



IANZ: the economic side

Examining the way IANZ supports the New Zealand economy

NZIER final report to IANZ

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Key points

IANZ is an important part of New Zealand's institutional framework

- IANZ helps firms reduce their transaction costs, which supports productivity and profitability improvements.
- As part of New Zealand's quality infrastructure, IANZ provides “an external badge of competence” for New Zealand's assessment bodies.
- It has particular significance in supporting the desired shift to increased value from New Zealand exports.
- It also supports consumer choices, reducing their search costs.

Figure 1 How accreditation supports consumer choices



Source: Adapted from Frenz and Lambert (2013)

IANZ helps grow trust in the New Zealand economy

- The existence of a suitable quality assurance system such as IANZ delivers, supports the growth of trust in the area of the economy affected.
- Standards or other pre-validated devices serve to lower risk and cost by removing the need to independently, and thus expensively, check the underlying characteristics or performance of a product or service because a more widely accepted (and/or cheaper) system is in place.
- IANZ's activities allow economic agents to go about their normal activities without having to constantly suspect and therefore, stop and conduct (or ask an appropriate expert to conduct) tests on counterparties.
- Participants can shortcut these issues and just use the accreditation system as a basis for trusting that their expectations will be met and thus not have to incur extra cost and time in requesting their own procedures.

IANZ plays a significant role in facilitating trade, employment and GDP

- IANZ and Telarc combined employ 79 staff, and deliver \$7.6 million of payments to employees.
- They spend a further \$5.8 million on other inputs to production elsewhere in the economy, such as communication and IT services, accommodation and marketing.
- IANZ supports production in sectors that employ over 357,700 workers, up from 305,800 in 2000. These workers account for 17% of all employment in New Zealand.
- Through its accreditation activities, IANZ also plays a valuable role in supporting New Zealand's exports. The total value of these IANZ-facilitated exports was \$27.6 billion in the year to June 2016, or 56.5% of New Zealand's total merchandise exports.
- IANZ supports industries that produce \$35.8 billion of GDP.
- By being an independent assurance agent IANZ is part of the thrust to increase value in the export sector.

Economic modelling demonstrates that IANZ secures a \$4.5 billion export premium for accredited exporters

- UK firms report that accreditation delivers them an average 8% price premium over products that are not accredited. This provides an indication of the additional value generated by accreditation services of the type that IANZ delivers, though the premium could be considerably higher in New Zealand, given our reliance on primary exports that need to be accredited.
- By using a Computable General Equilibrium (CGE) model, we can ask: what would be the impact on the New Zealand economy if this export premium were *not* achieved in New Zealand?
- Essentially this could be the situation if IANZ did not exist and there were no comparable accreditation services available to New Zealand exporters.
- Our CGE modelling indicates that under such a scenario, the economic impacts of an 8% decrease in accredited industries' export margins would be significantly negative:
 - Real GDP would fall by 0.63%, or \$1.65 billion
 - Real wages economy-wide would fall by 1.6% as lower accredited export production leads to lower demand for labour
 - Real household consumption - a measure of living standards - would fall by 1.58% or \$2.3 billion, as households have lower incomes as real wages drop
 - The value of accredited exports would fall by \$4.54 billion, comprising both price falls and volume decreases
 - Total export values would fall by \$2.36 billion, as non-accredited export industries would have more resources available, at a lower cost. This allows them to expand their exports, partially offsetting the \$4.54 billion drop in accredited exports.

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1. Scene setter: IANZ's role

1.1. What IANZ does

Different accreditation bodies around the world have developed in different ways. What is clear is that their individual histories have shaped the exact make-up of the business, but the core approach and set of offerings is clustered around a common group of services.

IANZ, the New Zealand accreditation body has, of course, been influenced by its own history.¹ It was established in 1972 and is the national authority for accrediting:

- Testing and calibration laboratories
- Radiology services
- Inspection bodies such as boiler and crane inspectors and fire safety system inspectors
- Other technical professional services such as Building Consent Authorities.

Accreditation means that organisations are recognised to issue certain test, inspection or technical service reports or certificates and to deliver certain technical services. It ensures the integrity and reliability of laboratory results, inspection reports and other professional services.

The key advantages of IANZ accreditation are summarised in Figure 2.

Figure 2 Benefits of IANZ accreditation



Source: NZIER, based on IANZ brochure

¹ This background section draws on the IANZ brochure at <https://go.promapp.com/ianz/view/Documents/Minimode/Permalink/E65XlrQMoojYLnpyYEhG5>

Accreditation occurs after IANZ has assessed the capability and experience of an organisation's staff, the integrity and traceability of its equipment and materials, the technical validity of its methods and its compliance with intentional standards for quality and technical management.

The role of accreditation is crucial for New Zealand exporters, particularly in the primary sector. IANZ has signed Mutual Recognition Agreements with 97 countries, which means test reports, calibration certificates and inspection reports from New Zealand laboratories are also accepted in those importing countries.²

IANZ also offers training in a wide range of technical and quality subjects via the New Zealand Quality College.

1.2. Alignment with government objectives

IANZ's activities contribute to several of the government's *Business Growth Agenda* (BGA) objectives:

- **Building exports** – by publicly ensuring New Zealand provides high quality primary and manufactured goods to markets, and working with offshore accreditors to facilitate easier access for these exports. This essentially reduces the cost and risk of doing business for New Zealand's exporters.
- **Building innovation** – by providing reliable and cost-effective accreditation services to scientific laboratories, allowing them to focus on improving the way they do things, and supporting our exports of highly specialised scientific equipment. And by encouraging more effective and efficient conformity with domestic and international standards, IANZ supports innovation in service delivery.
- **Building skilled and safe workplaces** – through its training courses (1,975 person days delivered in 2016), IANZ helps to support and improve the skills of the labour force. It also provides accreditation of workplace drug testing services. Through its accreditation of laboratories, IANZ also facilitates improved capability in New Zealand's science and technology sectors by freeing up scientists' and technology workers' resources to focus on what they do best.
- **Building infrastructure** – by accrediting Building Consent Authorities around the country, IANZ helps to ensure consistency and efficiency of consent issuance.

These BGA related initiatives support the current government's wider policy objectives around building a more productive and stronger economy, delivering better public services within tight fiscal constraints and rebuilding Christchurch.

