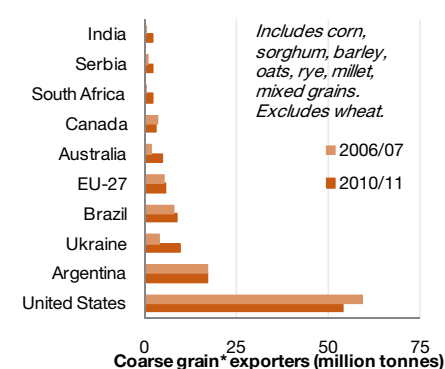


Figure 16: Coarse grain exporters



⁵ Includes corn, barley, wheat, sorghum, millet, mixed grains, oats and rye. Excludes pulses, legumes and dried distillers grains (DDG).



US consumption of coarse grains has expanded at by more than 5% pa since the mid 2000's, however most of this growth has been in the ethanol sector. Chinese coarse grain consumption has expanded by nearly 3% pa since 2006/07, with most of the growth in the stockfeed sector. The expansion of the US domestic ethanol industry over the past 5 years has reduced their exportable surplus of whole coarse grains to the international stockfeed industry.

The FAO and the International Feed Industry Federation (IFIF) estimate over 60% of stockfeed is consumed as compounds. Furthermore, 60% of compound stockfeed is produced by 10 countries, and with 80% produced by 3800 mills.⁶

The rise and rise of Dried Distillers Grains⁷

The rise of the ethanol industry has pressured feed grain supplies. However the co-production of DDG is important.

The expansion of the US ethanol sector has significantly boosted the production of Dried Distillers Grains (DDG). US corn used for ethanol production in 2010/11 is forecast at 119 million tonnes, up from 54 million tonnes in 2006/07 and 16 million tonnes in 2000/01. Corn used in US ethanol production now accounts for over 40% of total US domestic corn use, up from 8% in 2000/01

This explosive growth in the US ethanol industry has resulted in US DDG output expanding from 5 million tonnes in 2000/01 to 38 million tonnes in 2010/11. Some key attributes of the US DDG industry are:

- The production of 1 tonne of DDG required approximately 3 tonnes of corn.
- DDGs are estimated to have 120 to 135% the feed value of corn.
- DDGs have gained a foothold in dairy and beef rations and to a lesser extent in poultry and swine rations.
- The US has become a significant exporter of DDGs. The USDA has reported that US exports of DDG in 2009/10 exceeded 8.2 million tonnes, a near 6.7 fold increase on 2005/06 exports. Chinese DDG imports (from the US) have surged to 2.1 million tonnes after previously being virtually non-existent. Mexico is the next largest market.

The USDA, in their 2010 Baseline Projections Report (Feb 2010) forecast that the rapid growth phase of the US ethanol industry has now past. The USDA forecast the growth rate of US corn consumed for ethanol production will slow to 1.2% pa (or 1.5 million tonnes pa) over the coming decade. This will slow the growth in DDG supply for both the US domestic market and export.

Figure 17: US corn consumed in ethanol production

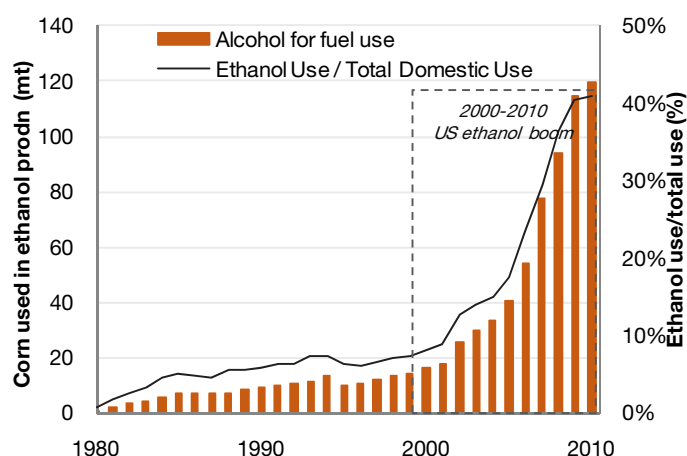
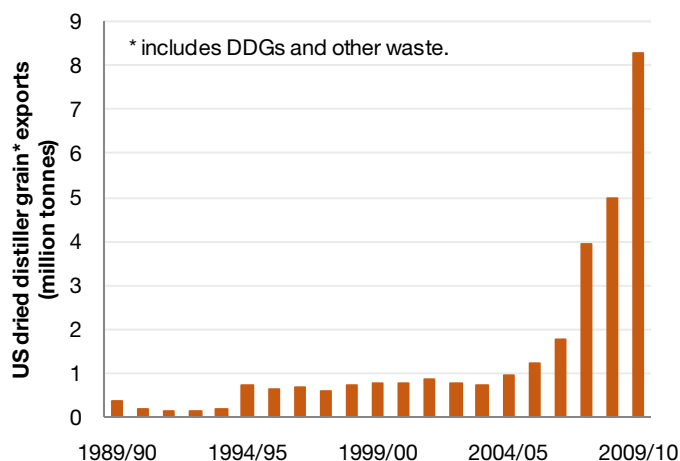


Figure 18: US dried distillers grain exports



⁶ www.ifif.org

⁷ Accessing reliable production and consumption data for the DDG industry, particularly at the global level, is extremely difficult.



Near term outlook for the international stockfeed sector

Global livestock sector outlook

Global livestock herds are tipped to rebuild.

Global livestock numbers are expected to rebuild in 2010 and 2011 following the GFC cull. This recovery in the animal numbers supports stockfeed demand. The most significant risks to herd rebuilding over the next 12-24 months are high grain prices and economic uncertainty.

Cattle industry outlook

- Global cattle numbers at the beginning of 2011 are forecast at 991.2 million head, up 1 million head from the levels of a year earlier.
- The global calf crop in 2011 is expected to be 279 million, up 1.4 million (0.5%) from the 2010 calf crop.
- Importantly, both the beginning cattle inventory and the global calf crop remain well below the 2007 / 2008 peaks. The global cattle inventory is 28 ¼ million head below the 2008 peak of 1.02 billion. And the calf drop in 2011 is 18 ½ million (6%) below the level observed in 2007.
- This may have two main implications. Firstly, cattle prices should remain supported as global herd rebuilding continues. Secondly, stockfeed demand should expand in line with the herd expansion.

Swine (pig) industry outlook

- Global swine numbers declined by 3% from 2006 to 2008, influenced by rising feed costs and the onset of the GFC.
- From 2008 global swine numbers have begun to rebuild, and in 2011 the USDA has forecast there are 794 million swine globally, up 14 million from their 2008 lows. From 2010 to 2011 the USDA has forecast a 700 thousand head expansion in swine numbers.
- The global piglet crop for 2011 is forecast to increase to 1.2 billion head, up 6.6 million from 2010. This will help support pig feed demand over the next 12 months.
- As with cattle, the global swine herd remains below pre-GFC levels. We expect further swine herd rebuilding which will support swine prices and future stockfeed demand.

