NZ-US Trade & Investment Relationship Report: 2023

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NZUS Council

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Sense Partners

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NZUS COUNCIL

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DATA LOGIC ACTION

Key Points

Bilateral trade has recovered strongly since the pandemic dip

- The bilateral trade relationship has grown steadily over the past decade, averaging 8.8% per year from 2013 to 2019. Since the depths of the pandemic in 2021, bilateral trade has rebounded by 56%.
- Total two-way trade is now $27.6bn. The US is our third largest trading partner for both imports and exports. For goods and services exports, the US took a 14.6% share in 2023 having averaged 12% since 2015.
- New Zealand's exports of goods and services to the US grew by an average of 9.0% per year between 2013 and 2019. Since their low of $9.6bn in 2021, they have bounced back 57% to reach a new high of $15.1bn in the year to June 2023.
- New Zealand's imports of goods and services from the US grew by an average of 8.5% between 2013 and 2019. From $9.9bn in 2019, they sank to a low of $8.0bn in 2021, before surging 55% to $12.4bn in 2023.

A travel export recovery is offset by falls in tech sector services

- With travel restrictions easing, and visitors returning to New Zealand, there has been a corresponding recovery in services trade. However, the value of travel exports to the US, at $1.1bn, is still below the $1.4bn recorded in 2019.
- Exports of non-travel services, including computer services, licencing fees, and other business services picked up during the pandemic. However, in the past year they have fallen a combined 13.5%.
- Imports of services from the US have recovered, but their composition has changed. As with exports, tourism imports have yet to fully recover – Kiwis have some catching up to do on the holiday front.
- Imports of computer services, software licensing services, and Intellectual Property charges have all risen since 2021. Imports in these categories are up a combined $422m since 2021.

The end of the pandemic has seen a surge in primary sector exports

- The post pandemic bounce has seen a surge in the value of primary sector exports to the US. Exports of agricultural goods have reached $6.3bn in 2023, a 54% increase on 2019. Stripping away inflation shows the real value of exports is up 31%.
- Non-agricultural goods exports have topped $2.9bn, a 28.6% increase on 2019.
- These typically build on our expertise in the primary sector, with products like fruit grading machines ($34.2m) and harvesting machinery ($21.7m) helping grow US productivity.
- The US is a critical supplier to New Zealand of a range of high-tech and specialised imports. Aerospace goods, like airplanes, helicopters, their engines, and parts rank as some of the largest imports by value. The US typically commands a dominant role in supplying these.

Contents

1. Objectives & Scope

We use the latest data to update our original analysis

In 2021, Sense Partners was engaged by the New Zealand US Council to provide a stocktake of the New Zealand-US bilateral relationship from an economic perspective. This was in the midst of worldwide disruption caused by the COVID-19 pandemic.

In 2023, we have been engaged to provide updated data to show how the post-pandemic return to normality is evolving.

As with our original report, we focus on the evolution of the scale and composition of bilateral goods trade, services trade, and investment to illustrate the changing nature of the commercial relationship.

Our original quantitative analysis was supplemented with twelve case studies of New Zealand businesses that collectively demonstrate the innovation and creativity that characterise the way New Zealand and US firms do business together. We include these in Appendix A for continuity.

2. Overview of the Bilateral Relationship

The post-pandemic recovery is well underway

The New Zealand-US trade relationship topped $27.5bn in 2023

The bilateral trade relationship has grown steadily. COVID-19 dented the trend in 2020, but the post-pandemic rebound has seen a return to trend.

Combined bilateral trade in goods and services grew by an average of 8.8% per year from 2013 to 2019. Since the depths of the pandemic in 2021, bilateral trade has rebounded by 56%.

New Zealand's exports of goods and services to the US grew by an average of 9.0% per year between 2013 and 2019, marginally faster than the average growth in US exports to New Zealand of 8.5%. Since the 2021 trough, exports have grown 57%, while imports have grown 55%.

Figure 1: bilateral trade in goods and services, NZ$ billions, year to June

Source: Comtrade, StatsNZ[1]

The US is New Zealand's 3rd largest export and import partner

Over the longer term, the US share of New Zealand's exports and imports has remained steady around 10% since the GFC. The US remains our 3rd largest export and import market, behind China and Australia, and ahead of Japan.

The reduction prior to the GFC is largely due to the explosive growth of trade with China. This is particularly the case for the US share of NZ imports, as China became a substitute for manufactured imports. Like exports, imports have stabilised at around 10% since 2008.

1 We use destination import data when assessing exports. This data provides values in CIF, which includes the full cost of shipping and insurance.

Figure 2: US share of NZ total goods exports and imports

Source: Comtrade, StatsNZ; Sense Partners estimates

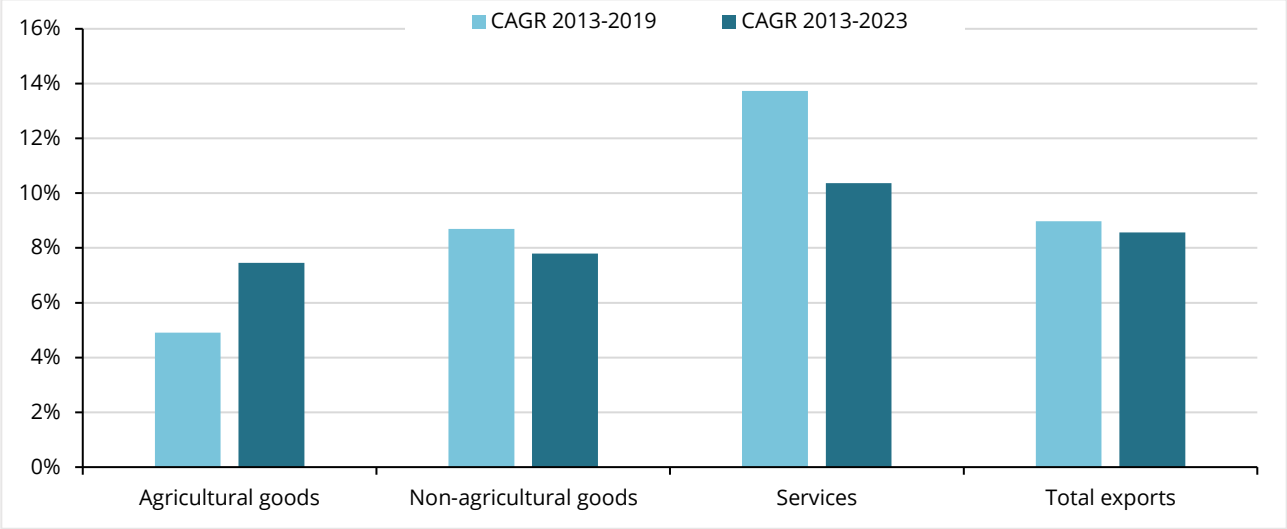
Services have led a broad recovery in trade

The drop in New Zealand exports to the US in 2020 was almost entirely a services story. Closed borders due to COVID-19 knocked NZ$1.6 billion off New Zealand's services exports to the US between the year to June 2019 and 2021 as tourism and travel ceased.

The removal of these restrictions has naturally meant the recovery is dominated by services. Services exports rebounded 87% between 2021 and 2023. Their nominal value, at $5.9bn, is now 24% above the 2019 pre-pandemic peak. The US is now our second largest services export destination.

But the recovery has by no means been limited to services. Goods exports have grown 57% since 2021 and are 36% above their 2019 pre-pandemic level. Growth has been strongest in the agricultural sector, with agricultural goods exports to the US up 49% on 2021.

Figure 3: Average annual growth in NZ exports to the US, year to June



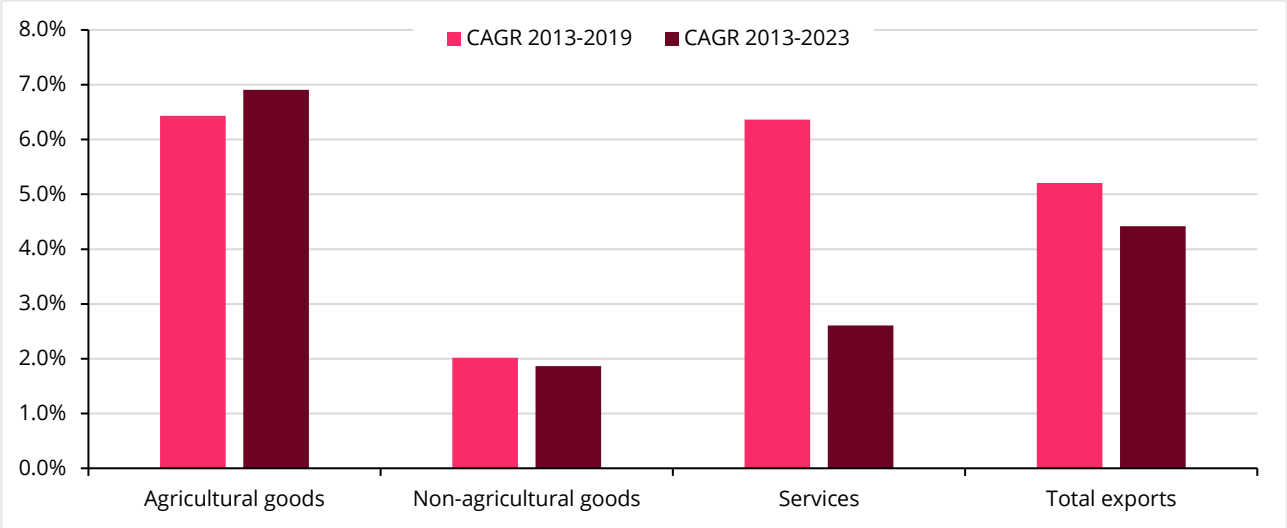
Source: Comtrade, StatsNZ

Figure 3 above shows average annual growth rates for exports to the US, broken down by broad sector. The 2013-2019 average rates are compared to the 2013-2023 rates. When these two

measures are close, it indicates that exports are near their pre-pandemic trend – a good sign of recovery.

