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Impact of El Niño on Australian farm GDP

November 2015

Summary

Highlights

Overall, we assess this year's El Niño as a moderate risk to farm production. We forecast farm GDP (2% of the total economy) to be flat to moderately lower (0 to -5%) in 2015-16, which will only marginally subtract from headline GDP.

Key points

- El Niño can severely affect winter, spring and summer rainfall in eastern Australia. The impact of any given El Niño event is highly variable. Many previous El Niño events have been associated with lower farm GDP. Real farm GDP declined between 0.7% and 25.4% during the last five El Niños, with an average decline of 12.6%.
- Farm GDP constitutes around 2% of total Australian GDP, limiting the direct impact of El Niño on GDP. There are potential flow on impacts to other areas of the economy, but we expect these to be relatively small. We do not expect El Niño to affect exchange rates or the RBA's policy settings.
- The relatively late onset (outside Victoria) of the rainfall deficiency associated with this year's El Niño has spared winter crops from a serious calamity, although conditions in Victoria are very challenging. We forecast wheat production to be similar to last year. Wheat represents 16% of agricultural production by value.
- The beef industry is already experiencing a production slowdown. This will place some pressure on farm GDP irrespective of climatic conditions over summer. Dry conditions are causing production to spike and prices have tended lower in October, but if Queensland enjoys a decent wet season, prices could increase. Beef represents 17% of agricultural production by value.
- Despite dry conditions in Victoria, milk production this season looks to be holding up and concerns around the impact of El Niño on New Zealand have pushed prices higher. Dairy represents 9% of agricultural production by value.
- Conversely, El Niño could boost non-farm GDP. For example, there may be fewer weather disruptions to mining production and/or increased electricity consumption.

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Contact

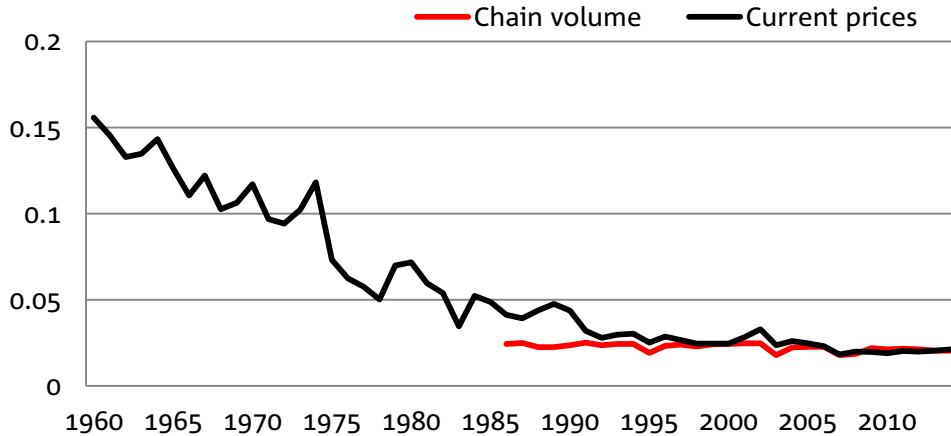
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Overview of the Australian agricultural sector

Australian GDP – farm sector share

Per cent



Agriculture in Australia is a substantial exporter and a cornerstone of the economy of rural areas. However, as a share of GDP, agriculture is a small part of the total Australian economy. Agriculture has comprised around 2% of the Australian economy since the 1990s on a real and nominal basis.

Australian agricultural production is relatively diversified. The largest agricultural sector is beef, which makes up 17% of the total value of production. Wheat is second at 16% followed by dairy at 9%.

