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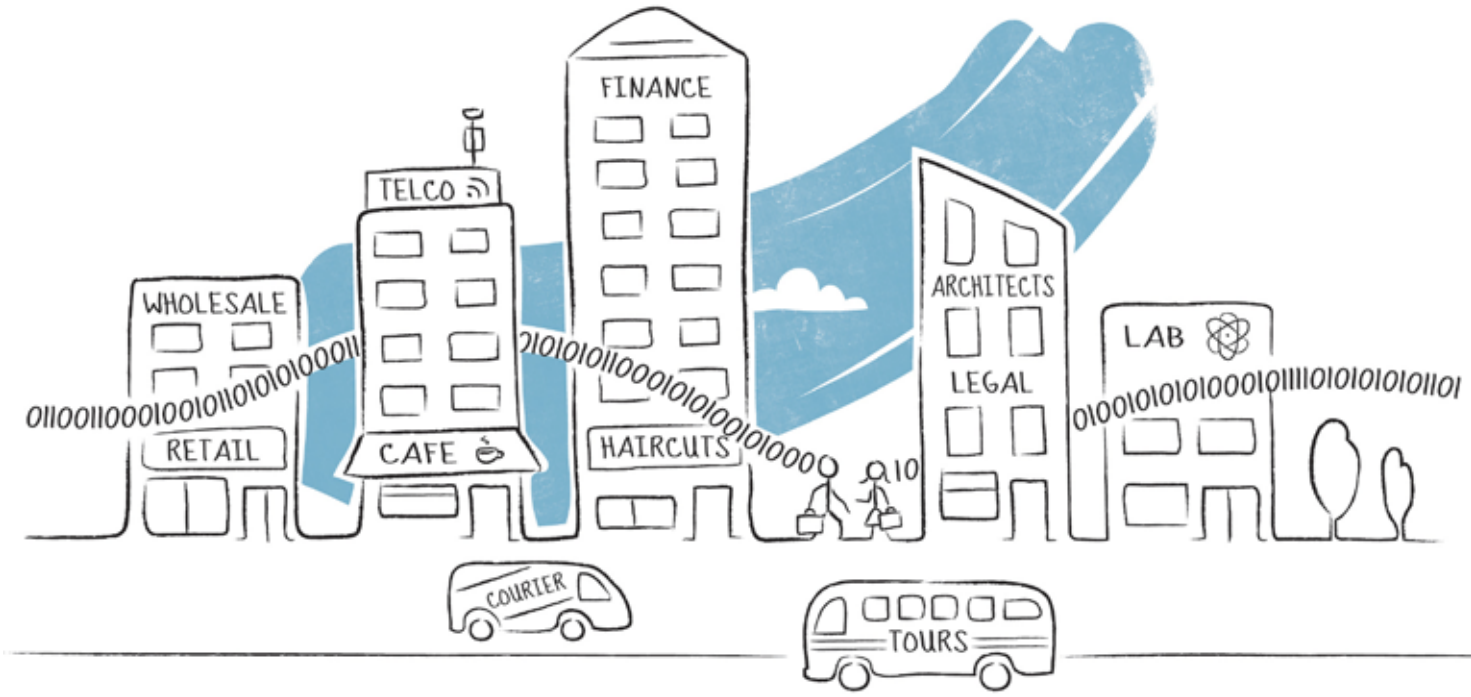
PRODUCTIVITY COMMISSION
Te Kōmihana Whai Hua o Aotearoa




# Boosting productivity in the services sector

## 1st Interim Report

July 2013

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**About us**

The Commission is an independent Crown entity, established in April 2011. We undertake in-depth inquiries on topics selected by the Government (our core business), carry out productivity-related research that assists productivity over time and promote understanding of productivity issues. The Commission aims to provide insightful, well-informed and accessible advice that leads to the best possible improvement in the wellbeing of New Zealanders. The Commission's work is guided by the New Zealand Productivity Commission Act 2010.


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## 1st Interim Report

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# Terms of reference

## Boosting productivity in the services sector

### Context

1. Services are often described as things you can buy or sell but cannot carry. From browsing the internet, dining out, buying and selling a home to receiving an education or medical treatment, services make up a wide and diverse range of activities that impact on the lives of all New Zealanders on a daily basis

2. The services sector stands out in New Zealand's economy, accounting for over 70 percent of registered businesses, national output and employment. Services make up a critical part of New Zealand's export revenue. In 2009, New Zealand's services exports were valued at $12.7 billion and represented 22 percent of all exports. Travel and transportation services accounted for 77 percent of services exports.

3. Furthermore, services form a valuable input to many of New Zealand's exports. Nearly half of the value of New Zealand's exports can be attributed to value-added from the services sector.

4. Despite the clear importance of the services sector to the New Zealand economy, relatively little is known about the impact and drivers of service sector productivity. Measurement can be difficult, but overseas experience suggests that there is considerable variability in the degree to which countries have benefited from improved services productivity growth. In New Zealand, there has been considerable variation in productivity performance across the services sector.

5. Improving productivity in the services sector would contribute to a number of Government goals including to materially lift New Zealand's long-run productivity growth rate while maintaining our high rate of labour force participation, and to increase the ratio of exports to GDP to 40% by 2025.

6. Given the significance of the services sector to New Zealand's economy but the relatively small amount of study into the sector's productivity performance, the Government is commissioning a Productivity Commission Inquiry into Boosting Productivity in the Services Sector.

### Purpose and Scope

7. The purpose of the inquiry is two-fold: to provide an overview of the role of services in the New Zealand economy and to provide policy options to lift productivity in the services sector.

#### A. The role of services in the New Zealand economy

8. This part of the inquiry should provide an overall assessment of the role and performance of the services sector in New Zealand. This assessment should:

   a) describe the recent productivity performance of the services sector, including the extent to which employment has shifted from high to low productivity sectors;

   b) assess the impact of the services sector on the New Zealand economy overall, including how it affects the performance of the primary and manufacturing sectors; and

   c) assess the performance of the New Zealand services sector against the experience of OECD and other small open economies.

#### B. Policy options to lift productivity in the services sector

9. Given the diversity of industries within the services sector, policy recommendations and lessons for lifting productivity are likely to be better informed by looking at selected issues or parts of the sector in more depth.

10. Informed by part A above, this part of the inquiry should provide detailed analysis on a selection of issues that are critical for lifting productivity in the relevant parts of services sector. This analysis should lead to policy recommendations to lift productivity in those parts of the services sector.

11. The Commission should have regard to the following criteria when determining the issues or parts of the sector on which it will undertake more in-depth analysis:

    a) whether the issues or parts chosen for further analysis have the potential to make a significant impact on New Zealand's overall productivity performance;

    b) the extent to which the analysis will be able to identify impediments to increasing productivity in the services sector and lead to concrete recommendations for changes to government policy which can overcome those impediments.

12. In applying the criteria above, the Commission should take into account the following aspects when determining the issues or parts of the sector on which it will undertake in-depth analysis:

    a) The increasing importance of services to GDP, to global trade, and as a contributor to the Government's goal of lifting the ratio of exports to GDP to 40% by 2025.

    b) The wide variation in the productivity performance of services subsectors and industries, and the ability to draw lessons from high performing subsectors (for example financial and insurance services) and to lift productivity in relatively poor performing subsectors (for example administrative and support services).

    c) The importance of information and communications technology in other OECD countries as a contributor to strong productivity growth and as an explanation for differences in productivity growth across countries.

13. The Commission should seek views from interested parties when determining the services sector issues on which it will undertake in-depth analysis.

### Other matters

14. Consideration of productivity in the services sector should be limited to market-provided services and therefore exclude study of services provided directly by the public sector. The Government has a wide programme underway to improve public sector productivity, detailed consideration of this sector is not possible within the time available to the Commission, and measurement issues in this sector also make analysis difficult.

15. The Commission should prioritise its effort by using judgement as to the degree of depth and sophistication of analysis it applies to satisfy each part of the Terms of Reference. In making this prioritisation, the Commission should emphasise the importance of making concrete policy recommendations in part B that maximise the impact on New Zealand's overall productivity performance.

### Consultation requirements

16. In undertaking this inquiry the Commission should consult with key interest groups and affected parties.

### Timeframe

17. The Commission must publish a draft report and/or discussion paper(s) on the inquiry for public comment, followed by a final report, which must be submitted to each of the referring Ministers by 28 February 2014.

Referring Ministers

Hon Bill English, Minister of Finance
Hon Steven Joyce, Minister for Economic Development

# The 1st interim report

This report contains the Commission's draft response to part A of this inquiry's terms of reference: an assessment of the role and performance of the services sector in the New Zealand economy. The report also outlines the Commission's proposed topics for in-depth study in part B of the inquiry.

Chapter 8 contains 19 questions to which responses are invited. However these questions are not intended to limit comment. The Commission welcomes information and comment on any part of this report and on any issues that participants consider relevant to the inquiry's terms of reference.

The Commission is particularly interested in submissions that provide feedback relating to the proposed topics for further analysis that are set out in chapter 8.

## Key inquiry dates

| | |
|---|---|
| Submissions due on the 1st interim report | 23 August 2013 |
| Announcement of Part B topics | Late August |
| 2nd interim report (draft Part B): | January 2014 |
| Final report to Government: | 28 April 2014 |

See Chapter 1 for an expanded inquiry timeline.

## Why you should register your interest

The Commission seeks your assistance in gathering ideas, opinions and information to ensure this inquiry is well-informed and relevant. The Commission will keep registered participants informed as the inquiry progresses.

You can register for updates at www.productivity.govt.nz/subscribe-to-updates, or by emailing your contact details to info@productivity.govt.nz.

## Why you should make a submission

Submissions provide information to the inquiry and help shape the recommendations made to the Government in the final report. Inquiry reports will quote or cite relevant information from submissions.

There will be one further opportunity to make submissions to this inquiry. You may choose to make a submission in response to one or both of these opportunities.

## How to make a submission

The due date for submissions in response to this report is **23 August 2013**. Late submissions will be accepted; however lateness may limit the Commission's ability to consider them fully.

Anyone can make a submission. It may be in written, electronic or audio format. A submission can range from a short letter on a single issue to a more substantial response covering multiple issues. Please provide relevant facts, figures, data, examples and documentation where possible to support your views. Every submission is welcomed; however multiple, identical submissions will not carry more weight than the merits of the arguments presented. Submissions may incorporate relevant material provided to other reviews or inquiries.

Submissions should include your name and contact details and the details of any organisation you represent. The Commission will not accept submissions that, in its opinion, contain inappropriate or defamatory content.

### Sending in your submission

Web: www.productivity.govt.nz/make-a-submission

Email: info@productivity.govt.nz

Post:

Inquiry into the Services Sector
New Zealand Productivity Commission
PO Box 8036
The Terrace
WELLINGTON 6143
New Zealand

The Commission appreciates receiving an electronic copy of posted submissions, preferably in Microsoft Word or searchable PDF format. Please email to info@productivity.govt.nz.

## What the Commission will do with submissions

The Commission seeks to have as much information as possible on the public record. Submissions will become publicly-available documents on the Commission's website. This will occur shortly after receipt, unless the submission is accompanied by a request to delay release for a short period of time, or marked 'in confidence'. Please contact the Commission before submitting 'in confidence' material, as it can only be accepted under special circumstances.

## Other ways you can participate

The Commission welcomes feedback about its inquiry. Please email feedback to info@productivity.govt.nz or get in touch to arrange a meeting with inquiry staff. There will be one further opportunity to make submissions and to meet with the Commission during the inquiry. See Chapter 1 for details.

# Contents

## Tables

## Appendix tables



## Figures

## Appendix Figures



## KEY

Q Questions

F Findings

# Commonly used terms and abbreviations

| Term | Description |
|---|---|
| agglomeration | Firms in related industries obtain *agglomeration economies* through locating near each other, reducing the costs of transporting goods, people and ideas. |
| ANZSIC | Australia New Zealand Standard Industry Classification. ANZSIC96 and ANZSIC06 refer to the 1996 and 2006 versions respectively. |
| capital deepening | An increase in capital intensity. |
| capital intensity | The amount of capital per worker. |
| convergence | The proposition that the per-capita income of poorer countries should, over time, converge towards that of the richest economies as capital and ideas flow from richer to poorer countries in search of higher returns. |
| directly-traded services | When the producer and consumer of a service are not normally co-located, a service is *directly traded* whenever: (a) consumer moves to the producer's location; (b) the producer moves to the consumer's location; or (c) the service itself is delivered across a distance. |
| distributive industries | Services industries that focus on the transport of people, and the exchange or movement of goods. The industries in this group are wholesale trade, retail trade, and transport, postal and warehousing. |
| economies of scale | Reduction of unit costs as the volume of production increases, due to large up-front or fixed costs being spread across all units. |
| embodiment perspective | A view of the services sector that emphasises the interconnectedness between goods and services and the industries that produce them. See Chapters 1 and 2. |
| FDI | Foreign direct investment. An investment made from outside New Zealand into a firm based within New Zealand. |
| former measured sector | The former measured sector is the industries included in Statistics New Zealand's standard productivity statistics from 1978 to 2011. The sector covered about 61% of the New Zealand economy in 2009. The 'sector' cuts across the three sectors of the economy, ie primary, goods-producing and services. |
| GFC | Global Financial Crisis. The economic downturn that started with a financial crisis in the US in 2007 and peaked in 2008. |
| goods-producing sector | The part of the economy consisting of the manufacturing, construction, electricity, gas, water and waste industries. Industries in the goods-producing sector span varying degrees of transformation, from initial processing of primary produce (eg frozen meat) through to elaborately-transformed manufactured items (eg electronics). |
| ICT | Information and communications technology. |
| industry | A group of businesses that have the same main activity as classified within ANZSIC, eg, retail trade. |
| information asymmetry | A situation involving a transaction between two or more parties, where one party has more or better information than the others. |
| information industries | Service industries that focus primarily on the management or creation of knowledge. These industries are extensive users of ICT and are highly innovative. The industries in this group are information media and telecommunications, finance and insurance, and professional, scientific and technical services. |
| intangible assets | Non-monetary assets which are identifiable but without physical substance, eg reputation, brand recognition, human capital, patents and databases. |
| labour productivity | Average output per unit of labour input (usually taken to be an hour of work). |

| Term | Description |
|---|---|
| market-provided services | Services that are provided at economically significant prices, usually to generate a profit. |
| measured sector | The measured sector is the industries included in Statistics New Zealand's standard productivity statistics from 1996 to 2011, covering all predominantly market industries. The measured sector covered 81% of New Zealand's GDP in 2009. The 'sector' cuts across the three sectors of the economy, ie primary, goods-producing and services. |
| modes (of services trade) | The distinct ways in which services can be traded at a distance. The General Agreement on Trade in Services defines four modes (modes 1 to 4), and this report introduces a fifth. See Box 2.4 in Chapter 2. |
| MFP | Multi-factor productivity. The amount of output produced that cannot be attributed to changes in the level of labour or capital input. It captures factors such as advances in knowledge, and improvements in management and production techniques. |
| mutual recognition | Two countries recognising compliance with each other's laws or regulations. |
| non-market provided services | Non-market provision by government or non-profit organisations occurs when they supply goods or services for free or below economically-significant prices. Health care and social assistance, education and training, and public administration and safety are the three service industries with the highest share of non-market provision |
| ODI | Outward direct investment. Investment by New Zealanders into firms or entities in other countries. |
| OECD | Organisation for Economic Co-operation and Development. |
| person-centred industries | Service industries that are highly person-specific. The industries in this group are accommodation and food, rental hiring and real estate, administration and support, arts and recreation, and other services. |
| PPP | Purchasing power parities (PPPs) are rates of currency conversion that equalize the purchasing power of different currencies. They are indicators of price level differences across countries for the same good or service. Using $US PPP exchange rates, for example, would result in an identical good across different countries having the same price when expressed in $US. |
| primary sector | The part of the economy consisting of the agriculture, forestry and fishing, and mining industries. These industries use natural resources to produce relatively unprocessed goods. |
| production perspective | A view of the services sector that emphasises commonalities in what firms do and the nature of their inputs. See Chapters 1 and 2. |
| productivity | A measure of output per unit of input. See Chapter 2. |
| productivity frontier | The world productivity frontier reflects the cutting edge of technology at the global level. It determines the maximum amount of goods and services that can be produced with a given quantity of inputs. |
| sector | Statistics New Zealand classifies productive activities in the economy into one of three sectors: primary, goods-producing and services. |
| services sector | The part of the economy consisting of all the service industries. |
| spatial transaction costs | The extra costs incurred because production and customers are not co-located. Spatial transaction costs include transport costs, tariffs and regulatory barriers. |
| sub-industry | A group of businesses within an industry that have more specific main activities. This term corresponds to subdivisions, groups and classes in ANZSIC. For example, 'legal and accounting services' is a sub-industry of 'professional, scientific and technical services'. |
| tradeable | A characteristic of a product, meaning that it can be sold in a location other than where it is produced. Tradeability varies by product and crucially depends on spatial transaction costs. Perfectly tradeable products should cost the same (adjusted for currency) wherever they are |

| Term | Description |
|---|---|
| | bought. |
| transaction costs | Costs incurred by the parties making an economic exchange, other than the amount paid directly for the goods or service purchased. |
| transaction perspective | A view of the services sector that takes account of features of services, and ways in which they are bought and sold, that distinguish them from goods. See Chapters 1 and 2. |
| transport costs | The costs of transporting a product from the producer to the customer, the producer to the point of consumption, and/or the customer to the point of production. |
| unilateral recognition | Recognising compliance with another jurisdiction's laws or regulations. For example, if a product meets sale requirements in one jurisdiction it can be sold in the other jurisdiction without needing to meet that jurisdiction's regulatory requirements. |
| value-added | *Industry* value-added is the value of gross output of an industry minus the costs of inputs provided by other industries.<br><br>*Export* value-added is the gross value of exported goods and services minus the costs of imported inputs used in their production. |

# Overview

The New Zealand economy is largely services based. The services sector accounts for nearly three-quarters of gross domestic product and is tightly interlinked with the other sectors of the economy. Services, including service inputs to merchandise exports, account for over half of New Zealand's total exports. Services-sector productivity, therefore, strongly affects the productivity of the economy as a whole and the wellbeing of New Zealanders.

New Zealand's productivity performance is below par compared with its OECD peers. Reflecting this and the importance of services in the economy, the Government has asked the Productivity Commission to undertake an inquiry into New Zealand's services sector and to identify opportunities to boost its productivity.

This inquiry has two main aims:

- to build a better understanding of the services sector, its recent performance, and the role it plays in the New Zealand economy; and
- to identify opportunities to boost productivity in the services sector and contribute to New Zealand's overall productivity.

This interim report focuses on the first aim by assessing the role and performance of the New Zealand services sector. It investigates the productivity performance of the different service industries, the impact of the sector on the economy as a whole, and New Zealand's performance against that of other countries.

A second interim report will feature an in-depth examination of selected services-sector topics. The terms of reference specify that these topics should have the potential to significantly boost New Zealand's productivity performance, and to lead to concrete recommendations for government policy.

## What are services?

Most people have an intuitive feel for the difference between a 'good' and a 'service'. For example, one way of defining a service is that it is something that can be bought and sold, but not carried. Another approach is to adopt sector definitions used by Statistics New Zealand. That approach classifies services as everthing produced outside the primary and goods-producing sectors.

While these definitions have practical advantages, the Commission has found that they have limitations when it comes to thinking about what is distinctive about services, and what policies might boost productivity in the sector. The Commission has found that looking at services from multiple perspectives presents a richer picture of the sector, its role in the economy and opportunities for improvement.

One perspective on services is that transactions between buyers and sellers of services have distinctive characteristics. These transactions concern intangible rather than tangible products, and/or involve a rental contract rather than a transfer of ownership. For example, the purchase of legal advice is a service transaction because it involves an intangible product. Hiring a car is also a service transaction because it involves a rental contract and not a change of ownership. The Commission has used this perspective and several others in this report.

## Why does the productivity performance of the services sector matter?

Put simply, the productivity performance of the services sector matters because the sector is such a large proportion of the total economy. Even small improvements in the sector's productivity performance will show up in the performance of the economy overall.

But the influence of the services sector's productivity runs much deeper than its contribution to aggregate performance. The services sector is closely interconnected with other sectors of the New Zealand economy.

Services feature extensively as inputs to the production of other goods and services. More services are purchased by firms, as inputs to their production, than by households.

The firms that constitute the primary and goods-producing sectors purchase sizeable amounts of services as inputs to their production. They spend nearly 40% more on market-provided services than they spend on wages and salaries.

The performance of the services sector also directly affects the wellbeing of New Zealand households. For example, reduced productivity growth in telecommunications providers could adversely affect the price and quality of communication – impairing the ability of New Zealanders to maintain and enhance interconnections between families, friends and communities.

### The services sector's role in international trade

Service exports matter a great deal for New Zealand, as a small and isolated economy that relies on trade.

Services can be exported directly. For example, by delivering a service to an overseas client over the internet, or by a tourist travelling to New Zealand. New Zealand's direct exports of services, as a share of total exports, are similar to other developed economies. However, a large proportion of these services are transport, tourism and education. If these types of services are excluded from the comparisons, the share of GDP for the remaining service exports is comparatively low. This could suggest the existence of unexploited export opportunities for other service products. Alternatively, it may reflect an efficient outcome given New Zealand's comparative advantages, and its isolation, trade barriers and scale. Services can also be exported indirectly by New Zealand firms that have established a physical presence in other countries. Typically this requires outward direct investment (ODI). New Zealand's ODI (as a share of GDP) is small relative to that of other OECD countries. This suggests that New Zealand service firms have relatively little presence in overseas markets.

Another route by which services are exported indirectly is through their contribution to the production of exported goods. When such 'embodied' services are added to directly-exported services, service industries contribute a little over half of the value of New Zealand's exports. Inefficiencies in the production of services, and in the operation of service markets, increase the costs faced by goods exporters and reduce their international competitiveness.

## How well has the services sector performed?

The productivity performance of New Zealand's services sector is below the average of a benchmark set of OECD countries.

The individual service industries are extremely diverse in their nature and performance. Big differences exist across New Zealand's service industries in both productivity levels and growth rates. Some information industries (eg, finance and insurance) are top performers, associated with high skill-levels and the use of information and communication technologies (ICTs). Other service industries such as retail trade, and accommodation and food services have generally had lower productivity levels and growth rates.

Service industries vary in workforce characteristics such as wage levels, skill levels, average age and experience. Variability in these characteristics is a benefit in that it creates employment opportunities that cater to the mixed composition of New Zealand's workforce. While growth in high-wage, high-skilled work is desirable, lower-skilled service industries also play an important role in society and in the career development of workers.

Preliminary research indicates a wide dispersion in productivity levels across firms in the same service industry, which is hidden when productivity statistics are aggregated. Some firms perform exceptionally well, while others perform poorly. This suggests that the forces of competition may be relatively subdued in some of New Zealand's service industries, as competition should encourage well-performing firms to expand and poorly-performing firms to exit.

Labour and multi-factor productivity (MFP) performance in service industries has mostly been below OECD averages for both levels and growth rates, in line with New Zealand's overall productivity performance.

Industry-level productivity comparisons between countries are challenging because of data and comparability issues. The Commission has drawn on research that compares New Zealand industries to those in Australia and the UK. This research found that some New Zealand service industries have higher productivity (levels and growth rates) than their UK and Australian counterparts, but the bulk do not.

Compared with the UK and Australia, New Zealand's service industries tend to have considerably lower levels of capital intensity. The picture for MFP is more varied – around half of New Zealand's service industries have higher MFP levels than their Australian and UK counterparts.

The positive productivity trends in some New Zealand service industries – such as information media and telecommunications – have not been strong enough to offset the weak performance of other service industries. As a result, New Zealand has not received the boost to its economy-wide productivity growth that the US and some other countries have achieved from their services sectors since the mid-1990s.

Overall productivity performance will suffer if low-productivity industries in an economy expand relative to high-productivity industries. A shift of employment into lower-productivity service industries and the expansion of these industries could thus be a contributor to New Zealand's disappointing productivity performance. The Commission's analysis of the overall shifts over time of output and employment towards low-productivity industries (including service industries) found that such shifts had only a minor negative effect on aggregate productivity growth. Most growth in aggregate productivity arose from growth within industries rather than from shifts in employment and output across industries.

## What policy issues are relevant to boosting productivity in the services sector?

The diversity of services and service industries, along with classification difficulties, make it challenging to generalise about the services sector. There is also much diversity across firms within service industries. Generalisation is, however, valuable in framing thinking about the sector, its role in the economy and the efficacy of government regulation.

There is a complex web of services that are inputs to the production of goods, and goods that are inputs to the production of services. This web connects the primary, goods-producing and services sectors. Policy analysis should avoid the trap of treating the primary, goods-producing and services sectors as silos.

### Strong domestic and international competition are important

Achieving scale, specialisation and competition among New Zealand firms are perennial challenges for New Zealand policy. Indeed, these challenges, and their implications for productivity, can be more acute for service firms given that many services are less easily traded over distance than the outputs of the primary and goods-producing sectors. This has implications for both domestic and international policy.

Many services are delivered face to face – which means that service providers need a physical presence in the local area where they provide the service. Because New Zealand's population is small and spread across a relatively large land area, the opportunities to benefit from competition and scale in these 'localised' service markets may be more constrained than in more densely populated parts of the world.

Improved transport and communications infrastructure can reduce spatial transaction costs, thereby increasing the ability of services to be traded over distance, which in turn can stimulate greater competition and scale economies. Thus, infrastructure provision and the regulation of transport and communication networks are important and relevant policy areas.

At the international level, the cost and quality of service inputs into goods exports affects their international competitiveness. Accordingly, policies to improve productivity performance in the services sector can have flow-on benefits for goods exporters. Competitive and efficient domestic service markets can help ensure

that the services embodied in New Zealand's goods exports enhance rather than detract from those products.

Goods exporters often follow a 'make it, pack it, ship it' model. However, New Zealand firms that directly export services typically need deeper connections, better information and better networks than goods exporters. This is likely to be relatively more challenging for New Zealand firms, given their small scale and distant location. Exporting services by establishing a physical presence overseas can also present challenges for New Zealand firms. Reducing barriers to ODI could reduce the initial fixed costs faced by New Zealand firms that aim export services. This points to the importance of mutual recognition and other economic integration measures.

International trade stimulates competition by opening domestic service markets to a wider range of competitors. Barriers that inhibit service imports reduce the competitive pressure in parts of the services sector. They also slow the flow of new ideas and technologies into New Zealand. Policies should reflect the competition and innovation benefits that can stem from inward foreign investment.

## Optimise regulatory settings

The extent of regulation varies between different service industries. Some industries face only generic regulations that apply across all industries, such as labour laws, while others are subject to industry-specific regulations.

When considering the effects of targeted and generic regulations on the services sector, an important question is: how close to optimal are the regulatory arrangements? Are there significant opportunities to boost efficiency, growth and innovation – and therefore wellbeing – by improving current arrangements? Answering these questions requires analyses that drill into the regulatory environment affecting individual industries and their component sub-industries. These would likely find examples of regulations that no longer (or never did) meet their goals, fail to provide an optimal trade-off between competing priorities, or could otherwise be improved.

Regulations designed to assist buyers and sellers to conduct service transactions – such as consumer protection laws and occupational licensing regimes – are particularly relevant. This stems from the complexity that is inherent in some service transactions. Information asymmetries between service providers and customers, and the inability to fully assess quality and delivery of some services before the transaction, contribute to this complexity. These traits can lead to difficulties in sorting out, and obtaining remedies to, any problems that subsequently arise with the service. While regulation can help to protect consumers from opportunistic suppliers, benefits need to be carefully assessed against costs.

## ICT and innovation can boost productivity when effectively applied

Innovation – developing new products, making use of new products, or developing new processes or ways of doing something – is a vital way for New Zealand firms to lift productivity. This is as true for firms in the services sector as it is for those in the other sectors.

ICTs are particularly important to boosting productivity in the services sector. The provision of many services is limited by the need for the provider to interact directly with customers. ICTs are making distance less important for the delivery of some of these services, allowing them to be more easily traded.

Over the past decade New Zealand has invested in ICT at a similar rate to other OECD countries. However, ICT investment alone is not sufficient to generate productivity growth – equally important is how ICTs are put to work and applied within firms. It appears that many New Zealand firms are not extracting the full potential of these technologies. This points to the need for policy settings that encourage investment in complementary skills and capabilities. Developing the business systems and processes necessary to incorporate ICTs into firm practices are also important.

## Which services-sector topics would benefit from in-depth analysis?

The next part of this inquiry is dedicated to formulating policy recommendations to lift productivity in the services sector. The terms of reference direct the Commission to focus on specific topics that are particularly relevant to the services sector (rather than attempting to cover the whole sector).

The terms of reference specify two main criteria to inform the selection of topics for in-depth analysis:

- the potential to make a significant impact on New Zealand's overall productivity performance; and
- the ability to identify impediments to increasing productivity and lead to concrete recommendations for changes to government policy that can overcome those impediments.

These criteria, along with the Commission's analysis and suggestions from inquiry participants, were used to select the following three topics, of which the Commission ultimately intends to examine two.

- Improving occupational licensing in the services sector
- Stimulating services competition
- Addressing barriers to the successful application of ICTs

### Improving occupational licensing in the services sector

Occupational licensing broadly aims to protect the public from the risks of an occupation being carried out incompetently or recklessly. The objectives of specific occupational regulations vary, but generally they are intended to protect customers by specifying minimum educational and professional qualifications that people must have in order to work in the occupation, specifying the types of services that a licensed provider can engage in, and setting and enforcing codes of conduct.

Occupational licensing regimes aim to mitigate a number of risks for customers, many of which are particularly common in the services sector, including:

- information asymmetries that arise from the complexities of some services;
- the intangible nature of many service transactions, which can increase the difficulty of assessing their quality; and
- the severity of consequences that are associated with some services.

For example, consumers of legal services generally have limited knowledge about legal matters, and hence are not in a good position to assess the skills or quality of a lawyer. Adding to this difficulty is the fact that most legal services are intangible, meaning that there is no physical product to examine. Moreover, poor quality legal advice could have severe consequences, and those consequences may not be apparent until some future time.

Protecting customers from the risks associated with services undertaken by professions generates benefits for the public. However, these benefits need to be clearly articulated, demonstrated, and balanced against the costs of occupational licensing. In addition to compliance and administration costs, applying entry restrictions to certain professions can reduce competition, creating adverse outcomes for customers. Entry barriers can also restrict flexibility in the workforce by reducing the scope for labour movements between professions to match changes in demand.

The Commission is interested in the influence of occupational licensing on service transactions between firms, and between firms and consumers. More specifically, how is the balance best struck between the costs and benefits of occupational licensing regimes in the services sector?

## Stimulating services competition

Competition is an important factor that influences productivity. It creates incentives for firms to invest in productivity-raising actions such as adopting new innovations. It can also result in creative destruction, where the best-performing firms expand and poor performers exit the market.

Competition matters, to a varying extent, for all sectors in the economy. But the nature of some services can create particular barriers to competition. Many service transactions require a direct interaction between customers and the service provider, meaning that competition can be limited to the firms that are active within a specific local area.

The Commission is particularly interested in the role that consumers play in stimulating competition. Consumer perceptions of barriers to changing providers can have a dampening effect on competition.

Acquiring the knowledge necessary to make an informed decision about which provider offers the services that best meet their needs can be costly for consumers in the presence of information asymmetries. Furthermore, the transaction costs associated with switching providers for some services can deter effective competition. For example, until relatively recently, switching phone companies resulted in the inconvenience of changing to a new phone number.

The spread of the internet and other ICTs has increased the ability of consumers to drive competition to some extent. For example, prospective house buyers or tenants can now easily browse through multiple online listings, enabling them to search a much wider range of properties than if they had to visit each property in person.

Government has addressed search and switching costs through provision of information in some markets. For example, the 'What's my number' campaign provides consumers with information about their ability to switch electricity supplier, the ease of switching and the potential savings from changing supplier.

The Commission is interested in whether there is role for government, business or non-government organisations in stimulating greater competition by reducing search and switching costs in service markets.

## Addressing barriers to the successful application of ICT

ICT use and productivity growth are positively linked. Benefits attributed to the use of ICTs include improved information and knowledge management, more effective management of processes, reduced coordination costs and improved communication. In addition, ICTs can deliver new services or new and better ways of delivering existing services.

The productivity potential associated with ICTs may be particularly pronounced for New Zealand, given its isolation from trading partners. For example, the internet can enable New Zealand firms to access larger markets, and expose domestic markets to increased competition.

The Commission is interested in identifying and addressing barriers to firms extracting the full benefit from ICT. One issue is whether the technical skills and broader human capital (including management capability) that are required to successfully harness technology are available to New Zealand firms. Another is whether there are regulatory or other constraints on the types of business models that New Zealand service firms can adopt that limit their ability to fully exploit ICT.

A further issue is whether regulatory or other barriers prevent the uptake of emerging technologies. For example, do concerns about privacy and security create a significant barrier to greater adoption of cloud computing?

The Commission is also interested in differences between the uptake and successful use of ICT in different parts of the services sector, and identifying any industry-specific barriers. Evidence from the US retail industry and Australian wholesale trade industry have shown a significant relationship between ICT investment and productivity growth. In New Zealand, these industries are both relatively poor productivity performers. Are there any barriers to the effective use of ICT in these industries? Could policy changes assist?

## Next steps

The next part of this inquiry will focus on a detailed examination of two of the three topics outlined above. A second interim report will be published in January 2014, and include the Commission's draft analysis, findings and recommendations. Submissions are invited to help guide the choice of topics, along with suggestions towards refining the scope of these topics. Submissions commenting on the content of this report are also welcome, and will assist the Commission in preparing the final inquiry report.

# 1 About this inquiry

**Key points**

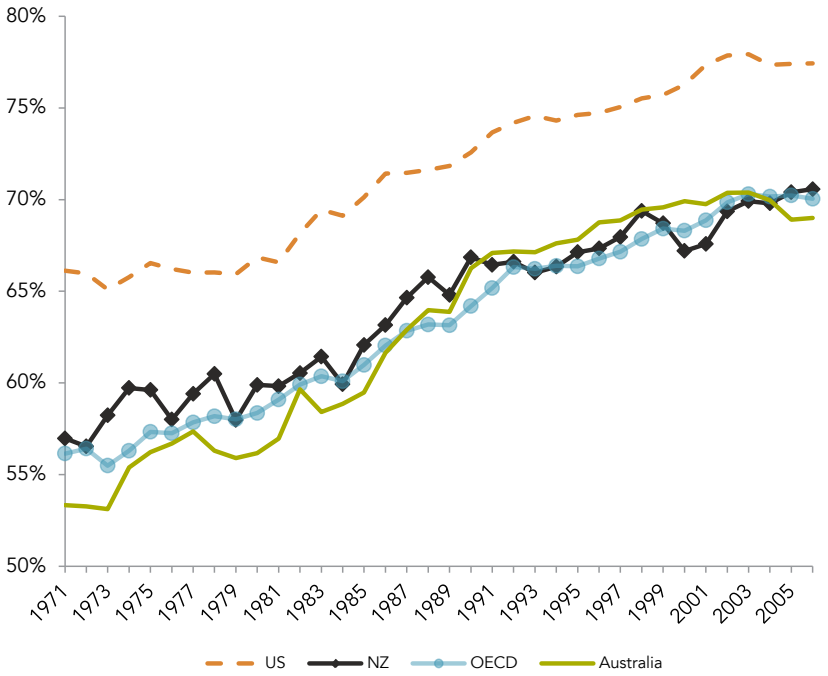
- The Government has asked the Commission to conduct an inquiry into boosting productivity in the services sector.
- This is the first of two interim reports for this inquiry. This report focuses on the performance of the sector and its role in the wider economy.
- This report also outlines the topics proposed by the Commission for in-depth examination in a second interim report – scheduled for January 2014. That report will feature an in-depth examination of selected topics, aiming to identifying opportunities to boost productivity in the services sector and contribute to New Zealand's overall productivity.
- The services sector is the largest of the three sectors that make up the New Zealand economy. The other two are the primary and goods-producing sectors.
- The three sectors are highly integrated; each is dependent on outputs from the others.
- This inquiry covers market-provided services, collectively representing about half of GDP. The services sector as a whole – including non-market provision – represents about 70% of GDP.
- There is a high level of diversity between the industries that make up the services sector, and within individual service industries. This diversity creates challenges in defining and classifying services.
- There is no single right or best definition of a 'service'. Looking at the question from multiple, complementary perspectives leads to a richer understanding of the role of services and of opportunities to improve their contribution to the economy. This report makes particular use of three perspectives:
  - The *production perspective* emphasises commonalities in what firms do and the nature of their inputs. The primary sector extracts and harvests natural resources, the goods-producing sector combines natural resources and other goods inputs into finished goods, and the services sector provides services to itself and the other sectors. This perspective is best for examining the productivity of service industries, because it underlies the available productivity data.
  - The *transaction perspective* takes account of features of services, and ways in which they are bought and sold, that distinguish them from goods. It offers insights on the spatial distribution of service production, and on the effects and efficiency of government intervention. Governments intervene in services markets in many ways, including by regulating market transactions and providing infrastructure.
  - The *embodiment perspective* emphasises the interconnectedness between goods and services and the industries that produce them. It is a useful way to understand the relative contributions of service and other industries to New Zealand's exports.

## 1.1 Context for this inquiry

The primary, goods-producing and services sectors make up the New Zealand economy. They are highly integrated; each sector is a significant source of inputs for the others.

The industries classified as the 'services sector' are an important engine of the New Zealand economy. New Zealand's services-sector share has grown strongly as in other OECD countries (Figure 1.1). The sector now produces around 70% of Gross Domestic Product (GDP) and also accounts for over 70% of employment.

Figure 1.1 Services-sector share of GDP against overseas comparators, 1971-2006




*Source:* Productivity Commission; OECD structural analysis database

Service industries provide a wide array of services to firms and private individuals across the economy. This inquiry covers market-provided services, collectively representing about half of GDP.

Some industries within the services sector are well researched. However, analysis of the sector as a whole is relatively scarce in comparison with the primary and goods-producing sectors.

This inquiry has two main aims:

- to build a better understanding of the services sector, its recent performance, and the role it plays in the New Zealand economy (Part A); and
- to identify opportunities to boost the productivity of service industries and contribute to New Zealand's overall productivity (Part B).

This interim report focuses on the first aim by assessing the role and performance of the New Zealand services sector. It considers productivity performance across different service industries, the impact of the sector on the economy as a whole, and the performance of the sector relative to other countries.

A second interim report is scheduled for January 2014. It will feature an in-depth examination of selected services-sector topics. This inquiry's terms of reference specify that these topics should have the potential to significantly boost New Zealand's productivity performance, and to lead to concrete recommendations for government policy.

The Commission proposes an in-depth examination of two of the following topics:

- Improving occupational licensing in the services sector – is there an appropriate balance between the costs and benefits that stem from occupational licensing regimes in the services sector?
- Stimulating services competition – is there a role for government in stimulating consumers to drive greater competition in New Zealand services markets?
- Addressing barriers to the successful application of information and communications technology (ICT) – policy issues relating to the adoption and effective use of ICTs by New Zealand service firms.

Chapter 8 provides further details of the topics and the rationale for their selection. The Commission seeks feedback on this proposal by 23 August 2013. It will announce its final selection of topics in late August.

The two separate interim reports will be combined and revised into a final inquiry report, to be delivered to Ministers in April 2014. The report will likely be published in May 2014.

The Commission welcomes feedback on this report and the questions it contains. Feedback will inform this inquiry's second interim and final reports.

## 1.2 What are services?

Most people have an intuitive feel for the difference between a 'good' and a 'service'. However, in practice it is difficult to find a definition that deals satisfactorily with the many things that have attributes of both. A lump of coal is clearly a good and a haircut a service, but what is a takeaway coffee? Is the customer paying for the coffee (a good) or the application of the barista's skills (a service)?

There is no single right or best definition of a 'service'. Services are, however, an important topic in the economic research agendas of governments and other organisations. International thinking reflects a variety of approaches, reflecting both different conceptions of services and the problems they seek to address (Box 1.1).

Box 1.1 **International thinking about services**

Governments, international organisations, businesses and academics adopt different approaches to services depending on the problems they seek to address.

Much economic research seeks to understand the drivers of productivity growth and sectoral change in economies, which impact a country's output and income per capita. For example, Syverson (2010) reviews the determinants of productivity, and Acemoglu (2009) considers demand and supply side factors influencing structural change in the composition of the economy. On the demand side, as households get richer, the proportion of income spent on more basic goods goes down, while the proportion spent on services goes up. On the supply side, differences in the productivity growth of different industries lead to changes in relative prices, and thus structural change (Baumol, 1967; Acemoglu & Guerrieri, 2008).

Governments seek to identify policies to enhance economic growth. This has been the subject of many public policy inquiries. An example is the OECD's report on enhancing the performance of the service sector, which notes that the services sector will need to do better if policy makers wish to strengthen economic growth. Recommendations included regulatory reform of services markets, more open international trade and investment in services and policies to support services innovation (OECD, 2005). The Irish proposal for a national services strategy is an example of a country-level inquiry. It notes that the changing nature of services in an increasingly globalised economy brings with it significant challenges and opportunities for Irish firms (Services Strategy Group, 2008). It recommends ways to boost productivity, enhance skills and foster innovation in services.

International services trade is a growing area of research. A recent literature survey notes increasing evidence that services liberalization is a major potential source of gains in economic performance, including productivity in manufacturing and the coordination of activities both between and within firms (Francois & Hoekman, 2010). Another report notes that the services sector has been the neglected component of international trade. Three reasons for the neglect of services trade are lack of public awareness of the contribution of services to the economy, governments' concern about the impact of services openness on the operation of their regulatory systems, and inadequacies in the way trade agreements are negotiated (Pacific Economic Cooperation Council & Asian Development Bank Institute, 2011).

Businesses have a strong interest in understanding services. There is an extensive literature in the areas of marketing and management that considers ways for businesses to succeed in service

industries. A recent review of 'services research' literature notes the major contributions made towards understanding service innovation over the last 20 years. Many services can now be traded from afar and this has led to extensive debate on service offshoring. Another development has been "a new focus on the role of knowledge, expertise and creativity in local and regional economic development" (Bryson, Rubalcaba & Strōm, 2012, p. 646).

This report makes use of three broadly-compatible perspectives. Each is based on a different way of thinking about services, offers different opportunities for analysis, and leads to different insights. The Commission has found adopting multiple approaches – or 'perspectives' – to be the best way to develop and present a richer picture of the sector, its role in the economy and opportunities for improvement.

## The production perspective

The *production perspective* concentrates on the nature of productive activities. Firms are ultimately grouped into three *sectors* – primary, goods-producing and services[1]. In brief, the primary sector extracts and harvests natural resources, the goods-producing sector combines and transforms[2] natural resources and other goods inputs into finished goods, and the services sector provides services to itself and the other sectors.

From this perspective, *services* are the output of the industries that make up the services sector and *goods* the output of those in the other two sectors. For example, takeaway coffee would be classified a service, as it is the output of the accommodation and food services industry[3].

This perspective has two particular advantages for this inquiry.

- The inquiry's scope is the 'services sector', and the Commission can adopt the services-sector boundary used by Statistics New Zealand.
- Much of the data available to the Commission, including productivity measurements, are based on this perspective.

However, the use of the production perspective poses some challenges for this inquiry. The data gathering definitions may not align well with what is best for developing policy insights. Notably, the high level of diversity across service industries means that few common characteristics are apparent. This makes it challenging to identify cross-cutting issues and to make recommendations that might widely benefit the sector.

The production perspective underlies Chapters 3, 4 and 5.

## The transaction perspective

The *transaction perspective* uses two dimensions for classification.

- Does the transaction involve a tangible product (ie with a physical form)?
- Is the transaction a change of ownership or a rental?

A *goods transaction* is a change of ownership of a tangible product. Other transactions – those involving renting, intangibles or both – are *services transactions*. From this perspective, *services* are the subject of services transactions. From this perspective, the sale of a takeaway coffee is a goods transaction, as ownership of the cup and its contents changes at the point of sale.

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[1] Firms are grouped into sub-industries based on common features, in particular the source of the value-added of the main activity of the firm. Large firms with multiple activities may be treated as multiple, separate firms with single activities. Sub-industries are further grouped together into *industries* based on common features. *Sectors* are the highest level of classification.

[2] The industries of the goods-producing sector span varying degrees of transformation, from initial processing of primary produce (eg frozen meat) through to elaborately-transformed manufactured items (eg electronics).

[3] Because firms are classified by their main activity, this would not always be the case. For example, a takeaway coffee from a bookstore would likely be an output of the retail trade industry.

Transaction costs are the costs incurred by the parties making an economic exchange, other than the amount paid directly for the goods or service purchased. They lower the potential gains from trade – the benefits to people from exchanging something they own for something they value more highly. Examples include search costs (finding a party to transact with), spatial transaction costs (the additional costs of trading at a distance), taxes and information costs (determining prices and quality). These costs affect how, where and whether goods and services are traded.

The nature of some services creates relatively high transaction costs. Chapter 2 further details the rationale for, and implications of, the transaction perspective in services markets.

The transaction perspective offers a useful basis for examining the effects and efficiency of government intervention as this perspective focuses on the operations of markets. Governments intervene in services markets in many ways, often with the aim of lowering transaction costs. Interventions include providing infrastructure and regulating market transactions.

## The embodiment perspective

The *embodiment perspective* classifies a product based on the relative proportions of tangible and intangible inputs that went into its creation.

Goods are rarely (if ever) produced without some level of services input – even rock quarried out of the ground embodies quarrying know-how. Similarly, services are rarely (if ever) produced without some input of goods – even a massage likely requires a table, towels and oil. The great majority of products will be a mix – often complex – of tangible and intangible inputs.

From this perspective, classification of a cup of takeaway coffee requires investigation of the relative costs of the barista's skills, coffee beans, milk, cup and other inputs, along with an estimation of the composition (tangible vs. intangible) of each input. This example highlights the practical difficulty of using this perspective to make a hard distinction between a good and a service.

This perspective emphasises the extent to which the production of goods and services is interdependent. Interdependence breaks down some of the hard boundaries inherent in the other perspectives; for example, the output of some capital-intensive service industries (eg transport, accommodation) might be considered to be more like a good rather than strictly a service. No perspective is right or wrong in this regard; their value comes from providing insights.

The embodiment perspective is a useful way to understand the relative contributions of service and non-service industries to New Zealand's exports. It underlies the analysis in Chapter 6.

The production and embodiment perspectives are mainly used in Part A of this inquiry to get a better understanding of the services sector. The transaction perspective should be most helpful in Part B.

## Other perspectives

The Commission found the three perspectives above to be the most useful for this inquiry. However, they are not comprehensive. Other potentially useful perspectives include:

- Classifying products based on whether or not they are internationally traded. For example, haircuts and crushed rock would be considered 'non-tradable', whereas internet search services and frozen meat are 'tradable'.
- Classifying products based on customer groupings. For example, tourists require travel, accommodation, food, recreation and souvenirs.
- Classifying products on the basis of whether the product satisfies intermediate or final demand. Other businesses generate intermediate demand, while government and consumers generate final demand.

Where useful, this report also adopts these perspectives.

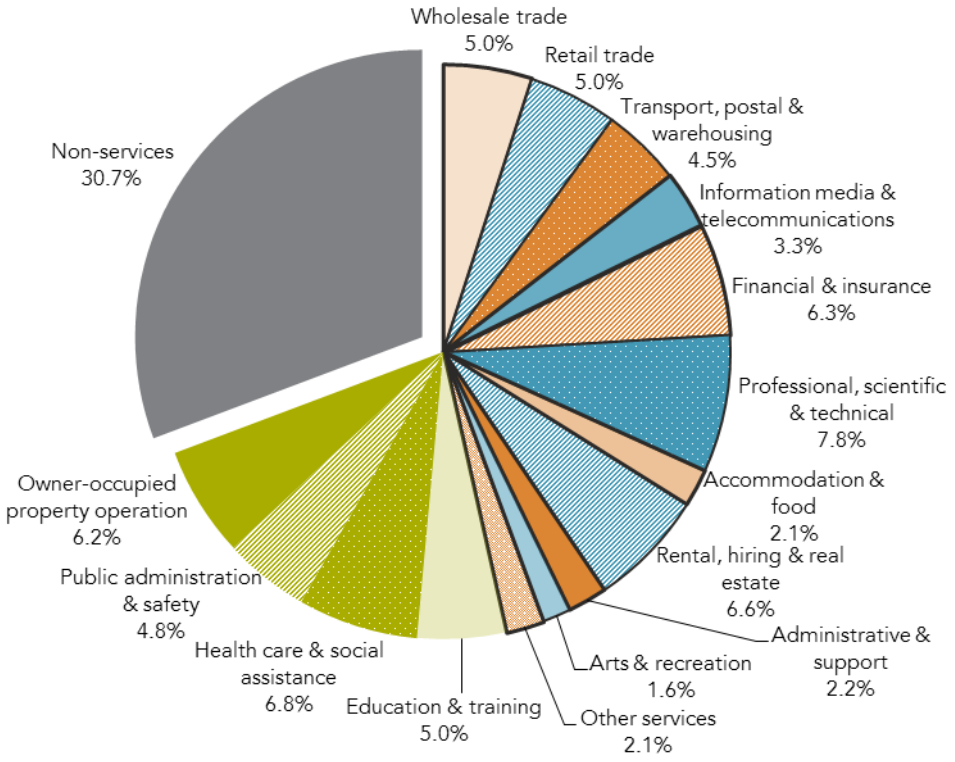
## 1.3 What is the scope of the 'services sector'?

This inquiry adopts the production perspective in order to define service industries and thus the sector. This choice is based on the need to use standard statistical data to investigate productivity performance, to make international comparisons, and to draw on existing research literature. The perspective has its limitations, and is supplemented by other perspectives where these offer useful insights.

*Service industries* are those that are neither 'primary industries' (ie mining, agriculture, fishing and forestry) nor 'goods-producing industries' (ie manufacturing, construction, electricity, gas, water and waste). The service industries collectively form the *services sector*.

The service industries are shown in Figure 1.2, with slice sizes indicating their contribution to New Zealand's GDP. These classifications are based on the *Australia New Zealand Standard Industry Classifications 2006* (ANZSIC06) used by Statistics New Zealand. The industries outlined in black are the focus of this inquiry.

**Figure 1.2 ANZSIC06 industries (% of New Zealand's GDP, 2010)**




*Source:* Productivity Commission; Statistics New Zealand national accounts tables

*Notes:*

1. Industry outputs and GDP are measured in 2010 dollars.
2. Service industries' shares sum to around 70%, the total share of services in the economy. Provisional statistics for 2011 and 2012 give the share of services at around 71% of the total economy.
3. Owner-occupied property operation is an estimate of the 'housing services' produced by owner-occupied residential properties.

Many data sources of interest for this inquiry are not based on the ANZSIC06 classifications. These data have been analysed using the source classification system and are presented on that basis in this report[4].

Reflecting the unclear distinctions between goods and services, Federated Farmers (sub. 5) requested that the electricity, gas, water and waste industries be included within the scope of this inquiry, as these industries provide important inputs into agricultural production. However, the same point might be made for inputs particularly important to other industries. On balance, the Commission sees benefits from

[4] Appendix D outlines these classification systems and the degree to which they correspond.

alignment with international classification systems, and has not expanded the scope of the sector for this inquiry.

## What service industries are in scope?

The terms of reference specifically direct the Commission to limit its consideration to 'market-provided services and therefore exclude study of services provided directly by the public sector'.

Several inquiry participants commented on the scope of this inquiry (Box 1.2).

Box 1.2 **Participant comments on inquiry scope**

Many participants emphasised the importance of non-market provided services, for example:

> The public sector is a large 'chunk' of the service sector and excluding services provided by the public sector from the scope of the Inquiry is in the Federation's view unfortunate and misses an opportunity to learn from experiences (in both directions). (Federated Farmers, sub. 5, p. 3)

> Much of our international trade occurs with the involvement of public sector entities. Universities, Polytechnics and Schools are all engaged in international trade. The MetService, Airways Corporation and Learning Media are examples of state owned entities that trade internationally. There is no reason why our hospitals could not be as active in international trade as our universities. It is our belief that international education is the second largest service export industry, taking $2.7 billion in foreign exchange in 2011. (Business NZ, sub. 9, p. 5)

Some participants suggested that this inquiry should cover all service industries, or at least the market-provided parts of all service industries. The New Zealand Home Health Association pointed out:

> … considering… that 67% of health services are provided by agencies outside of government (including private and not for profit agencies), to not include them would exclude a significant, and growing proportion of service delivery. (sub. 4, p. 2)

Alistair Sheat encouraged the Commission to take an expansive view:

> …international research on services and service innovation is increasingly talking about the need to take a 'service systems' approach that recognises value is created (or destroyed) via the interaction of parts of the service system … health, education, scientific and technical services, and social sectors are highly interconnected and inter-dependant so considering just one part of the 'service system' limits potential for value creation. (sub. 16, pp. 13-14)

On the other hand, the Council of Trade Unions supported the exclusion of the public sector from this inquiry's scope, noting the "measurement of productivity among services is frequently problematic, and particularly so in the areas dominated by the public sector" (sub. 12, p. 3).

There is a significant proportion of non-market provision in some service industries; for example education and training (see Table 1.1). The productivity performance of these industries has an important impact on New Zealand's economy. Ultimately, the Commission has largely excluded non-market services from the analysis in this report, reflecting the terms of reference.

The exclusion of particular industries and services from this inquiry would not exclude them from being the subject of a future Commission inquiry. Submitters also proposed topics for deeper analysis in Part B of this inquiry, and specific issues more suited to investigation as Part B topics. These are discussed in Chapter 8.

National statistics distinguish between market and non-market provision based on whether output is intended for sale at economically-significant prices[5] (United Nations Statistics Division, 2009). Provision is distinct from issues of ownership and funding. For example, the output of state-owned enterprises is classified as 'market provided' if they sell their output at economically-significant prices to generate a profit.

[5] Prices are 'economically significant' when they have a significant influence on the amounts that producers are willing to supply and on the amounts purchasers wish to buy (United Nations Statistics Division, 2009).

Likewise, a government-funded surgical operation in a privately owned and operated hospital is market provision, as the operation was sold to the government at economically-significant prices.

Non-market provision by government or non-profit organisations occurs when they supply goods or services for free, or below economically-significant prices. Box 1.3 provides an example.

Box 1.3 **Emergency ambulance services – an example of non-market provision**

The emergency ambulance services supplied by the non-profit organisation St John are an example of non-market provision. Government contracts provide around 80% of the direct operating costs of these services. The shortfall is made up with other St John revenue and a user charge of approximately $80 per trip.

Prices are 'economically significant' when they have a significant influence on the quantities producers are willing to supply and on the quantities purchasers wish to buy (United Nations Statistics Division, 2009). The user charge of $80 per trip does not affect supply. It is likely that it has little effect on demand in true emergency situations, particularly as the patient receives an invoice by post rather than making an upfront payment.

Applying the UN definition, the user charge is not economically significant, and thus these services would be considered non-market provision.

*Source*: St John, n.d.

Table 1.1 shows the service industries with notable levels of non-market provision and/or government ownership, and those industries for which Statistics New Zealand does not publish full productivity data.

**Table 1.1 Non-market provision in service industries, 2010**

| Service industry[1] | Non-market provision | Government ownership[2] | Published productivity data[3] |
|---|---|---|---|
| Public administration and safety | 94% | 95% | No |
| Education and training | 87% | 79% | Limited |
| Health care and social assistance | 57% | 44% | Limited |
| Arts and recreation; Other services[4] | 28% | 12% | Yes |
| Transport, postal and warehousing | 9% | 38% | Yes |
| Owner-occupied property operation | NA[5] | 0% | No |

*Source:* Statistics New Zealand GDP tables

*Notes:*

1. The service industries not listed in this table have non-market provision below 9% and relatively low levels of government ownership. Full productivity data is available for the service industries not listed.
2. Based on the ownership of institutions and/or the degree of control by central and local government. The output of non-profit organisations can make non-market provision higher than government ownership. The market operation of some government and non-profit organisations and the funding of market output by government and non-profit organisations can make non-market provision lower than government ownership.
3. The industries marked 'yes' in this column are those included in Statistics New Zealand's 'measured sector'[6]. The industries marked 'limited' are those covered in *Education and health industry productivity 1996–2011* (Statistics New Zealand, 2013a).
4. These data for these two industries are combined in the source tables.
5. Not applicable as the output is not sold.

[6] The term 'measured sector' uses a different definition of 'sector' that that used elsewhere in this report. The measured sector cuts across the three sectors of the economy, ie primary, goods-producing and services.

High levels of non-market provision mean that the public administration and safety industry is out of scope.

The transport, postal and warehousing, arts and recreation, and other services industries are treated as market-provided in most analyses in this report, despite small shares of non-market provision.

Owner-occupied property operation reflects the value obtained by owners from living in their properties. It is an important component (6.2%) of GDP. However, official productivity measures do not exist because it is impractical to measure labour input. Accordingly, the Commission has excluded this industry from this inquiry.

The market-provided parts of the education and training and health care and social assistance industries are technically in scope, but are difficult to isolate and examine. Statistics New Zealand (2013a) provides productivity statistics for these industries as a whole – but not disaggregated into market and non-market provision[7]. The productivity of the market-provided parts of these industries may be considerably different to that of the industries as a whole; however, the Commission is not in a position to determine whether or not that is the case. Accordingly, the Commission will in most cases exclude these industries from its analyses.

The table also shows the level of government ownership for each industry, and how this differs from the level of non-market provision. The Commission has followed Statistics New Zealand in disregarding ownership when considering non-market provision for the purposes of this inquiry.

## 1.4 Why does the productivity performance of the sector matter?

The productivity performance of the services sector matters for New Zealand. It matters because the sector is such as large proportion of the total economy.

The performance of the services sector directly impacts the wellbeing of New Zealand households. For example, an unnecessary barrier to productivity growth in telecommunications services could negatively affect the price and quality of communication – impairing the ability of New Zealanders to connect with their families, communities, schools, hospitals, and social networks.

The services sector is closely intertwined with other sectors of the New Zealand economy. Many service industries provide important inputs into the production processes of other industries. The performance of such service industries has a pronounced impact on the cost structures faced by firms that rely on their outputs.

New Zealand's direct exports of services, as a share of total exports, appear typical by international standards. However, they are dominated by transport, travel and education, which is atypical. This could suggest the existence of unexploited export opportunities for other service products. Alternatively, it may reflect an efficient outcome given New Zealand's competitive advantages, and issues of distance, scale and trade barriers. A better understanding of the sector – and the costs and barriers it faces – will help unravel this and other important questions for New Zealand's economic future.

## 1.5 A guide to this report

Table 1.2 outlines the structure of this report. The chapters need not be read in order. Readers looking to gain an appreciation of the breadth of the services sector and its component industries may wish to start with Chapter 3. Those seeking the Commission's overall assessment of the role and performance of the sector may wish to start with Chapter 7 and refer back to earlier chapters for the supporting analysis.

[7] A further issue is that the productivity levels of these industries are not directly comparable with other industries (Statistics New Zealand, 2013a).

Table 1.2 Report structure

| Chapter | Content |
|---|---|
| 2 | Explores the economics of services, providing background for subsequent chapters. |
| 3 | Describes the industries that comprise the services sector, demonstrating the diversity between and within those industries. It highlights some distinctive features of each industry and possible barriers to productivity growth. |
| 4 | Investigates the recent productivity performance of the services sector and its component industries. It contrasts New Zealand's experience with that of other countries. |
| 5 | Examines the changing structure of the economy and the possible implications of those changes for overall productivity performance. In particular, it looks at the shifting allocation of resources within the services sector and between the three sectors of the economy. |
| 6 | Assesses the impact of the services sector on the New Zealand economy overall, including the role that services play as an input into other industries and their contribution to international trade. |
| 7 | Provides an overall assessment of the services sector, drawing together the preceding chapters. |
| 8 | Outlines the Commission's proposed topics for deeper analysis in Part B of this inquiry. |
| Appendices | Supporting material. |

This interim report, excepting Chapter 8, constitutes a draft of Part A of the final inquiry report. Submissions are invited on this material. They will be taken into account when revising the material for the final report.

## Next steps

Table 1.3 sets out the timeline for the remainder of this inquiry. The Commission, with the agreement of the Government, has deferred the previously announced milestones by two months. The expanded timeframe is better suited to the multi-stage nature of this inquiry.

The Commission may also test its thinking on specific issues through additional mechanisms, such as published research notes, discussion forums and expert roundtables.

Table 1.3 Inquiry timeline

| Date | Milestone |
|---|---|
| 23 August 2013 | Submissions on the 1st interim report due. |
| Late August | Announcement of the topics chosen by the Commission for Part B. |
| August-October | Engagement with interested parties on the 1st interim report. |
| January 2014 | Release of the 2nd interim report; being the draft report on the topics chosen for Part B, including preliminary findings and recommendations. |
| 28 February | Submissions on the 2nd interim report due. |
| February-March | Engagement with interested parties on the 2nd interim report. |
| 30 April | Final report delivered to referring Ministers. |

# 2 The economics of services

**Key points**

- The diversity of services and service industries, along with classification difficulties, make it challenging to generalise about the services sector. Generalisation is, however, valuable in framing thinking about the sector, its role in the economy and the efficacy of government regulation.
- Economic assessments of the services sector face many difficulties in classification and measurement. Productivity – the standard measure of production efficiency – is challenging to measure for many service industries.
- Multi-factor and labour productivity are two important measures of productivity. Both have their place in understanding the performance of an economy and its component industries.
- Service transactions commonly involve higher transaction costs than goods transactions for reasons including that the contracts, explicit or implicit, tend to be more complex. Reductions in transaction costs can increase both the number of transactions and the economic benefits created by those transactions.
- Spatial transaction costs – the extra costs incurred because production and customers are not co-located – are a significant component of transaction costs. Spatial transaction costs for some services are higher than those typically associated with goods, for example those involving travel by the provider or customer. Legal and regulatory differences between countries can impact strongly on services, exacerbating these costs.
- Service suppliers take a variety of approaches to reducing spatial transaction costs and to optimise their location decisions.
- High spatial transaction costs can lead to localised markets. Such markets may suffer an undesirable trade-off between scale in production and competitive pressure.
- Services are well suited to the production of high levels of product variety – an important source of consumer welfare. Localised service markets may offer relatively low product variety.
- Information asymmetries – when sellers and buyers have different information – can be more pronounced in service transactions. Problems arise due to difficulties in assessing service quality before or after purchase, and in obtaining remedies for poor service quality.
- The services sector is highly interlinked with the other sectors of the economy. Physical 'goods' embody many services, likewise intangible 'services' require goods in their production. Policy analysis should avoid the trap of treating the primary, goods-producing and services sectors as silos.

An economic framework for understanding and assessing services should reflect the differences between services and goods, and help to identify issues that need additional attention when considering services.

To further understand the sector and inform policy setting, this chapter considers the services sector from the three perspectives described in Chapter 1.

The 'production perspective' is based on the organisation of capital and labour into firms to produce output. It is the basis of the system of national accounts used by statistical agencies. Within this system, services are the 'residual' – those productive activities that are not easily classified as primary or goods

production. Much of the economic data relevant to this inquiry is organised in this way[8]. This perspective is explored in section 2.1.

Governments intervene in the markets for services in many different ways. Government actions affect the productivity of market-provided services as a customer (eg a District Health Board purchasing diagnostic testing services) and as an owner (eg telecommunications services provided by state-owned enterprise Kordia). Taxation and public spending decisions also affect markets, for example, tax credits for research and development and the provision of infrastructure.

However, regulation of markets is the primary way in which governments affect the productivity of service industries. Markets involve a supply side (producers), a demand side (customers) and 'matching' – the communication of information and transport of resources such that suppliers and consumers find each other and get together for mutually-profitable trades. Understanding the features of services markets is a constructive step towards policy recommendations that improve upon the status quo. Section 2.2 explores this 'transaction perspective'.

Physical products are the result of the application of perhaps many intangible services to a mixture of physical inputs. Conversely, the production of intangible services often requires the application of physical inputs. From this 'embodiment perspective', the distinction between a good and a service is one of degree. This perspective is explored in section 2.3.

## 2.1 The production perspective

From the perspective of a purchaser, the 'obvious' distinction between a good and a service is that a good is something that has a physical form. In many cases the distinction between what is physical and what is intangible is clear, but in some cases it is less so.