Services, while experiencing strong growth, have yet to recover fully. Total visitor arrivals to New Zealand from all countries reached 2.5m in the year to June 2023.2 This remains 34% below the pre-pandemic level of 3.9m in 2019. Tourism is typically the largest component of services trade, making up 49% of services exports to the US in 2019.

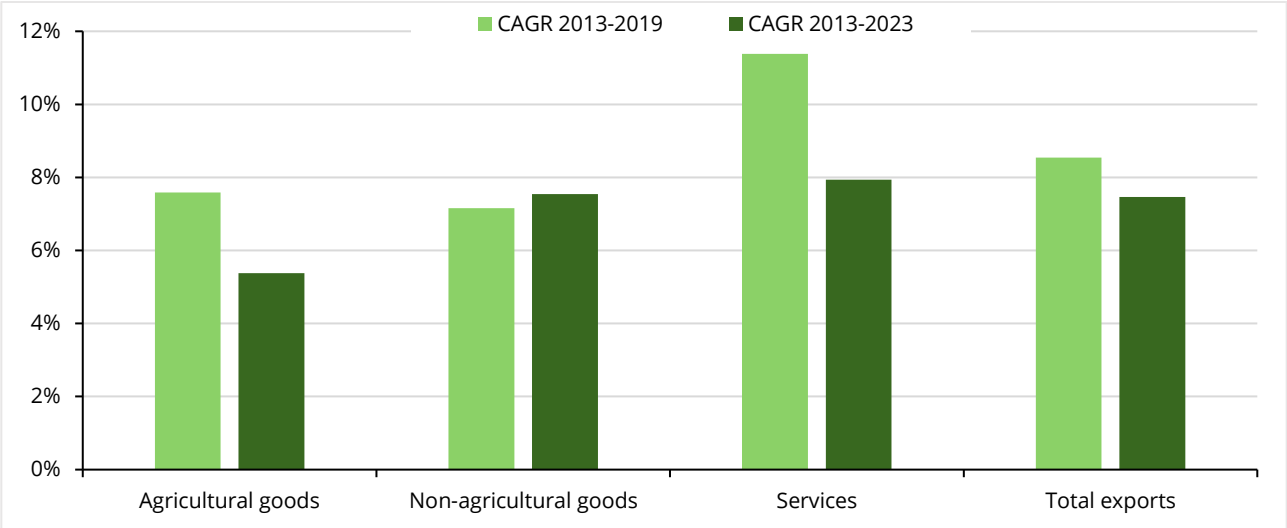
Figure 4: Average annual growth in total NZ exports, year to June



Source: Comtrade, StatsNZ

Despite this, services exports to the US have experienced a stronger rebound relative to total services exports. Growth in total services exports averaged 2.6% between 2013 and 2023, well below the decade average of 6.4%. The shortfall in total services exports is larger than that in services exports to the US.

Figure 5: Average annual growth in NZ Imports from the US, year to June



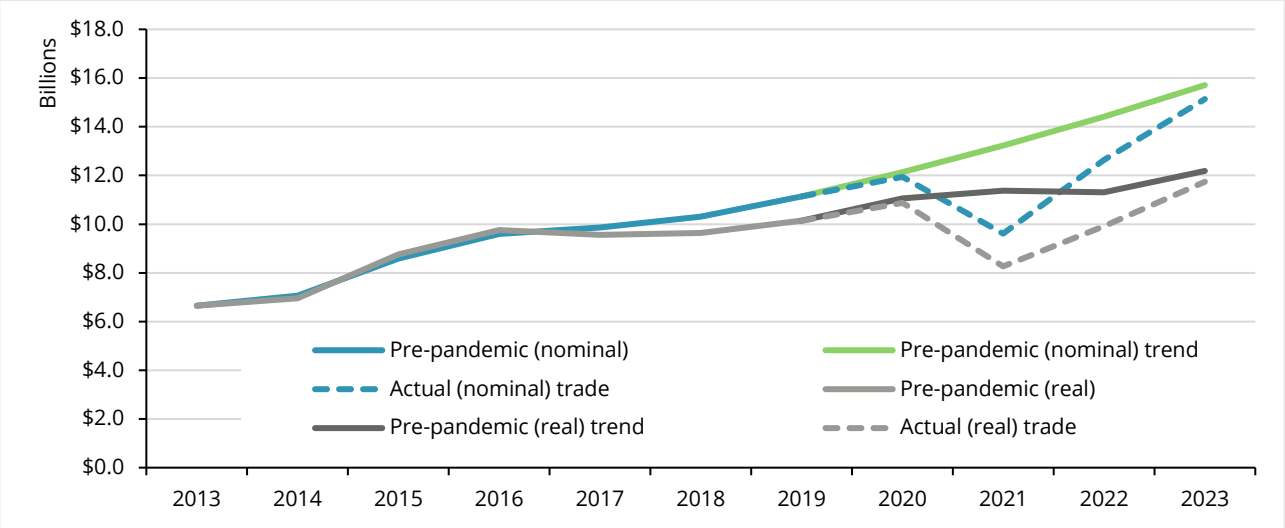
Source: Comtrade, StatsNZ

[2] Statistics New Zealand (2023) International travel: June 2023

Despite high inflation, there is growth in real values

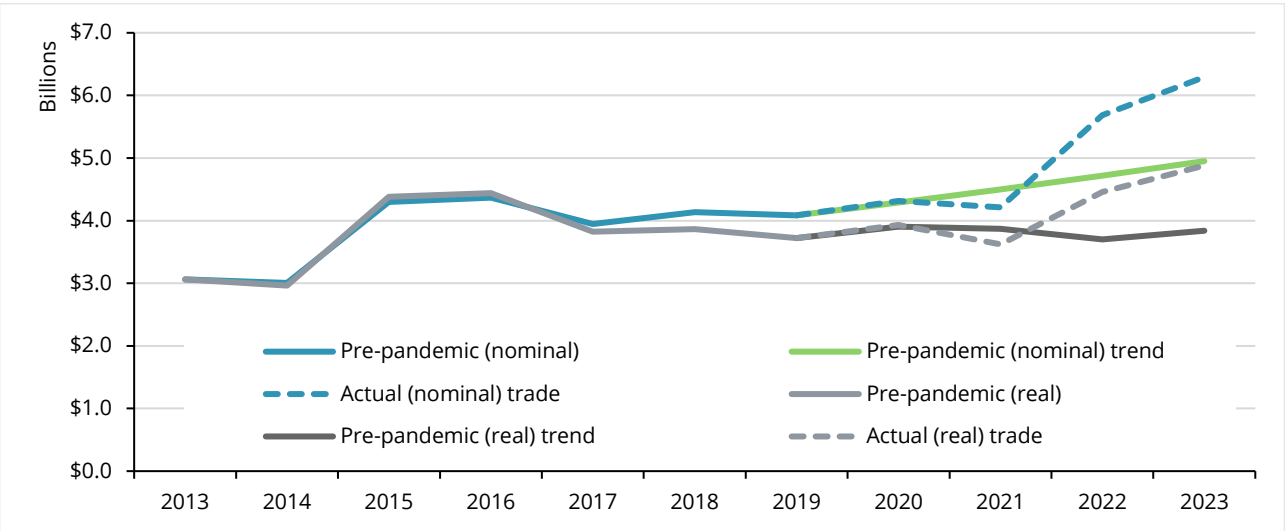
Total trade, in both nominal export and import values, has largely recovered to near-pre pandemic levels. Using PPI to strip away inflation, we can see that real values are also recovering back to trend, and are largely above pre-pandemic levels – the nominal recovery is more than just inflation.

Figure 6: Total exports to the US, $NZ, year to June



Source: StatsNZ, Comtrade; Sense Partners estimates

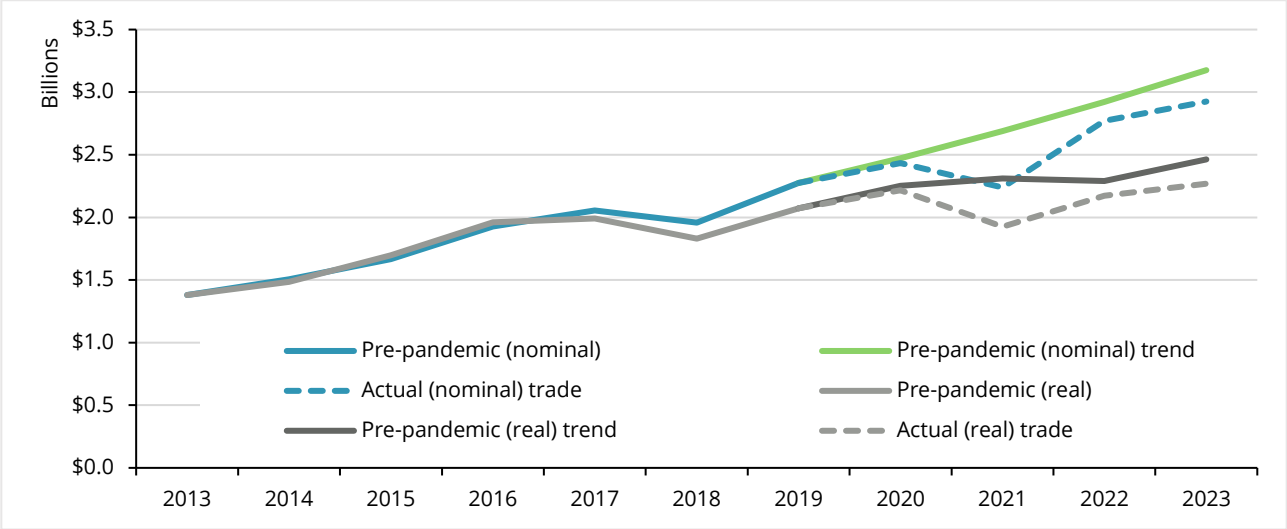
Figure 7: Agricultural goods exports to the US, $NZ, year to June