Australian agricultural production, 2013-14

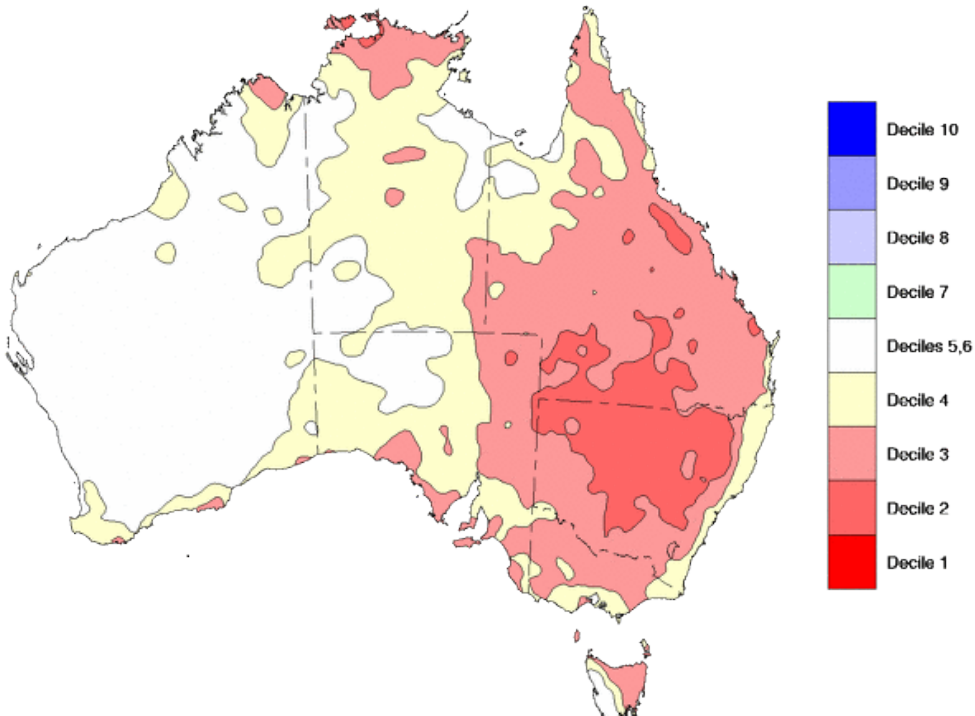
Gross value of production (AUD million) and share (per cent)

	Wheat	Barley	Cotton	Canola	Sugar	Other broadacre crops	Hay and silage	Fruit and nuts (ex grapes)	Grapes	Vegetables	Cattle	Sheep and lamb	Pigs	Poultry	Wool	Milk	Other	Total
Value	7998	2453	2006	2129	1226	2054	1360	3187	1003	3510	8544	2641	1081	2344	2530	4729	2069	50865
Share	16%	5%	4%	4%	2%	4%	3%	6%	2%	7%	17%	5%	2%	5%	5%	9%	4%	100%

Source: Australian Bureau of Statistics and NAB Group Economics

El Niño background

Winter-Spring Mean Rainfall deciles for 12 moderate-strong classical El Niño events



El Niño is characterised by a warming in sea surface temperatures in the Pacific ocean. This in turn lowers atmospheric pressure over the central Pacific compared to Australia, leading to lower strength Pacific trade winds.

El Niño affects temperature and rainfall in North and South America, Africa, East and Southeast Asia, the Indian subcontinent, Australia and the Pacific. Locally, the phenomenon causes generally lower winter and spring rainfall in northern and eastern Australia.

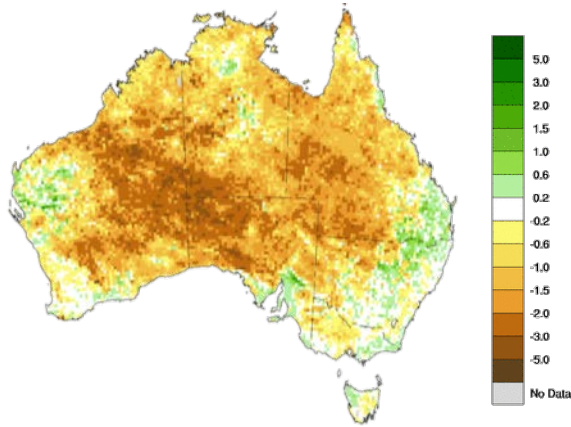
The impact of any given El Niño event is highly variable and difficult to predict. The map to the left shows the impact of El Niño on winter and spring rainfall for 12 “classical” events. In the eastern States, the impact on rainfall is often severe, although Western Australia is less susceptible, if not entirely immune.