Poultry industry outlook

- Global broiler meat production grew at 4½-6% pa pre GFC, but from 2008 to 2009 total production expanded by only ½ %. In 2010 and 2011 production is forecast to expand by 3.3% and 2.4%, supporting feed demand in the global poultry industry.

Figure 19: Global cattle herd and calf drop

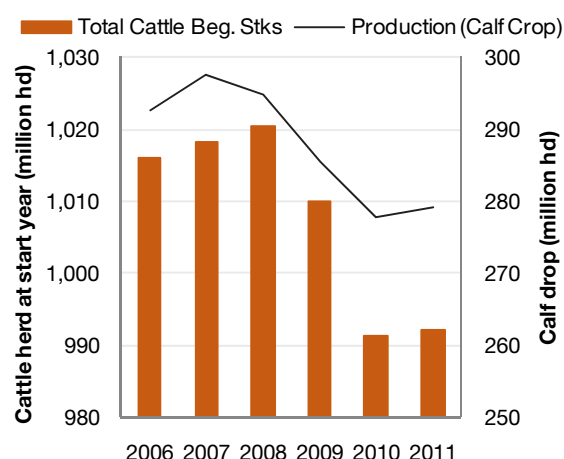


Figure 20: Global swine herd and piglet drop

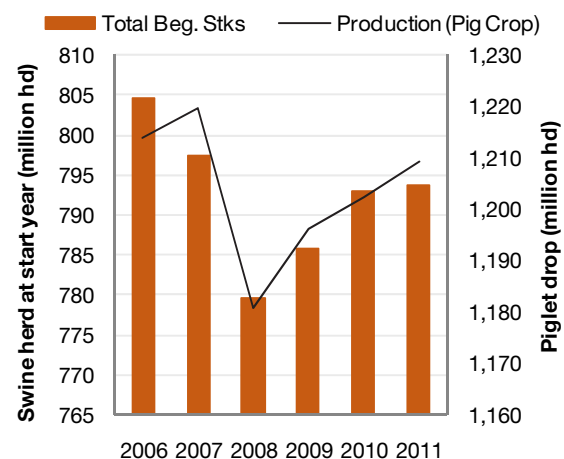
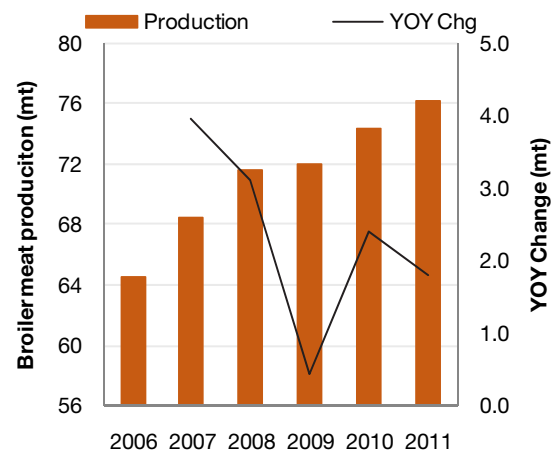


Figure 21: Global broiler meat production



Source: USDA and CBA



International livestock prices

Global livestock prices firmed throughout 2010 in line with the improving macroeconomic environment and wider commodity price gains. However in the past 3 months some of those gains have been handed back.

As at 30th November:

- CME live cattle were valued at USc103/lb, up 23% yoy and 24% higher than the 10yr average.
- CME pork bellies were valued at USc104/lb, up 18% yoy and 21% higher than the 10yr avg.
- CME lean hog were valued at USc69/lb, up 23% yoy and 9% higher than the 10yr average

Figure 22: US live cattle prices (CME, 1st futures contract)

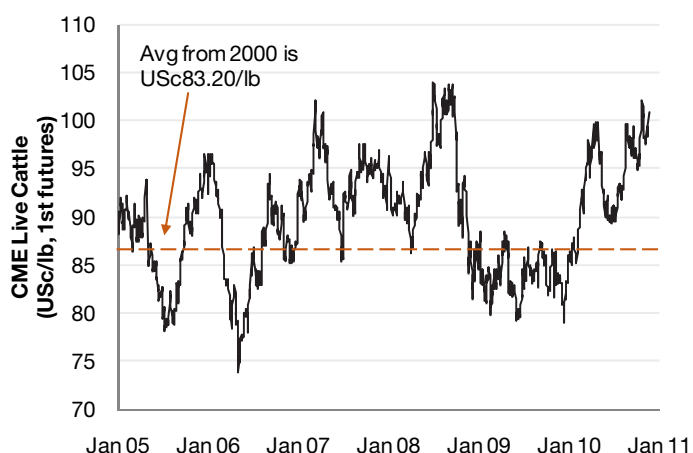
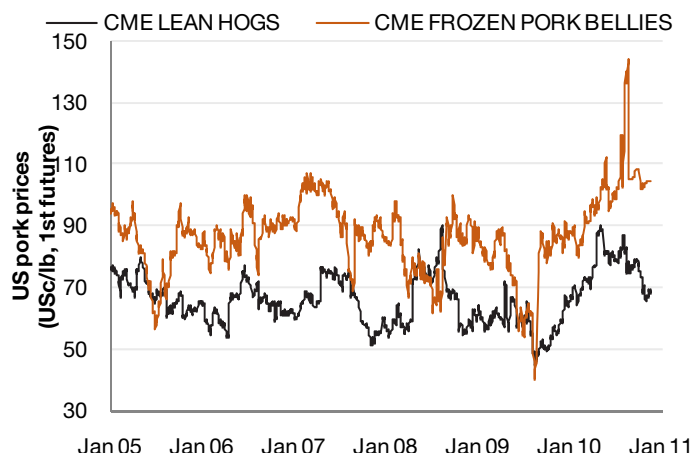


Figure 23: US hog price (CME, 1st futures contract)



Near term global grain supply outlook

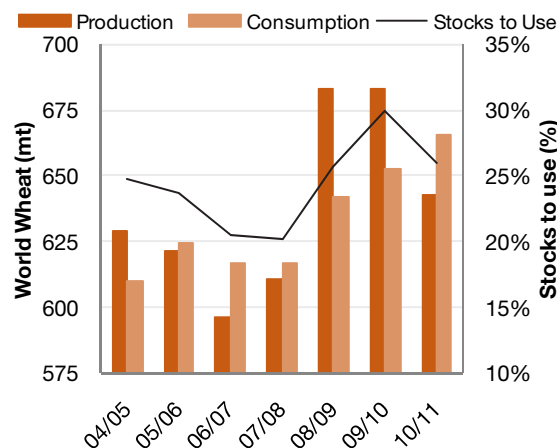
Global grain supply has been hurt by poor weather.

Unfavourable weather over the past six months has cut global grain production, while strong Asian demand has contributed to lower than expected carry-out supplies. Global coarse grain (supplies corn and barley) are now very tight and oilseed supplies are relatively tight. But wheat supplies remain relatively comfortable, particularly if compared to levels observed from 2006-2008. Increased production over the next 12 months is important, particularly for coarse grains.