Source: StatsNZ, Comtrade; Sense Partners estimates

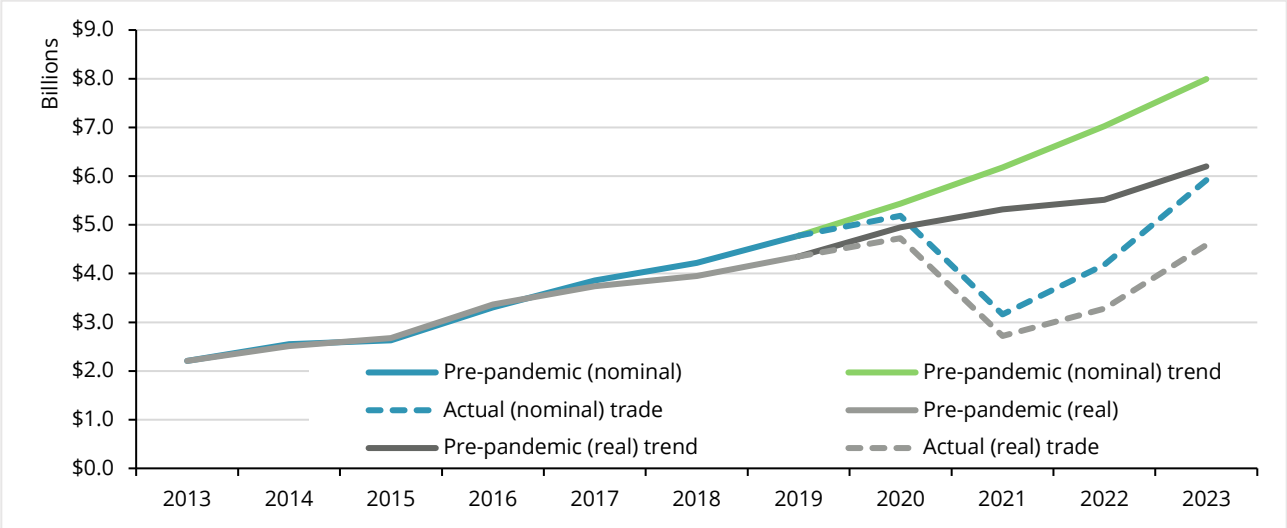
The nominal v real story is particularly relevant to agricultural exports. The surge in exports, while certainly magnified by inflation, is largely growth in real values. While nominal exports have grown 54% since 2019, real imports are still up 31%, nearly a full third.

Figure 8: Non-Agricultural goods exports to the US, $NZ, Year to June



Source: StatsNZ, Comtrade; Sense Partners estimates

Figure 9: Services exports to the US, $NZ, Year to June



Source: StatsNZ, Comtrade; Sense Partners estimates

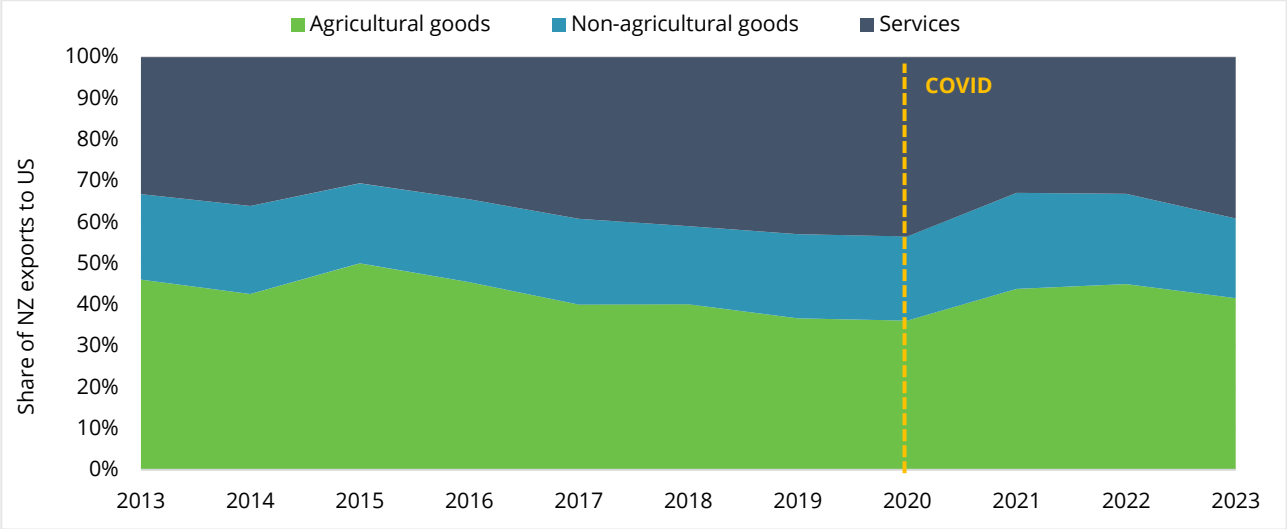
The end of travel restrictions is seeing a return to trend for services

Between 2013 and 2019, services exports grew at an annual average of 13.7%, considerably higher than agricultural (4.9%) and non-agricultural (8.7%) goods. This saw the share of services in total exports gradually expanding.

The COVID-19 pandemic and resulting border closures saw a collapse in services exports, which were largely made up of travel and tourism. As the border has reopened, and as visitor numbers recover, the shares are shifting back to their pre-pandemic levels.

There has been strong growth in agricultural exports (up 54% since 2019), and visitor numbers are still far below pre-pandemic levels (-34% on 2019). This means it remains to be seen whether the previous shift to services will prove an enduring trend beyond the pandemic.

Figure 10: COmposition of NZ exports to the US, year to June



Source: Comtrade, StatsNZ

3. New Zealand's Services Trade

Recovery is changing the composition of trade

A recovery in travel and tourism is shifting market rankings

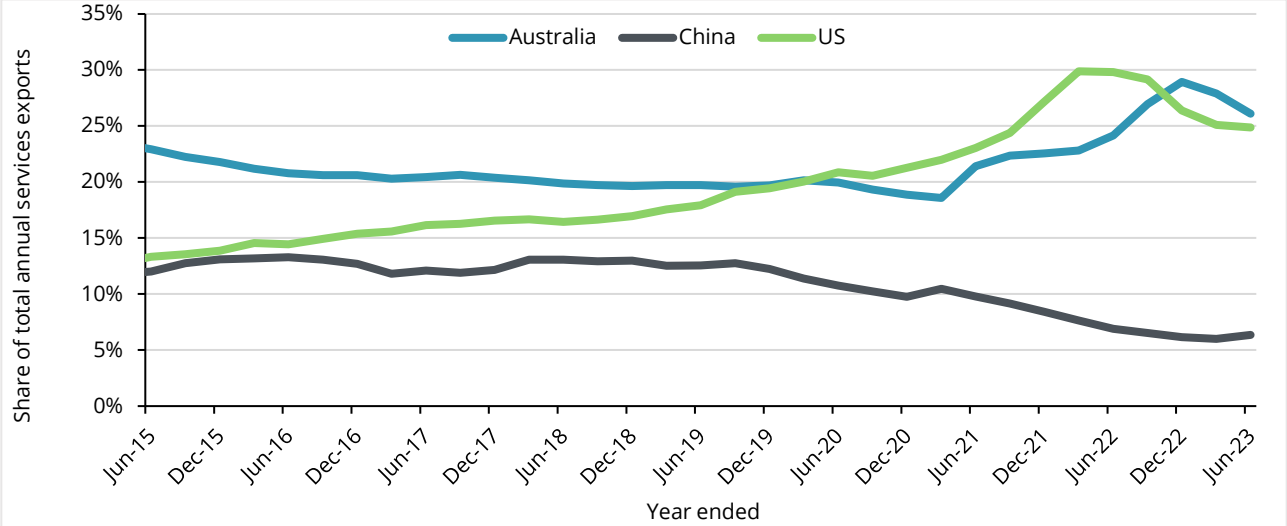
At 24.9% of New Zealand's total services exports in the year to June 2023, the US is currently New Zealand's second largest services market. Between 2015 and 2020 there was a steady increase in the US share, from 12.7% to 20.9%.

During the pandemic, this trend accelerated as a lower share of services trade was in travel, compared to other markets. Pre-COVID-19, travel accounted for around 49% of New Zealand's services exports to the US, compared to 90% for China, 89% for Japan, 65% for the UK and 51% for Australia.

This saw the US take the top spot as our number one services export partner.

Since borders began opening, the US share has fallen for precisely the same reason it proved resilient during the pandemic. The relatively lower share of travel in the relationship, paired with a strong rebound in tourism from markets like China (up 63% since 2022), has seen the US share recede.

Figure 11: NZ services export shares to the US, China, and Australia



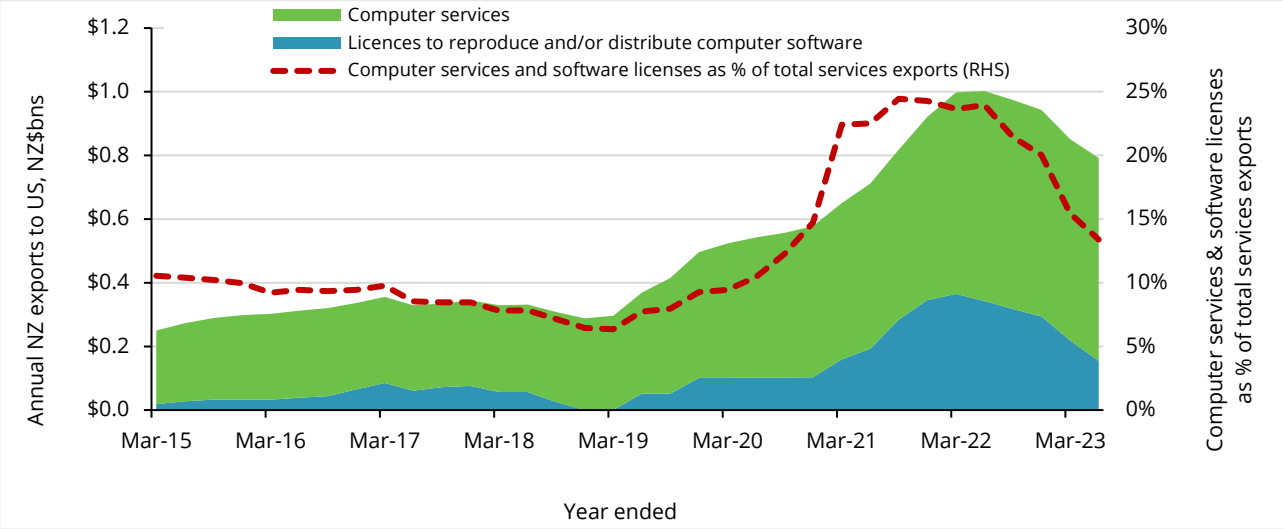
Source: StatsNZ

Non-travel services exports have taken a hit over the past year

The fall in the US share of New Zealand's services exports is also partly due to falls in some non-travel services. Business services, charges for the use of IP, and telecommunications, computer, and information services have fallen a combined 13.5% since 2022.