For example, how should a cup of takeaway coffee be classified? Discussions within the Commission and with inquiry participants have revealed a wide range of opinions on the answers to this question (see section 1.2).

These quandaries are reflected in ongoing debate in many countries about which industries make up the services sector. Different researchers have used different boundaries for the sector (Schettkat & Yocarini, 2003), in some cases affecting the conclusions of their studies. The Commission has adopted the ANZSIC06 classification for this inquiry (see Chapter 1). It contains some apparent anomalies. For example, 'agriculture, forestry and fishing support services' are classified as primary sector production (Federated Farmers, sub. 5). In a similar vein, the presence of the word 'services' in the 'water and waste services' sub-industry belies its classification in the goods-producing sector under ANZSIC06.

Any one system of classification will be suited to answering some types of questions, and unsuited to others. It is not feasible to have a multiplicity of classifications without the relevant disaggregated data, and the resources to restructure and interpret it. This inquiry is constrained, in most cases, to using data based on their underlying classification. These anomalies do, however, underscore the difficulties around industry classification.

### Grouping service industries

Service industries are very diverse (Chapter 3; McLachlan, Clark & Monday, 2002). This diversity arises from many sources.

For example, service industries differ in the predominant form of capital they require (Box 2.1). Other dimensions include the main customer type of the industry (eg other businesses or end consumers), and the relative intensity of their use of information and communications technologies (ICTs).

[8] Different datasets are based on different systems of classification. While ideally this report would pick a single classification and translate every dataset into that classification, data limitations make such translations largely infeasible. Accordingly, the results in this report are presented based on several classifications (Appendix D).

Box 2.1 **One dimension of service industry diversity: what type of capital is required?**

Some services take the form of renting physical goods. Rental can be on an exclusive basis (eg car hire, holiday houses). In other cases the service offered is access to shared infrastructure that would be infeasible to supply on an exclusive basis (eg an airport or mobile phone network). A common characteristic of the industries that supply such services is that they are capital intensive – in particular for physical capital.

Other service industries are intensive in their use of human capital. For example, doctors, lawyers and building inspectors hire their expertise and apply it to a customer's specific situation. Physical capital is generally less important in these businesses.

A third category of service industry relies on intangible capital, eg the rights to reproduce music, films or photographs.

It is useful to group service industries to provide insights, even though no one grouping can hope to capture all relevant dimensions. Miles (1993) proposed a grouping for service industries based on the type of production process of the service: physical services; information services and person-centred services. This report uses a variation of Miles' classification to group the ANZSIC service industries (Table 2.1).

Table 2.1 **Service industry groups used in this report**

| Distributive industries | Information industries | Person-centred industries | Health and education industries |
|---|---|---|---|
| Wholesale trade | Information media and telecommunications | Accommodation and food | Education and training |
| Retail trade | Financial and insurance | Rental, hiring and real estate | Health care and social assistance |
| Transport, postal and warehousing | Professional, scientific and technical | Administrative and support | |
| | | Arts and recreation | |
| | | Other services | |

## Understanding productivity

A country's productivity is a key determinant of its standard of living. All else equal, the higher the productivity of a country, the higher will be its average income per head. Productivity growth allows countries to enjoy increasing wellbeing, including better-quality health, education and environmental quality, and increased time available for leisure.

Productivity is about how well firms and other organisations turn resources such as labour and capital (inputs), into goods and services (outputs). Productivity is typically measured as a ratio of output to inputs, in volume terms. Volume measures are used in order to remove the effects of price changes from productivity data. For example, the measured productivity of a steel mill should not change solely because of a change in the price of coal or iron ore (inputs) or steel (output).

Improvements in productivity can mean more output produced with the same inputs or the same output produced with fewer inputs.

There are two main measures of productivity: labour productivity and multi-factor productivity. Each is appropriate for different purposes. These productivity measures sit within the wider economic concepts of 'economic efficiency' and 'wellbeing' (Box 2.2).

Box 2.2 **Productivity, efficiency and wellbeing**

Economic analysis generally is directed to seeking ways to enable individuals in society to maximise their utility, given the resources available in the economy. Utility is the total satisfaction a person receives from goods and services. Achieving this goal involves maximising what, technically, is called economic efficiency.

Overall economic efficiency requires satisfaction of productive, allocative and dynamic efficiency:

- Maximum productive efficiency requires that goods and services be produced at the lowest possible cost[9].
- Maximum allocative efficiency requires the production of the set of goods and services that consumers value most in the current period, from a given set of resources.
- Maximum dynamic efficiency is achieved when allocative efficiency is also met for investments, including investments in innovation and future productive capability. (APC, 2013)

Improving economic efficiency can involve reducing the costs of production per unit of output (improving productive efficiency), matching the supply of goods and services to those most desired by individuals (improving allocative efficiency), and/or removing barriers to innovation and flexibility (improving dynamic efficiency).

Productivity is a narrower concept than efficiency. It most closely relates to productive efficiency[10]. Productivity growth unambiguously increases the standard of living that an economy can provide for its population, all else equal. However, the greatest possible gains also require an efficient allocation of resources.

Wellbeing is a wider concept than economic efficiency, in that it more explicitly includes material and non-material determinants of living standards (beyond income and GDP). It recognises that freedoms, rights and capabilities are important; that the distribution of living standards across different groups in society is an ethical concern for the public and a political one for governments; and that the sustainability of living standards over time is central to ensuring that improvements in living standards are also enjoyed by future generations. (New Zealand Treasury, 2011)

## Labour productivity

Labour productivity is the output produced per unit of labour employed[11]. Labour productivity is typically measured as the average output per hour worked.[12]

Labour productivity is an important measure because of its strong link to incomes and living standards. The standard 'growth accounting' framework decomposes GDP per capita – the main indicator of material wellbeing used for comparison between countries – into labour productivity and labour utilisation (Figure 2.1). The framework further decomposes labour productivity into capital intensity and multi-factor productivity (MFP).

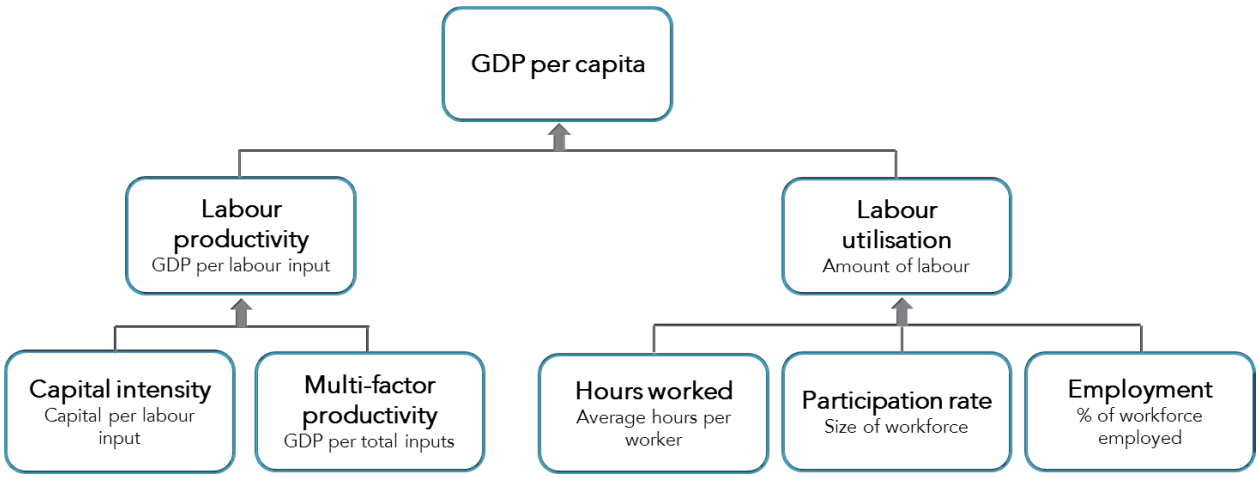
[9] Productive efficiency comprises technical efficiency (ie maximum output for the volume of specific inputs) plus optimum use of inputs given their relative costs (ie allocative efficiency on the supply side)

[10] If all inputs and output are valued at market prices, then productivity is conceptually the same as productive efficiency.

[11] 'Output' in this context is value-added adjusted for changes in price and quality. See Appendix C for more information.

[12] Labour productivity can also be measured more simply as output per worker. However, output per worker will reflect differences in working hours and therefore in labour inputs to the production activity.

Figure 2.1 Decomposition of GDP per capita




*Source:* Productivity Commission

Labour productivity is a widely-available measure of productivity as its measurement is relatively straightforward (see Appendix C). Labour productivity levels vary significantly between service industries. This broadly reflects differences in human and physical capital intensity across those industries (Conway & Meehan, 2013).

### Capital intensity

Capital intensity is the amount of capital per unit of labour. An increase in capital intensity ('capital deepening') is associated with an increase in labour productivity. Better tools, equipment, etc. generally increase output per worker. Capital deepening can change the skills requirements of a firm. For example, ICT investments can complement the analytical tasks primarily performed by highly educated workers and substitute for routine tasks generally performed by middle educated workers (Michaels, Natraj & Van Reenen, 2010).

Capital intensity is also affected by the cost of capital and other factors. Distortions in the economy that increase the cost of capital will reduce opportunities for profitable investments.

### Multi-factor productivity

MFP is a measure of how well an economy, an industry, or an individual firm uses a combination of inputs, typically capital and labour, to produce output. MFP growth represents the change in output that is not due to changes in the amounts of labour and capital inputs.

MFP growth captures a range of influences including the impacts of technological progress, improvements in the quality of management, capital, labour and production techniques and increased economies of scale on output.

MFP cannot be measured directly. There is no measure that directly captures the level of technology and efficiency in an industry or an economy. MFP growth is calculated as a residual; and so it also includes effects from any missing inputs and any mis-measurement of inputs and outputs[13].

## Measuring service industry productivity

The measurement of productivity of service industries presents some significant challenges (Djellal & Gallouj, 2008; Triplett & Bosworth, 2004). The main challenges relate to designing suitable volume measures of output for services that are highly differentiated in quality (or other attributes valued by customers) and in estimating the value of output for non-market services. Burgess (2011) explores these challenges in the context of measuring the output of financial-services industries. Haldane (2010) notes that the apparently high measured output of the UK financial sector has measured the return to risk – as distinct from the value-add from managing risk. He concludes that "risk illusion, rather than a productivity miracle, appears to have driven high returns to finance" (p. 2).

[13] For example, if the quality of labour improves via increased education, this will typically be captured as higher MFP.

The New Zealand Council of Trade Unions raised concerns about productivity measurement in specific service industries:

> Even in apparently less skilled services such as road transport there can be externalities such as pollution, road safety, and (in the case of passenger transport) passenger safety and experience which may not be captured in price or volume information.
>
> Given the lack of competition in the banking sector which dominates the Financial and Insurance Services industry, and its ability to generate activity of dubious social utility, we do not consider its measured productivity levels and changes should be taken at face value. (sub. 12, p. 4)

Statistical agencies are well aware of measurement issues. They have worked to improve the measures over time. Appendix C discusses productivity measurement in service industries.

The official productivity statistics are calculated and reported as industry, sector and economy-wide averages. Looking at averages alone can mask significant variation at lower levels of aggregation. It is plausible, and indeed likely, that analysis performed at alternative levels of aggregation – for example the sub-industry level – would offer different insights and findings.

Cross-country comparisons are particularly challenging. Relative productivity levels and growth are affected by differences in industrial classifications and industry composition between countries. This means that the comparisons are not always measuring like with like.

The Commission acknowledges these challenges. The analysis in this report draws on the best data available, and the findings presented are those consistent with international research and, where feasible, multiple analyses and datasets.

## Increasing firm productivity

A significant volume of research has identified many influences on firm and industry productivity. Influences on firm productivity can be roughly divided into two areas: influences that firms have some degree of control over (internal influences) and influences from firms' external operating environment (external influences). Table 2.2 summarises these influences. Please refer to Appendix E for further detail.

Importantly, firms seek to maximise their profitability, rather than their productivity. Profitability is directly affected by the changes in market prices that productivity measures abstract from. However, in many – but not all – cases, actions by management and workers to improve firm profitability also increase productivity.

Table 2.2 Influences on firm productivity

| Internal influences | External influences |
|---|---|
| Human capital investment (including in management quality) | Knowledge spillovers |
| Capital investment | Economic geography |
| ICT investment | Competition |
| R&D investment | International linkages |
| Learning-by-doing | Regulation |
| Workplace culture | Macroeconomic environment |
| Business models and processes | Institutional quality |
| | Infrastructure |

*Source:* Appendix E

## 2.2 The transaction perspective

Vargo and Lusch (2004; 2006) characterise services broadly as the application of competencies such as knowledge and skills by one person, to benefit another. This approach emphasises human capital, but underplays the role of other types of capital in service provision. Services also encompass the rental of physical goods (eg cars), and shared access to physical infrastructure (eg telecommunications and transport networks). These types of services appear to be excluded by the Vargo and Lusch definition.

An expansive definition of a *service* might be any economic activity that adds value from the perspective of customers. Such an activity will take place if there is opportunity for sale and purchase – an economic transaction.

Transactions involving goods are straightforward in principle. In its simplest form – barter – ownership rights[14] in one good are exchanged for ownership rights in another. Physical possession is often a reasonable proxy for ownership, so a simple physical exchange of goods is sufficient.

Transactions involving services can be more complex, as discussed below. Understanding why that complexity arises, and how it impacts on trade in services, is important in understanding the economics of the services sector.

### What distinguishes services transactions?

Service transactions can be distinguished from goods transactions along two dimensions (Figure 2.2):

- The horizontal axis reflects the nature of the object of the transaction: the intangible vs. the tangible. Transactions in intangibles are services transactions.
- The vertical axis reflects the distinction between an ownership and a rental transaction. Rentals, ie access to resources for a limited period of time, are services transactions.

In Figure 2.2, transactions that change the ownership of physical goods appear in the top left quadrant. From the transaction perspective, the degree to which the good embodies services is not relevant to this classification. Thus a supermarket checkout is a location for goods transactions, not retail services transactions.

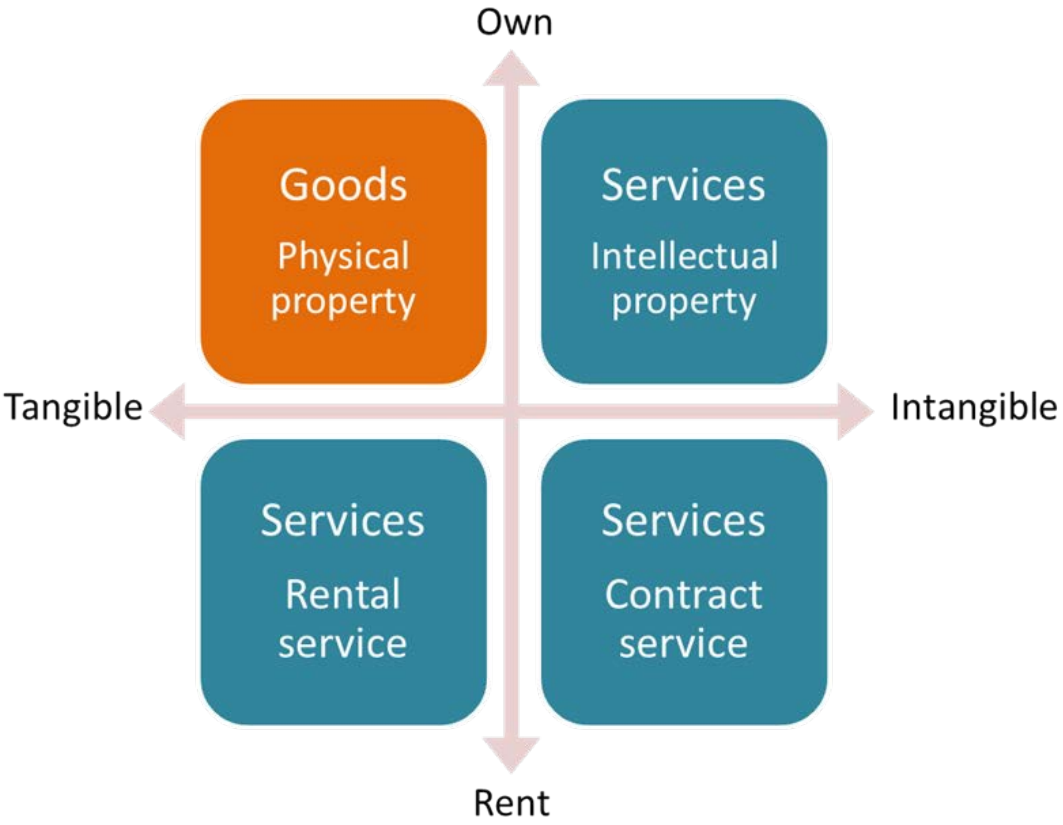
Transactions that involve a change of ownership of intangible property appear in the top right. Examples include the sale of patents and the copyright in books, and the creation of a logo for a corporate client. The old adage 'possession is nine-tenths of the law' is rarely applicable to intangible property, so the legal mechanisms that create and define the ownership rights that underpin these transactions tend to be more complex (Arora & Gambardella, 2010).

Transactions involving rental of tangible items, eg car hire, appear in the bottom left quadrant. Rental involves the transfer of specified rights for a limited time. Contracts also underpin rental transactions.

Lastly transactions involving the rental of intangibles appear in the bottom right quadrant. Examples include telecommunications service agreements and consultations with doctors. The quadrant also encompasses the rental of human time and expertise (ie labour). These transactions are often highly dependent on complex contracts and/or legal frameworks, though that complexity may not be evident to the parties, at least not until things go wrong.

[14] Ownership rights are the residual rights of control after any other contractual rights or legal obligations (Grossman & Hart, 1986). Ownership rights typically include the right to transfer ownership to another party.

Figure 2.2 Distinguishing characteristics of service transactions




## Legal frameworks and property rights

Legal frameworks for property rights and contracts underpin transactions in both goods and services.

For a service to be supplied in a market economy, one or more suppliers need to be able to capture sufficient revenue – directly or indirectly – to cover the costs of their inputs. The service needs to be 'excludable' – the supplier needs to be able to prevent customers obtaining their product for free[15].

If suppliers cannot recover their costs, the service will not be provided. The under-provision of services due to non-excludability is a form of market failure. Suppliers forgo any profits they might have made, and wages may also be forgone. Potential customers forgo any benefits from purchase, or substitute a less-desirable alternative.

Some services are by their nature excludable: tied to a person, a time, a location or some combination thereof. Examples include consultation with a doctor and a seat on a plane. There are effective mechanisms for dealing with non-excludability for other services, including through contracting arrangements, the creation of property rights, regulation, and tying the service to a good or a more-excludable service.

Many services are based on intangible assets such as knowledge. The property rights surrounding such assets are particularly important (Box 2.3).

Governments have an important role in establishing the legal frameworks underpinning contract law and property rights. Improving such mechanisms could boost productivity in the services sector and economic growth.

[15] What is 'free' can be subtle in some markets. For example, internet search engines are typically a 'two-sided market' involving consumers and advertisers. Consumers 'pay' for their searches through viewing advertisements. 'Free' in this context might mean consumers blocking the display of advertisements, a practice that, ultimately, could reduce the willingness of advertisers to fund the search service.

Box 2.3 **Property rights in knowledge**

Knowledge, in general, is only partly excludable (Romer, 1990) as its use can be observed by others who may not have contributed to its creation. However, its non-rival nature[16] can make its use immensely valuable when it is copied at low cost and applied in many situations. This risks a situation in which knowledge creators are poorly rewarded and knowledge is under-produced in a market economy. One possible response by government is to fund research that is openly shared. A complementary (and at times conflicting) response is the creation of property rights in knowledge to increase private incentives for its creation. For example, patents create property rights over innovations, and copyright creates property rights over some types of information and the output of creative industries.

The design of property rights over such 'intangibles assets' is challenging. Weak property rights encourage the spread of existing knowledge, but risk under-investment in new knowledge. However, property rights that are overly strong can also unduly restrict beneficial use and market entry, or deter innovation, particularly if those rights offer veto power over subsequent or parallel innovation (Clark & Konrad, 2008; Heller & Eisenberg, 1998). It has been argued that the standard patent period should be varied according to the specific characteristics of the industry (eg Encaoua, Guellec & Martinez, 2006).

## Services can involve high transaction costs

Transactions costs are the costs incurred by the parties to a transaction in addition to the price paid (Coase 1937; 1960) [17]. They come in many forms, including taxes and tariffs, search costs (finding a party to transact with), spatial transaction costs (the additional costs of trading at a distance), information costs (determining prices and quality), bargaining costs (agreeing on contractual terms) and enforcement costs (ensuring that parties abide by the contract).

Reductions in transaction costs have the potential to increase both the number of transactions and the economic surplus created by those transactions.

The next two sub-sections discuss the effect of two particular types of transaction costs on services markets: spatial and information costs.

### Spatial transaction costs

Spatial transaction costs – the extra costs incurred because production and customers are not co-located – are a significant component of transaction costs. They include transport costs, for example the cost of getting a customer to a shop, a musician to a concert hall, or a customised report to the customer who commissioned it.

Spatial transaction costs also include costs that arise when complex information is poorly communicated over distance[18]. The amount of international business travel has been rising steeply over time, reflecting the importance of face-to-face communication given the complexities of modern business relationships and business-to-business services (McCann, 2009)[19].

Spatial transaction costs for services are in many cases higher than those for goods. For some services these costs are effectively infinite; for example it is impractical to deliver a restaurant meal freshly made in Auckland to a customer in Wellington.

[16] Non-rivalry means that one person's use of a specific piece of knowledge does not devalue that knowledge for other potential users. The observation that knowledge is non-rival is generally true, though there are many examples where it does not apply. For example sharing foreknowledge of next week's Lotto numbers would degrade it value.

[17] If transaction costs are sufficiently high, there may be no price at which the parties will voluntarily transact.

[18] Complex information is more effectively communicated face-to-face, placing a premium on co-location (Storper & Venables, 2004; Gaspar & Glaeser, 1998; McCann, 2007)

[19] It also reflects the declining costs of international business travel.

Markets rely on information. Some information (eg reputations) relies on dense networks for its transmission, and those thin out with distance. This creates a 'home bias' towards the selection of local service providers.

Other information is difficult to convey other than face-to-face. The cost of providing a given level of service quality increases with distance (Duranton & Storper, 2007). These effects create spatial transaction costs.

Service suppliers take a variety of approaches to minimising total spatial transaction costs. In a competitive market, service providers can be expected to pick a minimum-cost combination of the five modes of services trade (Box 2.4). For example, a café owner in a CBD area may open an outlet (mode 3 – commercial presence) 250m away from their existing café, if their additional costs are less than those faced by their customers having to walk an extra 250m (mode 2 – consumer travel). Similarly the owner of software intellectual property may choose to export a good embodying the software (mode 5), rather than license the software to a manufacturer (mode 1) in a country with weak protection for intellectual property rights.

Box 2.4 **The five modes of services trade at a distance**

The General Agreement on Trade in Services (GATS) classifies international services trade into four different modes: In the context of the GATS, these relate to international trade, but they are equally as relevant to trade between geographic areas within a country. The modes are:

**Mode 1: Cross-border trade** where a service flows from one location to another, for example banking or architectural services provided over the internet.

**Mode 2: Consumption abroad** refers to situations where a consumer travels to another location to obtain a service, for example a tourist or student.

**Mode 3: Commercial presence** involves a service supplier establishing a permanent presence in another location to provide the service, for example a hotel chain.

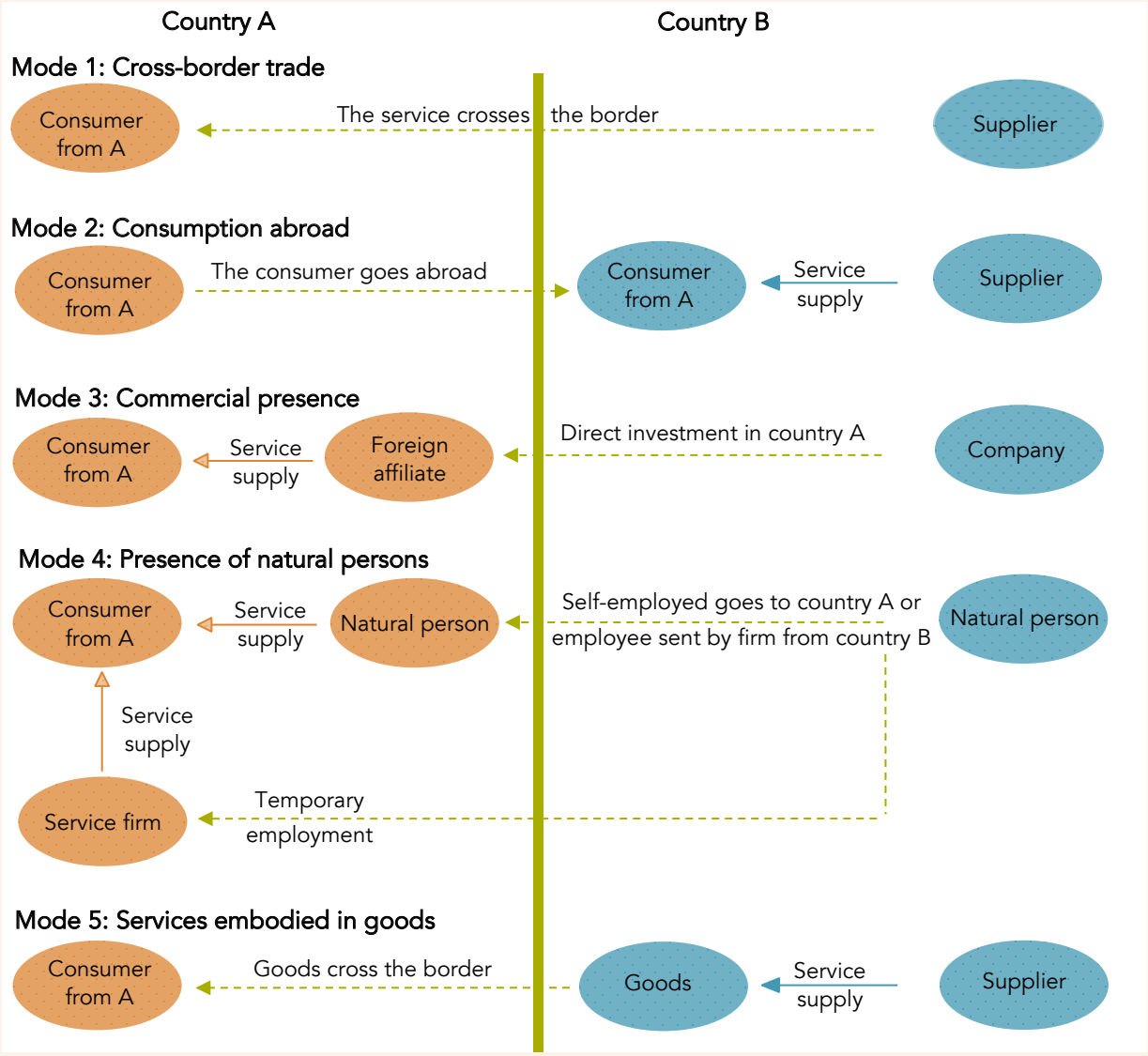
**Mode 4: Presence of natural persons** where an individual service provider temporarily travels to provide a service, for example consultancy services provided by an individual out-of-town, or in another country.

Data on services as a source of value-add in exported goods suggests a fifth mode:

**Mode 5: Embodiment of services in goods** where a significant proportion of a good's value is created by services.

Figure 2.3 provides a depiction of international trade via these five modes.

**Figure 2.3 Modes of international trade**




*Source*: Productivity Commission; McLachlan, Clark and Monday, 2002

New Zealand geographically remote and has a small population. It is likely that the costs of passenger transport are relatively high, affecting services trade via modes 2 and 4. Relatively high external and internal freight transport costs (NZPC, 2012b) affect services traded via mode 5.

### Innovation that reduces spatial transaction costs

Innovations that reduce spatial transaction costs and thus increase the size of services markets can assist in increasing services trade. As noted by Phil Hayward, over time "transport and communications have continually substituted for proximity. The extent to which this substitution has occurred depends on the type of business." (sub. 1, p. 2).

Such innovations can be technological, contractual or institutional. Examples include:

- Moving from single- to multiple-stage supply chains can improve productivity for services with supply at point of consumption and dispersed demand. For example, franchisee fast-food production involves concentration of 'back-room' functions to exploit economies of scale in purchasing, production, training and marketing.

- Codifying a service increases its tradeability. Codification means that requirements can be clearly described, quality can be easily monitored and contracting is efficient and enforceable. Suppliers can exploit economies of scale, and competition occurs at the global level. For example, standardisation of components and business processes, and the increased use of English as the common language of business have assisted India to become a preferred location for corporate software development and likewise China for outsourced manufacturing. Other examples include standardised shipping containers and internet protocols.
- Technological change is reducing spatial transaction costs for some services, typically those directly traded (ie via mode 1). For example, the falling cost of transmitting images via the internet has allowed radiological services to be traded between countries. (See section 2.6 for a further discussion of the effects of ICTs on service industry productivity.)

Some commentators (eg the New Zealand Institute, 2007a) have promoted the concept of 'weightless exports' as a means of overcoming the disadvantages of New Zealand's remoteness and small size (Box 2.10). However, the competitive dynamics of firm location in response to falling spatial transaction costs is complex (Box 2.5). In particular, near-zero spatial transaction costs imply that production can be located anywhere. Optimum firm location will then be determined by other cost factors.

Box 2.5 **Spatial transaction costs affect firm decisions about the location of production**

Firms optimise their location based on the overall costs and revenues. The spatial transaction costs involved in delivering a product to customers affect firm costs and thus location decisions. Three particular cases can be distinguished:

1. If spatial transaction costs are negligible, production can potentially serve global demand from anywhere.
2. If spatial transaction costs are moderate, the aggregation of production allows access to agglomeration benefits and economies of scale.
3. If spatial transaction costs are sufficiently high, production will be highly dispersed with local production meeting local market demand.

A service that falls into case (1) will be produced in few countries. Production is 'footloose' – it will occur wherever the cost of other inputs is lowest. For example, call centres that serve large clients are often located in low-wage countries such as India and the Philippines[20]. Other countries benefit from being able to import the service at globally-competitive prices.

Almost all countries will produce a service that falls into case (3), typically at many locations. Examples include haircuts, cafes, accommodation and veterinary services. Prices will be largely determined by the opportunity cost of other inputs (including labour), thus a haircut in the Auckland CBD will cost more than the equivalent service in Oamaru.

Depending on specific circumstances, countries may import or export services in intermediate cases (2).

The effect of a reduction of spatial transaction costs for a specific industry in New Zealand depends crucially on how that industry is currently affected by those costs.

If the industry falls between cases (2) and (3), then reduced costs might support increased aggregation within New Zealand, with consequential agglomeration and scale benefits.

Conversely, if the industry is between cases (1) and (2), then a reduction in costs will increase its exposure to international competition. If local industry has a low cost structure relative to other

[20] Unfamiliar accents and lack of deep cultural knowledge can also be considered as spatial transaction costs for some clients. These costs can lead them to preferring locations like New Zealand to serve specific markets.

locations globally, then the reduced costs will improve its ability to export. If local costs are high, and are not responsive to increased international competition, then the local industry will likely contract. For example, the falling cost of transporting recorded music over the internet assisted the rise of global music retailers such as Apple's iTunes, and a corresponding contraction of music retailers with a physical presence in countries like New Zealand.

*Source*: Productivity Commission; Krugman, 1991; Krugman & Venables, 1995; McCann, 2008

### Competition vs. scale in localised markets

Localised markets can occur with dispersed demand and high spatial transaction costs. Such markets suffer from a trade-off between scale in production and competitive pressure. This trade-off is undesirable – ideally markets have both competition and economies of scale.

> …on occasion [services] come with a ridiculous price tag as they are not subject to the same competitive pressure as the traded economy. (New Zealand Manufacturers and Exporters Association, sub. 6, p. 2)

In closed markets without significant demand growth, any improvements in scale are likely to be accompanied by a reduction in the number of competing suppliers, and vice versa. Low levels of competition tend to be associated with poor service, limited innovation and inflated prices. However, the inability of small producers to access economies of scale in production leads to a higher cost base, reflected in higher prices. This tension between scale and competition creates challenges for competition regulators (Evans & Hughes, 2003).

Localised markets may be an economically-efficient outcome from the responses of producers to spatial transaction costs. They may occur for both goods and services.

A New Zealand example of a localised market is aggregate (crushed rock). It is a good produced in about 600 quarries across the country: "it is a low value per weight product, so its cost increases sharply with distance, doubling every 30km. Most aggregate is produced and used locally..." (Richard Paling Consulting, 2008, p. 60). However, aggregate appears to be a quite rare example of a localised market for a non-perishable good. Most are produced at relatively few locations, and then transported (using the distributive service industries) to a location that balances the cost of distribution against the convenience and transport costs of customers.

By contrast, much of the output of person-centred and health and education industries, and some information industries, is produced at thousands of locations across the country. This reflects the high costs typically involved in delivering those services at a distance[21]. However, markets for such services can be thicker[22] where demand is concentrated, for example in larger cities.

'Tradeability' is the degree to which a good or service can be traded across a distance. It is inversely related to spatial transaction costs. Zheng (2013) calculated an index of tradability of the output of service industries within New Zealand. The index was relatively high for the information industries and for wholesale trade, and relatively low for other service industries, including health and education.

### Trading across international boundaries

International boundaries create additional spatial transaction costs, and have significant impacts on services trade. These costs and their effects are discussed in section 2.5.

## Information costs

For a transaction to occur, the vendor needs to know what they are selling, and the purchaser what they are buying. Moreover, they need to be able to agree that an exchange has taken place. It may be harder to meet these conditions for transactions in intangibles, relative to goods transactions.

[21] Technological developments in remote health and education offer the promise of significant increases in the tradeability of these services in future.

[22] A thick market is one with multiple buyers, multiple sellers, and efficient matching of buyers to sellers.

Customers of both goods and service providers often face an 'information asymmetry'. The supplier knows the quality of the product they intend to supply, but higher-quality suppliers find it difficult to credibly signal this information to prospective customers, given that lower-quality suppliers can make similar claims (Akerlof, 1970)[23]. The intangible nature of many services compounds the problem if it means that customers have no easy way to determine service quality before they receive it. Indeed, they may not be in a position to determine quality following the transaction. For example, it will likely be some years before a consumer can judge the durability of a tooth filling.

Difficulties in observing service quality can make it harder to obtain a remedy for poor service. A customer returning a broken vacuum cleaner to a store is likely to have relatively little difficulty in agreeing with staff that the item is, in fact, broken, as a first step in obtaining a suitable remedy. It is likely more difficult to reach agreement with a masseuse or lawyer that the service provided was not up to the anticipated standard. A foreseeable difficulty in obtaining a remedy is a transaction cost which acts to discourage trade.

Low-quality service provision may create unacceptable risks for service purchasers or impose costs on third parties (eg an inexperienced bus driver could be a hazard to passengers and other road users).

Standard regulatory responses to these problems include mandating minimum quality levels, backed by quality-control inspections, statutory warranties, or to license occupations and/or service providers. Information disclosure requirements can also be applied to make more transparent where the product sits within the range of quality levels.

In the presence of a mandated minimum quality level there may be no private rewards to improving quality beyond this level. If consumers have no reliable signals of higher quality above the minimum, they will only pay for minimum quality (Akerlof, 1970). Branding, guarantees and multi-level quality certification are market-based mechanisms that help to overcome this problem.

Mandated minimum quality levels create effects above and below the prescribed level. They can deny the service to those on low incomes for whom a lower-quality service would be preferable over none at all. They can also encourage clustering at or near the mandated minimum, denying consumers the benefits of quality variations (Box 2.6).

Box 2.6 **Service-product variety enhances consumer welfare**

High levels of product variety – including variety in quality – are an important source of consumer welfare. Product variety creates value for consumers when they can find something that more closely matches their needs. That created value can be shared with the supplier as the customer is willing to pay a higher price for their preferred variety, or to make a purchase that they would not otherwise have made.

In deciding how many varieties to produce, a firm faces a trade-off between increased revenue from customers and its costs of producing that variety.

There are significant economies of scale in the production of standardised products. The production of additional variety comes at a cost to a firm to the extent that it reduces these economies of scale.

A feature of many services is relatively fewer economies of scale in production than is typical for goods[24]. This shifts the optimal trade-off towards increased variety, as the cost of additional variety will be a smaller increment on that of the standard service.

The supply of some services is amenable to individual customisation – the ultimate in variety. Examples include doctors and accountants, who provide information highly specific to customers' particular circumstances.

*Source:* Katz & Shapiro, 1985; Farrell & Saloner, 1986

[23] Consumer laws aim to prohibit false and misleading claims; however it cannot ensure that all claims are accurate or correctly interpreted.

[24] Digital goods, for example music, are an obvious exception.

Information asymmetries affecting suppliers and customers are also likely to exist within firms. The internal costs of monitoring quality may affect the optimal firm size, or advantage the use of particular organisational forms, for example cooperatives. Ideally, regulation should be neutral to organisational form, rather than mandating specific models.

The Lawyers and Conveyancers Act 2006 provides an example of restrictions on organisational form. It requires that control of incorporated law firms remains in the hands of lawyers actively involved in the practice, and that ownership resides only with those lawyers and their relatives. This removes, for example, the ability for law firms to incentivise non-legal staff through equity participation in the firm and prohibits large law firms from raising capital through a public offering. The ownership of pharmacies is similarly restricted by regulation.

### Assessing services transaction costs

The Commission sees value in identifying common trends, issues and themes affecting the services sector. However, the diversity of services and the industries supplying them mean that it can be difficult to make generalisations. An astute reader might find a counter-example to every example presented here, and a special case that is the exception to every observation.

The findings presented here are not universal. Some may challenge conventional ways of thinking about services. The fact that they do not apply in every case does not reduce their importance or relevance. Rather it should encourage the deep investigation of particular services markets when making policy decisions.

**F2.1** Some service transactions involve high transaction costs. Reductions in transaction costs have the potential to increase the number of transactions and the economic benefits created by those transactions.

**F2.2** The complexity of some service transactions prompts governments towards extensive regulation of service industries. An important question is how close to optimal are the regulatory arrangements? Such regulation is difficult to design and risks unintended consequences.

**F2.3** Spatial transaction costs – the extra costs incurred because production and customers are not co-located – are often higher for services than for goods. High spatial transaction costs can lead to localised services markets with an undesirable trade-off between competition and economies of scale in production.

**F2.4** Information asymmetries can be more pronounced in service transactions than goods transactions, due to the difficulties in assessing service quality before or after purchase, and in obtaining remedies for poor service quality.

## 2.3 The embodiment perspective

The 'three sector' model (ie primary, goods-producing and services) describes the typical transitions of a developing economy. The economy transitions from subsistence agriculture to trading in agricultural and other primary products (the primary sector). This is followed by an expansion of manufacturing (the secondary or goods-producing sector), and then the expansion of the services sector (also referred to as the tertiary sector) accompanied by the relative contraction of the other sectors (Fisher, 1936; Clark 1940).

This model, covering stages of economic development, aligns with a linear 'supply chain' view of the economy (Figure 2.4). The two models thus reinforce each other.

Figure 2.4 The economy as a linear supply chain


These models are appealing in their simplicity, but an over-simplification of the 21st century situation in New Zealand and other advanced economies. As expressed by the New Zealand Manufacturers and Exporters Association:

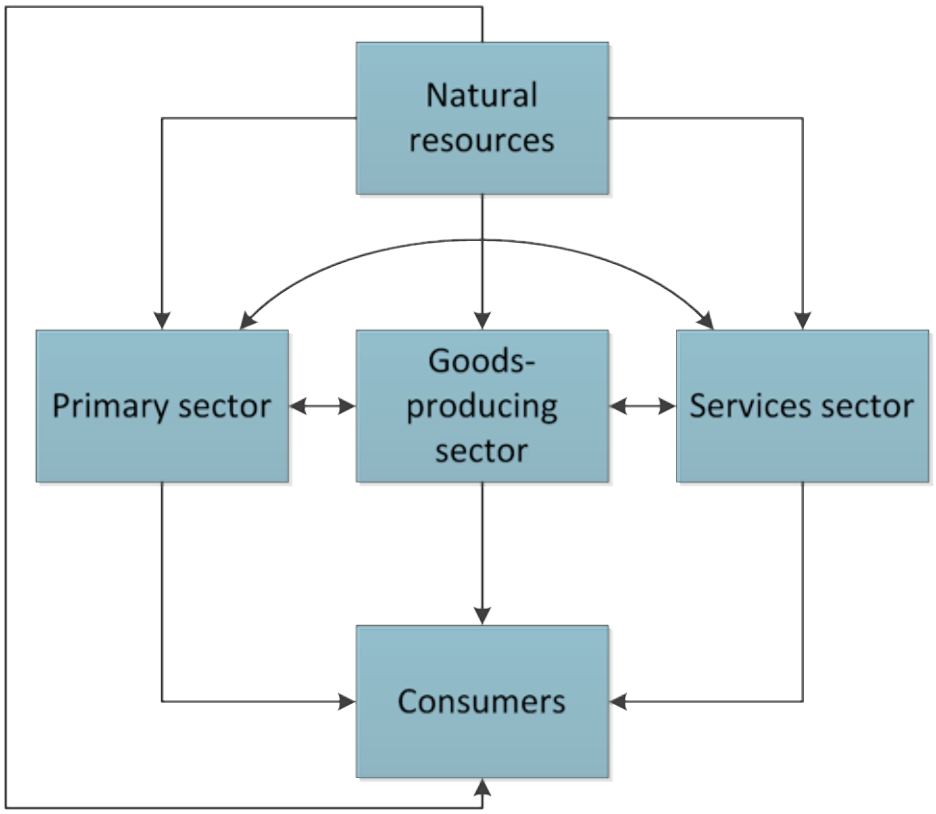
> The idea that services, primary and goods producing sectors can be considered independently is flawed. (sub. 6, p. 1)

New Zealand's services sector is highly interlinked with the wider economy. The reality of New Zealand's supply chain is a lot more complex than the linear model, and less amenable to a simple diagram. Figure 2.5 offers one attempt. Points of divergence with the linear model include:

- Natural resources are important inputs into all sectors. For example, wind and water are inputs into electricity production (goods-producing sector), and scenery is an input into the tourism industry (services sector). Natural resources also provide services directly to consumers (eg clean air).
- The services sector provides inputs for the primary and goods-production sectors (eg accounting, media and transport).
- The primary and goods-producing sectors provide goods directly to consumers (eg farmers' markets, electricity, home building).
- The goods-producing sector provides inputs for the primary sector (eg fertiliser, tractors).

Not depicted, but also important, are the information flows from consumers back to producers about the quality and type of goods and services they prefer.

Figure 2.5 The supply-chain as a web




Reflecting these interrelationships, the 'embodiment perspective' emphasises that the 'goods' produced by the primary and goods-producing sectors have a large component of services (Chapter 6). Similarly, the 'services' produced by the services sector often require the use of goods for their production.

Furthermore, actual 'products' sold to customers are often bundles of goods and services (Box 2.7).

Box 2.7 **Participant views on services embodied in goods**

> The delineation between traditional goods and services is blurring as customers demand service functionality (such as customer care) with physical goods and hardware with their services. (Vodafone New Zealand, sub. 8, p. 5)
>
> Many businesses, both in New Zealand and offshore, now sell a complementary range of services around their main product. This ensures that they can meet the needs of their customers, while at the same time providing an additional stream of revenue. (BusinessNZ, sub. 9, p. 6)
>
> As manufacturing becomes more elaborate, devices are bundled with different services to form a product. … bundles of device and services increasingly blur the distinction between services and products. (New Zealand Manufacturers and Exporters Association, sub. 6, p. 2)

Just as the distinction between goods and services is blurred, so is the distinction between employment and contracted services as intermediate inputs to production. 21st century economies are characterised by increasing interconnectedness, specialisation and complexity. Organisations cannot efficiently obtain the full variety and quality of services they require on an in-house basis. The purchase of services from external suppliers complements in-house provision, and can substitute for it where the transaction costs of services contracting are low. High transaction costs – for example difficulties in specifying the required outputs – tilt the balance towards in-house service provision.

Over recent decades these factors have favoured a shift from in-house to outsourced provision of services. By itself, this shift creates measurement issues. For example, the output of a lawyer employed by a manufacturer is likely classified as manufacturing; but should the lawyer set up independently and contract

back to the manufacturer, her output would be classified as a service. Increased outsourcing explains part but by no means all of the increasing employment in the services sector and decreasing employment in the goods-producing sector (Schettkat & Yocarini, 2006).

Service industries vary markedly in labour productivity levels and growth rates. Related to this, industries vary in dimensions pertaining to their workforce: average wages, skill levels, average ages and experience, turnover rates and proportions of part- to full-time workers. Variability in these dimensions has a large benefit in that it creates employment opportunities that match the very mixed composition of the workforce. All economies have a spread of available skills and skill requirements; ideally the two are closely matched.

In particular, it desirable that the low-skilled, the young, the inexperienced and those who need flexible work hours can find suitable jobs. Often, these positions will be temporary but they can provide both valuable learning experiences and stepping stones to more skilled and more permanent employment. The service industries that provide these jobs thus play an important role in society and the career development of these workers. Notwithstanding this, all industries have potential to improve their productivity. When they do so, they can provide further benefits.

The deep substitutability and interconnectedness between the services sector and the wider economy suggests that the sector is best viewed as part of an integrated whole. Policy analysis should avoid the trap of treating the primary, goods-producing and services sectors as silos.

## 2.4 Regulating service industries and markets is complex

Governments, through the design and implementation of institutions and regulation, can foster or hamper services markets.

Regulatory barriers to competition and technological diffusion tend to be highest in service industries, including the service industries that use ICT intensively (Conway & Nicoletti, 2006). Service industries make up a relatively large part of the economy, and provide important inputs to other productive industries. So the potential benefits of getting service industries regulation right are likely to be relatively large.

Aside from the quality of regulation, the sheer amount of regulation can be a detracting factor in itself:

> There is no clear single piece of regulation for market conduct for the insurance industry in New Zealand. We have a number of regulatory supervisors and a number of relevant pieces of legislation in respect of market conduct. This fragmentation leads to inconsistent and sometimes inappropriate introduction of regulation. We also end up with confusion for consumers. This can act as a disincentive to investment in the industry as there is uncertainty around compliance and exposure. (Insurance Council of New Zealand, sub. 11, p. 3).

Policy interventions have complex effects, and risk unintended consequences and negative outcomes overall. For example, imposing minimum quality levels for rental housing might not achieve all desired outcomes:

> … where households are in poor-quality accommodation because they have nowhere else to go [minimum-quality regulation] risks worsening their situation. Either repair costs will be passed on through increased rents, or in extreme cases the building may be condemned. This may generate greater risk for those who struggle the most to achieve adequate housing. (NZPC, 2012a, p. 207)

The Motor Trades Association provided a second example: requiring registered motor vehicle traders to offer consumer guarantees has the consequence of discouraging them from operating at the lower-priced end of the market (Box 2.8).

Box 2.8 **Mandatory guarantees and used cars**

The retail sale of used cars is subject to the provisions of, amongst others, the Sale of Goods Act 1908, the Consumer Guarantees Act 1993, the Contractual Remedies Act 1979, the Fair Trading Act 1986, the Motor Vehicle Sales Act 2003, Motor Vehicle Dealers Act 1975 and the Consumer Information

Standards (Used Motor Vehicles) Regulations 2008.

This legislation is aimed at protecting consumers. It reflects a view that:

- vendors know (or should know) more about specific cars than do potential customers;
- vendors have incentives to misrepresent what they do know;
- vendors are better able than customers to diversify the risk of faults unknown to both parties at the time of purchase; and
- market-based mechanisms (including reputations, voluntarily-offered guarantees and third-party inspections) offer an insufficient level of consumer protection.

According to the Motor Trade Association, rather than serving to protect all consumers, the Consumer Guarantees Act has created a significant unintended consequence by pushing the market for older used cars almost exclusively to the consumer-to-consumer market, in which few consumer protection measures apply[25]. Of the 732,000 used passenger vehicles bought and sold in 2012, 518,000 (70%) changed hands in the private market. Unregistered dealers are known to operate in the consumer-to-consumer market.

The Consumer Guarantees Act reduces the incentive for dealers to trade anything other than reasonably new second-hand cars. The older the car, the higher the risk of unknown faults and so the higher the potential costs of providing a guarantee. In addition, the law does not define the period that consumer protection applies, providing only the vague guidance of 'what is reasonable'. Because of these risks, dealers mostly operate in the newer, higher-priced sectors of the used vehicle market.

*Source*: Motor Trade Association

The regulation of intangible assets has implications for the productivity performance of some service industries. Intangible assets – including employee skills, databases, design, organisational know-how, brands and intellectual property – have grown in importance as sources of innovation and productivity gains over recent years. The design of policy frameworks to realise this productivity potential is particularly tricky, as the characteristics of intangible assets create market imperfections that hinder the allocation of new ideas to where they can be developed most efficiently. Policy issues include the financing of start-up firms, the treatment of intangibles in corporate valuation and accounting frameworks, competition policy in the digital economy and the role of intellectual property rights (Andrews & de Serres, 2012).

High spatial transaction costs can create small localised markets for some services, which may increase prices and reduce the quality and variety of those services. Improved transport and communications infrastructure can reduce spatial transaction costs, and thus the regulation of infrastructure, and transport and communication linkages, are likely to be important influences on the productivity performance of service industries.

These characteristics – the quantity of regulation, its complexity and possible unintended consequences – create entry barriers that act against new firms entering existing markets, thus decreasing competition. Furthermore, these same characteristics make it easier for incumbent providers to argue for higher entry barriers.

[25] Consumer protection may include the following. (1) If a private seller misleads a buyer about a vehicle, in some circumstances the Contractual Remedies Act 1979 applies and the buyer can take the seller to the Disputes Tribunal (Ministry of Business, Innovation and Employment, 2011a). (2) A buyer may have some rights under the Sales of Goods Act 1908 if they unknowingly bought a vehicle that the seller did not have the right to sell; or if the seller owed money on the vehicle or used the vehicle as security (Community Law, n.d.). (3) Buyers also have some protection under section 9.12 of the Land Transport Rule: Vehicle Standards Compliance 2002, 35001/1. The vehicle's Warrant of Fitness must be less than one month old at the change of ownership, unless the buyer accepts this in writing (Ministry of Transport, n.d.).

Chapter 3 explores the diversity of service industries, and discusses some of the main regulations affecting those industries. Chapter 8 proposes specific topics for in-depth analysis in part B of this inquiry. The opportunity to improve regulation is one criterion for the selection of those topics.

## 2.5 International trade in services

International boundaries create additional spatial transaction costs, and have significant impacts on services trade. Legal and regulatory systems change at borders, and, as discussed earlier, service transactions rely on those systems. Enforcing a contract in another country's legal system is typically more uncertain and more expensive than within the local system.

Unlike the tariffs applied 'at the border' to the international trade in goods, barriers to international trade in services generally occur 'behind the border' (World Trade Organisation, 2012). Such barriers are termed *non-tariff measures* (NTMs) by the Word Trade Organisation.

Specific NTMs include rules around working visas (affecting services trade via mode 4), education and tourist visas (mode 2), and foreign investment (mode 3). Mode 1 services trade may be affected by regulation concerning data location, publishing and privacy. Mode 5 trade is affected by tariffs and NTMs that apply to the goods embodying those services.

Empirical work on how closely prices are linked across New Zealand and Australia is consistent with the effects of NTMs on services markets. This research indicates that services markets are generally much less integrated across the Tasman than goods markets (Conway, Meehan & Zheng, 2013). Some parts of New Zealand's services sector are well integrated with Australia's, at least in terms of ownership (eg banking, retail). There are, however, still large parts of the services sector that operate quite separately in the two countries.

Free trade agreements that cover services offer the potential of larger services markets. Benefits include increased scale for service exporters, and improved variety and competition in domestic services markets. Cross-border investment agreements are particularly important given the importance of mode 3 as an export mechanism.

Alongside explicit NTMs, trade barriers can arise simply because the regulatory systems in two countries are different. There are multiple ways in which such barriers can be reduced in situations where there is a high degree of compatibility in the objectives of those systems. These can be broadly grouped into unilateral and cooperative approaches (APC & NZPC, 2012).

Unilateral approaches include one country changing its regulatory system to mirror that of others. It also includes *unilateral recognition* – accepting that a person or product that meets the standards, qualifications and certifications of another country also meets the equivalent requirements of the recognising country. Another unilateral approach is to engage the services of an overseas regulator on a 'fee for service' basis.

Cooperative approaches include mutual recognition, harmonisation, and the creation of cross-country institutions. The latter two may work in some circumstances, but can be slow, complex and potentially inefficient (APC & NZPC, 2012). Even if regulatory systems are largely aligned, the uncertainty that a service will not be legally, culturally or socially acceptable in a foreign market adds costs, and thus reduces its tradeability. Mutual recognition can be an efficient means to reduce the cost of regulatory uncertainty associated with services trade and is thus a desirable alternative; however it requires a reasonable level of conformance between regulatory systems and a high level of trust between governments.

These considerations can also play out within a country. Differences in local government regulation or its implementation can deter businesses from operating across local government boundaries (NZPC, 2013a). Procurement policies that explicitly favour local suppliers deter market entry by non-local firms. If widely applied, such policies contribute to the creation of localised markets. The resulting effects on price and quality may not be those desired by the policy makers.

Spatial transaction costs are not the only determinate of international trade. To the extent that countries have different economic characteristics that result in their firms facing different costs and opportunities, they tend to specialise and trade according to their comparative advantage (Box 2.9).

Box 2.9 **Comparative advantage leads to specialisation and international trade**

Comparative advantage explains why people and firms, individually and collectively as countries, specialise in production and trade with each other. More particularly, it explains how it is efficient for a person or firm to specialise in what they are *comparatively* best at or, in other words, according to where their margin of advantage compared with that of others is largest.

If, as the data suggests, New Zealand manufacturing firms are able to add more value per dollar of input costs than are dairy farmers, it might be thought that New Zealand would specialise in manufacturing industries. But that is not necessarily the case. If the advantage that manufacturing has over dairy farming in New Zealand is small compared with the advantage that manufacturing has over dairy farming in, say, China, then it is more efficient for New Zealand to specialise in dairy farming and for the two countries to engage in trade.

The structure of comparative advantages amongst countries should not be thought of as founded solely on differences in natural resource endowments. Comparative advantage derives from all those things that bear on a country's economic characteristics, including its institutions, its location and the skills and aptitudes of its people. Hence it is possible for countries to develop comparative advantage in new industries, including 'higher value-add' industries. Examples of countries that have done this include Korea and Singapore (Lucas, 1993; van Elkan 1995). There is also a literature "that finds that the evolution of a country's export mix is a path-dependent process, in the sense that it is easier for a country to develop a new comparative advantage in some product if it has already developed a comparative advantage in products that are proximate [similar] to it". (Mehta & Felipe, 2013). Hildago, Klinger, Barabási and Hausmann (2007, p. 487) note that "it is quite difficult for production to shift to products far away [from those in which a country has an existing comparative advantage], and therefore policies to promote large jumps are more challenging. Yet it is precisely these long jumps that generate subsequent structural transformation, convergence, and growth".

The rise in importance of digital goods and services have led some to suggest that policy should emphasise 'weightless' exports (Box 2.10).

Box 2.10 **'Weightless' exports**

The economy is becoming 'lighter' all the time, in the sense that the physical weight of traded products has been falling relative to their value. In 1999, then US Federal Reserve Chairman Alan Greenspan commented that the "per capita physical weight of our gross domestic product is evidently only scarcely higher today than it was fifty or one hundred years ago" (Greenspan, 1999).

The term 'weightless economy' (or 'digital economy') has been used to describe a post-industrial economy that uses ICT to produce and deliver high-value output of exchangeable information, knowledge and other intangibles. ICT has enabled expansion of those parts of the economy for which the transport costs of exchange have fallen to near zero; for example, music and books ordered and delivered via the internet.

Skilling and Boven (2007) propose that New Zealand's distance from world markets lends it to specialising in 'weightless' exports, noting that products and services with no weight are costless to transport. With no transport costs, New Zealand producers should be able to compete with those in other locations on a 'level playing field' – one unaffected by distance. Examples cited include the

hosting of large-scale data centres for international clients (New Zealand Institute, 2007b).

However, small differences in transport costs can make large differences in the cost structures for some seemingly 'footloose' activities. Moreover, the costs of transporting data to and from New Zealand may not be all that low for New Zealand because:

- Internet infrastructure, and in particular long undersea cables, is very expensive. Infrastructure will not be built unless prices allow infrastructure providers to recover their sunk costs. New Zealand, being small and remote, is thus likely to face relatively higher international data transport costs for the foreseeable future.
- New Zealand has few high-capacity data connections with the rest of the world, and is thus relatively vulnerable to loss of a single connection. Multiple, redundant connections would reduce this risk, but would be costly.
- Data-intensive activities (such as matching information across two databases) can require multiple round trips between computer systems. The relatively small delays in transmitting data across a distance can accumulate to the extent of making some types of activities too costly.

Transport costs are not the only source of spatial transaction costs, and other such costs (eg differences in regulatory frameworks) may be more significant for particular activities.

Whether spatial transaction costs are a constraint – or irrelevant – for a New Zealand-based business depends on the specific activities of the business. It may be that, as a whole, the relative reductions in spatial transaction costs via use of the internet compared to conventional transport could be greater for New Zealand producers. However, the view that 'the internet' means that New Zealand producers can compete as if they were unaffected by distance overlooks the factors described above.

## Is New Zealand missing opportunities for service exports?

Zheng (2013) compares the domestic tradeability of service industries against statistics for international trade in the services produced by those industries, finding:

> … a large number of services that are tradable within New Zealand but are not traded internationally to or from New Zealand. This may be indicative of a missed opportunity and regulatory and other barriers to services trade. (p. iii)

The apparent absence of exports of a particular service may indicate a regulatory barrier or missed opportunity. It could also reflect other reasons including:

- Financial services are less tradable cross-border than within an economy because of differences in currencies; systems (transactions in each currency have to be processed/settled within the clearance and settlement system of the country that issues that currency); and proximity to customers.
- Core government services are highly 'tradeable' (in the sense of being widely delivered) within countries but little between countries almost by definition – governments serve their local populations, not those of other countries.
- Wholesale trade may be tradable at the world level (eg it is probably efficient to supply many European countries from a single warehouse). However, New Zealand is an unlikely location for warehouses serving international markets.
- Statistics New Zealand's data for services exports, on which Zheng's analysis is based, excludes mode 3 exports (ie commercial presence in the importing country). Many types of services are more efficiently exported via mode 3, for example construction project supervision services.

Chapter 6 further investigates opportunities to expand New Zealand's services exports.

## 2.6 ICT and services-sector productivity

This section looks at how economic influences can play out in practice, using the example of the way ICT influences service industry productivity.

ICT is a dominant general purpose technology of the late 20th and early 21st centuries. It has very general impacts on economic activity and people's wellbeing. In particular, ICTs present many opportunities to invent services and boost the productivity of existing services.

ICT use contributes to productivity growth in service industries in several ways:

- ICT can improve the efficiency with which businesses produce services, for example by reducing the inventory holding costs of wholesalers and retailers through better stock tracking.
- ICT can enable businesses to adopt new business models and organisational forms, for example direct sales to customers via an airline's website rather than via travel agents.
- ICT can lower the spatial transaction costs of providing services (eg legal research in Auckland for customers in London). This has the effect of increasing the size of the market for those services and increasing competition between service providers.

The US productivity experience of the 1990s and 2000s provides an example of the influence of ICT on the productivity of services. In particular, the strong MFP performance in the US in some service industries has been linked to increased use of ICT (Box 2.11).

Box 2.11 **Strong US productivity growth has been associated with the use of ICT**

Timmer, Inklaar, O'Mahony and van Ark (2011) observe that faster labour productivity growth in the US economy compared to the European Union reflected the superior productivity performance in the US services sector (Table 2.3).

**Table 2.3 Contributions to market economy labour productivity growth, 1995 to 2007[1]**

| | Market economy labour productivity growth | Contribution from goods-production[3] | Contribution from ICT production[4] | Contribution from market services[5] | Contribution from reallocation of labour between sectors[6] |
|---|---|---|---|---|---|
| United States | 2.6 | 0.3 | 0.8 | **1.8** | -0.2 |
| European Union[2] | 1.6 | 0.7 | 0.4 | **0.6** | -0.2 |

*Source:* Timmer, Inklaar, O'Mahony & van Ark, 2011

*Notes:*

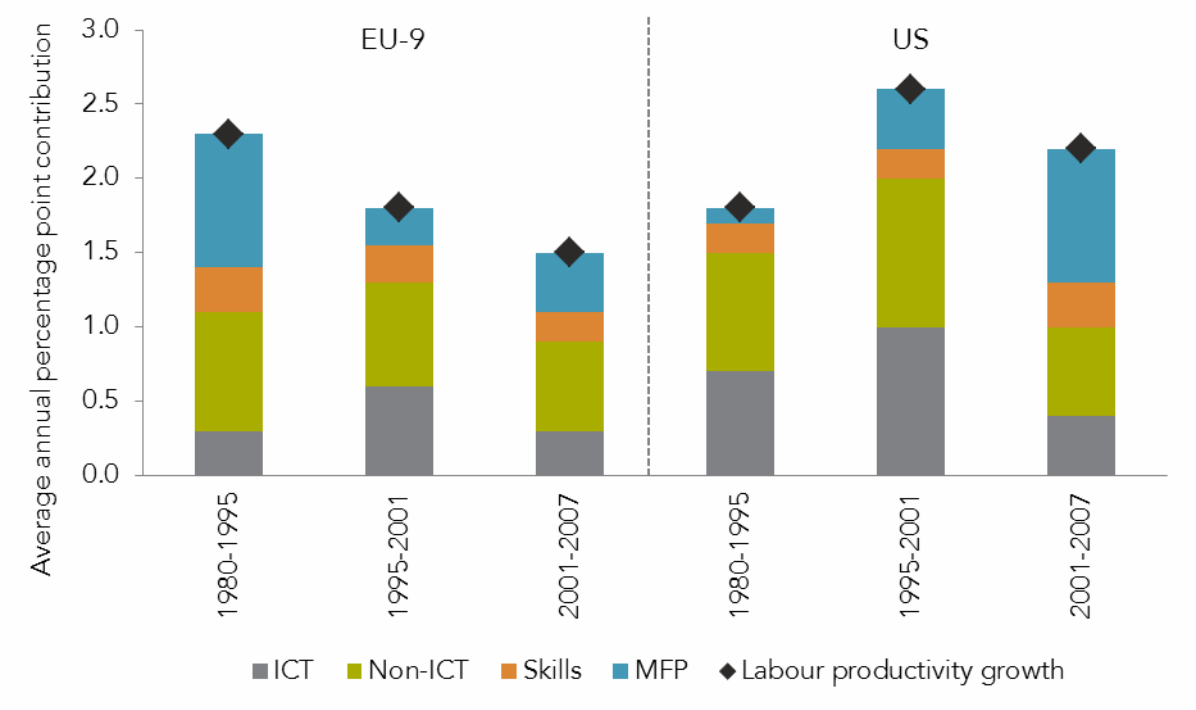
1. Average annual growth rates, in percentage points. Calculations based on EU KLEMS database, November 2009. Numbers may not sum exactly due to rounding.
2. The 'European Union' aggregate refers to the ten countries of Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Spain and the United Kingdom.
3. Goods production includes agriculture, mining, manufacturing (excluding electrical machinery), construction and utilities.
4. ICT production includes manufacturing of electrical machinery and post and telecommunications services.
5. Market services include distribution services and financial and business services, excluding real estate and personal services.
6. Labour productivity effects of reallocations of labour between goods-production, ICT production and market services.

As an explanation for the superior US labour productivity performance, Timmer, Inklaar, O'Mahony and van Ark (2011) argue that US service industries such as retail and wholesale trade, transport services, and business services embraced the knowledge economy through capital investment in ICT,

and through new business and organisational forms facilitated by ICT. This has happened to a much more limited extent in Europe (Sadun & Van Reenen, 2005). The higher productivity growth in the US came more from smarter use of skills and capital inputs (ie from growth in MFP) rather than from more intensive deployment of those inputs.

