

**The *agri benchmark* Global Producer Price
Indices for Beef Cattle and Sheep**

1 Introduction

agri benchmark Beef and Sheep Network provides a set of annual (calendar year) global Producer Price Indices for finished cattle, weaner cattle, lambs and sheep meat. The global Producer Price Indices are Laspeyres, production-weighted indices¹, measuring changes in global farm gate prices as provided annually by the *agri benchmark* Beef and Sheep Network, with 34 countries included for cattle and 16 for sheep. The Indices use nominal prices (not inflation-adjusted) and based on average prices over the 2014 to 2016 period.

These global indices and associated country and regional indices can be used to monitor and explain developments in global, regional and country beef cattle, lambs and sheep prices over time. They reflect a) the structure of beef and sheep prices in producing countries which are not within of the main exporters, and b) country-specific drivers of prices such as policy interventions and supply / demand changes in major producing and consuming countries.

In order to better understand global producer price developments over the observed period, sub-indices for regions and countries that contributed highly to the average global production over 2014–2016 were also calculated. Four sub-indices were identified for finished cattle: North America, South America, EU and China price indices. For weaner cattle there are three: North America, South America and EU price indices. For lambs there are three: Oceania, EU and UK price indices. For sheep meat there are China, Oceania, EU and UK price indices.

2 The *agri benchmark* Global Producer Price Indices

2.1 The Finished Cattle Producer Price Index

The global Finished Cattle Price Index (FPPI) includes weighted finished cattle prices from 33 countries, with all the major producing countries included except India – representing approximately 76% of global beef production.

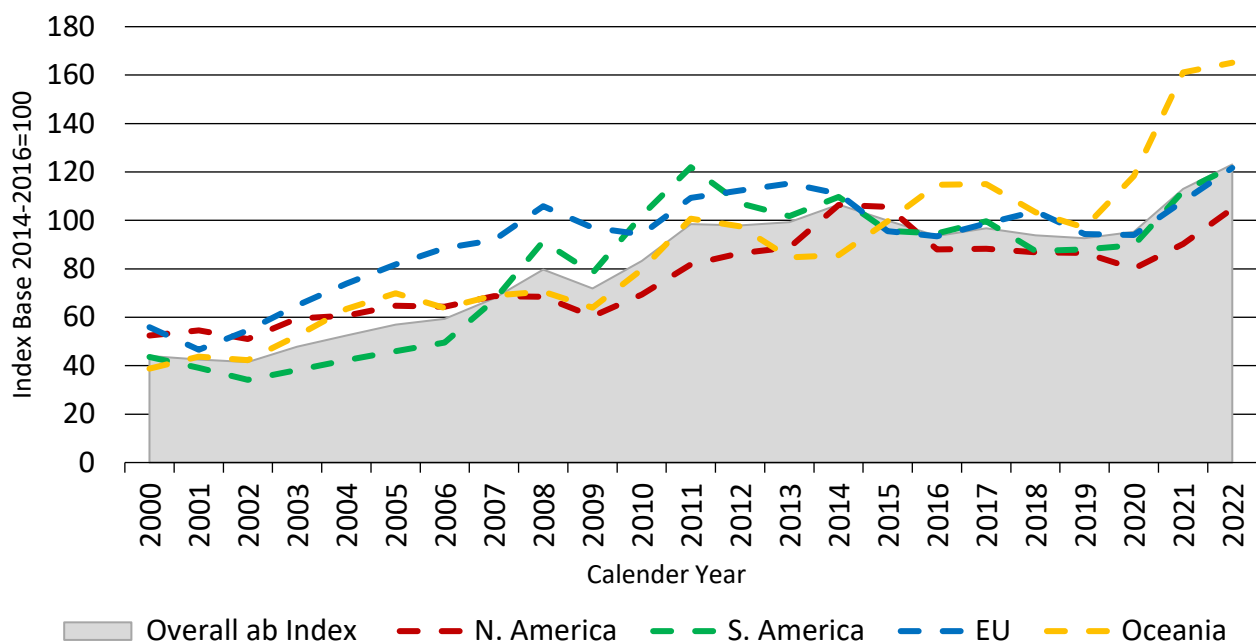
As shown in Figure 1, The *agri benchmark* FPPI rose appreciably in all but one year from 2003 to 2014, to peak 149% above the starting period of 2000-2002. This was driven mainly by price rises in China and Brazil commencing in 2007, and the US from 2010. Behind this was the influence of beef demand growth from expanding populations and incomes, especially in the US and developing Asian countries, plus a lowering of import barriers in North Asia and China. Also contributing was slowing supply growth over that period, mainly due to land, feed, water and environmental constraints.