Wheat

- The global wheat crop for 2010/11 is forecast at 643 million tonnes, down 6% from the 2009/10 crop. The decline in global output is due to poor conditions in the northern hemisphere; with the Russian drought the single most significant event.
- The smaller crop has resulted in a 23 million tonnes supply deficit this season, causing global wheat stocks falling to 172½ million tonnes from 195 million tonnes last season.
- Despite the yoy decline in production and stocks, world wheat supplies are relatively comfortable, and easily exceed the tight supplies observed in 2007.
- The recent high wheat prices will encourage a strong planting program for 2011/12 which should help lift total production.

Figure 24: Global wheat profile

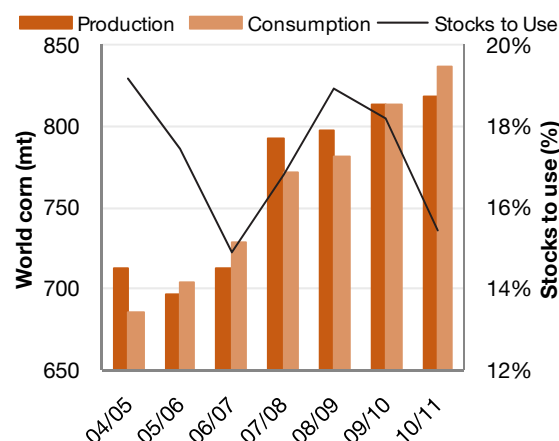




Corn & coarse grains

- Total coarse grain consumption growth remains strong, largely influenced by strong growth in industrial (ethanol) demand.
- Coarse grain production in 2010 has been a letdown, largely due to poor northern hemisphere growing conditions. As a result the world faces a 39 million tonnes supply deficit in 2010/11, driven largely by a 19 million tonne corn production deficit.
- The global corn stock to use ratio is forecast to be less than 15.5% this year from 18% last year. Supplies are nearly as tight as the 15% stock to use ratio observed in 2006/07. That was a period of severe shortage.
- These tight supplies will continue to support coarse grain prices. The coarse grain market requires a big rebound in output next season to restore balance.⁸

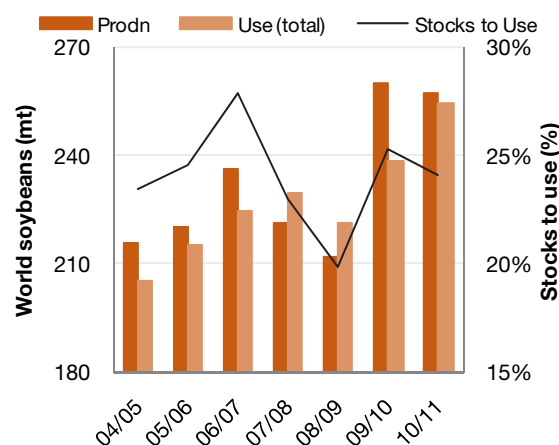
Figure 25: Global corn profile



Soybeans

- Despite a very large global soybean crop in 2010/11, global supplies are forecast to decline due to insatiable Chinese demand.
- From 2008/09 to 2010/11, China's soybean crush increased by 40%. China accounted for over half of the growth in global soybean demand for the period, and in two years grew their market share from 21% to 26%.
- The global soybean stock to use ratio is forecast to decline to 24% in 2010/11 from 25.3% in 2009/10. US stocks are very tight.
- Global soybean output must grow strongly next season to keep up with strong global demand⁹. Furthermore strong prices for corn and cotton will support soybean prices.

Figure 26: Global soybean production



Source: USDA and CBA

International grain prices

Global grain prices are strong.

Global prices for grains and oilseeds are strong. This reflects this year's production downgrades and strong demand, particularly in the case of Chinese oilseeds and US ethanol. Grain and oilseed prices have also been buoyed by improving investor appetite for risk assets over the past 6 months, notwithstanding the ructions observed across markets in the past few weeks.

As at 19th November:

- CBOT wheat was valued at US\$650/bu, up 15% yoy and 50% higher than the 10yr average.
- CBOT corn was valued at US\$530/bu, up 32% yoy and 78% higher than the 10yr average.
- CBOT soybeans were valued at US\$1243/bu, up 17% for the year and 67% higher than the 10yr average.

⁸ Despite current strong corn prices a strong production response is not guaranteed. Crops in South America are at the mercy of La Nina, and we expect a gruelling battle for acres next season because of strength in competing crop prices.

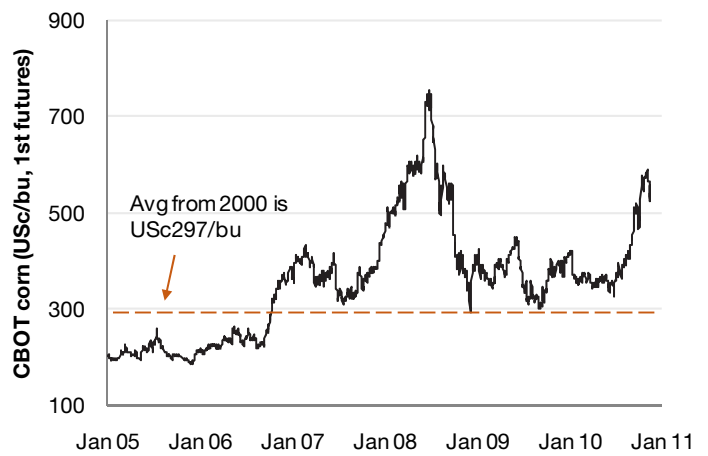
⁹ Global soybean demand has been expanding at ~ 3.5% pa over the past 5 years.



Figure 27: US wheat prices (CBOT, 1st futures contract)



Figure 28: US corn prices (CBOT, 1st futures contract)



Source: Bloomberg and CBA

Global livestock feeding indicator

The price incentive to feed livestock has deteriorated.

Surging feed grains prices over the past six months have lessened the attractiveness of livestock feeding, particularly considering meat prices have generally declined over the past few months.

CBA's livestock feeding attractiveness indicator dropped from +17 in June to -5 by late November, driven by a 50% surge in feed grain prices and a 3% fall in meat prices¹⁰. It is the first time since January 2010 that the Indicator has dipped into negative territory. This puts at risk recent herd rebuilding efforts. Nonetheless, the Indicator still remains significantly above the readings of -25 to -30 consistently observed in early 2008. That was a period of significant herd liquidation.