Source: Bureau of Meteorology

2015 climatic conditions

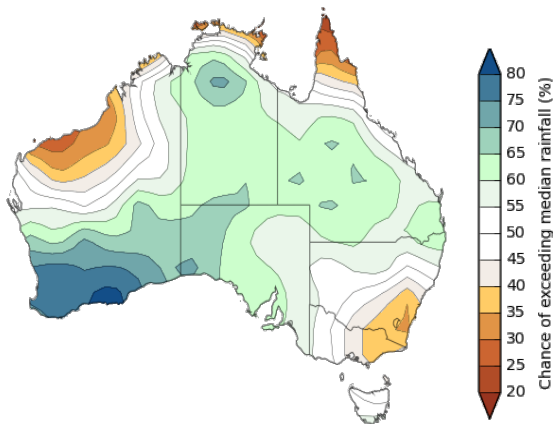
Normalised Difference Vegetation Index Anomaly

Six months to 30 September 2015



Three month rainfall outlook

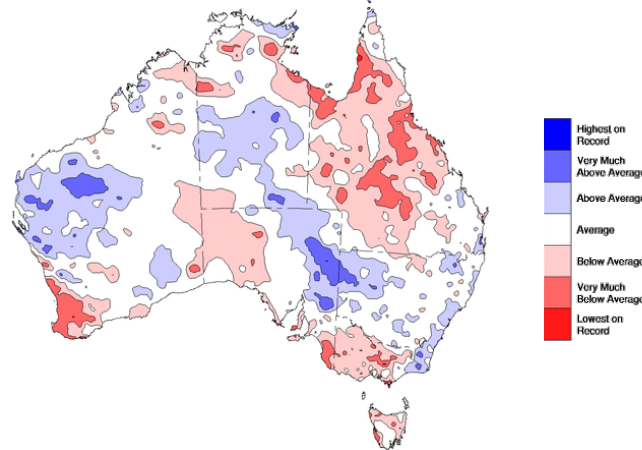
Chance of exceeding median rainfall



Source: Bureau of Meteorology

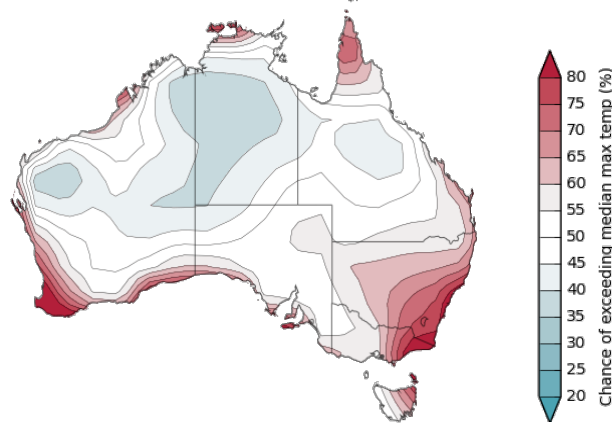
Australian rainfall deciles

Nine months to 30 September 2015



Three month temperature outlook

Chance of exceeding median temperature



In 2015, rainfall has been below to well below average across much of Queensland, Victoria, Tasmania, south-west Western Australia and parts of South Australia. However, the relatively late onset (outside Victoria) of the rainfall deficiency associated with this year's El Niño has spared the national wheat crop from a serious calamity.

The Bureau of Meteorology's Normalised Difference Vegetation Index (NDVI) anomaly for the last six months shows that throughout most of Australia, vegetation is less green than the long run average for the period.

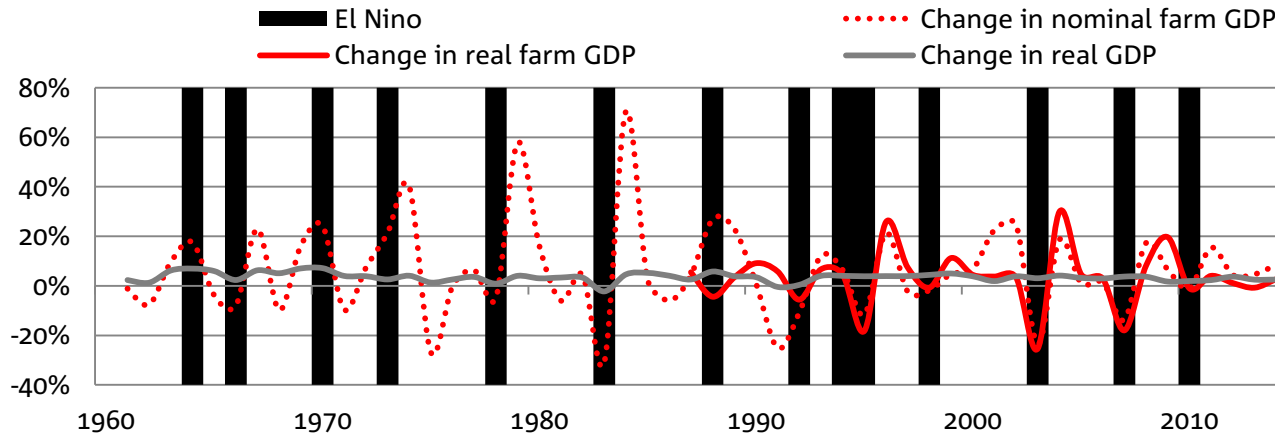
The Bureau of Meteorology's three-month outlook to December shows hot and dry conditions for eastern Victoria southern New South Wales as well as the Pilbara and Cape York. This outlook would spare much of drought-affected Queensland from another failed wet season but would see a difficult summer for much of Victoria and southern New South Wales.