¹ For detailed information of how the Laspeyres approach has been used to calculate the indices, please see Almadani, et al. 2021 at: ["Introducing the World's First Global Producer Price Indices for Beef Cattle and Sheep"](#)

The FPPI fell back in the two years following the peak in 2014 due to increasing production in North America and South America and a temporary fall in prices in China, but stabilised from 2017 to 2020 at a historically high level. Between 2011 and 2020, the FPPI was almost flat, moving between 90 and 100 index points (except 2014 at 107 index points). It then rose to historically high levels in 2021 and 2022 at 113 and 123 index points, respectively. This growth has been driven by:

- 1- Beef supply shortages in 2021 in Australia (-12% y-o-y), Argentina (-6%) and Brazil (-4%) — due to herd rebuilding phase which females were retained for breeding rather than being slaughtered.
- 2- COVID-19 aftermath and recovering food service and blooming demand.
- 3- Continued growth in export demand particularly from China and Northeast Asia. China has maintained its position as the world’s largest beef importer in 2022 with 2.7 million tonnes of imported beef, up by 14% and 26% compared to 2021 and 2020 levels, respectively.
- 4- Megadrought in southwestern North America resulted in tight feed supplies and high feed costs.
- 5- Inflation and big production cost increases (late 2021 to mid-2022), mainly feed, energy and transport costs.

Figure 1: The overall *agri benchmark* and regional Finished Cattle Producer Price Indices



Source: *agri benchmark* database, 2023. Own illustration

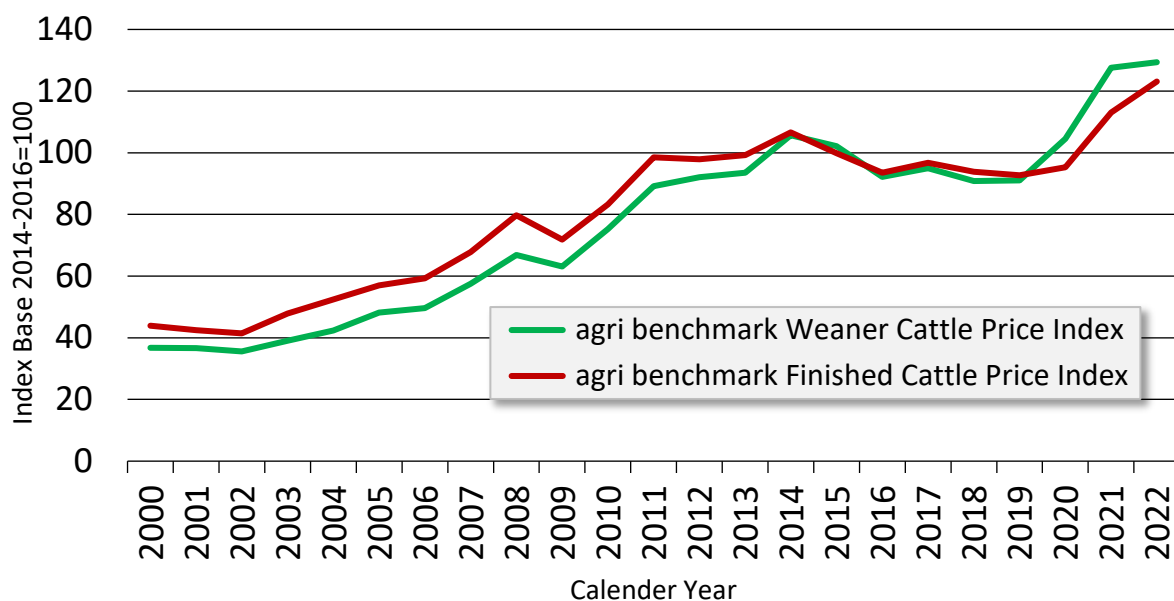
2.2 The Weaner Cattle Producer Price Index