A similar argument is made by Strauss and Samkharadze (2011). Figure 2.6 (based on their work) indicates that growth in ICT capital was an important contributor to US labour productivity growth from 1995-2001, although it assumed less prominence after 2001. In contrast, non-ICT capital growth was a more significant contributor to labour productivity growth in the EU-9 than ICT capital growth.

**Figure 2.6 Contributions to labour productivity growth in the EU-9 and the US, 1980-2007**




*Source:* Strauss & Samkharadze, 2011, p. 11

*Notes:*

1. Labour productivity growth for the total economy.
2. This figure breaks labour productivity growth into four components: ICT capital growth, non-ICT capital growth, an effect from the changing skill composition of the workforce, and growth in MFP.
3. The 'EU-9' countries are Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands and Spain. The annual growth rate in real value-added per hour "is obtained by subtracting the contribution of hours worked from the growth rate of real-value added in the EU KLEMs growth accounting database" (Strauss & Samkharadze, 2011, p. 11).

The strong aggregate US productivity performance compared to European countries provides a counter-example to the trend of convergence in OECD countries (Box 2.12). The fact that US firms reacted differently than their European counterparts to technological developments in ICT suggests that institutional, policy and/or cultural factors are important.

Box 2.12 **Convergence and catch-up**

*Convergence* refers to the proposition that the per-capita income of poorer countries should, over time, converge towards that of the richest economies as capital and ideas flow from richer to poorer countries in search of higher returns. As these resources are applied, poorer economies – starting with low productivity levels – should experience higher productivity growth than do richer economies.

In conceptual terms, the world *productivity frontier* reflects the cutting edge of technology[26] at the global level and determines the maximum amount of goods and services that can be produced with a given quantity of inputs. The US is one of the most productive economies in aggregate, and its performance is often used as a proxy for the frontier. However, different countries are likely to be at the productivity frontier in different industries.

The productivity gap between countries reflects a range of policy and non-policy factors, including policies that affect how efficiently labour, capital and fixed resources are allocated and employed within the economy. Productivity growth in a low-productivity country is influenced by the extent to which new technologies flow across its border, and its ability to make use of those technologies. The quality of its economic institutions and policies are particularly important in this regard.

Because learning from others is typically easier than creating new knowledge, countries some distance behind the frontier tend to experience faster productivity growth than countries operating nearer the frontier. Poorer countries can replicate the successful production methods, technologies, and institutions of developed countries, and avoid adopting the unsuccessful ones.

*Catch-up* is the process of getter closer to higher-productivity countries. Specific catch-up mechanisms include technology and knowledge transfer through foreign direct investment and cross-border mobility of high-skilled workers and managers (Mason, 2013).

There is little evidence of convergence across all countries in the period 1960-2000 (Acemoglu, 2009). However, convergence has been observed across countries with economic institutions above a certain quality threshold. Until recently at least, convergence has been observed across a number of OECD countries and in the manufacturing sectors of a wide range of countries (Acemoglu, 2009; Rodrik, 2013).

[26] 'Technology' in this context includes institutions and policy settings.

# 3 Understanding New Zealand's service industries

**Key points**

- The diversity of the services sector is apparent across the different industries that make up the sector, and also within each industry. This makes it difficult to draw general conclusions about the services sector, even within specific industries.
- Trade-offs between competition and scale are evident in the service industries. Industries that rate highly for competition indicators are often dominated by smaller firms. Smaller firms tend to provide services to specific local markets and are less able to generate scale economies. In contrast, some industries are characterised by a smaller number of relatively large firms. While these firms are better placed to generate economies of scale and scope, their size invariably means that the industry has fewer competitors.
- Improved information and communications technologies (ICTs) and other technological changes are influencing the way that services are provided. For example, online sales account for a growing share of output in the wholesale and retail industries. The small scale of many of New Zealand's service firms may be a barrier to investment in ICT and other innovations. The experience of other countries suggests that larger firms are better able to make these investments because the up-front costs are easier to spread across a larger business base.
- The extent of regulation varies between different service industries. Some industries, such as administrative and support services, are only subject to generic regulations that apply across all industries, such as labour laws. Others, such as information media and telecommunications, are the target of industry-specific regulations.
- The historic view of services as the source of low-skill, low-wage jobs certainly does not apply across the services sector. Employees in industries such as financial and insurance services generally hold tertiary qualifications, and have earnings well above the median for the economy as a whole. On the other hand, there are some industries where formal qualification levels and wages are well below average. These industries also tend to have higher rates of worker turnover and a larger share of part-time workers.

This chapter examines some of the distinctive features of the industries that make up the services sector (Table 3.1).

Table 3.1 Service industries

| Distributive industries | Information industries | Person-centred industries | Health and education |
|---|---|---|---|
| Wholesale trade | Information media and telecommunication | Accommodation and food | Education and training |
| Retail trade | Finance and insurance | Rental, hiring and real estate | Health care and social assistance |
| Transport, postal and warehousing | Professional, scientific and technical services | Administration and support | |
| | | Arts and recreation | |
| | | Other services | |

Within each of the service industries, there is a wide range of factors that could influence productivity performance. This chapter provides an overview of each service industry by focussing on the following themes.

### Competition and tradeability

As a general rule, competition creates incentives for firms to innovate and provide the best possible value for consumers. Competition can also result in creative destruction, where poorly performing firms exit the market as a result of an inability to keep up with more productive firms (Syverson, 2010). However there are trade-offs between competition and scale. On one hand, firms with a large market share may exert a certain degree of dominance meaning they face lower levels of competition, but on the other, larger firms are more able to generate economies of scale and scope which can bring improvements to the services they deliver.

Linked to the issue of competition is 'tradeability', which is used in this chapter to refer generally to the ability of businesses to deliver services over distance. Where a service can be traded over distance, it limits the ability of a single business to dominate a specific local market. Where services can be traded internationally it opens the domestic market to competition from abroad, as well as allowing local firms to increase their scale by exporting services to much larger overseas markets.

### Regulation

There is a case for regulation of service industries where market failures lead to inefficient levels, or quality, of supply (and where the benefits of regulation outweigh the costs). Such cases include natural monopolies, externalities and lack of information. There is a risk, however, that regulation may constrain innovation, competition or adaptation to changing circumstances, and thus have its own detrimental effects.

Service industries are subject to a range of both industry-specific regulation, which is targeted specially toward firms in that industry, and non-targeted regulation, which applies to firms across a range of service industries. Self-regulation is also common among service industries. Under self-regulation, groups of supplies agree to a set of rules or principles about how they will operate, how they respond to issues such as complaints from consumers, and how they deal with non-compliant suppliers.

### Employment, wages and skills

Human inputs are an important driver of performance in service industries. Factors such as employees' qualifications and worker turnover can have important effects on firms' productivity performance.

### ICT and innovation

Adoption of product or process innovations can generate significant productivity gains. Some of the recent technological changes in each industry are examined, along with data relating to investment in research and development and whether firms are using the best available technology.

## Data presentation

Summary data for each of these themes (except for regulation, for which comparable indicators are not readily available) for the major service industries is presented in a 'wagon-wheel' chart. These charts show the position of each industry for a set of indicators relative to the average for service industries (excluding the industries that are primarily comprised of non-market provision). Box 3.1 details the indicators and data sources.

Some of the information presented in these charts is based on Statistics New Zealand surveys (Box 3.1). Further information about survey techniques such as sample sizes is contained on the Statistics New Zealand website. Three indicators (tradeability, profit elasticity and labour productivity consistency) have been derived using the prototype Longitudinal Business Database (LBD) component of the Integrated Data Infrastructure prototype (IDI) managed by Statistics New Zealand. These results are not official statistics, and the disclaimer at the start of this report applies to them.

Most of the information presented in this chapter is not disaggregated below the industry level, meaning that many findings are by necessity generalised. Within each industry there is wide variation in the types of businesses and the types of services that they deliver, which can be hidden by the average.

Box 3.1 **Summary indicators for service industries**

### Competition and tradeability

- Self-reported competition – the proportion of businesses that reported facing competition from 'many competitors none dominant', or 'many competitors several dominant'[27] (Statistics New Zealand (SNZ), Business Operations Survey, 2012).
- Profit elasticity – a measure of firms' ability to increase prices above marginal costs, a behaviour which may be indicative of low levels of competition (Productivity Commission calculations using LBD data). The graph shows the inverse of the results, so a higher score is indicative of higher competition.
- Labour productivity consistency – the productivity difference between higher and lower performing firms (the 75$^{th}$ and 25$^{th}$ percentile respectively) (Productivity Commission calculations using LBD data). A higher score means that productivity of firms within the industry is quite consistent, while a lower score means there is a wider spread in the performance of firms. The latter could be indicative of lower levels of competition if lower performers are not forced to exit the industry or improve their performance.
- Tradeability – the extent to which industries' output is traded within New Zealand from one geographic region to another (Productivity Commission calculations using LBD data). Industries with low tradeability tend to be geographically dispersed due to the need for a physical presence where consumers are located, while industries with higher tradeability tend to be more concentrated. The results for this variable are based on preliminary analysis – the finalised results will be included in the final inquiry report.

### Employment

- Wages – the median hourly wage (SNZ, New Zealand Income Survey, 2012).
- Formal qualifications – the proportion of the employees with a degree or higher qualification (SNZ, 2006 census data).
- Employee turnover – a measure of workforce stability calculated by dividing the average of job starts and terminations, by the total number positions within an industry (SNZ, LEED database, 2012).

### Industry structure

- Output used by other industries – shows the proportion of the output from the industry that is used by other domestic industries (SNZ, input output tables, year ended March 2007).
- Firm size – the proportion of employment in firms with more than 100 employees (SNZ, Business Demography Survey, 2013).
- Exports – the share of outputs that are directly exported (SNZ, input output tables, year ended March 2007).
- Foreign ownership – the share of employment in firms where foreign ownership is 50% or greater (SNZ, Business Demography Survey, 2013).

### ICT and innovation

- Up to date technology – the proportion of firms that reported their core equipment was fully up-to-date compared with the best available technology (SNZ, Business Operations Survey, 2012).
- Undertaking R&D – the proportion of firms that reported they had undertaken research and

[27] Other response options were 'no more than one or two competitors' or 'no competitors/captive market'.

development (R&D) during 2012 (SNZ, Business Operations Survey, 2012).

- Technological change – the proportion of firms who reported that the degree of technological change between 2011 and 2012 in their business was either major or complete (SNZ, Business Operations Survey, 2012).

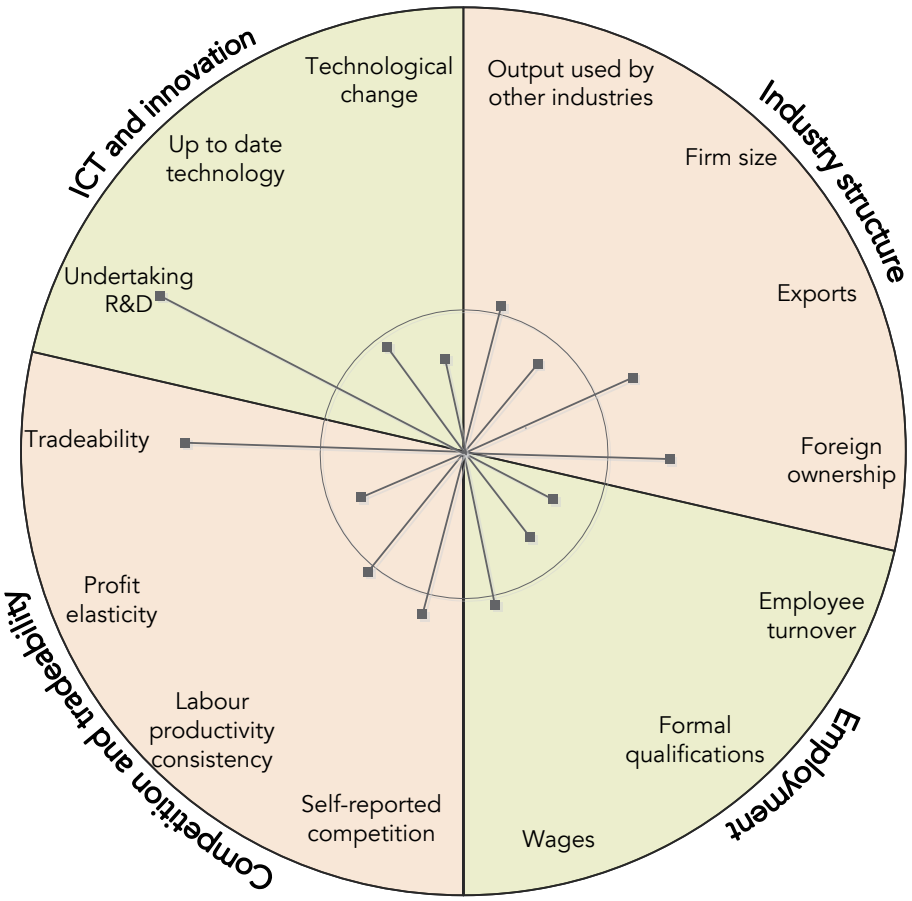
## 3.1 Distributive industries

### Wholesale trade

The wholesale industry comprises businesses that purchase and on-sell goods to other businesses. Wholesalers' main service is acting as an intermediary between producers and other businesses such as retailers. This intermediation reduces transaction, search and transport costs for producers and customers. Wholesalers' premises, often warehouses, offices or large storage facilities, usually do not display goods and are not designed to attract walk-in customers (ABS & SNZ, 2006). Wholesalers may also provide other services such as product assembly, packaging, sales and marketing, customer support, market research, product information, credit and financing and technical support.

The largest wholesaling sub-industry by output is machinery and equipment (30%), followed by other goods and commission-based wholesaling (28%); basic materials (21%); grocery, liquor and tobacco product (16%); and motor vehicle and motor vehicle parts (5%). Employment shares are very similar to output shares.

Figure 3.1 Wholesale trade summary indicators




*Notes:*

1. The circle in this figure represents the average for each indicator across all service industries (excluding health and education). The lines for each indicator are calculated as a ratio of the mean. This approach applies for all of the figures in this chapter. Box 3.1 contains further information about the indicators in this figure (and all other figures in this report).

### Competition and tradeability

Relative to other service industries, the wholesale trade industry scores well for most competition indicators.

In addition to a reasonable level of domestic competition, wholesalers are increasingly exposed to competitive pressure from online businesses. Wholesale trade websites are now making it easier for small and medium-sized enterprises to contact manufacturers directly, thus reducing the need for an intermediary (Kask, Kiernan & Friedman, 2002). Wholesale businesses are also subject to competitive pressure from international firms. There has been a slight increase since 2000 in the presence of wholesale businesses with a high share of overseas equity (50% or more) since 2000.

The diffusion of technological innovations such as Universal Product Code symbols has enabled greater economies of scale in the wholesale industry. In the United States, these technological innovations have enabled wholesalers to manage larger and more diverse inventories and to service larger and more geographically expansive customer bases (Kask, Kiernan & Friedman, 2002). In New Zealand there has also been some consolidation among wholesale firms. The employment share for firms with less than ten employees declined between 2000 and 2012. Over the same period, employment in firms with fifty or more employees increased from 43% to 48%.

### Regulation

The wholesale trade industry is not the subject of industry-specific regulations; however, the industry is affected by generic regulations, such as labour laws (including occupational health and safety regulations) and urban planning regulations. Some wholesalers are also impacted by import and export regulations such as the 10% tariff that applies to the import of various textiles, clothing and footwear. Wholesale is also heavily influenced by the productivity of the transport industry meaning that government policy relating to transport and infrastructure will often have a flow-on effect to the wholesale industry.

### Employment, wages and skills

Skills levels (as measured by formal qualification levels) are relatively low in the wholesale industry with most employees holding a secondary school qualification as their highest qualification. Despite relatively low formal skill levels, wages ($22.92 per hour) are 10% higher than the average for all industries ($20.83 per hour).

### ICT and innovation

Internationally, wholesalers have invested heavily in ICTs and other technology. For example, during the 1990s the Australian wholesale industry made significant investments in technologies to reduce or eliminate labour-intensive tasks, such as barcoding, scanning and automated stocktakes. The industry also introduced technology that enables 'just in time' ordering and delivery, such as automatically triggered inventory replacement systems and 'cross-docking', where goods pass through a distribution centre as opposed to being stored in one (Johnston et al., 2000). During this period, the wholesale industry was a "stand-out performer" in terms of productivity growth in Australia (Banks, 2002, p. 7).

New Zealand's wholesale trade industry is also one of the more intensive users of ICT relative to other industries (Warmke et al., 2010). Interestingly, the wholesale industry was the highest ranking service industry for the proportion of businesses that invested in R&D. Average expenditure on R&D was also high compared with other service industries. Despite their relatively high rate of R&D, wholesalers' self-reported rating against best commonly available technology was low compared with other service industries.

### Overall picture

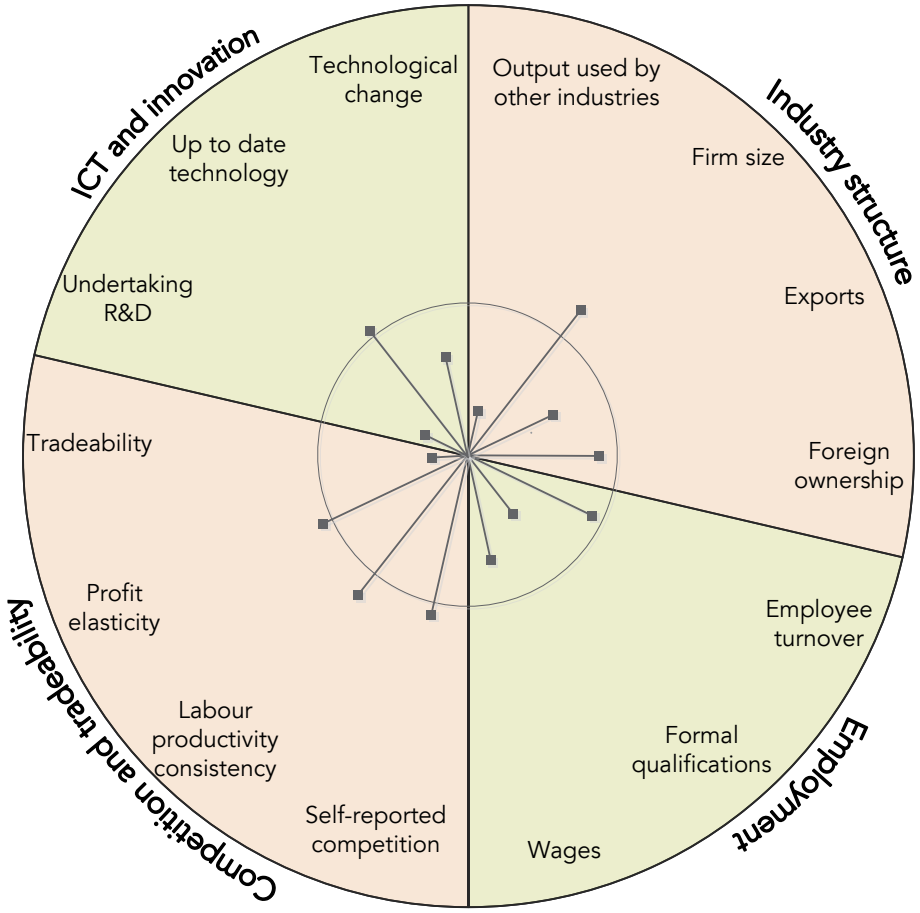
The wholesale industry is primarily involved in the provision of services to support goods transactions. The industry's performance is paradoxical. On one hand, there are no obvious issues in terms of the structure or composition of the industry. By most indicators, it appears relatively competitive, and online wholesale markets are a growing source of competition for the industry. In addition, there is little in the way of industry-specific regulation and the industry is undergoing a period of slight consolidation and has a relatively high level of research and development. But on the other hand, the productivity performance of the industry has been relatively poor. A comparatively low rate of productivity growth has resulted in a persistent productivity gap relative to wholesale trade in Australia and the United Kingdom (chapter 4).

## Retail trade

The retail industry comprises businesses that purchase and on-sell goods to the public, including on a commission basis and via the internet. The primarily role of retailers is to facilitate goods transactions, by acting as intermediaries between manufacturers or wholesalers and consumers. Retailers often provide additional services such as marketing, advertising, and financial and after-sale services. Retailers typically trade from shops; however under the industry classifications, not all businesses that operate from shops are retailers, for example, travel agents and hairdressers.

The retail industry is a significant component of the New Zealand economy and is the largest employer within the services sector. Its two largest sub-industries by output are supermarkets and grocery stores, and furniture, electrical and hardware stores.

Figure 3.2 Retail trade summary indicators




### Competition and tradeability

Aggregate indicators show relatively strong competition in the New Zealand retail industry. The industry has high rates of entry and exit by firms (Doan et al., 2012), and the productivity gap between high and low productivity retailers is relatively narrow compared to other service industries. These factors suggest that it is relatively easy for new businesses to enter the market, and that there is sufficient competitive pressure for lower productivity firms to be forced from the industry.

New technology has facilitated increased competition in some parts of the retail industry. Traditional retailers are facing pressure from growing online sales, which accounted for around 6% of retail sales in 2012 and grew by 19% from 2011 (PWC & Frost & Sullivan, 2012). Online retail facilitates direct competition from international retailers and also encourages domestic competition through greater price comparison and product knowledge. Online retail also lowers entry barriers for new businesses because it is more straightforward and less costly than bricks and mortar retail (Australian Productivity Commission, 2011).

The level of competitive pressure generated by online retailing depends on the nature of the goods sold. Online retail is strongest amongst goods that are smaller, lighter and non-perishable: books, electrical items

and clothing are the most popular online purchases (PWC & Frost & Sullivan, 2012). Many other goods, such as petrol, are by necessity sold and collected at the same location. Overall, despite the growing presence of online retail, tradeability in the retail industry remains relatively low (Figure 3.2).

The entry of international retailers is another variable that impacts competition. International firms often have advantages in management expertise, technology, access to low cost supply chains and technical knowledge (Higón et al., 2009). These attributes are associated with higher productivity in those firms and can increase competitive pressure on domestic retailers. While some international retailers such as Bunnings and JB Hi-Fi have entered the New Zealand market in the last decade, the share of employment in firms with a large proportion of overseas equity (greater than 50%) decreased slightly between 2000 and 2012.

### Regulation

The retail industry is subject to several targeted regulations such as restrictions on the sale of liquor, and food-safety and labelling legislation. In addition, a number of generic regulations have a particular impact on the retail industry such as trading-hours and labour regulations (New Zealand Manufacturers and Exporters Association, sub. 6). New Zealand shops are generally able to open 24 hours, seven days a week; trading restrictions only apply to three and a half days of the year. Despite the limited restrictions on trading, the inability to trade on Easter Sunday has frustrated New Zealand retailers, and certain exemptions to this rule have been a source of confusion (New Zealand Retailers Association, 2011).

The industry is also heavily influenced by consumer law, which involves a framework of statutes and regulations that deal with the purchase and supply of services and goods, and is primarily directed at addressing the risk of unfair supplier behaviour. Consumer laws can boost productivity by helping to provide an environment where "effective competition is stimulated by empowered consumers and responsive suppliers that trade fairly" (Australia Productivity Commission, 2008, p. 4) When consumers are confident that their rights as a consumer are protected, they are also more willing to purchase services without the need to negotiate tailored protections (Ministry of Consumer Affairs, 2010).

Large retailers and general merchandise retailers have expressed concern that certain planning laws have acted as a barrier to the establishment of new retail businesses, particularly in metropolitan centres (New Zealand Retailers Association, 2011). Restricted access to land can cause retailers to operate at a size below their efficient scale (Griffith & Harmgart, 2005) or prevent new stores from opening. For instance in 2008, the Environment Court ruled that IKEA could not be a tenant at a retail development in Auckland due to concerns its presence would cause traffic congestion (Environment Court, 2008).

The GST exemption for certain overseas online retail purchases has also emerged as an issue for some retailers (Box 3.2).

Box 3.2 **Online retail and GST**

Goods purchased online from foreign websites costing up to $400 are not liable for New Zealand's 15% GST, while goods sold by New Zealand retailers in shops and online are. This difference distorts competition in favour of foreign online retailers (Steel et al., 2013) and creates a risk of misallocation of resources (Australian Productivity Commission, 2011). On the other hand, New Zealand consumers benefit significantly from the lower prices and the greater range that foreign websites offer (Steel et al., 2013). It can also be argued that the shipping and other costs associated with purchasing from overseas retailers partially negate any distortion. The Australian Productivity Commission's (2011) analysis of this issue in Australia found that the costs of GST collection and the benefits to consumers of lower prices for imported goods outweighed the benefit of tax neutrality. They concluded that the costs of collection would need to be reduced in order for there to be a net benefit from decreasing the GST threshold.

### Employment, wages and skills

Among the retail sub-industries, there were a variety of employment movements between 2000 and 2012. The motor vehicle and parts and the fuel sub-industries experienced average annual falls in employment of 1% and 3% respectively. In contrast, employment in the electrical and electronic goods; hardware, building and garden supplies; and the clothing, footwear and personal accessories sub-industries all grew at an average rate of about 3% each year.

The retail industry is characterised by small businesses with most retailers employing five or fewer staff. However, the share of employment in business with more than 100 employees has grown from 46% to 53% since 2000, indicating some increase in the industry's scale. The ratio of retail outlets to enterprises (an enterprise can operate a number of outlets) has increased, indicating growth in the share of chain stores.

Skill levels for all occupations in the retail industry are below the New Zealand average, with the exception of 'sales and/or marketing managers' (DoL, 2009a). Median hourly earnings in the retail and accommodation and food service industries combined are the lowest of all New Zealand industries. The retail industry has a high proportion of part-time employees and a relatively high proportion of retail workers are under the age of 25, suggesting that retail is an important source of part-time work for students.

### ICT and innovation

Studies of the US retail industry have shown a significant relationship between ICT investment and productivity growth at the firm level. Effective ICT investment has also been identified as a factor in the superior productivity performance of the US retail industry relative to the UK (Higón et al., 2009; Foster, Haltiwanger & Krizan, 2005).

ICT can boost retail productivity by providing retailers with better information about customers, generating faster information flows between business units, and by matching inventories more closely to consumer demands (McGuckin, Spiegelman & van Ark, 2005). ICT can also improve productivity by reducing labour input, for example, by using barcode technology instead of manual pricing (Higón et al., 2009; Johnston et al., 2000). Other important ICTs include the analysis of sales information and computerised stock management systems that automatically replenish inventories. Many of these technologies were adopted by larger retailers in the late 1980s and spread to smaller retailers in the 1990s (Johnston et al., 2000).

It is likely that the small-scale of many of New Zealand's retail firms is acting as a barrier to ICT investment. Retailers in larger countries are able to spread the high fixed costs of ICT investment across a greater number of stores. However, for some ICTs, the cost barriers for small firms are lower. For example, Telecom (sub. 15, p. 2) notes that "the availability of standardised cloud services and smart mobile devices reduces the technical and cost barriers for small to medium businesses to adopt ICT in their business".

### Overall picture

The retail industry exhibits many of the negative features that have traditionally been attributed to the services sector. Productivity levels and growth are low, as are average wages and skill levels. The productivity challenges within the retail sector are not likely to have simple solutions. Retail services are generally still produced and consumed at the same location (requiring a face-to-face interaction) despite increasing volumes of online sales. Given New Zealand's small and dispersed population, local production and consumption limits the scope for retailers to benefit from economies of scale and can also dampen competition. Future productivity growth in the retail industry may come through greater innovation, better use of ICT and increased competitive pressure from both domestic and foreign online retailers. It is also important that planning restrictions and other regulations do not unnecessarily inhibit increased scale in the industry, as evidence from overseas suggests that larger chain stores often lead the way in terms of lifting productivity (Doms, Jarmin & Klimek, 2004).

## Transport, postal and warehousing services

The transport, postal and warehousing (TPW) industry makes up 4.5% of New Zealand's GDP and employment. The industry is primarily comprised of businesses that provide transport of passengers or freight by road, rail, water or air. It includes businesses that provide support services for the transportation

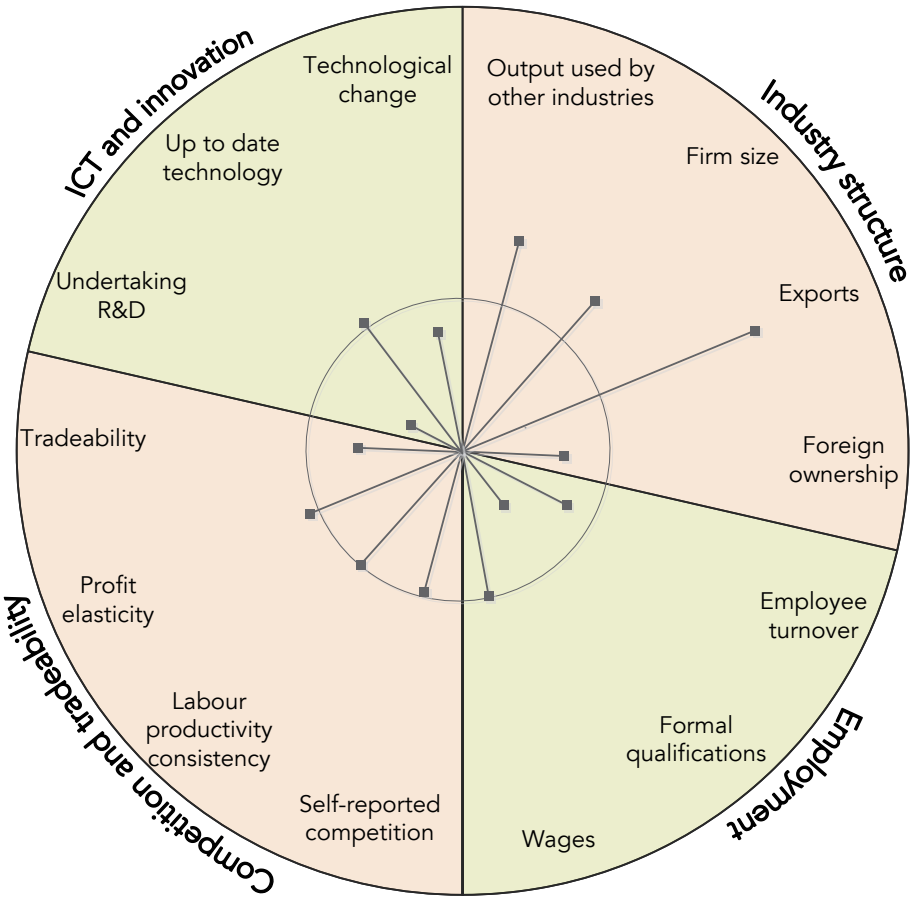
of passengers and freight such as stevedoring services, airport operations and customs services. Businesses that provide postal services, sightseeing transport and the storage and warehousing of goods are also included in the TPW industry. Road transport and transport support services are the largest sub-industries accounting for 34% and 31% of output.

The TPW industry was a star-performer in terms of productivity growth during the 1990s when multi-factor productivity increased at an average rate of 5.5% per year. However productivity growth slowed significantly in the late 1990s, and has since been more typical of the rest of the economy.

The performance of the industry has a direct impact on the daily life of most New Zealanders and the operation of other industries in the New Zealand economy. In particular, businesses need to be able to transport goods to domestic and international markets efficiently. The Ministry of Transport forecast that demand for freight will double over the next three decades (Ministry of Transport, 2011).

The industry is a significant exporter, which in part reflects New Zealand's geographic isolation and large tourism sector. The TPW industry has the highest export share of any service industry (43%) when the contributions of TPW services to other industries' exports are taken into account. The sub-industries with the greatest focus on exporting are air transport (driven primarily by international air travel) and 'other transport', which includes a range of tourism-orientated transport such as sightseeing flights and fishing charters.

Figure 3.3 Transport, postal and warehousing summary indicators




## Competition and tradeability

The TPW industry generally ranks at or marginally below the services-sector median for most competition indicators. For example, the self-reported levels of competition in the industry are slightly lower than the services-sector median, with 30% of firms reporting that they face either no effective competition, or just one or two competitors.

While the industry-wide figures are not indicative of significant competition problems, there are sub-industries where competition is limited. In some cases this is a consequence of New Zealand's small

population size, meaning that natural monopolies exist for ports and airports. The Productivity Commission's inquiry into international freight and transport services (2012) also identified issues such as limited competition in the provision of stevedoring services and impediments to competition caused by regulatory and other government interventions, such as the exemption of liner shipping carriers from some domestic competition laws.

The industry has a relatively high share of employment in firms with more than 100 employees. However, in contrast to the other distributive service industries (retail and wholesale), the employment share of large firms declined marginally since 2000.

### Regulation

Up until the mid-1980s, the TPW industry was subject to heavy government regulation, and government departments were directly involved in the provision of transport services. As part of a broad reform agenda from the mid-1980s to early 1990s, the industry underwent major regulatory reform that resulted in significant privatisation and increases in competition (NZPC, 2012b). During this period of regulatory reform, the industry experienced strong labour and multi-factor productivity growth. However, since the late 1990s, there has been little regulatory reform and productivity growth in the industry has plateaued.

The Commission's inquiry into international freight and transport services identified a number of industry-specific regulatory issues that may be affecting productivity growth:

- The exemption of liner shipping carriers from some domestic competition laws.
- In the road transport sub-sector, the uptake of high-productivity motor vehicles (trucks that exceed standard length and mass limits) is constrained by the current road user charge system, which dis-incentivises councils from making the necessary road improvements that these vehicles require.
- New Zealand participates in a number of multi- and bi-lateral air services agreements that cover matters such as the routes that may be flown, the capacity that airlines can offer, how many airlines operate, and how prices may be regulated.

In addition, the transport industry is heavily impacted by government decisions regarding key infrastructure projects such as roads, ports, airports and rail. Central and local government also has significant ownership within the TPW industry – primarily ports and airports. Central government has a 73% share in Air New Zealand (as at May 2013) and also operates three state-owned enterprises: New Zealand Post, New Zealand Railways Corporation (KiwiRail), and Airways Corporation of New Zealand (which provides New Zealand's air navigation services, such as air traffic control).

Compared with transport and postal sub-industries, warehousing services are relatively unaffected by government regulation.

### Employment, wages and skills

Average earnings in the TPW industry are marginally below the average for all industries. Employment in the TPW industry was static between 2000 and 2012. The only service industry with a lower employment growth rate (in this case negative) during this period was the information, media and telecommunications industry. The primary area of employment reduction in the industry came from the postal and courier sub-industry. There were also less pronounced employment falls in the rail and water transport sub-industries. Employment in the other TPW sub-industries grew at a rate typical of the services sector as a whole.

The qualification requirements for different occupations within the TPW industry are diverse. They range from highly trained occupations such as commercial airline pilots and air traffic controllers, to occupations that require little in the way of formal qualifications such as taxi drivers and furniture movers. Skill levels are relatively low across the industry as a whole, with around two thirds of employees having either no formal qualifications or a high school-level qualification.

### ICT and innovation

Many of the productivity-enhancing technologies that have influenced the retail and wholesale industries such as barcoding, scanning and cross-docking have also been applied in the TPW industry. Adoption of

ICTs has enabled greater coordination between different parts of the transport industry and enabled stock to be managed, tracked and traced worldwide (Ballis, 2008). Further changes in logistics technology are anticipated in the future, driven by trends such as environmental concerns, pressure for more rapid and flexible delivery and new communications technologies (NZPC, 2012b).

The industry's self-reported rating against best commonly available technology is about average for service industries. The TPW industry has a relatively low proportion of firms that invest in R&D, but the average amount invested by those that do invest is relatively high (compared with other service industries where a small proportion of firms conduct R&D).

### Overall picture

The TPW industry plays a significant role in the New Zealand economy, primarily by facilitating the movement of goods and people both nationally and internationally. Following a period of strong growth during the 1990s, the productivity performance of the industry has been on par with the rest of the services sector. Industry-wide competition indicators are marginally lower than other service industries. Unlike the other distributive industries, the TPW industry has become somewhat more fragmented since 2000. Investment in logistics technology and other productivity-enhancing equipment is likely to be important in the coming years given the strong forecast demand for freight services.

## 3.2 Information industries

### Information media and telecommunications

The information media and telecommunications (IMT) industry is comprised of businesses involved in the creation and transmission of information products. It also includes businesses that provide services to support these processes and the operation of infrastructure to enable transmission and storage of information products such as data or movies.

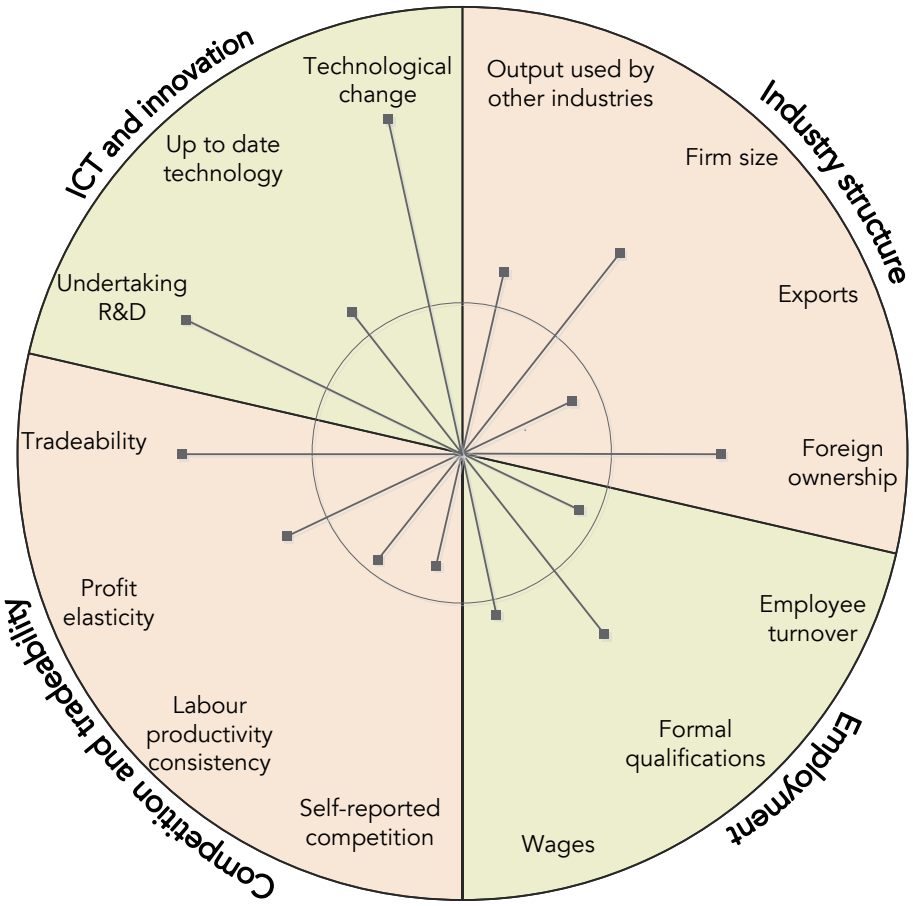
Telecommunications services is the largest sub-industry, accounting for 37% of employment. Other major sub-industries are publishing; broadcasting; motion pictures and sound recording; and internet service providers (including web search portals, and data processing services).

The telecommunications sub-industry generated over $5 billion in revenue and undertook investment totalling $1.3 billion in 2012 (Commerce Commission, 2013). The industry has significant potential to support and enhance other service industries, particularly where services are not location-sensitive and are information heavy. Telecom (sub. 14) notes that ICT uptake varies significantly between businesses. It considers that most benefit would likely come from greater adoption of mobile and ICT services by small to medium sized businesses, given that large businesses are already making significant ICT investments. Telecommunications also play an important role in the country's wider social well-being by enabling New Zealanders to connect with their families, communities, schools, hospitals, and social networks.

A relatively small share of the IMT industry's outputs are exported (8%); however, telecommunications technologies are extremely important in facilitating cross-border trade in services. For example, Vodafone (sub. 8) note that global connectivity has enabled the New Zealand owned businesses Mi5 and iDefigo to provide a video surveillance service to a global market: "Customers of the Mi5/iDefigo service can access and use their cloud based surveillance service anywhere leveraging the capabilities of public mobile networks around the world" (sub. 8, p. 6).

The IMT industry can also generate positive spillovers to other industries in the economy. For example, The Lord of the Rings film trilogy was linked to a modest increase in the number of international visitors to New Zealand (MED, 2012).

Figure 3.4 Information media and telecommunications summary indicators




## Competition and tradeability

The industry is primarily involved in dealing with intangibles – these can be transmitted with increasing ease meaning that many parts of the industry are subject to competition from overseas. For example, an online news story written in the United Kingdom is just as accessible to a New Zealand reader as locally written news. The industry also includes the provision and operation of tangible infrastructure that enables the transmission and storage of information (eg, fibre networks), which is location-dependent and subject to somewhat less competition.

The industry is relatively concentrated at the aggregate level. 41% of IMT firms reported that they face either no effective competition or just one or two competitors – the highest share of any service industry. Lower self-reported competition appears to be confined primarily to the telecommunications and internet services sub-industries where three factors tend to limit the number of competitors (Commerce Commission, 2009):

- Establishment of telecommunications networks requires a high level of irreversible initial investment, such as digging trenches to lay fixed cables.
- Network effects – in order to effectively compete in the telecommunications market, operators need to be interconnected with existing networks (few people would have signed up to the 2Degrees Mobile network if they were unable to contact people on the Vodafone or Telecom networks).
- Economies of scale and scope are particularly prevalent in the sub-industry, which can create a tendency for a small number of large firms to dominate. The industry has a high proportion of firms employing more than 100 staff.

Despite the presence of these characteristics, the level of competition in the telecommunications and internet services sub-industries has generally increased over the past decade (notwithstanding the recent

merger between Vodafone and TelstraClear). The entry of 2Degrees Mobile in 2009 brought the number of mobile service providers to three.

New technologies are also presenting opportunities to increase competition. For example, a shift from telephone-based technology to new broadband and wireless based technologies and a trend towards solely using cell phones, have increased competition for traditional land-line provision.

### Regulation

Up until 2001, New Zealand's approach to telecommunications regulation differed from many other countries as the sub-industry was only subject to general competition law. In 2001, the Government introduced industry-specific regulation, the Telecommunications Act 2001. In December 2006, the Government amended the Act to provide a broader set of regulatory tools and greater scope for the Commerce Commission to be proactive to achieve the statutory purposes of the Act (Commerce Commission, 2009). The Ultrafast Broadband initiative has also resulted in significant changes to the telecommunications and internet services sub-industry, including the structural separation of Telecom's retail business from the business (Chorus) that owns and operates network fibre and copper.

In 2007, the Telecommunications Dispute Resolution scheme (TDR) was established as an independent self-regulatory body to help consumers with complaints about their telecommunications company. The TDR established the Customer Complaints Code, and TDR members (major telecommunications companies) are bound by the TDR's decisions. The scheme's purpose also includes educating its members and improving their internal practices regarding complaints resolution.

The publishing and broadcasting sub-industries also have industry-specific regulation. Individuals or entities that publish material in New Zealand are subject to basic legal constraints designed to prevent them from impinging on the interests of citizens such as reputation, privacy and personal safety. In recognition of the role that the media plays as a conduit of information, news media have additional rights and responsibilities, such as an exclusive right to communicate electronically from courts. In addition, the news media are specifically exempt from the information privacy principles in the Privacy Act 1993, and certain provisions of the Electoral Act 1993, the Human Rights Act 1993 and the Fair Trading Act 1986 (New Zealand Law Commission, 2013). The New Zealand Law Commission (2013) notes, however, that the current regulatory system was developed when the public was largely dependent on mainstream broadcast and print media and as such, is now outdated. The Law Commission recommends that the current framework of platform-specific regulators be replaced with a single independent standards body with jurisdiction over all news media broadcasters, newspapers, and online providers.

New technologies such as cloud computing are resulting in new regulatory challenges (Box 3.3).

Box 3.3 **Cloud computing and regulation**

Research in the United States has found that total cost savings in firms that move all their information technology services to the cloud range between 44% and 71%, with greater cost savings for small businesses (with 1 to 15 computer users) (McAffee, 2012). However, concerns about privacy and security present a significant barrier to greater cloud adoption in some service industries. With pure cloud computing, companies don't have direct control over their data and in many cases will not know where their applications and data are physically located (Deloitte, n.d.).

A mechanism that enables consumers to be confident that cloud computing providers appropriately secure data, in a manner which is compliant with the Privacy Act 1993, may go some distance to addressing this issue. One initiative which may be useful in this regard is the voluntary, industry-led *Cloud Computing Code of Practice* which was released in June 2012. The Code aims to improve the standard of cloud computing in New Zealand, set a standard of disclosure within the industry and improve transparency regarding data protection, sovereignty and privacy (Institute of IT Professionals New Zealand, 2012).

Motion picture and sound recording activities have been influenced by production grants provided by the Large Budget Screen Production Grant, which provides a 12.5% rebate on production expenditure over $15 million in New Zealand (MED, 2012). A 2006 evaluation of the grant showed that its net economic impact ranged from a gain of $33 million to a $38 million loss (Cabinet Economic Development Committee, 2006). However, the evaluation notes that some dynamic gains associated with the grant were not captured in the analysis, such as reputational effects for New Zealand and the value of spillovers, such as additional infrastructure and industry development. The evaluation ultimately recommended that the grant should be retained with ongoing monitoring of its effectiveness (Cabinet Economic Development Committee, 2006).

### Employment, wages and skills

The IMT industry has relatively high wages. Employees tend to work full-time, have a relatively low rate of turnover and are relatively young compared to other service industries. The IMT workforce is also highly educated with over 30% of employees having a bachelor's degree or higher qualification.

Total employment in the industry declined between 2000 and 2012. This decline was driven primarily by significant reduction in the numbers employed in the printing sub-industry. This is likely to be a reflection of new technologies and an increasing number of online publications.

### ICT and innovation

The IMT industry is characterised by technological progress and uptake of new technologies. A high proportion of firms invest in research and development, and the average amount spent by firms on research and development is high relative to other service industries. As such, regulatory certainty and incentives to invest and innovate are particularly important (Commerce Commission, 2009).

Innovation and the adoption of new technology are particularly important in the film industry. For example, Weta Digital has built a reputation as a world leader in digital and visual effects (MED, 2012). Likewise, new distribution approaches, such as YouTube channels, are changing the way that media, film and broadcasting industries are reaching their audiences.

### Overall picture

Effective delivery of up-to-date telecommunications technology is a vital enabler of productivity and innovation in other industries. The industry tends to be concentrated in a small number of relatively large firms, although new providers have entered the market during the past decade. Technological change in the industry is rapid, and businesses tend to invest heavily in infrastructure and research and innovation. The industry is subject to a number of targeted regulations and is also significantly impacted by government policies such as the recent investment in ultra-fast broadband. Given the high productivity growth potential associated with new ICT technologies, it is important that there are no unnecessary or poorly-justified regulatory barriers to the investment in, and effective use of, new technology.

## Financial and insurance services

The finance and insurance industry comprises businesses that mainly facilitate borrowing, lending and the management of risk.

The banking sub-industry is the largest component of the finance and insurance industry by employment size. Its main task is to effectively manage a portfolio of savings and lending. In doing so, banks act as an intermediary between savers (seeking to hold a low risk liquid asset) and borrowers (typically for longer terms and entailing exposure to risk). Its role includes payment of services payment services, for example through internet banking and EFTPOS.

Other important services provided by the finance and insurance industry are:

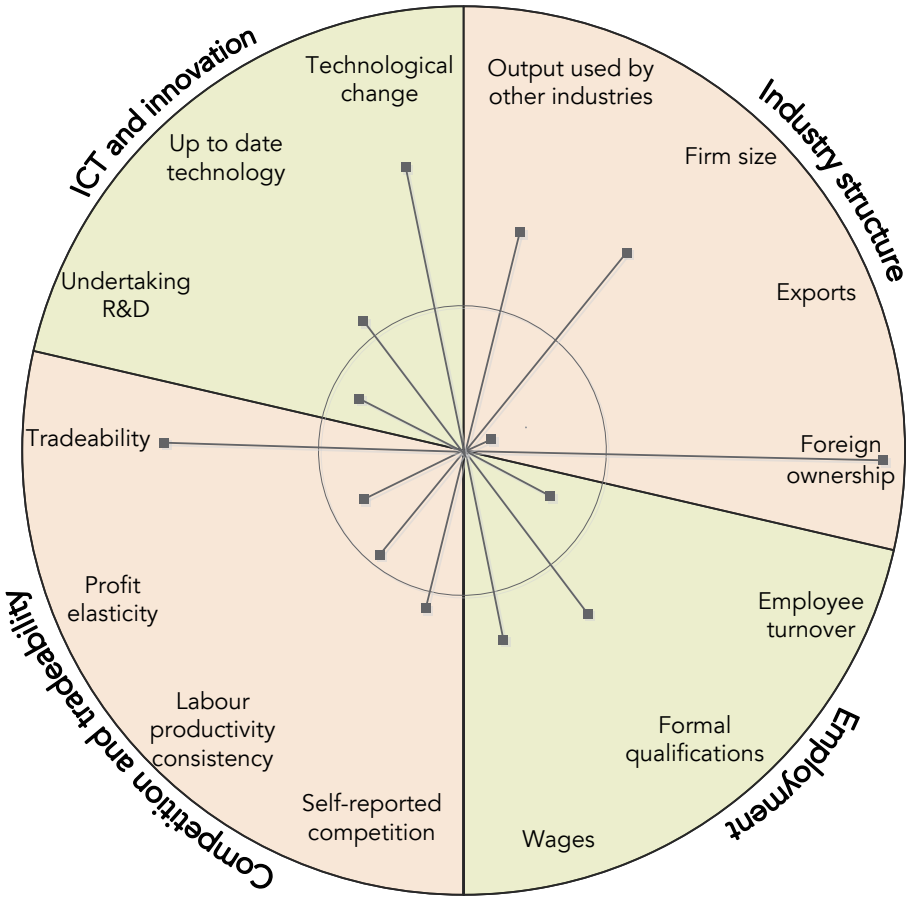
- Managing investment funds, for example, KiwiSaver funds. These firms intermediate between savers and users of capital, by matching the investment (risk-return) preferences of savers to the best investment opportunities available.
- Insuring against risks – including risks to property, life, health, business risk (eg, professional indemnity insurance), and also financial risk (eg, mortgage protection insurance).

- Providing financial advice and broking services (as in the case of share brokers, insurance brokers and authorised financial advisors).

These financial services are closely related, and the major firms often provide most or all services as part of a single customer relationship. There is a spectrum of firms in terms of size and scope though, with many small providers of insurance broking and/or financial advisory services.

Financial service providers have an investment evaluation role. This role arises from one party to a financial contract being less able to assess the risks involved than the other. Financial firms mainly add value by narrowing the information discrepancies in investment and hence enabling financial exchanges that might otherwise would not occur. Accordingly, they play a pivotal and pervasive role in the economy.

Figure 3.5 Finance and insurance summary indicators




## Competition and tradeability

In the late 1980s, the New Zealand banking system was opened up to greater competition. Prior to this, banking had essentially been confined to four trading banks, the trustee savings banks and the government-owned Post Office Savings Bank. There was also a sizeable number of 'non-bank' financial institutions, such as merchant banks, finance companies and building societies. The opening-up of the banking sub-industry saw a number of non-bank institutions acquire full banking status, as well as new entrants from abroad. However, over the past decade or two, the sub-industry has reconsolidated to the extent that the assets of the four largest banks currently account for nearly 90% of total banking assets, with the largest bank accounting for 32% (Jang & Kataoka, 2013). Other 'non-bank' financial institutions today have a correspondingly lower presence – many have been subsumed into the today's four main banks and, more recently, numerous finance companies have failed.

The banking sub-industry also faces competition from the securities market (corporates raising funds directly from investors) and from foreign banks lending to New Zealand borrowers directly from abroad (albeit often through syndicated facilities led by a New Zealand bank).

An important factor influencing competition in the banking sub-industry is a tendency for customers to avoid changing their bank (Haldane, 2010). This 'stickiness' is generally attributed to banking being relationship-based and to the costs involved in changing banking facilities. In addition, the 'reputation' and relationship-based based nature of banking acts as a natural barrier to entry – reputation and relationships take time to establish, generally meaning that it takes time for a start-up bank to achieve the customer base needed to achieve profitability.

On the other hand, the barriers to entering the New Zealand banking sector are not insurmountable, with a number of new entrants in recent years. Some of these entrants were previously 'non-banks' (eg, the Co-operative Bank and Southland Building Society), while others (eg, Bank of Baroda and KiwiBank) are new to the New Zealand market.

Around 100 firms provide insurance in New Zealand (RBNZ, 2012), although the six largest firms account for a large share of the market. Recent steps to strengthen the prudential regulation of insurance companies have already resulted in some rationalisation and further consolidation among smaller participants is anticipated (RBNZ, 2012).

The advisory/broker sub-industry of the finance and insurance industry comprises a large number of small operators (1-5 person firms), as well as the larger institutions that typically bundle advisory services into their overall product offering. Recent regulatory measures aimed at lifting professional standards are expected to result in some consolidation within the sector, although should still leave a large number of small independent operators. Where these advisory services are not linked to a particular provider of saving or investment products, they help to foster competition amongst product providers.

A feature of the New Zealand finance and insurance industry is the significant presence of foreign-owned firms. Across the industry as a whole, two thirds of employees work for firms with at least 50% overseas equity. As at March 2013, 94% of the New Zealand banking sub-industry was under foreign ownership (RBNZ, 2013). In effect, New Zealand 'imports' most of its financial services. Conversely, New Zealand firms export very few financial services. While some institutions established presences abroad in the 1980s (eg, BNZ, NZI Corporation, the National Bank), none of these remain. Indirectly, however, a significant share of the output of the sector (21%) is ultimately exported when taking into account the contribution of the industry to other industries' exports.

### Regulation

In addition to general business regulation (company law, competition law and labour law etc), the finance and insurance industry is subject to significant industry-specific regulation. Deposit takers and insurers are subject to prudential regulation (directed to maintaining the financial soundness of those firms); investment managers are subject to market conduct regulation (concerned mainly with appropriate disclosure of potential risks and rewards); and financial advisors are subject to minimum requirements relating to professional standards (competence and conflicts of interest).

These regulatory requirements seek to lessen the information asymmetry problem, between the investing/saving public and the financial firms they have a risk exposure to. Financial regulation also recognises that the failure of financial service firms, given their pivotal and pervasive role in the economy, can result in large costs being borne beyond the parties directly involved.

The internationalisation of finance has seen an increasing amount of the design of financial regulation taking place at the international level (eg, by the Basel Committee on Banking Supervision, the International Association of Insurance Supervisors and the International Organisation of Securities Commissions). International regulatory standards increasingly are becoming the benchmark against which national financial systems are assessed. These tendencies have been reinforced by the global financial crisis (GFC).

The GFC has also brought a much stronger focus to regulatory requirements to lessen 'systemic risk' and costs to taxpayers, reflected in both higher prudential standards, and efforts to improve failure resolution arrangements (for example, the Reserve Bank of New Zealand's open bank resolution mechanism). The latter regulations will also be competition-enhancing to the extent that they address effectively the 'too big to fail' problem, which has created a market bias in favour of larger institutions.

Regulatory measures are also emerging that seek to provide stronger protection of national interests such as ring-fencing entities within international groups on the basis of national borders. These regulations arose out of the GFC, where the failure of financial firms that operated across national borders resulted in conflicting national interests. New Zealand has adopted elements of this approach, specifically through restrictions on the outsourcing/offshoring of certain functions by 'systemically important' banks. These restrictions may inhibit competition if firms below the 'systemically important' size threshold decide to cap their growth in the New Zealand market to avoid the restrictions.

Non-targeted regulation can also have a substantial impact on finance and insurance firms. For example, the Insurance Industry Council (sub. 12) has raised concerns about changes in consumer law that will be brought about through the enactment of the Consumer Law Reform Bill. The Reform Bill may reduce the use of standard form contracts through its introduction of a prohibition on 'unfair contract terms' in standard form consumer contracts.

> The unfair contract terms provisions have the potential to produce significant unintended consequences for insurers, impacting on insurance affordability and potentially insurer solvency. These potential unintended consequences were repeatedly conveyed to government officials, but little has been done to address these concerns. (Insurance Industry Council, sub. 12, p. 2)

While a prohibition on the use of unfair contract terms may have economic and social benefits to consumers, it is also likely to entail costs for businesses such as reviewing existing and future contracts for unfair terms.

### Employment, wages and skills

The sector employs a little over 57,000 people (3% of New Zealand's labour force). Like the information, media and telecommunications industry, a typical finance and insurance employee is highly skilled (28% of employees hold a bachelors or postgraduate qualification) and relatively well paid (median hourly earnings are 35% higher than the economy-wide average). The industry has the lowest rate of employee turnover of all service industries and also the lowest proportion of people who work part-time. Over three quarters of the industry's employment is in a small number of firms with greater than 100 employees. 10% work for a large number of very small (1-10 person) firms.

### ICT and innovation

Finance and insurance, as essentially an information processing and storage industry, is highly ICT intensive. Unsurprisingly, a relatively high share of businesses reported that there were significant technological changes within the industry over the past two years.

One example of innovation in the banking sub-industry is the widespread adoption of self-service technologies such as internet banking and ATMs, which have been made possible by ICT advances (Castro, Atkinson & Ezell, 2010). These technologies present a number of potential advantages:

- Convenience – for example, internet banking can be done anywhere with an internet connection and is not restricted to bank trading hours.
- Greater customisation – for example, many ATMs allow users to select from different languages.
- Cost reductions – using self-service technology allows labour to be reduced or re-assigned to more profitable roles. For example, the average cost of an online banking transaction is $0.20 compared with an average cost of $4.25 at a branch (Castro, Atkinson & Ezell, 2010).

Financial services are also increasingly seeking to make use of cloud computing technology which, as noted earlier, presents a number of challenges (Deloitte, n.d.).

Other ICT advances in this industry have also been associated with innovation in risk management (statistical model-based risk management techniques), product design (synthetic/derivative products) and product delivery (internet and mobile phone banking). Some of these innovations have proved more robust than others; for example, electronic banking has become firmly established, whereas some approaches to statistical modelling of risk have been found wanting.

### Overall picture

The finance and insurance industry plays a significant role in the economy, in its own right and, more importantly, through its role as a key enabler of economic exchange (of goods, services and capital) between consumers and businesses and business-to-business. It has a pervasive influence on how resources are allocated (between consumption and saving, and amongst competing investment possibilities). A number of industry-specific regulations are in place that seek to mitigate risks that stem from information asymmetries between consumers and providers of financial services. Financial regulation also recognises that the failure of financial service firms, given their pivotal and pervasive role in the economy, can result in large costs being borne beyond the parties directly involved.

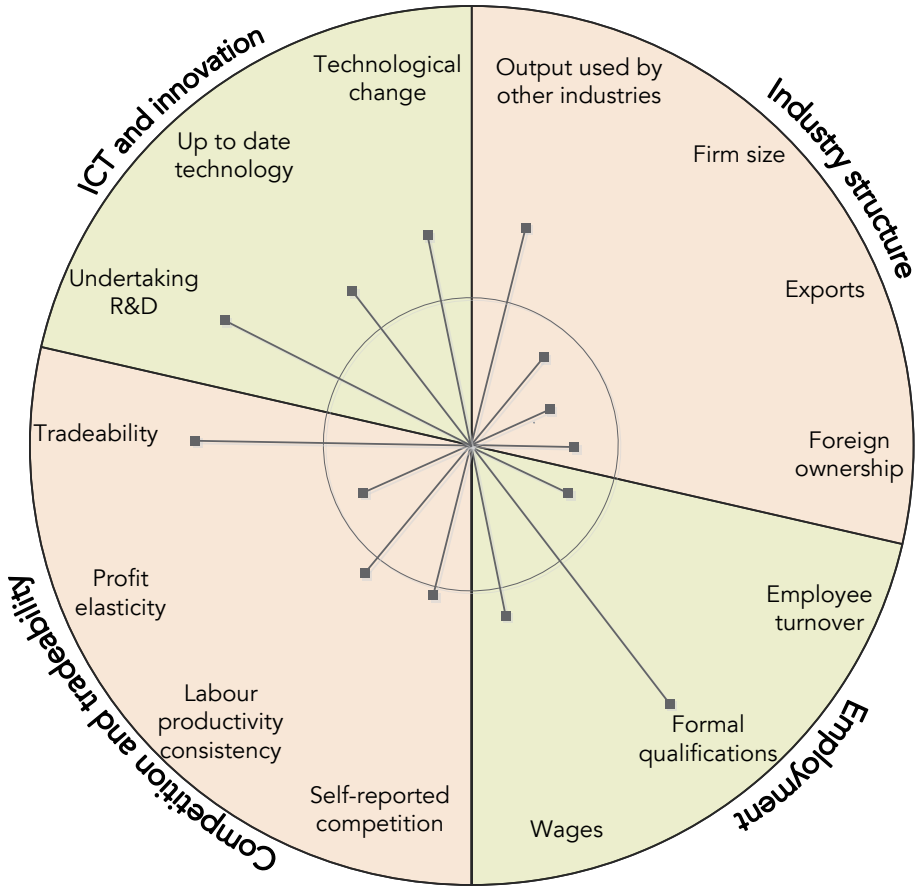
The finance and insurance industry exports very little in its own right, but does indirectly by way of intermediate inputs to exporting firms. One fifth of the industry's output is ultimately embedded in exports of other firms, while a high share of the industry's outputs are an input to the activity of other firms. The financial services industry is subject to some 'natural' barriers to entry that make it inherently less competitive than some other industries and over the past two decades, the market structure has become more concentrated.

## Professional, scientific and technical services

The professional, scientific and technical services industry includes providers of scientific research, architectural, engineering, computer systems design, legal, accountancy, advertising, market research, veterinary science and management consulting services.

Professional service providers typically require technical expertise given the complexity of the tasks involved. This complexity can make it difficult for consumers of professional services to assess the quality of the service on offer. Poor quality service may have severe consequences; for example, the work of engineers and scientists and accountants and lawyers can substantially impact public health and safety and their clients' financial circumstances respectively. Hence, professional services tend to be subject to a layer of regulation over and above that applicable to some other industries.

Figure 3.6 Professional scientific and technical services summary indicators



## Competition and tradeability

The professional, scientific and technical services industry comprises a large number of enterprises, ranging in size from national firms with several hundred employees, to owner-operator firms. About a third of the industry's employees work for firms with over 100 employees. There is also a preponderance of smaller professional practices in the industry; 18% of firms have 1-5 employees, which is high relative to the services sector as a whole, and significantly higher than other information-based industries.

In terms of competition, the industry is segmented; for example, large national firms typically do not operate in the same client market as sole practitioners. At the 'top end' of the market (in terms of size), the professions typically comprise a 'big 4 or 5' national firms, and a similar number of 'next tier' national firms, making for a market structure conducive to reasonable levels of competition. Operating alongside these first and second tiers is a large number of locally-based firms. The veterinary services market is something of an exception as they tend to be more locally based.

Most professional services are internationally tradable. New Zealand both exports and imports such services, notably engineering services and IT services. For example, Opus International Limited, which originated from the former Ministry of Works, is a significant exporter of engineering services. Major engineering works in New Zealand are also won by overseas contractors. For example, Australian Engineering firm Leighton Contractors is working on the Manukau Motorway Link, while Visionstream (a wholly owned subsidiary of Leighton Contractors) has been awarded a contract to construct and maintain copper and optic fibre access for Chorus. Foreign providers are active in providing IT services in New Zealand, such as well-known international firms Fujitsu and IBM.

Exports and imports of accounting and legal services, however, are low, although the large New Zealand accounting and legal firms typically are connected with overseas counterparts, such as under an international brand name. The Lawyers and Conveyancers Act 1986 places a number of limitations on the nature of services that overseas lawyers can provide in New Zealand.

Approximately 6% of the output of the professional, scientific and technical services industry is directly exported, 80% is sold to other New Zealand firms, and the balance is services provided directly to New Zealand households.

## Regulation

Providers of most professional services are subject to professional membership/licensing requirements prescribed by statute, and obligations to maintain prescribed levels of professional standards. These kinds of regulation apply to practitioners of law, accounting, engineering, architecture and veterinary science, but not to providers of IT, management consulting, or market research services.

Professional requirements are intended to provide clients with a level of confidence about the quality of the service on offer. They encourage the uptake of services that users might otherwise avoid due to a lack of knowledge about what they are purchasing. However, these benefits need to be balanced against the costs of these requirements. For example, professional membership obligations can inhibit competition by acting as a barrier to entry and can also inhibit innovation and opportunities for increased consumer involvement or semi-professional practice (Potts, 2009).