Figure 29: Meat vs. feed grain price index (USD terms)

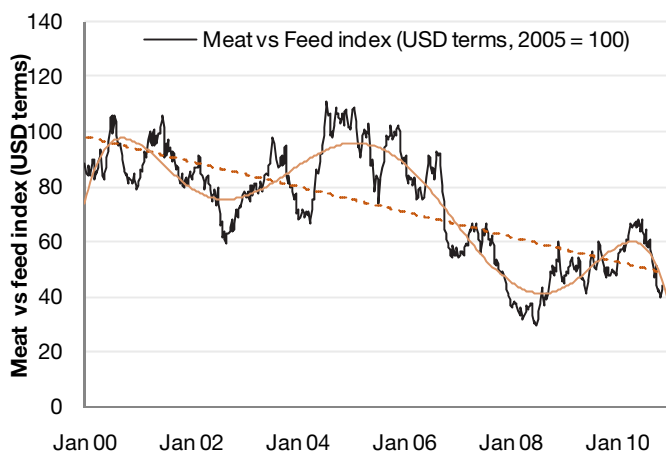
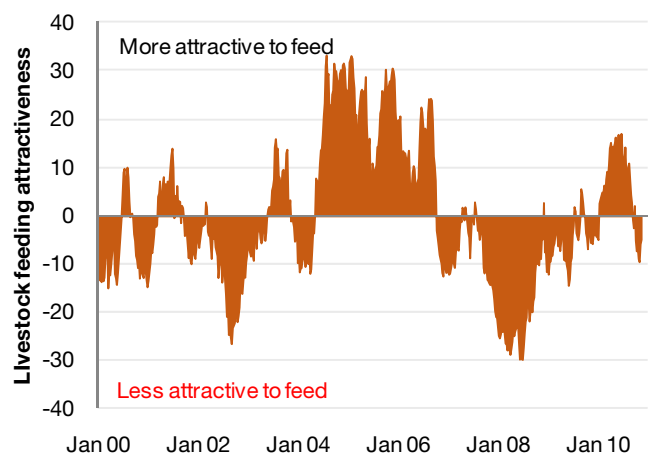


Figure 30: CBA livestock feeding attractiveness indicator



Source: Bloomberg and CBA

¹⁰ The Meat Price Index includes US live cattle, feeder cattle, lean hogs, pork bellies and skinless chicken breast. The Feed Price Index considers US corn, soybeans and wheat prices.



Australian stockfeed industry

Australia has a dynamic stockfeed industry.

Australia has a dynamic livestock feed industry operating under a myriad of business structures. At one end of the spectrum are small mixed grain/livestock producers who feed a proportion of their annual grain output to their own stock, either for “drought maintenance” and/or “finishing” purposes. At the other end of the spectrum are specialised compound stockfeed processors who buy raw ingredients (i.e. grain, protein meals, vitamins etc), manufacture specialised compound feed rations, and sell these rations to the livestock industry.

Dairy and poultry consume the majority of Aussie stockfeed.

The Stock Feed Manufacturers’ Council of Australia (SFMCA) indicates that Australian livestock owners consume 9-10 million tonnes of stockfeed annually¹¹. According to a recent report by JCS Solutions¹², the Dairy industry is the largest single user of stockfeed with 23% market share. Dairy is followed by the beef and poultry meat industries with 21% each, the pork industry with 16% and the layer (egg) industry with 7% market share.

The type of raw material used by the Australian stockfeed sector are largely determined by the following factors:

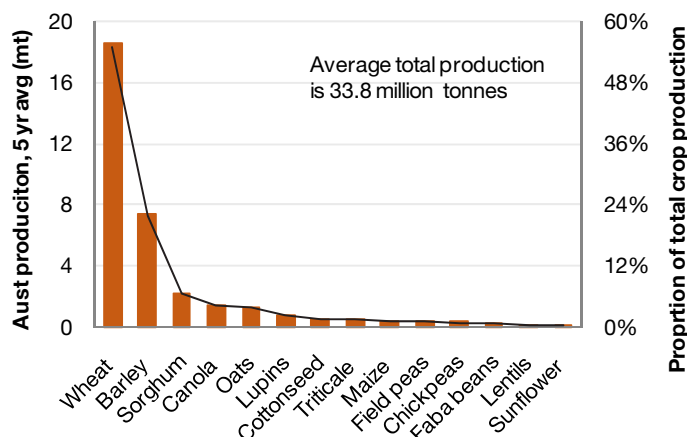
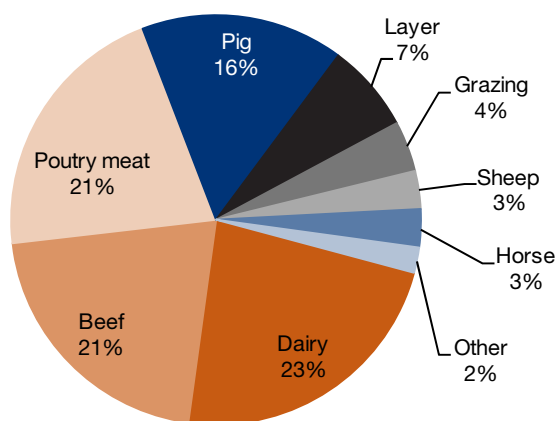
- Geographic availability.
- Relative nutritional attributes and animal requirements.
- Relative raw material cost.

Wheat is the most important grain used in the domestic stockfeed industry.

Wheat and barley are the most commonly produced broadacre crops in Australia¹³ and therefore are the dominant grains utilised in the stockfeed sector. Wheat has 40% share within the stockfeed industry, followed by barley with 26%, and sorghum with 11% market share. Of the grains produced in Australia, only sorghum and triticale are viewed as specialised feed grains¹⁴.

Figure 31: Australian feed grain use by industry (2010/11)

Figure 32: Australian crop* production (5 year average)



Source: JCS Solutions (2010)

Source: ABARE and CBA (*excludes rice)

The stockfeed industry’s position in the wider grains and oilseed sector:

The stockfeed industry uses 67% of domestically consumed grain.

The stockfeed industry in Australia operates as part of a wider grains and oilseed sector. The stockfeed market is just one of many markets available for grain producers along with export markets and domestic human consumption markets (flour, malt, whole grains). Seed and industrial requirements use only a small proportion of the Australian grain crop.

Although an “average year” is near impossible to define in the agricultural complex, a recent study by JCS Solutions concluded that “average” cereal production in Australia is slightly more than 32

¹¹ This volume excludes hay and silage and does not account for spikes in feed usage in times of drought.

¹² JCS Solutions (2010) “Feed Grain 2010 Update Report” www.sfmca.com.au

¹³ Wheat has 55% share of total grain production followed by barley with 22%, and sorghum with 6%.

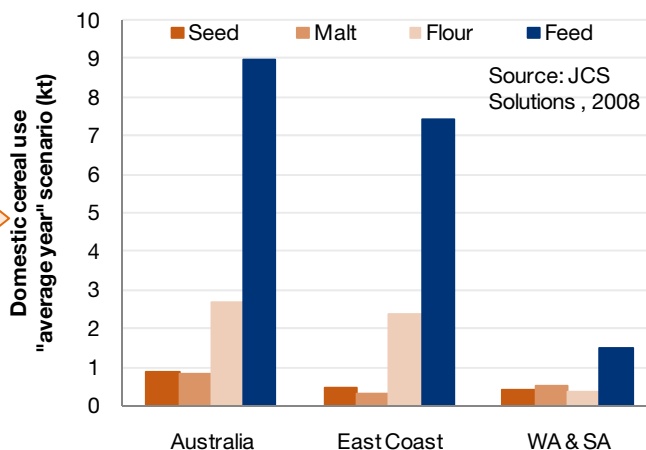
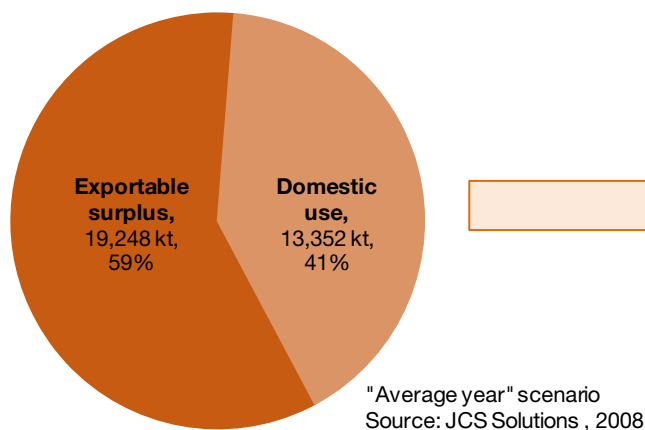
¹⁴ The dominance of wheat and barley highlights a key difference between the Australian and US stockfeed industries. US grain producers view the livestock sector as their primary market (i.e. corn and soybean producers), whereas the Australian grain producer generally targets the human consumption market (i.e. flour, malt) and the livestock sector is a second tier market.



