ECONOMIC BULLETIN

El Niño – the economic impact for New Zealand.

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Cruel summer

- **A strong El Niño is developing and could intensify further, raising the risk of hot, dry conditions across parts of New Zealand over summer, especially in eastern regions and the upper North Island.**
- **The main economic risk is to pasture-based agriculture, particularly dairy, sheep and beef, where drought can reduce pasture growth, lower production, lift costs and disrupt processing patterns across the season.**
- **Past severe droughts have subtracted as much as 1 percentage point from GDP growth – we'd emphasise that this as an upper bound on the potential impact rather than a prediction.**
- **Greater irrigation coverage, stronger drought preparedness and favourable starting soil moisture conditions mean that the agricultural sector is better placed than it was going into the last El Niño-led drought in 1997-98.**
- **Inflation effects are likely to be mixed but tilted higher overall, with potential upward pressure on dairy and imported food prices, partly offset by near-term downward pressure on meat prices.**
- **For the RBNZ, El Niño is best viewed as a risk to monitor rather than a trigger for immediate policy action, unless food price pressures spill into inflation expectations or broader pricing behaviour.**

Climatologists in New Zealand and internationally have declared a strong El Niño event this year, which is expected to strengthen further in the next few months and persist into mid-2027. Indeed, modelling suggests that this is on track to become the warmest event on record going back to the 1870s.

El Niño is the warm phase of the El Niño-Southern Oscillation (ENSO), a natural climate cycle driven by interactions between the tropical Pacific Ocean and atmosphere. During El Niño events, sea surface temperatures in the central and eastern Pacific become warmer than average, while the trade winds that normally push warm water westward become weaker.

For New Zealand, the main economic channel is likely to be reduced pasture growth and lower production in drought-prone regions, particularly for dairy, sheep and beef. The aggregate impact of past severe droughts suggests a potential drag on GDP growth of as much as 1 percentage point in a worst-case scenario. On its own this wouldn't be enough to drive the economy into recession, though it may meet the 'technical' definition (two consecutive quarterly falls in GDP) if there was already weak momentum in the rest of the economy.

However, the impact is highly uncertain. El Niño increases the probability of certain weather patterns rather than determining them, and New Zealand's farming sector is better placed than in past episodes due to irrigation, favourable starting soil moisture conditions and greater drought preparedness. For these reasons, we're highlighting El Niño as a downside risk to our growth forecasts rather than a part of our central view. We'll adjust our forecasts accordingly as things develop.

Bottom-line implications for output, inflation and interest rates.

It's hard to tell exactly how GDP could be impacted, but there is a clear downside risk to agricultural production depending on how the weather plays out over summer. These impacts are predominantly supply-side effects that reduce potential output, and as such won't necessarily lead to increased excess capacity for the economy overall. But there is clearly some risk of spillovers to the broader economy.

Inflation may be boosted in areas of the CPI where supplies of food products are affected – especially through impacts on global food prices. These effects are already evident in global grain markets (also impacted by the Russian war) and oils. This isn't helpful given that inflation is already elevated in both New Zealand and many global jurisdictions. Central banks will tend to look through these impacts as much as possible, given the relatively time-bound nature of an El-Nino event. Nonetheless, if these near-term price movements start to feed into inflation expectations then some policy response might be on the cards.

We expect the RBNZ to keep a watching brief as they try to balance the downside risks to output and the upside risks to inflation. It's likely that El Niño itself won't generate much of a policy response, but the broader economic context will be more important.

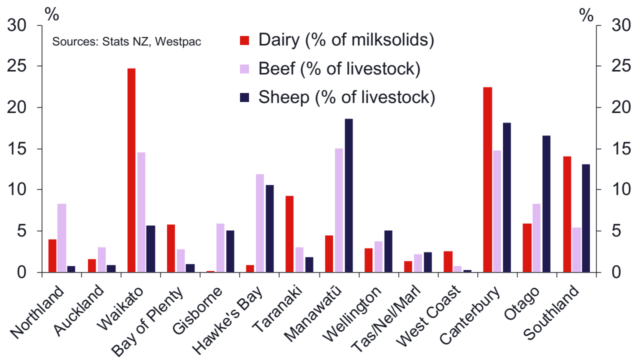
How does El Niño affect us?