² IANZ. 2016. '2016 Annual Report'. <http://www.ianz.govt.nz/wp-content/uploads/2016/11/IANZ-Annual-Report-F2016-Draft-10a-Including-signatures-Including-Audit-Opinionb-.pdf>

2. IANZ from an economic perspective

2.1. IANZ is an important part of New Zealand's institutional framework

Modern economics stresses the role of wider supporting institutions (like the law, and social protocols) in creating an efficient environment in which the activities that make up an economy are undertaken. This approach is known as (the new) institutional economics (NIE)³ and it has gradually been accepted as an important way of understanding and explaining relative levels of performance of different economies.

2.2. Transaction costs matter

Its broad insight is that economic activity is not costless – basically because effective trading almost always demands a basis of shared understanding of the key features of the deal. All exchanges therefore, have associated support activities and include potential risks which may crystallise into extra costs or required services, or perhaps even compensation.

Taken together with the resources used in other necessary pre-trade preliminaries such as search (to find the right counterparty) and negotiation (to settle the details), these are collectively known as **transaction costs**. Obviously if these can be reduced, there is a social gain, as it would enable the same exchanges to be made at a lower real resource cost.

One of the functions of institutions is to provide social (non-economic) ways of reducing transaction costs. In this context, the particular set of institutions involved is often called the country's **quality infrastructure**. Typically, the logic of these is based around economies of scale in the cost of the provision of such services. An example is laboratory testing, where having lots of similar tests done at the same time, and to the same guidelines, should mean lower unit cost. This saving then flows through into lower costs for the test-using businesses, which boost their competitiveness relative to those in other countries having to rely on alternative (costlier) institutional arrangements (including those providing poorer services.)

But lower transaction costs can come about in other ways than just lumping processes together. In the case of quality infrastructure, efficiency may stem from the creation of shared knowledge through simple devices, like the establishment of common standards, or shared assurance mechanisms.

Examples here include the use of ISO standards (which once investigated, mean the processes involved have a known degree of risk), or the availability of simple services

³ The "father" of NIE is Ronald Coase but a concise summary of the approach is Williamson (2000).

such as the provision of a bank cheque (guaranteed by the bank, as against one drawn on a personal account; the point is the notion the bank is less risky than the individual).

To sum up, in the apt words of Frenz and Lambert (our emphasis added):⁴

“The effective operation of markets needs buyers and sellers to be confident in the reliability and competence of their (trading) partners and in the information they provide on the properties of goods and services offered. There are a variety of ways in which market agents can develop the knowledge and confidence in goods and services. These included repeated purchases from one or several suppliers, to test suitability of the good or service and the reliability of the supplier. This is of course costly especially for high value, infrequently purchased or safety critical items. Buyers can instead depend on the reputation of suppliers as a signal of quality and confidence.

*An alternative source of confidence in the capabilities of suppliers of such critical goods and services is the implementation of standards for performance and the evolution of conformity assessment as a way of ensuring that the suppliers proceed consistently with the standard and so can be relied on. **Accreditation reinforces conformity assessment by providing an external badge of competence for the assessment bodies.***

Accreditation is the external validation of organisations offering conformity assessment services e.g. calibration, testing, inspection and certification. When products, services, processes or organisations are evaluated by a third party conformity assessment body, accreditation offers an additional, top-layer quality assurance by assessing the competence and impartiality of the conformity assessment bodies. This is done by accrediting the organisations offering conformity assessment to a recognized standard”

As part of the wider quality infrastructure, accreditation plays its part in producing a series of effects to underpin effective economic activity.

These specific effects include contributing to economic agents’ appreciation of a key set of important characteristics of goods and services, as summarised in Figure 3.

⁴ See Frenz and Lambert (2013, p.3).

Figure 3 How accreditation supports consumer choices



Source: Adapted from Frenz and Lambert (2013).

2.3. Transaction cost reduction mechanisms – the growth of trust

Thus, standards⁵ or other pre-validated devices serve to lower risk and cost by creating a situation where the need to independently (and thus expensively) check the underlying characteristics or performance of a product or service is removed because a more widely accepted (and/or cheaper) system is in place. And as the continued provision of the accreditation rests on the system doing what it promised, it is a largely self-sustaining and self-checking operation.

That is, the only way the validation system can realistically remain in operation is that its process is a success – what it has tested or certified is found to be the case when followed up. As an entity trading on its reputation the checker/ provider must be totally bound up with carrying out the expected duties to the quality standard expected.

Another high-level way of thinking about this is that the existence of the suitable quality assurance system, and in particular, the list of effects produced, **supports the growth of trust** in the area of the economy affected.⁶ It allows economic agents to go about their normal activities without having to constantly suspect and therefore, stop and conduct (or ask an appropriate expert to conduct) tests on counterparties.

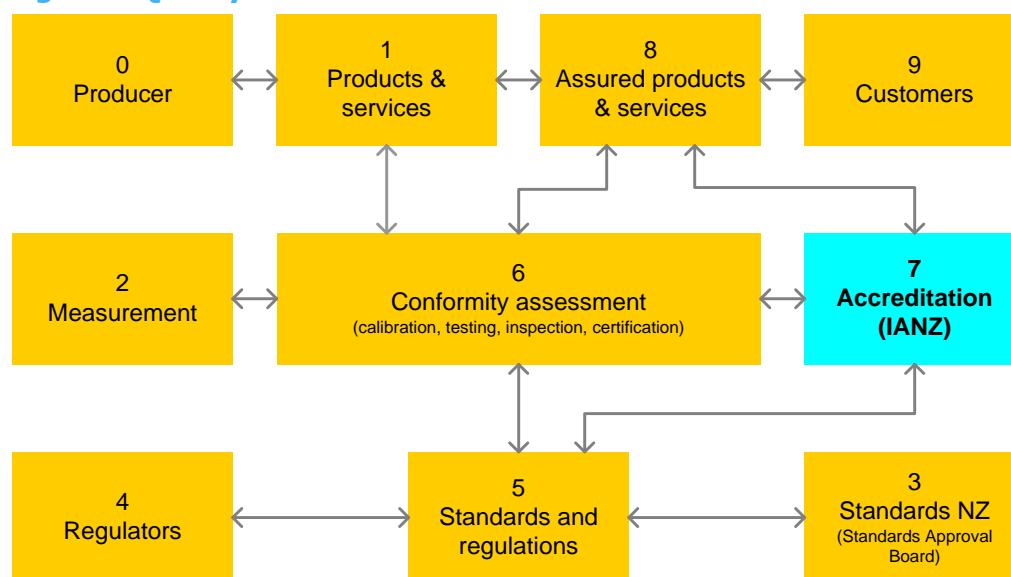
⁵ A thoughtful and wide-ranging overview of the role of standards and similar devices in the modern economy is Swann (2010), where he deals with the way standards and accreditation work alongside and reinforce one another.