½ million tonnes, of which 13.3 million tonnes used domestically and the remainder is available for export (some of which will be carried over as inventories). Of that consumed domestically, 67% is used for stockfeed, 20% for flour and 6% each for malt and seed. Nearly 80% of locally used grain is consumed on the east coast with the remainder used in WA/SA.

Figure 33: Australian cereal grain use, domestic vs export

Figure 34: Australian domestic grain use



Source: JCS Solutions (2008)

Source: JCS Solutions (2008)

Geographic location of the domestic industry

Australia's stockfeed industry is concentrated in the south east of the country.

The supply of raw material (i.e. grains and protein meals) and the location of livestock industries are the key considerations in determining the geographic location of Australia's stockfeed industry.

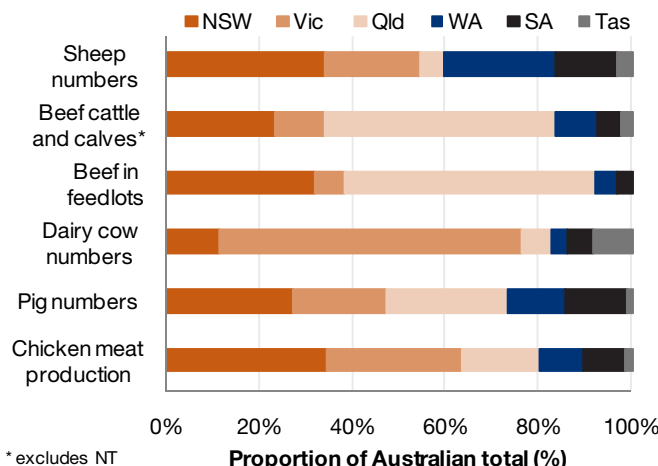
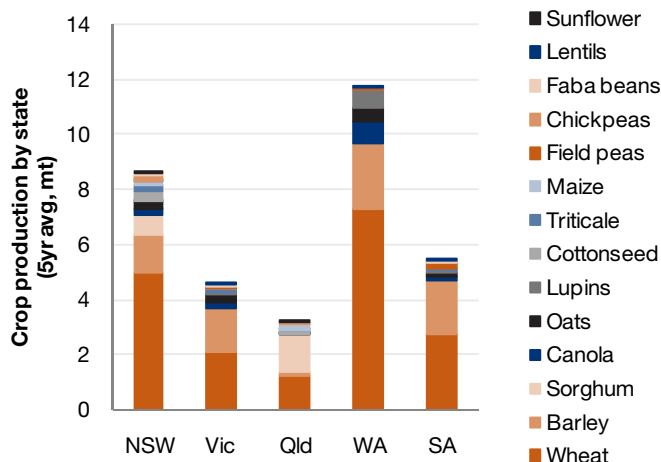
In turn, the location of intensive livestock industries is determined by factors such as the proximity to end markets (i.e. poultry/egg industries situated within reach of major metropolitan centres); local environment (i.e. dairy in high rainfall zones of Victoria); and the availability of young animals (i.e. cattle feedlot sector in SE Qld).

Because of these considerations, intensive livestock production facilities in Australia are primarily located on the east coast within proximity to the grain belt.

- Chicken meat production is concentrated in NSW (35%), Vic (30%) and Qld (17%).
- Pig production is concentrated in NSW (27%), Qld (26%) and Vic (20%).
- Dairy production is concentrated in Vic (65%) and NSW (12%)
- Feedlot beef numbers are concentrated in Qld (54%) and NSW (32%).

Figure 35: Australian crop production by state

Figure 36: Australian livestock numbers by state





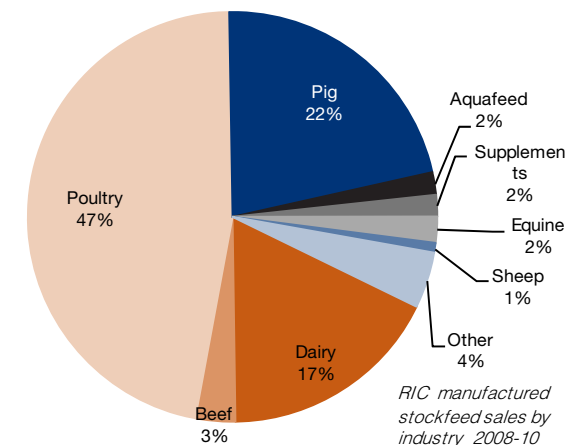
Manufactured stockfeed sector

Manufactured stockfeed accounts for around 50% of all Australian stockfeed.

The manufactured stockfeed industry operates as part of the wider stockfeed sector in Australia. According to the SFMCA, around 5 to 6 million tonnes of manufactured stockfeed is produced and consumed in Australia each year. This represents around half of total stockfeed use in Australia.

Target markets for manufactured stockfeed differ from the wider stockfeed industry. The poultry and pork industries predominantly utilise manufactured feed rations and dairy producers use a high proportion of manufactured feeds. In contrast, the beef feedlot industry mainly consumes whole, cracked or rolled grains which are not produced/manufactured by a feed mill.

Figure 37: Manufactured stockfeed consumption by sector (Ridley Corp, 2008 to 2010)



Source: Ridley annual reports and CBA

The manufactured stockfeed industry targets the poultry industry.

Whilst data regarding the consumption of manufactured stockfeeds is difficult to obtain, analysis of the sales profile of Australia's largest stockfeed manufacturer, Ridley Corp, indicates:

- The poultry industry consumes nearly half of Ridley's manufactured stockfeed.
- The pig industry uses 22% of Ridley's feed products, followed by dairy with 17%.
- The beef industry consumes only 3% of Ridley's manufactured stockfeed. At an aggregate level, the beef sector consumes 21% of all stockfeed (manufactured and non-manufactured).

Recent trends in the domestic stockfeed sector

The poultry industry is the fastest growing, and least volatile, livestock industry.

