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International Dairy Productivity Report

Prepared for Dairy Australia

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A Marsden Jacob Report

Prepared for Dairy Australia
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Contents

Executive Summary 5

1. Introduction 7

1.1 Background 7

1.2 Purpose of report 8

2. Updating Australian indices 10

2.1 Approach to update 10

2.2 Profitability and terms of trade 11

2.3 Productivity analysis 14

3. Developing indices for New Zealand 19

3.1 Approach 19

3.2 Profitability and terms of trade 19

3.3 Productivity analysis 20

3.4 Comparison between New Zealand and Australia 21

Appendix 1. Productivity components 23

Appendix 2. SFA total factor productivity by state 24

Contact us 27

Tables

Table 1: Summary statistics of input and output variables used in the SFA model 8

Table 2: Australia – Total factor productivity by SFA component 15

Table 3: Productivity growth rates – by state (for 2013/14 to 2022/23) 16

Table 4: Productivity growth rates – by Region (from 2013/14 to 2022/23) 17

Table 5: Comparison of SFA components – New Zealand and Australia 21

Table 6: Definitions of TFPI components 23

Figures

Figure 1: Relationship between productivity, terms of trade and profitability 8

Figure 2: Australia – Profitability, terms of trade and TFP (2013/14=1 for all indices) 11

Figure 3: Victoria – Profitability, terms of trade and TFP (2006/07=1 for all indices) 11

Figure 4: Queensland – Profitability, terms of trade and TFP (2000/01=1 for all indices) 12

Figure 5: New South Wales – Profitability, terms of trade and TFP (2000/01=1 for all indices) 12

Figure 6: South Australia – Profitability, terms of trade and TFP (2012/13=1 for all indices) 13

Figure 7: Tasmania – Profitability, terms of trade and TFP (2013/14=1 for all indices) 13

Figure 8: Western Australia – Profitability, terms of trade and TFP (2013/14=1 for all indices) 14

Figure 9: Australia – Total Factor Productivity by SFA component (2013/14=1 for all indices) 15

Figure 10: SFA Total Factor Productivity by state (2013/14 =1 for all indices) 16
Figure 11: SFA Total Factor Productivity by Region (2013/14 =1 for all indices) 18
Figure 12: New Zealand – – Profitability, terms of trade and TFP (2012/13=1 for all indices) 20
Figure 13: Total Factor Productivity by SFA component (2012/13=1 for all indices) 21
Figure 14: Victoria – Total Factor Productivity by SFA component (2006/07=1 for all indices) 24
Figure 15: Queensland – Total Factor Productivity by SFA component (2000/01=1 for all indices) 24
Figure 16: New South Wales – Total Factor Productivity by SFA component (2000/01=1 for all indices) 25
Figure 17: South Australia – Total Factor Productivity by SFA component (2012/13=1 for all indices) 25
Figure 18: Tasmania – Total Factor Productivity by SFA component (2013/14=1 for indices) 26
Figure 19: Western Australia – Total Factor Productivity by SFA component (2013/14=1 for all indices) 26

Acronyms and abbreviations

DA	Dairy Australia
DEA	Data Envelopment Analysis
DFMP	Dairy Farm Monitor Project
ETI	Environment and Technology Index
MJA	Marsden Jacob Associates
NZ	New Zealand
OEI	Output oriented Environmental Index
OSMEI	Output oriented Scale Mix Efficiency Index
OTEI	Output oriented Technical Efficiency Index
OTI	Output oriented Technology Index
PROFI	Profitability Index
QDAS	Queensland Dairy Accounting Scheme
RMEI	Residual Mix Efficiency Index
SFA	Stochastic Frontier Analysis
SNI	Statistical Noise Index
TFP	Total Factor Productivity
TFPI	Total Factor Productivity Index
ToT	Terms of Trade

Executive Summary

The inclusion of additional annual Dairy Farm Monitor Project (DFMP) data from 2018-19 to 2022-23 highlighted that the key trends in dairy farm total factor productivity (TFP) previously reported have not altered.

- The productivity performance of the Australian dairy farm sector has continued to remain flat and relatively weak, declining by an estimated 3.1% over the 10 years from 2013/14 to 2022/23. This equates to a compounding average annual rate of -0.4%[1].
- Profitability of dairy farms has risen by 2.3% annually on average since 2013/14, and this has continued to be driven by positive movements in the terms of trade as prices received for milk have been relatively high, increasing on average by 2.8% annually over the same period.

Underlying drivers of dairy farm productivity also continue to demonstrate similar patterns to those previously observed. This includes:

- despite significant technological changes and farm investment, the contribution of technological change to productivity growth is weak – increasing by 0.1% over 2013/14 to 2022/23, or 0.01% annually on average. There has been no observable improvement in technology induced productivity – both at national, state and regional levels.
- generally, there is no significant farm scale efficiency driving productivity. Scale and mix efficiency increased by around 0.1% annually, on average, over 2013/14 to 2022/23. However, there is some evidence of improved scale efficiency in Tasmania, with an average compounding annual increase of 0.9%, but this may be due to the inclusion of new larger pasture based corporate farms into the data set.

A significant evolution in the study of farm sector productivity from our last study in 2021 has been the development and application of these indices to international farm performance data. Dairy New Zealand and Teasgasc joined a consortium with Dairy Australia facilitated by Marsden Jacob Associates to apply consistent and comparable productivity indices to farm performance data. To date, members of the consortium have developed consistent approaches to the construction of farm performance datasets and the application of the proper indices to measure changes in farm productivity, profitability and terms of trade. Dairy New Zealand has also completed calculation of these indices.

New Zealand dairy has been found to exhibit similar performance trends to those observed in Australia – particularly those in southern Australian extensive pasture based systems.

Like Australia, New Zealand farm productivity has been relatively flat and weak, increasing by 3.5% over 2012/13 to 2021/22 or 0.4% on average per year. Farm profitability is very closely linked to the terms of trade. Recent rising profitability of 1.2% on average per year has occurred largely through

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[1] Average annual growth rate is calculated using the compounding annual growth formula.

positive improvements in the terms of trade – with terms of trade increasing by 7.7% over the study period or a compounding annual growth rate of 0.8%.

There are also similarities when comparing the average annual growth rate of each productivity component (from stochastic frontier analysis) for Australia and New Zealand. For example, from 2013/14 to 2021/22, environmental progress and technical efficiency indices fell for Australia and New Zealand. Additionally, over the same period, scale mix efficiency rose and there was a small average annual increase in technological progress (Table 5).

1. Introduction

1.1 Background

In 2022, Dairy Australia released first comprehensive analysis of the performance of the Australian dairy farm sector. The report used the state-of-the-art proper index methods to assess the performance of farm profitability, productivity and the terms of trade. In that analysis, the relatively weak productivity performance of Australian dairy farms was understood in much richer detail.

That work was observed with great interest by other international dairy industries. In 2023, Dairy Australia formed a research consortium together with Dairy NZ and Teasgasc (the Agriculture and Food Development Authority of Ireland) to develop a common approach and comparable analysis of farm productivity performance across the countries.

This consortium has been facilitated and led by Marsden Jacobs Associates using econometric modelling approaches where TFP can be decomposed into its key components. In Australia, this approach has been developed by econometricians at the Centre of Efficiency Productivity Analysis (CEPA) at the University of Queensland, including Professor Christopher O'Donnell who assisted with the modelling in R for this study.

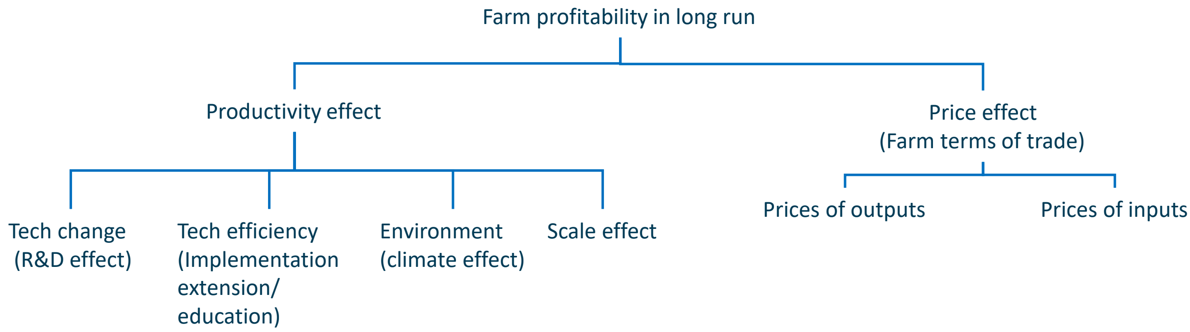
The consortium has:

- developed standardised approaches across the countries to construct comparable farm performance data sets from which proper indices can be estimated
- developed a community of practice to learn and then apply the proper index approach to these data in a consistent and repeatable manner
- assisted DairyNZ to complete the estimation and analysis of productivity indices for their dairy farm sectors, both nationally and across regions, and
- assisted Teasgasc so that it has substantially progressed the development of farm performance data sets and is progressing the appointment of a PhD student to assist with the measurement of productivity using proper indices.