⁶ For a broad discussion of the way trust works in economic terms see various contributions items in Kramer (2006). A specific practical example (from a different field) of the way accreditation builds trust is Bekkers (2003). He shows how accreditation can directly impinge on the way agents behave, as it provides a backing for increased trust among those considering making donations.

Participants can shortcut these issues and just rely on the accreditation system as a basis for trusting that their expectations will be met and thus not have to incur extra cost and time in requesting their own procedures.

The simple generic model⁷ in Figure 4 shows where an accreditation body fits into the wider quality infrastructure system.

Figure 4 Quality infrastructure



Source: Swann 2016, adapted for New Zealand

2.4. Transaction costs – encouraging improvement

Economic progress is built on improvements in the way things are done. Allowing, or better encouraging, innovation is a key factor in this process. As we have discussed, testing and assurance is a vital part of the modern economy at both the producing and the consuming level. Enhancing the way this process is carried out pays off in the modern world.

The use of accreditation to provide assurance about such systems plays a minor but supportive role in this process. By providing independent recognition of competence, the accreditor can check and give assurance of the workings of alternative service providers and innovative methods to provide confidence to the interested groups.

A well-developed sophisticated service with a significant staff of experts is well placed to keep up with innovations as well as check the way the fresh approaches work in practice.

⁷ This is based on work by Swann (2016). He founds it on a formal mathematical analysis to allow the degree of interaction between the elements shown to be quantified - subject to data availability.

2.5. What are the actual economic effects of accreditation?

There are no local studies that look at the impact of the whole accreditation system. And most international reviews focus on areas not those of interest such as academic qualifications, or hospitality industry training. Even those mentioned previously (Swan, and Frenz and Lambert)⁸ are not particularly helpful in providing a guide to the value of the New Zealand system, aside from at a rather general level – though see below for an illustrative thought experiment relating to our economic situation.

So, to gain an insight into the local situation, the previous high level discussion of the way accreditation works must be made more specific by pushing the effects down into specific impacts on sectors of the economy. This leaves certain, possibly key, aspects of accreditation to one side. These include the more technical assessment areas like calibration and testing labs.

The key areas where IANZ considers contributions have been made include:

- Quality management standards using ISO 9001.
- Marketing and reputation.
- Service quality.
- Customer requirement.
- Legal/regulation.

Using the broad model above and looking at the potential areas of application, the characteristics that accreditation provides can be identified – Table 1.

Dynamics and future value – where does IANZ fit?

As already mentioned the BGA is a government policy framework supporting sustained growth by the New Zealand economy. One of its six action areas under the Economic Success heading is Exports, where the aim is to have “growing international businesses that are able to add value to volume and seize opportunities in an increasingly Asia-Pacific-centred world.”

One crucial thread in this drive to have customers pay more per unit via a better offering to the market: having purchasers assess and accept as our products as of higher quality. There are different ways this can be achieved, including straight out marketing, but one aspect which fits with New Zealand’s history and product mix is to build a reputation for sheer technical excellence.

Obviously, a necessary pre-condition for this approach is for the products concerned to be superior quality, but that is not usually sufficient. For quality to be fully reflected in the prices paid, an independent mechanism is required to ensure the reliability of the facts of the situation. IANZ has created a web of international connections that mean it can provide such in-market assurances without the products having to be tested many times by many different agencies abroad.

⁸ Full details given in references section.

In addition, this type of assurance can be seen as the handmaiden of increased market robustness. Higher quality products tend to continue to sell through market disruptions, as price is not the sole factor determining their attraction⁹, and accepted independent quality assurance is a 'natural hedge' against sudden customer concern about inherent product quality.

Seen through this lens, **IANZ accreditation is a way of supporting the desired move up the value chain** through a straightforward method that allows the qualities of the New Zealand products to "speak for themselves" into the various markets in which we are trying to make headway. It does not require massive scale to use, and can be expanded across different countries without further significant investment. As such it is redolent of the famous quote from Rutherford¹⁰: "We haven't the money, so we've got to think."

Overall, IANZ is likely to form an increasingly valuable part of the set of supporting institutions that enable New Zealand to be an international 'player' reaping strong returns from the global marketplace.

⁹ A common phenomenon in situations where the normal trading is disrupted by events, resulting in increased uncertainty, is the "flight to quality."

¹⁰ Quoted by R. V. Jones, *Bulletin of the Institute of Physics* (1962), **13**, No.4, 102.

Table 1 Characteristics of IANZ accreditation services

Service	Need	Role of accreditation
Export certification	Exports, by definition, are moving between economic systems. What is required and/or trustworthy in the destination is, in general, different from what prevails in the originating country. A reliable, low cost method of providing such assurance is needed.	To provide simple, low cost assurance that the destination requirements are being met, a single agency can be used. This falls naturally to an accreditation agency. And a crucial factor is to remove all suggestions of conflict of interest, or corruption. The national accreditation agency (because of structure and business model) satisfies that aspect.
Medical laboratory certification	Maintaining technical standards is vital for medical and biological testing. Consumers do not have the time nor the readily available expertise to check that the services offered are up to the quality required. They need reliable expertise.	Accreditation offers a standard of independent expert checking to assure users that tests and their results meet required levels of quality. The scale of the national service lets economies of scale and scope lower costs.
Building consent authority certification	Building consents are provided by many different authorities and entail technical issues. But consents are to assure the public and individual clients that all projects meet prescribed standards. Independent checking is needed.	The accreditation service ensures consistent national minimum standards are achieved and held. Independence is assured by the arms-length relationship with those being tested, plus the basis of the whole enterprise on accuracy and integrity.
Workplace drug testing	Drug testing of employees is a new and growing field. Because of its potential consequences for all those involved (both the employees and those who may be put at risk by their drug use) it is vital the tests and their interpretation are beyond reproach.	Accreditation allows a small group of experts to cover the country and ensure an appropriate national standard is maintained in both testing and interpretation.
P Lab testing	This relatively new threat is a serious one where standards are still being established. But there is still a requirement that contamination can be aptly certified to avoid wider continued exposure.	External accreditation allows a few experts to check the work practices and interpretation standards of all the facilities involved and provide an assessment of their quality.
Water testing laboratories	The role of water in today's world is varied and there is a correspondingly wide set of tests and standards employed to assure users of different types that the content is what is being claimed. The full range of tests need to be reliable and kept up to the mark.	Accreditation by an arms-length agency means that the users can be assured that the testing regime is working to the expected standards.