Key trends that have emerged in the domestic stockfeed sector include:

- Intensive livestock production is growing at a brisker pace than domestic grain production. Furthermore, Australian grain output has flattened in the past decade.¹⁵
- Chicken production growth has been the strongest of all industries, averaging of 3.3% pa.
- The chicken industry is the only industry not to encounter a period of significant contraction over the past 40 years. For example, dairy cow numbers and pig meat production fell by 3% and 1.2% pa during the 2000's. Cattle in feedlots fell by nearly 30% from 2005/06 to 2007/08.
- Grain production is significantly more volatile than intensive livestock production. Since the 1970's, year on year variability in wheat production is 20% versus 2% in the chicken industry.

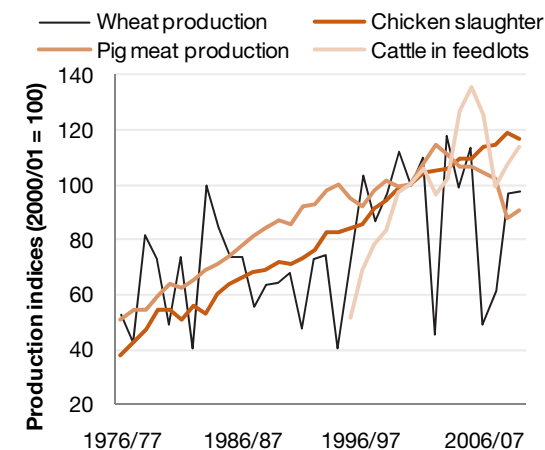
Figure 38: Grain & livestock production growth and variability

	Dairy Cow Numbers	Cattle in feedlots	Pig meat production	Chicken slaughter	Wheat production
Annual production growth (% pa)					
Growth % pa (since mid 1970s)*	-0.8%	4.1%	1.8%	3.3%	1.2%
Growth % pa (1980s)	-0.9%	~	3.6%	3.1%	0.0%
Growth % pa (1990s)	2.8%	~	1.4%	3.4%	6.2%
Growth % pa (2000s)	-3.1%	1.3%	-1.2%	1.9%	-0.9%
Variability in production (% pa)					
Variability (since mid 1970s)*	1.2%	6.7%	2.5%	2.1%	19.6%
Variability (1980s)	0.6%	~	1.4%	2.4%	15.8%
Variability (1990s)	1.0%	~	2.5%	1.4%	17.2%
Variability (2000s)	1.4%	8.2%	3.5%	0.7%	24.9%

(* for cattle in feedlots, beginning year is 1995/96)

Source: ABARE, ABS and CBA

Figure 39: Grain & livestock production indices



¹⁵ As a result Australia's exportable surplus of grains is trending lower.



For the manufactured stockfeed sector, the implications of the above market trends are mixed.

- The continued growth in the poultry industry is positive for manufactured stockfeed demand. However fluctuating fortunes for the dairy, and more recently pork industries, has resulted in fluctuating demand for manufactured stockfeed products.
- The strong growth in the beef feedlot industry from 1995 to 2005 did not translate strongly into manufactured stockfeed demand. This is because the beef feedlot sector predominantly uses crushed/rolled grain rations that are not produced by the manufacturing sector.

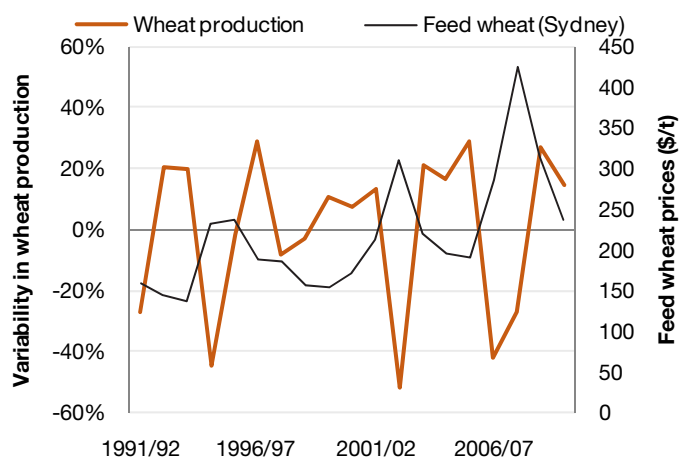
Impact of drought

Drought creates significant challenges for the industry.

Droughts provide great challenges for the Australian farm sector and the challenges posed by droughts are most evident in grain production.

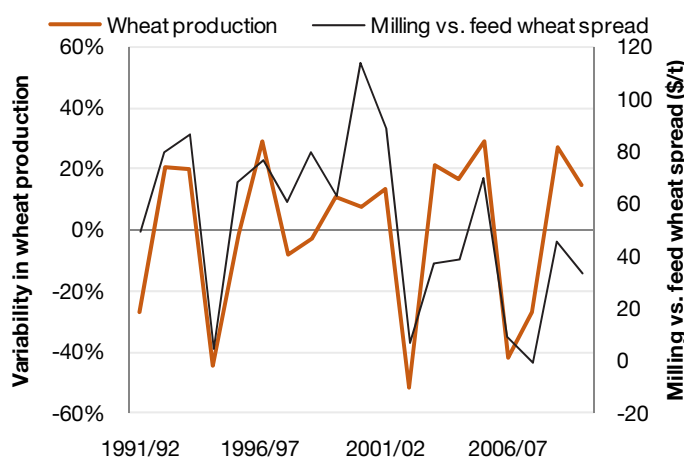
Several widespread drought years in the 2000's saw wheat production volatility rise and yield growth plateau. The impact of drought transmits to the livestock sector through lower feed availability and higher feed grain prices. The two price mechanisms that occur during drought years are (1) all grain prices rise, and (2) feed grain prices rise relative to milling wheat prices.

Figure 40: Wheat production vs. feed wheat prices



Source: ABARE and CBA

Figure 41: Wheat production vs. grain price spreads



Source: ABARE and CBA

Dry periods have mixed implications for the manufactured feed sector, depending on the severity of the dryness. Put simply, a brief period of dryness can be positive, while severe and persistent droughts are negative for the industry.

As JCS Solutions noted, during dry periods feed manufacturers can benefit from increased volumes of feed use by the dairy, beef and grazing industries. Higher grain prices are translated into higher selling prices with the retention of margins. But during severe drought, the stockfeed industry suffers from a loss of client base as producers reduce or cease production. The industry also suffers from increased bad debts and increased exposure to volatile grain markets.

Near term outlook for the Australian stockfeed industry

Australian livestock numbers are expected to rebuild. This supports feed demand.