Professional membership requirements vary in their scope and approach. For example, the Lawyers and Conveyancers Act 1986 requires anyone who represents themselves as a lawyer or provides certain prescribed legal services, to hold a practising certificate from the New Zealand Law Society. Similar requirements apply to those practising as, or representing themselves as, a veterinarian in New Zealand. The New Zealand Institute of Chartered Accountants (NZICA) Act 1996 is less restrictive, in that it proscribes anyone who is not a member of NZICA from representing themselves as a 'chartered accountant', but does not restrict non-members from providing accounting services or representing themselves as an 'accountant'. Similarly, the 2002 Chartered Professional Engineers of New Zealand Act requires engineers to be registered in order provide certain engineering services, for example, when engineering work involves health and safety issues. Other engineering services can be provided without registration.

Mutual recognition of occupational licensing has emerged as an important mechanism to reduce regulatory impediments to international trade in services. Mutual recognition means that registration in an occupation in one jurisdiction is sufficient grounds for registration in another jurisdiction (Australian and New Zealand Productivity Commissions, 2012). Mutual recognition of occupational licensing assists New Zealand firms who are exporting professional or other 'licensed' services into international markets, by ensuring that they can compete on a level playing field with both domestic operators and other international firms. It also facilitates the exposure of domestic labour markets to competition from other jurisdictions. While the existing mutual recognition agreement with Australia is relatively comprehensive, there is scope to seek further agreements with additional trade partners.[28]

### Employment, wages and skills

The industry employs nearly 130,000 people, or 6.6% of total employment, and contributes nearly 8% of GDP. Its labour productivity is relatively high among service industries, which is consistent with the above average levels of skills in the industry. The share of employees with a bachelors qualification or higher (44%) is the second highest of any service industry. The median hourly earnings in the industry are 20% above the economy-wide average.[29]

The industry grew faster than the economy over the past decade (3.1% vs. 2.6% per annum respectively). This growth coincided with above average growth in employment, particularly in computer system design and related services, where the number of employees doubled between 2000 and 2012.

Inquiry participants suggested that New Zealand suffers from a shortage of computing and other ICT skills and that this has a negative impact on the productivity in other service industries. Over the past decade, graduates completing a qualification in computing[30] have typically made up around 5% of New Zealand's degree-level graduates (OECD, 2012). Although this share is significantly lower than Australia, it is slightly higher than the median for OECD countries. This suggests that if New Zealand is affected by computing skills issues, the problems are more complex than straightforward shortages of graduates.

### ICT and innovation

Provision of professional, scientific and technical services is information intensive, so the industry is a high user of ICT. ICT usage includes accessing, manipulating and storing the information needed as inputs to service provision (eg, electronic access to continuously updated statutes and the use of modern accounting software) and increasingly electronic – and remote – delivery of professional services. A relatively high proportion of firms in the industry invested in research and development in 2012, and the median amount invested was the highest of any service industry.

### Overall picture

The professional, scientific and technical services industry is a large industry with important interactions with other industries and exporters. Professional, scientific and technical services are knowledge intensive, which, coupled with advances in ICT, has resulted in many aspects of the industry becoming increasingly tradable – both domestically and internationally. Trade presents a significant opportunity for businesses in this industry to overcome the barriers presented by New Zealand's small and internationally isolated market. Mutual recognition of occupational licensing regimes is common on a trans-Tasman basis, and extending these practices to further countries may assist in increasing imports and exports of professional services, which currently remain at low levels.

Professional service providers typically require technical expertise given the complexity of the tasks involved. This complexity can make it difficult for consumers of professional services to assess the quality of the service on offer. Hence, professional services tend to be subject industry-specific regulations

[28] For example, registered veterinarians in Australia can apply for a licence in New Zealand under the Trans-Tasman Mutual Recognition Agreement. The entry barriers for applicants from other countries are higher and involve sitting and passing the New Zealand National Veterinary Examination (although exceptions are granted to applicants with degrees from certain recognised institutions).

[29] Statistics New Zealand data groups the wages for professional scientific and technical services together with administration and support services.

[30] The computing classification includes: system design, computer programming, data processing, networks, operating systems and software development. Hardware development is excluded as OECD classifies it within engineering (OECD, 2012).

(particularly occupational licensing) that are intended to provide clients with a level of confidence about the quality of the service on offer.

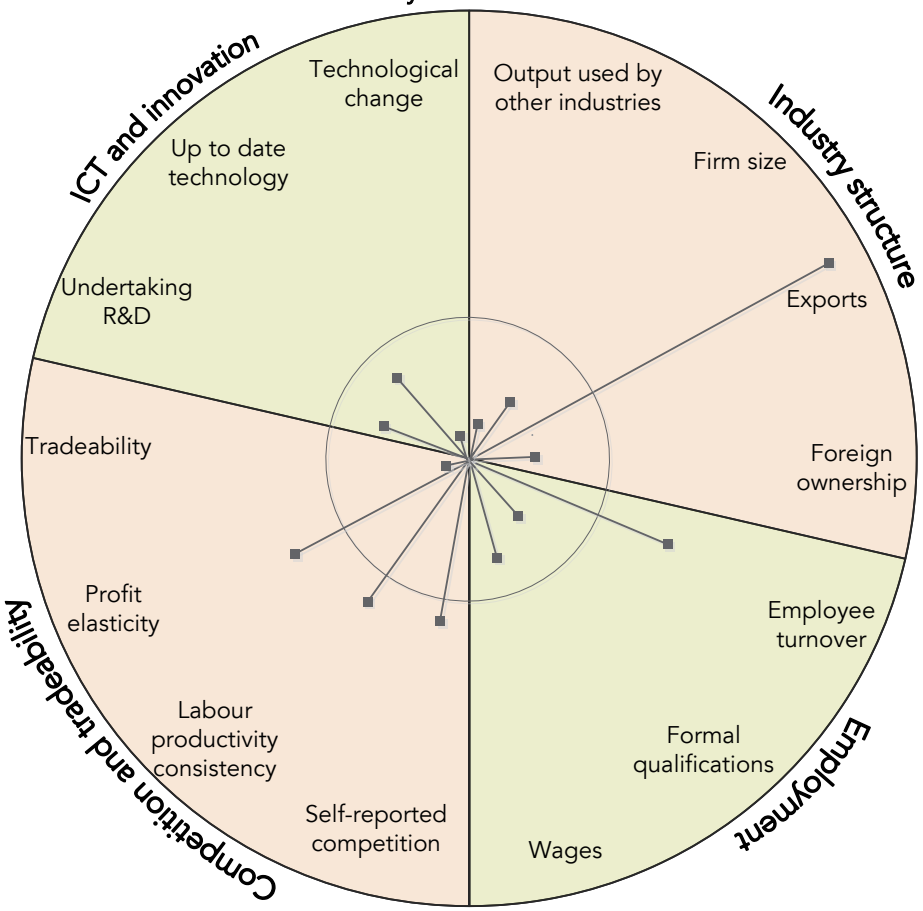
## 3.3 Person-centred industries

### Accommodation and food services

The accommodation and food services industry is made up of businesses providing short-term accommodation for visitors (hotels, motels etc.) and providing meals, snacks, and beverages for consumption by customers both on-site (eg restaurants) and off-site (eg takeaway meals). Firms selling food and drinks for consumption entirely off-site (such as liquor stores) are included in the retail trade industry.

The output of the accommodation and food industry is relatively small (3% of the total economy), however, its share of employment is significantly larger at 6.7%. A relatively high proportion of the industry's output is exported as much of its business is generated from tourism. Conversely, a low proportion of the industry's output is used as an input by other industries, indicating that most accommodation and food customers are private individuals rather than businesses.

Figure 3.7 Accommodation and food summary indicators




### Competition and tradeability

Employment in the accommodation and food services industry is spread fairly evenly relative to the population across the country, with the exception of higher concentrations in tourist hotspots such as Queenstown and Kaikoura. Industries that are geographically dispersed are generally less able to take advantage of productivity improvements through agglomeration, specialisation and scale. The lack of scale in the accommodation and food industry is illustrated by the fact that the industry has a relatively small share of employment in firms with more than 100 employees.

Although domestic tradeability in the industry is low, accommodation and food services ranks as the most competitive service industry in terms of profit elasticity and self-reported competition. There is also a high level of firm turnover within the industry.

One way the industry might be exposed to greater competitive pressure is through an increase in the presence of foreign-owned firms. The proportion of accommodation and food businesses with a high share of foreign equity is relatively small compared to other service industries.

### Regulation

Two areas of regulation that directly impact on the food and beverage sub-industry are currently undergoing change:

- In December 2012, the Sale and Supply of Alcohol Act was passed into law, replacing the 1989 Sale of Liquor Act. The new legislation gives local authorities greater control regarding certain aspects of liquor licensing, such as opening hours for licensed premises (eg bars), controlling the location of licensed premises and setting re-entry restrictions for bars in the early hours of the morning (NZPC, 2013a).
- A proposed Food Bill, to replace the 1981 Food Act, is currently before Parliament. The Food Bill takes a risk-based approach to food safety. It is designed to be 'enabling' for small traders and provides tools to manage food safety risks (MPI, 2013). The Act will impact many businesses in the accommodation and food industry; for example, it requires restaurants to maintain a written Food Control Plan and to undertake annual checks to ensure that the plan is being followed.

Accommodation and food services businesses are also impacted by generic regulations, particularly trading and labour regulations. Industry representatives have voiced concerns about the Holidays Act 2003, given that much of the industry regularly operate outside of traditional business hours, including on public holidays (Hospitality New Zealand, 2009). Some cafes and restaurants have tried to offset the costs associated with the Holidays Act (primarily the requirement to pay staff time and a half plus a day in lieu on public holidays) by using a public holiday surcharge. The Tourism Industry Association has endorsed the recently passed 'Mondayisation' amendment bill (that will 'Mondayise' Waitangi Day and Anzac Day when they fall on a weekend) on the grounds that it will boost domestic tourism during the resulting long weekends, particularly for accommodation businesses (Tourism Industry Association, 2012).

The government provides support to the industry through Tourism New Zealand. Tourism New Zealand was established in 1991 and markets New Zealand as an international visitor destination, for example, through the '100% Pure' campaign. There are a number of regulations that are targeted toward the tourism industry – these regulations affect businesses across a range of industries that provide tourism services. For example *The Health and Safety in Employment (Adventure Activities) Regulations 2011* were introduced with the aim of improving safety among adventure tourism operators, most of which are classified within the Arts and Recreation industry.

### Employment, wages and skills

Employment growth in the industry has been comparable to that of the services sector as a whole over the past decade. Factors influencing employment growth in the industry include international economic conditions, along with the discretionary income of New Zealand residents, and the spending of international visitors (DoL, 2009b).

Median earnings in the accommodation and food industry (combined with retail trade) are the lowest of any service industry. Qualification levels in the industry are also low, with the majority of employees having a secondary school qualification or no formal qualification. Like the retail industry, the food and accommodation industry has a very high proportion of part-time and younger employees.

The accommodation and food industry has the second highest rate of employee turnover of all service industries, which has been identified as a major impediment to productivity (New Zealand Tourism Research Institute, 2007). While a moderate degree of employee turnover can have a number of benefits, for example, enabling career progression and better job and employee matching (Ilmakunnas et al., 2005), it also entails a number of costs including pre-departure productivity loss; a learning curve for new employees; and disruption to other teams within a business (Sheehan, 2001).

### ICT and innovation

The accommodation and food industry is increasingly using ICT. Larger firms have tended to lead the way in terms of investments, with technology then spreading to smaller operations (Milne et al., 2004). ICTs provide a range of opportunities for productivity growth. For the accommodation sub-industry, ICT has enabled web-based bookings, quicker responses to inquiries and the collection of information about visitors prior to their arrival. In the food and beverage sub-industries, ICTs are particularly important for streamlining ordering and point of sale processes through the use of technologies such as wireless personal digital assistants and text message ordering (New Zealand Tourism Research Institute, 2007).

A number of barriers to greater uptake of technology in the industry have been identified. Investment can be commercially unviable if firms lack sufficient skills to effectively make use of the technology. Given the high rate of worker turnover in the industry and relatively low skill levels, the introduction of new technology can require additional training, which smaller firms struggle to provide. Like many New Zealand industries, the accommodation and food industry is dominated by small firms and relatively few chains. Telecom (sub. 15) note that smaller businesses often lack the technical focus or scale to readily adopt ICT based solutions. A number of businesses in this industry are also located in remote areas, which means the availability of nearby suppliers and face-to-face support is limited (Milne et al., 2004).

### Overall picture

The accommodation and food services industry shares many of the same characteristics as the retail trade industry: low productivity levels and growth, low average wages and low skill levels. The industry is geographically dispersed and dominated by small businesses; however, there is little evidence to suggest that this has resulted in low competition within the industry. There is a range of regulatory issues that impact on the industry with labour regulations often the most significant. The most promising prospects in terms of productivity growth appear to be through increased economies of scale, greater innovation and use of ICT, and additional competitive pressure from the entry of foreign businesses.

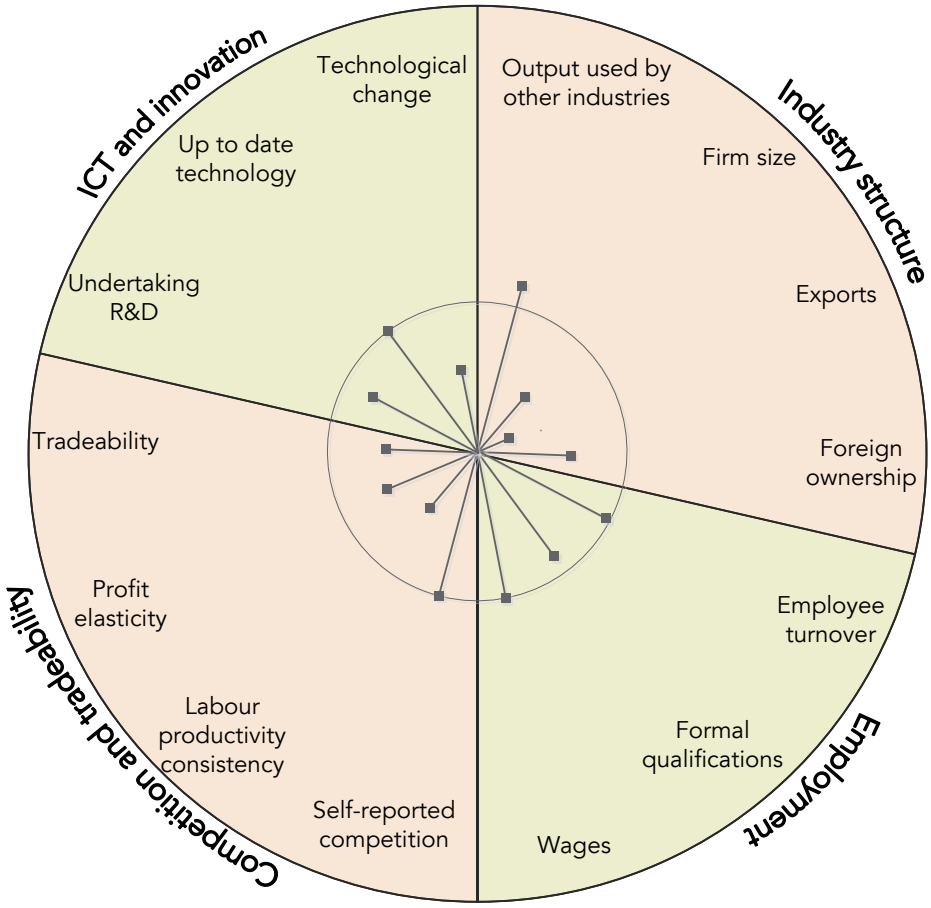
## Rental, hiring and real estate services

The rental, hiring and real estate services industry comprises businesses that rent or hire assets and provide related services. The industry also includes firms that provide real estate services such as selling, renting or buying real estate for others, and appraising real estate. The largest sub-industries are real estate, property management, and rental and hiring services. Most rental and hiring firms provide tangible goods such as rental cars or machinery hire, but the industry also includes businesses that lease intangible assets, such as patents or trademarks.

Given that real estate and property management services account for a large share of this industry, property market fluctuations can have a significant bearing on the industry. New Zealand's property market has historically been cyclical with an upward trend; however, the market experienced a pronounced house price boom between 2000 and 2007 (NZPC, 2012a).

Rental hiring and real estate services are an important input into other industries, for example, commercial property management and agricultural equipment hire. In contrast, the industry is a low contributor (both directly and in-directly) to exports. The industry is also plays an important role in New Zealand society. The quality and effectiveness of real estate services matters greatly given that buying or selling a house is the most significant financial transaction that most people will ever undertake. The growing number of households in rental accommodation means that residential property management services are an increasingly important part of the economy. The proportion of the population living in private rental accommodation increased from 19.2% in 1995 to 29.5% in 2010.

Figure 3.8 Rental hiring and real estate summary indicators




## Competition and tradeability

The rental, hiring and real estate industry includes enterprises ranging from large national firms with several hundred employees, to sole practitioner firms, but small businesses tend to dominate, with 60% of workers employed in firms with fewer than 20 staff. The split of firm sizes in the industry has remained relatively unchanged since 2000.

The property management and real estate industries tend to be dominated by smaller firms that focus on a specific regional area, often as part of a national franchise chain. Recent media reports have suggested that competition among real estate agents is fierce, to the point that it is actually detrimental to the service that they offer:

> Just shy of two thirds of the working time of real estate agents (64%) is spent prospecting for new work. The productive time spent on behalf of their clients in facilitating the sale of a house represents less than 25% of their working week. Yet their income from vendors supports their full working week. (Helm, 2013)

The private rental market is very much the domain of small-scale investors – most investors will own one or two houses, and around three quarters of landlords manage their property themselves rather than employing professional property management services (NZPC, 2012a).

Although some hiring businesses operate nation-wide, most tend to be smaller and cater to a specific local market, much like the retail sector.

New Zealand's rental, hiring and real estate firms export only a very small proportion of their output. Similarly, the industry is subject to limited competition from overseas firms. While some firms in the industry have a high share of overseas equity, relative to the rest of the services sector the rental hiring and real estate industry is predominantly owned domestically.

Firms in the industry have reported that they face a reasonable level of competition (similar to other service industries), but there is a significant gap between the productivity of high and low performing firms. If firms

were ranked according to their productivity, a firm at the 75th percentile is four and a half times more productive than one at the 25th percentile. This productivity gap is the largest of any service industry and suggests that there may be insufficient competition to force lower performing firms to exit the industry.

### Regulation

Most renting and hiring firms are subject to a range of non-specific regulations. Generally speaking, these firms are most impacted by the same types of regulations as the retail sector, such as labour regulations and trading restrictions.

The primary specific regulation that impacts the real estate sub-industry is the 2008 Real Estate Agents Act. The Act (which replaced the 1976 Real Estate Agents Act) is designed to 'promote and protect the interests of consumers' (s3). Major changes brought about by the 2008 Act include individual licensing arrangements that require anyone who is carrying out real estate agency work to be licensed (whereas firms could previously apply for certificates on behalf of the salespersons who worked for them), and the establishment of an independent Real Estate Agents Authority, which has responsibility for licensing, complaints and disciplinary action, industry standards, and providing information for consumers (Ministry of Justice, n.d.).

Residential property managers operate within the context of the Residential Tenancies Act 1986. The Act was amended in 2009 to provide greater clarity and balance around the rights and obligations of both tenants and landlords and to update issues such as letting fees and boarding houses (Social Services Committee, 2009). Commercial leases are governed by the Property Law Act 2007. Property managers are also subject to regulations regarding the upkeep of properties through the Building Act and Code, the Health Act, and Housing Improvement Regulations (NZPC, 2012a).

### Employment, wages and skills

Earnings in the industry are in line with the average for the services sector as a whole. Employment in the rental and hiring sub-industry grew by around 2% per year between 2000 and 2012. The number employed in the real estate and property management sub-industry has also grown since 2000, driven largely by an increasing number of sole proprietors.

The average education level of those employed in the industry is marginally lower than the services sector as a whole. The most common qualification is a secondary school level qualification. The rate of employee turnover in the industry is relatively high, which is likely to be partially explained by volatility in the property market.

### ICT and innovation

ICTs are having a significant impact on property management and real estate. For example, online listings have significantly improved the quality of the industry's services. A prospective buyer or tenant can now easily browse through multiple online listings on agency websites or on websites with listings from multiple firms, such as TradeMe or Open2View. Online listings have reduced search and transaction costs, as well as improved competition through increased transparency. There is also some anecdotal evidence that online listings has increased competitive pressure on real estate agents, as it has become easier for property owners to market and sell their real estate independently.

Hiring firms have also benefited from innovations such as online bookings, pre-registration of information, and customer loyalty programmes.

### Overall picture

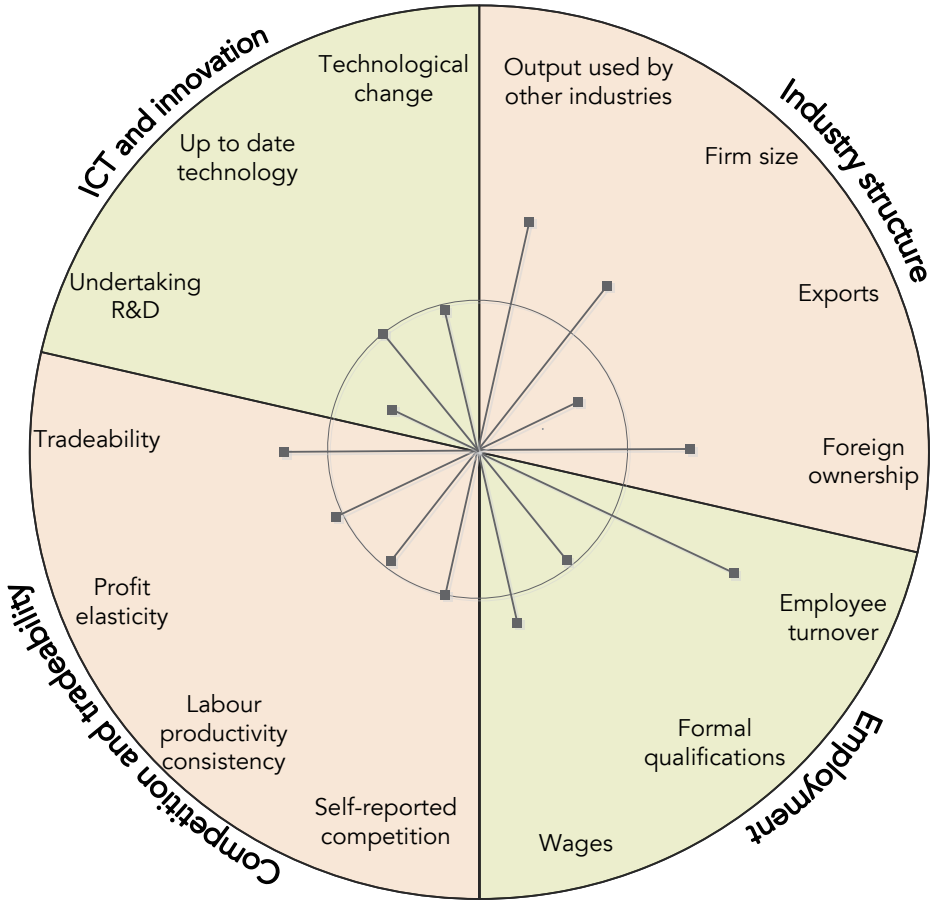
The rental, real estate, and hiring industry plays an important role in the New Zealand. New Zealand's stock of residential housing alone is valued at $625 billion and is the largest component of the wealth of New Zealanders. Hence, the sale of property and its management are of central importance to the economy. Based on the available competition indicators, residential and commercial property services look to be relatively competitive compared to other service industries. The industry is subject to a number of targeted regulations. Rental and hiring firms make up a small share of the industry, and tend to have similar characteristics to the retail trade industry.

## Administrative and support services

Businesses in the administrative and support services industry primarily provide routine support activities for the day-to-day operations of other businesses or organisations. Common support services include office administration; recruitment; document preparation; and arranging travel. Firms offering services such as building cleaning, pest control and gardening are also included. The industry exports a very small proportion of its output and a relatively small share of its output is used to produce exports by other industries.

Labour productivity in the administration and support services industry steadily deteriorated over the past 15 years. Hours worked in the industry grew strongly over the period, but this generated only low growth in output. This fall in labour productivity is particularly concerning given the often integral role that administration and support services play in the operation of businesses across the economy.

Figure 3.9 Administration and support summary indicators




### Competition and tradeability

Traditionally, administration and support services usually required a physical presence and face-to-face interactions. However, with improvements in ICT, some aspects of the industry are now able to be delivered from a distance, for example, document management, recruitment screening, and arranging travel. Other services provided by the industry are dominated by local providers, for example, building cleaning and pest control.

Self-reported levels of competition in the administration and support industry are around the median for the services sector. The industry has a relatively high proportion of large firms. About 60% of employment is in firms with greater than 100 employees. This proportion has been relatively unchanged in since 2000.

Domestic firms in the industry face relatively strong competition from foreign firms. A third of employees in the industry are employed in firms with greater than 50% overseas equity, which is relatively high compared with other service industries.

### Regulation

There are no apparent industry-specific regulatory barriers to productivity in the administration and support services industry.

Although there are no government licensing regimes within the industry, a self-regulatory system is in place for travel agents. The Travel Agents Association of New Zealand was founded in 1962 and has a Code of Ethics and Practice and works to ensure members have adequately trained staff.

### Employment, wages and skills

Statistics New Zealand groups wage data for the administration and support services with professional, scientific and technical services; the combined industry median wage is 20% higher than the economy-wide average. Wages for those employed in administration and support services, however, are likely to be lower than indicated by the combined data, given that a relatively small proportion of employees (18%) hold a bachelor's degree or higher (compared with 44% for professional, scientific and technical services).

Since 2000, employment in the industry has grown at a higher rate than the services sector as a whole, driven primarily by strong growth in the administration services sub-industry. Workers in the industry are younger on average than other service industries.

One potential problem for the industry is that its turnover of employees is the highest for service industries. This high rate of turnover may be partially due to some firms hiring fixed contract staff to fill administrative roles. While using fixed contract staff can be an effective way to manage workload fluctuations, high turnover, as noted earlier, can be a barrier to productivity.

### ICT and innovation

Advances in ICT are increasingly enabling administration and support services to be supplied from a distance or outsourced. This trend is occurring domestically and internationally (Baily & Lawrence, 2004), particularly for lower-skilled administrative and support tasks. Outsourcing can deliver significant financial savings in non-core tasks, while freeing management resources to focus on the firm's core competencies (Holweg and Pil, 2012; Hilmer & Quinn, 1994). An example is the outsourcing of call centres to foreign countries, a practice that is common among telecommunications firms. Where used effectively, outsourcing has the potential for immediate productivity gains. However, the New Zealand Council of Trade Unions (sub. 12, p. 8) notes that while outsourcing may provide short term cost advantages, in the longer run it may discourage capital investment and skill development and create insecurity for employees, who then have less incentive and resources to increase their skill levels.

### Overall picture

Administrative and support services is a small industry, but has an important impact on the productivity of firms in other parts of the economy. However, given the poor productivity performance of the industry in recent years, the industry may in fact be impeding productivity growth rather than enabling it. The industry is close to the services sector median (although generally on the lower side of it) in competition and innovation indicators. The two areas that stand out as potential barriers to productivity growth in the industry are the relatively low qualification levels of employees and a very high rate of employee turnover.

## Arts and recreation

Arts and recreation is the smallest service industry in terms of output. Around 60% of the industry's employment is in sports and physical recreation activities, which includes the operation of sporting facilities, provision of services that aid participation in sporting or recreational activities, and coaching and sports professionals. Other firms in this industry fall into the following categories:

- preservation and exhibition of objects and sites of historical, cultural or educational interest (for example operating a museum);
- artistic activities such as the production of original music or live performances; and
- gambling activities (eg, casino operation).

The industry is relatively detached from the rest of the economy, with a very small share of its output used by other industries. However, some research suggests that this industry has scope to indirectly enhance labour productivity throughout the economy, for example through the health benefits from increased physical activity.[31] One report estimated a benefit of $281 million to the New Zealand economy through sport and recreation through increased labour productivity alone (the total cost-benefit assessment of sport and recreation to the New Zealand economy was estimated to be a benefit of $1,038 million in 2011 ) (SPARC, 2011).

About 8% of the industry's output is exported. The industry provides a number of recreational services that are popular with international tourists to New Zealand, such as white water rafting and bungy jumping, and some New Zealand sporting and cultural performances are held overseas.

While some firms within this industry have a strong commercial focus, such as casinos, non-market provision accounts for 28% of the industry's output. For example, local government spending on new sport and recreation facilities amounted to $345 million in 2008/09 (SPARC, 2011).

### Other services

The ANZSIC06 classification includes a residual category called 'other services', which includes a broad range of service occupations that fall outside other industry classifications. Around two thirds of the industry's employees provide:

- personal care services, such as hair, beauty, diet and weight management services;
- funeral and cemetery services;
- religious services, including promotion, administration and the operation of religious facilities ; and
- professional and labour association and other interest group services.

The remaining third of employees provide selected maintenance and repair services.

This industry contains a number of small and medium sized enterprises, which are likely to benefit from improvements in economy-wide regulation (such as labour regulations).

## 3.4 Health and education

As discussed in Chapter 1, the terms of reference explicitly limit the scope of this inquiry to 'market-provided services' and exclude services provided directly by the public sector'. Three service industries have a relatively high level of non-market provision:

- Healthcare and social assistance
- Education and training
- Public administration and safety

The market-provided parts of the education and training and health care and social assistance industries (13% and 43% of the education and health industries' output respectively) are technically in scope, but they are difficult to isolate and examine (Box 3.4). The Commission acknowledges that these industries provide important services to the economy – a point that was noted in a number of submissions (eg, subs. 3, 4, 5, 6, and 9).

High levels of non-market provision mean that the public administration and safety industry is out of scope.

[31] Research in Australia has found that the overall average labour productivity loss caused by physical inactivity corresponds to a direct loss of 1.8 working days per worker per year for an average Australian worker (Medibank, 2008).

Box 3.4 **Productivity statistics for the health and education industries**

Statistics New Zealand (2013a) provides productivity statistics for the education and training, and health care and social assistance industries as a whole. The productivity data cannot be broken down into market and non-market services, at present, due to the level at which the data for outputs, inputs, and weightings were collected. The productivity for the industries as a whole may be considerably different to the productivity of the market services in these industries. The Commission is unable to assess the productivity performance (levels and growth rates) of the market-provided parts of these industries given the limited data.

Statistics New Zealand data shows that the health and education industries had productivity growth below the average for the market service industries between 1996 and 2011. The education and training industry experienced a fall in labour productivity of 1.4% per annum on average, while the health care and social assistance industry had low growth of 1.1%. In both industries, the main influence on their change in labour productivity came from changes in MFP rather than capital deepening, which reflects the relatively small proportion of capital in their production processes. Factors that could have contributed to the decline in MFP in the education and training industry include technological regress, new impediments or standards, adjustment and reallocation lags.

There are other performance indicators for these industries that may be at odds with the productivity measures. These include effective outcomes and value for money. Differences between the productivity measures and other indicators may occur if the productivity statistics do not fully account for quality change. For instance, a measure of the effectiveness of the industry – the proportion of students achieving National Certificate of Educational Achievement (NCEA) qualifications at all levels – increased by approximately 2% per annum between 2004 and 2011, while productivity in the in the education and training industry declined.

*Source*: Productivity Commission; Statistics New Zealand (2013a)

## Healthcare and social assistance

The healthcare and social assistance industry is the largest employer in the services sector and accounts for 7% of GDP. The industry provides human health care and social assistance. Key service providers in this industry are hospitals, medical centres, residential care homes and childcare centres.

Effective healthcare and social assistance services are a critical component of any well-functioning economy. There are a number of links between the health of the population and productivity. The most simple is that healthier people are able to work harder and think more clearly (Weil, 2007). Improvements in the health of the population can also indirectly impact on productivity. For example, living longer increases the incentive to invest in education, given that the return on investment is spread over a longer working life and healthier students tend to receive a better education if other factors are held equal (Weil, 2007). In addition, gaps in the provision of health and social services may increase the time and energy commitments of carers such as family members, which can limit their ability to undertake other more productive tasks (New Zealand Home Health Association, sub. 4).

There is a diverse range of jobs in the healthcare and social assistance industry, from highly skilled, high-wage medical specialists, to roles that require limited study such as home carers and are often worked on a part-time basis. The industry's workforce is relatively old, with 37% of employees aged over 50, compared with 25% for the remaining service industries.

Non-market provision accounts for 57% of the output of the health and social assistance industry. In some areas, the split between market and non-market provision is relatively clear; for example, adult dentistry is largely market provided, while a range of immunisations for children are entirely government funded. However, in many cases the lines between market and non-market provision are blurry. For example, a government funded operation in a privately owned and operated hospital would be considered as market provision as the operation was sold to the government at economically significant prices (Chapter 1). The

New Zealand Home Health Association (sub. 4, p. 2) notes "that 67% of health services are provided by agencies outside of government (including private and not for profit agencies)". While this industry is primarily funded by government, the competition for this funding is robust, meaning the environment closely resembles a private market (sub. 4).

## Education and training

Education and training is a large industry and plays a key role in economy-wide productivity performance (Kidd, 2008). The industry accounts for 5% of GDP and 9% of employment. While national skill levels can be supplemented to an extent through skilled immigration, the services sector and wider economy are heavily dependent on the education system to produce an appropriate number of graduates in different subject areas with different levels of skills.

Over the past three decades, there has been a rapid increase in the overall level of education in the industry's workforce. In fact, New Zealand's level of participation in tertiary education and level of educational attainment are in the top 25% of countries in the OECD. Despite performing well in aggregate, educational achievement is poorly distributed across the New Zealand population with a relatively long tail of low educational attainment. A large proportion of the population is still leaving secondary school without any formal qualifications (MacCormick, 2008).

While the majority of education and training is not provided by the market (87%), there are some important areas of market provision. Most important is the provision of education for full fee-paying international students (export education). Export of education services were estimated to have generated around $2.2 billion of foreign exchange in 2008. About $600 million of this came from tuition fees, while other expenditure – primarily living costs – accounted for the remainder (Education New Zealand & Ministry of Education, 2008).

Export education can generate a range of wider benefits. International students generate spillover effects such as knowledge transfer among students and increased rates of skilled migration (around 30% of international students will transition either to work or permanent residence in New Zealand). Export education also has positive spillovers for the tourism industry, with survey results indicating that each international student leads to approximately 11 visitor nights in New Zealand by friends or family (Education New Zealand & Ministry of Education, 2008). International students have typically comprised between 10% and 15% of tertiary enrolments over the past ten years, which increases the overall scale economies of domestic education providers.

Most export education is consumed by international students who visit New Zealand (consumption abroad), but around 3000 international students are enrolled with New Zealand providers in their own country. About half of the latter are taught extramurally, while the remaining half are enrolled with New Zealand providers who have established a commercial presence. New Zealand also exports other education services such as teacher training, curriculum development, and consulting and advisory services (Education New Zealand & Ministry of Education, 2008).

## Public administration and safety

Public administration and safety is primarily comprised of services provided by central and local government. Services include defence, enforcement of regulations (such as licensing and permit issuance), and public order and safety services (such as fire fighting). The majority (95%) of this industry is government owned and not provided by the market. The main exceptions are some businesses in the public order and safety sub-industry, such as private alarm monitoring firms and private security guard services.

# 4 Productivity performance

**Key points**

- New Zealand's overall labour productivity growth has been below the OECD average since the mid-1970s. A sizable productivity gap has now opened up between New Zealand and the more advanced OECD economies. There has been no sign of the gap narrowing let alone being eliminated relative to the OECD leaders.
- The services sector had a similar level of labour productivity to both the primary and goods-producing sectors in 2010 – around $50 of value-added per hour of labour input. But this average for the sector masks large differences across service industries reflecting differences in capital intensity, skills and other factors.
- Between 1990 and 2011 the growth rates of labour productivity and multi-factor productivity (MFP) in the services sector were higher than in the goods-producing sector but not as high as in the primary sector.
- The service industries' productivity performance has changed over time. There was strong productivity growth in the 1990s associated with major economic reforms and the uptake of new technologies. This was followed by slower productivity growth from 2000 to 2008, which partly reflected strong output growth on the back of strong employment growth especially of new entrants and lower-skilled workers.
- The productivity-growth performance of New Zealand service industries is diverse. There is significant variation across service industries in growth rates of labour productivity and MFP.
- The service industries with high labour productivity in both levels and growth, such as information, media and telecommunications, and finance and insurance, tend to employ people with higher skills, pay higher wages and be ICT-intensive. But some service industries – for example professional, technical and scientific services – share these characteristics and have had low productivity growth.
- The distributive and person-centred service industries generally have low labour productivity levels. This partly reflects their lower-skilled workforces. Less easy to explain is that they have also experienced slow labour-productivity growth.
- International comparisons of industry productivity performance are difficult and restricted by the scarcity of comparable datasets.
- Growth rates of labour productivity across the greater part of the New Zealand services sector were below the average of the corresponding parts of a benchmark set of OECD countries between 2000 and 2007.
- The general picture is that many New Zealand service industries have lower productivity levels and/or growth rates compared with counterparts in Australia and the UK.
- Stronger productivity growth in the United States, Finland and the United Kingdom since the mid-1990s has been associated with the innovative use of ICT in market services. New Zealand's performance in this area has not been strong or broad-based enough to achieve any significant productivity catch up with leading OECD countries.
- For most service industries, MFP has been a key driver of labour productivity growth, indicating that factors such as innovation, skills, scale, regulation and competition are particularly important for New Zealand's service industries, as they are for other sectors of the economy.

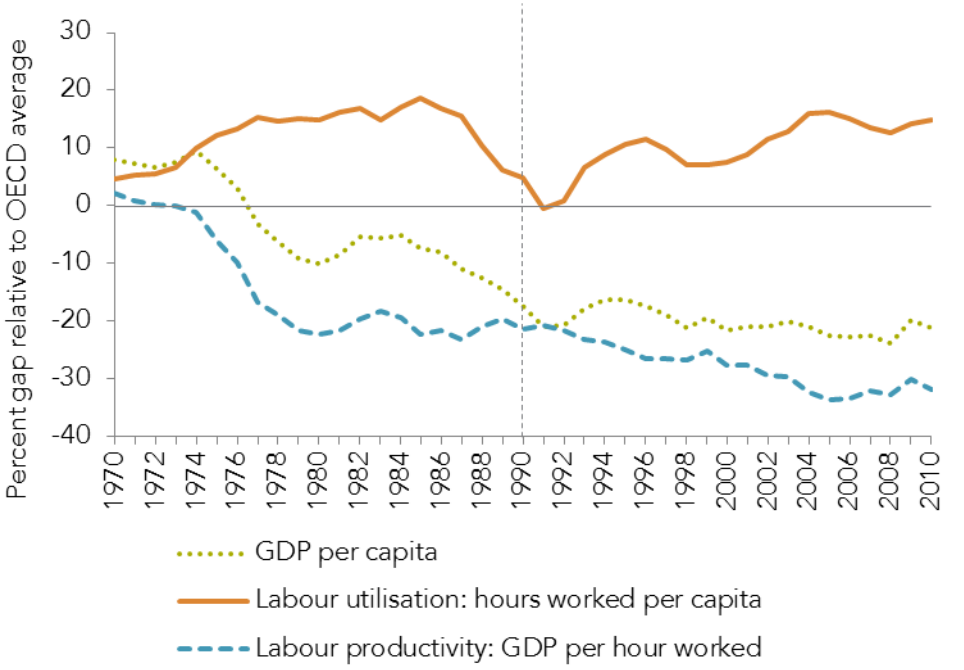
This chapter describes the recent productivity performance of New Zealand's service industries and firms and assesses it against the experience of other countries. It begins by looking at New Zealand's overall productivity performance, and then examines the performance of the services sector within the economy. At the next level down, it compares productivity across the service industries and over time. The deepest level looks across firms. At all these levels, the chapter indicates how performance in New Zealand compared with other OECD economies.

## 4.1 The broader context – aggregate productivity performance

### New Zealand's GDP per capita has weakened relative to the OECD

New Zealand's GDP per capita has fallen well below the OECD average over the last 25 years (Figure 4.1). Most of the relative decline occurred over two distinct periods. The first episode took place in the second half of the 1970s, reflecting a steep decline in New Zealand's labour productivity compared with other OECD countries. The second episode took place in the late-1980s and early-1990s, mainly reflecting a deep recession that provoked a sharp drop in hours worked and economic growth in New Zealand relative to the OECD average.

Figure 4.1 Source of economy-wide GDP per capita differences




*Source:* OECD database

*Notes:*

1. Based on OECD countries with the necessary data from 1970 to 2010, namely: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, Turkey, UK and USA.
2. To facilitate international comparison, labour productivity is measured on an economy-wide basis.
3. International comparisons are made using exchange rates adjusted to reflect purchasing power parity (PPP).

From the early-1990s, New Zealand's economic performance improved and GDP per head has broadly stabilised at around 20% below the OECD average. In large part, this stabilisation reflected increased labour utilisation arising from higher labour force participation and a trend of falling unemployment. In contrast, New Zealand's labour productivity (GDP per hour worked)[32] has continued its long, slow decline relative to other OECD countries (Figure 4.1).

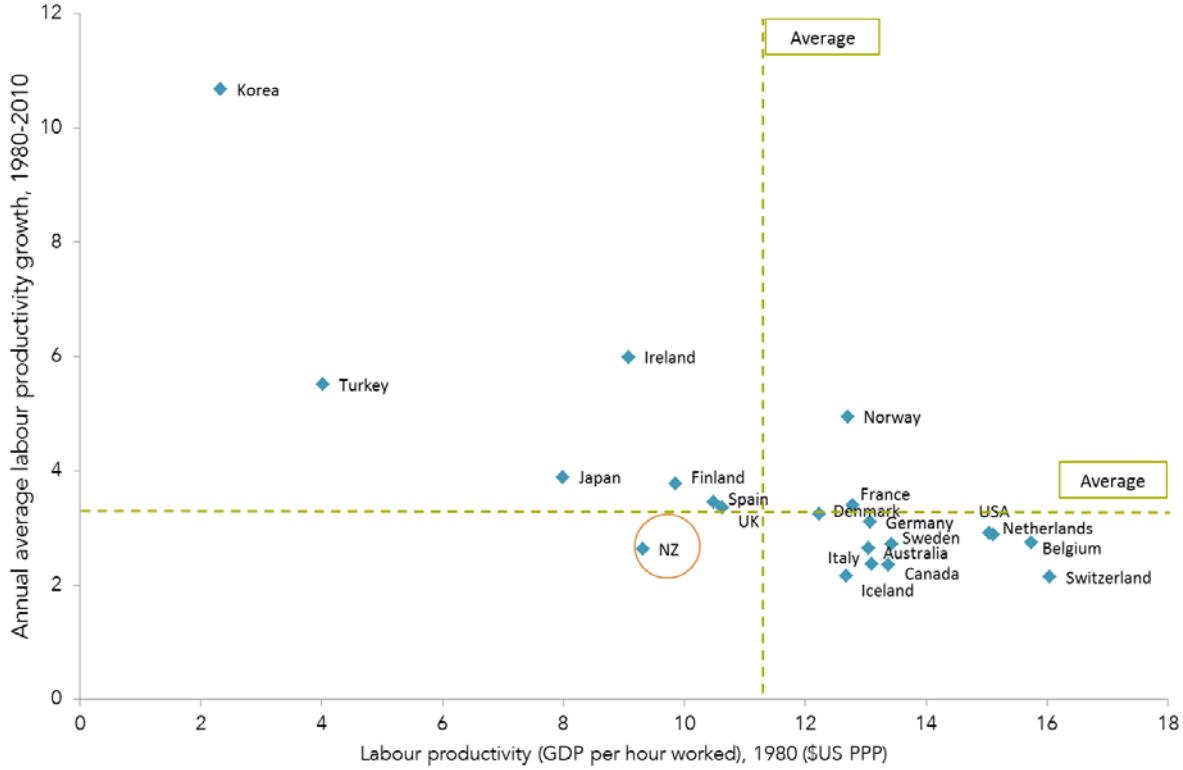
The level of New Zealand's labour productivity ranked in the lower third of OECD countries in 2011. An

[32] GDP per hour worked is a standard method of measuring labour productivity for the economy as a whole. However, New Zealand's official productivity statistics for individual industries use hours paid rather than hours worked as the basis for estimating labour inputs. See section 2.1 in Chapter 2 for a description of different productivity concepts and measures. Box 4.1 explains the distinction between levels and growth rates of productivity.

hour worked in New Zealand produces over 40% less output than an hour worked in the United States and about 25% less than the OECD average. This gap in New Zealand's GDP per capita relative to the better-performing OECD countries overwhelmingly reflects a weaker labour productivity performance.

Furthermore, there is no evidence that New Zealand's labour productivity is converging towards that of the more advanced OECD countries. Figure 4.2 shows this – New Zealand's labour productivity levels were below the OECD average in 1980 (as shown by its position along the horizontal axis). Since New Zealand generally ranks well among OECD countries in the quality of its policies and institutions, it might have been expected that its productivity would have grown more rapidly from this low starting point (see Box 2.9 in chapter 2 for more detail on why this would have been expected). But this has not been the case. As shown on the vertical axis, New Zealand is the only country with a below-average labour productivity level in 1980 to have also had a below-average growth rate since then.

**Figure 4.2 Labour productivity levels in 1980 and growth rates, 1980-2010, in OECD countries**




*Source:* OECD; Conway and Meehan (2013).

*Notes:*

1. Includes OECD countries with data over the entire sample period.
2. $US PPP means that the conversion of a country's currency to $US adjusts for the different local purchasing power of each currency. That is, conversions using $US PPPs result in a $US dollar's worth of each country's currency having the same local purchasing power.

Box 4.1 **Productivity measures: levels and growth rates**

Section 2.1 in chapter 2 explains the different concepts and measures of labour productivity, multi-factor productivity and capital intensity. When analysing productivity performance, it is important to keep in mind the distinction between levels and growth rates of productivity. Clearly the two concepts are related in that knowing the productivity level at time t and its growth rate will determine its level at time t+1, t+2 etc. An economy's productivity performance relative to others is ideally compared in terms of both levels and growth rates. As each can be comparatively high or low, there are four cases: (i) low level, low growth; (ii) low level, high growth; (iii) high level, low growth; (iv) high level, high growth.

When the levels and growth rates distinction is applied not only to labour productivity but also to MFP

and capital intensity – there are even more possible cases and combinations. Examining which cases arise, and how they change over time, helps to construct a rich picture. Quite often, however, data limitations prevent or limit this.

**F4.1** Despite New Zealand's relatively low level of labour productivity three decades ago, its subsequent labour productivity growth has been slower than the OECD average. The increasing gap relative to the OECD leaders is the opposite of what would have been expected under the theory of growth convergence.

## 4.2 Services-sector productivity

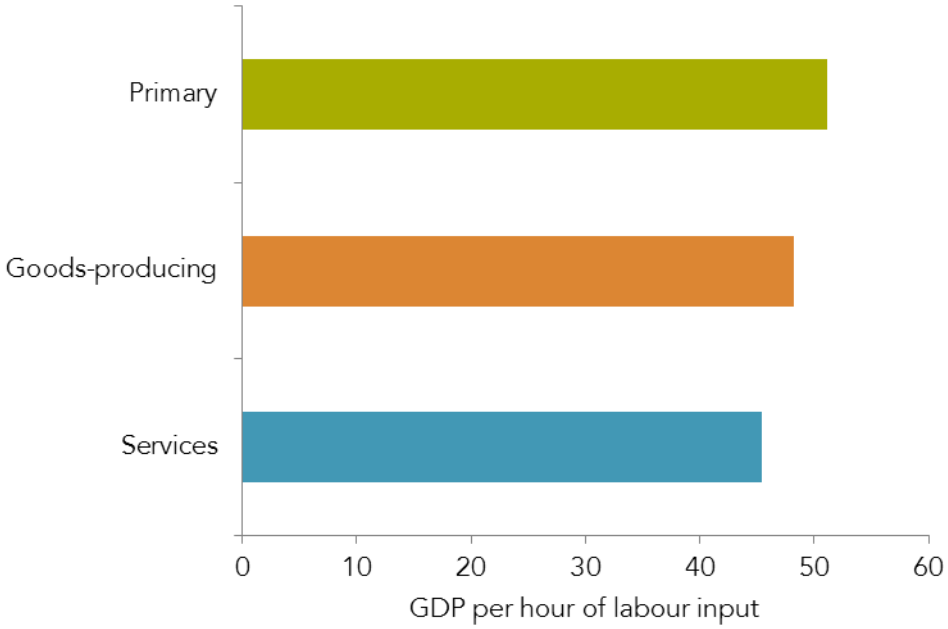
Since the mid-1980s, with the exception of the early-1990s recession, both the capital and labour inputs into the services sector have increased markedly. This reflects a steady structural shift of the New Zealand economy towards services. The services sector is now over 70% of GDP and total employment (Figures 1.1 and 5.1).

Simply because of the strong growth and large size of the services sector, it has a large influence on New Zealand's overall economic performance. For this reason alone, the sector's productivity performance deserves scrutiny.

### Levels of labour productivity across the primary, goods-producing and services sectors

The market services-sector had a slightly lower but similar average level of labour productivity to both the primary and goods-producing sectors in 2010 – a little under $50 of value-added per hour of labour input (Figure 4.3). As shown later in this chapter, these similar levels of sector labour productivity mask considerable variation across individual industries in all sectors.

Figure 4.3 Labour productivity levels, GDP per hour of labour input by sector, 2010




*Source:* Productivity Commission; Statistics New Zealand national accounts and labour hours paid tables.

*Notes:*

1. Statistics New Zealand bases its measure of labour input mainly on hours paid rather than hours worked. GDP per hour paid is in 2010 dollars.
2. Private residential lettings have been removed from 'rental, hiring and real estate' within the services sector because Statistics New Zealand is unable to measure, and therefore does not attribute, labour input for this sub-industry.

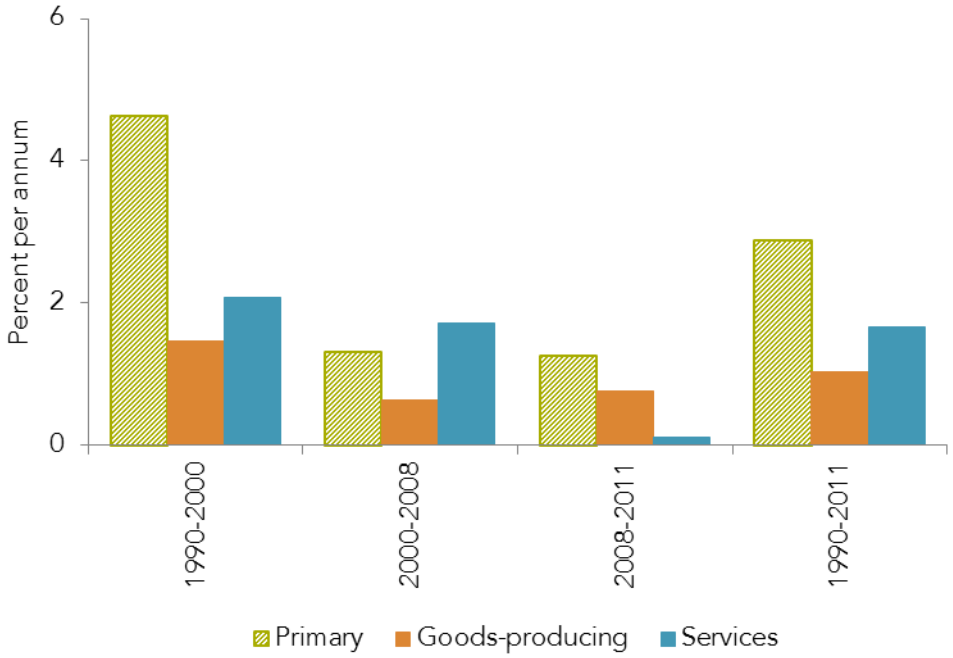
## Growth rates of labour productivity across the three sectors

Turning to growth performance, labour productivity growth in the services sector has generally been faster than in the goods-producing sector but slower than in the primary sector. Figure 4.4 shows the average annual labour productivity growth rates across the sectors from 1990 to 2011 (Appendix B, Table B.2 provides the growth rates for each sector from 1978).

The overall period of 1990-2011 can be broken into sub-periods based on productivity growth cycles (Box 4.2 explains productivity growth cycles). Two complete cycles occurred over 1990 to 2000 and one over 2000 to 2008. The Global Financial Crisis (GFC) greatly influenced economic activity over 2008 to 2011. This period, however, is not a complete growth cycle.

In the sub-period 2000-2008, labour productivity growth slowed in all sectors but much more so in the primary and goods-producing sectors than in the services sector. However, in the post-GFC period, 2008-2011, the labour productivity growth of the services sector slowed dramatically more than the other sectors to near zero.

**Figure 4.4** Labour productivity growth rates by sector




*Source:* Productivity Commission; Statistics New Zealand productivity tables

Box 4.2 **Choosing periods for analysing productivity performance: productivity growth cycles**

In examining the productivity performance over time, it is good practice to choose periods that correspond to growth cycles. A productivity growth cycle is the period between two peaks of productivity growth. Measuring average productivity growth between two peaks largely removes the problem of year-to-year variations in productivity growth owing to firms varying the use of their capital and labour over a growth cycle. The main productivity growth cycle periods that this report uses are set out in Table 4.1.

Table 4.1 Productivity growth cycle periods

| Period | Comment |
|---|---|
| 1990-2011 | Covers the completed growth cycles 1990–1997, 1997–2000 and 2000–2008, as well as the incomplete growth cycle 2008-2011. |
| 1997-2008 | Covers the completed growth cycles since 1997. Useful because the data for some service industries only became available from March 1996. |
| 1990-2000 | Covers the growth cycles of 1990 to 1997 and 1997 to 2000. |
| 2000-2008 | Covers one growth cycle. |
| 2008-2011 | Covers the current (incomplete) growth cycle. This period is sometimes kept separate as the growth cycle is not complete and the period was affected by the large falls in outputs as a result of the GFC. |

*Source:* Productivity Commission; Statistics New Zealand

Figure 4.5 shows the relative contributions of MFP and capital deepening to labour productivity growth across the three sectors. Capital deepening generally fosters greater output because workers have more and/or better plant, equipment, buildings and infrastructure to work with (chapter 2). MFP on the other hand is the combined effect of factors such as new knowledge and technologies, better business methods and models, greater skills and better use of them, which lead to higher output even when both capital and labour inputs are held constant. MFP is the major driver of higher productivity over the medium to long term.

Over 1990 to 2011, MFP and capital deepening made similar contributions to labour productivity growth in each of the primary and services sectors. In the goods-producing sector, however, capital deepening contributed a much greater share of the labour-productivity growth than MFP. MFP growth followed a similar pattern to labour-productivity growth – it was strongest in the primary sector, followed by services and then the goods-producing sector.

There are historical features and explanations of New Zealand's overall productivity performance and the performance of its services sector that are worth noting.

Faster labour productivity growth in the 1990s was driven more by MFP growth than capital deepening. New Zealand GDP growth was strong for most of the 1990s. Employment grew as the economy re-absorbed a lot of the labour shed as a result of New Zealand's major economic reforms of the 1980s and early 1990s. But output grew faster. This reflected the positive structural and efficiency effects of the reforms. Output also increased as a result of rapid technology improvements in some service industries such as telecommunications and transport.

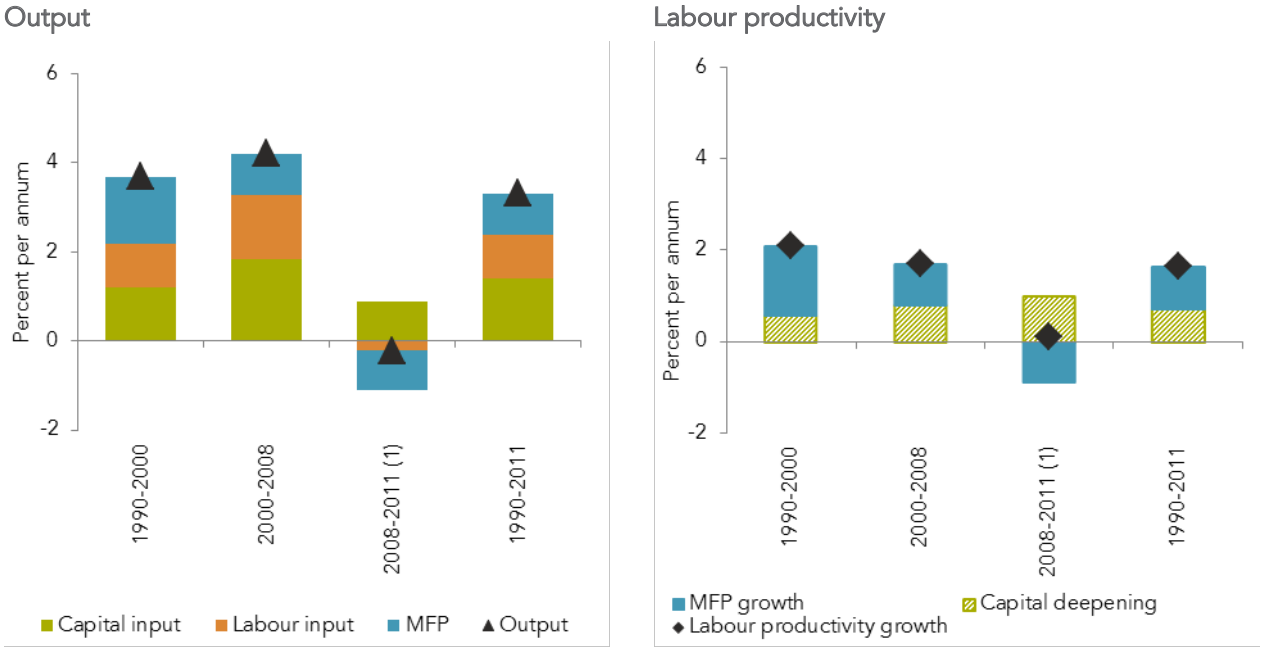
The slowdown in MFP growth over 2000-2008 partly reflected that some of the 1990s drivers had a one-off element and had run their course. Another contributing factor came from strong output growth over 2000-2008 that was associated with strong employment growth, particularly of new entrants and lower-skilled workers. Much of this employment growth happened in certain service industries such as retail trade and accommodation and food services. While this employment of new and lower-skilled was entirely positive for both economic and social reasons, one effect was to dampen the growth of average output per worker. This showed up in lower MFP growth (New Zealand Treasury, 2008a).

Figure 4.5 Labour productivity growth by sector, 1990-2011, with component contributions


*Source:* Productivity Commission; Statistics New Zealand productivity tables

The falls in services-sector labour productivity growth over the 2000s came from slower MFP growth (Figure 4.6) with MFP actually declining in the post-GFC period. In contrast, capital deepening increased somewhat over the 2000s particularly after 2008. This last feature reflected a major business-cycle event – the GFC. The relatively modest reduction in employment caused by the GFC, combined with continued growth in capital inputs, led to increases in capital per worker. These same events on the input side, combined with the sharp fall in output growth, led to the decline in MFP after 2008 (Figure 4.6).

Figure 4.6 Services-sector output and labour productivity growth, and component contributions [1]




*Source:* Productivity Commission; Statistics New Zealand productivity tables.

*Notes:*

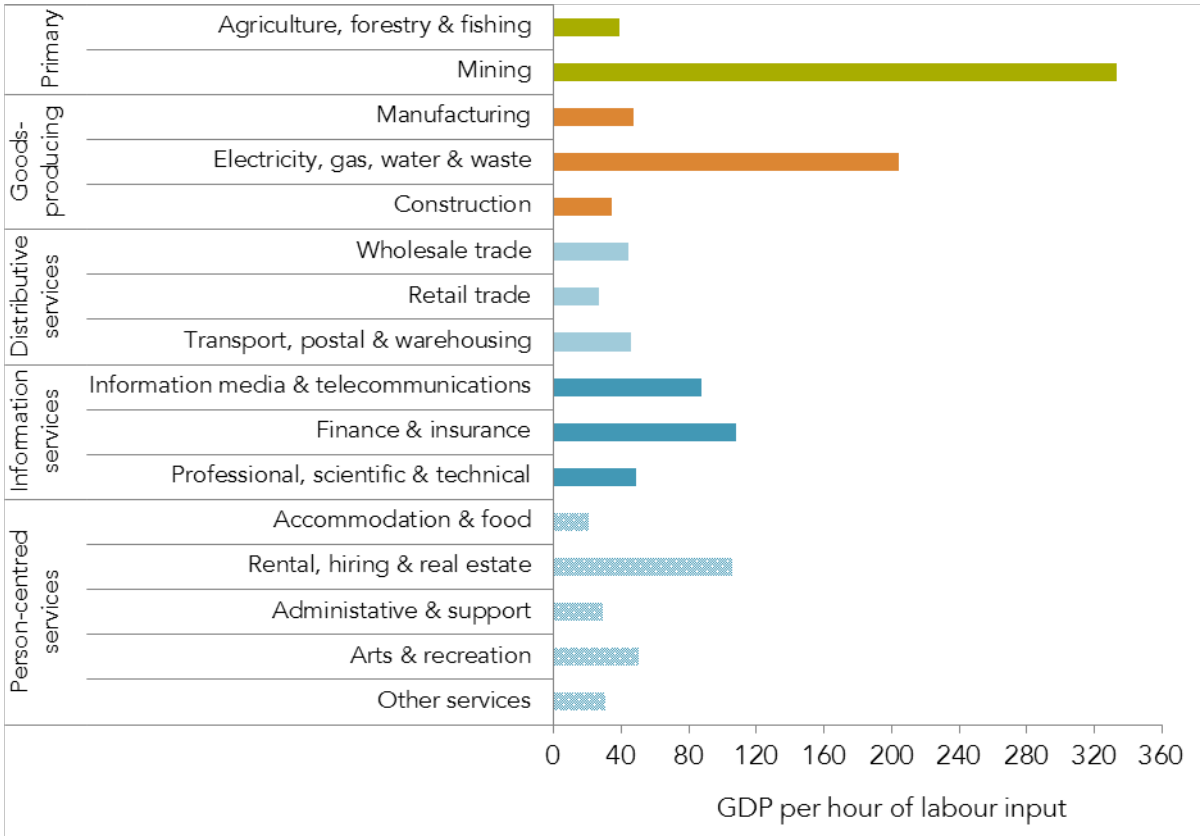
1. 2008-2011 is a partial productivity growth cycle.

## 4.3 Service industries productivity

### Labour productivity levels vary a lot across New Zealand service industries

The services sector includes industries with the lowest levels of labour productivity in the economy and also some with comparatively high levels. Generally speaking, distributive and person-centred service industries have low productivity levels compared to most of the information-services industries (Figure 4.7). Average output per hour in 2010 ranged from a low of $21 in the accommodation and food services industry to around $100 or more in information media and telecommunications; finance and insurance; and rental, hiring and real estate services.

Figure 4.7 Labour productivity levels, GDP per hour of labour input, by industry, 2010




*Source:* Productivity Commission; Statistics New Zealand national accounts and labour hours paid tables.

*Notes:*

1. Labour productivity levels are not shown for the education and training and the health care and social assistance industries due to differences in the method used to calculate these industries' contribution to GDP and because the large non-market parts of these industries are not within the scope of the inquiry.
2. Statistics New Zealand's measure of labour input is based largely on hours paid. GDP per hour is in 2010 dollars.
3. Private residential lettings have been removed from 'rental, hiring and real estate' because Statistics New Zealand is unable to measure, and therefore does not attribute, labour input for this sub-industry.

The large variations in labour productivity levels across industries reflect large differences in capital intensity as well as in MFP. Variation in MFP, in turn, is mainly a story of industries differing in the level of skills they employ and their use of technology. For example, it is generally the case that service industries that invest in and use ICT intensively have considerably higher labour productivity levels than those than do not. They also typically have higher skill requirements and pay higher wages. Two examples of ICT-intensive industries are information media and telecommunications, and finance and insurance.