In this study, as consistent with the previous report, productivity is measured using all factors of production in a dairy farm business (Table 1). This should not be confused with other partial measures of productivity such as full time equivalent (FTE) units of labour per cow. In the short and medium term, variations in farm productivity do not provide an acceptable guide as to the underlying impact of a more productive farm on profit or indeed profitability. Our concern with productivity is its influence over long term profitability, with the focus on how it helps shape changes in the *ratio* of revenue to costs.

In the long term, farm profitability is determined by productivity and terms of trade (Figure 1).

Figure 1: Relationship between productivity, terms of trade and profitability



As consistent with our previous approach to analysing productivity, Marsden Jacob use detailed farm financial and operational data from the DFMP and Queensland Dairy Accounting Scheme (QDAS) to examine the drivers of productivity growth. Table 1 shows all the inputs included in estimating indices using the stochastic frontier analysis (SFA) approach.

Table 1: Summary statistics of input and output variables used in the SFA model

Variable	Farm average	St. dev
Milk sales (kg MS)	148,290	130,043
Livestock sales (heads)	257	301
Herd health and replacement ($)	290	318
Capital ($)	886,923	1,179,959
Land (ha)	277	246
Labour (FTE employed and imputed)	3	2
ME (grain/ concentrates/ fodder/ agistment)	12,126,766	12,750,048
Fuel and oil (litres)	95,213	102,389
Irrigation (ML)	235	451
Fertiliser ($)	61,241	73,841
Overhead ($)	268	211
Repairs and maintenance ($)	290	309
Pasture improvement ($)	217	318
Number of milkers (heads)	310	240

1.2 Purpose of report

The purpose of the engagement was to undertake a comparative analysis of the drivers of productivity performance of contemporary dairy farm systems in selected international jurisdictions using consistent data and analytical methods. This included:

- Scoping study: Undertaking due diligence on potential jurisdictions and data to ensure a consistent, comparable analysis can be undertaken.
- Development of international databases of farm system performance data for comparative analysis.
- Creation of consistently derived input and output price series – derive input and output measures from the farm system database.
- Estimation of productivity indices and their analysis using consistent best practice analytical methods – using data envelopment analysis (DEA) and SFA methods to estimate productivity indices and derive compositional drivers of comparative farm system performance

This report summarises the progress and insights from the Consortium and includes:

- An extension of the previous Australian performance analysis up to and including 2018/19 to include an additional 4 years of data up to and including 2022/23.
- A comparative analysis of the competitive performance of the New Zealand dairy farm sector using proper indices and the SFA approach.

The report was also due to include a summary of the progress of the development of the Irish industry datasets. However, due to delays in development of Irish datasets, this has not been included as part of this report.

2. Updating Australian indices

2.1 Approach to update

The consortium has adopted a common approach using proper indices to the analysis of dairy farm productivity performance.

This includes common approaches to defining:

- **Profitability** – the rate of change of profit
- **Terms of trade** – the relative change in output prices to input prices
- **Productivity** – measures the relationship between physical outputs and physical inputs. We report output-based productivity indices (see glossary, section 2.3.1 and appendix 2) because outputs of dairy farm systems, milk and beef, are already predetermined outcomes – there is little flexibility with the inputs used to produce other types of outputs.

In doing so, it has adopted a common understanding of the relationships between these measures such that profitability is measured as the product of terms of trade and productivity.

Understanding how productivity performance has changed over time is important for understanding the dairy industry's future competitive position. Over time, weak productivity performance can (other things equal) translate into a weaker competitive position. Often weak productivity is offset by other factors such as prices received for products and price paid for inputs.

Overall, dairy farm productivity growth has remained relatively weak. Overall relative levels of productivity across regions reflected general levels of comparative advantage in farms between regions. While farmers are highly technically efficient, there has been very limited growth in the overall level of technical efficiency. Scale of the farms had little impact on farm productivity performance and instead have tended to rely on altering the mix of inputs to enhance productivity.

The impacts on profitability from weak productivity can be offset by terms of trade. The analysis found this was the experience of Australian dairy farms. Generally, it was found that most of the industry trends in dairy farm profitability could be explained by shifts in the terms of trade rather than changes in productivity.

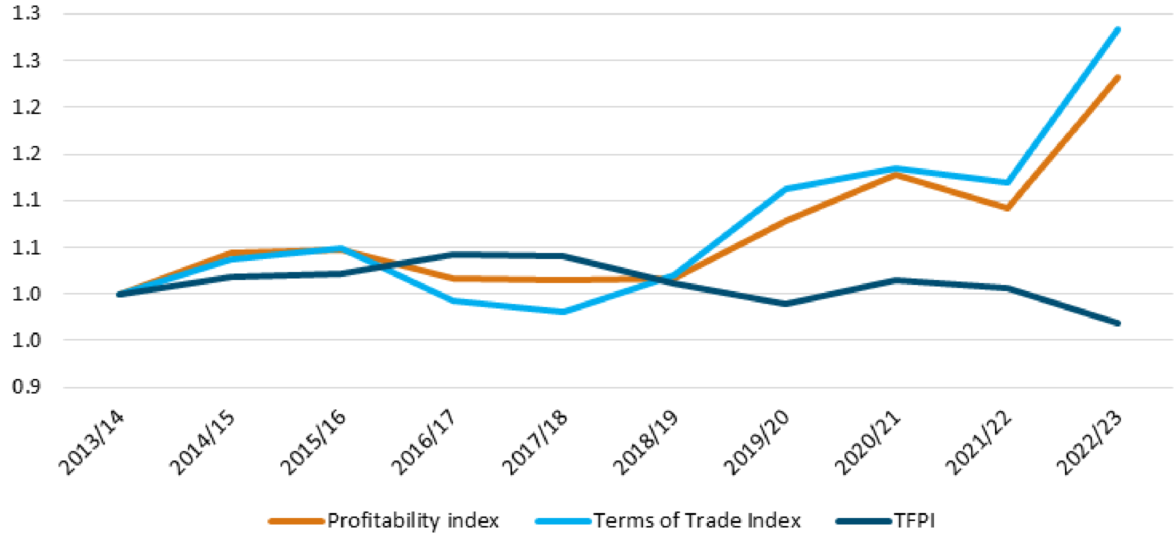
The consortium found that similar trends were observed in New Zealand as productivity remained relatively stable, with fluctuations in profitability being driven by changes in the terms of trade.

By adopting the proper index approach, the consortium calculates the same measures and components of productivity as defined in Appendix 1.

2.2 Profitability and terms of trade

Nationally, the profitability of Australian dairy farms in the DFMP has risen substantially since 2018/19, after the falls experienced in the two years following 2015/16 (Figure 2). This has been driven by favourable comparable movements in the terms of trade. Productivity has slightly softened since 2017/18.

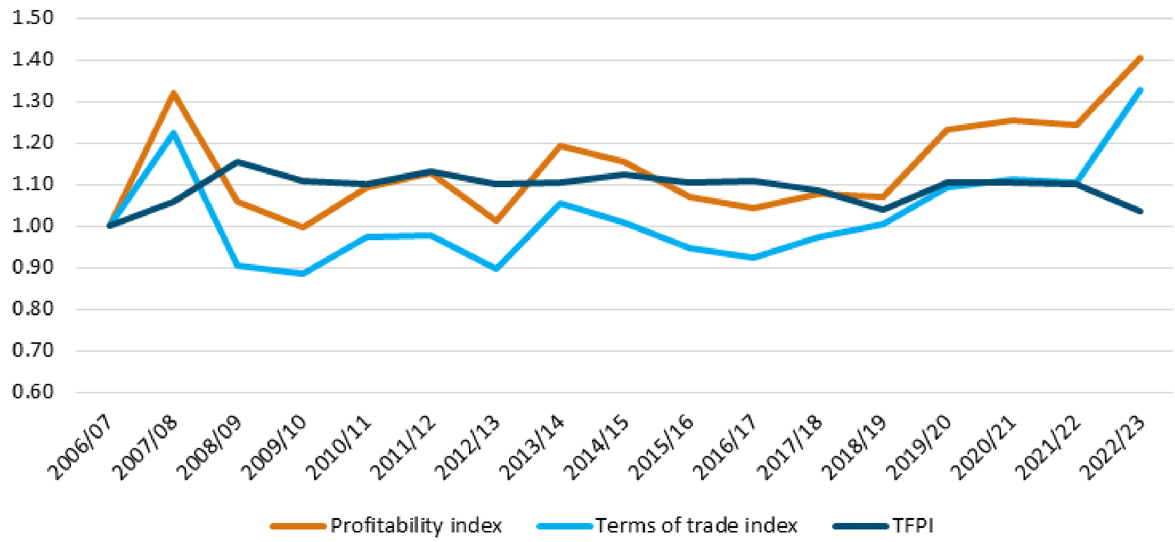
Figure 2: Australia – Profitability, terms of trade and TFP (2013/14=1 for all indices)