Source: NZIER

3. IANZ by the numbers

As noted above, we have found no complete economic impact assessments of an accreditation service in the literature. However, we can think of IANZ's services as having direct and facilitating economic impacts.

We do not construct a counterfactual here, so the figures presented below should not be interpreted as the gross economic impacts of IANZ's services. That is, it is difficult to determine precisely what would happen if IANZ did not exist.

However, there would need to be *some* form of substitution, as many of New Zealand's exports and domestic sectors are required by regulations to be accredited.

In our view, the two most likely outcomes if IANZ did not exist would be either:

1. An overseas accreditation agency such as NATA from Australia is engaged to provide accreditation services in the New Zealand economy; or
2. The New Zealand government would need to step in and set up its own accreditation agency or agencies.

Under either scenario, the expected impacts would be an increase in the cost of accreditation, as neither alternative supplier would be likely to be as efficient or effective as IANZ given its long history and depth of knowledge of the New Zealand market.

This increased cost would dampen the margins and overall competitiveness of many sectors of the New Zealand economy, which would be contrary to the Business Growth Agenda objectives mentioned in section 1.2 above.

3.1. Direct economic impacts

IANZ and Telarc combined employ 79 staff, and deliver \$7.6 million of payments to employees.

They spend a further \$5.8 million on other inputs to production elsewhere in the economy, such as communication and IT services, accommodation and marketing.

3.2. Facilitating economic impacts

3.2.1. Employment

IANZ provides accreditation to a wide range of sectors of the New Zealand economy. By looking at the number of workers in these sectors, we can get a sense of the wider employment-facilitating role that IANZ plays in the economy.

This doesn't imply that these jobs wouldn't exist without IANZ's presence, merely that there is risk exposure and that IANZ operates across the economy helping firms in these sectors to produce and export goods and services.

Table 2 IANZ-facilitated jobs

Based on February year 2016 Business Demography data

Sector	2016 employment	IANZ role in facilitating jobs
Basic Chemical & Chemical Product Manufacturing	8,520	Accreditation of testing labs
Beverage & Tobacco Product Manufacturing	4,900	Accreditation of wine testing
Construction Services	8,200	Accreditation of Building Consent Authorities
Dairy Product Manufacturing	16,020	Accreditation for chemical and microbiology
Electricity & Gas Supply	10,455	Accreditation of electricity and gas meters and gas composition
Fabricated Metal Product Manufacturing	23,605	Accreditation of mechanical testing labs and welder testing facilities
Fruit, Oil, Cereal & Other Food Product Manufacturing	4,250	Accreditation for food lab testing
Health Care & Social Assistance	89,250	Accreditation for medical testing labs and radiology practices
Horticulture & Fruit Growing	30,090	Testing of pesticide residues and plant viruses
Meat & Meat Product Manufacturing	30,750	Accreditation for chemical and microbiology
Mining	5,093	Assists with mines inspections; test products; environmental testing
Motor Vehicle & Motor Vehicle Parts & Fuel Retailing	24,860	Accreditation of legal weights and measures
Petroleum & Coal Product Manufacturing	2,650	Accreditation of testing labs
Polymer Product & Rubber Product Manufacturing	12,080	Accreditation of testing labs
Primary Metal & Metal Product Manufacturing	860	Accreditation of testing of sheet aluminium and steel
Professional, Scientific & Technical Services	3,150	Accreditation of scientific labs
Seafood Processing	6,500	Accreditation for chemical and microbiology
Sheep, Beef Cattle & Grain Farming	5,300	Accreditation for chemical and microbiology
Supermarket, Grocery Stores & Specialised Food Retailing	68,550	Accreditation of legal weights and measures; food safety inspection accreditation
Textile, Leather, Clothing & Footwear Manufacturing	1,470	Accreditation of leather testing
Water, Sewerage, Drainage & Waste Services	1,165	Accreditation of water and waste discharge testing
Total IANZ-facilitated jobs	357,718	

Source: Statistics New Zealand, NZIER, IANZ

As shown in Table 2, in the year ended February 2016, IANZ supported production in sectors that employ 357,718 workers.¹¹ This is up 17% from 305,823 in 2000.

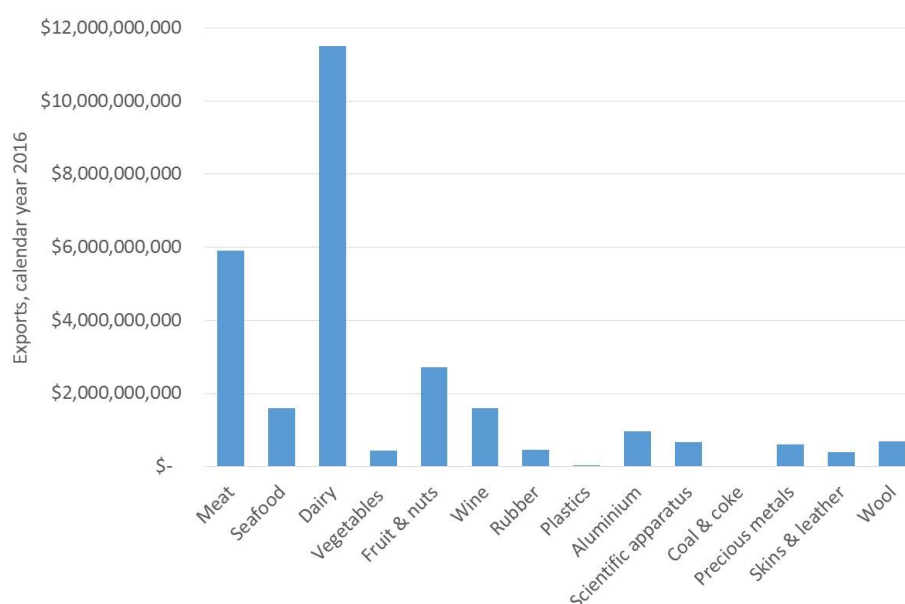
3.2.2. Exports

Through its accreditation activities, IANZ also plays a valuable role in supporting New Zealand's exports. Figure 5 shows the value of goods exported from sectors in which IANZ has a presence through its accreditation and testing activities.

The total value of these IANZ-facilitated exports was \$27.6 billion in calendar year 2016, or 60% of New Zealand's total merchandise exports.