Computer services, highlighted in our original report, have declined 3.4% in the past year. This is driven by a 5.8% fall in software exports. In addition, there has been a fall in software licensing transactions, likely due to a downturn in the US tech sector.

Figure 12: computer services exports to the US



Source: StatsNZ

Computer services are leading a recovery in services imports

US exports of services to New Zealand neared $3.9bn in 2023, with the US ranking as the 3rd largest source of services imports. This marks a recovery beyond pre-pandemic levels, up from $3.4bn in the year to June 2019. Drilling into the detail, we see that travel as expected remains well behind pre-pandemic values. Instead, a rise in computer services imports, as well as software and trademark licensing fees, has worked to boost overall imports.

Table 1: Key NZ services imports from the US, year to June, NZ$m

Services type	2019	2021	2023
Reinsurance	$685	$515	$695
Personal travel	$577	$20	$360
Technical, trade-related, and other business services	$465	$436	$486
Computer services	$398	$513	$618
Professional and management consulting services	$254	$237	$347
Licenses to reproduce and/or distribute AV & related products	$144	$130	$138
Business travel	$87	$25	$75
Licences to reproduce and/or distribute computer software	$85	$67	$114
Explicitly charged and other financial services	$72	$47	$54
Franchises and trademarks licensing fees	$56	$113	$190
Telecommunications services	$52	$34	$60
Audiovisual and related services	$48	$38	$30
Information services	$32	$29	$45

Source: StatsNZ

4. New Zealand's Goods Trade

Primary sector exports dominate goods trade

The composition of primary sector exports has changed over time

Table 2 overleaf shows the top 15 largest New Zealand primary sector exports to the US in 1990 and 2023. The blue shaded products from 1990 have fallen out of the top 15 exports, replaced by the green shaded products in 2023.

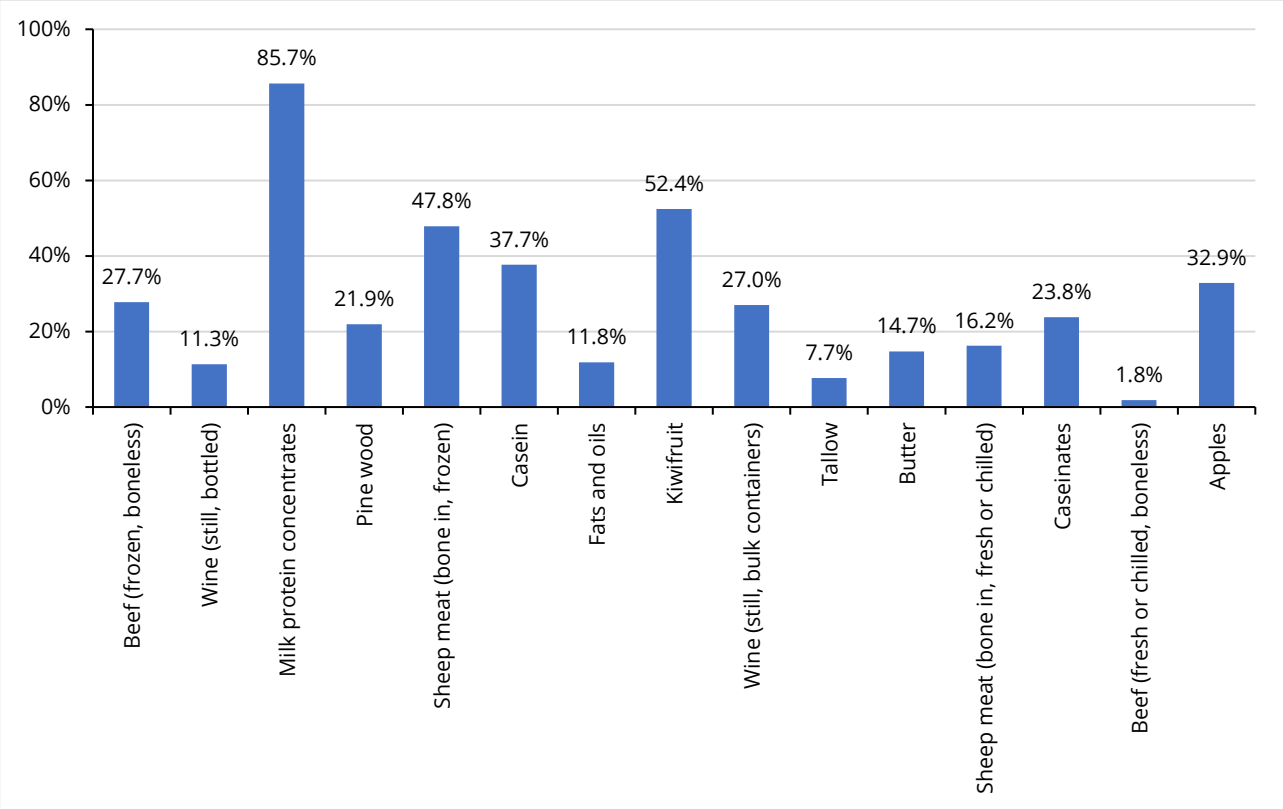
Products that have become less prominent in the export mix over time include wool, frozen fish, and rock lobsters (crayfish), cheese and sheepskins.

The largest export products in 2023 are now a mix of traditional pastoral-based exports and newer products, such as bottled and bulk wine (almost entirely Marlborough Sauvignon Blanc), kiwifruit, Mānuka honey, and mussels. These are all distinctly Kiwi products that are not readily substitutable for US-produced items.

The meat and dairy products have also changed in nature. A wider range of beef and sheep meat cuts is now being demanded by US consumers, along with dairy ingredients (milk protein concentrates, Anhydrous Milk Fat) rather than solely consumer items. The focus is very much value rather than volume.

New Zealand accounts for large shares of US imports in several of these products (especially dairy ingredients), though faces international competition for many others, including horticultural products and wine.

Figure 13: NZ share of US imports of primary products, year to June 2023



Source: Comtrade

Table 2: NZ's largest 15 primary sector exports to the US: 1990 and 2023

1990's largest primary exports to US	1990 export value, $NZm	1990 share of exports to US	2023's largest primary exports to US	2023 export value, $NZm	2023 share of exports to US
Beef (boneless, frozen)	$816.5	39.9%	Beef (boneless, frozen)	$1,256.2	13.6%
Casein	$191.2	9.4%	Wine (Still, bottled)	$955.6	10.4%
Fish fillets (frozen)	$159.0	7.8%	Milk protein concentrates	$460.1	5.0%
Cheese (other, including Cheddar and Colby)	$60.9	3.0%	Pine wood	$369.4	4.0%
Caseinates/casein derivatives	$56.7	2.8%	Sheep meat (other, bone in, frozen)	$341.4	3.7%
Fruit (other, fresh)	$47.3	2.3%	Casein	$332.5	3.6%
Apples (fresh)	$36.6	1.8%	Fats and oils	$210.6	2.3%
Animal guts, bladders & stomachs (not fish)	$24.8	1.2%	Kiwifruit	$198.2	2.2%
Rock lobsters	$20.1	1.0%	Wine (still, bulk containers)	$172.7	1.9%
Sheep meat (other, bone in, frozen)	$19.7	1.0%	Tallow	$131.5	1.4%
Wool (degreased, not carbonized, shorn)	$19.3	0.9%	Butter	$130.8	1.4%
Wool (greasy, including fleece-washed, shorn)	$18.7	0.9%	Sheep meat (bone in, fresh or chilled)	$130.0	1.4%
Albumin derivatives	$12.7	0.6%	Caseinates/Casein Derivatives	$127.9	1.4%
Sheepskins (without wool, pickled)	$11.9	0.6%	Beef (fresh or chilled, boneless)	$115.5	1.3%
Beer	$10.7	0.5%	Apples (fresh)	$106.6	1.2%
Value of top 15 primary exports, 1990	**$1.51b**	**73.7%**	**Value of top 15 primary exports, 2023**	**$5.04b**	**54.7%**