The *agri benchmark* global Weaner Cattle Producer Price Index (WPPI) measures weaner calf prices as the final output sold by cow-calf farms to pre-finishing operations (backgrounding or stocker) or directly to cattle finishing operations. It is mainly based on weaner calf prices weighted by weaner production share (live weight base) in the network countries.

The Index is of importance to both cow-calf farmers (output prices) and beef producers (input prices). Thus, it serves to monitor and explain changes in value added and net income movements for finished cattle farms over time. This is of major importance to feedlot and pasture production systems in which weaner purchase costs constitute the largest proportion of total finished cattle production costs.

As expected, the WPPI and FPPI follow each other closely (Figure 2). However, the strong rise in beef demand and prices in the last two years has resulted in growing cattle demand by finishers. On the other hand, the low weaners supply during herd rebuilding phase in 2020 and 2021 saw the weaner price rise faster. The FPPI increased by 22% between 2019 and 2021, whereas the WPPI increased by 40% over the period. The slowing rise in WPPI in 2022 can be attributed to a) the lower demand for weaners in the US due to dry conditions, and b) herd recovery in Australia and Brazil.

Figure 2: The *agri benchmark* Weaner Cattle and Finished Cattle Producer Price Indices



Source: *agri benchmark* database, 2023. Own illustration

2.3 The Lambs Producer Price Index

The *agri benchmark* Lambs Producer Price Index (LPPI) includes weighted prices of lambs from 11 countries, with Australia, New Zealand, the UK and Iran representing 83% of the production weighting in the base period 2014-16. This share has been largely unchanged since 2002, though within this Australia's share has risen from 25% to 33% over the period while New Zealand's share has fallen from 28% to 23%.

The price of lambs in Australia and New Zealand has the main influence on the LPPI, reflecting both their combined 55% production weighting and greater price volatility. Figure 3 shows both the similarity in movements in the Index and prices in Oceania, but also the more volatile and higher

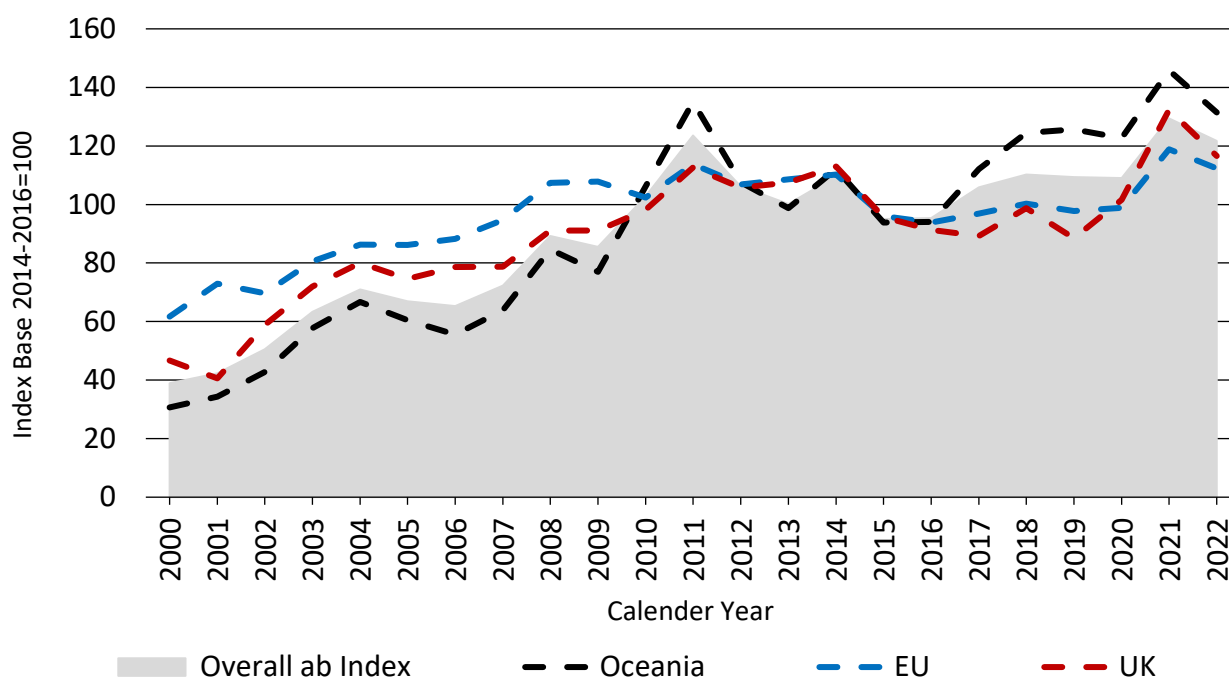
prices in Oceania, especially since China emerged as a major lamb importer in 2010. The other countries within the Index are primarily in the EU and have much more stable, and significantly lower, prices for lambs.