### Service industries also vary a lot in their productivity growth rates

As with the level of labour productivity, labour productivity growth also varied markedly across service industries (Figure 4.8) (Appendix B, Table B.3 and Figure B.1 provide further detail on the growth rates). From 1990 to 2011, the accommodation and food industry had the lowest average annual growth rate

(-0.5%), while the information media and telecommunications industry had the highest (6.1%). The latter reflects a combination of solid MFP growth and capital deepening, particularly over the 1990s. Undoubtedly, rapid developments in ICT and large reductions in its cost played a key role in both the MFP growth and capital deepening in this industry[33].

The other features of service-industries productivity growth that stand out – and possible reasons for them are:

- The transport, postal & warehousing industry experienced fast labour productivity growth in the 1990s (reflecting impressive MFP growth) but then suffered a sharp slowdown in the 2000s. Reasons for the rapid growth likely include large technological changes in transportation and a series of pro-competition, regulatory reforms in air, road and rail transport, coastal shipping, ports and airports in the 1990s. The reasons for the slowdown are less clear but likely include the one-off nature of some of the effects of the earlier reforms and some deterioration in the stance of regulation towards competition and new infrastructure investment (NZPC, 2012b).

- The finance and insurance industry achieved well above average growth in labour productivity over 1990 to 2011 (3.9% per year) and was particularly strong in the 1990s. MFP and capital deepening both contributed until the GFC in 2008 after which MFP growth turned negative. Interestingly, capital deepening grew strongly from 2008 to 2011 because capital investment grew quite quickly despite the crisis while labour input declined in 2009 and 2010[34].

- Labour productivity grew quite slowly in the wholesale and retail trade industries (1.1% and 1.9% per year respectively over 1990 to 2011). This is concerning because these industries are large and play an important role in the economy. It is also puzzling given their potential to benefit from the application of new technologies and business models, and their apparent openness to competition. From 1990 to 2008, the pattern is one of MFP driving the productivity growth and little in the way of capital deepening.

- In the accommodation and food industry, both MFP growth and capital deepening have been weak. Over 1990-2011, the growth rate of MFP was actually negative (-0.7% per year) and the rate of capital deepening only slightly positive (0.3% per year). Jointly, these rates gave a negative rate of labour productivity growth (-0.5% per year). Until 2008, the industry posted strong growth in employment.

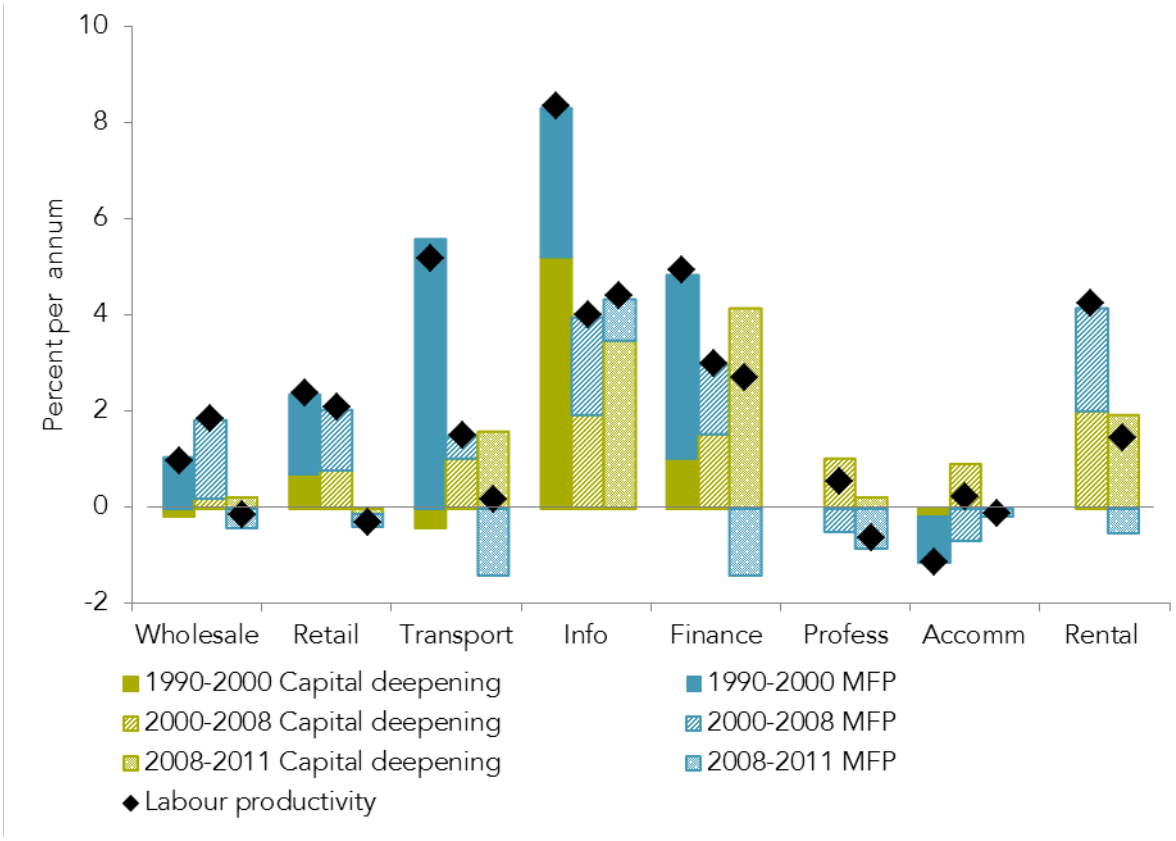
- Professional, scientific and technical services is an important industry – large in size with many of its activities requiring high skill levels and expert knowledge. Appendix C describes the methods used for the challenging task of measuring outputs in this industry. Both the labour-productivity and MFP growth rates of this industry have been low, averaging around 0.3% and -0.7% per year respectively between 1997 and 2011.

Most of the service industries – along with others – experienced sharply slower MFP growth over 2008-2011. This was not surprising given the sharp falls in output growth without commensurate falls in labour and capital inputs following the onset of the GFC. These special circumstances and the fact that the period is an incomplete productivity growth cycle mean these figures are not reliable indicators of longer-term trends.

[33] For productivity estimates, inputs and outputs are measure in physical 'volume' terms. When, say, the price of computers drops to such an extent that a firm uses ten of them rather than six it might actually cost the firm less in dollar expenditure on computers. But in terms of productivity measurement, the physical inputs of computers have increased.

[34] In the wake of the GFC, some commentators have questioned the current statistical approaches to measuring value added in financial services (Appendix C and Haldane, 2010)

Figure 4.8 Breakdown of industry labour productivity growth, 1990-2011, with component contributions




*Source:* Productivity Commission; Statistics New Zealand productivity tables

*Notes:*

1. Industry productivity data for professional, scientific and technical services, and for rental, hiring and real estate services is not available for most of the 1990s.
2. The industries are wholesale trade; retail trade; transport, postal & warehousing; information media & telecommunications; financial & insurance services; professional, scientific & technical services; accommodation & food services; rental, hiring & real estate services

## Service industries made both large and small contributions to aggregate productivity growth

An industry's contribution to the economy's aggregate productivity performance depends not only on its own productivity performance, but also on its size. The faster its productivity growth, and the larger its size as a proportion of GDP, the larger will be its contribution.

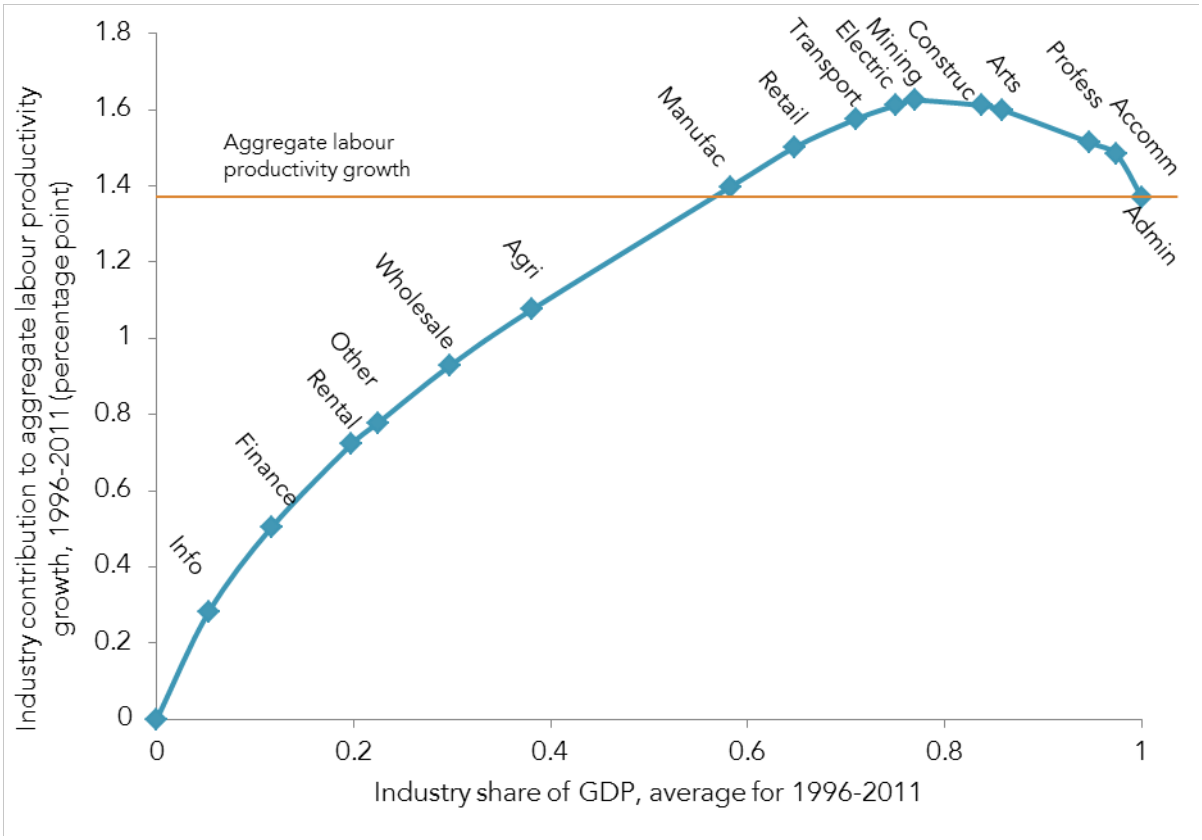
Industries vary markedly in their contributions to aggregate productivity growth. Figure 4.9 illustrates this by plotting the contribution of each industry to aggregate labour productivity against the industry's share of GDP. The industries are ordered with the one making largest contribution relative to its size put first (the one nearest the origin of the graph) and so on.

From 1996 to 2011, industries that accounted for only about 40% of GDP contributed about 80% of aggregate labour productivity growth (1.1 out of 1.4 percentage points). The largest contributions relative to size came from the high-productivity-growth industries of information media and telecommunications, and finance and insurance. These two industries collectively account for only around 10% of GDP but contributed half a percentage point to aggregate labour productivity growth.

At the other end of the spectrum, the construction industry and a number of low-productivity-growth service industries have detracted from aggregate labour productivity growth. Among these is the professional, scientific and technical services industry which is large – at about 8% of GDP – and subtracted almost a tenth of a percentage point per year from New Zealand's aggregate labour productivity growth. Administration and support services, although a smaller industry, subtracted almost as much from aggregate labour-productivity growth.

Service industries are thus represented at both ends of the range of industry contributions to aggregate labour productivity growth, illustrating the diversity of productivity performance in the sector. Even greater diversity characterises the industry contributions to overall MFP growth (Conway & Meehan, 2013).

**Figure 4.9 Cumulative industry contributions to aggregate labour productivity growth**




*Source:* Conway & Meehan, 2013.

*Notes:*

1. Industries are ordered by industry contribution divided by share of GDP. However, the industry contribution is estimated using the methodology developed in Parham (2012). This involves calculating labour productivity growth using separate indexes for output and labour input (output and total inputs) rather than a simple weighting of industry labour productivity growth weighted by GDP share.
2. GDP is the GDP arising from all the industries shown – which are all the industries included in Statistics NZ's official productivity statistics.

**F4.2** The productivity performance of New Zealand service industries is diverse. Service industries are among the most and least productive in the economy in terms of both levels and growth rates of labour productivity.

**F4.3** Some service industries with high labour productivity levels and growth rates – such as information media and telecommunications, and finance and insurance – tend to employ people with higher skills, pay higher wages and be ICT-intensive. But some service industries – such as professional, scientific and technical services – share these characteristics yet have low productivity growth.

**F4.4** The distributive and person-centred service industries generally have low output per hour paid, have experienced low labour productivity growth, and employ less-skilled people.

**F4.5** Both multi-factor productivity (MFP) growth and capital deepening contributed to labour productivity growth across service industries from 1990 to 2011. While the contribution of each component has varied over time, MFP growth has generally been the more variable and significant of the two.

## 4.4 Services-sector productivity compared with other countries

### Limited data makes international comparisons difficult

Measuring the outputs and productivity of many service industries is challenging even within one country (Appendix C). International comparisons are yet more complex because of problems such as varying definitions and methods used by different national statistical offices. Translations of prices in one currency to prices in another that take proper account of differences in purchasing power is another stiff challenge. As a consequence, care needs to be taken in comparing the productivity performance of service industries across countries.

Limited data availability has also restricted the Commission's ability to assess the productivity performance of New Zealand's services sector against OECD and other small open economies (as required in the terms of reference for this inquiry). Two examples illustrate this limitation:

- The EU KLEMS Growth and Productivity Accounts database is a leading source of productivity information by industry across countries, but unfortunately New Zealand is not part of this database. The database provides consistent industry-level measures of output, inputs and productivity for 25 European countries, Japan and the US from 1970 onwards. Industry output and inputs are adjusted for differences in relative price levels across countries. A key to achieving this is the use of industry-level purchasing power parity (PPP) indices estimated by the University of Groningen Growth and Development Centre (GGDC). These enable cross-country comparisons of productivity levels to be made with some degree of confidence (O'Mahony & Timmer, 2009).
- The OECD has not yet included New Zealand in its industry productivity database. This database compares the growth rates of labour productivity and MFP by industry across a significant subset of OECD countries. The OECD uses a set of industries that differ from the standard New Zealand and Australian classification – ANZSIC06.

Fortunately for this inquiry, Statistics New Zealand has recently estimated a set of industry productivity statistics based on the same classifications and a similar methodology as the OECD's industry productivity database (see Appendix B, Table B.4). This has enabled the Commission to compare the productivity growth rates of New Zealand's service industries with their counterparts in a number of other OECD countries[35].

The Commission has also drawn on two specific studies to compare productivity *levels*, as well as growth rates, of industries in New Zealand, the United Kingdom and Australia. Mason and Osborne (2007) compared New Zealand and UK industries over the period 1995 to 2004. With the Treasury and the Ministry of Business, Innovation and Employment, the Commission funded a similar study comparing New Zealand with Australian industries. This study, Mason (2013), has just become available and covers the period from 1997 to 2010. Both studies use New Zealand industry PPPs especially commissioned from the GGDC. The earlier study is based on the industrial classification system, ANZSIC96 and the latter on the more recent ANZSIC06 system, which this report mainly uses.

Comparative productivity analysis is hampered by the lack of an internationally consistent dataset that includes New Zealand. There would be significant benefits from New Zealand's inclusion in the OECD's industry productivity database. This would make comparative data available to a wide range of international researchers and policy analysts. In turn, this would lead to New Zealand being included in comparative studies with attendant benefits from the insights and evidence that these studies generate.

[35] The Commission is grateful to Statistics NZ for providing these estimates.

**F4.6** New Zealand's current non-inclusion in the OECD's industry productivity database limits opportunities for research that would yield evidence and insights of benefit to New Zealand.

## New Zealand productivity growth is below the OECD average in most service industries

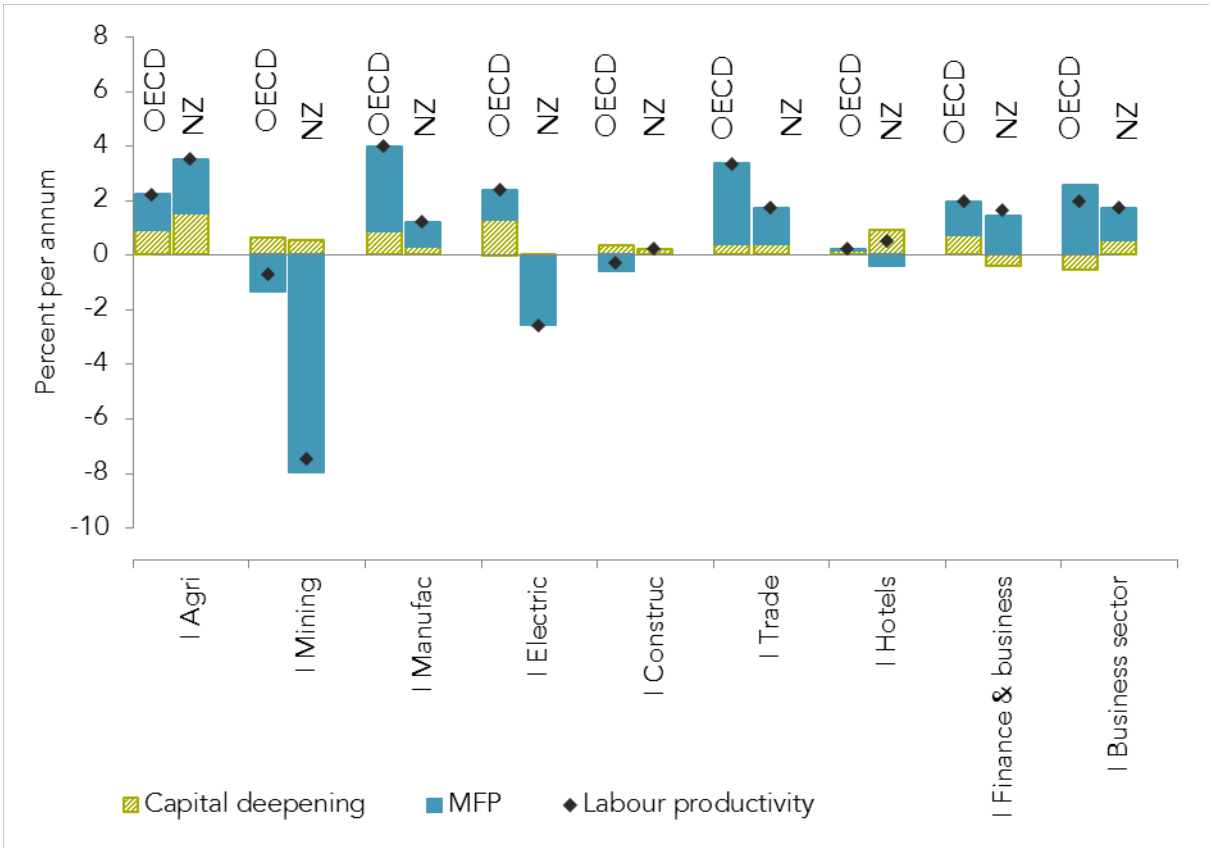
The growth rates of labour productivity for most New Zealand service industries over the period 2000 to 2007 are below the average of the other OECD countries with available data over this period (between 10 and 13 countries) Figure 4.10). This is consistent with the decline in New Zealand's economy-wide labour productivity relative to other OECD countries shown in Figure 4.1.

The four categories at the right-hand end of Figure 4.10 represent service industries. The last – *business sector services* – is a large grouping of service industries many of which are used as inputs to other businesses[36]. New Zealand's small relative underperformance in labour productivity in this grouping arose from slower MFP growth but with faster capital deepening offsetting this to some extent.

Figure 4.11 shows New Zealand's labour-productivity and MFP growth for business sector services over 2000 to 2007 compared with a comparison set of other OECD countries. New Zealand ranked 9$^{th}$ and 10$^{th}$ out of 11 in MFP and labour productivity growth respectively. New Zealand had better rankings in labour productivity growth in hotels and restaurants, and in labour productivity and MFP growth in finance, insurance and business services (Appendix B, Table B.8).

[36] The grouping consists of the following ANZSIC06 industries: wholesale trade; retail trade; transport, postal and storage; information media and telecommunications; financial and insurance services; professional, scientific and technical services; accommodation and food services; rental and hiring (excluding real estate); and administrative and support services.

Figure 4.10 Labour productivity, MFP growth and capital deepening, OECD average and New Zealand, 2000-2007

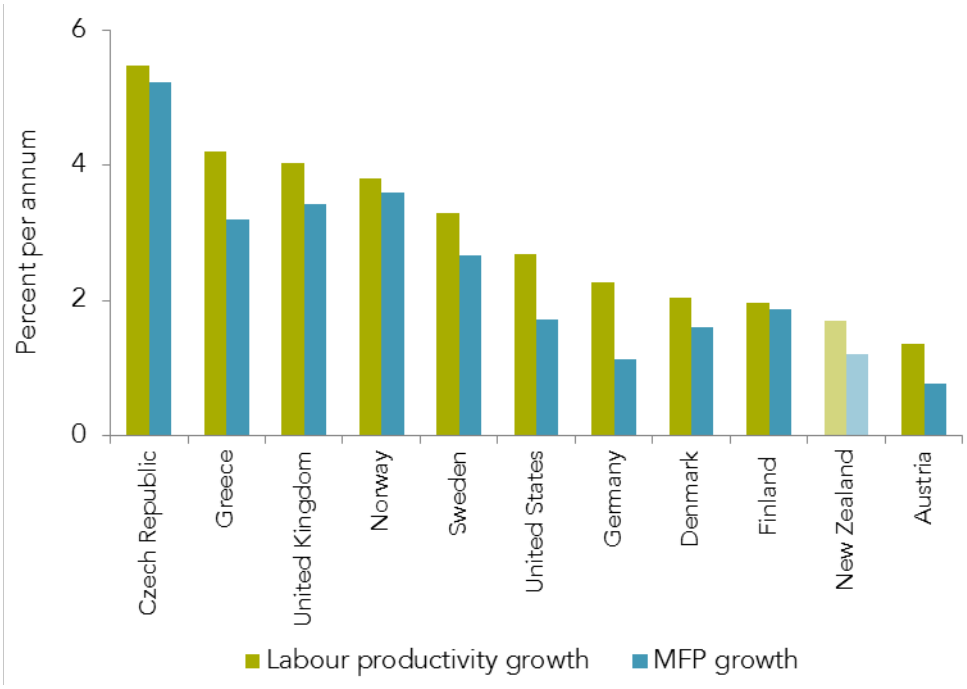



*Source:* Productivity Commission; OECD; Statistics New Zealand

*Notes:*

1. The OECD average is the simple average of OECD countries for which service-industry data are available from 2000 to 2007. These are: Austria, Belgium, Czech Republic, Denmark, Finland, Germany, Greece, Iceland, Italy, Norway, Sweden, the United Kingdom and the United States.
2. The number of countries in the OECD average is less for mining, finance & business services and business sector services as some countries do not have data for these industries. For mining, the OECD average does not include Iceland and the United Kingdom. For finance & business services and business sector services, the OECD average does not include Belgium, Iceland and Italy.
3. "I" refers to the ISIC Rev.3 classification used by the OECD to define these industries. For the services sector, there are four industry groupings: I Trade is wholesale and retail trade and repairs, I Hotels is hotels and restaurants, I Finance and business is finance, insurance and business services and I Business sector is business sector services. Appendix C, Table B.4 details the ISIC Rev. 3 industries shown here and their corresponding ANZSIC06 industries.
4. Appendix B, Table B.5 shows New Zealand's MFP growth by industry against the OECD average.

Figure 4.11 Business sector services, New Zealand and OECD labour-productivity and MFP growth, 2000-2007




*Source:* Productivity Commission; Statistics New Zealand; OECD productivity database.

*Notes:*

1. Appendix B, Tables B.6 and B.7 show New Zealand's MFP growth relative to each OECD country by industry. Figure B.2 shows output and labour productivity growth decompositions for New Zealand relative to each OECD country by industry.

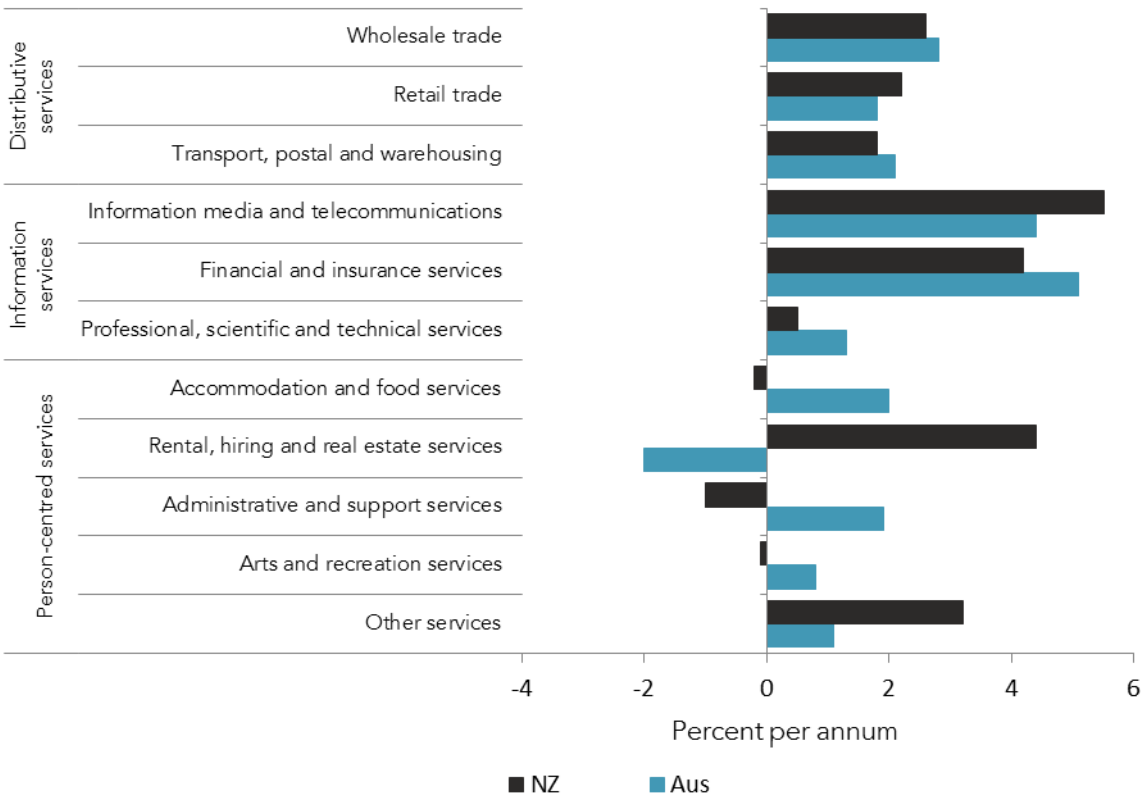
## Industry productivity growth comparisons with Australia and the UK

Mason (2013) and Mason and Osborne (2007) provide comparisons of New Zealand's productivity growth performance at the industry level with Australia and the United Kingdom respectively. These studies provide an opportunity to assess New Zealand's relative productivity growth in service industries in more detail than the OECD comparisons.

Figure 4.12 shows that from 1997 to 2008 Australia had faster labour productivity growth than New Zealand in 7 out of 11 service industries and slower growth in the remaining four. New Zealand had faster growth in retail trade; information media and telecommunications; rental, hiring and real estate services; and other services. These four industries represented around 38% of the total value-added of market service industries in New Zealand in 2008[37], leaving 50% where Australian industries grew faster and 12% where growth rates were similar. In all industries covered by official productivity statistics (referred to as 'total market industries' in Mason, 2013), Australia's average labour productivity growth rate was 2.1% against New Zealand's 1.6%.

[37] Includes private rentals in the rental, hiring and real estate industry.

Figure 4.12 Annual growth in labour productivity, 1997-2008, Australia and New Zealand

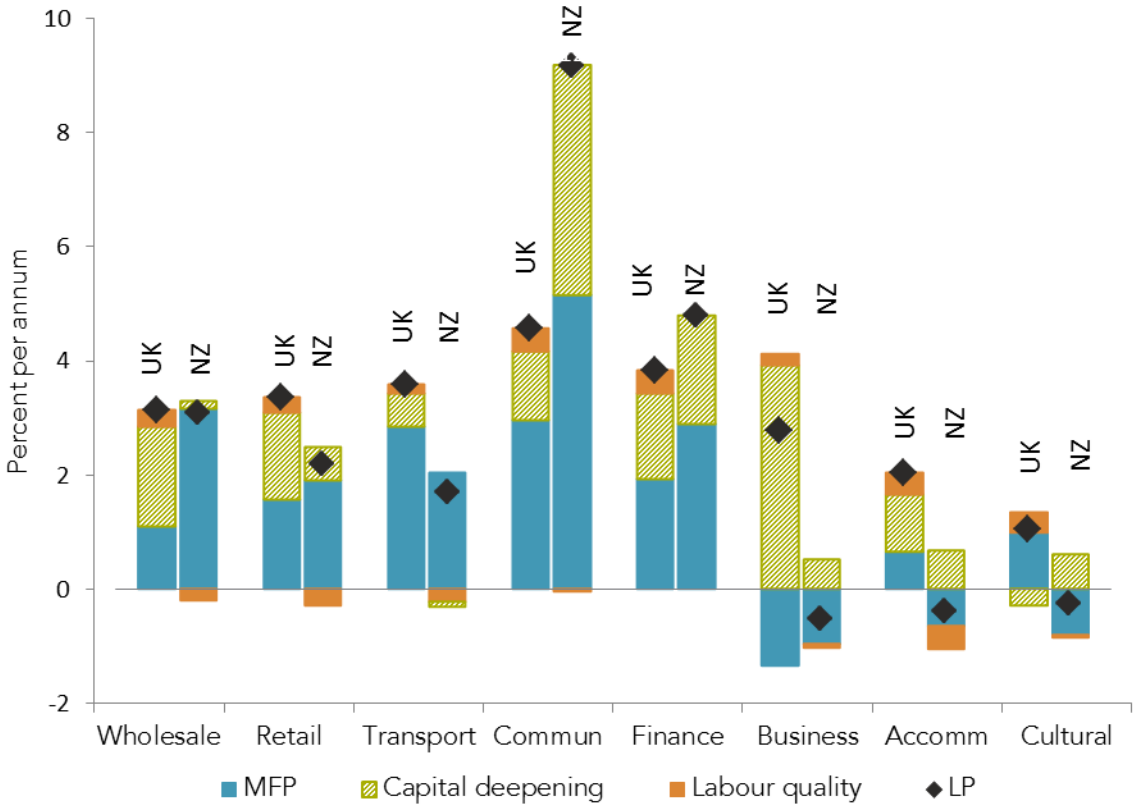



*Source:* Productivity Commission; Mason (2013)

The Mason and Osborne (2007) comparison of New Zealand and the UK includes only eight service industries[38]. From 1995 to 2004, the UK had faster labour productivity growth in five of these: retail trade; accommodation, restaurants and bars; transport and storage; business services; and cultural and recreational services. New Zealand had faster growth in two: communication services and finance and insurance, while growth rates were similar in wholesale trade (Figure 4.13). Similarly to the Australian study, the services in which New Zealand had faster labour productivity growth represented less than 50% of the value-added of market service sector in New Zealand.

[38] There were fewer industries for which productivity statistics were available at the time of the study. Also the classification is different because it is based on ANZSIC96 rather than the more recent ANZIC06.

Figure 4.13 Annual labour productivity growth and component contributions, 1995-2004, UK and New Zealand




*Source:* Productivity Commission; Mason & Osborne (2007).

*Notes:*

1. Mason & Osborne (2007) decomposed labour productivity growth into the contributions not only from capital deepening and MFP but also from labour quality by industry. This has the effect of reducing the measured MFP contribution because the effect of labour quality is normally captured in MFP.
2. The industries are wholesale trade; retail trade; transport & storage; communication services: finance & insurance; business services; accommodation, restaurants & bars; cultural & recreational services.

Taken together, the findings of these two studies point to the following broad conclusion about the relative performance of New Zealand service industries: the labour productivity growth rates of these industries have generally been slower than their counterparts in Australia and the UK. However, the ICT-intensive industries of communications and finance and insurance were relatively good performers in New Zealand. The next section examines evidence about relative *levels* of productivity in service industries to add to the picture based on growth rates.

**F4.7** The labour-productivity growth rates of New Zealand service industries have generally been slower than their counterparts in Australia and the United Kingdom.

## Industry productivity levels comparisons with Australia and the UK

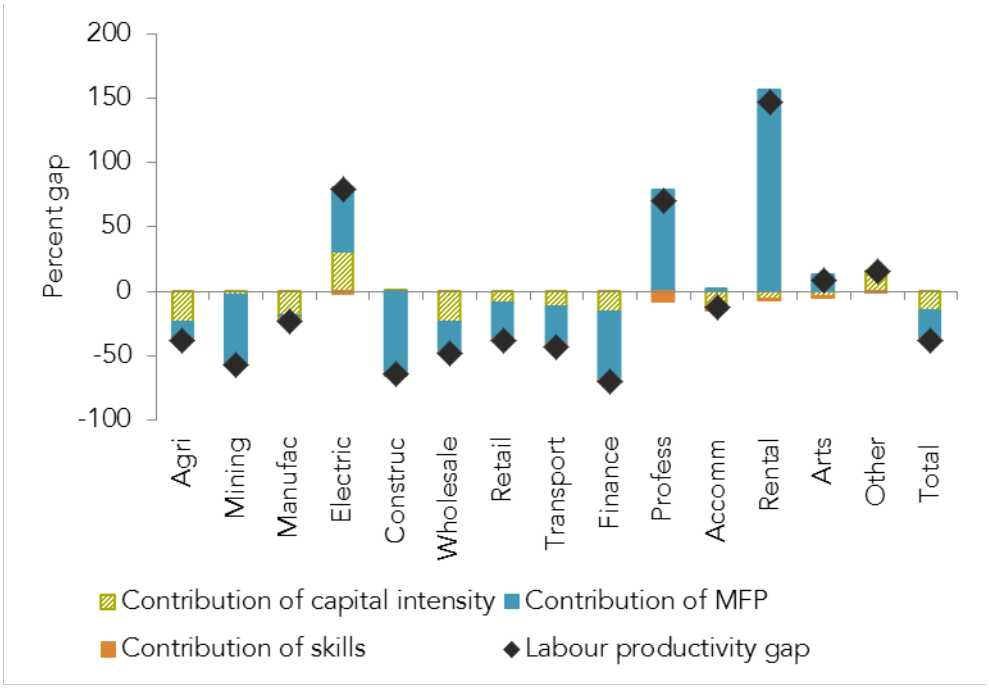
Mason (2013) and Mason and Osborne (2007) compare New Zealand levels of labour productivity and MFP in a number of market industries with those in Australia and the United Kingdom.[39]

Across total market industries, Mason (2013) estimated New Zealand's level of labour productivity to be around 62% of Australia's level in 2009, down from 68% in 1997. A gap of this order also applies to the service industries as a group. Figure 4.14 shows the percentage size of the gaps with respect to Australian levels across all the market industries. It also shows contributions to the gaps from three proximate causes – differences in levels of capital intensity, MFP and labour quality.

[39] Appendix B, Figures B.2 and B.3 show New Zealand's labour productivity levels relative to Australia and the UK respectively by industry.

The last factor – labour quality – is usually not identified and measured separately. Variations in it therefore show up in MFP differences. However, in this study the author estimated average labour quality (skills) in each industry in each country (based on educational qualifications and mean wage levels) in order to examine its contribution to differences in industry labour productivity levels between Australia's and New Zealand. These estimates found New Zealand's labour quality in each industry to be generally slightly lower than Australia's but this contributed very little to explaining any of the gaps.

**Figure 4.14 Industry labour-productivity differences in levels; New Zealand relative to Australia, 2009, with component contributions**




*Source:* Productivity Commission; Mason (2013)

*Notes:*

1. Information media and telecommunications and administrative and support services are not shown in the graph as New Zealand and Australia have equal labour productivity levels in these industries. New Zealand's MFP levels in these industries are higher than Australia, but these are offset by lower levels of capital intensity relative to Australia.

In their comparison of labour productivity levels between New Zealand and UK industries in 2004, Mason and Osborne (2007) found the New Zealand level for all industries in the study was 75% of the UK level, down from 82% in 1995. Among the eight service industries in 2002, New Zealand lagged in four, was ahead on three, and was similar in one. Figure 4.15 shows the percentage size of the gaps with respect to UK levels. It also shows contributions to the gaps from three proximate causes – differences in capital intensity, MFP and labour quality[40].

Several features of the results from these two studies are worth noting.

### Capital intensity

Most New Zealand industries, including service industries, have lower capital intensity than their Australian and UK counterparts. For all industries included in each study, New Zealand's capital intensity relative to Australia's was 62% in 2009 and, relative to the UK's, was 69% in 2002. In both cases New Zealand's gap in capital intensity grew over time. The major exception in the services sector was that the communications industry was more capital intensive in New Zealand than the UK.

### Multi-factor productivity

MFP presents a more variable picture across industries than capital intensity. Roughly half of New Zealand's service industries had higher MFP than their Australian and UK counterparts in the relevant comparison

[40] The study used a similar approach to Mason (2013) to estimate average labour quality by industry and examine its contribution to explaining the gaps in industry labour productivity levels between the UK and New Zealand. According to these estimates, New Zealand's labour quality was higher for each service industry and therefore acted to reduce negative, and increase positive, gaps for New Zealand.

year. Over all industries in each study, however, New Zealand's MFP was 78% of Australia's in 2009 (a slight improvement compared to 1997), and 87% of the UK's in 2002 (no significant change relative to 1995).

### Knowledge-intensive industries

New Zealand had significant MFP leads in some knowledge-intensive service industries[41] such as information media and telecommunications; and professional, scientific and technical services relative to Australia and finance and insurance services relative to the UK. On the other hand, New Zealand had a significantly lower level of MFP in financial and insurance services compared to Australia. But it is important to note the differences in the composition of the finance and insurance services industry between New Zealand and the other two countries. For example, a larger proportion of New Zealand's output from this industry at the time was from the finance sub-industry (mostly banking). Australia had higher proportions of both insurance and superannuation funds, and the auxiliary finance and insurance sub-industries.

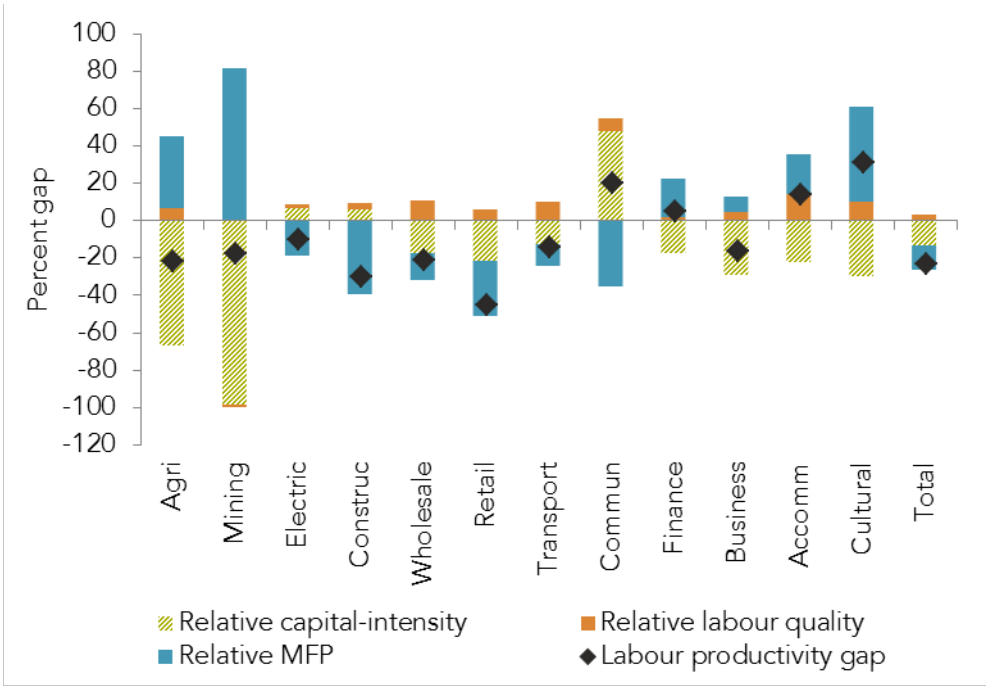
### Contributions to labour-productivity gaps

New Zealand's lower labour productivity across all market industries can be decomposed into a contribution from lower MFP and one from lower capital intensity. MFP explained the majority (57%) of New Zealand's negative labour-productivity gap with Australia in 2009, while lower capital intensity and skills explained 39% and 3% respectively. For most service industries, MFP was the main contributor to labour productivity differences. Where New Zealand had higher service-industry labour productivity than the other country, generally MFP contributed to this strongly. In industries where New Zealand was behind, generally both MFP and capital intensity contributed to the gap.

### Distributive industries

As a group of related industries – retail trade; wholesale trade; and transport postal and warehousing – have not performed well since the mid-to late 1990s. This shows in their lower labour-productivity levels compared with both Australia and the UK, and in slower labour-productivity growth rates relative to a wider group of OECD countries (Figure 4.10, Figure 4.14 and Figure 4.15).

**Figure 4.15 Industry labour-productivity differences in levels relative to the UK, 2002, and their contributing components**




*Source:* Productivity Commission; Mason & Osborne (2007)

*Notes:*

1. Data for the manufacturing industry was not available at the aggregate level, although it is included in the total.

[41] Knowledge-intensive industries are similar but not synonymous with ICT-intensive industries.

**F4.8** There is significant variation industry by industry in productivity growth rates and levels compared with other OECD countries. But the general picture is in line with New Zealand's relatively poor productivity performance observed at the economy-wide level.

**F4.9** New Zealand's service industries generally had relatively weak MFP growth compared with OECD countries between 2000 and 2007. MFP tended to be a greater contributor than capital intensity to New Zealand's labour productivity differences in service industries – in both growth rates and levels – compared with other OECD countries.

**F4.10** The information media and telecommunications industry was an exceptionally good performer in having high levels and growth rates of labour productivity and MFP growth both in relation to other industries in New Zealand, and to its Australian counterpart industry, from 1997 to 2010.

**F4.11** The available evidence suggests that New Zealand's distributive service industries have underperformed relative to other OECD countries.

## 4.5 The effect of ICT investment on New Zealand productivity

There is evidence that investments in ICT can boost MFP. Investments in ICT can help firms to use labour and other forms of capital more efficiently.

The strong labour productivity performance in the United States after 1995 in some service industries has been attributed to strong MFP growth (Inklaar, Timmer & Van Ark, 2007). This strong MFP performance has been linked to increased use of ICT (see Box 2.3 in chapter 2). Timmer, Inklaar, O'Mahony and van Ark (2011) noted that US service industries such as retail and wholesale trade embraced the knowledge economy through capital investment in ICT and through new business and organisational forms facilitated by ICT. This also happened in some European countries such as Finland, the Netherlands and the UK. But other European countries did not experience this phenomenon, and Europe as a whole experienced much weaker overall productivity growth than the US over this period.

In New Zealand, there has been greater MFP growth in ICT-intensive industries relative to other industries, although it is difficult to link this growth to the effect of ICT (New Zealand Treasury, 2008c; Engelbrecht & Xayavong, 2006a).

The extent to which there is an efficient level of ICT adoption by New Zealand firms is unclear:

> ICT adoption varies across industries and firms. The Booz and Company report suggests that the degree of digitisation varies by up to 50% across European industries. Further, larger companies tend to adopt ICT services more readily than small to medium size businesses. In part, this is because smaller businesses likely lack the technical focus or scale to readily adopt ICT based solutions. Overall, it's unclear whether ICT uptake by New Zealand firms lags that of high performing countries... (Telecom New Zealand, sub. 15, p. 2)

ICT investment as a proportion of New Zealand's GDP was similar to some comparable OECD countries over the period 1990-2008 (NZPC, 2013b).

The evidence described in this chapter on industry productivity levels and growth rates, and on capital deepening and MFP, suggests there have been some effects from ICT investment in New Zealand. Two

ICT-intensive industries – information media, and telecommunications, and finance and insurance – have experienced capital deepening and strong output and MFP growth[42].

However, other market service industries – including wholesale trade; retail trade; transport, postal and warehousing; and professional, scientific and technical services – also have the potential to benefit from ICT adoption and use. But these industries did not achieve strong productivity growth in New Zealand. This suggests they have either not invested in ICT to any extent, or not converted any such investment into significant productivity gains. In the US, market services as a whole achieved 3.0% labour productivity growth from 1995 to 2005 with strong growth coming from retail and wholesale trade, business services and financial services based on greater use of ICT. (Timmer, Inklaar, O'Mahony & van Ark, 2011).

The Commission is proposing further analysis of the adoption of ICT by New Zealand service firms in Part B of this inquiry (chapter 8).

**F4.12** The New Zealand service industries with the potential to benefit from ICT investment and adoption achieved mixed results in their productivity performance. The better performance of these industries in some other countries deserves further analysis for its possible lessons for New Zealand.

## 4.6 Productivity variation across firms in the same industry

Many studies, covering various countries, have found large and persistent differences in productivity across firms in the same industry. The top performing firms in an industry can be many times more productive than the poorest performing firms (Syverson, 2010). These productivity gaps are important. For example, Hsieh and Klenow (2009) show that differences in productivity dispersion between firms in the same industry can explain a significant part of aggregate productivity differences between countries.

Some internal and preliminary research conducted by the Commission indicates there are large differences in the productivity of firms in the same industry in New Zealand[43]. This research examined the ratios of labour and multi-factor productivity of firms at the 75$^{th}$ percentile of the distribution to those of firms at the 25$^{th}$ percentile. While stressing their preliminary and tentative status, the Commission found these ratios in New Zealand between 2000 and 2010 to be sizeable.

For example, the labour productivity levels of the 75$^{th}$ percentile firms in the information, media & telecommunications industry and the administrative & support industry were 3.1 times those of the 25$^{th}$ percentile firms, and 2.5 times in manufacturing. This suggests that in each industry there exists a long tail of poorer performing firms. These results are similar to those found by the Ministry for Economic Development[44] (Devine, Doan & Stevens, 2012).

The Commission's research also suggests that many service industries have greater labour and multi-factor productivity dispersion than the goods-producing industries. This tentative finding also fits with results in the study by the Ministry for Economic Development (Devine, Doan & Stevens, 2012). That study reported a positive correlation between the extent of dispersion and the intensity of competition in an industry.

A like-for-like comparison of industry productivity distributions in New Zealand and other OECD countries would be very interesting. However, cross-country comparisons of productivity dispersions are difficult. To date, the Commission has been able to make only a tentative comparison with only one other country – Denmark. This comparison – based on studies by Fox and Smeets (2011) and Bagger and Christensen (2011) – suggests that New Zealand's productivity dispersion across firms in service industries and other industries is relatively wide.

[42] The Commission is aware that Statistics New Zealand is currently studying the contribution of growth in ICT capital to productivity growth by industry. The Commission hopes to draw on the results of this study during the remainder of the inquiry.

[43] This internal Productivity Commission research used the Statistics New Zealand Longitudinal Business Database. Accordingly the disclaimer at the start of this report applies.

[44] The Ministry of Economic Development is now part of the Ministry of Business, Innovation and Employment.

The intensity of competition has a strong influence on the dispersion of productivity across firms operating in the same industry. In a study of ready-mixed concrete firms in local markets, Syverson (2004) found that increased competition was associated with higher average productivity across the firms, a narrower productivity dispersion, and with firms at the bottom end of the distribution having a higher productivity level.

Preliminary research by the Commission on profit elasticities[45] across industries suggests that weak competition may be a reason for productivity underperformance in some New Zealand service industries. This weakness could be a consequence of New Zealand's small domestic market, its isolation from competition by foreign suppliers and the limited tradability of many services. The Commission is interested in the role of the intensity of competition in stimulating productivity, and is proposing a topic for Part B of this inquiry that would bear on an aspect of this role (chapter 8).

## 4.7 Lack of convergence – how have service industries contributed?

This chapter began by noting the failure of New Zealand's aggregate economy to show any signs of convergence in productivity levels towards high-performing OECD economies such as the US and Australia. On one analysis, New Zealand stood out by being the only OECD economy with a labour productivity level below the OECD average in 1980 that did not subsequently achieve a higher-than-average growth rate in labour productivity. Achieving the latter is clearly a necessary condition for a country to converge towards the leading productivity countries.

Productivity performance in service industries appears to play a crucial role in explaining episodes of convergence and divergence in country-wide productivity levels across a broad group of countries. Over time, cross-country productivity gaps across developed countries have been substantially reduced in agriculture and goods-producing industries. Much of this reduction is the result of competition and the openness of these industries to international trade. In fact, Duarte & Restuccia (2010) find that productivity catch up in goods-producing industries explains about 50% of the gains in aggregate productivity across countries over the last 50 years or so.

Cross-country productivity gaps have not reduced by nearly as much in services. Indeed, "low productivity in services and the lack of catch up explain all the experiences of productivity slowdown, stagnation and decline in relative aggregate productivity across countries" (Duarte & Restuccia, 2010, p. 167). Other evidence on the importance of services productivity performance is described in Timmer, Inklaar, O'Mahony & van Ark (2011) in relation to the US and the EU from 1995 to 2007 (section 4.5).

### No convergence in service industries' labour productivity

On the evidence presented in this chapter, there is no clear convergence trend in the labour productivity of New Zealand service industries with those in Australia or the UK over the mid to late 1990s and the 2000s, Only 4 of the 11 service industries in the New Zealand-Australia study and 3 of the 8 industries in the New Zealand-UK study had movements towards parity. Overall, most existing industry productivity gaps between Australia and New Zealand continued in place and half of the gaps between the UK and New Zealand did the same.[46]

### No convergence in service industries' MFP

There is no clear convergence trend between New Zealand service industries and those in the UK and Australia in terms of MFP. Where a New Zealand industry was behind at the beginning of the period of study, the gap more often than not continued rather than declined. For total market industries, there was no convergence in New Zealand's MFP to the higher MFP level in the UK between 1995 and 2004. While New Zealand's MFP growth for total market industries has been greater than Australia's in all years but one since 2004, this has owed more to very low MFP growth rates in Australia than to good MFP growth in New

[45] Profit elasticities are a measure of firms' ability to increase prices above marginal costs. They are inversely related to the intensity of competition in an industry.

[46] See Tables B.9 and B.10 in Appendix B for an analysis of convergence by industry against Australia and the UK respectively

Zealand. There are also reasons to believe Australia's MFP growth rates will revive in the near future (Parham, 2012).

### Areas for investigation

A full understanding of New Zealand's productivity performance in services, and why it has not led to greater convergence, requires knowledge of the underlying causes of MFP and capital intensity. As set out in chapter 2, MFP and capital intensity – the growth-accounting components of labour productivity – are simply its proximate causes. MFP itself is an important influence on investment and capital intensity because it affects returns on investment. Taxation and the state of development of capital markets can also influence investment. Examples of factors that influence MFP are innovation, quality of management, skills, economies of scale, geography, regulation and competition (Appendix E). These are all potentially important for the performance of New Zealand's service industries. Chapter 7 describes the Commission's assessment of the most promising places to look for policy improvements. It will investigate some of them as in-depth topics for Part B of this inquiry (chapter 8).

**F4.13** The overall productivity performance of the services sector has not been sufficient to make progress towards closing New Zealand's aggregate productivity gap with Australia and other leading OECD countries.

# 5 Has the shift to services affected overall productivity performance?

**Key points**

- The industrial structure of the New Zealand economy has undergone significant change during the past three decades.
- Employment growth has been stronger in industries with lower labour productivity growth than in industries with higher productivity growth. But there was stronger growth in output from the higher productivity-growth industries, than in the lower-productivity-growth industries.
- Change in the industry structure of the New Zealand economy over the past three decades had comparatively little effect on aggregate productivity growth. To the extent that there was an effect, it was negative but small.
- Studies of the effect on productivity growth from change in industrial structure for Australia, and other advanced economies, give similar results to those for New Zealand.
- While New Zealand's productivity growth was mostly from productivity growth within industries, rather than from shifts in the structure of the economy between industries, some of the intra-industry productivity growth stemmed from higher-productivity firms replacing or gaining market share from lower-productivity firms.
- Thirty per cent of New Zealand's lower level of labour productivity compared with Australia is attributable to Australia having a greater share of employment in some capital intensive, high-labour-productivity industries (mining; finance and insurance; and electricity, gas, water and waste) and a smaller share in some industries with lower labour productivity (agriculture, forestry and fishing; and food and beverage manufacturing) .
- Achieving stronger productivity performance through a change in industrial structure towards high-productivity industries is dependent on the availability of labour with higher skills and on a market for the output of those industries.
- For an open economy, exports can provide a potential market for the output of high-productivity industries, if the exporting firms are internationally competitive.

This chapter examines the extent to which changes in the industrial structure of the New Zealand economy, including towards services, has affected its productivity growth. The analysis includes consideration of the extent to which employment has shifted from high to low-productivity industries.

Shifts of employment, and in the allocation of capital, across sectors with different levels of productivity can affect an economy's overall productivity growth. If low-productivity industries in an economy expand relative to its high-productivity industries, overall productivity growth will suffer, and vice versa. This is a matter of arithmetic.

The way in which structural change can impact an economy’s productivity growth is particularly evident in developing economies. In many of those economies, shifts of rural labour to, and increased investment in, higher-productivity manufacturing activities, has resulted in rapid productivity growth. A large part of the rapid growth of a number of East Asian economies over the past two to three decades is attributed to this kind of structural change (McMillan & Rodrik, 2011).

More advanced economies already close to the productivity frontier, however, have much less scope to achieve substantial lifts in productivity through that kind of change in economic structure. For these

economies, the issue that tends to receive more attention is the potential for change in industrial structure towards low-productivity service industries to dampen productivity growth (Nordhaus, 2006; Baumol, 1967). The issue is whether high productivity-growth industries shed resources, notably labour, which shifts into industries with lower levels of productivity. This could occur, for example, if technology gains in the information and telecommunications industry were to result in reduced employment in that industry over time, alongside an expansion of employment in, say, the accommodation and food industry.

Another possibility is that demand for things produced by low-productivity industries, such as food and accommodation or house-keeping services, increases more than proportionately with income (such goods and services are often referred to as 'superior', or 'luxury', goods). If that is the case the share of those industries in the economy may increase as income levels rise.

On the other hand, industries with high rates of productivity growth often experience increases in demand as the result of reductions in the prices of what they produce. For example, advances in technology have resulted in new and cheaper phone services, which have led to a substantial increase in demand for those services. This increase in demand will have acted to offset technology-induced labour shedding in the telecommunications industry.

The size and direction of the effects of structural change on an economy's productivity growth, therefore, is an empirical question. The following section seeks to shed some light on the effects of structural change in New Zealand.

## 5.1 The changing structure of the New Zealand economy

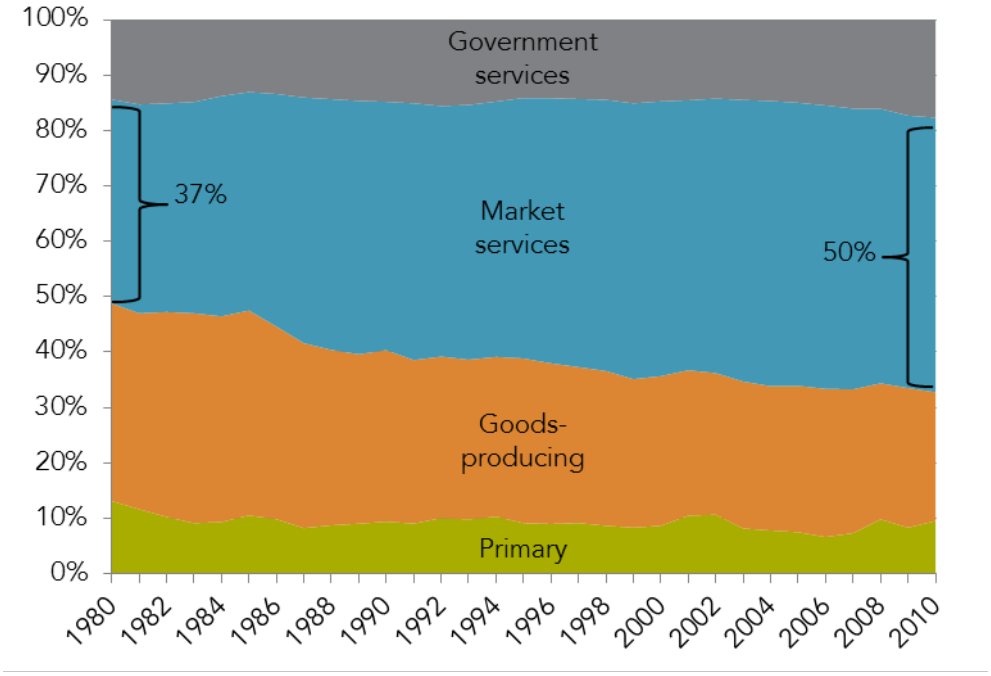
The structure of the New Zealand economy has undergone significant change during the past three decades. Both New Zealand-specific factors and wider global forces have shaped this change.

In New Zealand, there was a contraction in some manufacturing industries, following the phasing down, or out, of tariff protection in the 1990s. This was offset to some extent by growth in the manufacturing industries that process the output of the agriculture industry. The latter has occurred alongside a shift in the composition of the agriculture industry, toward dairying and viticulture, and away from sheep and beef farming. There was also a significant expansion of government-provided services. These changes have occurred against a backdrop of global shifts in economic structure, including a shift of manufacturing to emerging-market countries, particularly in Asia; huge advances in information and communications technologies (ICT); and a tendency by firms to purchase externally more of the services that traditionally were provided by employees within firms.

While structural change tends to occur gradually – albeit with periods when adjustment can be more rapid[47] – it can accumulate to a sizeable shift in the make-up of an economy over time. Since the early 1980s the share of New Zealand's GDP from the services sector has increased by over 15 percentage points to around 70%. Market-provided services account for over three quarters of that increased share, with growth in government-provided services accounting for the balance (Figure 5.1).

[47] Such as from the mid-1980s to the early-1990s in New Zealand.

Figure 5.1 Changing structure of the New Zealand economy




*Source:* NZIER

*Notes:*

1. Sectors shares are based on shares of value add in aggregate nominal GDP, excluding owner-occupied housing, based on the ANZSIC06 classification of industries. Government services includes: Local Government Administration, Central Government Administration, Defence and Public Safety, Education and Training and Health Care and Social Assistance. Market Based Services (MBS) includes all other service industries.

## 5.2 Structural change, employment and productivity

The analysis of New Zealand's productivity performance in Chapter 4 indicates that the recent (since 1990) level of labour productivity in the services sector was roughly in line with that for the primary and goods-producing sectors. At first glance, this might suggest that the shift in the structure of the New Zealand economy towards services will not have dampened New Zealand's overall productivity performance.

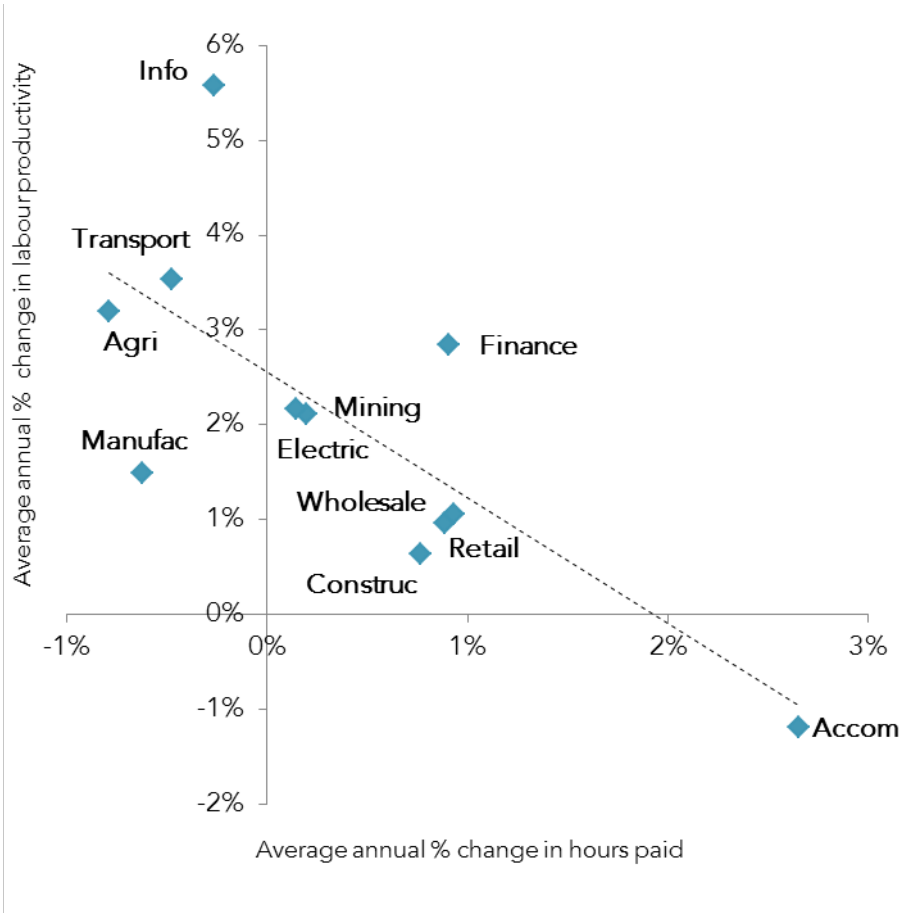
On the other hand, as noted in Chapter 4, the level and rates of growth of productivity in individual industries within the services sector was mixed. The levels and growth rates of productivity in some service industries were amongst the highest in the economy, whilst others were amongst the lowest. Therefore, to gauge how changes in the industrial structure of the economy, including towards services, has affected New Zealand's productivity growth, it is necessary to take account of productivity differences at the industry level of disaggregation. It is also useful to look back over a reasonably long time-span given that structural change can occur gradually.

Figure 5.2 and Figure 5.3 show the employment and output growth rates for individual industries against their average rates of growth in labour productivity between 1978 and 2011. Together these figures provide a window on whether employment shifted from high to low productivity-growth industries, and if so, whether that was because of shifts in demand for 'superior goods' produced by industries with low levels of productivity.

Figure 5.2 suggests that employment growth has tended to be weaker in industries exhibiting strong labour productivity growth (and vice versa). But Figure 5.3 shows that the output (ie value added) of high-productivity growth industries tended also to grow more strongly than that of the low-productivity growth industries. For example, the output of information media and telecommunications (a high-productivity-growth industry) grew most strongly, whereas expansion of accommodation and food (a low-productivity-growth industry) was more modest. These relationships suggest the weaker growth in employment in high-productivity growth industries has stemmed from advances in technology that enabled more efficient use of

labour, rather than from labour having been drawn away as the result of a shift in demand toward the services supplied by low-productivity-growth service industries.[48]

Figure 5.2 Labour productivity growth and employment growth, 1978-2011



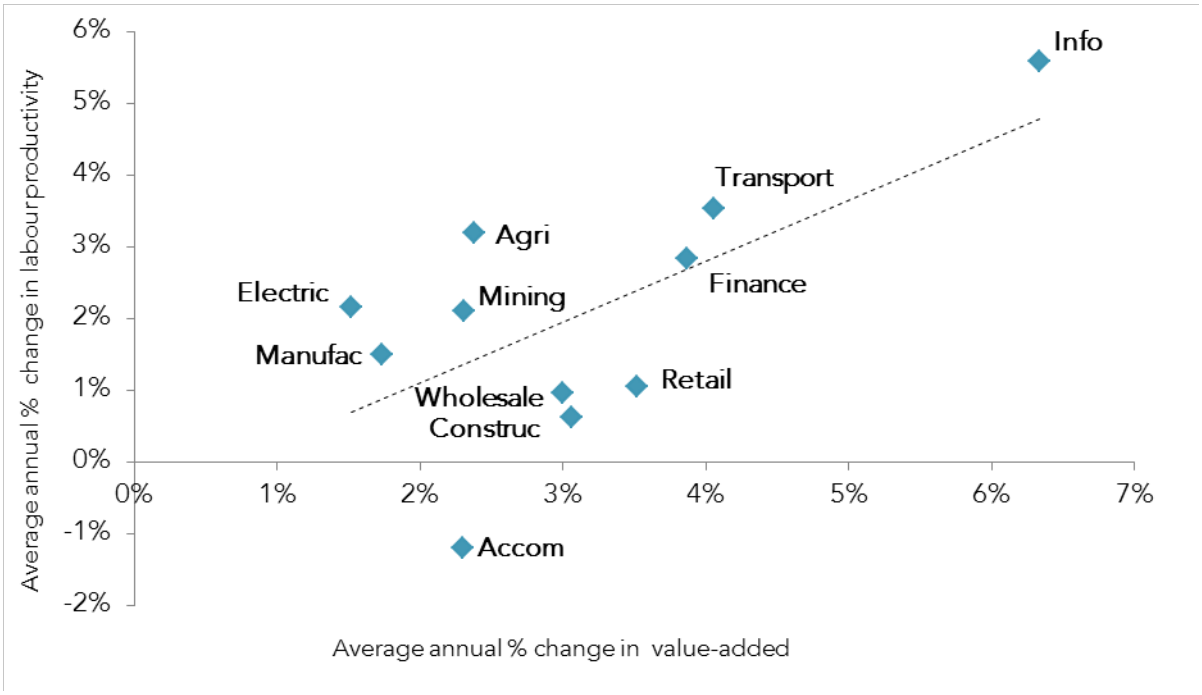

*Source:* Productivity Commission, Statistics New Zealand

*Notes:*

1. The dotted line represents the least squares linear regression of the plotted points.

[48] Plotting MFP growth against employment and output growth (not shown) results in a similar negative relationship between productivity growth and employment growth, and a positive relationship between productivity growth and output growth.