Source: Comtrade, Global Trade Atlas

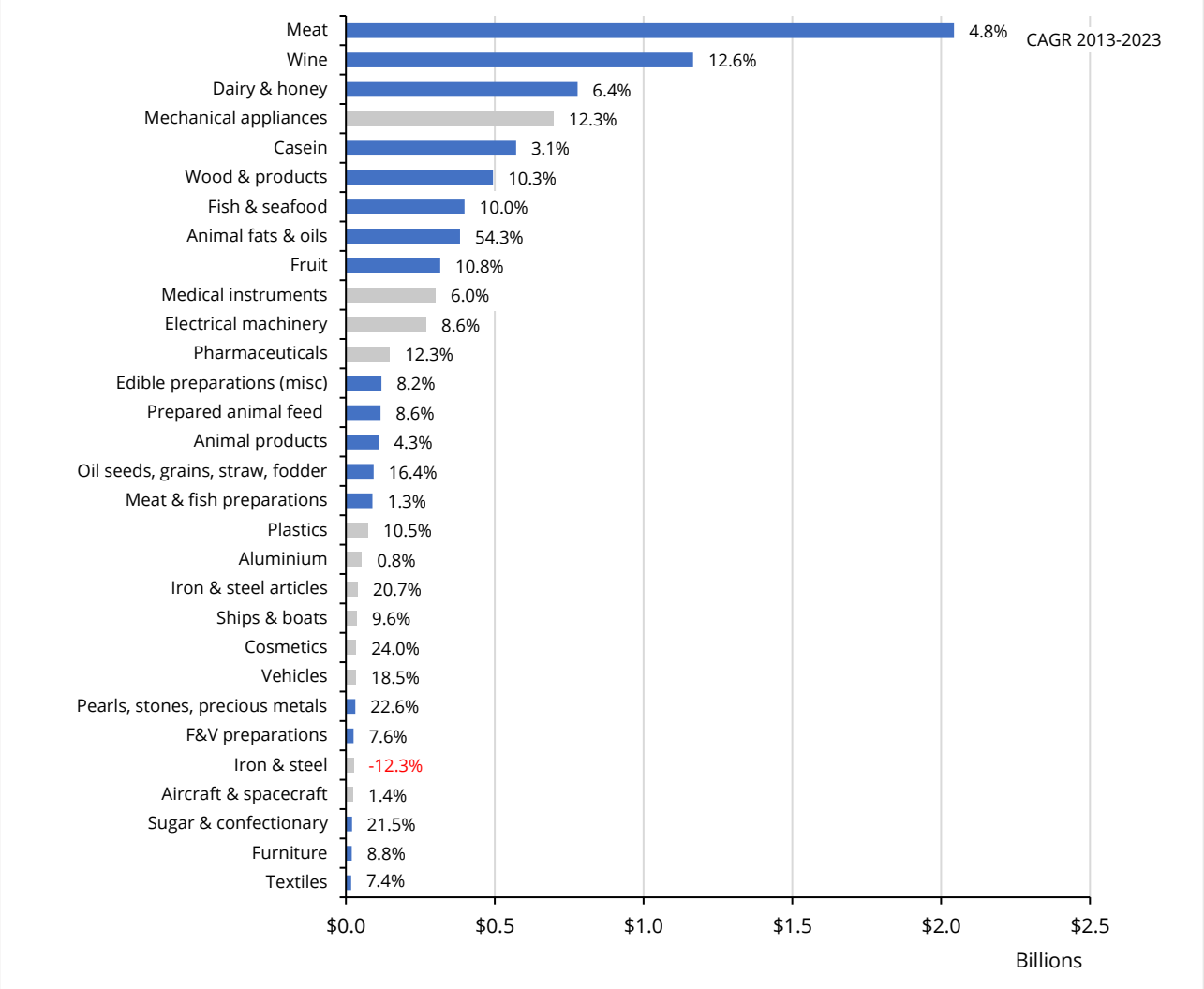
Manufacturing exports continue their growth

Exports are growing in a wide range of advanced products

The primary sector, and agricultural goods in particular, have experienced a surge since the pandemic. However, non-primary sector products, including specialised manufacturing products, are also showing robust growth.

Figure 14 below shows our top 30 goods exports to the US by value, and their average annual growth since 2013. This reinforces the importance of primary sector exports, but also highlights (in red) the breadth of New Zealand's non-primary sector exports.

Figure 14: Top 30 NZ exports to US, year to June 2023, NZ$ Billion



Source: Comtrade

Machinery exports are broad and build on our existing specialities

Figure 15 below shows the top 12 exports of products classed as "mechanical appliances". This is broad range of products, much of which builds on our existing expertise in agriculture and the primary sector. This includes eggs and fruit grading machines ($34.2m), harvesting machinery ($21.7m), and their spare parts ($16.3m).

Figure 15: Examples of NZ exports of mechanical appliances to the US

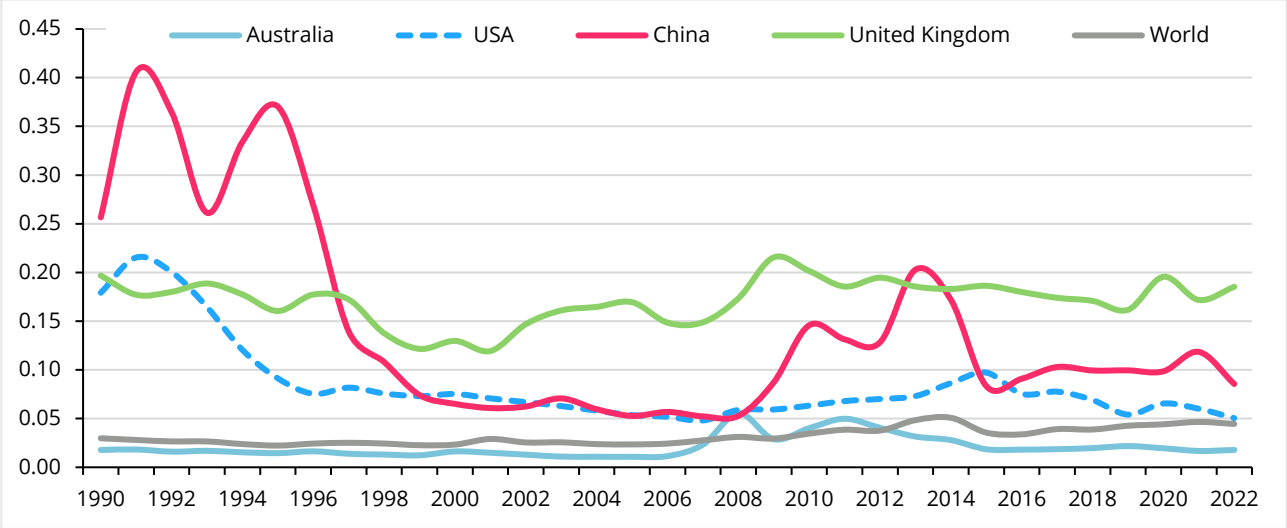
Welding machine parts, $115.9m of exports in 2023	Grading machines for eggs or fruit, NZ$34.2m	Metal rolling mills, NZ$32.5m	Machine tools, NZ$32.0m
Machinery for making hot drinks or heating food, $27.5m	Dishwasher parts, $26.7m	Elevators and conveyors, $24.5m	Catalytic converters, $23.9m
Hydraulic power engines and motors, $23.0m	Harvesting machinery, $21.7m	Taps, cocks, and valves, $21.4m	Harvesting machinery parts, $16.3m

Source: Comtrade

These types of machines are largely spin-offs from New Zealand's long-standing comparative advantage in primary production. They have been designed, developed, and tested in New Zealand to support our agricultural and horticultural sectors, and then exported to other markets which seek to boost the efficiency of their production processes.

Goods export concentration is falling as exports to the US diversify

Figure 16: Herfindahl-Hirschman index of NZ goods export concentration



Source: Comtrade; Sense Partners estimates

Figure 16 above shows below shows Herfindahl-Hirschman Index (HHI) measures for several of New Zealand's major trading partners. The lower the HHI value, the less concentrated in specific goods (or the more diverse) is our export profile with each market. It shows our trade with the US is more diverse than our trade with the UK and China.

The diversity of New Zealand's exports to the US has increased over the past 30 years, aside from a slight concentration following the Global Financial Crisis, after which New Zealand's exports of both wine and frozen beef surged (thus lifting overall export concentration). This period also coincided with New Zealand signing its Free Trade Agreement with China, which has led to shifts in New Zealand's overall export profile.

The US commands large shares of high-tech imports

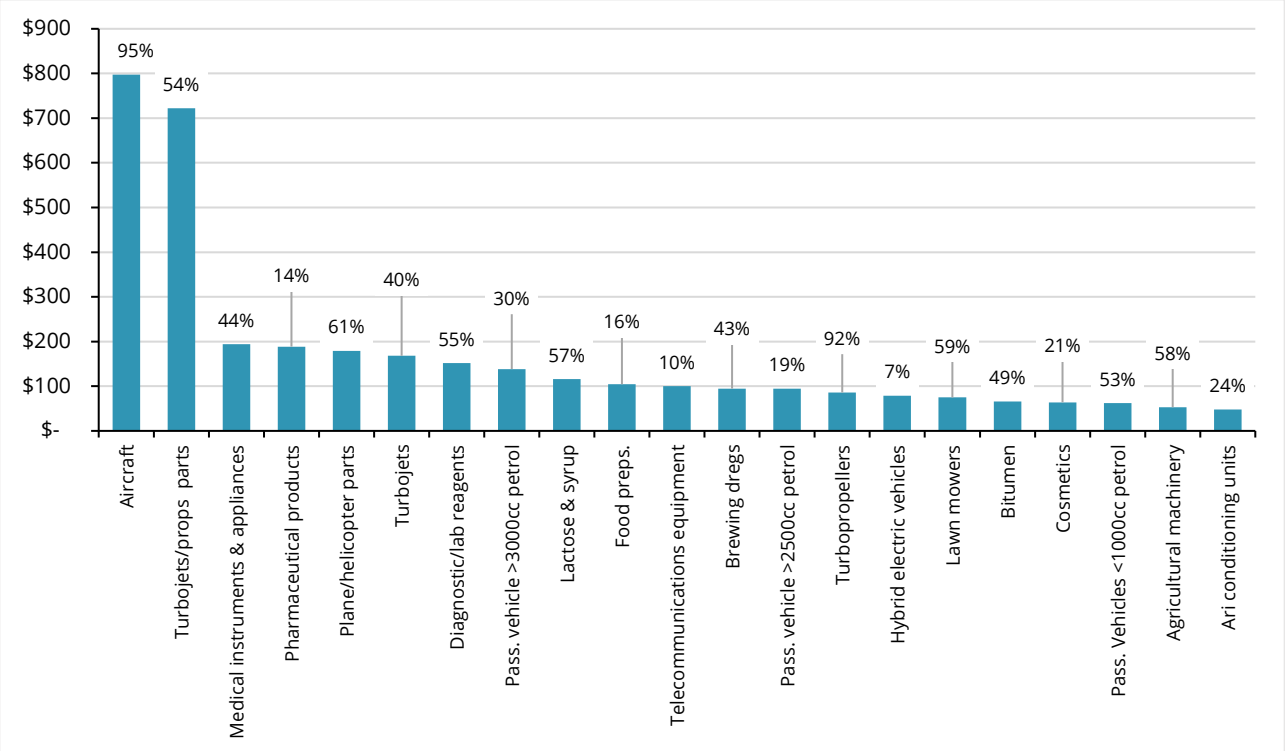
US goods exports to NZ reflect advantages in aerospace and vehicle manufacturing

For many goods imports, New Zealand is heavily reliant on the US. Figure 17 shows the 20 largest imports from the US in 2023 by value, along with the US share of imports.