The LPPI has risen by 212% since 2000, first reaching this peak in 2011 – driven by a strong rise in demand and more constrained supplies. In the case of sheep meat, demand has benefited most from Chinese income growth and its opening to imports, plus population growth elsewhere, particularly in Muslim and Hispanic communities in the Middle East, Asia and North America.

The LPPI fell back from 2011 to 2015, following supply growth and a temporary easing in Chinese demand growth. The Index recovered again in the four years to 2021, to surpass the 2011 record. This reflected price rises in Australia, New Zealand and Germany, more than offsetting price falls elsewhere in Europe. The rise in Oceania was assisted by faster China demand and import growth and lower supplies in Australia (due to drought).

The LPPI fell in 2022 by 6% y-o-y. This has been mainly driven by flock recovery in Australia, which is the fastest sheep flock buildup in 100 years. Lamb production in Australia reached a historically high level in 2022 at 529.000 tonnes, up by 9% and 13% compared to 2021 and 2020 levels, respectively.

Figure 3: The overall *agri benchmark* and regional Lambs Producer Price Indices



Source: *agri benchmark* database, 2023. Own illustration

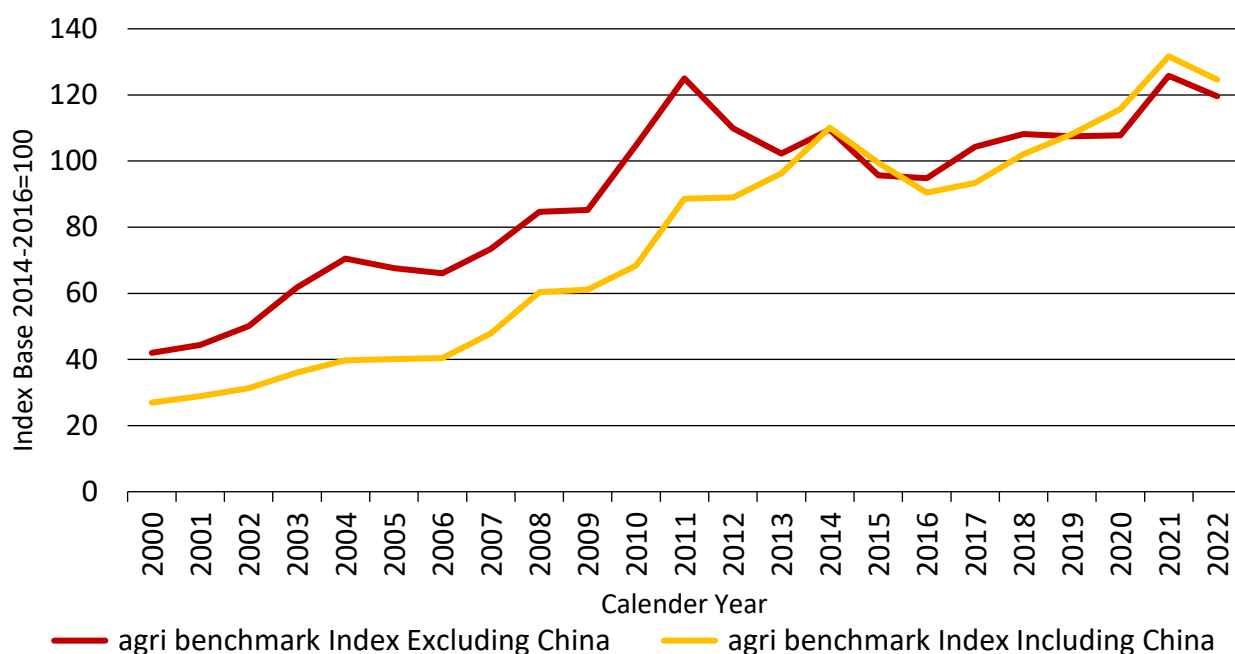
2.4 The Sheep Meat Producer Price Index

In many countries, there is no data distinguishing lambs from sheep, just a combined total. Hence, whereas the *agri benchmark* LPPI has 11 contributing countries, the Lambs and Sheep Price Index includes weighted prices from 20 countries. Since China contributes 60% of the sheep production share in the globe, it dominates the weighting. Thus, to build up a more complete and realistic picture of how the global sheep meat prices are developing, we introduce the Sheep Meat Producer Price Index (SPPI) including and excluding China.

Australia and New Zealand have a combined 40% of the production weighting in the *agri benchmark* SPPI (excluding China), largely unchanged in the past 20 years in total but with a fall in New Zealand's share from 17% to 14%. Other significant countries in the index are Algeria, Iran and the UK, each with an 9-10% share in the base period 2014-16.