Figure 5 IANZ-facilitated goods exports

Export values, calendar year 2016



Source: Statistics New Zealand, NZIER

3.2.3. Gross Domestic Product (GDP)

Using the same process as for employment (in 3.2.1), the sectors that IANZ supports produce \$35.8 billion of GDP, or 17.9% of the total economy.

3.3. Demonstrating IANZ's value to the New Zealand economy using a CGE model

In a recent survey¹², UK firms report that accreditation delivers them an average 8% price premium over products that are not accredited. This provides an indication of

¹¹ Note we have presented the jobs data in aggregated sectors for simplicity. In calculating these job figures, we have used more detailed sector data, so that not all of the (say) jobs in the professional, scientific and technical services sector are facilitated by IANZ, since this sector also includes legal services, corporate head office staff, accountants, etc.

¹² Frenz and Lambert, 2013

the additional value generated by accreditation services of the type that IANZ delivers here.

No such survey exists in New Zealand, but we can explore the economic impacts of IANZ's services by considering the following question:

What if that 8% accreditation price premium was also relevant for New Zealand?

Note that we expect this 8% premium would be a **conservative estimate in the New Zealand context**. The New Zealand economy, and especially its primary sector exports, is much more heavily reliant on accreditation than is the UK economy.

By way of illustrating the importance of IANZ accreditation in supporting Kiwi firms' revenue, a recent IANZ customer satisfaction survey¹³ found that:

- 26% of 247 respondents report that 61-100% of their revenue is reliant on IANZ accreditation
- 8% report that 31%-60% of their revenue is reliant on IANZ accreditation
- 16% report that 0-30% of their revenue is reliant on IANZ accreditation.

These figures give us a degree of confidence that the 8% price premium we model below is not unreasonable, and may well be an under-estimate.

3.3.1. Modelling approach

To explore this question, we use our Computable General Equilibrium (CGE) model of the New Zealand economy to explore a scenario where we effectively remove this price premium as a way of proxying how the New Zealand economy would look if IANZ were not present and no alternative accreditation services were available to support New Zealand businesses.

Technical details of our TERM-NZ CGE model are in Appendix B.

We run the model in its static form, meaning we simply compare the economy after we remove the 8% accreditation price premium with the business-as-usual (BAU) scenario in 2016. There is no explicit time dimension in this modelling run, so we do not look at the adjustment path of the economy before and after the removal of the price premium.

We use a long-run model closure, which assumes national employment is fixed, so all labour market effects occur through changes to real wages.

The scenario we model is a simple one. For the export industries that rely on accreditation (see section 3.2.2 above), we reduce the margins they receive on their overseas sales by 8% – essentially an export price shock. As export prices fall, exporters are willing to supply less, which leads to lower export volumes.

As always in CGE modelling, there are offsetting factors that mitigate some of the losses experienced by directly affected sectors. Specifically, as fewer resources (land, labour, capital) are required in the accredited export industries, this frees up resources for the non-tradable sector and non-accredited export industries.

In addition, factor costs such as real wages and the cost of capital will fall in response to lower demand from accredited export industries. This reduces the costs of

¹³ Kantar TNS. 2017. 'IANZ customer satisfaction 2017 TRI*M analysis'. Report to IANZ, April 2017.

production for non-tradable and non-accredited export industries. We would therefore expect these industries to expand.

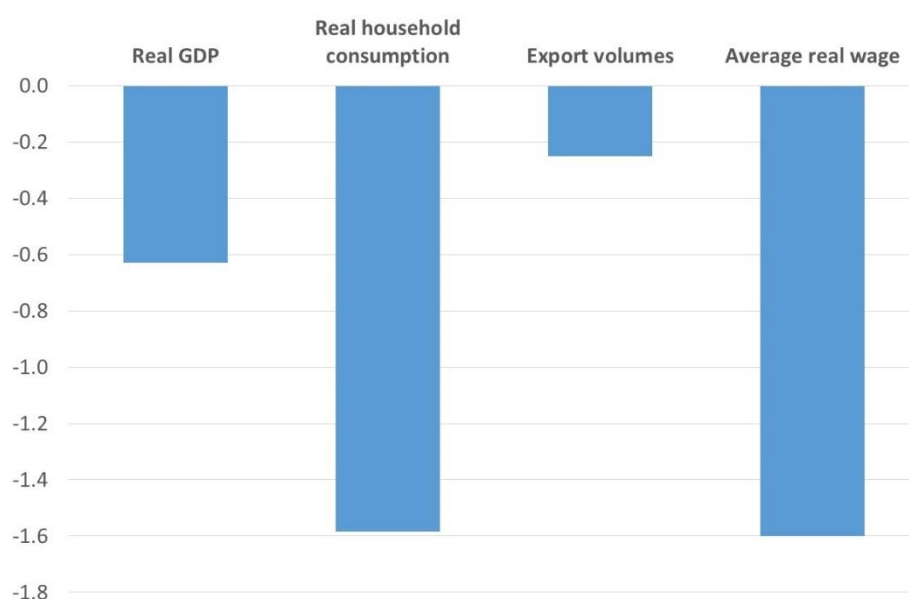
3.3.2. Modelling results

If IANZ did not exist and there were no comparable accreditation services available, the macroeconomic impacts of an 8% decrease in accredited industries' export margins would be significantly negative, as shown in Figure 6:

- Real GDP would fall by 0.63%, or \$1.65 billion
- Real wages economy-wide would fall by 1.6% as lower accredited export production leads to lower demand for labour¹⁴
- Real household consumption – a measure of living standards – would fall by 1.58% or \$2.3 billion, as households have lower incomes as real wages drop.