The aerospace sector, in particular, is an area where the US is a primary supplier. Aircraft, and turbojets and turboprop parts make up the largest imports by value, at $797.6m and $722.3m respectively in 2023. The US has a high market share in supplied of these goods to New Zealand, at 95% for aircraft and 54% for turbojets and turboprop parts.

The turbojets themselves added $168m to aerospace imports, with US sources taking a 40% share of imports. Other aerospace imports included plane and helicopter parts ($179.3m imports, 61% share). For turbo propellers, the US was nearly the sole supplier, with a 92% share of imports, valued at $85.9m.

Figure 17: Largest 20 US exports to NZ, year to June 2023



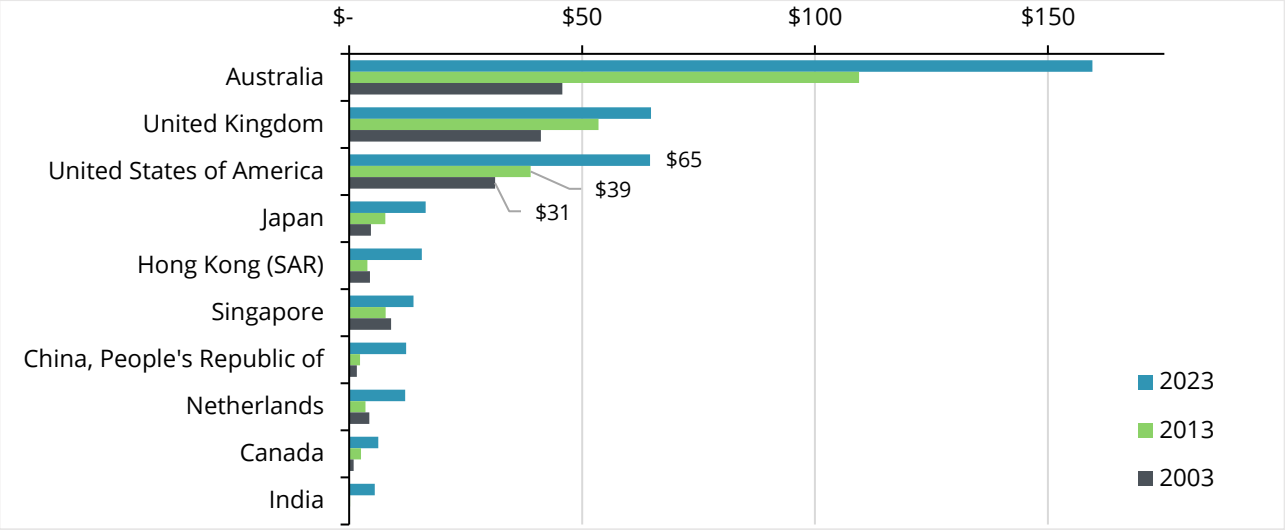
Source: Comtrade

5. Investment Patterns

Bilateral investment has continued to grow

The US is an important source of investment for New Zealand…

Figure 18: Stock of investment in NZ, $BN, Year to march 2023



Source: StatsNZ

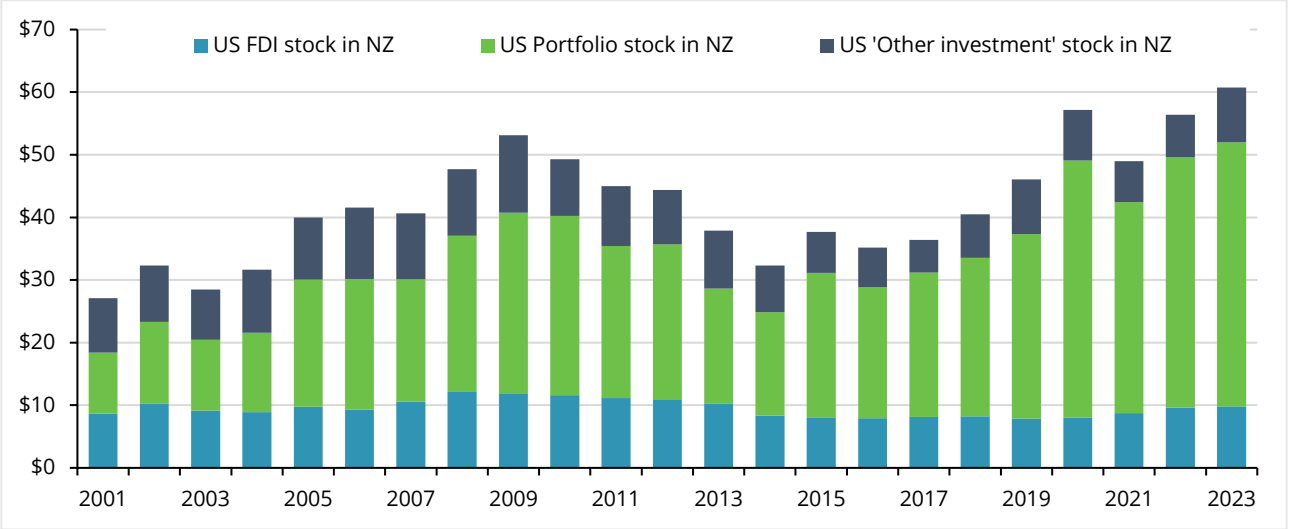
The US held a total stock of investment3 of NZ$65 billion in New Zealand in June 2023, or 12.2% of the total investment stock in New Zealand.

The majority of this stock is portfolio investment (see Figure 19). Direct investment (NZ$9.8 billion in June 2023) is primarily in manufacturing, finance and insurance, and wholesale trade4, as well as the wine sector.

Pre-COVID-19, the stock of US portfolio investment in New Zealand surged by 78% in three years. No data is available to determine precisely where this US portfolio investment was directed, but it suggests US investors are seeing plenty of potential opportunities in New Zealand.

[3] Comprising, direct investment, portfolio investment and 'Other' investment.
[4] USTR website.

Figure 19: Types of investment in NZ, Stock, $NZ Billons, year to march

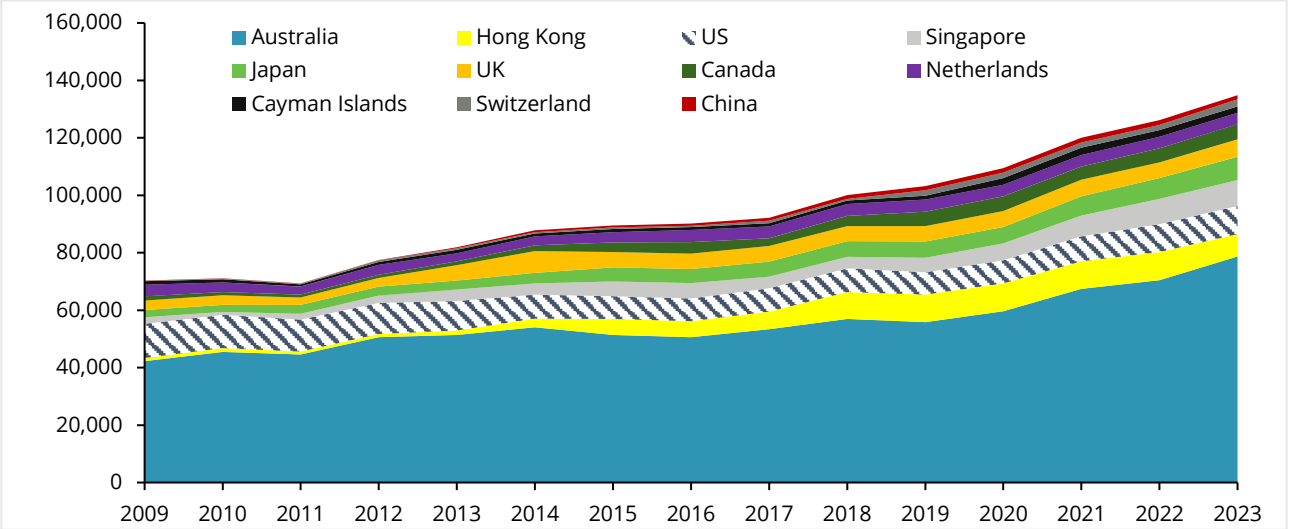


Source: StatsNZ

…though its share of direct investment is trending down over time

The US share of New Zealand direct investment has fallen from 15.7% in 2001 to 6.5% in 2023 (Figure 20). This may in part reflect the higher investment screening threshold (NZ$200m) afforded to New Zealand's FTA partners, such as Australia[5], China, Hong Kong, Singapore, and Japan, including through the CPTPP. The non-FTA threshold is NZ$100m.