In New Zealand, El Niño is associated with stronger and more frequent westerly winds over spring and summer. This has substantially different effects across the country:

- In the South Island, it tends to mean above-average rainfall on the West Coast and in Southland.
- Meanwhile, the mountainous spine of the island acts as a rain-shadow that produces hot and dry winds on the eastern side, particularly in Canterbury.
- In the North Island, mountain ranges also create a rain-shadow in the east to some degree, leading to dry conditions in the Bay of Plenty, Hawke's Bay and Gisborne.
- There is an additional effect that El Niño tends to alter storm tracks and reduce the frequency of moist subtropical weather systems that bring rain to the upper North Island.

New Zealand's direct economic exposure to El Niño is through our mostly pasture-based farming systems – particularly so in the North Island, where farms are more reliant on rainfall. Waikato is our largest dairying region and a major beef producer, while Hawke's Bay and Manawatu are major players in sheep and beef.

Agricultural activity by region



Canterbury is our most important farming region overall, but its exposure to dry weather is partly countered by extensive use of irrigation. There are also varying risks for regionally concentrated sectors such as horticulture.

How bad will this one be?

The strength of an El Niño event is measured in terms of the rise in sea surface temperatures in the central equatorial Pacific. This year's event has developed rapidly, with the Niño 3.4 Index running 2°C above average in July and reaching 2.7°C in mid-August – already putting it just below the peaks of the 1877-78 and 2015-16 events, which were the previous record highs. Since sea surface temperatures tend to peak between November and January, this year's event is on track to become the strongest on record by quite some margin.

However, El Niño influences the probability of certain weather patterns rather than determining outcomes with certainty, and no two historical events have been quite the same. For example, while 2015-16 was a severe event globally, it didn't have the expected impact on New Zealand: from January the prevailing winds shifted more northerly, bringing tropical airflows and rainfall to the at-risk parts of the North Island.

By the same token, New Zealand's historical record of drought extends well beyond El Niño years. La Niña, its opposite pattern, can also lead to drought, albeit in different parts of the country. And the last severe drought in New Zealand, over the 2012-13 summer, was not related to the Southern Oscillation one way or another.

One difficulty in forecasting actual weather conditions over the summer period is that El Niño can interact with other drivers such as the Indian Ocean Dipole, the Southern Annular Mode and local sea surface temperatures. That said, Earth Sciences NZ (formerly NIWA) has noted that these patterns are currently moving into phases that would support El Niño-like impacts rather than mitigate them.

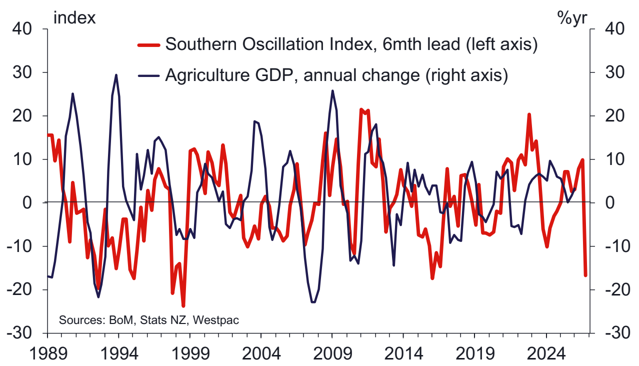
Economic impact – the big picture.

GDP growth.

A few studies have tried to model the impact of El Niño on the overall economy, using the Southern Oscillation Index (SOI) as an input. However, the findings are highly uncertain, as there is no straightforward relationship between the SOI, actual weather outcomes and the economic impact.

A 2015 IMF paper estimates that a one standard deviation fall in the SOI reduces New Zealand's GDP growth by 0.4% after a year. Currently the SOI is 2.2 standard deviations below average, which suggests a growth impact of around 0.9% (though this may not mark the peak in the SOI). **An earlier RBNZ paper**, using a similar method, produced a smaller estimate of around 0.6%.