However, it is important to note that there is considerable uncertainty in the forecasts, clouding the outlook for the summer. If anything, risks are weighted to the downside.

El Niño – historic relationship with farm GDP, exchange rates and interest rates

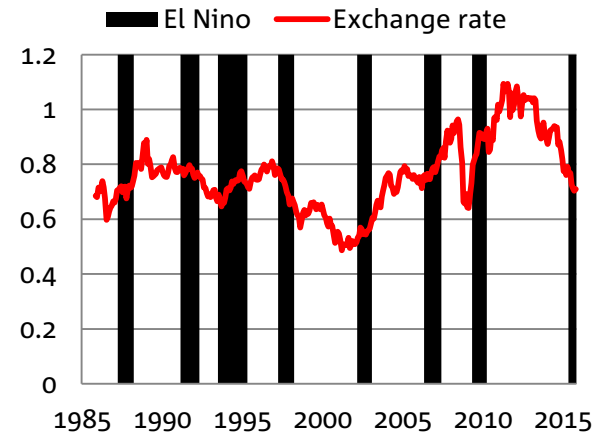
Australian farm GDP

Per cent change, annual



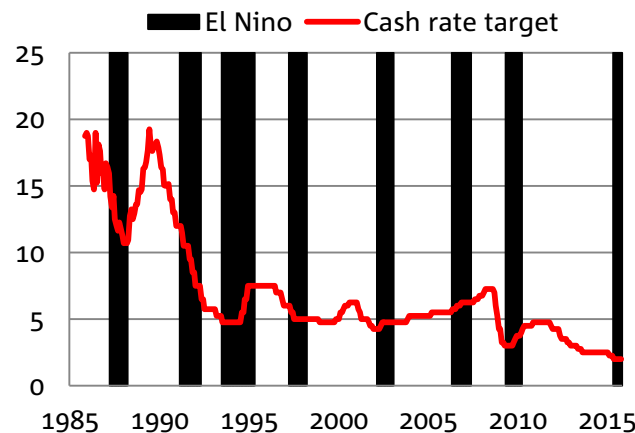
AUD/USD

Monthly



RBA cash rate

Per cent, monthly



Many previous El Niño events have been associated with lower farm GDP. Real farm GDP declined between 0.7% and 25.4% during the last five El Niños, with an average decline of 12.6%. The most severe declines in farm GDP were associated with earlier onset El Niño events that slashed winter crop production. The later onset of this event should spare winter crops from serious volume declines. For example, the 2006-07 El Niño, saw wheat production fall 57% and farm GDP fall 18%. With this El Niño ramping up towards summer, we see the risk to farm GDP being lower, pointing to a range between -5 to 0%.

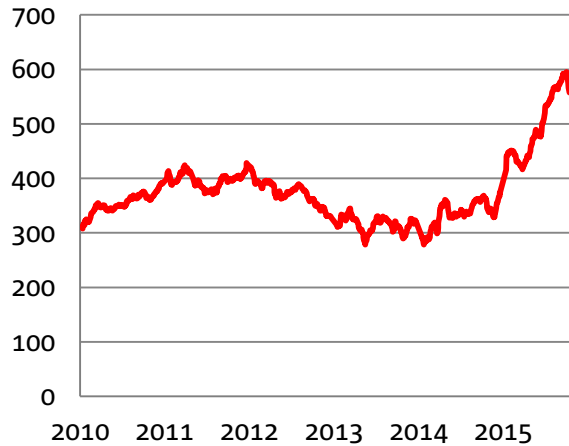
Farm GDP constitutes around 2% of total Australian GDP, limiting the direct impact of El Niño on GDP. There are potential flow on impacts to other areas of the economy, but we expect these to be relatively small. Likewise, we do not expect El Niño to affect exchange rates or the RBA's policy settings.