Note: TFPI is Total Factor Productivity Index

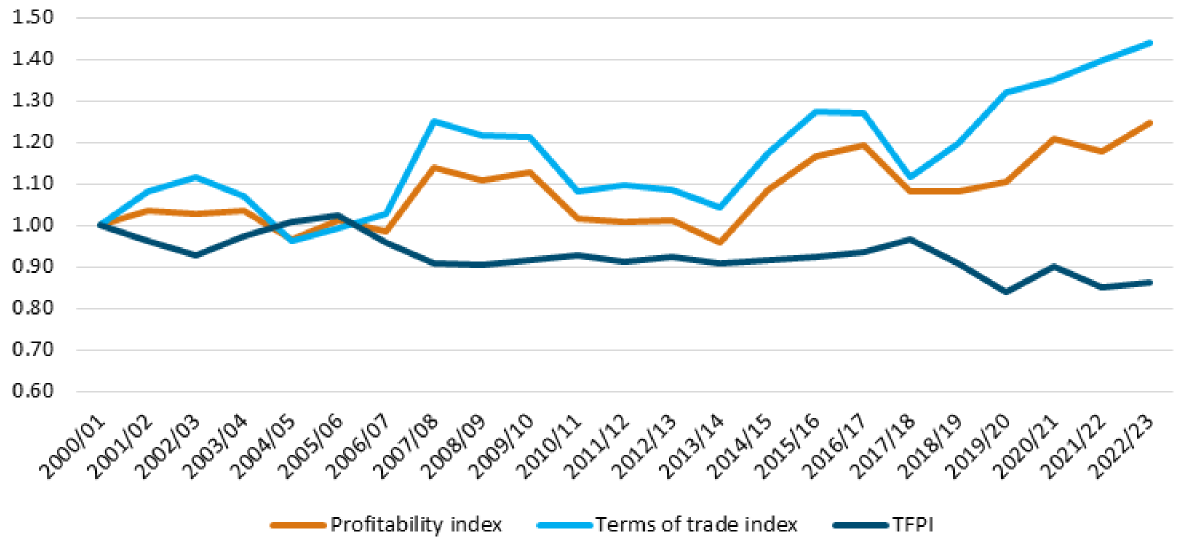
Profitability of Victorian farms has exhibited more volatility than the national average (Figure 3). It has very closely tracked the volatility of the terms of trade. This reflects the greater exposure of Victorian farmers in DFMP to international milk price movements. Victorian productivity has been relatively flat and weak and is not significantly contributing to the trends observed in profitability.

Figure 3: Victoria – Profitability, terms of trade and TFP (2006/07=1 for all indices)



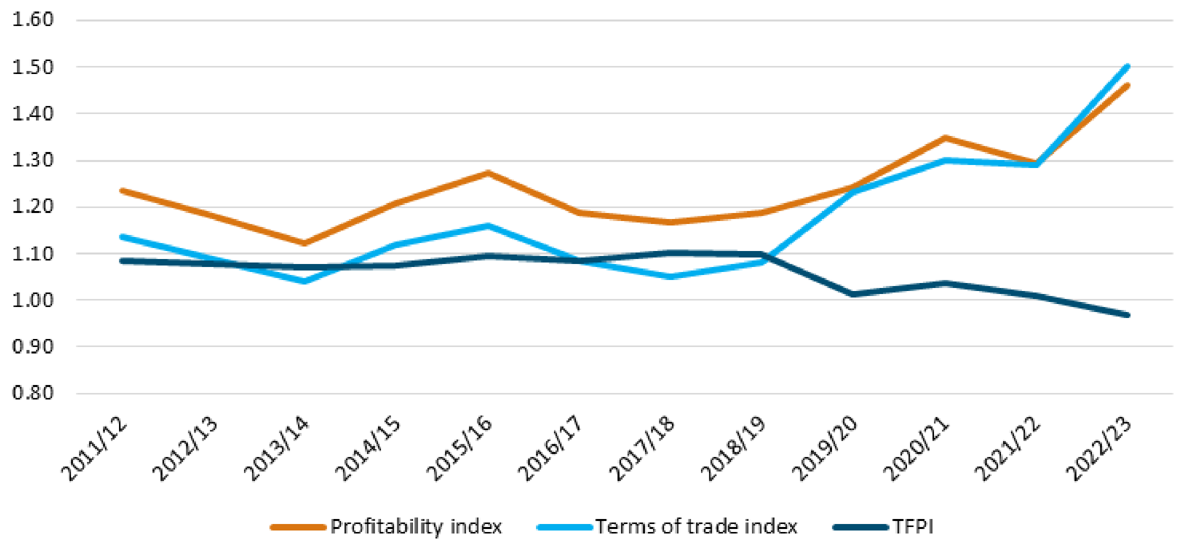
Queensland profitability is exhibiting significant volatility but nonetheless generally rising (Figure 4). Profitability very closely tracks the trends in the terms of trade. However, since 2018/19 the weakening productivity performance of farms is leading to a dampening of the otherwise general rise in profitability led by the terms of trade.

Figure 4: Queensland – Profitability, terms of trade and TFP (2000/01=1 for all indices)



In contrast, NSW appears to demonstrate relatively more stable rises in profitability (Figure 5). Profitability very closely tracks the trends in the terms of trade. This trend has strengthened since 2018/19 where profitability and the terms of trade largely mirror each other. This is because declining productivity now contributes less to the growth in profitability.

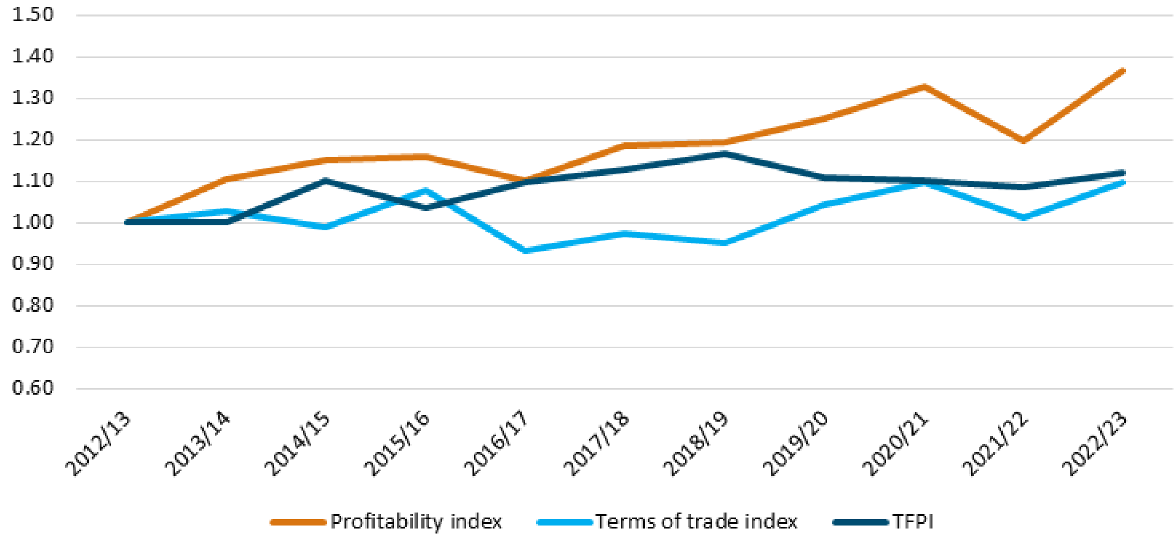
Figure 5: New South Wales – Profitability, terms of trade and TFP (2000/01=1 for all indices)



There are missing data points for 2007/08 to 2010/11 for NSW. Only data from 2011/12 onwards has been included

Figure 6 illustrates that profitability of South Australian DFMP farms is rising. The terms of trade is the key driver of this, but this is becoming slightly less pronounced over time as productivity rises and contributes more to profitability.