Figure 5.3 Labour productivity growth and output (value-added) growth, 1978-2011 ]




*Source:* Productivity Commission, Statistics New Zealand

*Notes:*

1. The dotted line represents the least squares linear regression of the plotted points.

**F5.1** Employment growth has been stronger in industries with lower labour-productivity growth than in industries with higher productivity growth. But there was stronger growth in output from the higher-productivity-growth industries than in the lower–productivity–growth industries.

## 5.3 Shift-share analysis of three decades' productivity performance

Aggregate productivity growth can be decomposed into the contribution from productivity growth within industries and the effect of shifts in the industry structure of the economy, ie shifts in the shares of the economy accounted for by different industries. Such decompositions are commonly referred to as 'shift-share' analysis.

The within-industry contribution is measured as a weighted average of individual industry productivity growth rates. It reflects what aggregate productivity growth would have been if there had been no change in the structure of the economy.

The between-industry contribution captures the effect on aggregate productivity growth from changes in the industrial structure of the economy. It is positive if industries with above-average levels of productivity have become a larger share of the economy, or if industries with lower levels of productivity have become relatively smaller, and vice versa (Table 5.1).

**Table 5.1 Effect of shifts in industry shares on overall productivity growth**

| | Industry share of economy | |
|---|---|---|
| | Larger share | Smaller share |
| High productivity industries | + | − |
| Low productivity industries | − | + |

There is no standard approach to decomposing an economy's productivity growth into within-industry and between-industry components. Such a decomposition can be estimated using different techniques, different measures of productivity (labour productivity and MFP) and different data series, over different time periods. A summary of some of the alternative decompositions undertaken by the Commission is provided in Table 5.2.

**Table 5.2 Shift-share analysis of productivity growth (annual average growth rates and contributions)**

| 1978-2011 | | |
|---|---|---|
| | Labour productivity (Method A) | MFP (Method B) |
| Within-industry effect | 3.02% | 0.84% |
| Between-industry effect | -0.30% | -0.02% |
| Total productivity growth | 2.73% | 0.82% |
| **1990-2011** | | |
| | Labour productivity (Method A) | MFP (Method B) |
| Within-industry effect | 2.23 | 1.00% |
| Between-industry effect | -0.41 | -0.02% |
| Total productivity growth | 1.82 | 0.98% |

*Source:* Productivity Commission; Statistics New Zealand

*Notes:*

1. Method A decomposes labour productivity growth using the following equation: $\frac{\Delta P}{P_{t-1}} = \frac{\sum_i S_{i,t-1}\Delta P_i}{P_{t-1}} + \frac{\sum_i P_{i,t}\Delta S_i}{P_{t-1}}$, where $P$ is the level of aggregate labour productivity, $S_i$ is industry $i$'s share of employment, $P_i$ is industry $i$'s level of labour productivity, and $t\text{-}1$ is the start period and $t$ is the end period. For further details see Sharpe (2010).
2. Method B decomposes MFP growth and follows the method described in Parham (2012) appendix B.2.
3. The data series used in the productivity decompositions for 1978-2011 are based on productivity data for the 'former measured sector', and those for 1990-2011 are based on the 'measured sector'. For details of industry coverage of the former measured and measured sectors see Statistics New Zealand (2012). However, productivity data for some measured sector industries are available from 1996 onwards only. For these industries, labour hours were back-cast to 1990 using industry growth rates of total hours paid from Statistics New Zealand's Quarterly Employment Survey.

Across the different time periods and data series, within-industry productivity growth was the main component of aggregate labour productivity growth. The between-industry effects on labour productivity growth were negative but over the periods investigated relatively small. The positive within-industry effect was five times the negative between-industry effect for the period 1990-2011 and ten times for the period from 1978-2011(Table 5.2).

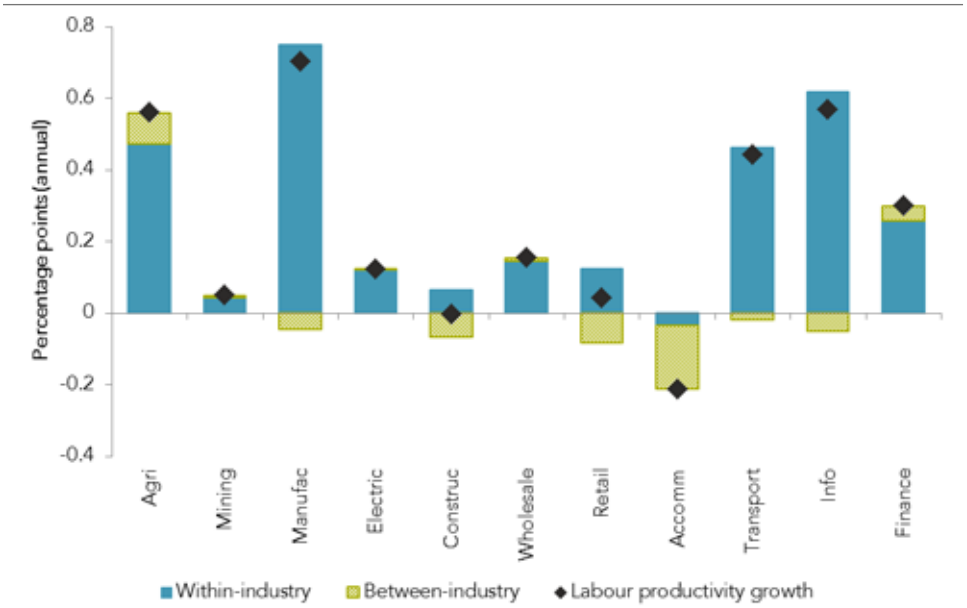
Decomposition of MFP growth over the same time periods shows virtually no between-industry effect. The smaller between-industry effect on MFP compared with labour productivity may have been due to the shift in the structure of the economy toward industries with lower levels of capital intensity, which lowers overall labour productivity growth but not MFP growth (Parham, 2012).

**F5.2** Change in the industry structure of the New Zealand economy over the past three decades had comparatively little effect on aggregate productivity growth. To the extent that there was an effect, it was negative but small.

### Industry contributions

Figure 5.4 provides a breakdown of the within-industry and between-industry contributions to total labour productivity growth by industry for the period 1978 to 2011.[49]

**Figure 5.4 Decomposition of labour productivity growth, industry contributions, 1978-2011**




*Source:* Productivity Commission; Statistics New Zealand

*Notes:*

1. The bars in the chart represent the percentage point contributions of each industry to the average annual percentage increase in labour productivity for the former measured sector.

The shift in the structure of the economy toward service industries accounts for some of the negative between-industry effect on labour productivity growth shown in Table 5.2. There were negative contributions from the retail trade; accommodation and food; transport, postal and warehousing; and information media and telecommunications industries. The retail trade and accommodation and food industries had below-average levels of labour productivity and accounted for a growing share of employment. The transport, postal and warehousing, and information media and telecommunications industries had high levels of labour productivity, but a shrinking share of employment. The financial and insurance and wholesale trade industries made positive contributions due to their above-average level of productivity and growing share of employment (Figure 5.4).

## 5.4 New Zealand compared with other countries

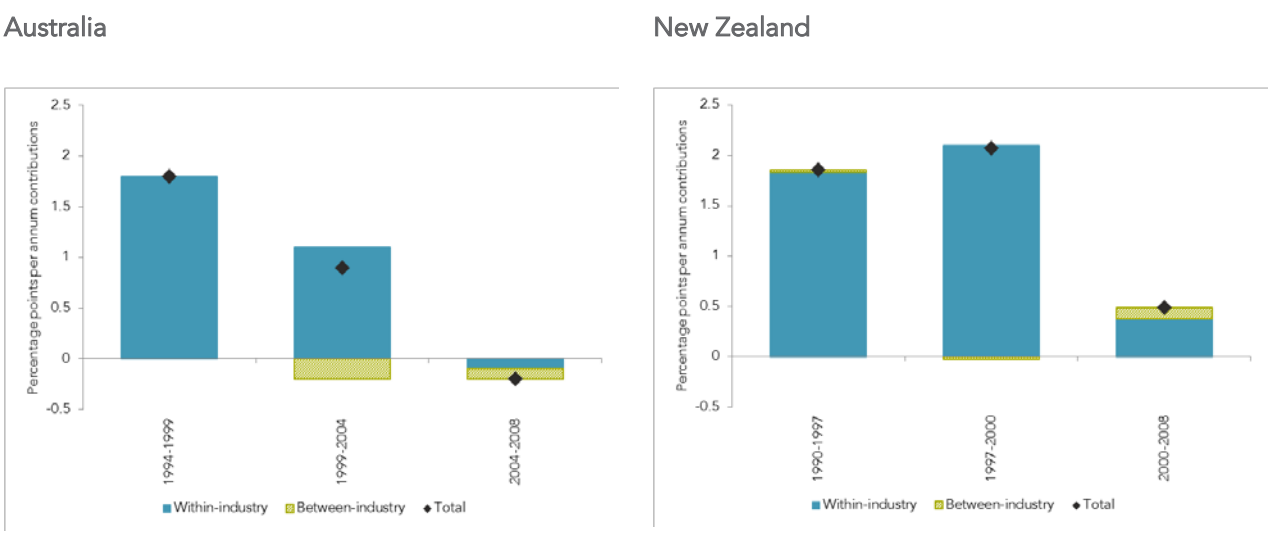
### With Australia

Shift-share analyses of MFP performance, using the same methodology used to generate the MFP results for New Zealand in Table 5.2, have been undertaken for Australia by Parham (2012). The shared industry classification system, ANZSIC06, used by New Zealand and Australia's statistical agencies makes it possible to compare the effects of changes in industrial structure on productivity growth in each country. The results suggest that the effects of structural change on MFP growth (the between-industry effect shown in Figure

[49] This section focuses on the between-industry effect on aggregate labour productivity growth for the former measured sector from 1978 to 2011. A counterpart chart for MFP is not shown given that the decomposition of MFP growth indicates virtually no between-industry effect, ie virtually no effect from change in the industry structure of the economy.

5.5) were very small in both countries, at least since the early 1990s (the period for which comparable data is available).

Figure 5.5 Structural change and MFP growth: Australia and New Zealand compared




*Source:* Parham, 2012; New Zealand Productivity Commission.

### With other countries

Making comparisons between New Zealand and other countries is more difficult due to differences in methodologies, data coverage and industry classifications. Nonetheless, international studies are still instructive.

McMillan and Rodrik (2011) report shift-share results on labour productivity growth for nine high-income countries.[50] Together these countries had an average (un-weighted) annual rate of increase in labour productivity of 1.46% per year between 1990 and 2005, comprising 1.54% per year from a within-industry effect and – 0.09% per year from a between-industry effect. The results vary across the individual countries, however. For example, in the UK, the respective effects were approximately 2.5% and -0.5% per year, while in the US, the respective effects were approximately 2.0% and -0.3% per year.[51] The effect of change in industry structure on labour productivity growth for the other countries ranged from small positive to small negative effects.

While the decompositions of labour productivity growth for New Zealand presented above are not entirely comparable with those in the McMillan and Rodrik study, the general picture is that the small negative effects that changes in industrial structure have had on New Zealand's labour productivity growth is broadly in line with what has happened in other advanced economies.

**F5.3** Studies of the effects on productivity growth from change in industrial structure for Australia and other advanced economies give similar results to those for New Zealand.

### Industry structure and labour productivity levels between New Zealand and Australia

Another study, Mason (2013), compares New Zealand and Australian labour-productivity levels and growth rates by industry. One question it examines is the extent to which differences in the levels of labour productivity for the two countries, in 2009, can be explained by differences in their industrial structures. This is not the same question as examined by the preceding shift-share analyses of the 'within-industry' and 'between-industry' effects on productivity growth within countries. Rather, this question is about how differences in the industry structures of the two countries at a point in time explain the gap between them in labour productivity levels.

[50] USA, France, Netherlands, Italy, Sweden, Japan, UK, Spain and Denmark.

[51] These results are inferred from those presented in Rodrik (2011) and are approximate only.

The analysis in Mason (2013) indicates that 30% of Australia's higher level of labour productivity is attributable to differences in the industrial structures of Australia and New Zealand. In particular, Australia has a greater share of employment in some high-productivity industries and a smaller share in some low-productivity industries compared with New Zealand. Almost all of the difference due to structure arises from Australia having larger employment shares in three relatively capital intensive, high labour-productivity, industries (mining; finance and insurance services; and electricity, gas, water and waste) and smaller employment shares in two relatively low-productivity industries (agriculture, forestry and fishing; food and beverage manufacturing). The other 70% of the gap between New Zealand and Australia's overall levels of labour-productivity is explained by trans-Tasman differences in the labour productivity levels of each industry.

**F5.4** Thirty per cent of Australia's higher level of labour productivity compared with New Zealand is attributable to Australia having a greater share of employment in some capital intensive, high labour-productivity industries (mining; finance and insurance; and electricity, gas, water and waste) and a smaller share in some industries with lower labour productivity (agriculture, forestry and fishing; and food and beverage manufacturing).

## 5.5 Interpretation and some caveats

The preceding analyses shed light on the extent to which change in the structure of the economy – including shifts in employment across industries – has been a factor in New Zealand's productivity growth. They show that overall productivity growth is explained mainly by the productivity growth within industries, with shifts in the industrial structure of the economy having had no more than a small negative effect.

### Results depend on the level of aggregation

A caveat to results from shift-share analysis is that they may stem at least in part from the level of aggregation (firm or industry) at which the analysis is undertaken. At the industry level of aggregation adopted for the analysis reported in this chapter, productivity growth was attributed mostly to what happened within, rather than between, industries. But it is also possible that much of the within-industry effect on productivity growth has been the result of shifts of labour and capital between the firms comprising those industries.

For example, within grocery retailing, changes in the sub-industry structure between corner dairies and supermarkets may have contributed as much to industry productivity gains as lifts in the productivity performance within dairies and supermarkets. International and New Zealand research suggests that changes in the market share of firms within industries, from lower to higher productivity firms, play a significant role in productivity performance at the 'within industry' level (Syverson, 2011; Law & McLellan, 2005).

### Constraints and opportunities

The analysis in this chapter indicates that the shift in the structure of the New Zealand economy towards services has not materially held back New Zealand's overall productivity growth rate. However, that leaves a question about whether a stronger shift in economic structure toward industries with higher levels of productivity could have resulted in still faster productivity growth.

One potential constraint on achieving faster productivity growth through a shift in economic structure toward high-productivity industries is that it would likely require greater availability of skilled labour. This is because industries with high levels of labour productivity generally require more-highly-skilled workforces. That is part of what makes them high-productivity industries.

Another caveat is that industry productivity performance, and the effects from shifts of resources between industries, are not entirely independent of each other. Industries with high levels of productivity tend to be those that have used labour and capital inputs efficiently. It does not necessarily follow, therefore, that productivity growth overall could have been stronger if only employment shares in those industries had

been greater. If employment in those industries had been greater, then the levels of productivity achieved by those industries may not have been achieved – at least not unless the industry was able to correspondingly increase its output. That would require a larger market for its output. For a small open economy like New Zealand, exporting is a way high-productivity industries can expand. An important requirement for these industries to export, however, is that they have, or can build, international competitive advantage (Chapter 2, Box 2.9).

**F5.5** Achieving stronger productivity performance through change in industrial structure towards high-productivity industries is dependent on the availability of labour with higher skills and on a market for the output of those industries.

**F5.6** For an open economy, exports can provide a potential market for the output of high-productivity industries, if the exporting firms are internationally competitive.

# 6 Domestic and international interactions

**Key points**

- The services sector is tightly linked to the rest of the economy. There is a complex web of services that are inputs to the production of goods, and goods that are inputs to the production of services. This web interconnects the primary, goods-producing and services sectors.
- More services are purchased by firms, as inputs to their production, than by households.
- Sizeable amounts of services are used as inputs by the primary and goods-producing sectors. These sectors, taken together, spend nearly 40% more on market-provided services than on wages and salaries.
- The way in which service industries are integrated into the New Zealand economy is broadly similar to comparable countries.
- The services sector supplies over half the value of New Zealand's exports when both service inputs to merchandise exports and exports by the services sector itself are taken into account.
- The performance of the services sector has a major bearing on New Zealand's export performance given that services, directly and indirectly, make up over half of New Zealand's exports.
- Another way in which firms can export services – particularly those that require co-location of the service provider and the service-user – is by establishing a commercial presence in foreign markets. This typically requires outward direct investment (ODI). New Zealand's ODI as a proportion of GDP is low compared with most other OECD economies.
- Traditional distinctions between international trade in goods and in services, and between international trade and international investment, are losing some of their relevance.
- Reducing barriers to international trade in services would better enable service firms to export and improve competition in domestic service markets. Relevant barriers include unnecessary differences in regulation across countries, and regulations restricting inward and outward foreign investment.
- The growth of service exports – whether embodied in goods, by way of sales of services from and within New Zealand to foreign residents, or from establishments located abroad – will depend on the extent to which New Zealand has high-performing service firms.
- The competitiveness of domestic service markets has a significant bearing on how well service providers not already exposed to international competition are positioned to enter global markets.

This chapter considers the role of the services sector in relation to the rest of the economy.[52] It does this by looking first at how the services, primary and goods-producing sectors are inter-linked. Then, taking account of these inter-linkages, the chapter focuses on the role of services in New Zealand's external trade. The backdrop for the discussion of external trade is the Government's goal of lifting the ratio of exports to GDP to 40% by 2025.

[52] In this chapter, all references to services are to market-provided services, unless otherwise stated. The classification of industries in section 6.1 is based on the OECD's classification of industries (see Appendix E).

## 6.1 Services as part of an economic web

Services play a pervasive role in the economy. They feature extensively both as inputs to production and in final uses, the latter mainly to households. The services bought by households include those bought directly, such as entertainment, eating out and personal financial services, as well as services embodied in goods. For example, groceries purchased from a supermarket embody the transport services that delivered them to the supermarket, and the product display and customer services provided by the supermarket. Moreover, services are used at many steps along production supply chains (Box 6.1). A number of submitters highlighted these interconnections between the different sectors of the economy:

> The idea that services, primary and goods-producing sectors can be considered independently is flawed. (New Zealand Manufacturers and Exporters Association, sub. 6, p. 1)

> It is important to note the interconnectedness between sectors, ie manufacturers and farmers are dependent on efficient provision of services and a competitive services sector is in their interests and vice versa. (New Zealand Chambers of Commerce, sub. 14, p. 4)

> …we think there is so much diversity across sectors that a value chain approach should be taken. (Aviation Industry Association of NZ (Inc), sub. 13, p. 3)

> Services are very important to the agriculture sector and agriculture is very important to the services sector. (Federated Farmers of New Zealand, sub. 5, p. 3)

### Box 6.1 A case study – services in the dairy industry

The dairy industry plays a significant role in the New Zealand economy. It includes dairy farming, and dairy companies processing raw milk into a range of dairy products, mostly for export. This box draws on the example of New Zealand's largest dairy co-operative, Fonterra, to illustrate how an industry mostly associated with the primary sector is both a substantial user, and also a producer, of services.

The dairy industry has a sophisticated supply chain, which runs from farms to the (mostly foreign) consumers of dairy products. Services are involved at most stages along the supply chain (Figure 6.1).

Starting at the farm, service inputs include veterinary, financial, and other professional services. Transport services are then required to get raw milk from farms to processing factories. This service is provided by Fonterra itself for the farms supplying Fonterra. The tanker fleet that collects the raw milk is owned and operated by Fonterra, making it one of the country's largest trucking operators. Rail transport services are also used for transporting raw milk between milk-supply regions.

Service inputs at dairy factories include engineering services to maintain complex processing facilities, and scientific testing of products. Some of these are provided in-house and others are contracted from external service providers. Fonterra is a large-scale user of scientific research services. It undertakes research at its own research centre located in Palmerston North. New Zealand and overseas universities also undertake research for Fonterra.

Fonterra's business also involves large-scale distribution operations, with parts of those located within New Zealand and parts overseas. They involve warehousing, logistics, transport, and the marketing of processed products to customers.

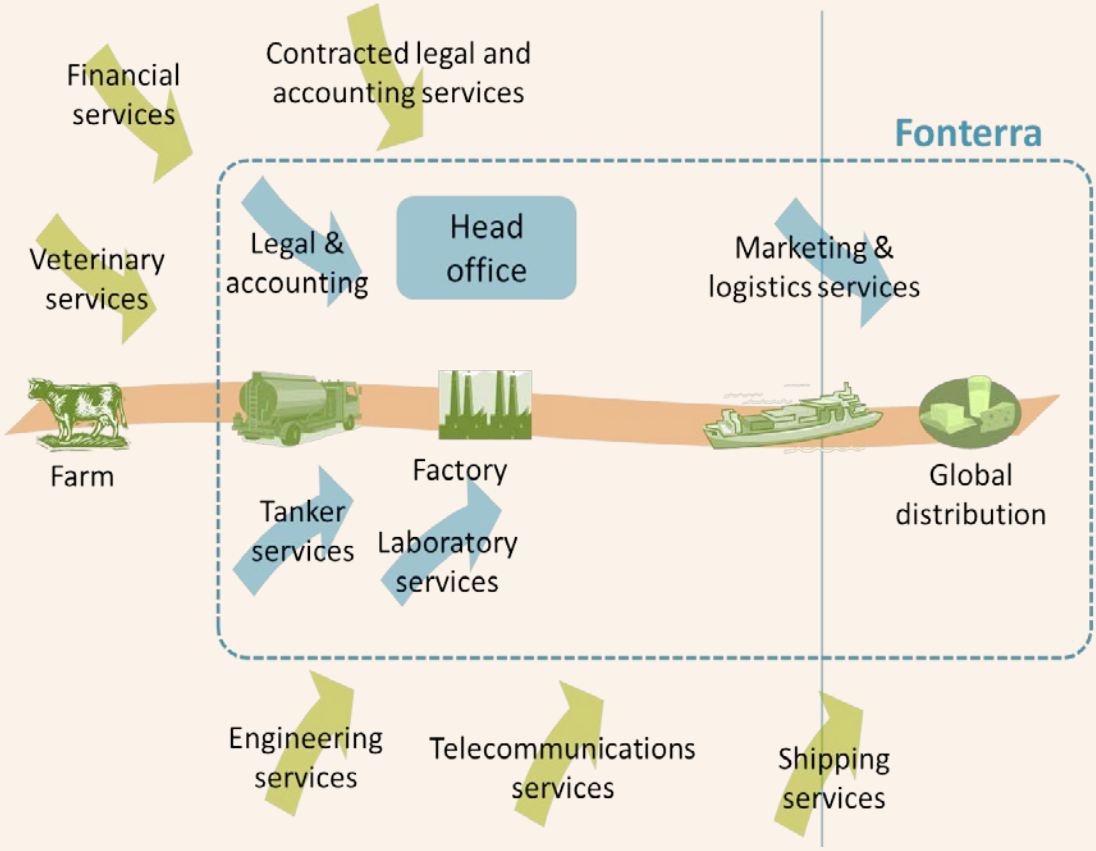
Within New Zealand, logistics are involved in coordinating production and land transport of processed products with container shipping services. Fonterra is also a large-scale user of shipping services to import and distribute inputs for the dairy industry, eg palm kernel feedstock, chemical ingredients, and plastics. These logistics operations are now being coordinated with some other major New Zealand users of domestic transport and international containerised shipping services, through Fonterra's Kotahi joint-venture (Commerce Commission, 2012).

Offshore, Fonterra also has an extensive source and distribution network, which includes sourcing from processing operations it part-owns in other countries (eg Australia and Chile) and from international joint-venture partners. Fonterra's gross revenue for the year to 31 July 2012 amounted to $19.8 billion

(Fonterra, 2012), compared with total dairy exports across the wharf from New Zealand in the year to September 2012 of $12.7 billion.[53] Part of the revenue stream is attributable to Fonterra's offshore logistics and distribution operations.

Overseeing all these operations is a head office. The head office provides governance, financial management and marketing for the overall business. The head office also makes extensive use of services from external sources. These include legal, accounting and financial services, as well as services sourced from within the company, such as treasury services for foreign exchange and debt management. Fonterra has one of the largest foreign currency dealing desks in New Zealand, by New Zealand dollar value.

**Figure 6.1 The dairy industry supply chain**




All this serves as an illustration of how pervasive services are through the economy. Even in an industry closely associated with the primary sector, services feature prominently throughout the supply chain.

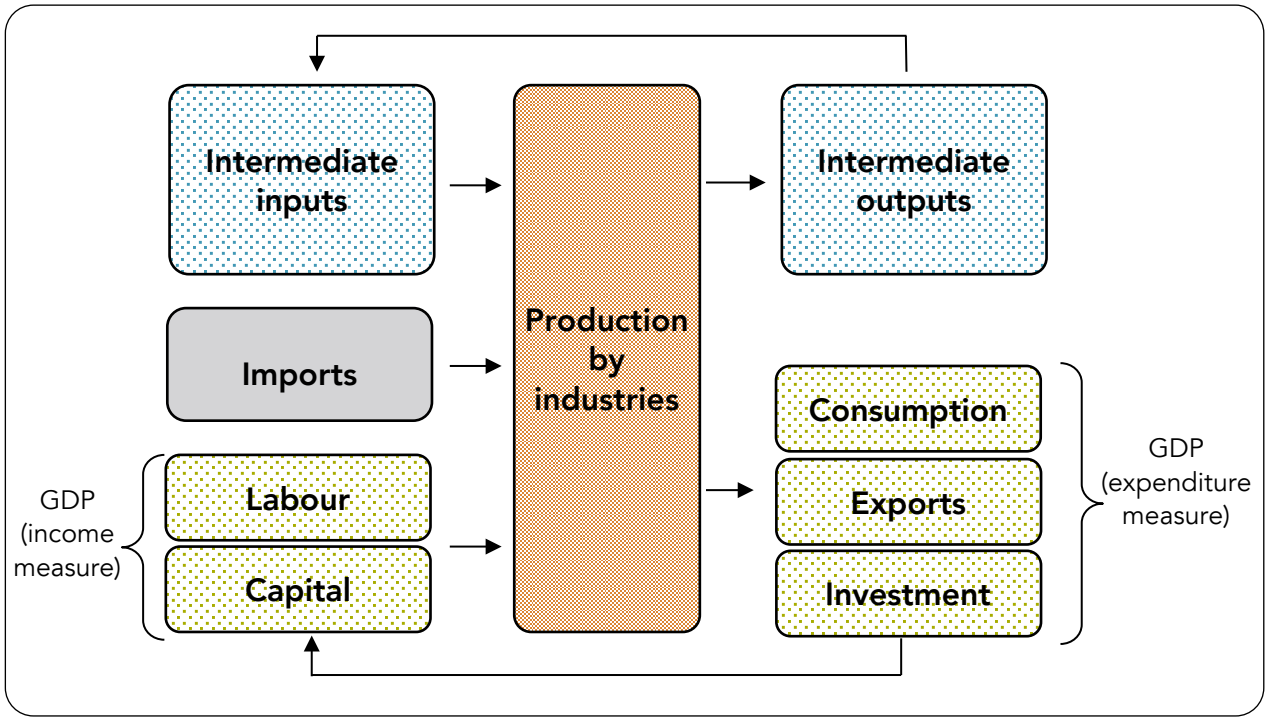
*Source*: Fonterra; Statistics New Zealand

## Input–output analysis

A tool used for analysing sectoral interactions within an economy is input-output analysis. Figure 6.2 illustrates how the flows of inputs and outputs within an economy can be captured in such a framework. It shows how firms source inputs from other domestic firms and from imports, and apply labour and capital to those inputs to produce outputs. Some outputs feed back as inputs into firms' production processes, and others are sold for final use to households, the government, or foreign buyers (ie as exports).

[53] Comprising milk powder, butter, cheese, casein and caseinates.

Figure 6.2 The production process: inputs and outputs




For the reader with a technical interest, Table 6.1 (below) shows the flows of inputs and outputs depicted in Figure 6.2 for the New Zealand economy (with further detail on the methodology and data in Box 6.2). Some key structural characteristics of the New Zealand economy that can be extracted from the data in Table 6.1 are that:

- More of the output of the services sector is used as inputs to production by firms than consumption by households. Of the total gross output of the services sector in 2011-12, nearly 50% was used as inputs into later stages of production.[54]
- Service inputs comprise a correspondingly sizeable proportion of the total inputs used by the primary and goods-producing sectors. In 2011-12, these two sectors taken together spent nearly 40% more on market-provided services than on salaries and wages.[55]
- The services sector is a large user of inputs sourced from itself.[56] The value of these also amount to more than the cost of labour employed in the sector. A sizeable proportion of these intra-sector input-output transactions occur in distribution chains, ie in the wholesale and retail trade, and transport and storage industries.

**F6.1** The services sector is tightly linked to the rest of the economy. There is a complex web of services that are inputs to the production of goods, and goods that are inputs to the production of services. This web interconnects the primary, goods-producing and services sectors.

**F6.2** More services are purchased by firms, as an input to their production, than by households.

[54] In Table 6.1, the output of the market-provided services sector that is used by the primary sector is $52 000 million, by the goods-producing sector is $21 843 million, and by the market-provided services sector itself is $48 202 million. Adding to those amounts the output used by the government ($14 182 million) gives a total approaching 50% of the sector's total gross output ($197 407 million).

[55] In Table 6.1, the inputs of market-provided services used by the primary and goods-producing sectors are $5 200 million and $21 843 million, which amount to nearly 40% of their combined wage and salary bills ($3 049 million plus $16 525 million).

[56] The amount of services that the market-provided services sector sources from itself is $48 202 million.

**F6.3** Sizeable amounts of services are used as inputs by the primary and goods-producing sectors. These sectors, taken together, spend nearly 40% more on market-provided services than they do on wages and salaries.

Box 6.2 **Input-output accounting and methodology**

Table 6.1 is based on Statistics New Zealand's input-output tables for the New Zealand economy in 2006-07, but with the following adjustments:

- The data have been updated to 2011-12 by fitting the official 2011-12 national income and expenditure accounts data to the input-output structure of the New Zealand economy as it was in 2006-07 – the latest year for which official input-output tables are available. Updating these tables is a resource-intensive exercise that is only undertaken about every five years.
- The classification of industries is based on the OECD's classification of industries (to enable comparison with other countries). All data in section 6.1 is on the basis of the OECD industry classification. See Appendix D for details of the OECD classification.
- The owner-occupied housing 'industry' has been omitted. Hence, GDP as shown in Table 6.1 is less than the official measure of GDP.

Other aspects of the methodology include:

- Factor inputs (capital and labour) are measured at factor prices, whereas final outputs are measured at market prices (notably, including GST). The 'indirect taxes less subsidies' row in the table accounts for this difference in the pricing basis on which factor (labour and capital) inputs and outputs are incorporated into input-output tables.
- Output of capital goods, eg buildings and machinery, are recorded as going to a final use, labelled investment. These add to the capital stock and are used as inputs to production in future years. The cost of the capital used in production is a combination of the amount of capital used-up (depreciation) and the return to the owners of capital (the firm's profit).
- The inputs and outputs for wholesale and retail trade included in Table 6.1 are gross amounts, not just the wholesale and retail margin.
- Exports are attributed to the firm that enters into the export transaction. Hence, exports by wholesalers are classified as services-sector exports. This explains the relatively large amount of services sector exports in Table 6.1.
- An input-output table is based on transactions and therefore does not include an industry's use of natural endowments in their raw state. However, the inputs used in, for example, extracting minerals, or cultivating crops, are captured, as are the outputs from those activities and their use in any subsequent stages of production.

*Source:* NZIER

Table 6.1 Input-output accounting for the New Zealand economy, 2011/12, $million

| | | | Uses of outputs | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Used as inputs by… | | | | Final uses | | | | Total gross output (incl. intermediate output) | Total final output |
| | | | Primary sector | Goods-producing sector | Services sector (market ) | Services sector (government) | Household consumption | Government consumption | Investment | Exports | | |
| Input sources | Output of… | Primary sector | 2882 | 9264 | 6465 | 995 | 1280 | 233 | 223 | 4747 | 27600 | **6483** |
| | | Goods-producing sector | 3034 | 24842 | 17389 | 5783 | 18453 | 120 | 11343 | 27787 | 118315 | **57704** |
| | | Services sector (market-provided) | 5200 | 21843 | 48202 | 14182 | 56968 | 5671 | 9750 | 26644 | 197407 | **99033** |
| | | Services sector (government) | 1321 | 3992 | 9618 | 6722 | 13644 | 29455 | 2678 | 2670 | 73054 | **48447** |
| | **Imports** | | 1775 | 11061 | 13762 | 3440 | | | | | | (30038) |
| | | **Capital (operating surplus + depreciation)** | 6937 | 14202 | 42403 | 12374 | | | | | | |
| | | **Labour (wages and salaries)** | 3049 | 16525 | 42231 | 29663 | | | | | | |
| | **Indirect taxes less subsidies** | | 2610 | 2824 | 9871 | 3476 | | | | | | |
| | **Total gross input (incl. intermediate input)** | | 26792 | 109156 | 189559 | 76605 | | | | | **416376** | |
| | **Capital and labour income (including indirect taxes)** | | **12510** | **35711** | **93798** | **45349** | | | | | | **181629** |
| | | | | | | | | | | | | GDP |

*Source:* NZIER

*Notes:*

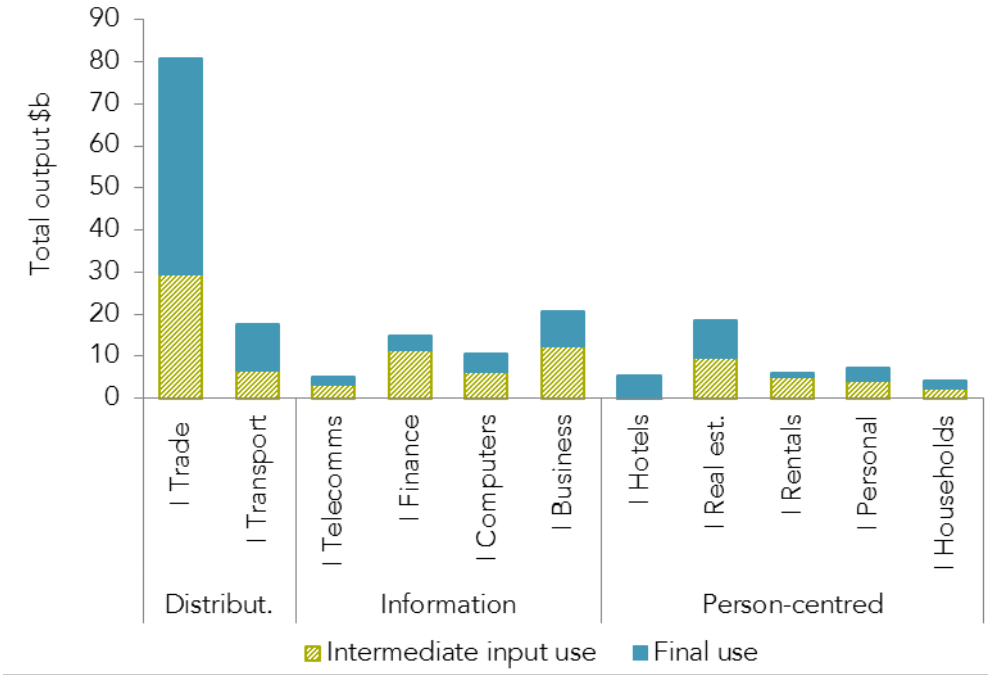
1. Discrepancies in the summations of rows and columns arise from differences in the income and expenditure measures of GDP, and also from fitting 2011-12 national accounts data into the 2006-07 input-output table structure.

## A closer look within the services sector

This section takes a more granular look at how the services sector is integrated into the wider economy.

Figure 6.3 splits the output of each service industry into its use as an input for further stages of production or final use. As might be expected, the distributive services and, to a lesser extent, information services, are used more as inputs to production than are person-centred services.

**Figure 6.3 Destination of the output of service industries**




*Source:* NZIER

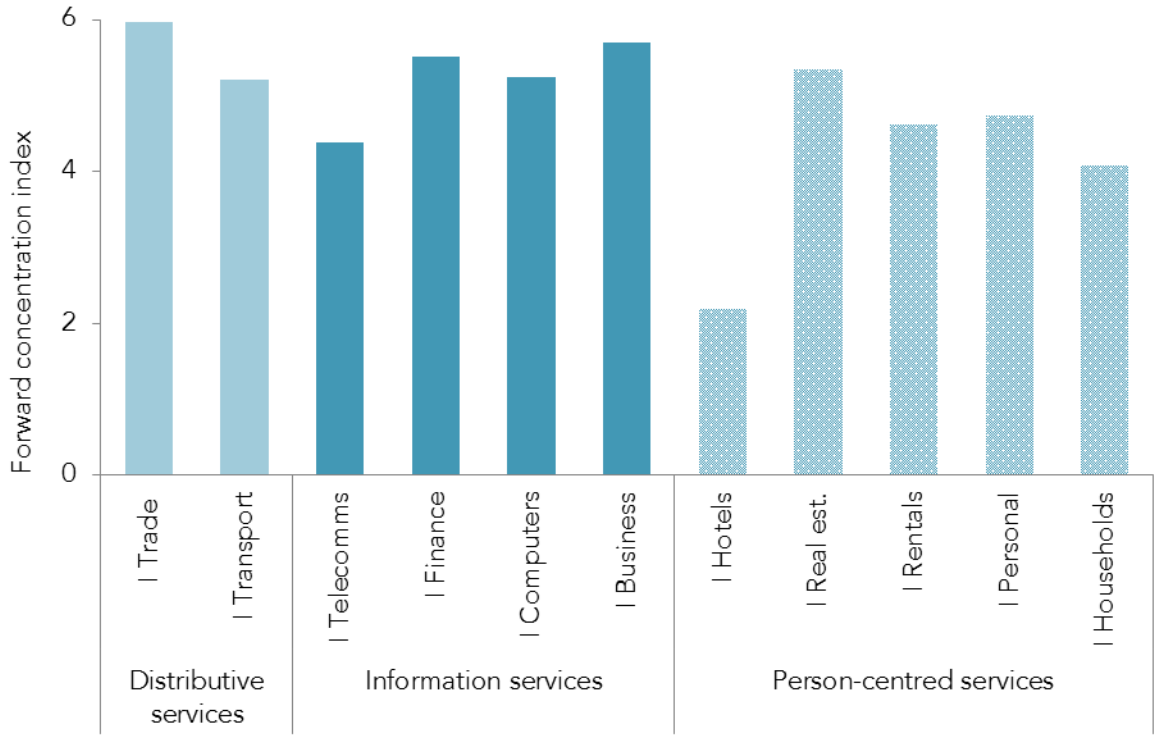
*Notes:*

1. Industry classifications are those of the OECD. See Appendix D for their definitions.
2. The 'personal' services industry comprises firms that provide personal services to households, whereas the 'households' industry comprises services provided by households, including persons who work from home.
3. The dominance of the trade industry (comprising wholesale and retail trade) stems from the 'pipeline' nature of the role played by these industries. In Table 6.1, from which Figure 6.3 is drawn, wholesale and retail sales are included as gross amounts.
4. Some of the output from the hotels industry is used as intermediate inputs by other industries but is insufficient to appear on the chart.

The inter-connectedness of industries can also be measured by a forward concentration index (Figure 6.4).[57] This index provides a summary measure of the 'breadth' and 'depth' of an industry's role as a provider of intermediate inputs throughout the economy. An index level of zero for an industry indicates that its output all goes to final use, and is not used as an intermediate input. High index numbers indicate that an industry's output is widely used by other industries, and/or goes through multiple stages of production before reaching final use. For example, the forward concentration index for the hotels and restaurants industry is quite low, indicating that a relatively high proportion of its output goes to final consumers and/or to industries close to final users. In contrast, the business services industry has a comparatively high forward concentration index. This is consistent with business services being, by definition, intermediate inputs and the need for business services at all stages in supply chains.

[57] For details of the methodology used in constructing the forward connectedness index, see Claus et al., (2009).

Figure 6.4 Forward concentration index of service industries




*Source:* NZIER

*Notes:*

1. Industry classifications are those of the OECD. See Appendix D for their definitions.
2. While the amount of output from the hotels industry used as intermediate inputs is insufficiently large to appear in Figure 6.3, the breadth of such use by other industries is sufficient for the hotels industry to register in this chart, albeit with a relatively low reading.

## How does the role of New Zealand's services sector compare with other countries?

Table 6.2 provides a snapshot of the role of the services sector within the structure of the New Zealand economy, relative to some comparator economies for New Zealand.

Table 6.2 Market-provided services in the economic structure, across countries

| Country | Market-provided services sector share of GDP (%) | Share of market-provided services sector gross output used as intermediate inputs (%) | Services exports as a share of market-provided services sector gross output (%) |
|---|---|---|---|
| UK | 54.7 | 52.0 | 9.5 |
| Denmark | 48.4 | 44.9 | 12.9 |
| Australia | 43.0 | 55.5 | 5.4 |
| **New Zealand** | **50.7** | **48.3** | **7.0** |

*Source:* NZIER

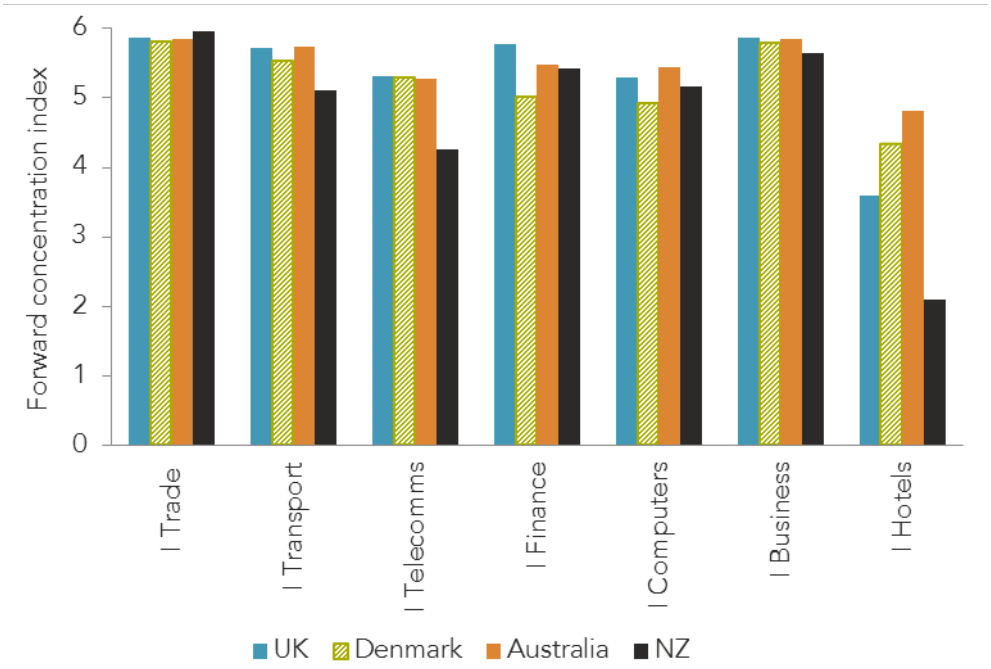
These data suggest that the relationship of the services sector to the rest of the economy in New Zealand is broadly similar to other economies. Where there are differences, they are more at the margin than indicative of fundamental differences in economic structure.

In New Zealand, market-provided services comprise a greater share of GDP than in Australia, but a lower share than in the UK. This result is consistent with Australia having a relatively large primary sector; and the UK having a relatively large financial-services industry.

Services comprise a smaller proportion of total exports in New Zealand than Denmark and the UK, but are a greater proportion of exports than in Australia (these data do not take account of services embodied in merchandise exports, as discussed below). The larger shares for Denmark and the UK reflect that these countries are large exporters of transport services (the Maersk shipping line is headquartered in Denmark) and of financial services respectively.

Service industries are also integrated into the New Zealand economy to a similar degree as in other countries. Figure 6.5 provides a comparison of industry integration across the same four countries based on the forward concentration index measure described above. It shows similar index readings across countries for most industries, although New Zealand's hotels and restaurants, transport and storage, and post and telecommunications industries are somewhat less integrated. The lower level of integration of the New Zealand hotels and restaurants industry may stem from New Zealand's geography (small and internationally distant, resulting in fewer business trips with overnight stays), but the reasons for the lower integration levels in the transport and storage, and post and telecommunications industries, are less evident.

**Figure 6.5 The integration of selected service industries, international comparison**




*Source:* NZIER

**F6.4** The way in which service industries are integrated into the New Zealand economy is broadly similar to comparable countries.

## 6.2 Services in relation to the external economy

New Zealand is commonly thought of as being an exporter of primary commodities. This characterisation reflects New Zealand's external trade data. These show that primary-sector based exports comprised over half of New Zealand's total exports for the year to March 2012 (Table 6.3). Services comprised only 22% of total exports, with over two-thirds of that share comprising transportation and travel services (mainly to

foreign tourists). The remaining service exports, mostly business services, amounted to less than 6% of total exports.[58] Business NZ observed that:

> The total services sector (private + public contribution) accounts for around 70% of New Zealand's GDP. However, it represents roughly 25% of our exports. To deliver on the Government's goal of growing the proportion of exports to GDP from 30% to 40% by 2025, there will have to be substantial growth in services exports (sub. 9, p. 1).

**Table 6.3 Exports of goods and services, 2011-12**

| Export category | $m[6] | % of total exports |
|---|---|---|
| **Merchandise exports** | **48358** | **77.7** |
| Dairy[1] | 12709 | 20.4 |
| Meat | 5390 | 8.7 |
| Forestry | 3741 | 6.0 |
| Other primary-sector based[2] | 12369 | 19.9 |
| Elaborated transformed manufactures | 13266 | 21.3 |
| **Service exports** | **13874** | **22.3** |
| Transportation | 2534 | 4.1 |
| Travel[3] | 6942 | 11.2 |
| Business and financial[4] | 3640 | 5.8 |
| Other[5] | 758 | 1.2 |
| **Total exports** | **62232** | **100.0** |

*Source:* Statistics New Zealand.

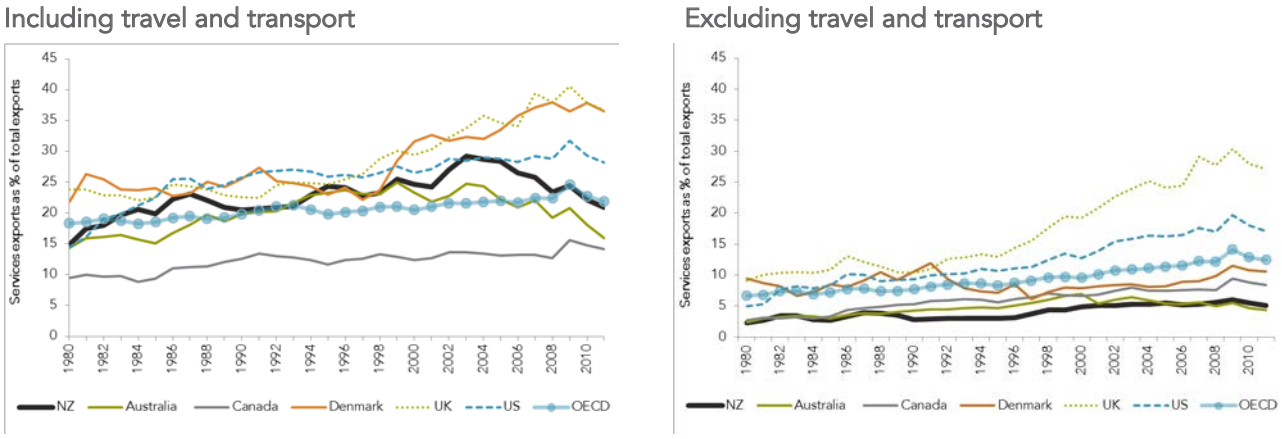
*Notes:*

1. Dairy includes milk powder, butter, cheese, casein and caseinates; forestry includes logs, wood, wood articles, wood pulp and waste paper.
2. Other primary-sector based exports include: crude oil; fruit; fish, crustaceans and molluscs; wine; precious metals, jewellery and coins; wool; raw hides, skins and leather; vegetables; other animal originated products; live animals; food residues, wastes and fodder; animal or vegetables fats and oils; seeds, raw peanuts and soya oils; and other commodities.
3. Travel exports include exports of education services (including by government educational institutions) of $1910 million.
4. Business and financial services include communication; construction; insurance; financial; computer and information; royalties and license fees; and other business services.
5. Other exports include government exports of services of $187 million.
6. The sub-categories of merchandise exports have been taken from Statistics New Zealand's 'exports of main commodities' data series and do not sum exactly to the merchandise trade total, which has been taken from Statistics New Zealand's 'balance of payments' data series.

Figure 6.6 shows that the services share of New Zealand's exports is in line with the OECD average if exports of travel and transportation (ie tourism services) are included. However, New Zealand's share of service exports other than tourism is low compared with the OECD average.

[58] While these data are on the basis of exports classified by type of commodity or service, the division of exports into merchandise exports and services exports maps reasonably closely to those by the primary and goods-producing sectors (combined) and the services sector. Note also with respect to exports of services that the standard statistical convention is to include only modes 1, 2 and 4 exports. Mode 3, which involves the 'exporter' supplying a service from an enterprise established in the foreign market, is reflected in balance of payments statistics as a return on outward foreign investment, rather than as an export.

Figure 6.6 Service exports (as a % of total exports)

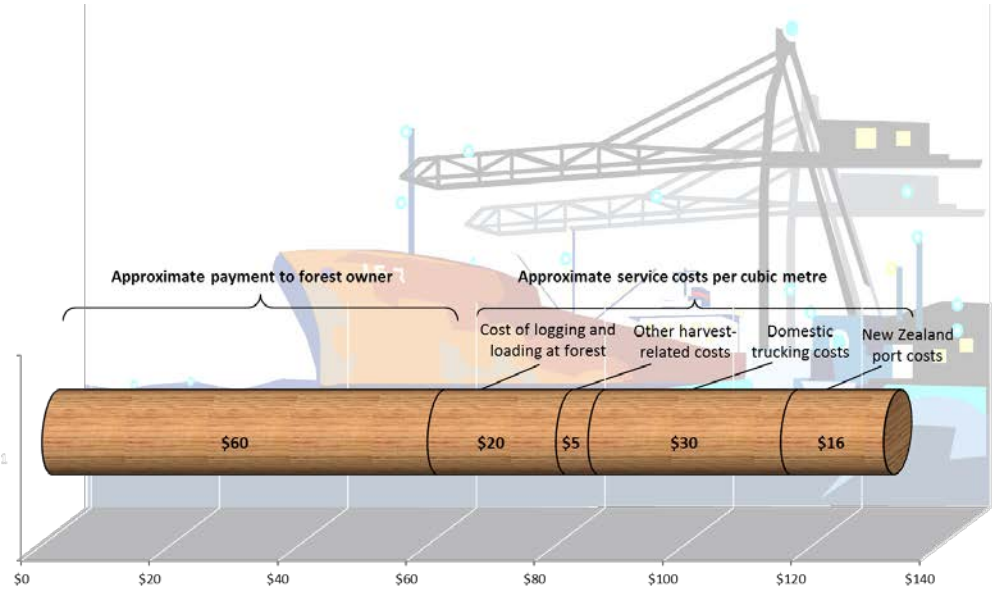



*Source:* World Trade Organisation (WTO) time series on international trade.

## Services embodied in merchandise exports

By the time merchandise exports reach the wharf (or airport), most incorporate sizeable proportions of service inputs. However, most classifications of exports (as in Table 6.3) do not attribute exports to the full range of industries that provided those inputs. For example, in the case of log exports, a very basic commodity export, over half the free on board value of the log when it leaves New Zealand typically comes from services (which range from logging to port costs) (Figure 6.7).

Figure 6.7 The services embodied in an exported log




*Source:* Ministry of Primary Industries; a New Zealand log exporter

*Notes:*

1. The service costs are approximate only, and not representative of all New Zealand log exports. This example uses Lake Taupo 'A-grade' logs (large, industrial grade unpruned sawlogs).
2. New Zealand port costs include wharfage and marshalling of logs at the port and fumigation.
3. Other harvest-related costs include harvest access, harvest management and weighbridge costs.
4. Domestic trucking costs are estimated based on a trip from Taupo to the Port of Tauranga.
5. In the ANZSIC06 classification, logging and forestry support services are included in the primary sector. Excluding those reduces the services content of the free on board value of the log to 35%.

The concept of services being embodied in log exports can be extended to merchandise exports in general. Table 6.4 shows the estimated value of services embedded in New Zealand's merchandise exports by service industry. It shows that the proportion of the value of New Zealand's total merchandise exports

that can be traced back to service inputs exceeds 45%. This estimate has been arrived at by tracing the service inputs to exports going back multiple stages. For example, in the case of log exports, the methodology takes account not only of the transport services used in transporting logs to the wharf, but also of the services (eg legal and accounting services) used by the trucking firms, offset by inputs sourced from the primary and goods-producing sectors (eg diesel). This process is repeated until all the service inputs back along the production chain have been captured. Following this approach, four service industries stand out as important sources of inputs to New Zealand's merchandise exports: wholesale trade[59]; transport, postal and warehousing; finance and insurance; and professional, scientific and technical services.

**Table 6.4 Estimates of market-provided service inputs embodied in the value of primary and goods-producing sector exports**

| Service industry | Service inputs to merchandise exports | |
|---|---|---|
| | $m | % of merchandise exports value |
| Wholesale trade | 2532 | 7.5 |
| Retail trade | 481 | 1.4 |
| Accommodation and food | 59 | 0.2 |
| Transport, postal and warehousing | 2924 | 8.6 |
| Information media and telecommunications | 1120 | 3.3 |
| Financial and insurance | 2481 | 7.3 |
| Rental, hiring and real estate | 1509 | 4.5 |
| Professional, scientific and technical | 2865 | 8.5 |
| Administrative and support | 961 | 2.8 |
| Arts and recreation | 37 | 0.1 |
| Other services | 555 | 1.6 |
| Total | 15,523 | 45.8 |

*Source:* Infometrics

Table 6.5 takes the analysis one step further by combining the services embodied in merchandise exports with services that are sold, from and within New Zealand, directly to foreign residents (also net of goods used in the delivery of those services). When combined in this way, the services sector's contribution to New Zealand's exports is over 50%.

[59] In these calculations, wholesale trade inputs incorporate only the wholesaler's margin, not the gross amount of turnover.

Table 6.5 Embodied and direct exports of services, 2011/12

| Services sector contribution to exports | $m | $m |
|---|---|---|
| Total merchandise exports (from Table 6.3)[1] | 48358 | |
| Services embodied in merchandise exports (45.8%, from Table 6.4)[2] | | 22148 |
| Services sector exports (from Table 6.3)[1] | 13874 | |
| Less embodied goods (24.2%)[2] | -3358 | |
| Services exports net of embodied goods | | +10516 |
| **Total service-sector contribution to exports** | | **32664** |
| Total exports of goods and services (from Table 6.3) | | 62232 |
| **Services sector contribution as a percentage of total exports** | | **52.5%** |

*Source*: Statistics New Zealand; Infometrics

*Notes:*

1. Government exports of goods and services have not been excluded from the total amounts of merchandise and services exports to maintain consistency with Table 6.3. Statistics New Zealand balance of payments data include $1910 million of education exports in services exports (most of which comprises exports by government-owned education institutions) and $187 million of other government service exports.
2. The percentages of services embodied in merchandise exports, and of goods embodied in service exports, are derived from Statistics New Zealand 2006/07 input-output tables. These percentages are for market-provided inputs of goods and services.

The large share of service inputs in merchandise exports is open to alternative interpretations. One perspective is that services provide a potential source of value-add to exports. Another is that high prices for services are a cost burden. The New Zealand Manufacturers and Exporters Association capture both these as follows:

> …on occasion [services] come with a ridiculous price tag as they are not subject to the same competitive pressure as the traded economy…
>
> As manufacturing becomes more elaborate, devices are bundled with different services to form a product. Product services can be informational or support for the products upgrade, use, repair, marketing and sale over the products life and could well involve interactions that support the products on-going development, sale and distribution (sub. 6, p. 2).

Both perspectives point to competitive markets for services as being important for fostering New Zealand's export performance. Competitive service markets help to lessen the scope for domestic service suppliers to operate 'cost-plus' business models that result in unnecessarily high input costs, and also help to foster the innovation that leads to higher value-added production for export.

**F6.5** The services sector supplies over half the value of New Zealand's exports when both service inputs to merchandise exports and exports by the services sector itself are taken into account.

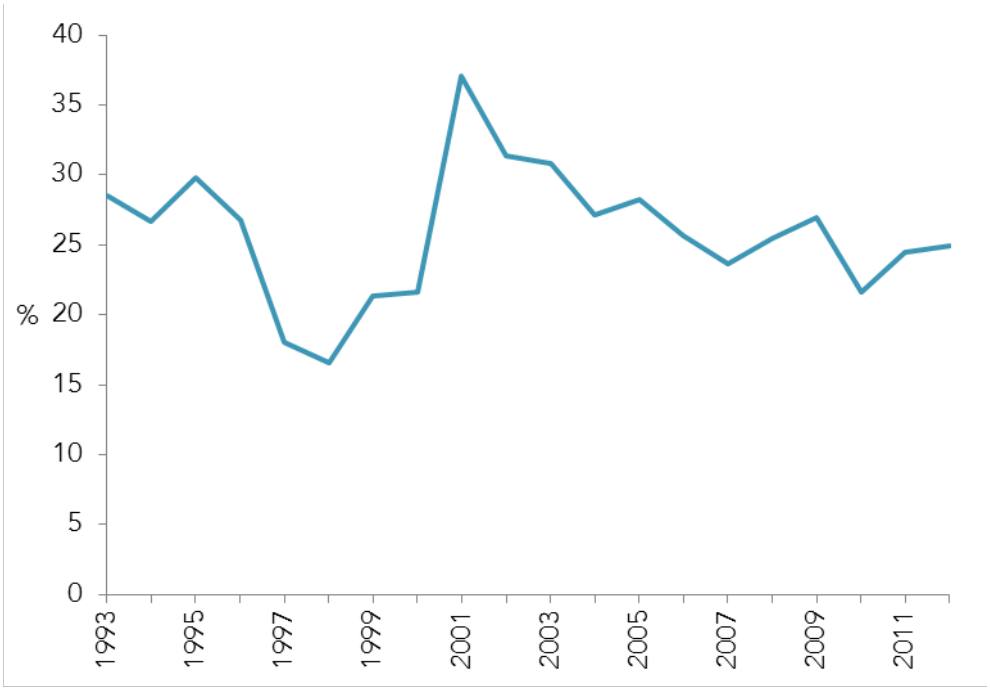
## Services and foreign investment

Outward direct investment (ODI) is another mode for exports of services ('mode 3' – see Chapter 2). ODI occurs when a firm supplies services from a presence established in a foreign market. These services are not included in the standard statistical measures of service exports. Rather, in the balance of payments statistics, the return to the capital invested in the foreign establishment is recorded as overseas investment income.[60]

[60] The investment returns recorded in the balance of payments data are net returns, ie they exclude payments for inputs, such as labour, sourced in the foreign country. Sales of services from, and within, New Zealand to foreign residents by contrast are recorded in the balance of payments in gross terms, ie without deducting the import content of those exports.

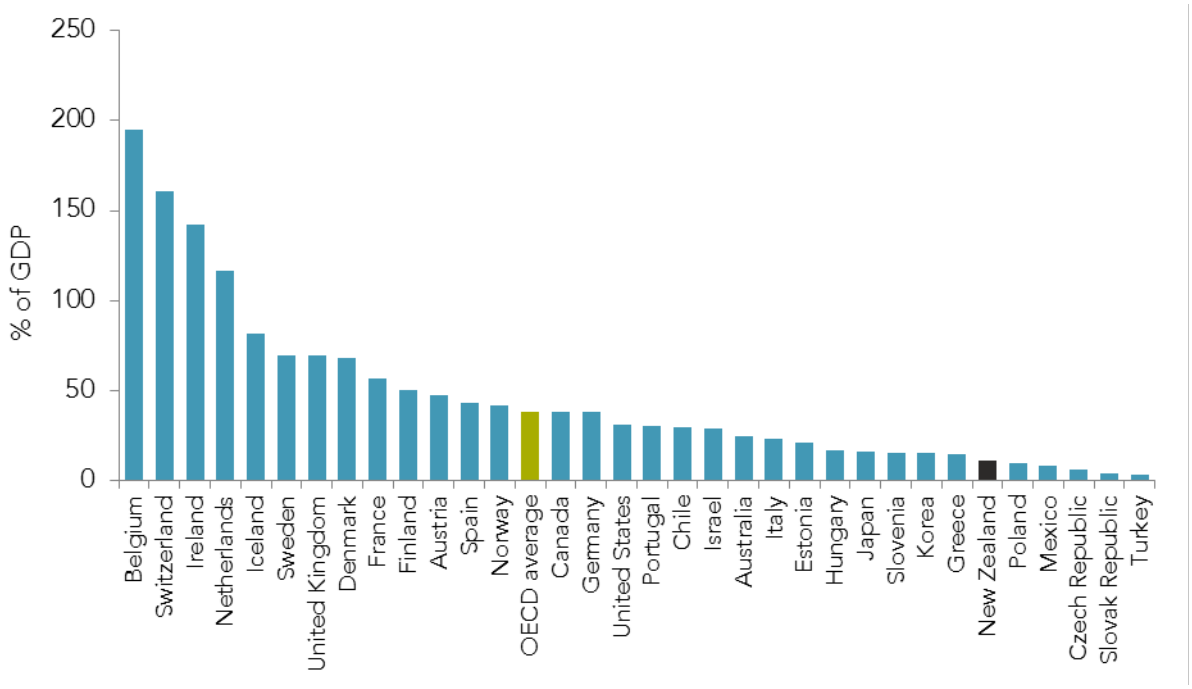
The stock of ODI by New Zealand firms is small relative to the stock of foreign direct investment (FDI) in New Zealand (Figure 6.8) and relative to the ODI-to-GDP ratios of other OECD countries (Figure 6.9). A sizeable proportion of the FDI in New Zealand is within the services sector, and is a source of useful competition for domestic service providers. By comparison, New Zealand providers of services have little commerical presence in overseas markets. New Zealand's investment income from ODI is correspondingly small, at a little over $2 billion in 2011/12. By way of comparison, this is similar in amount to New Zealand's exports of transport services, which were $2.4 billion in 2011/12, most of which comprised sales by Air New Zealand to foreign residents.

Figure 6.8 New Zealand ODI as % of FDI




*Source:* Statistics New Zealand

Figure 6.9 New Zealand's ODI as a % of GDP compared with other OECD countries, 2011




*Source:* OECD foreign direct investment statistics

**F6.6** Another way in which firms can export services – particularly those that require co-location of the service provider and the service-user – is by establishing a commercial presence in foreign markets. This typically requires outward direct investment (ODI). New Zealand's ODI as a proportion of GDP is low compared with most other OECD economies.

**F6.7** Traditional distinctions between international trade in goods and in services, and between international trade and international investment, are losing some of their relevance.

## External trade in services – performance and potential

The performance of the services sector has a major bearing on New Zealand's export performance given that services, directly and indirectly, make up over half of New Zealand's exports.