Source: Australian Bureau of Statistics, Bureau of Meteorology, Reserve Bank of Australia, Bloomberg and NAB Group Economics

El Niño – impact on beef

Eastern Young Cattle Indicator

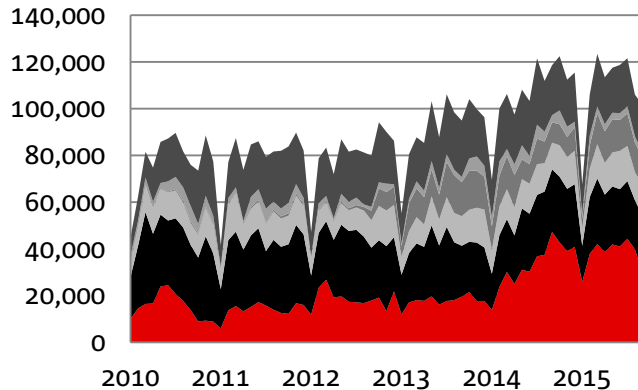
Australian cents/kilogram



Monthly cattle exports

Tonnes

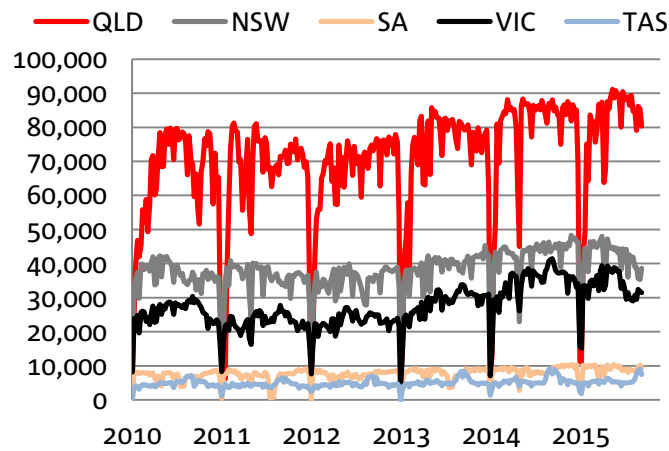
■ Other ■ Indonesia ■ China
■ South Korea ■ Japan ■ US



Source: Meat and Livestock Australia and NAB Group Economics

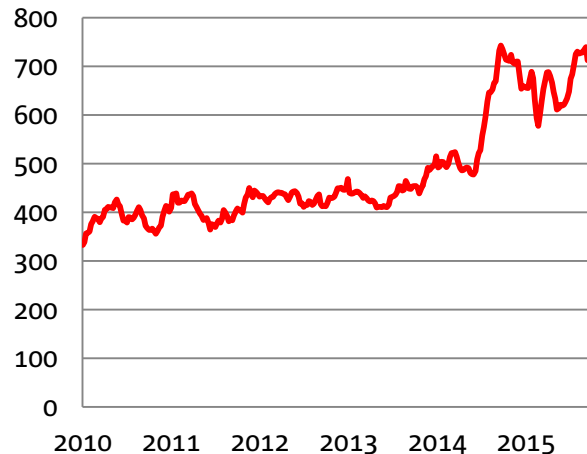
Weekly eastern states slaughter

Head



US 90CL export price

Australian cents/kilogram



The beef industry is already experiencing a production slowdown following a prolonged period of elevated slaughter amid drought in Queensland and strong US demand. The surge in exports to the US saw cattle prices surge from the start of this year, although dry weather has caused an uptick in southern states slaughter in October and has put pressure on prices.