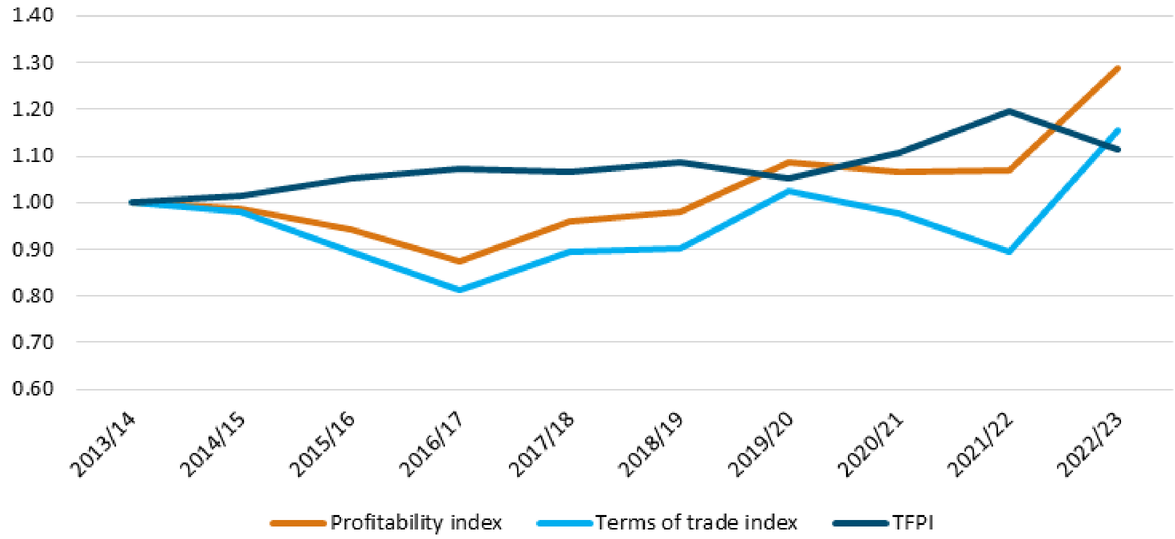
Figure 6: South Australia – Profitability, terms of trade and TFP (2012/13=1 for all indices)



Note

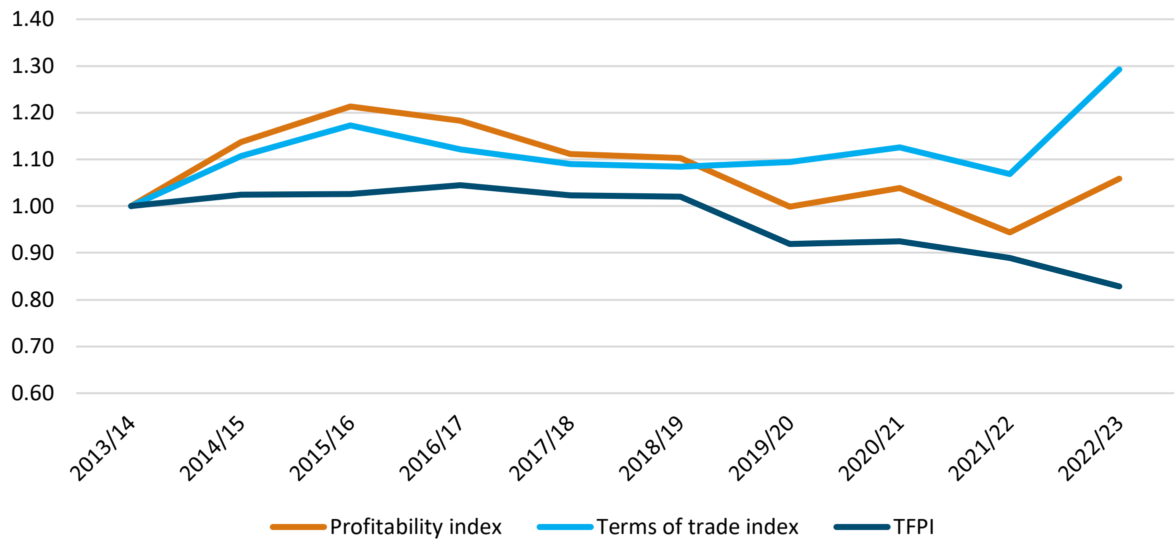
After the falls in profitability that were led by weak commodity prices in the two years after 2015/16, Tasmanian profitability has generally risen with the terms of trade as shown in Figure 7. Similar to South Australia though, rising productivity is contributing increasingly more to profitability over time.

Figure 7: Tasmania – Profitability, terms of trade and TFP (2013/14=1 for all indices)



As indicated in Figure 8, DFMP farms in Western Australia experienced a general weakening of profitability following an initial rise up to 2015/16. The fall in profitability was driven largely by a weakening of productivity. However, some strengthening of the terms of trade from 2019/20 onwards has seen some counterbalancing of these impacts on profitability.

Figure 8: Western Australia – Profitability, terms of trade and TFP (2013/14=1 for all indices)



2.3 Productivity analysis

Since 2018-19, the underlying trends in Australian productivity observed up until then have largely continued if not amplified in some cases.

The addition of new data since 2018/19 indicates that Australia's dairy farm productivity performance has further declined, driven by weaker performance in a number of states.

2.3.1 National productivity analysis

Productivity (TFPI) in Australia has remained relatively flat, falling by 3.1% over the period from 2013/14 to 2022/23 (Figure 9). This equates to an average annual growth rate of -0.4% over the same period. Productivity showed positive movements from 2013/14 to 2017/18 before a volatile but downward trend began and continued for the remainder of the period.

The shift since 2017/18 is partially reflective of downward trends in **technical efficiency** (OTEI). The technical efficiency index illustrated that technical efficiency fell by 1.3% from 2013/14 to 2022/23, or about 0.1% on average, each year.

Growth in **scale mix efficiency** (OSMEI) by 1.2% over the period indicates some minor improvements in scale mix efficiency. This is equivalent to a compounding annual growth rate of 0.1%. Based on the statistical analysis undertaken, it is clear that scale itself is not explaining productivity changes. Instead, farmers appear to be altering the mix of their inputs in response to changing terms of trade and are impacting productivity more through these decisions, rather than through changes in scale.

Over the period from 2013/14 to 2022/23, both **technology** (OTI) and **environmental** (OEI) indices showed minimal change. OTI increased by 0.1% over the 10 years to 2022/23 (0.01% per year), while OEI fell by 0.1% over the same period (-0.02% per year).

Despite a well specified model, statistical noise could not be eliminated and also contributed to the shift in productivity, declining by -0.4% on average each year over the period. This indicates there are further opportunities to identify other variables affecting productivity. For example, this could include other specifications of climatic variables than those already tested, the inclusion of farm soil characteristics, or decision making lags.

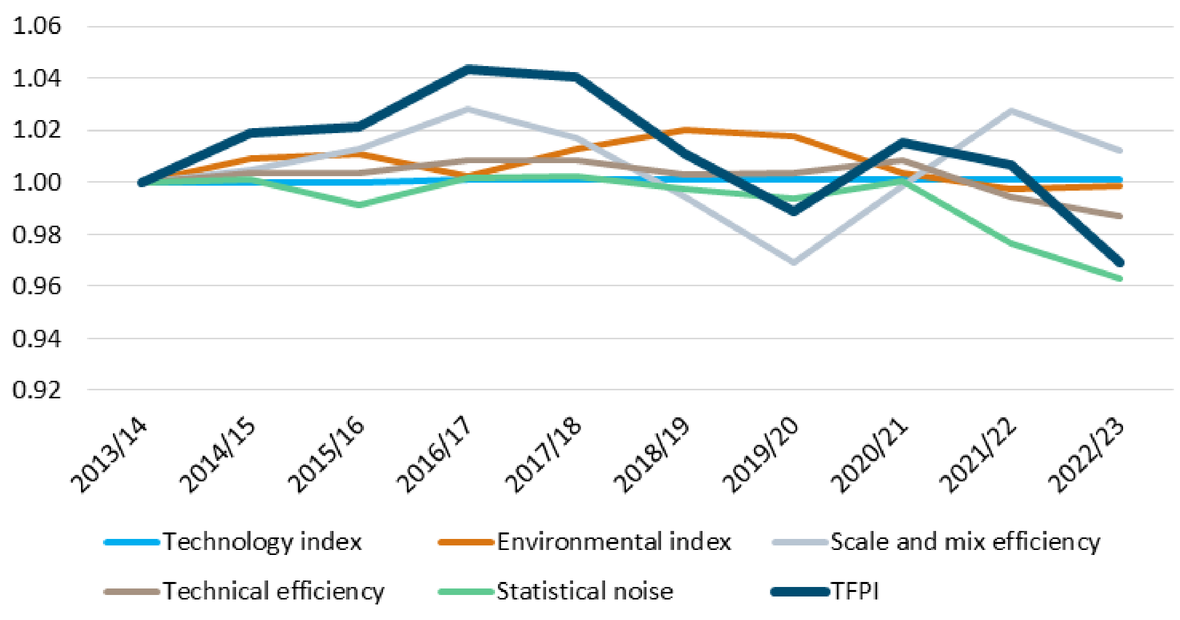
The change in indices from 2013/14 to 2022/23 and the average annual growth rates are shown in Table 2 and illustrated in Figure 9.