Figure 6 Macroeconomic impacts of removing 8% accreditation price premium

% change compared to BAU

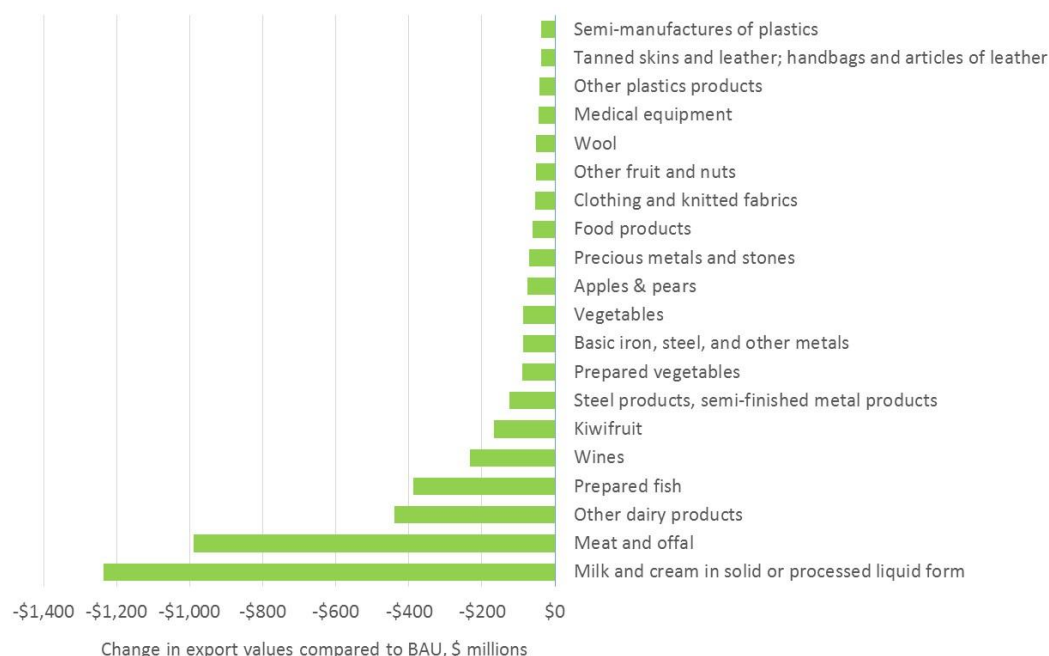


Source: NZIER

¹⁴ Recall that we fix national employment in our modelling closure, so all labour market effects are felt through real wages. In reality, the labour market impacts would be a mixture of fewer jobs and lower real wages.

Figure 7 Export impacts of removing 8% accreditation price premium – 20 largest commodity impacts

Change in export values from BAU, \$ millions



Source: NZIER

Figure 7 shows the impact on export values from removing the accreditation price premium. We show only the 20 largest drops in commodity export values here, and a full set of results is provided in Appendix C.

Unsurprisingly, our primary exports – which rely heavily on accreditation to demonstrate their traceability and conformity – would be most significantly affected. Dairy products, meat, wine, fish, kiwifruit and other food products are amongst the most hard-hit. Metal and metal products, and mineral products (crude petroleum, coal, coke), also suffer.

In aggregate, the value of accredited exports fall by \$4.54 billion, or 16.4%. The export value impact is greater than 8% because export volumes also fall in response to lower prices. The precise mix of price and volume impacts varies considerably between sectors and commodities.

As expected, non-accredited commodities benefit from greater availability of resource, and lower input costs. The aggregate export values of these non-accredited commodities lifts by \$2.19 billion

The net impact on total export values from the removal of the accreditation price premium is a loss of \$2.36 billion.

3.4. Accreditation in practice

IANZ accreditation supports Kiwi businesses to help them export their innovative goods and services. Examples include:

- **Karina Water**, a Stratford-based business that sells drinking water treatment plants that are built entirely within 6-metre transport containers. Within an hour of being installed, these plants deliver clean drinking water. To satisfy drinking New Zealand and Australian water standards – which gives purchasers the confidence that their products are reliable and high quality – the business owns an IANZ-accredited laboratory for water and wastewater analysis.
- **New Zealand's wool exporters** are able to sell their wool via auctions that are approved by the International Wool Textiles Organisation. To participate in these auctions, countries are required to have their wool tested in accredited labs, and IANZ provides these services in New Zealand. This accreditation gives wool buyers confidence that they can trust the quality of the product being auctioned.

There are also numerous examples of situations where accreditation could have prevented problems:

- **Steel and Tube, along with four other companies**, was investigated by the Commerce Commission in 2016 because it labelled “many thousands” of sheets of steel mesh products with the logo of an IANZ-accredited testing laboratory, when in fact the sheets had been tested at an in-house laboratory with no IANZ accreditation. This had an immediate negative impact on the company's share price, wiping millions off its value in the short term. All Steel and Tube steel mesh is now tested in IANZ-accredited laboratories.
- In 2009, the Auckland District Health Board (DHB) awarded the contract for medical testing in Auckland to **Labtests**. Labtests was not required to be accredited with IANZ and experienced a series of high-profile problems related to delays and inaccuracies in testing procedures. To relieve some of the pressure on Labtests, the previous provider, DHL – an IANZ accredited organisation – was asked by the DHB to take on 10% of the workload. This had a negative impact on the expected savings from awarding the entire contract to Labtests, who are now accredited with IANZ.
- **Canterbury City Council (CCC)** lost its ability to issue building consents in 2013 after IANZ – which is responsible for accrediting local authorities for this purpose – revoked its accreditation. IANZ was concerned that CCC's consent approval processes and timeliness were not up to accreditation standard. While alternative arrangements were made to allow consents to be issued, the revocation of accreditation status resulted in significant financial and reputational costs to CCC and added unwelcome uncertainty to the Christchurch rebuild programme. CCC was eventually granted authority to issue consents in 2015.

4. Conclusion

IANZ plays a crucial role in supporting the New Zealand economy. It is an important part of New Zealand's 'quality infrastructure', and its accreditation activities allow New Zealand and overseas consumers and firms to buy accredited goods and services with confidence.

IANZ now facilitates \$27.6 billion of New Zealand's exports – over 56% of our total goods exports. Given the inherent challenges of exporting from New Zealand, such as a lack of scale and distance to markets, Kiwi firms need to do all they can to 'control the controllable'.

One key area they *can* control is the quality of their products, and its independent rating. Exporters need to be known and recognised overseas as delivering high-quality, safe goods and services to market. IANZ accreditation provides precisely this 'seal of approval', which reduces exporters' transaction costs and risks, and supports ongoing government and business efforts to lift the value-added from our exports.

An illustrative economic modelling exercise provides an indication of the additional value that accreditation delivers to New Zealand exporters. If the 8% 'accreditation price premium' that an overseas survey suggests exporters receive from accreditation were to be removed, it would cost accredited exporters around \$4.5 billion, and cause New Zealand's GDP to drop by 0.63% or \$1.65 billion.

IANZ also plays an important role in the domestic economy. Its accreditation services support industries that account for \$35.8 billion of New Zealand's GDP, and which employ almost 358,000 workers (17% of total employment).

Appendix A References

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Appendix B TERM-NZ model

A CGE model works by using data to describe the economy in a benchmark year, and then specifying hundreds of mathematical equations to represent the relationships between data values.

The method allows us to model the effects of accreditation on the exporting sectors that depend on it to get an ‘accreditation price premium’ growth in export markets, and identify how this premium impacts the national economy, including impacts on upstream and downstream sectors.