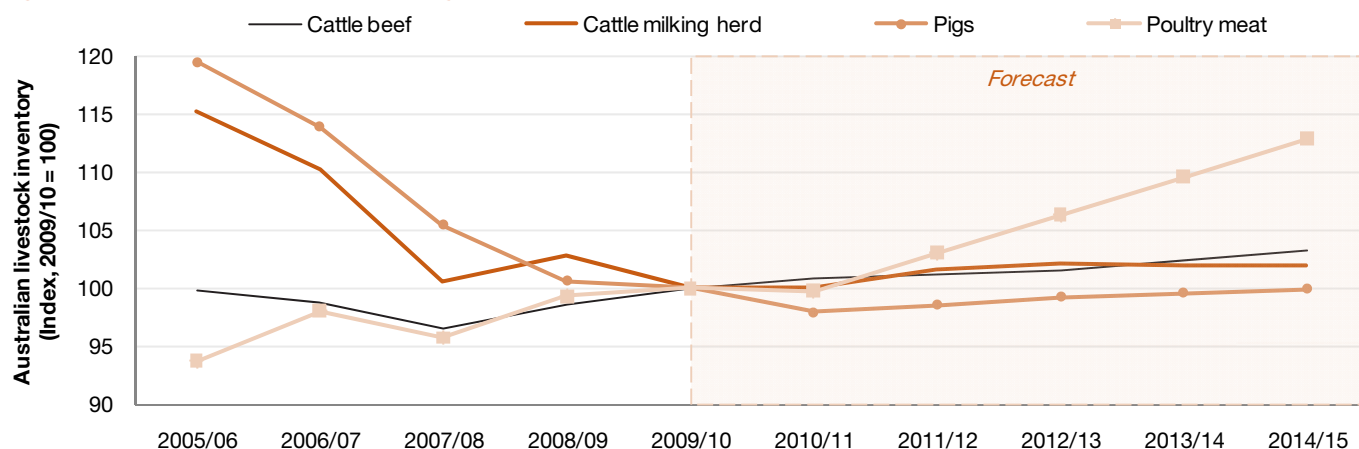
The five year outlook for domestic stockfeed demand is encouraging, driven by an assumed rebuilding in livestock numbers. The passing of the east coast drought in Q1'2010, which has been followed by above average winter and spring rainfall, has allowed Australian livestock producers to rebuild animal inventories. For the period from 2010/11 to 2014/15, ABARE forecast:

- Australian **dairy cow numbers** will rebuild by 0.5% pa.
- Australian **pig numbers** will rebuild by 0.5% pa.
- Australia's **beef cattle herd** will to grow by 0.6% pa.



- Australian **poultry meat production** will surge by 3.2% pa.
- Australia's **sheep flock** will expand by 1.4% pa.

Figure 42: Australian livestock inventory estimates to 2014/15



Source: ABARE and CBA

Near term domestic grain production forecasts

Favourable seasonal conditions across eastern Australia this season has resulted in a record east coast winter grain and oilseed crop. This crop is currently being harvested.

Wheat production forecasts

East coast feed grain supplies will be very large this year.

We forecast that the Australian wheat crop will be 22.3 million tonnes this year¹⁶, however east vs. west production prospects contrast significantly.

East coast wheat production is forecast at a record 14.1 million tonnes this season. This is 50% higher than the 9.4 million tonnes east coast crop harvested in 2009/10, and 3.3 times larger than the drought affected crop of 2006/07. Within the eastern states, the NSW crop is forecast at a record 9.3 million tonnes, up 82% from last year's 5.1 million tonne crop.

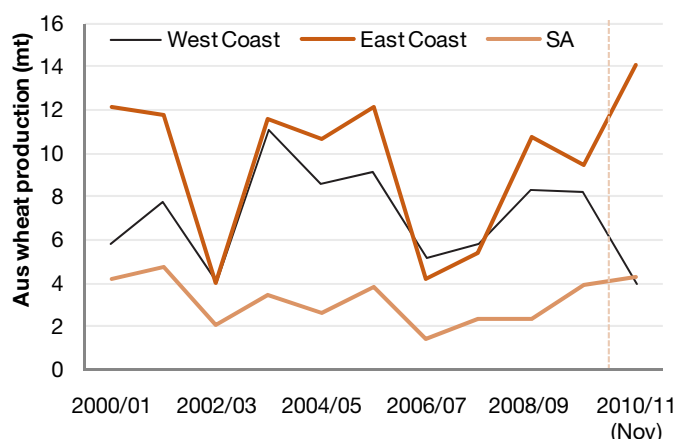
This contrasts to WA which has been decimated by drought. We expect WA wheat production to be only 4 million tonnes, which equal to the smallest crop of the last decade, and half the size of the 8.2 million tonne crop harvested last year.

Figure 43: CBA Australian wheat production forecast

mt	2010 - 11 (f)	2009 - 10	2008 - 09	2007 - 08	Decade avg.	10 Yr Max	10 Yr Min
WA	4.0	8.2	8.3	5.8	7.4	11.1 03/04	4.0 02/03
SA	4.2	4.0	2.4	2.3	3.1	4.8 01/02	1.4 06/07
VIC	3.3	3.2	1.8	2.0	2.3	3.2 09/10	0.9 02/03
NSW	9.3	5.1	7.0	2.5	5.8	8.0 05/06	2.5 02/03
QLD	1.4	1.2	2.0	1.0	1.1	2.0 08/09	0.6 02/03
AUS	22.3	21.7	21.4	13.6	19.7	26.1 03/04	10.1 02/03

Source: CBA

Figure 44: CBA regional wheat production forecast



¹⁶ This represents a 1/2 million tonne increase from our October crop production estimate.



Quantity vs. Quality

Despite our forecast for a big east coast crop, grain quality issues have emerged. Continued heavy rainfall over the past few months has slowed harvest progress and compromised grain quality. For many regions the harvest is running 2-3 weeks behind schedule because of wet weather.

Three main impacts of the harvest delays and quality declines are expected.

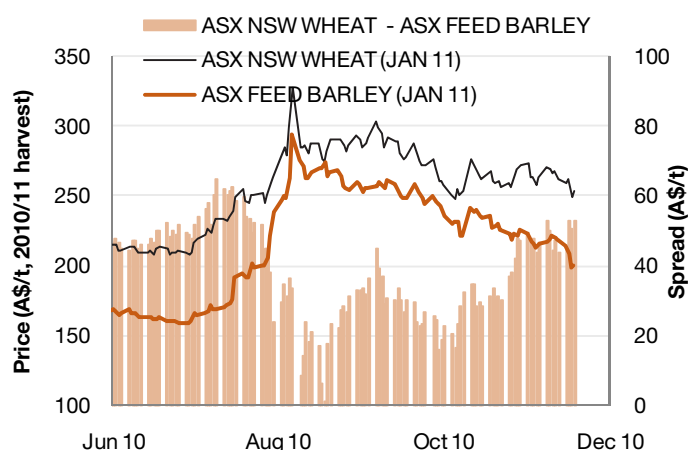
- Near term grain quality spreads will continue to be supported.
- Traders who have forward sold supplies for Dec/Jan shipment will be becoming nervous about their ability to meet those deadlines, which will push the front end of the ASX NSW futures curve into backwardation.
- East coast bulk handlers and exporters may receive less grain than previously expected as farmers sell a greater proportion of their crop directly to the local stockfeed sector.

Feed grain prices have fallen relative to milling wheat or malt barley prices.

The stockfeed industry is a beneficiary of the decline in grain quality this season. There are now large supplies of feed wheat and increased supplies of downgraded barley which is suitable only for livestock feed. Relative prices of domestic milling wheat vs. feed grain supplies clearly indicates the recent increase in feed grain supplies.