Southern Oscillation Index and agriculture GDP



Another approach is to look at case studies of the most severe droughts in recent history – regardless of cause – which can help to provide an upper bound on what the impact of this year's El Niño might be. Specifically, we looked at:

- **1997-98:** A severe and widespread drought, driven by one of the strongest El Niño patterns on record. Unusually, a shift to La Niña led to a second drought in the following summer for many parts of the country.
- **2007-08:** A La Niña-driven event with a relatively early onset, with drought conditions emerging as early as November.
- **2012-13:** One of the most extreme droughts on record, affecting most of the North Island. It was unrelated to ENSO and was unusual in that it intensified late in the summer and through autumn.

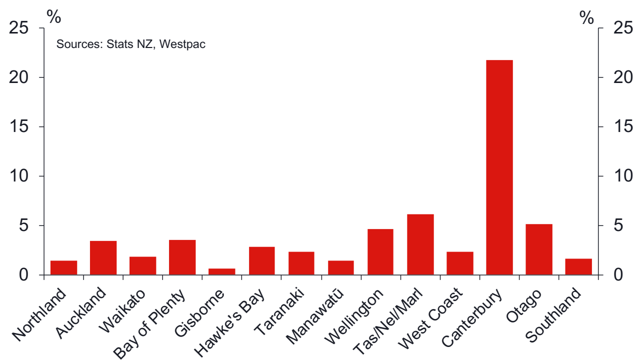
The drawback of the case study approach is that while it's easy to trace the direct impacts of lost agricultural output and food processing, it's much harder to gauge the flow-on effects to the wider economy (although a multiplier of 2 seems a reasonable rule of thumb). What's more, droughts in New Zealand have often coincided with major global economic shocks such as in 1998 and 2008, and it's difficult to separate the two effects.

With that in mind, it appears that major droughts have knocked as much as 1% off GDP growth in the past. **A 2015 RBNZ paper** estimated that in the 1997-98 El Niño the drop in agricultural and food manufacturing output alone subtracted around 0.7ppts from GDP. This paper also estimated that the 2012-13 drought subtracted around 0.9ppts in total – the large impact reflecting that this event was more concentrated in the North Island. **Our own work in 2020** found that agriculture and food manufacturing knocked about 0.2ppts off GDP in 2008 and 0.4ppts in 2013 (with the effect on total GDP perhaps double this).

These estimates may overstate the impact of El Niño-led drought this summer, as the farming sector has been evolving over the last few decades towards greater resilience. The most important factor has been a steady shift in land use, in particular away from sheep farming and towards dairy. That shift has been most prominent in the Canterbury region and has gone hand-in-hand with the growing use of irrigation to sustain pasture growth. In most cases, the key issue for farmers and growers over summer is not rainfall per se but soil moisture; access to irrigation breaks the link between the two.

The amounted of irrigated agricultural land in New Zealand doubled between 2002 and 2022. Canterbury was already the leader in the use of irrigation (accounting for 63% of the total), and that region also saw a doubling over that time. The high use of irrigation in Canterbury stems from the ready availability of water from snowmelt in the Southern Alps during the summer months. In contrast, water sources in the North Island are largely dependent on rainfall and storage.

Share of agricultural land that is irrigated

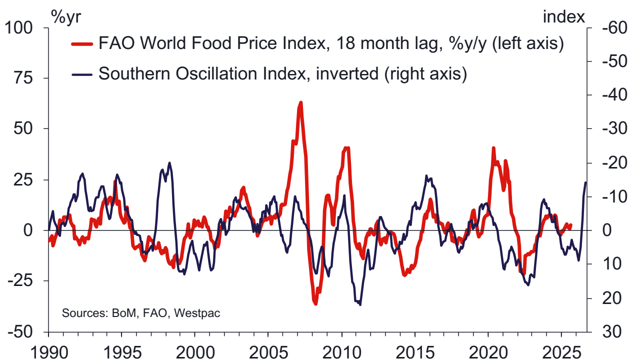


Most farming regions also appear to be coming from a relatively favourable starting point this year, with above-normal rainfall across many eastern and lower North Island regions earlier in the year and generally healthy soil moisture levels. Hydro lake levels are currently very high, and snow levels in the South Island are looking favourable. Altogether, the farming sector looks better equipped today to handle an El Niño-led drought than it was during the last one – almost 30 years ago.