Figure 20: Stock of FDI in NZ, NZ$ million, year to march



Source: StatsNZ; Sense Partners estimates

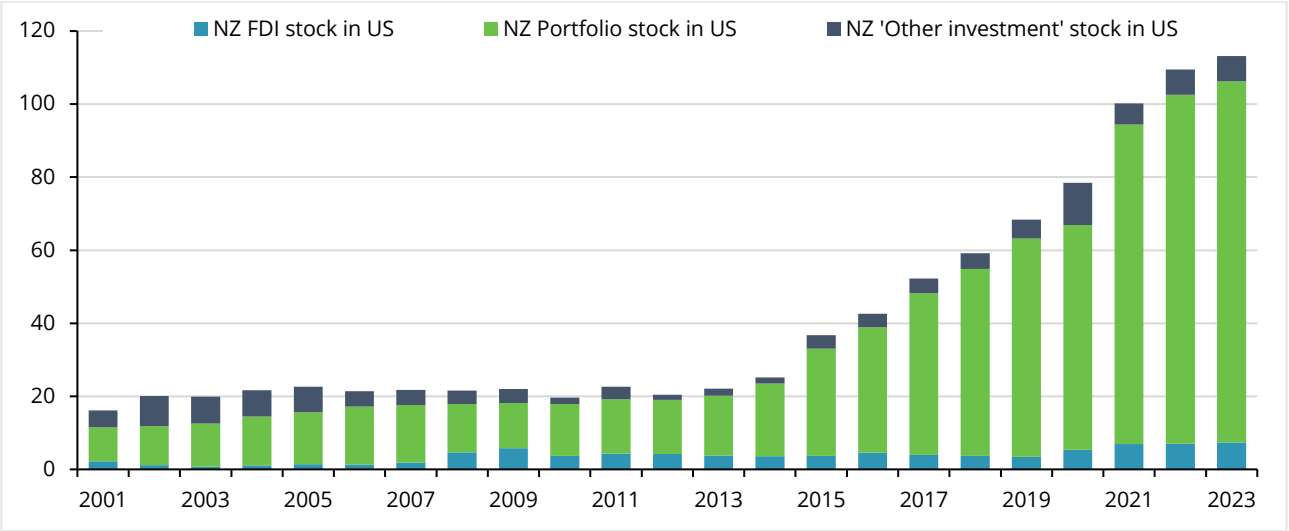
[5] Australia's threshold is higher still, at New Zealand$552 million, reflecting our long-standing economic integration agenda and Trans-Tasman business links.

The US continues to grow in popularity as an investment destination

New Zealand's investment stock in the US has grown by NZ$91 billion in the past decade (412%). This has been driven by New Zealand's portfolio investment in the US, which has grown from NZ$16.4 billion in 2013 to NZ$98.9 billion in 2023.

The popularity of the US as a destination for New Zealand investment continues to grow, even after a surge during the pandemic.

Figure 21: NZ stock of investment in the US, $NZ billion, year to June



Source: StatsNZ

6. Conclusion

The post pandemic recovery is well advanced

The pandemic had a major impact on trade between New Zealand and the US. Travel bans and closures at maritime ports caused major disruption. New Zealand's exports to the US fell 19.5% from their peak of $11.9bn in the year to June 2020 to $9.6bn in 2021. Imports from the US fell 18.7% from $9.9bn in the year to 2019 to $8.0bn in 2021.

Since then, there has been a strong recovery in trade values. Total exports have bounced back 57% from their 2021 low, and at $15.1bn are 36% above their pre-pandemic 2019 level. Likewise with imports, a 55%increase from 2021 to $12.4bn, up 26% from 2019.

Services exports are recovering well after the pandemic, driven by tourism flows. But visitor numbers remain well below their pre-pandemic levels. Other services exports which supported bilateral trade during the pandemic, particularly computer and software related services, have since retreated from their highs.

With tourism yet to fully recover, the expansion of the bilateral trade relationship is being driven by strong export growth in the primary sector. This plays to our traditional advantages, and well-established relationships with the US in beef, wine, and dairy ingredient exports.

Non-agricultural goods have retained robust growth. While they haven't quite matched the surge in the primary sector, they remain an important source of diversification in the trade relationship. They offer the potential for mutual productivity gains, particularly where they build on our existing specialisations in the primary sector.

Appendix A: Case Studies

Our original report, produced in 2021, included a range of case studies on US-NZ economic and business relationships.

Taste Pure Nature: Partnering with US companies to grow awareness[6]

The strong growth in red meat exports to the US reflects increasing demand among well-being-conscious US consumers for products that are healthy and good for the environment. New Zealand grass fed beef and lamb are highly appealing to this market segment, but awareness of New Zealand beef and lamb among consumers is relatively low.

This is where the Taste Pure Nature campaign, led by Beef+Lamb New Zealand, comes into play. The objective is to lift consumer awareness of New Zealand red meat products and create higher demand and value. This is being achieved not only through traditional marketing, such as advertisements, but also via partnerships with US companies and retailers.

A great example of success is that of Silver Fern Farms, who retail direct to US customers online. A 20% discount paired with the Taste Pure Nature material led to a 370% increase in website visits and a 435% increase in sales revenue.

Silver Fern Farms has also partnered with US companies. Spiceology, a US based food company start-up, created a unique spice blend tailored to Silver Fern grass fed New Zealand beef and lamb. Among target consumers in California, Taste Pure has raised awareness of New Zealand beef and Lamb from 41% to 58%, and preferences for New Zealand beef and lamb from 6% to 13%, and 16% to 23% respectively.

Kono: leveraging sustainability to create a premium product[7]

Kono is a vertically integrated food and beverage business based in Te Tauihu, the top of the South Island. The company's focus is on high quality, high value beverages, fruit bars, seafood products, pip fruits, and hops.

Wholly owned by Wakatū Incorporation, Kono combines the traditional values of te ao Māori with their business model. This includes a focus on sustainability and conservation. Kono's products are all grown and harvested to high standards of sustainability. This includes being accredited by Sustainable Winegrowing New Zealand, using NZ Pipfruit Integrated Fruit Production methods, and complying with industry environmental codes of practice in seafood.

The focus on sustainability is both values-driven as well as a sound business choice. New Zealand exports are increasingly oriented toward higher value premium products over bulk commodities. This is a function of New Zealand's small scale and large distance from major markets. Increasingly, a core part of achieving high value is sustainability and being environmentally conscious. This is something Kono is well placed to leverage.

Kono also takes the intergenerational perspective that is part of te ao Māori. Wakatū has implemented a 500-year business plan, Te Pae Tawhiti, to guide its business operations and investment decisions. A big focus of this plan is the importance of whenua, or land. Whenua is culturally significant as a homeland, as well as being a source of sustenance and wealth. Wakatū, conscious of the central role of land, has set out to preserve their land for future generations.

[6] Case study based on discussions with Beef+Lamb New Zealand representatives.
[7] Case study based on discussions with Kono representatives.

Kami: digital learning beyond the pandemic[8]

Digital services are a growing export, benefiting from frictionless trade through the internet. While some services, notably tourism, have taken a massive hit during the pandemic, digital services have grown strongly (41% of services exports to the US in 2021). The move from schools to home based learning has been a particular boost for **Kami**, a digital learning and productivity tool.

Founded in Auckland in 2013, Kami is a digital tool that allows educators to turn any document into an interactive learning tool. Educators can customise resources on the fly, while students have in-app access to annotations, highlighters, and a text to speech tool that can read out selected text. The app integrates with other tools, such as Microsoft 365, Google Classroom, and OneDrive, allowing for a seamless experience.

While uptake has been high through the pandemic (1177% revenue growth over 2019-2021**9**), Kami is not designed solely for remote learning. As students return to the classroom, Kami is returning with them and aiming to grow even further. The company, backed by investors in New Zealand, Australia and the US, is aiming for 100 million users within the next two years.

Dinosaur Polo Club: gaming sector creativity and weightless trade[10]

Figure 22: Mini Motorways

The future of New Zealand services exports to the US is likely to be characterised by innovative small and medium enterprises in the tech sector. Champions of digital exports, such as Xero, are being joined by start-ups in the local gaming industry. **Dinosaur Polo Club** is a Wellington based indie studio, and number 12 in the Deloitte Fast 50 2021 index**11**.

They rose to prominence in 2016 with the release of in their first title, Mini Metro. This minimalist subway simulation game struck a chord with gamers, winning a suite of awards, including a nomination for best debut in the 2016 BAFTA games awards. The studio has followed this success with Mini Motorways, another well received game, and has further releases in production.

Mini Motorways was developed in partnership with Apple, who sought out Dinosaur Polo Club to develop a flagship product for the launch of Apple Arcade. This is one example of the value of building relationships with major publishers, platforms and other game studios. The studio has formed partnerships with many of the major US based platforms, such as Microsoft, Nintendo USA, and Valve, and 40% of its audience is from the US.

The gaming industry benefits from some unique characteristics of digital services, with effectively borderless trade across the internet. With no physical product to ship, the industry can scale rapidly, leveraging New Zealand's rapid fibre network to do global business locally. As a result, it is a fast-moving industry and new players can emerge and grow rapidly as Wellington's technology hub continues to expand and diversify.

The industry does face a major challenge in securing the talent needed to power growth. The challenge of high global competition for game development skills is compounded by the relative lack of senior talent within New Zealand. There are few options in the tertiary education sector for developing specialised and essential skills such as game design and user experience. This, combined with the fact that many of these roles are not on the government's skills shortage lists, adds a further challenge to sourcing international talent. Partnerships with US companies have proven to be essential in bridging funding and skills gaps.

[8] Case study based on publicly available information on the Kami website.
[9] Deloitte. 2021. *Fast 50 Index*. https://www2.deloitte.com/nz/en/pages/deloitte-private/articles/fast-50-index-deloitte-fast-50.html
[10] Interview based on discussions with Dinosaur Polo Club representatives.
[11] Deloitte. 2021. *Fast 50 Index*. https://www2.deloitte.com/nz/en/pages/deloitte-private/articles/fast-50-index-deloitte-fast-50.html

Soul Machines: combining advanced AI and CGI[12]

What makes Soul Machines Digital People unique is its Digital Brain. This brain powers its Human Operating System, or HumanOS, which gives digital people life-like behaviours and allows them to learn through their interactions.

Digital people see their audience through a device's camera, hear through its microphone, and can detect and react to facial expressions, tone, and emotions. This machine learning is paired with life-like CGI, allowing digital people to express realistic emotions in response to users.

The company, founded in New Zealand, has gone global with offices in San Francisco, Los Angeles, New York City, London, Tokyo, Melbourne and Auckland. Today it is working with major US companies like Google, Amazon Web Services, and Microsoft to enhance customer experiences across the globe.