Table 2: Australia – Total factor productivity by SFA component

Productivity component	Growth (2013/14 to 2022/23)	Average annual growth rate
TFPI – Total Factor Productivity Index	-3.1%	-0.4%
OTI – Output -oriented Technology Index	0.1%	0.01%
OEI – Output-oriented Environmental Index	-0.1%	-0.02%
OSMEI – Output-oriented Scale Mix Efficiency Index	1.2%	0.1%
OTEI – Output-oriented Technical Efficiency Index	-1.3%	-0.1%
SNI – Statistical Noise Index	-3.7%	-0.4%

Note: See Appendix 1 for detailed definitions of each component

Figure 9: Australia – Total Factor Productivity by SFA component (2013/14=1 for all indices)



2.3.2 State productivity analysis

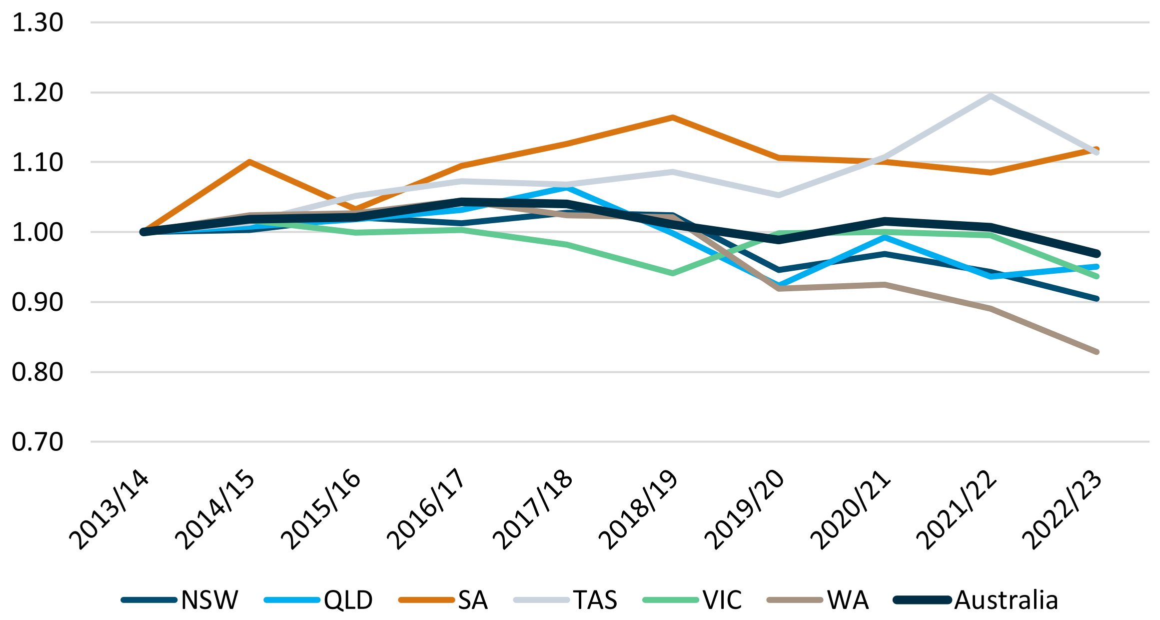
Performance between states has been mixed, with average annual growth rates varying from -2.1% in Western Australia to 1.3% in South Australia (Table 3). Figure 10 illustrates the divergent trends between states. The data also illustrates that the differences in growth rates depend on the point of time measured. Larger changes are observed taking point to point estimates compared to annual averages and, therefore, the differences between states need to be interpreted carefully. For example, Tasmania and South Australia had the largest average annual growth rates at 1.2 and 1.3 per cent respectively. While South Australia experienced large growth, there are large fluctuations in the TFPI values for that state due to: differences in performance between farms in the south of the state (Mount Gambier to the Victorian border) and north of the state; movement of farms in and out of the sample; and the relatively small number of farms in the dataset.

The breakdown of the components of total factor productivity for each state is included in Appendix 2.

Table 3: Productivity growth rates – by state (for 2013/14 to 2022/23)

State	Growth (2013/14 to 2022/23)	Average annual growth rate
Victoria	-6.4%	-0.7%
Queensland	-5.0%	-0.6%
New South Wales	-9.5%	-1.1%
South Australia	11.9%	1.3%
Tasmania	11.4%	1.2%
Western Australia	-17.2%	-2.1%

Figure 10: SFA Total Factor Productivity by state (2013/14 =1 for all indices)



2.3.3 Regional productivity analysis

Similarly to the State level analysis, performance between regions has been mixed. Over the period 2013/14, the highest growth in TFPI occurred in South Australia (SA), increasing by 11.9% over the period or 1.3% on average annually. In contrast, Western Australia (WA) experienced the lowest growth in TFPI, decreasing by 17.2% from 2013/14 to 2022/23 or 2.1% decline on average each year over the period. However, given that the farms within South Australia (SA) and Western Australia (WA) are not segmented into sub-regions, the same insights and caveats discussed in Section 2.3.2 apply.

It can be more insightful to investigate the difference in trends between the major dairy regions. For example, the growth in productivity for Gippsland (GI), Northern Victoria (NO), Tasmania (TA) and South NSW (SN) from 2013/14 to 2022/23 was -2.8%, -10.6%, 11.4% and -9.5% respectively. A variety of on farm factors could be driving these outcomes but it is also important to note weaker growth has generally corresponded with weaker absolute levels of productivity.

Underlying absolute productivity is higher in southern systems (Gippsland and Tasmania) characterised by temperate climates, high rainfall and a high reliance on year-round pasture production. These farms have also tended to perform better in annual average productivity growth. In contrast, increased intensification in northern systems with a greater reliance on forage crops and off farm feed, and the consequential impacts on other inputs such as fuel, fertiliser, machinery and labour may be important considerations.

Additionally, the growth rates seen for Central Queensland (CQ) should be treated with caution. Given that there is, at most, one DFMP farm included in the dataset in any given year, the growth rates cannot be considered representative of the region.

The growth rates for each region from the productivity analysis is included in Table 4 and illustrated in Figure 11.

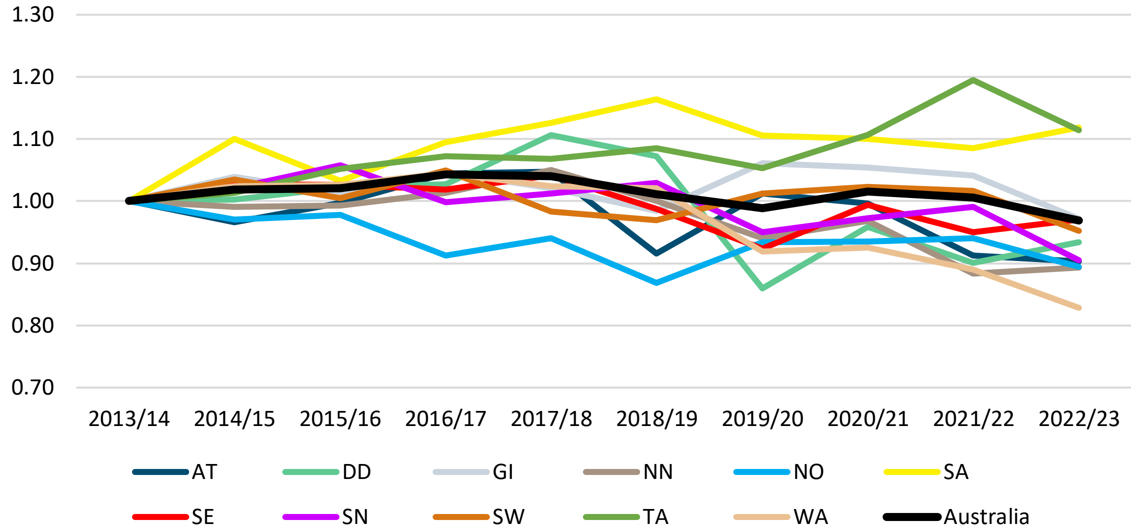
Table 4: Productivity growth rates – by region (from 2013/14 to 2022/23)