Inflation.

El Niño events tend to add to inflation pressures on balance, although the effects are mixed. There is a correlation between El Niño conditions and global food prices over the following year, although it's clear that there are also other factors that can drive major shifts in food prices.

Southern Oscillation Index and global food prices



The IMF estimates that past El Niño events have lifted annual inflation by between 0.1 and 1 percentage point across countries. The size of the impact is partly a function of the weight of food in a country's CPI basket – that is, the impact tends to be larger in developing economies. (The IMF paper actually estimates a negative impact on inflation for New Zealand, but this result is an outlier and seems to have conflated the effects of the 1982-83 El Niño with the wage and price freeze that the government imposed around the same time.)

In New Zealand, the initial effects would likely include higher prices for dairy products (due to lower production), but lower prices for beef and lamb (due to earlier slaughter). There's also likely to be upward pressure on prices for imported foods, though not across the board. Historically El Niño events have led to reduced harvests in the likes of Australia (wheat), India (rice) and Indonesia (coffee, cocoa, palm oil), but better growing conditions in the likes of Argentina (soybeans) and the US (fruits and various other foods).

Economic impact – the details.

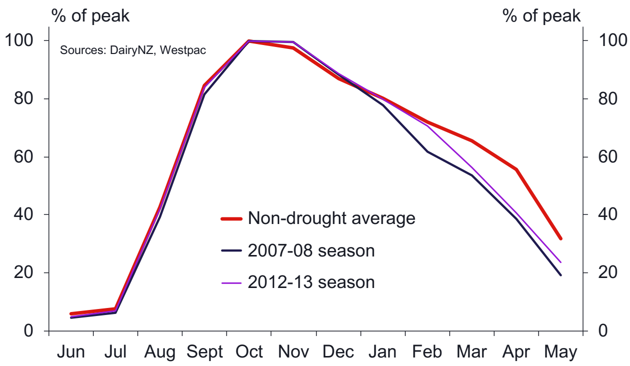
The rest of this article looks at the potential impact of an El Niño drought across sectors, with the focus largely on agriculture. Where possible, we've highlighted the effects on prices as well as output, which together determine the impact on incomes. Higher prices may provide a buffer in some cases, but this depends on whether New Zealand is a significant player in the world market, and/or whether El Niño has a negative impact on production at a global level.

Dairy.

Dairying is by far our largest agricultural industry and accounted for 21% of our total export earnings last year. Dairying in New Zealand is largely pasture-based, so it can be highly exposed to drought conditions.

Milk production typically peaks in October, then gradually declines over summer and autumn as farmers start to 'dry off' cows. In a drought year, farmers are forced to start drying off earlier, leading to noticeably lower production from around February onward. This means that the dairying season is already around 70% complete before drought becomes a consideration – which puts an upper bound on the impact that an event like El Niño can have.

Monthly milk collections, % of season peak



During the 2007-08 drought, full-season milk production fell short by around 7% (relative to trend growth at the time). The late onset of the 2012-13 drought meant a smaller impact of around -5%. We don't have monthly data for the 1997-98 El Niño drought, but quarterly data suggests the impact was similar to the 2007-08 season.

In terms of the price impact, dairy is unusual in that New Zealand is a significant player in the global market, accounting for around a third of internationally-traded dairy products. This means that when production in New Zealand falls short of expectations, this can put significant upward pressure on global prices. Notably, futures prices for milk powder have been ramping up in recent weeks, particular for contracts over the New Zealand summer, which suggests that the market is becoming more wary of El Niño risks.

In fact, there have been times when higher prices have outweighed the drop in volumes, leading to higher export earnings at the national level. However, this may have been truer before 2016, when EU countries faced quotas on dairy production and weren't able to scale up despite the incentive created by higher prices. The global milk supply is more flexible today, which could limit the extent of the rise in prices this time around.

Even if dairy export earnings do rise at the national level, the effects will be spread unevenly. Farmers in drought-prone regions may still see lower revenue on balance, along with extra costs from buying feed and transporting stock to other pastures. On the other hand, it can be a windfall for a region like Southland, which is not prone to drought but still benefits from the higher farmgate milk price. (Although Southland faces its own risks from El

Niño: above-average rainfall can hinder pasture growth and lead to animal health issues.)