Zespri: using IP to grow the US fruit basket with year-round supply[13]

Figure 23: Zespri Organic SunGold

Kiwifruit exports from New Zealand to the US are growing rapidly, accounting for NZ$159.1m for the 2020 season. For Zespri, New Zealand's industry led exporter, the US is a launch market with considerable potential. With good market access (zero tariffs), high incomes, and a growing consumer desire for sustainable, healthy, and organic products, kiwifruit offers plenty of potential for the US market.

New Zealand exported over 30,000 tonnes of kiwifruit to the US in 2020, 31% of US consumption.**14** However, kiwifruit makes up only around 1% of the global fruit basket, and so a major focus for Zespri is growing total US consumer demand for the fruit rather than competing directly with US or other growers. A part of this strategy is not just exporting New Zealand-grown kiwifruit to the world, but also working with northern hemisphere growers to grow Zespri varieties, including Zespri SunGold Kiwifruit, in exchange for licence royalty payments.

New Zealand kiwifruit growers can supply the market for 8 to 9 months of the year. Working with growers in the Northern Hemisphere helps to bridge this gap and extend the kiwifruit season, helping to maintain shelf space and a presence with consumers. Zespri has established global supply operations in Italy, France, Greece, Japan, and Korea. As part of growing the US market, Zespri is also working with local US growers to carry out pre-commercial trials of Zespri SunGold Kiwifruit.

[12] Case study based on publicly available content from the Soul Machines website.
[13] Case study based on discussions with Zespri representatives.
[14] Authors' calculations using COMTRADE data and USDA ERS Fruit and Tree Nuts Yearbook Tables. Note that these figures are at the annual level.US supply, and imports from northern hemisphere producers (Italy and Greece), are counter-seasonal to NZ and southern hemisphere producers (Chile). This means that the NZ export share of US consumption is seasonal, rising during our season and falling off-season.

Fonterra: US partnerships to meet growing global demand for value-add protein[15]

Fonterra has built US partnerships to produce high quality, sustainably sourced, value-add protein ingredients for sports, medical and paediatric applications. Columbia River Technology (CRT) was established as an Oregon-based joint venture between US dairy cooperative Tillamook, Threemile Canyon Farms, and Fonterra to produce high quality whey protein products, utilising the natural whey and lactose by-products from Tillamook's state of the art cheese-making plant.

Fonterra brings significant technical and sales expertise, and intellectual property to the JV, which adds value to US milk and supplies customers domestically and increasingly in a number of export markets, primarily in Asia.

The manufacturing plant based in Oregon supports 50 direct jobs, as well as many more downstream jobs in sales, supply chain, and secondary processing. The JV creates value for Fonterra's farmer shareholders by complementing New Zealand-based supply and enabling the Co-operative to meet growing global demand for high quality protein.

Wisk: New Zealand as a test bed for US aviation leaders[16]

Figure 24: Wisk's Air Taxi.

Wisk is an Advanced Air Mobility (AAM) company formed as a joint venture by The Boeing Company and Kitty Hawk Corporation. It is developing an autonomous, electric vertical take-off and landing (eVTOL) aircraft for urban air mobility, also known as a flying taxi. The company has a team of more than 360 people worldwide, with 20 based in New Zealand.

The flying taxi, named Cora, was brought to New Zealand after a global search for an ideal test ground. Wisk was looking for somewhere bold and progressive, focused on sustainability, and with a world class reputation in certification and regulation. New Zealand fit this bill and has potential to grow as a test bed to complement US innovation.

The aircraft is a flagship project under the New Zealand Government's Innovative Partnerships programme and Wisk was the first industry participant in the Government's Airspace Integration Trials. As part of these trials, Wisk is undertaking passenger transport trials. The collected data will be used to inform regulations in New Zealand and enable the integration of urban air mobility into the wider transport system.

Wisk has brought in considerable R&D investment in New Zealand and is working to grow the AAM industry. This includes working with other New Zealand based aerospace companies Dawn Aerospace, Kea Aerospace, Merlin Labs, and Pyper Vision, to establish the New Zealand Aerospace Industry Executive. The Executive has championed the National Aerospace Strategy and is working to increase the economic contribution of the industry to $10bn by 2030.

Wisk has also developed a partnership with Ngāi Tahu, working to build a pipeline of talent into science, technology, engineering, and mathematics (STEM) subjects. This is part of wider engagement with the New Zealand Government and tertiary institutions in New Zealand to ensure the skills needed by the aerospace sector are developed locally. This will not only help grow the local industry but will attract big international players to locate their R&D and testing functions in New Zealand.

[15] Case study based on discussions with Fonterra representatives.
[16] Case study based on discussions with Wisk representatives.

Volpara: Kiwi ingenuity in the fight against cancer[17]

Volpara is a health software company providing an accurate quantitative measurement of breast density, a key risk factor in breast cancer. This rests on vendor-neutral software packages, meaning they can be used with any brand of medical equipment. The software uses algorithms developed by the company to assess breast density, look for other risk factors, and evaluate the performance of the breast screening process.

Volpara has become a world leader in breast cancer risk assessment and screening. It is using the data collected from breast screening to develop the most comprehensive risk screening model available, with over 39.5 million images in their database. This will allow cancer treatment and prevention to be more proactive, predicting far more accurately those at risk of breast cancer.

The company, founded in New Zealand, has software in over 2,000 facilities worldwide, including top cancer screening centres in the US. Over 13.5m people across 39 countries have had their breast composition assessed by Volpara software.

TRG Natural Pharmaceuticals: New Zealand health and wellness R&D partnered with US distribution[18]

Figure 25: kānuka honey treatments

TRG Natural Pharmaceuticals draws on New Zealand's abundance of natural products to develop and license natural pharmaceuticals, which are exported to the US. As a biotech company, TRG applies strong clinical trials to prove the efficacy of each product, which includes kānuka honey and bee venom-based treatments.

TRG works with the Medical Research Institute of New Zealand, supported by Callaghan Innovation and New Zealand Trade and Enterprise, to publish research in peer-reviewed journals such as the British Medical Journal that confirms their products' health and wellbeing credentials.

An advantage of conducting R&D in New Zealand is the ability to carry out international standard clinical tests, meaning their research passes the highest bars of clinical best practice. In addition, the skills and talent needed are readily available in New Zealand and allow R&D to be cost-effective.

The high quality of TRG's research is important when it does business in the United States, the global centre of the Natural Pharmaceuticals industry and market. Consumers demand high standards, and health and wellbeing claims need to be substantiated. Trusted research practices and well published professionals mean results are readily accepted and help TRG to directly engage with top tier pharmaceutical companies.

Rather than establish in-house distribution networks, TRG has partnered with US based Taro Pharmaceutical Industries to brand and distribute their range of products in the US. This is a win-win, allowing Taro to leverage the New Zealand R&D environment to build a portfolio of natural health brands with proven efficacy.

[17] Case study based on Volpara Health Annual Report 2021
[18] Case study based on discussions with TRG Natural Pharmaceuticals representatives.

Robotics Plus: NZ R&D with strategic US partnerships to achieve scale and productivity[19]

Figure 26: Robotics Plus AGV

An example of New Zealand exports that promote US supply chain productivity can be found in Robotics Plus. The Tauranga based company designs and manufactures a range of agricultural systems using Mechanisation, Automation, Robotics, and Sensor (MARS) technologies.

The product range includes a robotic scaling machine (RSMs), providing a rapid, safe, and automated way to measure logs. With a unit in every port in NZ, by early 2022 up to 60% of New Zealand log exports will be processed by one of these RSMs. However, the structure of the US logging industry means that the technology has had to be adapted to suit, with a greater focus on a mobile solution.

The company has formed a joint venture, Global Pac Technologies, with the Australia and New Zealand based Jenkins Group and US based Van Doren Sales to market another of its innovations, an automated apple packer. And a strategic partnership with Yamaha has led to the commercialisation of an autonomous ground vehicle (AGV). This will be integrated with Yamaha's existing unmanned aerial vehicles for fully autonomous crop spraying in the Napa Valley, California.

The Global Pac Technologies joint venture and a strategic partnership with Yamaha have both been crucial in opening up access to the US market. Building relationships with US producers is essential, and a permanent presence in the form of a US subsidiary is a key part of growing trust, tailoring each platform to the US market, and achieving the scale that US producers require. This will also allow the company to explore manufacturing partnerships in the US.

A big advantage to having a base in New Zealand is the local strength in R&D. Skilled talent with agricultural DNA is easy to come by in New Zealand. In addition, the smaller scale of the industry brings a high degree of agility, meaning new technologies can be deployed onto farms rapidly. Government support through Callaghan Innovation and the tertiary system is another advantage that strengthens New Zealand as a base for R&D.

UBCO: Kiwi ingenuity and US manufacturing strength[20]

Figure 27: UBCO 2X2 electric utility bike

UBCO was established in 2015 to take to market an all-wheel-drive electric utility bike. New Zealand's rugged terrain and diverse market segments has made it an ideal place to design, test, and perfect the EV platform. With integrated software, large datasets have been collected among New Zealand test users to finesse the design and pave the way for new products.

UBCO's flagship products, the 2X2 Work Bike and 2X2 Adventure Bike, launched into the US market in 2017 and demand has grown strongly. A core part of the US market is the recreation and adventure segment, for which the 2X2 is ideally suited. This market includes a surge in interest in RV, or campervan, holidays. At just 50kgs without battery, the UBCO can be easily strapped on the back of a campervan for mobile adventuring.

At present, the bikes for the US market are assembled within the US. Shipping in separate parts and assembling in market is more efficient than shipping a final product. The 628% surge in shipping costs since March 2020**21** has led UBCO to consider onshoring more manufacturing in the US. The US is a cost-effective location to manufacture and factoring in shipping and logistics helps make the case.

[19] Case study based on discussions with Robotics Plus representatives
[20] Case study based on discussions with UBCO representatives
[21] Statista. 2021. *Global container freight rate index from July 2019 to October 2021*. https://www.statista.com/statistics/1250636/global-container-freight-index/

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