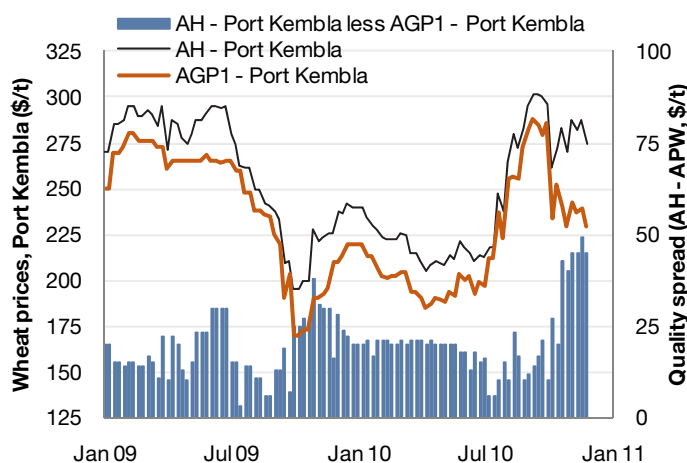
- In the past few months the spread between ASX NSW wheat and feed barley (basis, Jan 11 delivery) has widened to \$53/t after narrowing to single digits in August.
- Furthermore, within the wheat complex quality premiums have recently widened. The Port Kembla AH – APW spread has recently blown out to \$45/t after narrowing to \$6 in July. This spread typically trades around \$15/t.

Figure 45: ASX NSW wheat vs. feed barley (Jan 11 contract)



Source: Bloomberg and CBA

Figure 46: Port Kembla physical wheat prices by grade



Source: Rural Press and CBA

Production outlook for other crops

Winter grains and oilseeds

Production prospects of other winter grains and oilseeds this season are similar to that of wheat. More specifically, very large east coast crops will outweigh poor WA production prospects. At a national level, ABARE has forecast a 9% year on year increase in barley production to 8.8 million tonnes and a 17% year on year increase in canola production to 2.2 million tonnes¹⁷.

The east coast barley and canola crops are huge in terms of volume (e.g. NSW barley forecast at 2.4 million tonnes, up 91% yoy), however as with wheat, recent rain has caused significant quality

¹⁷ 10 yr average is barley crop is 7 million tonnes and the 10 year average canola crop is 1.5 million tonnes.



issues. The potentially massive malt barley crop has suffered a blow with the widespread rain resulting in the staining and sprouting of grain, consigning an increased proportion to feed quality.

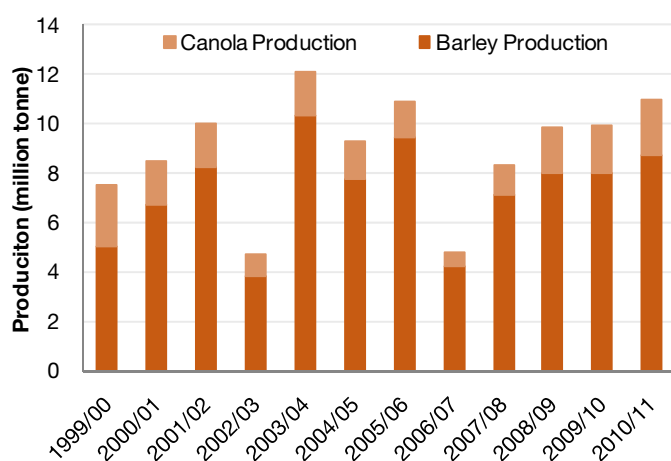
Summer grain and oilseed production in 2010/11

Summer crop production forecasts are big, and could get bigger.

Summer crop production prospects are currently very strong, owing to ample moisture availability, strong prices (particularly cotton) and a favourable three month weather outlook.

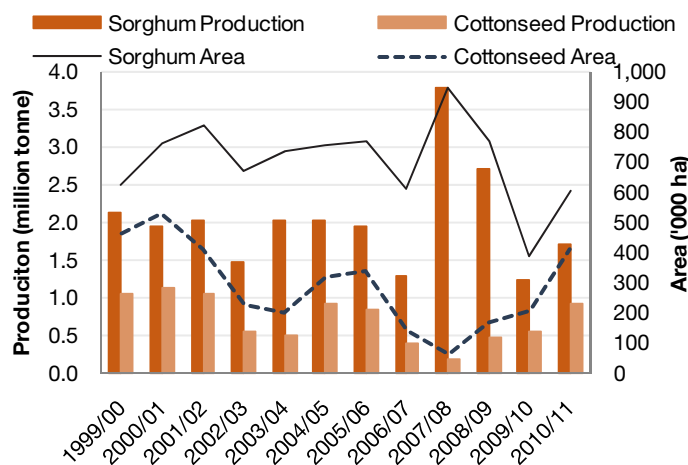
- ABARE has forecast that the area planted to sorghum this season will rise by 55% to 602 thousand hectares, and cotton acreage will virtually double this year to 408 thousand hectares. This would be the largest area planted to cotton in nearly a decade.
- Sorghum production is forecast at 1.7 million tonnes (up 40% yoy, but still below the record 3.8 million tonne crop of 2007/08). Cotton seed production is forecast at 923 thousand tonnes (up from 547 thousand tonnes last year and up from the decade average of 660 thousand tonnes).
- ABARE will review these area and production forecast in their *December Crop Report* publication. We believe there is strong possibility of upward revisions for both sorghum and cotton production.

Figure 47: Winter crop production



Source: ABARE and CBA (2010/11 is ABARE estimate)

Figure 48: Summer crop production



Source: ABARE and CBA (2010/11 is ABARE estimate)

Next year's 2011/12 wheat crop

Our preliminary 2011/12 Australian wheat production forecast is 22 million tonnes, largely unchanged from this year's crop. However we expect a substantial year on year production swing by region. More specifically, we expect the WA crop to double in size next year to 8.2 million tonnes, while the east coast crop is likely to contract by 3.8 million tonnes to 10.3 million tonnes. Both forecasts are largely the result of a return to more normal seasonal conditions and yields.

Putting it all together – the outlook looks good for the local feed sector

Although current plentiful pasture availability on the east coast may temper the immediate need for supplementary feeding in the beef, dairy and sheep industries, we believe the post drought/ GFC herd rebuilding efforts will add to overall stockfeed demand.

East coast stockfeed manufacturers should be well positioned this season because of huge supplies of east coast feed grains – due to massive yields and recent grain quality downgrades – which will underpin raw product supplies at reasonable prices. This large supply of east coast feed grains is helping insulate that local industry from rising international grain prices which has reapplied some pressure to the international livestock industry.



Appendix 1: Global challenges in the stockfeed industry

The global stockfeed industry has been subject to increased attention over the past 10 years. Some of the challenges of the global industry include:

- Population growth and westernisation of diets has increased strain on raw materials. As a result the sustainability of various feedstuffs and/or production methods have been questioned.
- Safety issues in the stockfeed industry have arisen. These have been headlined by BSE (Mad Cow Disease) outbreaks, which are caused by the feeding of meat and bone meal to animals.
- The suitability of developing feedstuffs which use genetically modified materials has been questioned.
- Some consumers have questioned the ethical basis of intensive animal production. Various interest groups have run smear-campaigns which tarnish the entire industry and supply chain.
- The stockfeed industry has been forced to increasingly compete with the renewable fuel sector for grain and oilseed supplies.



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