Sheep and beef.

As with dairy, sheep and beef farming is largely pasture-based and is vulnerable to periods of low rainfall. The use of irrigation has gradually increased over the last couple of decades, but there are large swathes of hillier farmland that are unsuitable for irrigation systems.

In a drought, the impact on production happens in two stages. In the near term, farmers are likely to bring stock forward for processing to reduce feed demand, temporarily increasing slaughter numbers and meat supply. This can actually provide a boost to reported GDP in the March and June quarters (technically this should be offset by a fall in on-farm production for the agricultural sector, but Stats NZ does not have a quarterly measure for this). This is followed by a period of herd rebuilding in the following years, which means fewer animals sent to slaughter and a reduced supply of meat in the meantime.

Prices follow a similar pattern. Initially, the accelerated slaughter puts downward pressure on meat prices; if processors don't have the capacity to handle the increased volumes, they will lower their schedule prices to discourage farmers from sending more stock. Later, the herd rebuilding phase will mean reduced meat supply and higher prices – even more so if competing producers such as Australia are going through the same issues.

We should note that the rebuilding phase is not a certainty. In the case of sheep farming in particular, flock numbers have been in long-term decline, and drought has sometimes been the impetus for changes in land use.

Horticulture.

Kiwifruit and apples are generally less exposed to El Niño conditions than pastoral farming, as most commercial orchards have access to irrigation and intensive management systems. However, prolonged dry conditions in the Bay of Plenty and Hawke's Bay could lead to water use restrictions, which would weigh on yields, fruit size and quality.

Reduced volumes may be partly offset by higher export prices. New Zealand is not a dominant player in the global market per se, but it is an important supplier during the Northern Hemisphere's off-season. And in an El Niño event, growing conditions in the likes of Australia and South America will also suffer.

Viticulture.

El Niño generally means higher temperatures and lower rainfall for the Marlborough region, which accounts for around 80% of winemaking by volume. The impact is ambiguous: up to a point, a hot dry summer can improve the quality of the harvest by reducing disease pressure and concentrating the flavour in the grapes. But in a severe drought with restrictions on water use, a decline in yields will be the dominant effect. Note that the New Zealand wine industry has been grappling with overproduction and low returns in recent years; a strong drought could end up hastening the exit of some players from the industry, which would help to improve returns over the longer term.

Grains.

Canterbury is the major grain-growing region, accounting for 78% of wheat and 66% of barley production last year. As with the recent trends in dairying, this reflects the availability of flat land and snowmelt-fed irrigation systems. While the latter provides some buffer against El Niño conditions, a prolonged drought would still lead to lower yields and poorer crop quality.

Around 75% of the wheat grown in New Zealand is used for animal feed, so a drop in production would lead to higher costs and lower output in the meat sectors. Much of the wheat for human consumption is imported from Australia (which is also likely to be negatively impacted by El Niño).

Forestry.

Forestry is generally less sensitive to year-to-year fluctuations in rainfall, although a prolonged El Niño-driven drought can slow tree growth, particularly in younger forests, newly established plantations, and forests on lighter or drought-prone soils. A severe El Niño may have only a limited impact on harvest volumes in the short term (and what remains in the ground will be harvested later), but it can materially affect profitability through greater pest control costs, higher insurance costs and increased wildfire risk.

Export log and timber prices depend primarily on global housing activity, construction demand, shipping costs, and conditions in key markets such as China. As such, any shortfall in volumes during a drought is unlikely to have a significant direct effect on export prices.

Electricity.

Hydroelectric generation accounts for around half of New Zealand's generation capacity, with most of that found in the South Island where large catchment lakes are fed by snowmelt. In dry years, reduced hydro generation can lead to a greater reliance on thermal generation (gas and coal) and sharply higher wholesale electricity prices.

El Niño has not historically been an issue for hydro generation – it's actually the opposition pattern (El Niña) that is the greater threat, as this tends to lead to lower rainfall and inflows into the South Island hydro lakes. El Niño can result in below-average rainfall in the North Island, affecting hydro generation along the Waikato River, but this accounts for a much smaller share of the total.

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