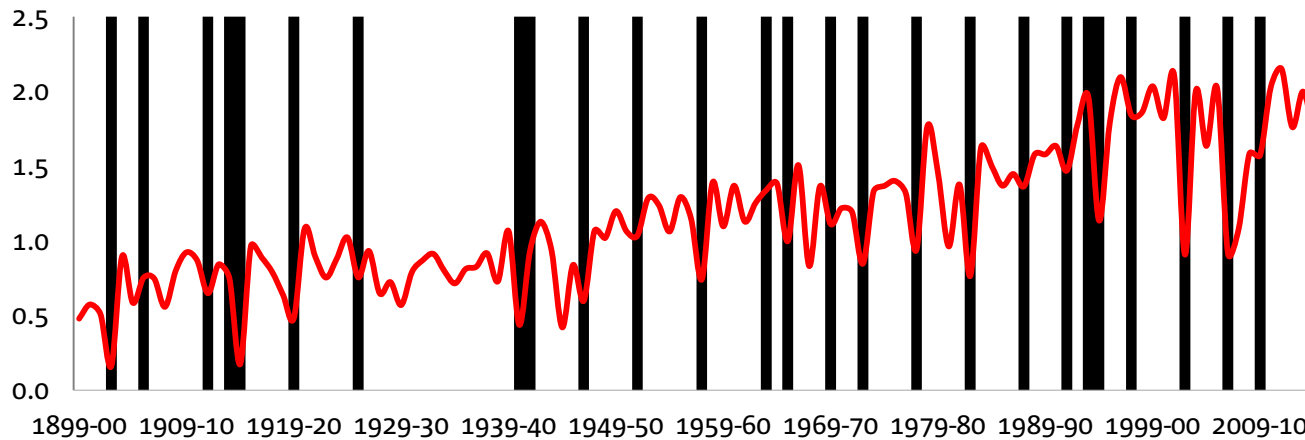
Queensland is Australia's biggest cattle producer by a considerable margin and parts of the state have seen very poor rainfall over three to four years. The latest three month rainfall outlook forecasts above average rainfall across much of Queensland. If this transpires, there is continued upside for prices as producers look to restock.

However, we expect volumes to contract after an ultimately unsustainable level of slaughter over the past year. This will place some pressure on farm GDP irrespective of climatic conditions over summer.

El Niño – impact on wheat

Australian wheat yields since Federation

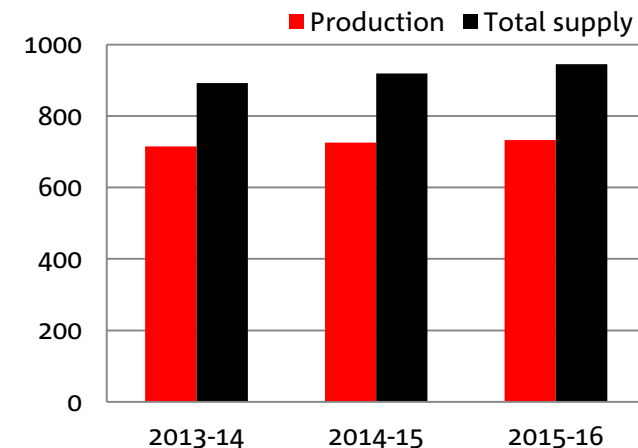
Tonnes/hectare, black shaded areas show El Niño



As wheat is a winter crop in Australia is sown in autumn and early winter and harvested in spring and summer, wheat yields are highly sensitive to winter and spring rainfalls. Severe El Niño events have been associated with drastically lower wheat yields in eastern Australia. El Niño events in 1982-83, 2002-03 and 2006-07 were particularly bad for wheat, with production down 46%, 58% and 57% respectively.