Region		Growth (2013/14 to 2022/23)	Average annual growth rate
AT	Atherton Tables	-9.7%	-1.1%
CQ*	Central QLD	26.1%	2.6%
DD	Darling Downs	-6.6%	-0.8%
GI	Gippsland	-2.8%	-0.3%
NN	North NSW	-10.7%	-1.3%
NO	Northern Vic	-10.6%	-1.2%
SA	South Australia	11.9%	1.3%
SE	South East QLD	-3.0%	-0.3%
SN	South NSW	-9.5%	-1.1%
SW	South West Vic	-4.8%	-0.5%

Region		Growth (2013/14 to 2022/23)	Average annual growth rate
TA	Tasmania	11.4%	1.2%
WA	Western Australia	-17.2%	-2.1%

* *Note: There is only (at most) 1 observation per period for region CQ and results are not representative of the region*

Figure 11: SFA Total Factor Productivity by Region (2013/14 =1 for all indices)



Note: Region CQ has been removed from the graph as there is only (at most) 1 observation per period and results are not representative of the region

3. Developing indices for New Zealand

3.1 Approach

New Zealand adopted an approach to developing indices that was largely similar to that taken by Australia. A full description of the approach taken to develop Australian dairy indices can be found in Marsden Jacob's previous report.

New Zealand developed indices using data from 2012/13 through to 2021/22. In comparison, Australia developed indices using data from 2000/01 to 2022/23 for some states, with data from all states, and therefore nationally, available for 2013/14 to 2022/23.

3.2 Profitability and terms of trade

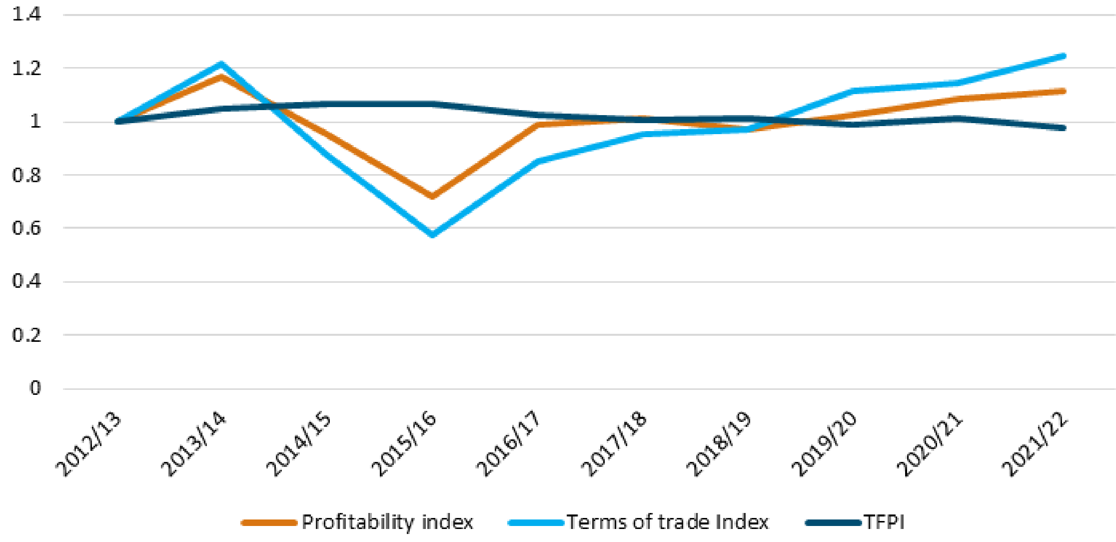
New Zealand dairy farms have experienced, in general, similar profitability, terms of trade and productivity trends to Australia. This includes:

- Profitability is strongly determined by a volatile terms of trade (Figure 12). As such, the 1.2% average annual growth in profitability is largely driven by the 2.5% annual growth in terms of trade.
- Productivity has been generally flat and weak. TFPI showed a decrease of 2.2% over 10 years, or 0.2% decline, on average, annually
- Productivity has played a limited role in shaping profitability

Given the export focus of the New Zealand dairy industry, it is unsurprising that dairy farmers face volatile terms of trade. The decline in the terms of trade and the resulting impact on profitability Australia experienced in 2016-17 and 2017-18 had occurred a year earlier in New Zealand, in 2015-16. These falls in index terms were deeper in New Zealand than in Australia but recovery was quicker and has generally been steadier.

Relatively weak and flat productivity means that it is not playing a significant role in shaping profitability. There is no evidence of productivity creating any sustained divergence between the close tracking of the terms of trade and profitability.

Figure 12: New Zealand – – Profitability, terms of trade and TFP (2012/13=1 for all indices)



3.3 Productivity analysis

New Zealand dairy farm productivity (TFPI) has been relatively flat and weak.

Given the scale of the indices shown in Figure 13, there has been some moderate fluctuations but often counter cyclical to that which has been experienced in Australia. At the time that the terms of trade deteriorated in 2015-16, productivity fell slightly and as terms of trade improved productivity strengthened somewhat.

Productivity movements appear to be somewhat counterbalanced by:

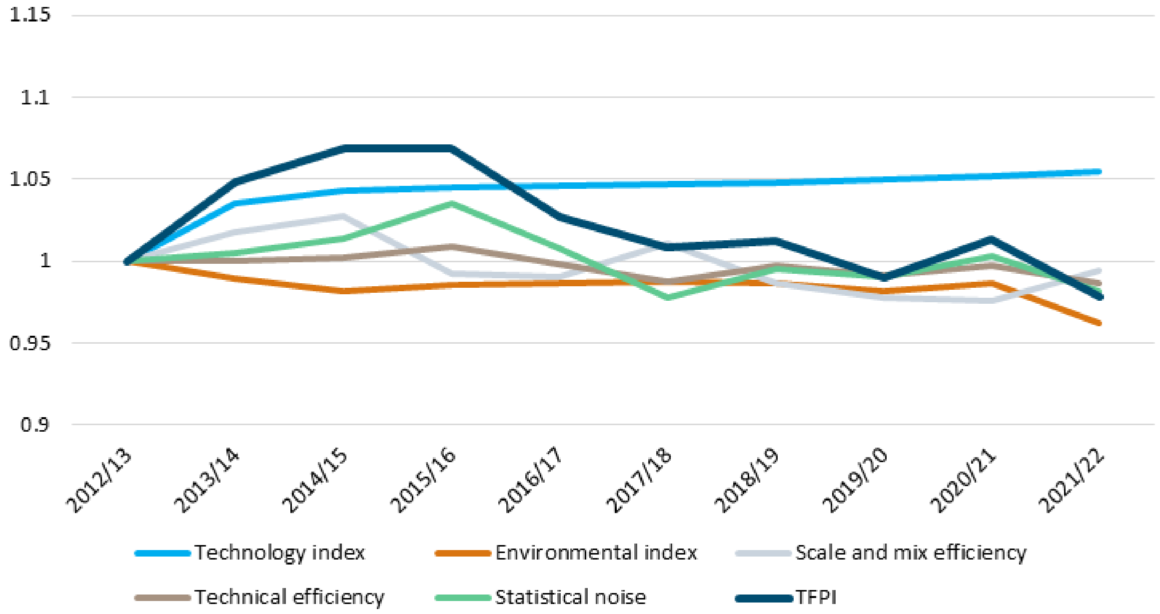
- a slight strengthening of technological change by 5.5% over 2012/13 to 2021/22 or 0.6% annually each year
- slight weakening of statistical noise, environmental index and technical efficiency. Annual growth rates show declines of 0.2%, 0.4% and 0.1% respectively.

Given the relatively flat productivity performance, the slight movements that are observed appear to map, to some degree, statistical noise.

Scale and mix efficiency change has been flat, declining by only 0.1% on average annually, and is not contributing to productivity growth in any observable way.

3.3.1 Stochastic Frontier Analysis

Figure 13: Total Factor Productivity by SFA component (2012/13=1 for all indices)



Empirical analysis by Dairy NZ found no evidence of economies of scale driving productivity growth.