NZIER’s TERM-NZ (“The Enormous Regional Model”) is a bottom-up regional CGE model which treats each region as a separate economy. All regions are linked via inter-regional trade in commodities and movements in labour and capital.

The model includes 106 industries and 201 commodities in its standard form. It is based on Statistics New Zealand’s 2013 input-output tables, which have been updated to reflect the economy in 2016.

NZIER’s TERM-NZ has been built in consultation with CGE experts at Centre of Policy Studies (COPS) which is now based at Victoria University, Melbourne. COPS is well-regarded internationally and recognised as a world leader in CGE modelling.

More technical detail on the model is available on request.

Appendix C Detailed export results

Table 3 Change in export values for commodities that are accredited

Commodity	Export BAU, \$ million	% change in export volume	% change in export price	Change in accredited exports in \$ million
Milk and cream in solid or processed liquid form	8694.6	-7.7	-6.5	-1235.6
Meat and offal	6672.8	-9.6	-5.2	-989.1
Other dairy products	5600.0	-4.8	-3.1	-439.1
Prepared fish	1560.3	-21.4	-3.5	-388.1
Wines	1444.6	-10.0	-6.0	-232.0
Kiwifruit	1133.1	-8.4	-6.4	-167.6
Precious metals and stones	904.2	-3.0	-4.8	-70.9
Basic iron, steel, and other metals	931.2	-5.8	-3.6	-87.7
Medical equipment	702.1	-1.5	-4.8	-44.1
Prepared vegetables	444.3	-15.5	-4.8	-89.9
Apples & pears	410.6	-13.1	-5.4	-75.8
Steel products, semi-finished metal products	690.6	-16.8	-1.2	-124.3
Tanned skins and leather; handbags and articles of leather	433.6	-1.8	-7.1	-38.5
Food products	1677.4	-2.3	-1.5	-62.4
Vegetables	324.9	-23.7	-2.9	-86.4
Clothing and knitted fabrics	602.6	-6.7	-2.4	-54.7
Photographic and scientific equipment	329.3	-1.6	-5.3	-22.6
Other plastics products	249.1	-11.9	-5.0	-42.1
Wool	228.8	-18.6	-4.1	-52.1
Other fruit and nuts	178.9	-27.2	-2.0	-52.2
Semi-manufactures of plastics	143.1	-22.7	-3.1	-37.0
Prepared fruit and nuts	120.4	-18.0	-4.3	-26.8
Forage products, fibres, sugar crops, unmanufactured tobacco	104.0	-13.8	-5.2	-19.8
Spirits and tobacco products	324.5	-4.6	-1.1	-18.5
Beer, soft drinks, and fruit juices	288.7	-10.0	0.0	-28.7
Other textiles	151.6	-5.5	-2.6	-12.4
Rubber	65.9	-20.8	-3.6	-16.1
Plastics in primary forms	52.7	-20.5	-3.7	-12.8
Footwear	108.4	-5.5	-2.6	-8.8
Living plants, buds, seeds, spice, and aromatic crops	48.9	-27.6	-1.9	-14.4
Fish	173.1	-2.9	-1.6	-7.7

Yarn and thread	93.4	-1.7	-3.4	-4.8
Woven fabrics	53.1	-1.5	-3.4	-2.6
Rubber tyres and tubes	10.1	-27.7	-1.8	-3.0
Cereals	8.3	-30.3	-1.1	-2.6
Television, cameras, and other electronic goods	327.1	2.4	-0.5	6.1
Coal, coke, and tar products	401.1	7.3	-1.4	23.8
Total accredited commodities	\$27,645			\$-4,542

Source: NZIER

* Note that not all exports in these commodities are classified as ‘accredited’. To align our CGE model database with the data presented in section 3.2.2, we have split some commodities between accredited and non-accredited.

Table 4 Change in export values for non-accredited commodities

Commodities with zero exports in the BAU have been deleted from this table

Commodity	Export BAU, \$ million	% change in export volume	% change in export price	Change in exports in \$ million
Crustaceans	304.2	-5.6	1.2	-13.6
Other petroleum products	1421.0	-0.8	0.2	-8.6
Bacon, ham, and smallgood products	429.2	-2.2	0.5	-7.7
Hides and skins	386.0	-2.5	0.5	-7.6
Other animal products	293.2	-0.8	0.2	-1.9
Starches	102.5	-1.2	0.2	-1.0
Weapons and ammunition; accumulators, primary cells, and batteries	22.7	-1.3	0.3	-0.2
Fishing services	1.2	-13.6	3.0	-0.1
Road transport freight services	0.2	12.4	-2.3	0.0
Gypsum, limestone, cement, and building stone	1.1	6.6	-1.3	0.1
Cleaning	1.3	9.8	-1.9	0.1
Services incidental to manufacturing	1.2	10.8	-2.0	0.1
Natural gas	2.4	5.8	-1.1	0.1
Freight transport agencies and other supporting transport services	1.2	15.2	-2.8	0.1
Chemical and fertilizer minerals and salt	19.0	1.0	-0.2	0.2
Railway passenger transport	17.2	2.9	-0.6	0.4
Supporting services for road and rail transport	3.3	14.7	-2.7	0.4
Maintenance of domestic and office equipment	2.5	20.0	-3.6	0.4
Sheep	1.3	39.0	-6.4	0.4
Railway transport freight services	5.2	11.0	-2.1	0.5
Support services to agriculture (including animal husbandry)	2.5	23.0	-4.1	0.5
Supporting services for air transport	6.6	9.6	-1.8	0.5
Services auxiliary to financial services	5.5	14.6	-2.7	0.7
Placement and supply of personnel	7.7	10.6	-2.0	0.7
Jewellery	164.9	0.8	-0.2	1.1
Macaroni and noodles	29.9	4.7	-0.9	1.1
Sands, pebbles, gravel, clays, stone, and bitumen	17.0	8.4	-1.6	1.2
Iron ores, non-ferrous metal ores, and concentrates	113.5	1.3	-0.3	1.2
News agency, library, and archive services	9.1	16.7	-3.0	1.2
Prefabricated buildings	15.7	10.6	-2.0	1.4
Sea transport freight services	14.1	12.3	-2.3	1.4
Other livestock	189.7	1.1	-0.2	1.7
Broadcasting, programming, and programme distribution services	30.3	7.0	-1.3	1.7
Supporting services for water transport	15.2	13.9	-2.6	1.7