The *agri benchmark* SPPI (excluding China) displayed broadly the same movements as the Lambs Price Index (Figure 4), rising to a peak in 2011 before falling back to 2015 and recovering over the last four years. However, following the 2011 peak, the SPPI (excluding China) showed an identical change to that of the LPPI until 2016. The reason for this is probably the influence of the rapid rise in China's import demand, which would have lifted the value of sheep more than it did for lambs.

Figure 4: Comparison of the *agri benchmark* Sheep Meat Producer Price Indices, including and excluding China



Source: *agri benchmark* database, 2023. Own illustration

When China is included in the SPPI it dominates the weighting, with a production share of 60% in the base period, followed by Australia (10%) and New Zealand (6%). China's production share has risen from 46% in 2000, with commensurate falls in the shares of all other major producers. In the

past 15 years, China's sheep meat demand growth has accelerated but local production growth has slowed, causing a rapid rise in China's lambs and sheep prices – to be one of the highest in the world. Hence, if China is included, the Index keeps rising beyond 2011 to peak in 2014 and has risen much more than the index excluding China since 2017.

Similar to the LPPI, the SPPIs with and without China have shown a decline in 2022 by nearly 5% compared to a year before. This is attributed, in addition to growing lamb and mutton supply from Australia, to the shrinking global demand for sheep meat particularly from China. Consumer demand in China has decreased in 2022, mainly affected by the sustained high prices of sheep, so taking into account the economic hardships and growing doubts associated with cost-of-living in key import markets in 2022. The other reason is the COVID-19 outbreak in the city of Shanghai between February and August 2022, which was the most widespread in Shanghai since the pandemic began in 2019. With Authorities efforts to uphold China's zero-COVID policy, a strict lockdown of the city has been imposed. Thus, high end restaurants, which are the main channels of sheep meat consumption in China were highly impacted.

The fall in global sheep meat prices in 2022 unquestionably indicates that global lamb and sheep meat prices are very sensitive to any demand shifts in China.