In two respects, however, New Zealand has a low level of exports of services compared with other countries. New Zealand sells from and within New Zealand a relatively low level of services to non-residents, if tourism-related services are excluded. And sales of services by New Zealand firms to non-residents from establishments located abroad are also low. This is against a backdrop of relatively strong growth in international trade in services generally. International trade and foreign direct investment in services have grown faster than in goods over the past couple of decades (Mattoo & Stern, 2008).

### Service exports from and within New Zealand

The relatively small amount of services provided from New Zealand to foreigners can be attributed largely to high spatial transactions costs (chapter 2) arising from New Zealand's distance from overseas markets. To be internationally competitive in the provision of services that require co-location of the service-provider and service-user, New Zealand firms need either to have sufficient competitive advantage to offset the cost of people travel, or to establish a presence in foreign markets.

New Zealand clearly has a competitive advantage in the provision of tourism services, based on its natural endowment of scenery and wilderness. The relatively low level of exports of other services, such as professional, scientific and technical services, and financial and insurance services, suggests that this has been less the case for those industries. However, advances in ICT may be providing greater opportunities for New Zealand firms to sell services abroad. ICT developments are lessening the need for co-location for some kinds of service, for example, call-centre services, retailing over the internet, and some categories of technical services. The New Zealand Chambers of Commerce (sub. 14, p. 3) noted that:

> The growth in ICT is particularly important for New Zealand in relation to services exports. It is most significant that 86% of New Zealand's commercial services exports (including information technology, engineering, royalties, management fees, and other business services such as accounting and legal services) are exported by phone, internet or email (mode 1 services). It is these sectors becoming more internationally focussed where much of the growth potential lies.

Another view is that there are great opportunities for New Zealand to grow its exports of agricultural services. The New Zealand Chamber of Commerce (sub. 14, p. 3) noted that "because of our agricultural expertise, New Zealand has a lot of potential in the exporting of agricultural and biotechnology services." Similarly, the OECD has suggested that "transferring resources towards high-value added activities that leverage off New Zealand's strong primary-industry base may hold the most promise for strengthening productivity and competitiveness" (OECD, 2013a, p. 68). In a similar vein, Oram (2008a) suggests that "taking New Zealand's agriculture capital, science and skills out to the world provides opportunities to build bigger, more profitable businesses than at home". These views accord with research that indicates successful export diversification is path-dependent, that is, it mostly builds on existing comparative advantage and capabilities, rather than the creation of entirely new lines of exporting (Mehta & Felipe, 2013).

## Overseas direct investment

ODI is the other mode for exporting services where New Zealand stands out for being on the low side. For many services, despite the advances in ICT, co-location of the service-provider and service-user is still needed. Where that is the case, ODI can be the most suitable mode of supply.

ODI as well as direct exports of services can be inhibited by behind-the-border barriers to entry in foreign markets. Barriers can take a number of forms, for example, investment screening, double taxation of investment returns, and requirements for service providers to obtain professional qualifications in the host country. Even in the absence of the latter kind of requirement, lack of recognition by a host country of another country's professional standards may inhibit international trade in services because foreign customers are not well-placed to assess that equivalency. Participants noted the increasing relevance of these matters for New Zealand's trade negotiations (Box 6.3).

Box 6.3 **Participants' views on trade negotiations**

Submitters representing the business sector pointed to a need for services to receive more attention in the negotiation of New Zealand's trade agreements:

> We believe that our negotiators must insist that future negotiations include all four modes of services supply and achieve to the extent possible, a liberalisation of barriers in all areas. Past negotiations have at times excluded services or had outcomes that have achieved minimal liberalisation (Business NZ, sub. 9, p. 8).
>
> …we think there needs to be more emphasis placed on achieving high quality trade agreements in services too. The service coverage in the China and ASEAN FTAs was pleasing but liberalisation of trade in services still lags behind that of other sectors and activities. In such negotiations, as well as removing barriers to export, New Zealand negotiators will focus on behind the border barriers including domestic regulations (New Zealand Chambers of Commerce, sub. 14, p. 3)
>
> How trade agreements link to locally supplied services and potentially services supplied by the trade partner can have a major impact on product exports. For example the Mutual Recognition Agreement associated with the China Free Trade Agreement has been a disaster and remains an open question five years since the Agreement was signed. The Agreement references factory inspection services, special product test services and overarching compliance services that are not available in New Zealand (New Zealand Manufacturers and Exporters Association, sub. 6, p. 5).

**F6.8** Reducing barriers to international trade in services would better enable service firms to export and would also improve competition in domestic service markets. Relevant barriers include unnecessary differences in regulation across countries, and regulations restricting inward and outward foreign investment.

## Competitiveness matters

While trade policy can be an enabler of growth in exports of services, it still remains for New Zealand service firms to achieve that growth through being competitive in foreign service markets. Over the past decade or two, the performance of New Zealand firms abroad has been mixed. Telecom, Air New Zealand, and the Warehouse, experienced poor outcomes in the Australian market over this period. Over the same period, FDI in the New Zealand services sector, particularly in the financial and insurance, information media and telecommunications, and retail trade industries, increased substantially. In other words, New Zealand became much more an importer than an exporter of services. In the most recent decade, however, there are some examples of New Zealand service-sector firms that appear to have secured competitive positions in foreign markets. Examples of these firms that are currently supplying services through a commercial presence in overseas markets include Mainfreight (transport and logistics services); Hallenstein Glasson, Pumpkin Patch, and Michael Hill Jeweller (retailing); and Opus International Consultants (infrastructure consultancy).

It is difficult to gauge the extent to which recent experience portends a greater international role for the services sector. Moreover, with traditional distinctions between trade in goods and services, and between international trade and foreign investment, becoming more blurred, it is uncertain what form growth in service exports might take. But it does seem clear that the growth of service exports – whether embodied in goods, by way of sales of services from and within New Zealand to foreign residents, or from establishments located abroad – will depend on the extent to which New Zealand has high-performing service firms. For service-providers not already exposed to international competition, the competitiveness of domestic markets for services has a significant bearing on how well they are positioned to compete in international markets.

**F6.9** The growth of service exports – whether embodied in goods, by way of sales of services from and within New Zealand to foreign residents, or from establishments located abroad – will depend on the extent to which New Zealand has high-performing service firms.

**F6.10** The competitiveness of domestic service markets has a significant bearing on how well service providers not already exposed to international competition are positioned to enter global markets.

# 7 Overall assessment

## Key points

### Diversity and size

- Industries that make up the services sector are highly diverse in what they produce, their use of skills and technology and their types of customers. There is also much diversity across firms within service industries. This creates challenges in defining and classifying services, and in drawing general conclusions.
- The services sector produces over 70% of GDP and the services share of total employment is nearly 75%. It is tightly interlinked with the wider New Zealand economy. Service industries underpin the primary and goods-producing sectors, and in turn rely on the outputs of those sectors.
- The services sector effectively contributes more than half the country's exports, primarily through embodiment in exported goods. The competitiveness of New Zealand's goods exports depends critically on the performance of the services sector.

### Productivity performance

- New Zealand's economy-wide productivity performance (levels and growth rates) has been poor by OECD standards. There has been little sign of catch up – as might be expected under the theory of growth convergence.
- Productivity performance varies over service industries. Some service industries are capital intensive and have a highly skilled workforce – both of which contribute to high labour productivity. Others have low capital intensity, employ relatively low-skilled labour and exhibit commensurately lower productivity, but still perform valuable functions in the economy and society.
- Growth rates of labour productivity for most New Zealand service industries over the period 2000 to 2007 were below the average of a benchmark set of OECD countries.
- A majority of New Zealand service industries – representing more than half the value added of the sector – have productivity levels below those in Australia and the UK, indicating scope to catch up.
- Resource shifts between industries have not significantly pulled down New Zealand's productivity growth. Productivity changes within industries, rather than the growth of low-productivity industries at the expense of high-productivity ones, account for almost all economy-wide productivity changes over time.
- ICT-intensive service industries in a few other countries have performed very well – enough to boost economy-wide productivity performance above their OECD peers. While New Zealand also has highly productive ICT-intensive service industries, these have not been large or numerous enough to generate the scale of aggregate impact seen in some other countries.

### Policy landscape

- The small size of New Zealand service markets can mean a difficult trade-off between scale in production and competitive pressure.
- Regulatory changes to boost the productivity of the services sector should focus on enablers of scale, specialisation and competition and striking the best trade-offs among them.
- Services transactions are often complex, prompting extensive regulation of service industries. These regulations can be convoluted, costly and discouraging of innovation. Improvements to

occupational licensing and consumer protection could lower costs of services transactions and remove barriers to greater competition.

- Removing barriers to international trade in services would encourage service firms to export and improve competition in domestic service markets. Barriers include unnecessary differences in regulations across countries and those affecting inward and outward foreign investment and labour mobility.

This chapter draws on preceding ones to offer an overall assessment of the role and performance of the services sector in New Zealand. It starts by highlighting the main features of the sector, summarises its productivity performance and finishes with some thoughts about where to look for opportunities for policy reforms that could lift the performance of service industries.

## 7.1 The services sector is large and diverse

New Zealand's economy has become services-based, as have the economies of most OECD countries. Services now account for just over 70% of GDP and the services share of employment is even larger. In several of the high-income OECD countries, eg France, US and the UK, services are now approaching 80% of GDP.

Service industries are very diverse in their nature and performance. Some are typically made up of small and dispersed businesses serving a very local market, such as hairdressers, motels, and cafes and restaurants. Others tend to comprise large and sophisticated businesses located far from many customers, such as media companies. This diversity makes it hard to generalise about services.

Nevertheless some broad generalisations are possible. Some may be found surprising, but appreciating them is central to understanding the role, importance and performance of services in the New Zealand economy.

The Commission has found it useful to classify service industries into four broad classes: distributive industries (eg wholesale trade), information industries (eg information, media and telecommunications), person-centred industries (eg accommodation and food), and the health and education industries.

## 7.2 Services are highly interlinked with the rest of the economy

The services sector is highly interlinked with, and interdependent on, the primary and goods-producing sectors (chapter 6). Services are an important intermediate input into primary and goods production. Primary and goods producers – taken together and on average – spend around 40% more on services than they do on wages and salaries.

Services are also a major input into the production of other services. In short, the whole economy is influenced by the performance of the services sector.

New Zealand's proportion of total exports that are directly-traded services is comparable to other OECD economies. A significant proportion of those exports involve transport, tourism and education services that are consumed by foreigners in, or travelling to and from, New Zealand. Once these are removed from the comparisons, New Zealand's share of direct service exports appears to be comparatively low both as a percentage of total exports and of GDP.

Over half of the value of New Zealand's merchandise exports can be attributed to services inputs. The principal service-industry inputs to exports are wholesale trade; transport, postal and warehousing; finance and insurance; and professional, scientific and technical services.

The predominance of service 'exports' in this embodied form could be viewed as a reflection of New Zealand's strong comparative advantage in primary industries, and as an efficient response to the higher relative costs of exporting services via other modes, rather than a weakness in exports of services.

On the other hand, directly-traded services are growing as a percentage of global trade with particularly strong growth in high-value, knowledge-based services. Because this is not true of New Zealand's services exports at present, it raises the question of whether New Zealand is missing an opportunity in that it may have the potential to develop capability to profitably sell more such services to the world.

This assessment notes that interdependence of services with the rest of the economy is at odds with a widely-held view of New Zealand's economy. This view is that natural resources are the dominant source of New Zealand's income. To quote one of many examples:

> Our economy is largely based on the ability to 'harvest water' through milk, forestry and other agricultural products. We remain a resource-based, or emerging, economy and have not translated favourable commodity prices into investment in better-value additions through, for example, processing raw products. (Office of the Auditor-General, 2013, p. 12)

This view could be seen as relegating the services sector to that of a 'luxury' only made possible by successful primary and goods-producing sectors. That view is incomplete at best and potentially misleading. Indeed relatively weak productivity performance of service industries can damage New Zealand's international competitiveness. Lower productivity often equates to higher prices charged to customers. Given the dependence of exports on service inputs, these higher prices feed through to the costs of exporters and weaken their international competitiveness.

A useful outcome of this inquiry would be a better understanding of services and their importance to the rest of the economy and its export 'base' in particular.

## 7.3 Productivity performance is low compared to OECD averages

New Zealand's level of labour productivity lay below the OECD average level several decades ago. In spite of this, its subsequent labour productivity growth has been below average, contrary to expectations under the economic theory of growth convergence. These facts suggest that barriers exist to New Zealand's convergence. Barriers could arise, for example, from less-than-optimal institutions or economic policy settings. New Zealand generally ranks well among its OECD peers on the quality of its institutions and policies, but there is always room to improve.

In looking for explanations of New Zealand's underperformance, the services sector's productivity performance deserves scrutiny, if only because of the sector's size and importance. Is it adding to or detracting from aggregate performance? Does New Zealand's below-par productivity performance compared with its OECD peers occur because of, or in spite of, the performance of services?

Further context for these questions is provided by research that points to the importance of service industries to economy-wide productivity. This research found that differences in productivity performance since the 1960s in some service industries across OECD countries explain the bulk of differences in the countries' aggregate productivity performances. For example, higher US productivity growth since the mid-1990s, compared with EU averages, has largely happened because of superior performance in ICT-intensive service industries.

Several stylised facts summarise New Zealand's services-sector productivity performance compared with other OECD countries:

- Productivity growth rates of service industries since the mid-1990s (in labour productivity and MFP) have mostly been below OECD averages.
- A portion of New Zealand's services sector has had higher productivity (levels and growth rates) than its UK and Australian counterparts, but the bulk has not. Generally, labour productivity gaps in service industries have not reduced since the mid-1990s.
- Fluctuations in labour-productivity growth have mostly come from variations in multi-factor productivity (MFP) rather than in capital intensity. Compared with the UK and Australia, New Zealand service industries tend to be considerably less capital intensive. Many also have lower MFP levels, but there are

notable exceptions such as rental, hiring and real estate services relative to Australia; and finance and insurance relative to the UK.

The Commission's overall assessment is that New Zealand's services sector as a whole has underperformed relative to its OECD peers. However this overall performance masks some significant variation across service industries and individual service firms.

## 7.4 Productivity performance varies a lot across service industries and firms

Chapter 4 highlighted some important features of the productivity performance of New Zealand service industries and firms.

- Big differences exist across New Zealand service industries in both levels and growth rates of productivity. Two of the three information-services industries – information, media and telecommunications, and finance and insurance – have been strong performers, associated with high levels of skills and use of ICTs. Distributive and person-centred service industries such as retail, and accommodation and food have generally had lower labour productivity growth rates and levels, the latter associated with lower capital intensity and a less-skilled workforce.
- Professional, scientific and technical services is a relatively knowledge-intensive industry with a medium level of labour productivity. But it has recorded very low productivity growth rates, particularly in MFP.
- There is a very wide range in the productivity levels of firms in the same service industry. There is some evidence – yet to be fully tested – that the range is much wider in New Zealand than in some other OECD economies. Large differences in productivity between firms in the same sub-industry may suggest weaker competition, economic dynamism and 'creative destruction' than in other economies. These forces drive efficient resource use, efficient investment in and use of skills, the adoption of effective business models, and investment in new technologies – essential ingredients for lifting productivity and incomes.

Rapid development in ICTs have enabled new services and transformed existing ones including in communications, media, entertainment and education. ICT-intensive service industries have the potential to achieve impressive productivity performance. This potential appears to have been only partly realised in New Zealand. In some industries the changes have been sufficiently strong and pervasive to show up in industry productivity figures. But in other service industries with potential for ICT-supported productivity improvements, such as wholesale and retail trade, and professional, scientific and technical services, productivity performance has lagged the achievements in other countries.

New Zealand's disappointing aggregate productivity performance has not to any significant extent been the result of output and employment shifting towards low-productivity industries (including service industries). Most growth in aggregate productivity has arisen from within industries rather than from shifts in employment and output across industries (chapter 5).

The Commission's overall assessment of the available New Zealand and cross-country data is that productivity growth in some New Zealand service industries has been insufficiently strong and offset too much by weaker performance in other parts of the sector to give New Zealand an above-average aggregate productivity growth performance. In other words, New Zealand is not achieving the boost to its overall productivity from service-industry productivity performance that happened in the US, Australia and some other OECD economies from the mid-1990s.

## 7.5 Lack of scale and competition inhibit productivity

If New Zealand's services sector has underperformed in international comparison, what are the economic drivers underpinning this poor performance? Given that New Zealand is a small and distant country, achieving scale, specialisation and competition among New Zealand firms are perennial challenges.

Indeed, these challenges, and their implications for productivity, may be more acute for service firms given that many services are less easily traded over distance than primary and manufactured goods. This has implications at both the domestic and international levels.

At the domestic level, the local nature of many service products – such as funerals, legal advice and repairs – limits the extent of markets. If this combines with low population density the result is less choice and competition. New Zealand has a small population distributed across a relatively large land area, so the opportunities to benefit from competition and scale in these local service markets is less than in more densely populated countries. This is likely to reduce the incentives for firms to invest in new technologies and business models, with implications for regional productivity performance. Moreover, the increasing prevalence of services in the economy is likely to have extended the tension between scale and competition to more markets.

At the international level, an economy's service industries can make two sorts of contribution that help raise export performance. Both present challenges for New Zealand firms:

- The cost and quality of service inputs into export businesses affects their international competitiveness. If New Zealand service industries underperform, this risks exporters facing higher costs and/or lower quality of those inputs. Other things being equal, this will mean that New Zealand exporters lose competitiveness.
- New Zealand firms that directly export services make a valuable contribution to total exports. But service exporters typically need deeper connections, better information and better networks than goods exporters. Meeting these needs is costly. The argument often made for goods – that New Zealand firms face a high wall of fixed costs to get into exporting because of distance and a small domestic market – is likely to apply even more to service firms.

ICTs have rendered distance less important for some services allowing them to be more easily traded. This arguably provides New Zealand entrepreneurs with opportunities to expand exports of 'weightless' products including services (accounting software firm Xero is an example). This business model can work spectacularly well (eg Google, Facebook). But the nature of innovation in these ventures is another cause of high fixed costs, on top of the fixed costs of exporting. The scale needed for profitability in the face of such fixed costs provides a stiff challenge for New Zealand-based firms that need to expand into international markets to acquire that scale.

New Zealand's distant location also inhibits competition from imported services. Specifically, low import penetration would mean that intermediate and final consumers of services in New Zealand have little alternative to purchasing these products from domestic suppliers. In turn this limits the incentives on local service firms to raise their productivity towards the international frontier. Inward foreign direct investment is another source of healthy competitive pressure. Indeed it has occurred in a number of service industries with apparently beneficial effects on productivity, eg in telecommunications and retailing.

Preliminary evidence indicates not only a wide dispersion of labour productivity across individual firms within New Zealand industries, but also that it is more marked in industries where competition is less strong. The evidence also suggests that competition is weak in some service industries.

There is evidence that service firms face less international competition than goods firms. One study investigated how closely product prices are linked across New Zealand and Australia in order to gauge the extent of integration across the two economies. The results indicated that service industries are generally much less integrated across the Tasman than goods industries.

Taken together results suggest that competition and creative destruction, which should encourage well-performing firms to expand and poorly performing firms to exit, are relatively subdued across some of New Zealand's service industries.

## 7.6 Services transactions are often more complex

The simplest transactions involve the exchange of a good or service for an agreed price between the buyer and seller, where the product's quality is easily assessed and the 'basic facts' of the deal do not change over time. Some service transactions are like this (eg bus rides) but many are not. The complexities mostly arise from asymmetric information between the seller and buyer, and include customers' common inability to fully assess the quality and delivery of some services until time (sometimes many years) has passed. This combination of traits can lead to difficulties in resolving, and obtaining remedies to, any problems with the service that arise either at the time of the transaction or subsequently.

Other sources of complexity in service transactions include the network nature of telecommunications and transport, and the privacy and content aspects of media and entertainment.

These characteristics prompt governments towards extensive regulation of service industries. Examples include occupational regulation (eg lawyers, engineers, financial advisors) and supervision of banks.

Service industries, service customers

and the markets in which they meet and transact are impacted then by a whole range of government regulations and laws, as well as by the common law and the courts. An important question is how close to optimal are the regulatory arrangements? Are there significant opportunities to boost efficiency, growth and innovation – and therefore welfare – by improving current arrangements?

Some big perennial challenges are reducing the burden and unintended consequences of large masses of complex regulation, stopping incumbents from exploiting regulations to their own advantage by erecting entry barriers, and designing regulations that do not restrain innovation.

Meeting these challenges will require analyses that drill into the regulatory environment affecting individual service industries. It would be no surprise if these found regulations that no longer (or never did) meet their goals, failed to provide an optimal trade-off between competing priorities, or could otherwise be improved.

## 7.7 The challenge of designing successful policies for the services sector

Because service industries make up a large part of the economy, and provide important inputs to other productive industries, there are large potential benefits to making improvements to policies that impact on service industries.

But where to look? The evidence presented about New Zealand's lagging performance in services and its scale and distance handicaps suggest that regulatory barriers to competition and technological diffusion should be a prime area of focus. New technologies are making it easier for some services to be traded over distance. Policy and regulatory settings should support this, subject to cost benefit and other criteria of good public policy.

In a small economy like New Zealand, enablers of scale, specialisation and competition and the best trade-offs among them should feature prominently in the design of policies and regulations. Removing barriers to international trade and economic integration need particular focus, because exporting is the best way for firms in a small economy to achieve specialisation and scale without harming domestic competition.

Dismantling barriers to trade and competition in service industries is complex and more difficult than in goods markets. High spatial transaction costs lead to small localised markets for some services whose price, quality and variety suffer as a consequence. Improved transport and communications infrastructure can reduce spatial transaction costs. Thus infrastructure provision and its regulation, and the regulation of transport and communication networks, are likely to be important influences on the productivity performance of service industries.

At the international level, the focus should be not only on conventional trade barriers but also on barriers to outward and inward investment flows, and to labour mobility, and on regulatory differences across

countries. These barriers restrict firms who seek to supply services across borders by investing in the destination market. In doing so they also act to shelter New Zealand service firms from healthy international competition. They dampen the flow of new ideas and technologies into New Zealand, thus missing another opportunity to lift domestic productivity. Economic integration measures, including unilateral and mutual recognition of regulatory and occupational standards, are important items in the toolkit for lowering these international barriers.

Another area to look may be the regulation of intangible assets, eg databases, organisational know-how, and various forms of intellectual property. These assets are growing in importance as sources of innovation and productivity gains including, and perhaps particularly, in some service industries. Policy issues include the financing of start-up firms, the treatment of intangibles in corporate valuation and accounting frameworks, competition policy in the digital economy and the role of intellectual property rights.

Large service firms are complex and challenging organisations. Managerial skills, and human capital more broadly, are fundamental to innovation and related productivity improvements at the firm level. The extent to which deficiencies in these exist in New Zealand and, if so, what policy changes could lead to better outcomes, remain open questions.

Finally, as mentioned above, the complexity of many services transactions suggests there is scope to improve occupational licensing, consumer protection and the other regulations relating to service industries.

The lack of productivity catch up by New Zealand makes it important to identify and address the areas in which policy could be improved to greatest effect. The Commission believes that the above policy areas – impacting on service industries – are promising places to look.

The next chapter begins the task set in this inquiry's terms of reference to identify impediments to increasing productivity in the services sector and make concrete recommendations to overcome them. The policy landscape affecting service industries is very broad and it is beyond the resources of this inquiry to explore all of it. The next chapter sets out the Commission's proposals for specific Part B topics that will investigate some of the opportunities for policy improvements to lift productivity in service industries.

# 8 Proposed topics for in-depth analysis

**Key points**

- The next stage of this inquiry aims to develop policy recommendations to lift productivity in the services sector.
- The inquiry terms of reference asks the Commission to select some topics for in-depth analysis. Given the size and diversity of the services sector, a wide range of topics were considered.
- Criteria set out in the inquiry terms of reference along with suggestions from inquiry participants were used to select three candidate topics:
  - Improving occupational licensing in the services sector
  - Stimulating services competition
  - Addressing barriers to successful application of information and communications technology
- The Commission intends to select two of these topics for further assessment. Their scope will be further refined over the next month.
- Submissions are invited to help guide the choice of topics, and refine their scope. Specific questions relating to each topic are posed throughout this chapter.
- The Commission will announce the two topics for further examination in late August after the closing date for submissions.

The next phase of this inquiry is dedicated to formulating policy recommendations to lift productivity in the services sector and the wider economy. This chapter outlines the process by which the Commission has identified topics within the services sector to examine. It then sets out three topic options from which the Commission intends to choose two for in-depth analysis.

## 8.1 The topic selection process

### Criteria

The inquiry terms of reference specify two main criteria to inform the selection of topics for in-depth analysis:

- the potential to make a significant impact on New Zealand's overall productivity performance; and
- the ability to identify impediments to increasing productivity and lead to concrete recommendations for changes to government policy that can overcome those impediments.

In addition, the terms of reference ask the Commission to consider the increasing importance of services to GDP and international trade; the possibility of drawing lessons from high-performing service firms and industries to lift productivity in low-performing ones; and the contribution of information and communications technology (ICT) to services-sector productivity. Given the breadth of these criteria, the Commission used them as a broad guide rather than as hard-and-fast requirements that all topics must meet.

### Participant suggestions

Suggestions from inquiry participants influenced the Commission's consideration of topics. Options were canvassed through engagement meetings and roundtable meetings with industry and government representatives (appendix A). Many submissions also suggested topics for further assessment (Box 8.1).

Box 8.1 **Some participant views on topics for deeper assessment**

A common theme among submissions was the importance of regulation.

> Among the service industries there are numerous cases of natural monopolies, limited competition, externalities (sometimes very large with major social impacts), public good aspects and other deviations from perfect markets … The question for debate is the best form of regulation… (New Zealand Council of Trade Unions, sub. 12, p. 17)
>
> Legislation and regulation are the critical areas affecting productivity for any service industry due to the time and cost of meeting the requirements imposed by both central and local government. (Sandra Goudie & others, sub. 3, p. 1)
>
> … the Inquiry should take a broad view of how generic regulations and industry-specific regulations could be improved for the services sector. (Federated Farmers, sub. 5, p. 7)
>
> Reviewing the regulation of the services industries will be fundamental to improving productivity… (New Zealand Chambers of Commerce, sub. 14, p. 4)

The Insurance Council of New Zealand (sub. 11, pp. 2-3) made more specific suggestions for regulatory change:

> One particular initiative that should be considered by the Commission is the establishment of a merits review framework… This judicial arrangement enables an affected party to apply to the AAT [Administrative Appeals Tribunal] to review, and potentially overturn, an administrative/regulatory proposal by a government agency.
>
> …there is no clear single piece of regulation for market conduct for the insurance industry in New Zealand … This fragmentation leads to inconsistent and sometimes inappropriate introduction of regulation.

BusinessNZ (sub. 9, p. 8) submitted that there is scope to improve New Zealand's occupational regulation:

> New Zealand is relatively open, but there are still barriers here. We would argue that the medical profession is a good example of a profession that it still heavily protected (note it is excluded from the Trans-Tasman Mutual Recognition Arrangement). Everyone else is generally open to, at least, competition from Australia because of TTMRA …

Telecom (sub. 15) questioned whether the regulatory environment creates impediments to the adoption of cloud-based services. They also question whether enough is being done to educate small-to-medium businesses about the benefits of ICT. Federated Farmers (sub. 5) suggest that the inquiry should look closely at issues around scale and competition given New Zealand's small market size and geographic isolation from overseas competition. They also suggest examining the role of ICT:

> Given the productivity benefits likely from greater use of information and communications technology (ICT), it would be useful for the Inquiry to look into the use of ICT. (Federated Farmers, sub. 5, p. 7)

Other submissions raised more specific issues. For example, the Southern Cross Health Society (sub. 10) suggested changes to the tax treatment of health insurance premiums and employer expenditure on employee wellness initiatives. The Institute of Patent Attorneys (sub. 7) suggested that New Zealand should develop a national intellectual property strategy with funding for the protection of innovation. The New Zealand Home Health Association (sub. 4) raised issues around government procurement of the delivery of health and social services by not-for-profit organisations. In their view, current procurement models fail to optimise both public funds and service delivery.

The operation of regulation is a common theme in many of these submissions. Some are specific to particular industries, but the Commission is inclined toward topics that have a broader impact. The Commission considers that the issue of competition and scale, raised by Federated Farmers, is significant for many parts of the services sector. It also believes that ICT, raised by Telecom and Federated Farmers (and indirectly by the Institute of Patent Attorneys), has a pervasive impact across the services sector and

will continue to have a significant overall impact on productivity. Occupational regulation, raised by BusinessNZ, is one type of regulation that is commonly used to support quality in the services sector.

## 8.2 Topics for in-depth analysis

Based on the process outlined above, the Commission has identified a short-list of topics for deeper assessment in the second part of this inquiry.

- Improving occupational licensing in the services sector
- Stimulating services competition
- Addressing barriers to the successful application of ICTs

The rationale for selecting these topics is set out in more detail in the following sections of this chapter. The Commission considers that the in-depth examination of each of these topics has the potential to generate specific policy recommendations with significant productivity benefits.

**Q8.1** Which two of the three proposed topics rank most highly in relation to the selection criteria in the inquiry terms of reference?

## 8.3 Improving occupational licensing in the services sector

### Summary of the problem

Occupational licensing is one regulatory approach that aims broadly to protect the public from the risks of an occupation being carried out incompetently or recklessly (Ministry for Business, Innovation and Employment, 2011b). The nature of specific occupational regulations varies, but generally, they serve to protect consumers by specifying minimum educational and professional qualification requirements in order to work in the occupation, specifying the types of services that a licenced provider can engage in, and through setting and enforcing codes of conduct (APC, 2008).

There are currently around 80 occupational regulation regimes operating in New Zealand, covering a wide breadth of occupations. Many of these professions fall within the services sector, for example, patent attorneys, financial advisers, auctioneers, accountants, lawyers, motor vehicle traders, pawnbrokers, architects, taxi drivers, pharmacists, veterinarians, engineers and real estate agents.

Some regulated occupations (such as teachers), operate largely in the non-market part of the services sector and as such, would be outside the scope of this inquiry.

The role of protecting consumers from the risks associated with services undertaken by certain professions generates benefits for the public. However, these benefits need to clearly articulated, demonstrated, and balanced against any potential costs that occupational licensing generates. The Commission is interested broadly, in the influence of occupational licensing on service transactions between firms, and between firms and consumers. More specifically, what is the current balance between the costs and benefits that stem from occupational licensing regimes in the services sector?

### Why the topic is important for the services sector

In its analysis of the services sector, the Commission has found that the problems or risks that occupational licensing regimes aim to mitigate are often prevalent in the services sector. These include:

- information asymmetries that arise from the complexities of some services;
- the intangible nature of many service transactions; and
- the severity of consequences that are associated with some services.

For example, consumers of legal services generally have limited knowledge of legal matters, and hence are not in a good position to assess the skills or quality of a lawyer. Adding to this difficulty is the fact that most legal services are intangible meaning that there is no physical product to examine. What's more, poor quality legal advice could have extremely severe consequences, however in some cases the consequences that arise from the quality of legal advice may not emerge for a long period of time.

Accordingly, the Commission sees occupational licensing as an issue of particular significance for the services sector. Given the important role that services play as an intermediate input into other parts of the economy, improvements in the nature of occupational licensing regimes are likely to have significant benefits, not only within the affected service industries, but also across the economy more broadly.

## Likely key issues

As an initial step, the Commission seeks to understand the objectives of occupational licensing regimes, whether they are appropriate, and how well they are being achieved. Occupational licensing regimes are in place for a large number of services professions and the Commission is interested in determining whether a consistent and principled framework is applied across the range of occupational licensing regimes. The Commission is also interested in understanding how occupational licensing regimes can help to lift productivity in the services sector.

**Q8.2** Are the objectives of occupational licensing regulation affecting the services sector clear? Are these objectives being achieved?

**Q8.3** Does occupational licensing regulation inhibit productivity improvements in the services sector?

### Domestic competition

The OECD has produced a set of indicators that attempt to measure the negative consequences stemming from regulations that are applied to certain professional services (accounting, law, architecture and engineering). The indicators were last recorded in 2008 across 34 developed economies. They focus on the impact of regulations on competitive pressure and the costs that regulations entail for economic activities that use the output of regulated sectors as intermediate inputs in production (OECD, 2011). In 2008, New Zealand's regulations averaged across the four measured professions were less restrictive than the average for the 34 measured countries, but higher than comparator countries such as Australia, the United Kingdom and the United States.

Although these results are based on just four regulated service occupations, they indicate that there may be scope to stimulate greater competition within the services sector through changes to the way that occupations are licensed.

**Q8.4** To what extent do occupational licensing requirements create an unnecessary barrier to entry (and greater competition) in particular service industries?

**Q8.5** Do occupational licensing requirements unnecessarily limit labour market participation and the movement of labour? Do these effects have a significant impact on New Zealand's overall productivity?

### International competition

Occupational regulation can also reduce competition in the services sector by acting as an entry barrier for service providers from other jurisdictions. Mutual recognition of occupational licensing has emerged as an important mechanism to reduce regulatory impediments to international trade in services. Along with

exposing domestic labour markets to competition from other jurisdictions, mutual recognition of occupational licensing assists New Zealand firms that are exporting professional or other 'licensed' services into international markets, by enabling them to compete on a level playing field with both domestic operators and other international firms.

However obtaining mutual recognition agreements can involve difficult and protracted negotiations with the partner country. An option suggested by BusinessNZ (sub. 9, p. 8) is for New Zealand to unilaterally recognise occupational licensing regimes from third parties, while continuing to address barriers to services trade presented by other countries in trade negotiations:

> …domestic barriers should be eliminated by unilateral government action, while foreign barriers should be addressed through Free Trade Agreement (FTA) negotiations…

**Q8.6** Should New Zealand adopt unilateral recognition of overseas occupational licensing regimes? Under what circumstances?

### Restrictions on businesses form

Occupational regulation can also act to restrict the forms of professional services firms. Typically this occurs either through restrictions on the structure of regulated firms or through professional obligations applied to individuals. For example, regulated firms providing professional services may be:

- restricted from engaging in a multi-disciplinary practice, even where this might enable greater efficiencies for the firm's clients; or
- prohibited from structuring their business in the most efficient manner.

For example, there are restrictions in the Lawyers and Conveyancers Act 2006 designed to ensure that control of incorporated law firms remains in the hands of lawyers actively involved in the practice and that ownership resides only with those lawyers and their relatives. One consequence of this restriction is that it removes the ability for law firms to incentivise non-legal staff through equity participation in the firm and prohibits large law firms from raising capital through a public offering.

Another example is the 2008 Real Estates Agent Act, which prevents anyone without an appropriate licence from carrying out 'real estate agency work'. This might restrict the ability of licensed agents to use unlicensed employees to perform some tasks such as hosting open homes.

**Q8.7** Do occupational licensing requirements create unnecessary restrictions which restrict the type of firm structure adopted? What are the impacts, and what should be done to address them?

### Other consumer protection laws

Alongside occupational licensing, there are many other regulations that are designed to ensure certain levels of quality in the services and goods producing sectors. Consumer law regulation involves a framework of statutes and regulations that covers issues such as misleading and deceptive conduct in trade (Fair Trading Act 1986) and guarantees in relation to the quality and performance of goods and services (Consumer Guarantees Act 1993).

Consumer law can assist the competitive process by making consumers more confident about transactions, and penalising inappropriate business conduct. When consumers are confident that their rights are protected they are more willing to purchase services without the need to negotiate bespoke protections. Consumer laws can boost productivity by helping to provide an environment where "effective competition is stimulated by empowered consumers and responsive suppliers that trade fairly" (APC, 2008, p. 4).

Consumer laws were recently reviewed, and a reform process is in progress (at the time of writing, the Consumer Law Reform Bill was awaiting the 'Committee of the whole House' stage). As such, the

Commission has opted not to further examine this topic. However, consumer laws can have important effects on productivity in the services sector and it is important that these effects are monitored closely. In particular, it is important that efforts to provide greater protections (such as the proposed changes to the use of standard form contracts and business to business contracting) do not result in compliance costs that exceed their benefits.

## 8.4 Stimulating services competition

### Topic overview

Competition is a key variable among the multitude of different factors that can influence productivity in both the services sector and the goods-producing sector. Competition can drive productivity in two broad ways. First, it creates incentives for firms to invest in productivity-raising actions such as adopting new innovations, where previously they may not have. Secondly, competition results in creative destruction, where poorly performing firms exit the market as a result of an inability to keep up with more productive firms (Syverson, 2010).

One issue relating to competition in the services sector that the Commission is particularly interested in is the role that consumers play in stimulating competition. If services consumers are reluctant to change to an alternative service provider it can have a dampening effect on competition, even if the market structure for that service appears relatively competitive. This issue is of particular interest in New Zealand because it is likely that the country's small size and isolation limits the intensity of competition compared with many other countries.

There are two features of consumer behaviour which can impact on competition (Waterson, 2002).

- The nature of their search behaviour, ie to what extent do consumers search among competitors for the best deal? For many transactions, such as standard retail purchases like clothes or groceries, it is relatively straightforward for consumers to search among competitors. But for more complex transactions, there are significant costs involved in acquiring the knowledge necessary to make an informed decision as to which provider offers the services that best meet consumers' needs.
- Switching costs, ie if a consumer is able to identify services that better meet their needs, are there barriers such as exit fees or burdensome paperwork that unnecessarily discourage switching providers? For example, changing banks may result in the inconvenience of being temporarily unable to access accounts, and, until relatively recently, switching phone companies resulted in the hassle of receiving a new phone number. Where the good or service in question has a function that is important to health or safety consumers might be reluctant to switch due to uncertainty that the alternative is of sufficient quality.

To a certain extent, the spread of the internet and other ICTs has increased the ability of consumers to drive competition. For example, as noted in chapter 3, prospective house buyers or tenants can now easily browse through multiple online listings on agency websites or on websites with listings from multiple firms, such as TradeMe or Open2View. This enables consumers to search a much wider range of properties than if they had to visit each property in person. Similarly, privately-operated websites such as PriceSpy allow consumers to compare the price of goods across a range of retailers. Many websites are dedicated to reviewing the quality of goods and services (eg guest reviews on hotel booking websites).

Where search and switching costs are high, there may be a role for government in spurring both consumers and suppliers to operate more effectively (Waterson, 2002). These might include both provision of information about prices and quality, and seeking to reduce switching costs.

### Why the topic is important for the services sector

Competitive markets where consumers are able to search and switch among different offerings are important for productivity in all sectors of the economy. But high search and switching costs tend to particularly pronounced in some services transactions.

Information asymmetries can mean that there are significant costs involved in acquiring the knowledge necessary to make an informed decision as to which provider offers the services that best meet consumers' needs. Similarly, many services transactions involve a high degree of complexity which might have the effect of 'locking-in' consumers to certain service providers.

## Likely key issues

### Increasing transparency to promote competition

The Commission is interested whether there is role for government or other agencies to facilitate greater competition in New Zealand services markets by reducing search and switching costs. Government currently is actively promoting transparency as a means of driving competition in the electricity market (Box 8.2).

Box 8.2 **'What's my number' and competition in the electricity market**

The 'What's My Number' campaign was developed to provide consumers with information about their ability to switch power suppliers, the ease of switching and the potential savings from switching power supplier. The campaign website allows users to compare the prices of different power suppliers using a simple calculator.

An evaluation of the campaign's success during its first seven months (June to December 2011), found that there was a 28% increase in the number of users who switched power provider. The evaluation also suggested that some power retailers had made changes to their pricing plans as a result of the campaign.

*Source*: Electricity Authority, 2012

One example of a service market where there may be scope for similar intervention is the KiwiSaver funds management. Given that about two million New Zealanders participate in KiwiSaver with a total investment of $13 billion (as at June 2012), greater competitive pressure in the funds management sector has potential to generate significant benefits for New Zealand investors. New regulations have just been introduced (the KiwiSaver Periodic Disclosure Regulations 2013) that require KiwiSaver schemes to regularly report on fund performance, fees, asset allocation and other matters in a simple and standardised form (MBIE, 2013). These reports must be prepared quarterly and published on KiwiSaver providers' websites (the first disclosure statements are due to be published in mid-October 2013).

Given that there are 50 different KiwiSaver schemes (FMA, 2012) there may be scope to further increase transparency by collating disclosure information in a single easily accessible location, which -also provides information about how consumers can switch provider. Once the disclosure information is available, this task may well be performed by a private organisation. If that doesn't occur then there might be a role for government.

**Q8.8** Are online tools such as PowerSwitch an effective means of enhancing competition?

**Q8.9** Is there a role for government in further provision of consumer information and switching tools? If so, in which markets?

### Competition law

Competition policy is based on the notion that well-functioning competitive markets are an important driver and determinant of overall economic performance and the choices and benefits available to consumers. The primary legislative instrument governing competition law in New Zealand is the Commerce Act 1986. It prohibits conduct or practices that could be harmful to competition, but contains some exemptions where an activity that may otherwise harm competition is efficiency-enhancing.

Inquiry participants did not raise competition law as a particular barrier to productivity in the services sector. However, competition has emerged in the Commission's assessment of the services sector as one of the most important drivers of productivity performance. As such, the Commission is interested in how competition law impacts on the services sector and whether there are any specific issues relating to competition law that might meet the criteria for assessment in the next stage of this inquiry. Any such issues would need to be clearly contained, as the available resources do not permit a full analysis of competition policy.

**Q8.10** Are there specific issues relating to competition law that would be suited to examination in this inquiry (ie that meet the criteria set out in the terms of reference)?

## 8.5 Addressing barriers to successful application of ICTs

### Topic overview

ICT is a broad term that is used to capture a range of products that fulfil or enable information processing or the communication of information by electronic means. It also includes the use of electronic processing to detect, measure or record physical phenomena, or to control a physical process (OECD, 2003).

Early research examining the relationship between ICT investment and productivity growth failed to identify any strong links between the two. The growth of computing power and affordability in the 1970s and 1980s was actually accompanied by a significant slow-down in labour productivity growth. This led some to conclude that there was an 'ICT productivity paradox', as "[Y]ou can see the computer age everywhere but in the productivity statistics" (Solow, 1987, p. 36).

The ICT productivity paradox has since been put down to time lags in gains being realised, difficulties that firms experienced in successfully integrating ICTs, and a range of measurement issues (Pilat, 2004). Among more recent research, there is a growing consensus that ICT investment and productivity growth are positively linked (Atzeni & Carboni, 2006). For example, Koutroumpis (2009) found that among a sample of Eurpoean Union member countries, a 1% increase in broadband penetration resulted in GDP growth of 0.025%. Other benefits attributed to the use of ICTs include improved information and knowledge management, more effective management of processes, reduced coordination costs and improved communication (Gargallo-Castel & Galve-Górriz, 2012).

While few studies have examined the relationship between ICT and productivity in the New Zealand context, Engelbrecht and Xayavong's (2006a) findings align with the emerging consensus. They find that New Zealand industries that produce ICTs, or are relatively intensive users of ICT, have tended to exhibit stronger productivity growth than less ICT-intensive industries. Research that examines the relationship between broadband internet adoption and productivity in New Zealand firms reveals a productivity dividend of approximately 10% for those firms that have adopted broadband (Grimes, 2009).

The Commission is interested in building a better understanding of how the relationship between ICTs and productivity has played out in the New Zealand context.

**Q8.11** To what extent has the adoption of ICTs enabled New Zealand services firms to increase productivity?

### Why the topic is important for the services sector

There is a growing consensus that ICT investment and productivity growth are positively linked. This relationship is not exclusive to the services sector, however, the benefits from ICT may be more pronounced for services firms.

Services transactions tend to require a direct interaction between consumer and the service provider, meaning that competition can be limited to the firms that are active within a specific local area. However ICTs can reduce spatial transaction costs and facilitate the trade of services over distance. This can bring

opportunities for scale efficiencies (by enabling firms to access larger markets), along with the potential for greater competitive pressure. Research that has measured the productivity benefits associated with the uptake of broadband internet found a marginally stronger (although not statistically significant) impact on firm productivity for firms in rural (low population density) relative to urban (high density) areas (Grimes, 2009).

Given New Zealand's isolation from international trading partners, the productivity potential associated with ICTs is likely to be particularly beneficial in enabling trade of services over distance. For example, the internet can enable New Zealand firms to access larger markets, and also expose domestic markets to increased competition (Dean et al, 2012).

## Likely key issues

### Application of ICT by New Zealand service firms

New Zealand typically performs well in terms of investment in ICT (computers and related hardware; communications equipment; and software) and sits alongside countries such as the United States, Sweden, the Netherlands, Great Britain, and Denmark (OECD, 2013b). While ICTs may have taken hold across the economy, what matters for productivity, is how ICTs are being made to work. There is an emerging consensus that ICT investment alone, is not sufficient to generate productivity growth and that the relationship between them is not straightforward. For example, Pilat (2004, p. 58) makes the following observation:

> … turning investment in ICT into higher productivity is not straightforward. It typically requires complementary investments and changes, e.g. in human capital, organisational change and innovation. Moreover, ICT-related changes are part of a process of search and experimentation, where some firms succeed and grow and others fail and disappear.

Several inquiry participants have suggested that New Zealand firms tend to invest in ICT at a similar rate to other countries, but struggle to extract value from the investment.

The experience of other countries suggests that larger firms are better able to make ICT investments because the up-front costs can be spread across a larger business base. The small scale of many of New Zealand's service firms may be a barrier to investment in ICT and other innovations. Greater collaboration among firms might help to address some of the difficulties presented by the up-front costs of ICT investments. However, the Commission has heard from service industry representatives that firms are reluctant to do this out of concern that they could breach competition laws. Greater knowledge sharing among service firms may also speed up the dissemination of effective ICTs and help avoid the adoption of ineffectual technologies.

**Q8.12** What are the main factors that prevent firms from extracting value from investments in productivity-enhancing ICTs? What can be done to address them?

One issue for examination is whether the technical skills and broader human capital (including the ability to successfully make use of skills) that are required to successfully harness technology are available to New Zealand firms. Drawing on research conducted in the European Union, Glass (2013) suggests that deriving economic success from the use of internet services countries requires investment in two complementary areas:

- developing organisational conditions within firms that support the use and application of the internet in production processes, and
- investment in human capital, so that labour resources are able to use internet tools and applications efficiently.

Similarly, Telecom (sub. 15, p. 3) questioned whether more could be done to educate small to medium businesses about the benefits of ICT:

While the ICT industry has an incentive to promote ICT adoption, there may be some facilitative role for policy makers to educate and promote uptake.

**Q8.13** Are there shortfalls in the complementary factors (eg skills) that are required for firms to successfully make use of ICTs? If so, what are the specific factors, and is there a role for government policy to address these shortfalls?

### The use of ICT in specific service industries

Studies of the US retail industry have shown a significant relationship between ICT investment and productivity growth at the firm level (chapter 2). During the 1990s productivity growth in the retail industry accounted for a large share of productivity growth across the US economy as a whole. Effective ICT investment has also been identified in the superior productivity performance of the US retail industry relative to the UK.

A similar scenario played out in Australia's wholesale trade industry – which made a major contribution to Australia's overall productivity growth in the 1990s. Part of the success of the Australian wholesale industry is attributed to the successful use of ICTs. During this period wholesalers were not necessarily investing more heavily in ICTs, but they were using technology more productively (Banks, 2002).

The New Zealand wholesale and retail industries are both relatively poor productivity performers. They account for about 10% of the economy and 15% of employment. Poor productivity in these industries is likely to have a flow-on effect to other industries, and also impacts on private households through limited choice or higher prices. More effective use of ICT in the wholesale and retail industries could have benefits that extend beyond these industries.

**Q8.14** Are their particular barriers to the uptake and effective implementation of ICT in the wholesale and retail industries? If so, what impact do they have and what could be done to address them?

### Do policy settings enable service firms to embrace productivity-enhancing technologies such as cloud computing?

Research in the United States suggests that firms' computing costs can be significantly reduced through the adoption of cloud computing (McAffee, 2012). As such, ensuring regulatory barriers to the use of cloud services are minimised is an essential ingredient in enhancing productivity for all service firms where information technology services are a necessary input. However, concerns about privacy and security can present a significant barrier to greater cloud adoption.

The introduction of a mechanism through which consumers of cloud services can be confident that cloud computing providers appropriately secure data, in a manner that is compliant with the Privacy Act 1993, is an important part of addressing this issue. The voluntary, industry-led *Cloud Computing Code of Practice* may go some way toward achieving this.

Some inquiry participants have suggested that firms that supply services to government are reluctant to utilise cloud computing due to a perception that it may be prejudicial to their continued working relationship with government agencies. This suggests that the Government needs to be very clear about what is and isn't permissible and why. In making these decisions, high regard should be held for any effects on relevant service providers.

**Q8.15** What are the barriers to adoption of cloud computing in New Zealand? Are government agencies reluctant to engage the services of firms that make use of cloud computing solutions? If so, why?

**Q8.16** Is the *Cloud Computing Code of Practice* an effective quality assurance mechanism for cloud users?

**Q8.17** Are there regulatory or policy barriers to the adoption of new or emerging ICTs other than cloud computing?

## 8.6 How the Commission plans to approach these topics

The three selected topics are presented very broadly. As noted earlier, the Commission will make use of feedback from inquiry participants to narrow the scope of two topics over the next month.

This scoping exercise will be particularly important. The selection criteria for topics (the requirement to formulate concrete policy recommendations on topics that have a significant impact on New Zealand's overall productivity performance) led the Commission to select topics that are potentially very wide-ranging and complex pieces of work. But at the same time, the Commission aims to release an interim report on two of these topics by January 2014, which limits the amount of analysis that can be carried out.

**Q8.18** How should the scope of the proposed topics be refined?

**Q8.19** What information can you supply to assist the Commission's analysis?

Box 8.3 sets out a broad approach that the Commission intends to use for the analysis of these topics.

Box 8.3 **A broad approach to inquiry topics**

In order to ensure that the analysis of these topics produces beneficial policy recommendations, while also having an impact on New Zealand's overall productivity performance, the Commission intends to approach the analysis in three steps:

1. Further examination of how the issues in the chosen topic influences productivity in the New Zealand economy as a whole.
2. A detailed examination of one or two issues within each topic, where specific recommendations can be developed.
3. A examination of how the findings from the detailed examination (step two) might be applied across the topic more broadly, and idenfication of issues that would benefit from further research or review.

For example, an analysis of occupational licensing would examine its rationale, the extent to which it is used in the services sector, and the wider effects that it has on productivity. This would be followed by a detailed examination of one aspect of the issue, which for this topic might take the form of a case study into a single regulated profession. The recommendations and findings from this analysis might then be able to be applied more widely.

## 8.7 Next steps

Table 8.1 sets out the timeline for the remainder of the inquiry. As noted earlier, the Commission welcomes submissions to help guide the choice of topics for the next stage of this inquiry, along with suggestions as to how the scope of these topics might best be refined.

Following the closing date for submissions, the Commission will announce the topics that have been selected for further analysis, and will undertake targeted engagement on these topics. The Commission may also test its thinking on specific issues through additional mechanisms, such as published research notes, discussion forums and expert roundtables.

**Table 8.1 Inquiry timeline**

| Date | Milestone |
|---|---|
| 23 August 2013 | Submissions on the 1st interim report due. |
| Late August | Announcement of the topics chosen by the Commission for Part B. |
| August-October | Engagement with interested parties on the 1st interim report. |
| January 2014 | Release of the 2nd interim report; being the draft report on the topics chosen for Part B, including preliminary findings and recommendations. |
| 28 February | Submissions on the 2nd interim report due. |
| February-March | Engagement with interested parties on the 2nd interim report. |
| 30 April | Final report provided to referring Ministers. |

# Summary of questions

| | |
|---|---|
| Q8.1 | Which two of the three proposed topics rank most highly in relation to the selection criteria in the inquiry terms of reference? |
| Q8.2 | Are the objectives of occupational licensing regulation affecting the services sector clear? Are these objectives being achieved? |
| Q8.3 | Does occupational licensing regulation inhibit productivity improvements in the services sector? |
| Q8.4 | To what extent do occupational licensing requirements create an unnecessary barrier to entry (and greater competition) in particular service industries? |
| Q8.5 | Do occupational licensing requirements unnecessarily limit labour market participation and the movement of labour? Do these effects have a significant impact on New Zealand's overall productivity? |
| Q8.6 | Should New Zealand adopt unilateral recognition of overseas occupational licensing regimes? Under what circumstances? |
| Q8.7 | Do occupational licensing requirements create unnecessary restrictions which restrict the type of firm structure adopted? What are the impacts, and what should be done to address them? |
| Q8.8 | Are online tools such as PowerSwitch an effective means of enhancing competition? |
| Q8.9 | Is there a role for government in further provision of consumer information and switching tools? If so, in which markets? |
| Q8.10 | Are there specific issues relating to competition law that would be suited to examination in this inquiry (ie that meet the criteria set out in the terms of reference)? |
| Q8.11 | To what extent has the adoption of ICTs enabled New Zealand services firms to increase productivity? |
| Q8.12 | What are the main factors that prevent firms from extracting value from investments in productivity-enhancing ICTs? What can be done to address them? |
| Q8.13 | Are there shortfalls in the complementary factors (eg skills) that are required for firms to successfully make use of ICTs? If so, what are the specific factors, and is there a role for government policy to address these shortfalls? |
| Q8.14 | Are their particular barriers to the uptake and effective implementation of ICT in the wholesale and retail industries? If so, what impact do they have and what could be done to address them? |

| | |
|---|---|
| **Q8.15** | What are the barriers to adoption of cloud computing in New Zealand? Are government agencies reluctant to engage the services of firms that make use of cloud computing solutions? If so, why? |
| **Q8.16** | Is the *Cloud Computing Code of Practice* an effective quality assurance mechanism for cloud users? |
| **Q8.17** | Are there regulatory or policy barriers to the adoption of new or emerging ICTs other than cloud computing? |
| **Q8.18** | How should the scope of the proposed topics be refined? |
| **Q8.19** | What information can you supply to assist the Commission's analysis? |

# Findings and recommendations

The full set of findings from the report are below.

## Chapter 2 – The economics of services

**F2.1** Some service transactions involve high transaction costs. Reductions in transaction costs have the potential to increase the number of transactions and the economic benefits created by those transactions.

**F2.2** The complexity of some service transactions prompts governments towards extensive regulation of service industries. An important question is how close to optimal are the regulatory arrangements? Such regulation is difficult to design and risks unintended consequences.

**F2.3** Spatial transaction costs – the extra costs incurred because production and customers are not co-located – are often higher for services than for goods. High spatial transaction costs can lead to localised services markets with an undesirable trade-off between competition and economies of scale in production.

**F2.4** Information asymmetries can be more pronounced in service transactions than goods transactions, due to the difficulties in assessing service quality before or after purchase, and in obtaining remedies for poor service quality.

## Chapter 4 – Productivity performance

**F4.1** Despite New Zealand's relatively low level of labour productivity three decades ago, its subsequent labour productivity growth has been slower than the OECD average. The increasing gap relative to the OECD leaders is the opposite of what would have been expected under the theory of growth convergence.

**F4.2** The productivity performance of New Zealand service industries is diverse. Service industries are among the most and least productive in the economy in terms of both levels and growth rates of labour productivity.

**F4.3** Some service industries with high labour productivity levels and growth rates – such as information media and telecommunications, and finance and insurance – tend to employ people with higher skills, pay higher wages and be ICT-intensive. But some service industries – such as professional, scientific and technical services – share these characteristics yet have low productivity growth.

**F4.4** The distributive and person-centred service industries generally have low output per hour paid, have experienced low labour productivity growth, and employ less-skilled people.

**F4.5** Both multi-factor productivity (MFP) growth and capital deepening contributed to labour productivity growth across service industries from 1990 to 2011. While the contribution of each component has varied over time, MFP growth has generally been the more variable and significant of the two.

**F4.6** New Zealand's current non-inclusion in the OECD's industry productivity database limits opportunities for research that would yield evidence and insights of benefit to New Zealand.

**F4.7** The labour-productivity growth rates of New Zealand service industries have generally been slower than their counterparts in Australia and the United Kingdom.

**F4.8** There is significant variation industry by industry in productivity growth rates and levels compared with other OECD countries. But the general picture is in line with New Zealand's relatively poor productivity performance observed at the economy-wide level.

**F4.9** New Zealand's service industries generally had relatively weak MFP growth compared with OECD countries between 2000 and 2007. MFP tended to be a greater contributor than capital intensity to New Zealand's labour productivity differences in service industries – in both growth rates and levels – compared with other OECD countries.

**F4.10** The information media and telecommunications industry was an exceptionally good performer in having high levels and growth rates of labour productivity and MFP growth both in relation to other industries in New Zealand, and to its Australian counterpart industry, from 1997 to 2010.

**F4.11** The available evidence suggests that New Zealand's distributive service industries have underperformed relative to other OECD countries.

**F4.12** The New Zealand service industries with the potential to benefit from ICT investment and adoption achieved mixed results in their productivity performance. The better performance of these industries in some other countries deserves further analysis for its possible lessons for New Zealand.

**F4.13** The overall productivity performance of the services sector has not been sufficient to make progress towards closing New Zealand's aggregate productivity gap with Australia and other leading OECD countries.

## Chapter 5 – Has the shift to services affected overall productivity performance?

**F5.1** Employment growth has been stronger in industries with lower labour-productivity growth than in industries with higher productivity growth. But there was stronger growth in output from the higher-productivity-growth industries than in the lower–productivity–growth industries.

**F5.2** Change in the industry structure of the New Zealand economy over the past three decades had comparatively little effect on aggregate productivity growth. To the extent that there was an effect, it was negative but small.

**F5.3** Studies of the effects on productivity growth from change in industrial structure for Australia and other advanced economies give similar results to those for New Zealand.

**F5.4** Thirty per cent of Australia's higher level of labour productivity compared with New Zealand is attributable to Australia having a greater share of employment in some capital intensive, high labour-productivity industries (mining; finance and insurance; and electricity, gas, water and waste) and a smaller share in some industries with lower labour productivity (agriculture, forestry and fishing; and food and beverage manufacturing).

**F5.5** Achieving stronger productivity performance through change in industrial structure towards high-productivity industries is dependent on the availability of labour with higher skills and on a market for the output of those industries.

**F5.6** For an open economy, exports can provide a potential market for the output of high-productivity industries, if the exporting firms are internationally competitive.

## Chapter 6 – Domestic and international interactions

**F6.1** The services sector is tightly linked to the rest of the economy. There is a complex web of services that are inputs to the production of goods, and goods that are inputs to the production of services. This web interconnects the primary, goods-producing and services sectors.

**F6.2** More services are purchased by firms, as an input to their production, than by households.

**F6.3** Sizeable amounts of services are used as inputs by the primary and goods-producing sectors. These sectors, taken together, spend nearly 40% more on market-provided services than they do on wages and salaries.

**F6.4** The way in which service industries are integrated into the New Zealand economy is broadly similar to comparable countries.

**F6.5** The services sector supplies over half the value of New Zealand's exports when both service inputs to merchandise exports and exports by the services sector itself are taken into account.

**F6.6** Another way in which firms can export services – particularly those that require co-location of the service provider and the service-user – is by establishing a commercial presence in foreign markets. This typically requires outward direct investment (ODI). New Zealand's ODI as a proportion of GDP is low compared with most other OECD economies.

**F6.7** Traditional distinctions between international trade in goods and in services, and between international trade and international investment, are losing some of their relevance.

**F6.8** Reducing barriers to international trade in services would better enable service firms to export and would also improve competition in domestic service markets. Relevant barriers include unnecessary differences in regulation across countries, and regulations restricting inward and outward foreign investment.

**F6.9** The growth of service exports – whether embodied in goods, by way of sales of services from and within New Zealand to foreign residents, or from establishments located abroad – will depend on the extent to which New Zealand has high-performing service firms.

**F6.10** The competitiveness of domestic service markets has a significant bearing on how well service providers not already exposed to international competition are positioned to enter global markets.

# Appendix A Public consultation

## Submissions

| INDIVIDUAL OR ORGANISATION | SUBMISSION NUMBER |
|---|---|
| Phil Hayward | 1 |
| Target Railway Progress | 2 |
| Sandra Goudie and others | 3 |
| New Zealand Home Health Association | 4 |
| Federated Farmers of New Zealand | 5 |
| New Zealand Manufacturers and Exporters Association | 6 |
| New Zealand Institute of Patent Attorneys Inc | 7 |
| Vodafone New Zealand Limited | 8 |
| BusinessNZ | 9 |
| Southern Cross Health Society | 10 |
| Insurance Council of New Zealand | 11 |
| New Zealand Council of Trade Unions | 12 |
| Aviation Industry Association of NZ (Inc) | 13 |
| New Zealand Chambers of Commerce | 14 |
| Telecom New Zealand Limited | 15 |
| Alistair Sheat | 16 |

## Roundtables

### INDUSTRY REPRESENTATIVES, 6 MAY 2013

Insurance Council of New Zealand
New Zealand Institute of Chartered Accountants
Tourism Industry Association New Zealand
Motor Trade Association
Hospitality New Zealand
New Zealand Retailers Association
Booksellers New Zealand
Technology Association of New Zealand
Insurance Council of New Zealand
Business Central
New Zealand Bankers Association
BusinessNZ
New Zealand Shipping Federation
Aviation Industry Association of New Zealand

### GOVERNMENT AGENCIES, 10 MAY 2013

Treasury
Ministry of Business Innovation & Employment
Ministry of Foreign Affairs and Trade
Ministry of Transport
Reserve Bank of New Zealand
Land Information New Zealand

## Engagement meetings

**INDIVIDUAL OR ORGANISATION**

Association of Non-Governmental Organisations of Aotearoa (ANGOA)
Platform Trust
New Zealand Home Health Association
Commerce Commission
Institute of Environment Science and Research Limited
New Zealand Institute of Chartered Accountants
Statistics New Zealand
Tourism Industry Association New Zealand
Webb Henderson
Professor Norman Gemmell
Professor Morris Altman

# Appendix B Productivity performance – additional material

## B.1 Productivity data coverage for service industries

This section supplements sections 4.2 and 4.3 of chapter 4. Table B.1 shows the data coverage for service industries in Statistics New Zealand's productivity statistics. This data coverage also impacts the composition of the services sector productivity statistics over the period.

Statistics New Zealand's productivity statistics cover six service industries for the period 1978 to 2011. Data for an additional five service industries – rental, hiring and real estate; arts and recreation; professional, scientific and technical services; administrative and support services and 'other services'- are available from March 1996 to 2011.

**Table B.1 Data coverage for service industries**

| Period | Services industries covered |
|---|---|
| 1978-2011 | • wholesale trade<br>• retail trade<br>• transport, postal and warehousing<br>• information media and telecommunications<br>• financial and insurance services<br>• accommodation and food services |
| 1996-2011 only | • professional, scientific and technical services<br>• rental, hiring and real estate services<br>• administrative and support services<br>• arts and recreation services<br>• other services |

*Source:* Productivity Commission; Statistics New Zealand

*Notes:*

1. Between 1978 and 2011 arts and recreation services is included in the statistics for the services sector as a whole, but statistics for the industry are not available separately until 1996.

## B.2 New Zealand services sector productivity

This section supplements section 4.2 of chapter 4, services sector productivity. Table B.2 shows the labour productivity growth rates by sector over the period 1978-2011. The data prior to 1990 helps to provide context for the more recent period of 1990-2011.

**Table B.2 Labour productivity growth by sector, % per year**

| | Primary sector | Goods-producing sector | Services sector |
|---|---|---|---|
| 1978-1985 | 2.3 | 2.2 | 0.6 |
| 1985-1990 | 6.8 | 1.8 | 1.5 |
| 1990-2000 | 4.6 | 1.5 | 2.1 |

| | Primary sector | Goods-producing sector | Services sector |
|---|---|---|---|
| 2000-2008 | 1.3 | 0.6 | 1.7 |
| 2008-2011 | 1.3 | 0.8 | 0.1 |
| 1990-2011 | 2.9 | 1.0 | 1.7 |

*Source:* Productivity Commission; Statistics New Zealand

*Notes:*

1. The sub-periods are based on productivity growth cycles.

## B.3 New Zealand services industry productivity

This section supplements section 4.3 of chapter 4, service industries productivity. Table B.3 provides the labour and MFP growth rates for services industries over sub-periods between 1978 and 2011. The data prior to 1990 helps to provide context for the more recent period of 1990-2011. Figure B.1 shows annual output and labour productivity growth by service industry, with component contributions.