Internet telecommunications services and online content	16.0	13.6	-2.5	1.8
Metal containers and steam generators	20.6	11.3	-2.1	1.9
Glass and glass products	35.7	7.1	-1.4	2.1
Petrol	43.3	6.0	-1.2	2.1
Wholesale trade	250.3	1.0	-0.2	2.1
Animal and vegetable oils and fats	301.8	0.9	-0.2	2.2
Passenger transportation by waterborne vessels	46.8	6.2	-1.2	2.3
Paints	88.9	3.8	-0.7	2.7
Non-structural ceramic ware and clay products	53.0	6.6	-1.3	2.8
Other support services	21.4	16.5	-3.0	2.9
Animal feed	137.8	2.7	-0.5	3.0
Electricity	32.5	11.9	-2.2	3.1
Plaster, lime, and cement	27.7	14.9	-2.7	3.4
Other transport equipment and parts	46.2	9.3	-1.8	3.5
Newspapers and journals	43.4	10.1	-1.9	3.6
Sports goods	31.6	13.9	-2.6	3.6
Storage and warehousing services	28.2	15.7	-2.9	3.6
Aircraft and spacecraft	104.5	4.5	-0.9	3.8
Non-residential building construction	45.5	10.3	-1.9	3.8
Leased commercial property services	44.1	11.0	-2.1	4.0
Wood and non-wood forest products	2123.4	0.2	0.0	4.1
Wood containers and other wood products	23.7	21.3	-3.8	4.2
Grain products	117.9	4.7	-0.9	4.4
Gambling services	49.0	11.7	-2.2	4.7
Engines	98.2	6.3	-1.2	5.0
Cargo handling services	127.0	5.1	-1.0	5.2
Packaged software, tapes, audio, and video records	39.5	18.1	-3.3	5.9
Electric motors, generators, and transformers	393.3	1.9	-0.4	6.1
Other personal and community services	52.5	16.0	-2.9	6.8
Road passenger transport	195.9	4.4	-0.9	6.9
Medical, dental, and other health services	63.3	13.6	-2.5	7.0
Retail margin	64.0	14.9	-2.7	7.8
Diesel	184.8	5.2	-1.0	7.8
Legal services	87.5	12.5	-2.3	8.9
Intellectual property licensing services	269.6	4.4	-0.8	9.5
Wastes and scraps	548.0	2.2	-0.4	9.6
Sugar and confectionery products	308.1	4.0	-0.8	9.8
Articles of concrete and stone	101.1	12.4	-2.3	10.2
Other insurance services	99.0	12.7	-2.4	10.3
Computers, parts, and office machinery	227.2	5.8	-1.1	10.6

Domestic appliances	163.8	8.1	-1.5	10.7
Equipment hire services	133.9	10.0	-1.9	10.9
Other business services	93.3	14.4	-2.6	10.9
Accounting and taxation services	96.2	14.2	-2.6	11.1
Machinery for mining	197.3	7.1	-1.4	11.4
Bakery products	214.1	6.6	-1.3	11.4
Furniture	112.0	12.7	-2.4	11.6
Postal and courier services	97.6	14.7	-2.7	11.7
Air transport freight services	64.6	23.0	-4.1	12.2
Libraries, museums, and art	91.5	16.4	-3.0	12.3
Other special-purpose machinery	179.4	8.6	-1.6	12.4
Advertising and marketing services	103.9	15.0	-2.8	12.7
Carpets	208.4	7.6	-1.5	12.8
Natural and man-made textile fibres	544.3	3.1	-0.6	13.5
Other chemical products and man-made fibres	1550.7	1.1	-0.2	13.5
Packaging products of plastics	258.7	6.7	-1.3	14.0
Books and other printed material	353.9	5.0	-1.0	14.2
Machinery for food production	95.1	18.4	-3.3	14.4
Wholesale margin	121.1	14.5	-2.7	14.4
Maintenance of other equipment	128.5	14.8	-2.7	15.5
Sport and recreation services	140.2	13.8	-2.5	15.7
Building joinery	111.0	17.5	-3.2	15.9
Structural metal products	143.2	13.7	-2.5	16.0
Fertilisers and pesticides	245.9	8.1	-1.5	16.0
Central government administration services	135.1	15.5	-2.8	17.1
Games and toys	200.8	10.6	-2.0	17.2
Telecommunications services	205.0	10.8	-2.0	18.0
Architectural and engineering services	211.8	11.0	-2.1	18.9
Crude petroleum	2166.1	1.1	-0.2	19.0
Other electrical equipment and parts thereof	719.9	3.3	-0.6	19.1
Ships, pleasure, and sporting boats	330.1	7.4	-1.4	19.7
Leased residential property services	223.3	11.2	-2.1	20.3
Motor vehicles, trailers, and semi-trailers; bodies (coachwork)	401.7	6.9	-1.3	22.5
Secondary education	196.3	14.5	-2.7	23.3
Cattle	113.9	27.1	-4.7	25.5
Soap and perfumes	259.9	12.2	-2.3	25.8
Other fabricated metal products	405.9	8.0	-1.5	26.3
Research and development	119.7	28.0	-4.8	27.7
Agricultural and forestry equipment	336.8	10.7	-2.0	29.2
Pharmaceutical products	488.2	9.3	-1.8	36.7

Panels, boards, veneer sheets, and plywood	543.4	8.5	-1.6	37.4
Financial intermediation services	338.2	13.7	-2.5	37.7
Other education services	346.1	14.1	-2.6	39.7
Beverage services	297.4	17.0	-3.1	41.3
Takeaways	396.5	13.1	-2.4	42.4
Maintenance of transport machinery and equipment	441.0	12.0	-2.2	42.9
Management consultancy	572.3	9.4	-1.8	43.4
General industrial machinery	1006.8	6.2	-1.2	50.7
Travel arrangement and sightseeing transportation services	563.7	13.0	-2.4	59.5
Motion picture, radio, TV services	886.7	8.6	-1.6	61.5
Pulp, paper, and paperboard	672.7	11.9	-2.2	64.9
Basic chemicals; other paper and paperboard products	936.7	9.0	-1.7	68.4
Computer software and services	779.5	11.9	-2.2	75.6
Wood	1148.5	8.2	-1.6	76.1
Meal services	988.9	13.7	-2.5	110.1
Higher education	1349.4	12.8	-2.4	140.8
Accommodation	1868.1	10.5	-2.0	159.4
Air passenger transport	3102.5	6.8	-1.3	171.1
Total non-accredited exports	\$46,473			\$2,185

Source: NZIER