3.4 Comparison between New Zealand and Australia

A key output of this productivity analysis is comparing productivity measures in Australia to New Zealand. Table 5 compares the average compound annual growth rate of each productivity component from the stochastic frontier analysis for New Zealand and Australia over:

- the longest period for which data is available for modelling
- the longest available comparable time period (2013/14 to 2021/22).

The growth rate is calculated as a compound annual growth rate from the first to the last point in the period. Therefore, while both approaches are useful to compare trends over time, it may be more useful to compare the measures over the same time period.

Table 5: Comparison of SFA components – New Zealand and Australia

Productivity component	NZ longest period (2012/23 to 2021/22)	Aus longest period (2013/14 to 2022/23)	NZ 2013/14 to 2021/22	Aus 2013/14 to 2021/22
TFPI	-0.2%	-0.4%	-0.9%	0.1%
OTI	0.6%	0.01%	0.2%	0.01%
OEI	-0.4%	-0.02%	-0.4%	-0.04%
OSMEI	-0.1%	0.1%	-0.3%	0.3%

Productivity component	NZ longest period (2012/23 to 2021/22)	Aus longest period (2013/14 to 2022/23)	NZ 2013/14 to 2021/22	Aus 2013/14 to 2021/22
OTEI	-0.1%	-0.1%	-0.2%	-0.1%
SNI	-0.2%	-0.4%	-0.3%	-0.3%

Note: See Appendix 1 for detailed definitions of each component.

Appendix 1. Productivity components

Table 6 details the definitions of the components, used by the consortium in adopting the proper index approach.

Table 6: Definitions of TFPI components

Measure	Definition
Total factor productivity index (TFPI)	TFPI is a measure of total output change divided by a measure of total input change (i.e., an output index divided by an input index). TFPI is a proper index. TFPI compares the TFP of one firm to another across time periods. TFPI = OTI × OEI × OTEI × OSMEI × SNI
Output-oriented technical efficiency index (OTEI)	OTEI is a measure of technical efficiency. Technical efficiency is a measure of movements towards or away from the production frontier due to the use of different existing technologies.
Output-orientated technology index (OTI)	OTI is a measure of technical or technological progress. Technical change is a shift in the production function due to the discovery of new technologies.
Output-orientated environmental index (OEI)	OEI is a measure of changes in characteristics of the environment (e.g., weather).
Output-orientated scale and mix efficiency index (OSMEI)	OSMEI is a measure of both scale efficiency and the efficiency of the mix of inputs.
Statistical noise index (SNI)	SNI is a measure statistical noise. Statistical noise is variability in TFPI that has not been captured by the other variables in the model.

Appendix 2. SFA total factor productivity by state

Figure 14 to Figure 19 includes the total factor productivity for each state by SFA component.

Figure 14: Victoria – Total Factor Productivity by SFA component (2006/07=1 for all indices)

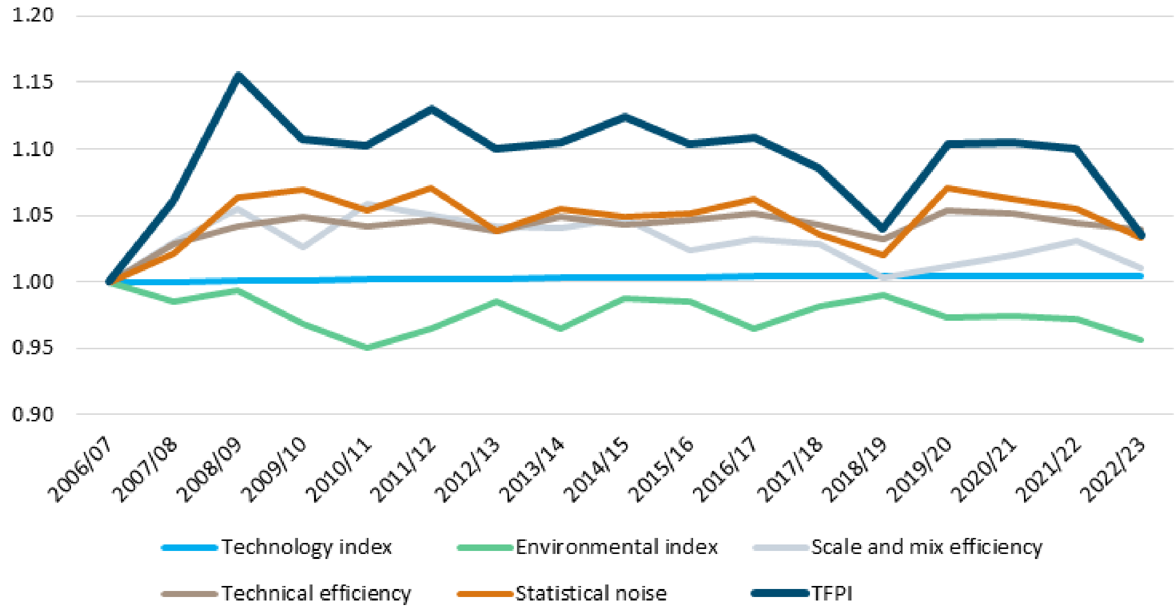


Figure 15: Queensland – Total Factor Productivity by SFA component (2000/01=1 for all indices)

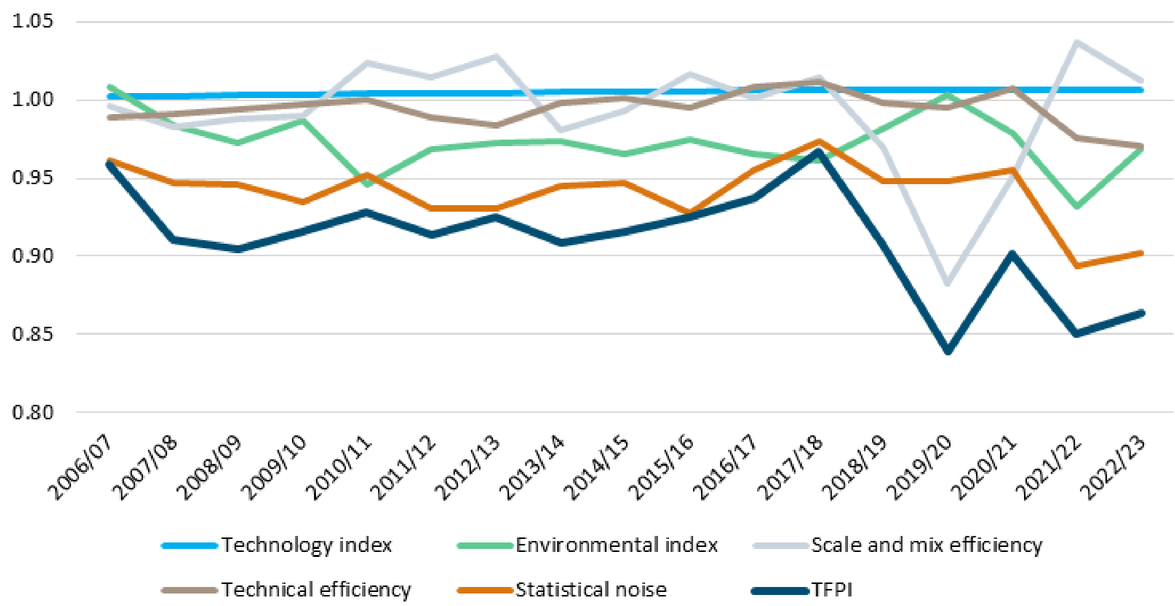


Figure 16: New South Wales – Total Factor Productivity by SFA component (2000/01=1 for all indices)