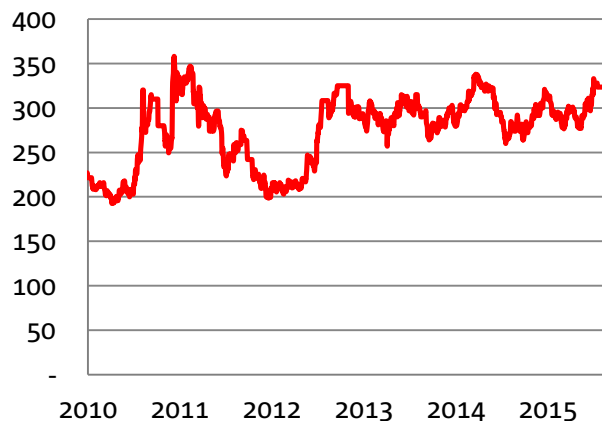
USDA global wheat forecasts

Million tonnes



Eastern Australia milling wheat

Generic 1st, AUD/tonne

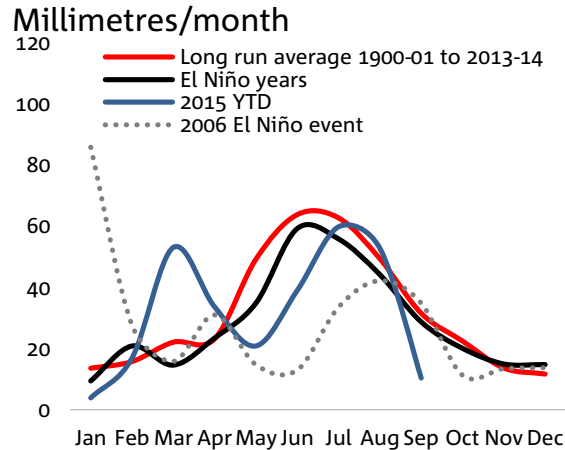


However, the presence of El Niño by no means guarantees a poor national wheat crop. The 1997-98 El Niño saw lower wheat crops in New South Wales and Victoria, but a larger crop in Western Australia, Australia's biggest wheat producer. Overall the crop was 16% smaller for the year.

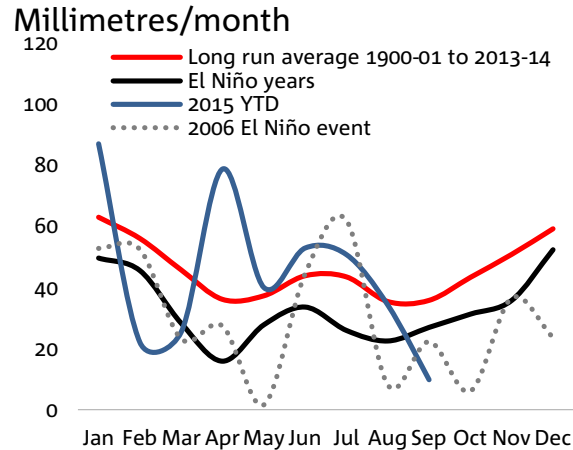
Source: Bureau of Meteorology, Australian Bureau of Statistics, Bloomberg, USDA and NAB Group Economics

El Niño – impact on wheat (continued)

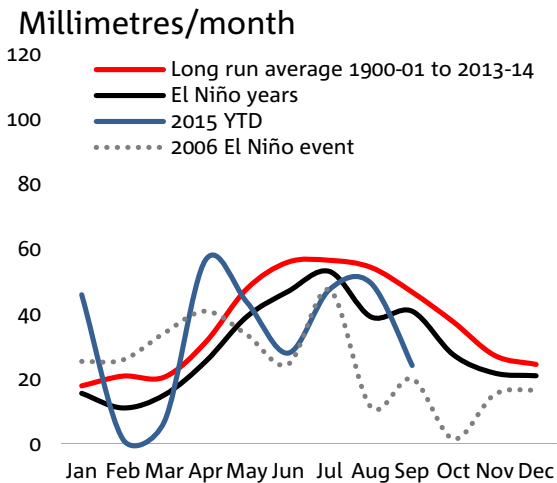
Wheat region rainfall Western Australia



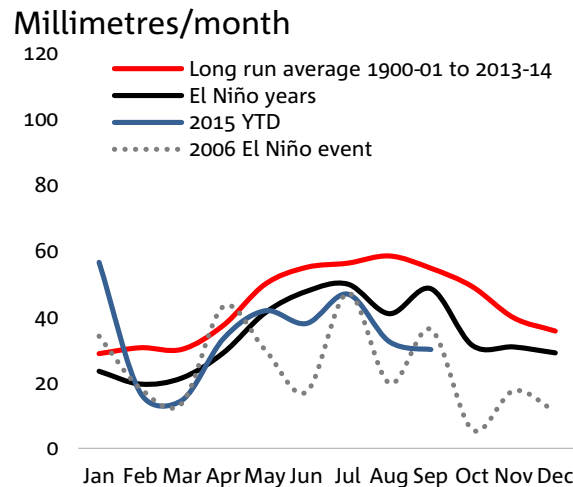
Wheat region rainfall New South Wales



Wheat region rainfall South Australia



Wheat region rainfall Victoria



-20
 Source: Bureau of Meteorology and NAB Group Economics

The relatively late onset (outside Victoria) of the rainfall deficiency associated with this year's El Niño has spared the national wheat crop from a serious calamity, although conditions in Victoria are very challenging.

September and October were much dryer than average in most wheat regions and a heatwave in October caused damage to crops.

While we have previously highlighted the risk of El Niño to Australia's 2015-16 wheat crop, the major risk has now passed. However, the upside in production volumes that some had expected did not materialise.

Overall, we forecast Australian wheat production to be similar to last year.

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