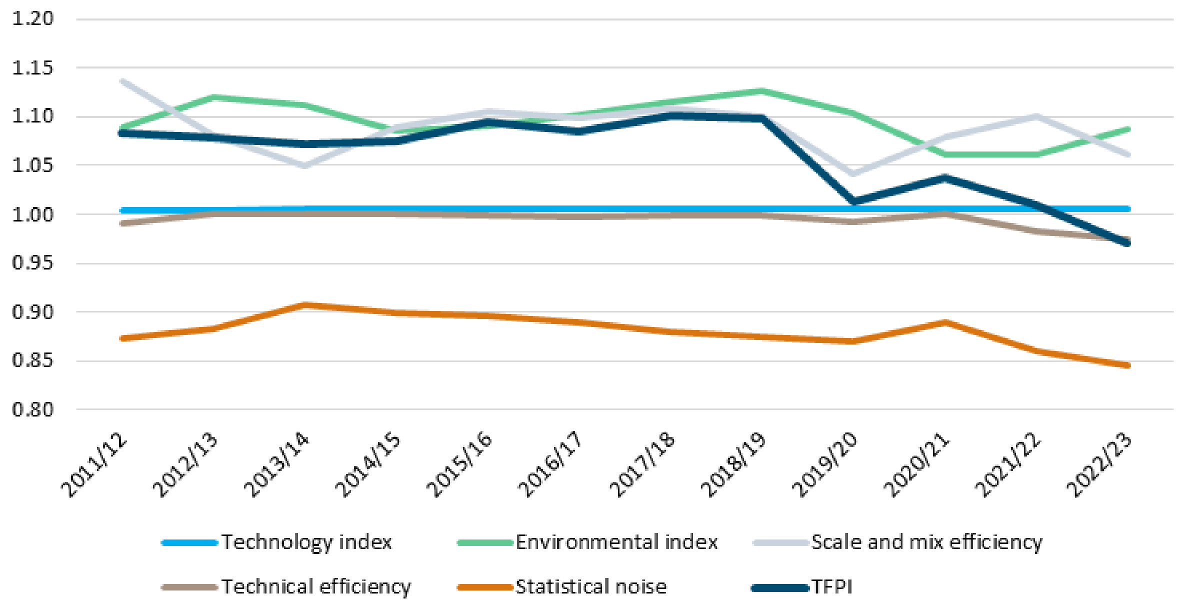


Figure 17: South Australia – Total Factor Productivity by SFA component (2012/13=1 for all indices)

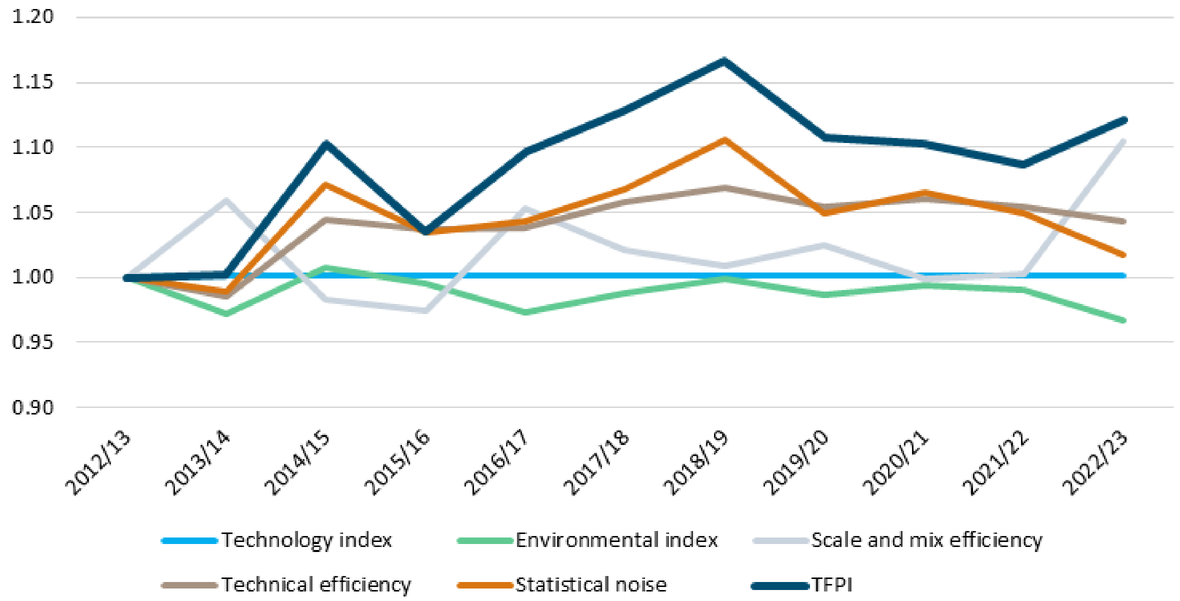


Figure 18: Tasmania – Total Factor Productivity by SFA component (2013/14=1 for indices)

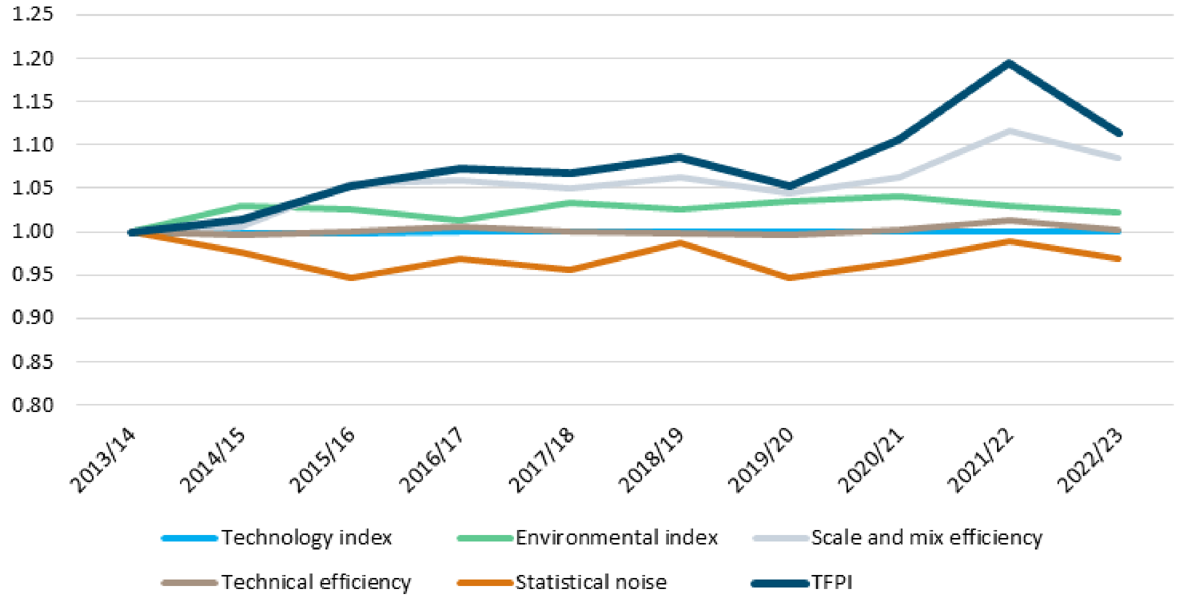
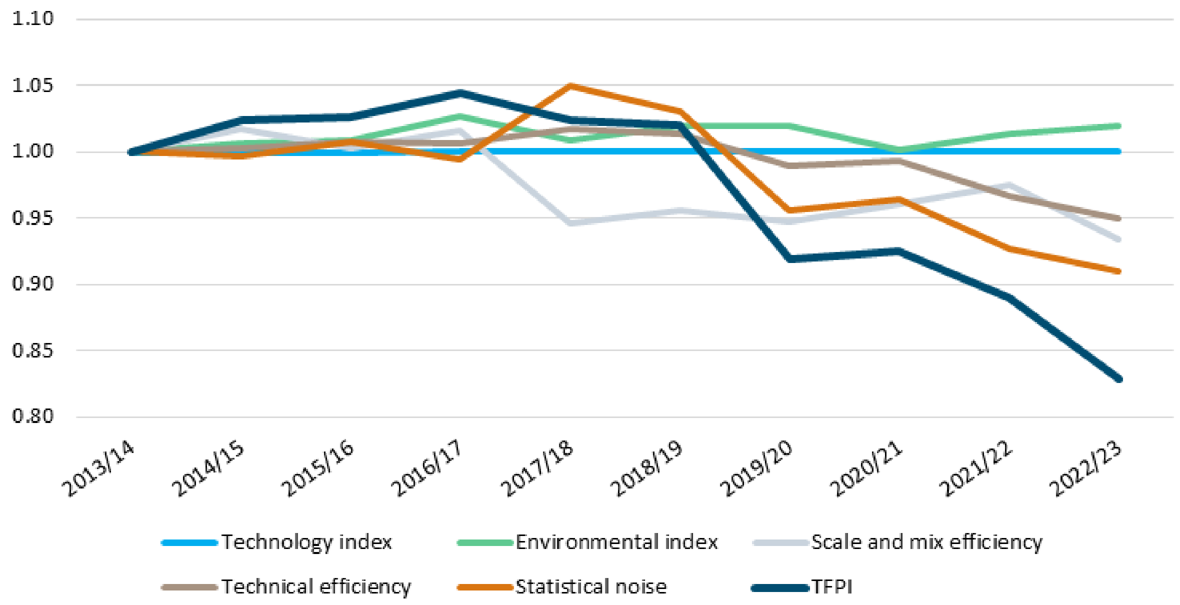


Figure 19: Western Australia – Total Factor Productivity by SFA component (2013/14=1 for all indices)



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