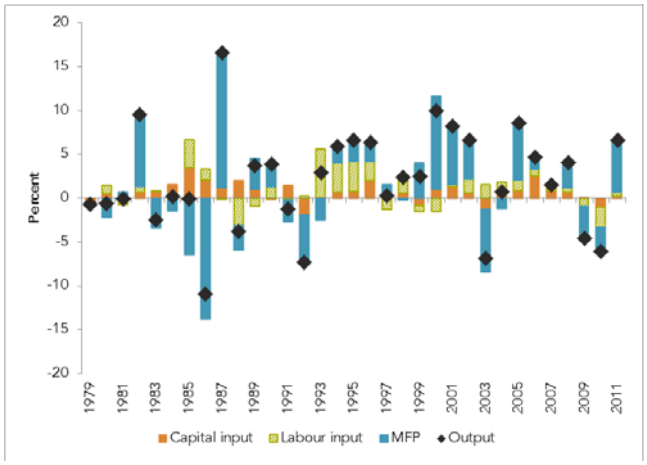
**Table B.3 Labour productivity and MFP growth by industry, % per year**

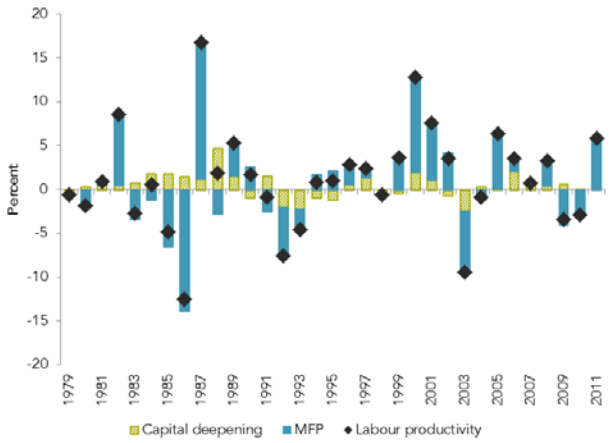
| | Labour productivity growth | | | | | | MFP growth | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1978 - 1985 | 1985 - 1990 | 1990 - 2000 | 2000 - 2008 | 2008 - 2011 | 1990 - 2011 | 1978 - 1985 | 1985 - 1990 | 1990 - 2000 | 2000 - 2008 | 2008 - 2011 | 1990 - 2011 |
| Wholesale trade | 0.0 | 2.2 | 1.0 | 1.7 | -0.3 | 1.0 | -0.7 | 0.6 | 1.1 | 1.5 | -0.5 | 1.0 |
| Retail trade | -1.3 | 1.1 | 2.4 | 2.1 | -0.4 | 1.9 | -1.7 | -0.8 | 1.7 | 1.3 | -0.3 | 1.2 |
| Transport, postal & warehousing | 3.2 | 6.4 | 5.2 | 1.4 | 0.2 | 3.0 | 3.8 | 4.7 | 5.6 | 0.4 | -1.4 | 2.6 |
| Information media & telecommunications | 3.8 | 6.1 | 8.4 | 4.0 | 4.3 | 6.1 | 2.7 | 1.2 | 3.1 | 2.0 | 0.8 | 2.3 |
| Finance & insurance | 2.9 | -1.1 | 4.8 | 3.0 | 2.7 | 3.8 | 1.3 | -3.3 | 3.8 | 1.4 | -1.4 | 2.1 |
| Professional, scientific & technical | | | | 0.5 | -0.7 | | | | | -0.5 | -0.9 | |
| Accommodation & food | -2.2 | -2.6 | -1.1 | 0.2 | -0.2 | -0.5 | -2.2 | -3.5 | -0.9 | -0.7 | -0.2 | -0.8 |
| Rental, hiring & real estate | | | | 4.2 | 1.4 | | | | | 2.1 | -0.5 | |
| Administrative & support | | | | 0.3 | -5.2 | | | | | -0.1 | -5.9 | |
| Arts & recreation | | | | -0.9 | -0.3 | | | | | -1.6 | -1.9 | |
| Other services | | | | 1.7 | 1.3 | | | | | 1.2 | 1.1 | |

*Source:* Productivity Commission; Statistics New Zealand

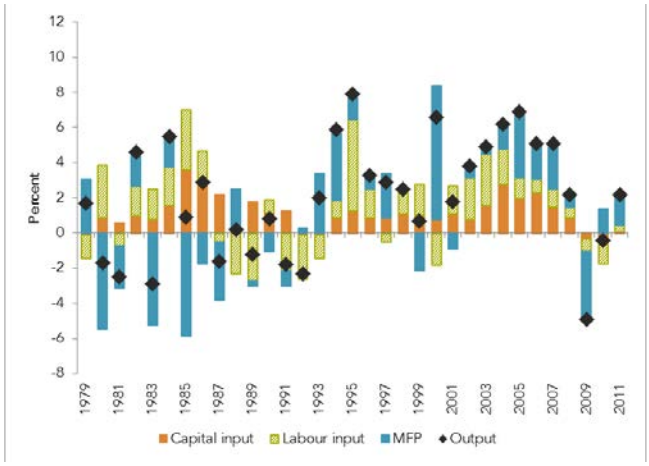
Figure B.1 Decomposition of annual output and labour productivity growth by service industry, 1978-2011

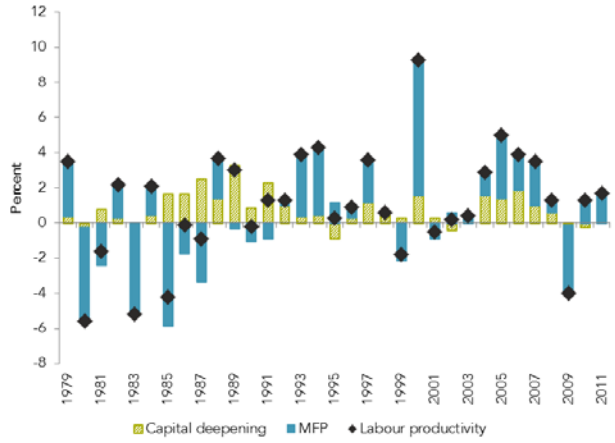
Wholesale trade



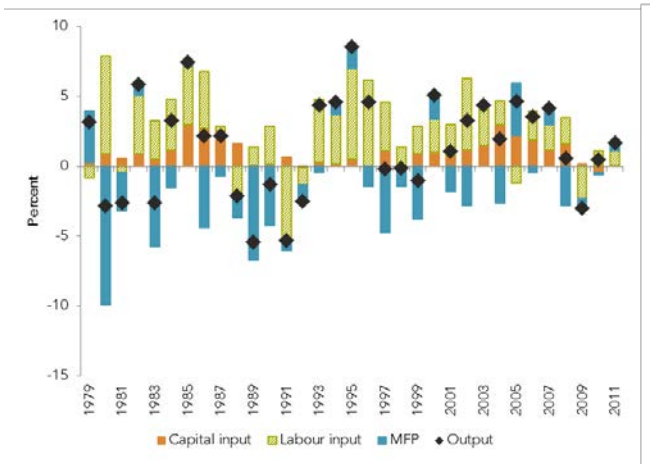



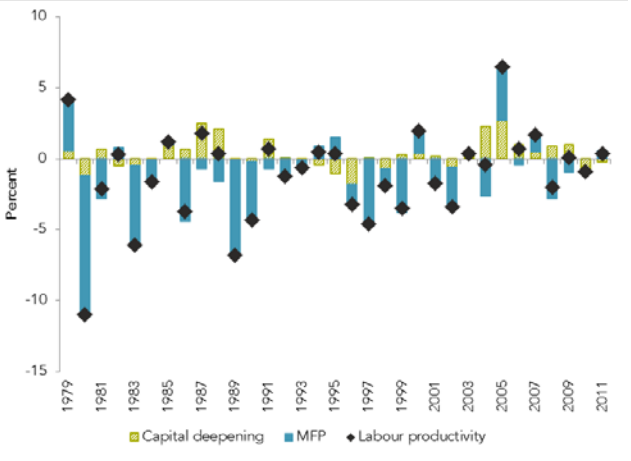

Retail trade



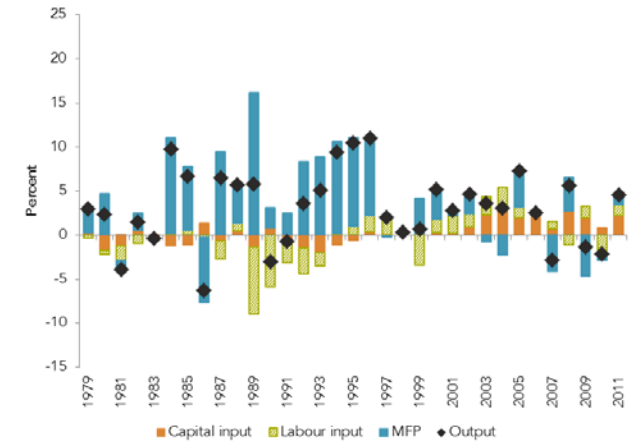



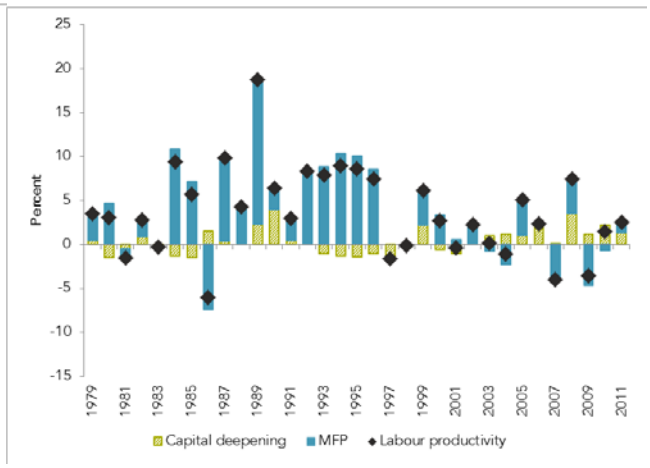

Accommodation & food services



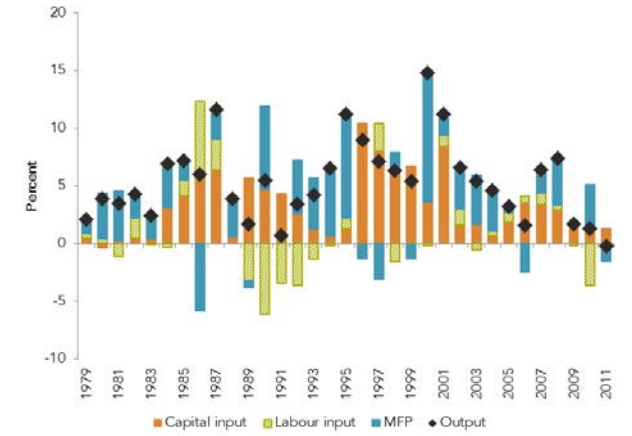



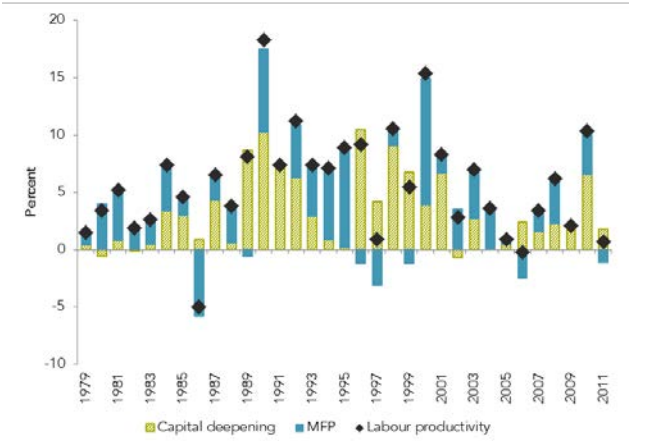
## Transport, postal & warehousing



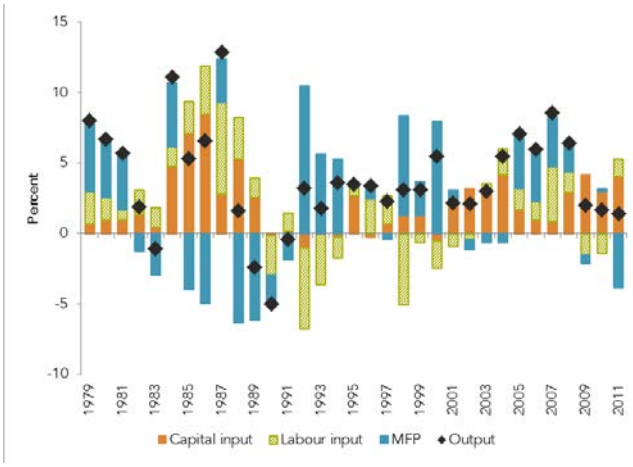



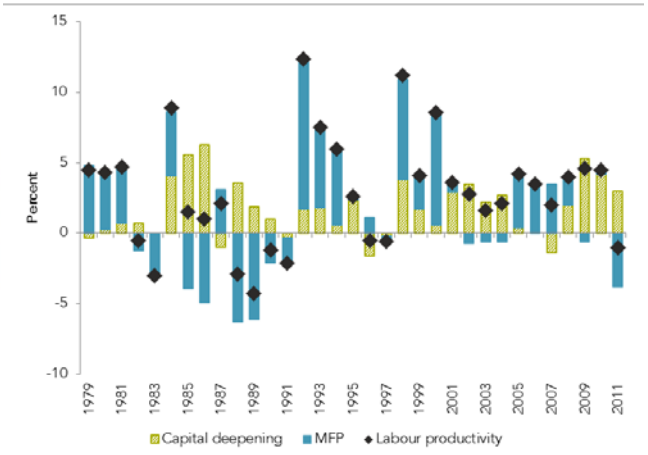

## Information media & telecommunications



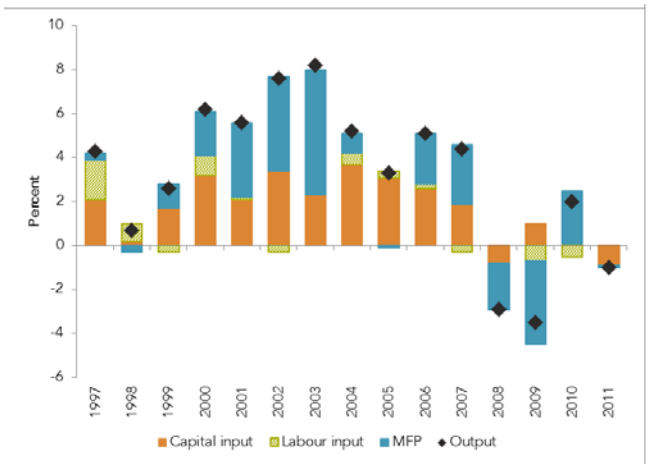



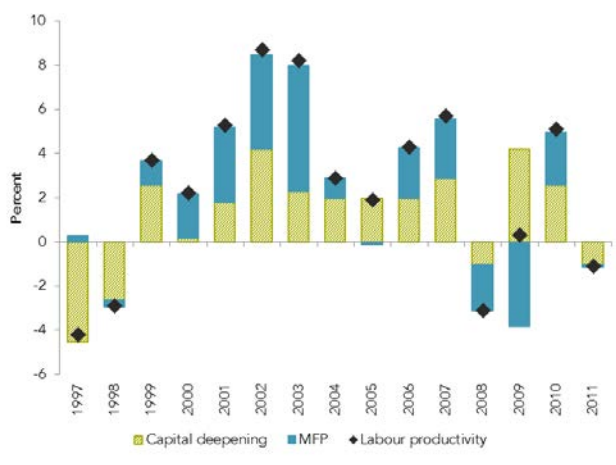

## Financial & insurance services



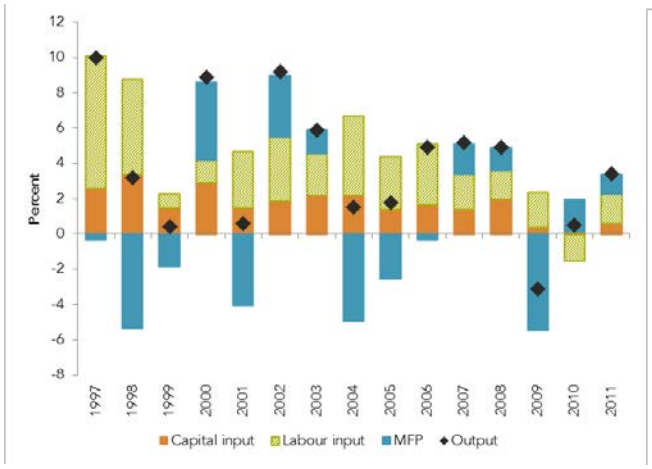



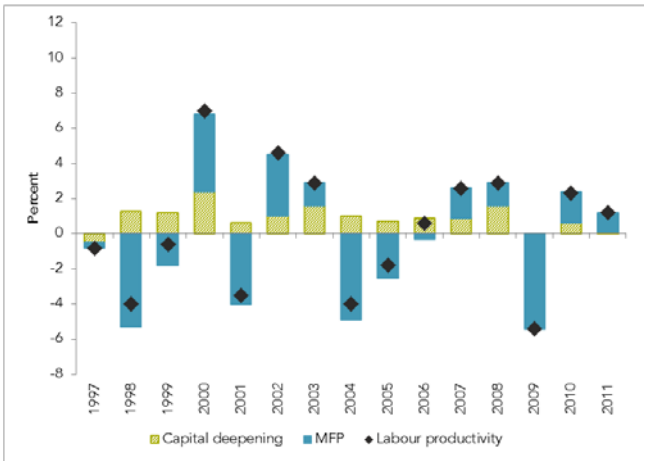
## Rental, hiring & real estate services



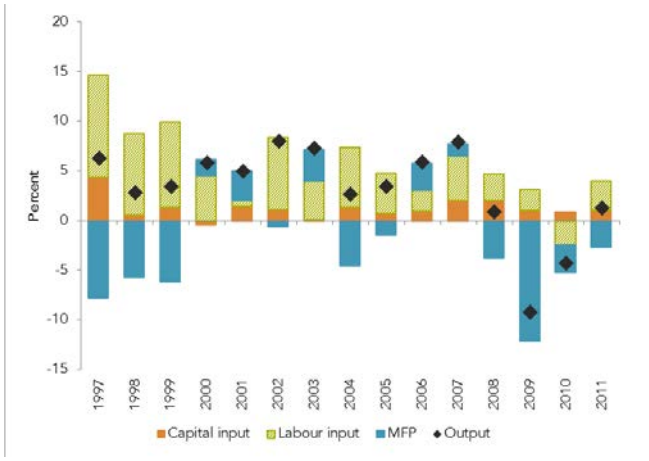



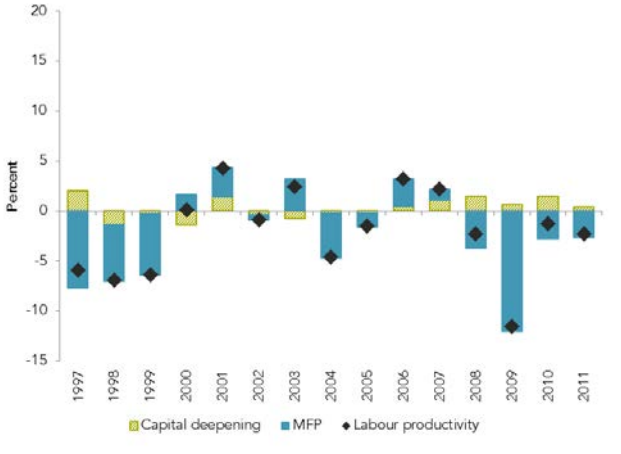

## Professional, scientific & technical services



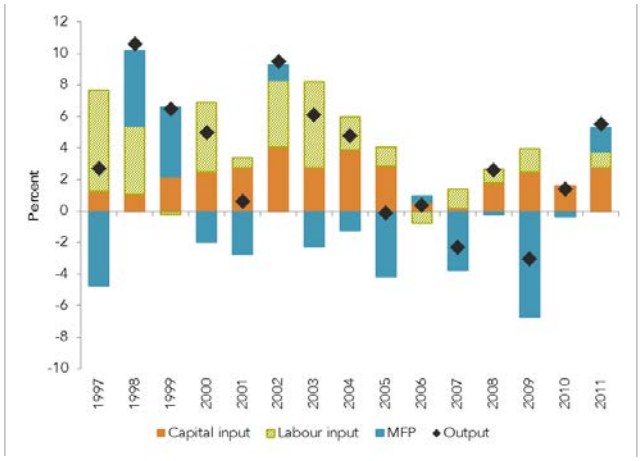



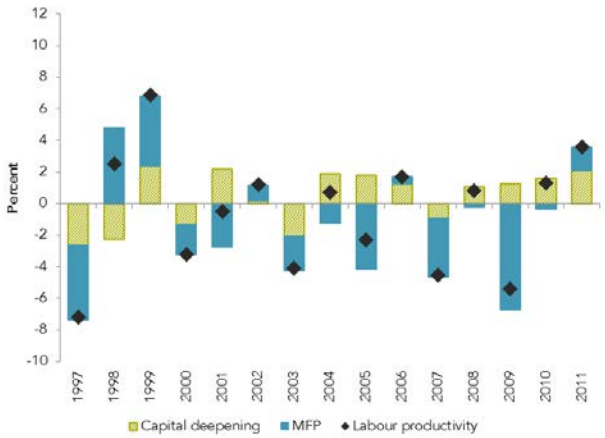

## Administrative & support services



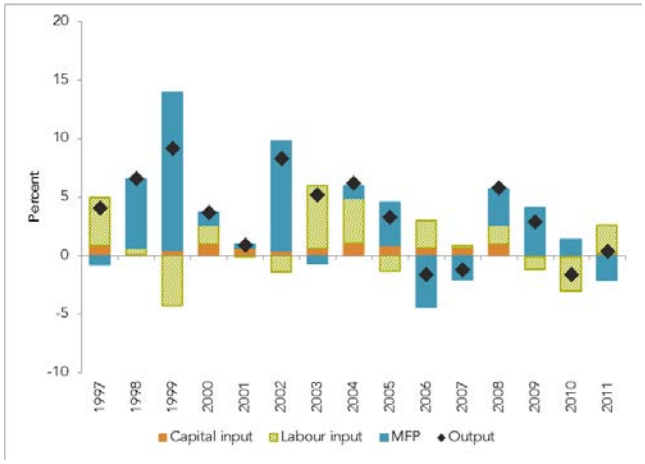



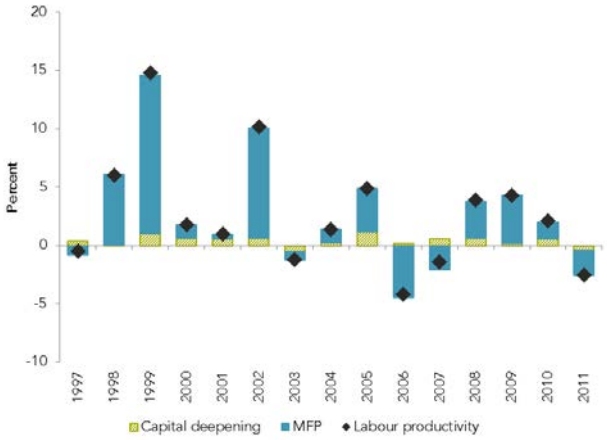
Arts & recreation services




Other services




*Source:* Productivity Commission; Statistics New Zealand

## B.4 OECD comparisons

This section supplements section 4.4 of chapter 4 on services-sector productivity compared with other countries. It outlines how Statistics New Zealand matched New Zealand's ANZSIC06 based productivity statistics to the classifications used by the OECD. It also provides additional data on New Zealand's productivity growth relative to OECD countries, including decompositions of output and labour productivity growth.

### Matching New Zealand data to the OECD methodology

The period of 2000-2007 is when most countries included in the OECD productivity statistics have data available, so this was the period chosen for analysis. The OECD productivity statistics cover 20 OECD countries: Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Korea, Netherlands, Norway, Poland, Spain, Sweden, United Kingdom, and United States. The availability of data varies by country.

New Zealand's industry classifications (ANZSIC06) do not align exactly with the ISIC Rev.3 definitions used by the OECD. For instance, a proportion of the output in New Zealand's information media and telecommunications industry aligns with the OECD post and telecommunications industry, while another proportion aligns with the other community, social and personal service activities industry. Most of the output for New Zealand's information media and telecommunications industry aligns with the OECD post and telecommunications industry, so Statistics New Zealand has used the data for New Zealand's information media and telecommunications industry for that OECD industry.

Table B.4 OECD industry groupings and the ANZSIC06 industry equivalent

| OECD industry grouping abbreviations | OECD industry groupings[1] | ANZSIC06 industry equivalent |
|---|---|---|
| I Agri | Agriculture, hunting, forestry and fishing | Agriculture, forestry and fishing |
| I Mining | Mining and quarrying | Mining |
| I Manufac | Manufacturing | Manufacturing |
| I Electric | Electricity gas and, water supply | Electricity, gas, water and waste services |
| I Construc | Construction | Construction |
| I Trade | Wholesale and retail trade – repairs | Wholesale trade<br>Retail trade |
| I Hotels | Hotels and restaurants | Accommodation and food services |
| I Finance & business | Finance, insurance and business services | Financial and insurance services<br>Rental, hiring and real estate<br>Professional, scientific and technical services<br>Administrative and support services |
| I Business Sector | Business sector services | Wholesale trade<br>Retail trade<br>Transport, postal and warehousing<br>Information media and telecommunications<br>Financial and insurance services<br>Professional, scientific and technical services<br>Accommodation and food services<br>Rental, hiring and real estate<br>Administrative and support services |

*Source:* OECD; United Nations Statistics Division; Statistics New Zealand; Australian Bureau of Statistics

*Notes:*

1. International Standard Industrial Classification of All Economic Activities, Rev.3 2008, from the United Nations Statistics Division.
2. Finance and business services covers the following ISIC Rev.3 industries: financial intermediation; real estate activities; renting of machinery and equipment and other business activities.
3. Business sector services covers the following ISIC Rev.3 industries: wholesale and retail trade and repairs; hotels and restaurants; transport, storage and communications; and finance, insurance and business services.

## Additional data on New Zealand's productivity growth relative to OECD countries

Table B.5 MFP growth, 2000-2007, New Zealand vs. selected OECD countries, % per year

| Industry | New Zealand | Selected OECD countries average |
|---|---|---|
| Agriculture, hunting, forestry and fishing | 2.0 | 1.3 |
| Mining and quarrying | -8.0 | -1.5 |
| Manufacturing | 0.9 | 3.1 |
| Electricity gas and, water supply | -2.5 | 1.1 |

| Industry | New Zealand | Selected OECD countries average |
|---|---|---|
| Construction | 0.0 | -0.6 |
| **Services** | | |
| Business sector services | 1.2 | 2.5 |
| Wholesale and retail trade and repairs | 1.3 | 2.9 |
| Hotels and restaurants | -0.4 | 0.0 |
| Finance, insurance and business services | 1.4 | 1.3 |

*Source:* Productivity Commission; Statistics New Zealand; OECD productivity database

*Notes:*

1. Countries were selected on the basis of whether the OECD productivity database contains relevant data for them. The selected OECD countries are Austria, Belgium, the Czech Republic, Denmark, Finland, Germany, Greece, Iceland, Italy, Norway, Sweden, the United Kingdom and the United States. For mining and quarrying, data for Iceland and the United Kingdom are not available. For business industries and finance, insurance and business services, data for Belgium, Iceland and Italy are not available.

**Table B.6 MFP growth in service industries, 2000–2007, New Zealand vs. selected OECD Countries, % per year**

| Country | Business sector services | Wholesale and retail trade – repairs | Hotels and restaurants | Finance, insurance and business services |
|---|---|---|---|---|
| NZ | 1.2 | 1.3 | -0.4 | 1.4 |
| Austria | 0.8 | 0.9 | -0.2 | 0.2 |
| Belgium | | 0.9 | -1.0 | |
| Czech Republic | 5.2 | 7.5 | -6.8 | 3.6 |
| Denmark | 1.6 | 1.7 | -1.3 | 1.0 |
| Finland | 1.9 | 3.8 | 2.9 | -0.7 |
| Germany | 1.1 | 1.6 | 0.2 | 1.0 |
| Greece | 3.2 | 3.1 | 0.5 | -3.9 |
| Iceland | | 4.5 | 6.0 | |
| Italy | | -0.4 | -2.7 | |
| Norway | 3.6 | 6.0 | 1.6 | 2.4 |
| Sweden | 2.7 | 3.8 | -0.6 | 1.7 |
| United Kingdom | 3.4 | 2.9 | 1.0 | 5.8 |
| United States | 1.7 | 2.0 | 0.6 | 1.4 |

*Source:* Productivity Commission; Statistics New Zealand; OECD productivity database

*Notes:*

1. The industries in this table have the OECD codes C50T74, C50T52, C55, and C65T74X respectively.

Table B.7 MFP growth in other industries, 2000-2007, New Zealand vs. selected OECD countries, % per year

| Country | Agriculture, hunting, forestry and fishing | Mining and quarrying | Manufacturing | Electricity gas and, water supply | Construction |
|---|---|---|---|---|---|
| NZ | 2.0 | -8.0 | 0.9 | -2.5 | 0.0 |
| Austria | 2.3 | 4.0 | 3.2 | 2.4 | 1.0 |
| Belgium | -3.1 | 2.0 | 2.1 | 0.5 | 1.6 |
| Czech Republic | 0.4 | -0.5 | 5.4 | 3.8 | 0.0 |
| Denmark | -1.7 | -3.0 | 2.0 | -0.3 | -1.6 |
| Finland | 2.7 | 0.8 | 6.1 | 2.2 | 0.0 |
| Germany | 1.2 | -2.9 | 3.1 | 2.2 | -0.5 |
| Greece | -1.0 | 1.2 | -0.7 | 4.9 | 0.1 |
| Iceland | 3.1 | | 2.7 | -4.6 | 0.5 |
| Italy | -0.4 | -5.1 | -0.2 | 1.4 | -1.4 |
| Norway | 5.1 | -4.1 | 2.3 | 2.3 | -3.9 |
| Sweden | 5.8 | -3.7 | 5.2 | 0.0 | 0.2 |
| United Kingdom | 0.8 | | 3.8 | 0.7 | 0.1 |
| United States | 1.9 | -4.9 | 5.2 | -1.5 | -4.0 |

*Source:* Productivity Commission; Statistics NZ; OECD Productivity Database

*Notes:*

1. OECD codes C01T05, C10T14, C15T37, C40T41, and C45 respectively.

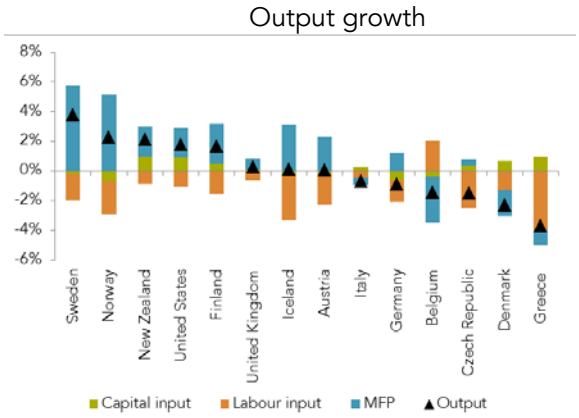
Table B.8 New Zealand's ranking in service industries out of the OECD countries with available data, 2000-2007

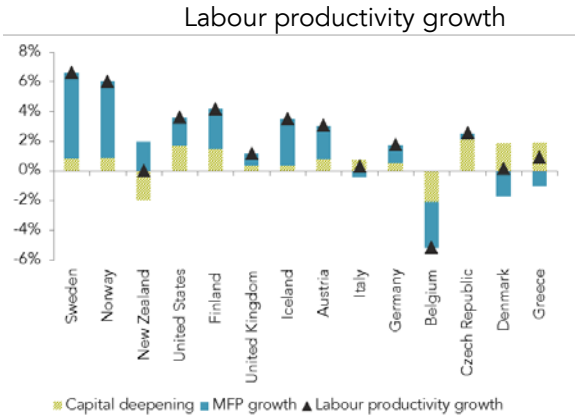
| Service industry groupings | NZ's Labour productivity growth ranking | NZ's MFP growth ranking |
|---|---|---|
| Business sector services | 10/11 | 9/11 |
| Wholesale and retail trade and repairs | 11/14 | 11/14 |
| Hotels and restaurants | 7/14 | 9/14 |
| Finance and business services | 8/11 | 6/11 |

*Source:* Productivity Commission; Statistics NZ; OECD Productivity Database

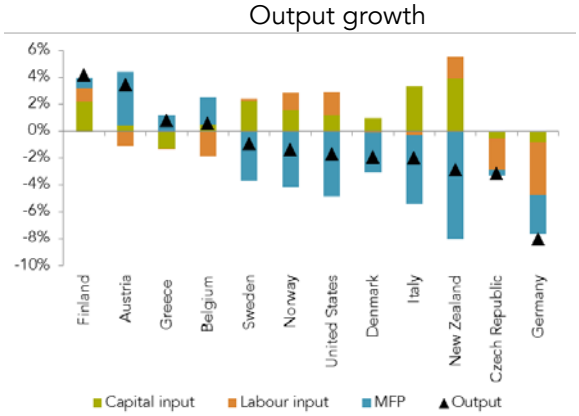
Figure B.2 Output and labour productivity decompositions, 2000-2007, OECD countries

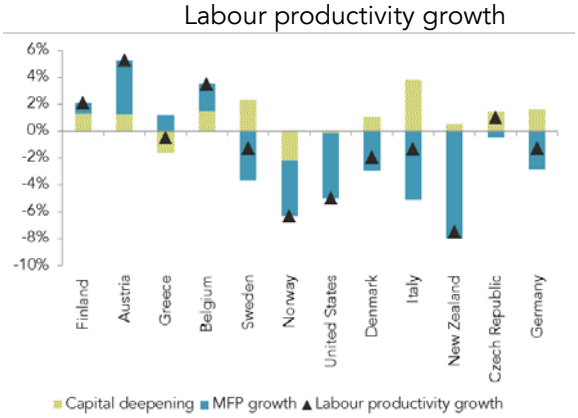
Agriculture, forestry and fishing



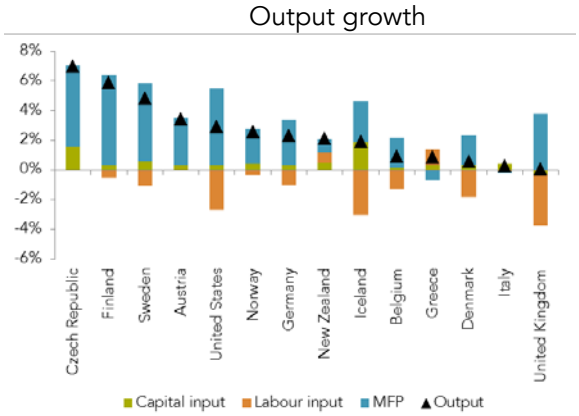



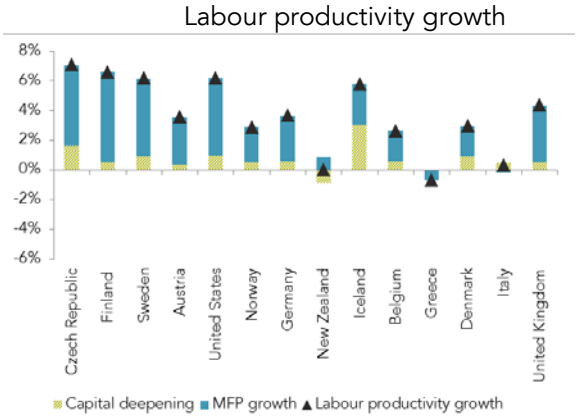

Mining and quarrying



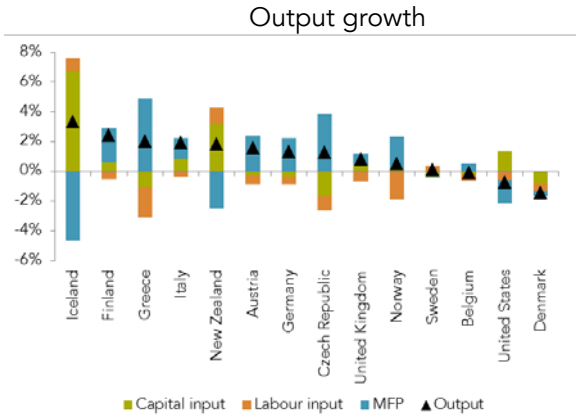



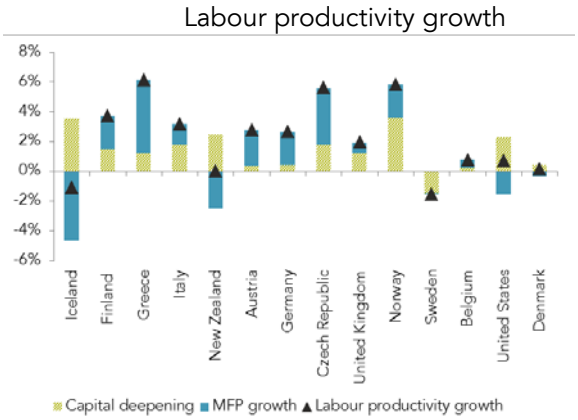

Manufacturing



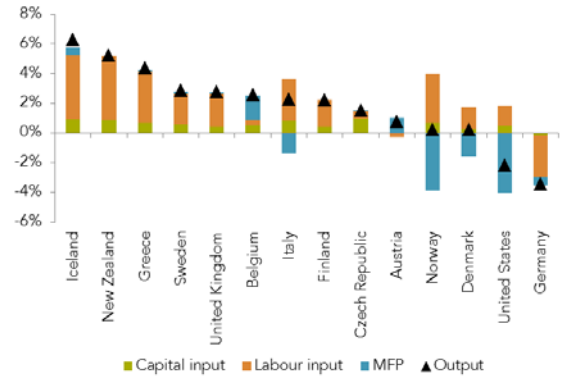

Electricity, gas and water supply



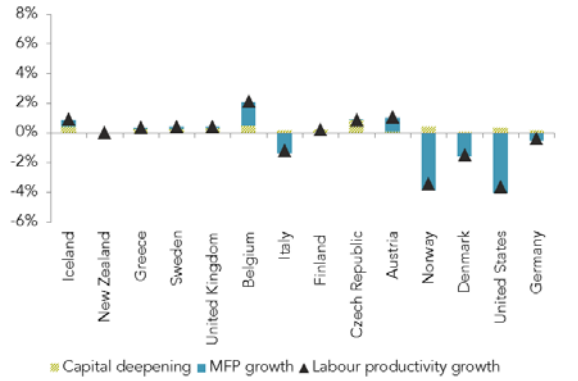



## Construction

Output growth

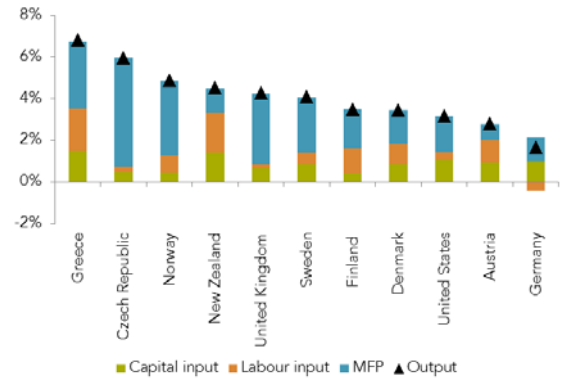



Labour productivity growth

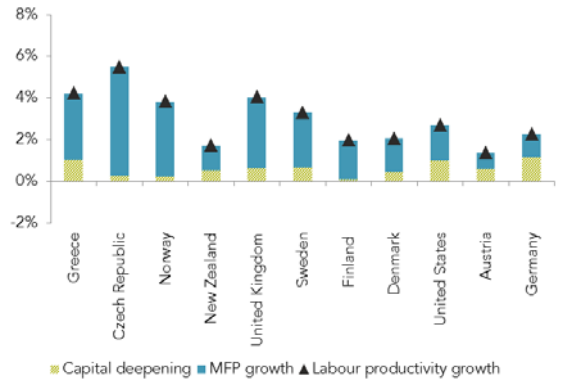



## Business sector services

Output growth

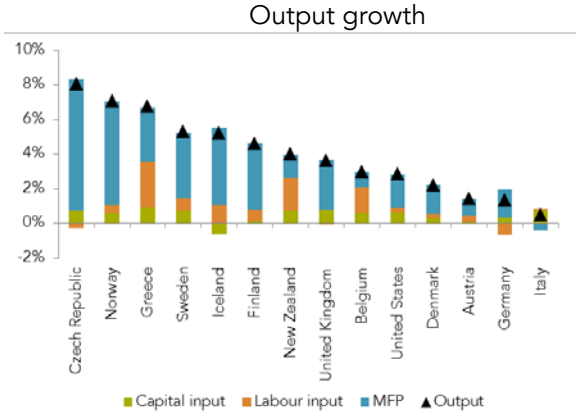



Labour productivity growth

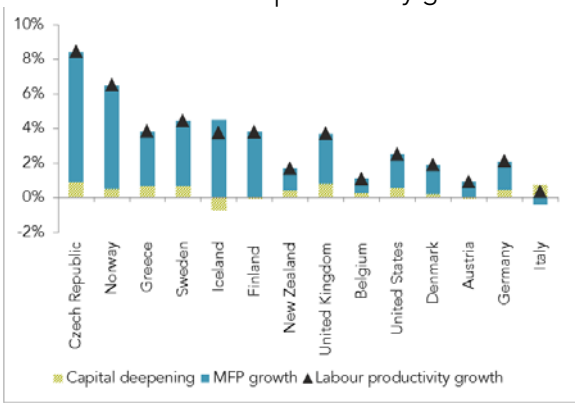



## Wholesale and retail trade and repairs

Output growth

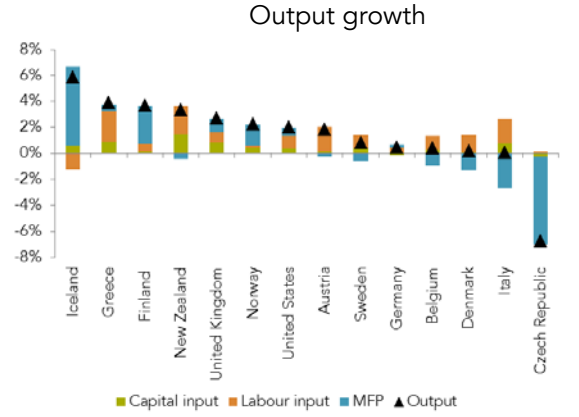



Labour productivity growth

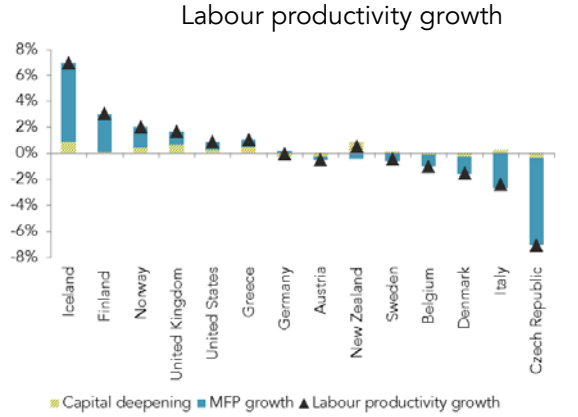



## Hotels and restaurants

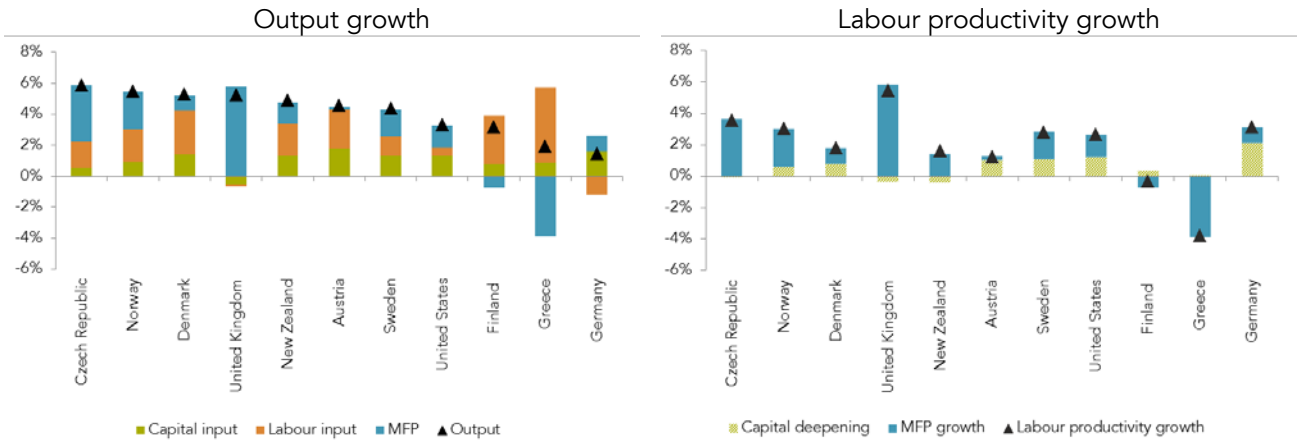
Output growth




Labour productivity growth



Finance, insurance and business services

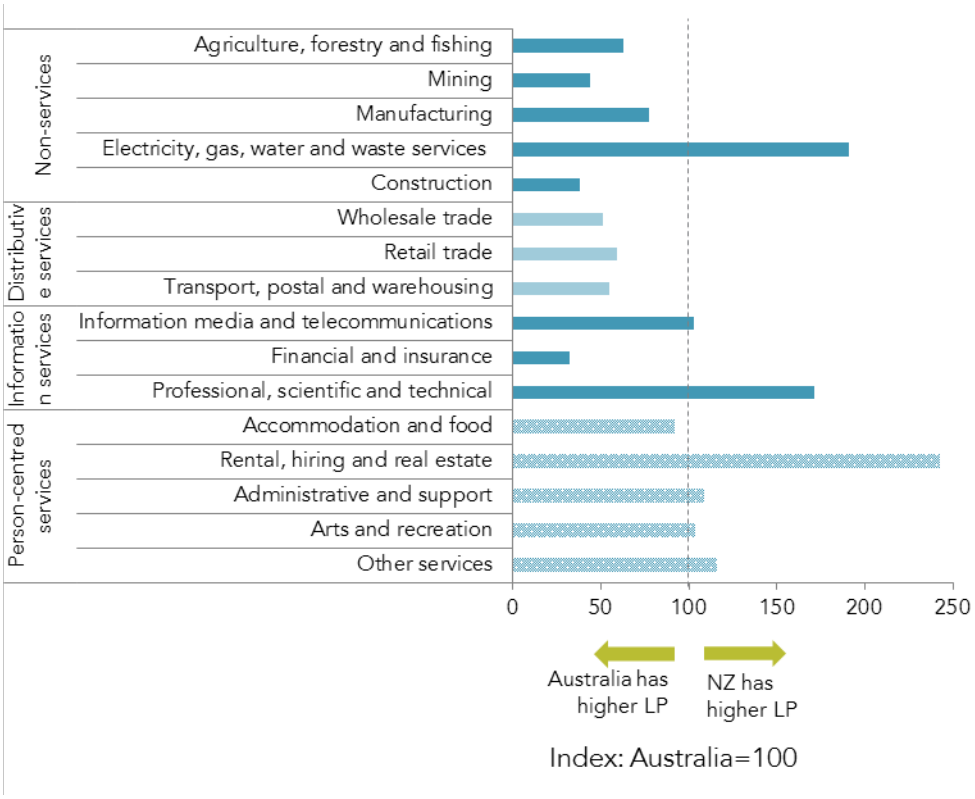



*Source:* Productivity Commission; Statistics New Zealand; OECD productivity database

## B.5 Productivity levels comparisons

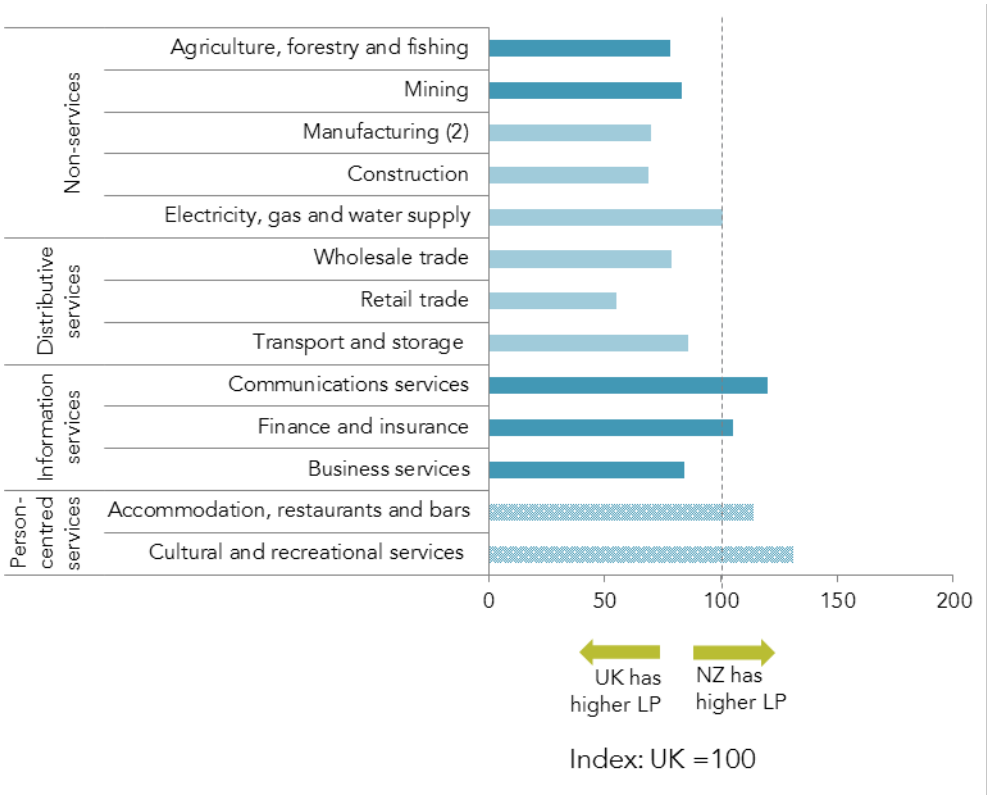
This section supplements section 4.4 in chapter 4 that looks at comparisons of productivity levels among New Zealand, Australian and UK service industries. It provides New Zealand's labour productivity levels for each industry relative to Australia and the UK respectively. It is important to note that the comparisons are estimates only. Relative productivity levels and growth rates are affected by differences in the composition of industries between New Zealand and Australia and the UK. This means that the comparisons are not always measuring like with like.

**Figure B.3 New Zealand's labour productivity levels relative to Australia, 2010**




*Source:* Productivity Commission; Mason (2013)

Figure B.4 New Zealand's labour productivity levels relative to the UK, 2004




*Source:* Productivity Commission; Mason & Osborne (2007)

*Notes:*

1. Industries are based on the Australian and New Zealand Standard Industrial Classification 1996 (ANZSIC96). Transport and storage is largely transport, postal and warehousing in ANZSIC06. Communication services is largely information media and telecommunications. Business services is largely professional, scientific and technical services; rental, hiring and real estate and administrative and support services. Accommodation, restaurants and bars is largely accommodation and food services. The split between information services and person-centred services is not the same as for ANZSIC06 as business services includes rental, hiring and real estate services and administrative and support services, which are part of person-centred services.
2. The relative labour productivity level for manufacturing is that for 2002.

## B.6 Service industries' contribution to convergence

This section supplements the section 4.7 in chapter 4 that discusses the contribution of service industries to New Zealand's lack of convergence. It provides an analysis of convergence by industry against Australia and the UK respectively.

Table B.9 New Zealand's relative labour productivity levels1 relative to Australia = 100, 1997-2010

| Service industry | 1997 level | 2010 level | Change | Convergence, divergence | NZ's relative performance summary |
|---|---|---|---|---|---|
| Wholesale trade | 54 | 51 | ⇔ | | Persistent productivity gap with Aus |
| Retail trade | 64 | 59 | ⇓ | Divergence | Persistent productivity gap with Aus |
| Transport, postal and warehousing | 57 | 55 | ⇔ | | Persistent productivity gap with Aus |
| Information media and telecommunication | 90 | 103 | ⇑ | Convergence reached | NZ catches up to Aus |
| Financial and insurance | 32 | 32 | ⇔ | | Persistent productivity gap with Aus |

| Service industry | 1997 level | 2010 level | Change | Convergence, divergence | NZ's relative performance summary |
|---|---|---|---|---|---|
| Professional, scientific and technical | 205 | 171 | ↓↓ | Convergence | NZ consistently higher than Aus |
| Accommodation and food | 109 | 92 | ↓ | Convergence, then divergence | New productivity gap with Aus |
| Rental, hiring and real estate | 137 | 243 | ↑ | Divergence | |
| Administrative and support | 146 | 109 | ↓↓ | Convergence | NZ consistently higher than Aus |
| Arts and recreation | 131 | 104 | ↓ | Convergence reached | NZ consistently higher than Aus |
| Other services | 91 | 116 | ↑ | Convergence, then divergence | NZ moves to be higher than Aus |

*Source:* Productivity Commission; Mason (2013)

*Notes:*

1. New Zealand's relative labour productivity level by industry shows its proportion of Australia's labour productivity level. Australia's labour productivity levels for each industry are set at 100. For instance, if New Zealand's relative labour productivity level is 51 for an industry, New Zealand's labour productivity level in that industry is 51% of Australia's labour productivity level.

## Table B.10 New Zealand's labour productivity levels relative to the UK = 100, 1995-2004

| Service industry | 1995 level | 2004 level | Change | Convergence, divergence | NZ's relative performance summary |
|---|---|---|---|---|---|
| Wholesale trade | 79 | 79 | ↔ | | Persistent productivity gap with UK |
| Retail trade | 61 | 55 | ↓ | Divergence | Persistent productivity gap with UK |
| Transport and storage | 102 | 86 | ↓ | Divergence | New productivity gap with the UK |
| Communication | 80 | 120 | ↑↑ | Convergence, divergence | NZ moves to be higher than the UK |
| Finance and insurance | 96 | 105 | ↑ | Convergence, divergence | NZ moves to be higher than the UK |
| Business services | 113 | 84 | ↓ | Convergence, divergence | New productivity gap with the UK |
| Accommodation, restaurants and bars | 142 | 114 | ↓ | Convergence | NZ consistently higher than the UK |
| Cultural and recreational services | 147 | 131 | ↓ | Convergence | NZ consistently higher than the UK |

*Source:* Productivity Commission; Mason & Osborne (2007)

# Appendix C Measuring the output of service industries

This appendix briefly summarises the standard methods that Statistics New Zealand uses to measure the output (value-added) of service industries. It describes the challenges and complexities of this measurement.

## C.1 Service industries' value-added

Industry productivity is calculated by dividing an industry's value-added by its inputs.[61] Industry value-added is the value of an industry's gross output minus the cost of the inputs provided by other industries (intermediate consumption).[62]

There are formidable challenges in measuring industry productivity. The difficulties in measuring labour and capital inputs are similar for service and other industries and are not covered in this appendix. Instead, the focus is on the measurement of output, which is generally more difficult for service than for goods industries (Djellal & Fallouj, 2008).

The measurement of services output presents a number of challenges:

- Output can be difficult to define. Service outputs are often intangible. Service output can vary by customer as the service is adapted to meet their specific needs. For instance, the number of haircuts given by a hairdresser may not be a good indicator of the output of a hairdresser as each haircut is different.
- The quality of a service may be difficult to specify. There are numerous facets to service quality and it is difficult to set objective standards.
- Services vary significantly in quality and other dimensions, making measurement and aggregation of data difficult. The finance and insurance industry is a good example of the difficulties in measuring the output of services that are highly differentiated in quality and other dimensions.
- Ill-defined outputs mean that it is difficult to measure innovations and quality improvements. In addition, improvements are frequent in some industries, such as information media and telecommunications.
- The effects of service outputs can be felt over time. For instance, the immediate service output of a garage mechanic is the tasks they perform on a vehicle, but the longer term output is the consequence of those tasks for the vehicle's functioning. This adds to the challenge of measuring quality.
- Output can be co-produced by consumers of services. Customers can contribute to the output of services such as by giving guidance and feedback to service providers and through providing some self-service.
- Industry diversity. There are numerous service sub-industries and they vary substantially. (Djellal & Fallouj, 2008)

## C.2 International standards

There are international statistical bodies that provide standards for output and productivity measurement to national statistical agencies. The United Nation's Statistics Division is the major body. Its *Fundamental*

[61] Industry value-added rather than industry gross output is used to estimate industry output. This avoids wrongly capturing the outputs of other industries that are used as inputs into that industry's production.

[62] Output is valued at producers' prices. The producer's price is the value of the goods and services sold at the producer's door. It excludes GST. The valuation of intermediate consumption is the price paid by the purchaser. This is the cost up to the point of delivery, inclusive of any distribution and transport margins and taxes on commodities such as sales tax and excise duties or import duties. GST is included in cases where the tax is non-deductible (Statistics New Zealand, 2008).

*Principles of Official Statistics* publication provides the basic framework for official statistics in its member countries, including New Zealand (Statistics New Zealand, no date a). It also produces the *Handbook of Statistical Organization* and the *System of National Accounts*. Another important standard-setting body is the OECD Statistics Directorate. These agencies regularly review their recommended methods and standards.

Statistics New Zealand seeks to use international best practice and to continuously improve its statistics[63].The department generally develops its standards and classifications in line with international classifications. It is a member of many international statistical agencies and organisations, including the United Nations Statistics Division and the OECD, and works closely with the Australian Bureau of Statistics to develop harmonised standard classifications, such as ANZSIC06. Statistics New Zealand departs from international standards where there are concepts or items that are not suitable for New Zealand's needs or where New Zealand's laws require different treatments. It has a programme of work to keep up with changes in international standards. For example, it is working on implementing the recommendations from the 2008 review of the UN's System of National Accounts framework (Statistics New Zealand, 2013b). There are generally lags between new recommendations and when they are implemented by Statistics New Zealand due to the time and cost involved.

## C.3 Methods to calculate market services value-added

National and international statistical agencies typically measure industry productivity and value-added growth over time using an index series[64]. The use of indices reflects that it is generally easier to measures *changes* in outputs and inputs over time than to measure their *levels* at specific points in time.

Productivity is a ratio of two volume measures, for example, the number of widgets produced per labour hour. However, industries produce many different products , so they need to be measured in monetary units to aggregate them (Djellal & Fallouj, 2008). Hence, industry value-added is measured as the value of an industry's gross output minus the cost of inputs provided by other industries (intermediate consumption).

To measure changes in an industry's output in volume terms, the first step is generally to measure changes in industry value-added (or output and intermediate consumption separately) in current prices. The second step is to remove the effect of pure price changes over time (inflation), that is, price changes not related to changes in the quantity, quality or the mix of services sold. Price changes are removed by deflating industry value-added in current prices (ie, dividing it by the increase in prices) to get a constant-price (volume) series (Djellal & Fallouj, 2008).

Statistics New Zealand calculates the constant-price value-added series for service industries using a few different methods.

- Deflation of an industry's value-added series to get a constant-price (volume) value-added series:
  - *Single price deflation*: The value-added series is deflated using a price index for the output series. This method assumes that the price movements of output and intermediate consumption are similar for an industry, that is, the relationship between the output price and intermediate prices remains the same. This may not be a correct assumption. To avoid this problem, a more complex method known as double-price deflation can be used (Statistics New Zealand, 2013b).
  - *Double price deflation*: The current-price series for output and intermediate consumption are each deflated by separate price indices. The output series is deflated by a price index measuring the change in output prices, while a price index for the price of inputs is used to deflate the intermediate consumption series. Once the two series are deflated, the constant-price value-added series is calculated from output less intermediate consumption (Statistics New Zealand, 2013b).

[63] Sourced from Statistics New Zealand in a customised information request.

[64] An index is a 'unitless' measure – a single index number provides no information. As an example, a productivity index begins with a reference number, such as 1000, that represents an estimated productivity level at a particular date. The number for another other date in the index, such as 1025, shows the productivity level for that date relative to the reference level. Change between the index numbers is generally measured in percentage terms.

- Extrapolation of a constant-price, value-added figure using a single volume indicator to get a constant-price value-added series. Three types of indicators for an industry can be used: its output, an intermediate input to its production and a factor of its production (such as employment or consumption of capital).

  This method requires a big assumption. It assumes that the true constant-price value-added for an industry has similar movements to, or varies in the same proportion to changes in whichever indicator is used. This assumption is unlikely to be exactly true. Statistics New Zealand generally prefers to use an indicator of output, but if one is not available, it uses the best available intermediate input indicator[65].

  It is also very difficult to get an indicator that properly captures the output of services. For instance, retail industry value-added is calculated from retail sales, but the value-added of the retail industry is really its service to customers in the form of product quality, range, information, customer service and accessibility etc (Djellal & Fallouj, 2008).

While double deflation is a superior approach to calculating volume measures of value added (because it accounts for changes in the volumes of both inputs and outputs during the production period), it cannot be used in all situations. For instance, the data may not be available or meet the required standards. All of the methods listed above are internationally accepted[66].

## C.4 Methods and data sources by industry

This section summarises the methods used by Statistics New Zealand to calculate industry value-added for specific service industries. A more detailed overview is given first for the information media and telecommunications industry.

### Information media and telecommunications

This industry is split in to six sub-industries, with a mixture of methods used for estimating value-added in volume terms. Statistics New Zealand calculates the constant-price, value-added series for motion picture and sound recording activities, internet service providers, telecommunications services, and library and other information services sub-industries by extrapolation of a base year constant-price, value-added figure. It uses output volume indices as indicators. The department estimates the constant-price, value-added for the remaining sub-industries – publishing and broadcasting – using double deflation (Statistics New Zealand, 2013b).

**Table C.1 Detailed Statistics New Zealand's value-added methodology for information media and telecommunications**

| Sub-industry | Value-added methodology |
|---|---|
| JJ111 – Publishing (except internet and music publishing) | Double deflation. The current-price intermediate consumption and output series from the national accounts are deflated by an annualised producers price index (PPI) for the sub-industry. |
| JJ112 – Motion picture and sound recording activities | Extrapolation by an output volume index. The index is based on output deflated by an annualised version of the PPI for the sub-industry. |
| JJ113 – Broadcasting and Internet publishing | Double deflation. The current-price intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly PPI for the sub-industry. |
| JJ122 – Internet service providers, web search portals, and data processing services | Extrapolation by an output volume index. The index is based on volume data collected from key companies, which are weighted together based on annual, current-price, gross output and sales data. |

[65] Sourced from Statistics New Zealand in a customised information request.

[66] Sourced from Statistics New Zealand in a customised information request.

| Sub-industry | Value-added methodology |
|---|---|
| JJ121 – Telecommunications services | Extrapolation by an output volume index. The index is based on volume data collected from key companies, which are weighted together based on annual current price output and sales data. |
| JJ123 – Library and other information services | Extrapolation by an output volume index. The index is compiled from two components added together. The first component is annual constant-price consumption of fixed capital. The second component is annual salaries and wages of employees in the sub-industry from the national accounts, deflated by annualised versions of the relevant part of the quarterly labour cost index. |

*Source:* Productivity Commission; Statistics New Zealand (2013b).

## Other service industries

Table C.2 Statistics New Zealand value-added methodology for other industries

| Industry | Data source |
|---|---|
| Wholesale trade | Extrapolation by an output volume index. The index is based on the quarterly sales from the Wholesale Trade Survey, deflated by sub-indices of the PPI.<br><br>Wholesale Trade Survey: 650 firms in a postal sample. Data for approximately 35,000 firms is modelled from tax data (GST and employer monthly schedule), sourced from the Inland Revenue (Statistics New Zealand, 2013c). |
| Retail trade | Extrapolation by an output volume index. The index is based on quarterly sales data from the Retail Trade Survey.<br><br>Retail Trade Survey: 2,500 enterprises in a postal sample. Data for approximately 26,400 firms is modelled from GST data, sourced from the Inland Revenue (Statistics New Zealand, 2013d). |
| Accommodation and food services | Extrapolation by an output volume index. The index is based on quarterly sales data from the Retail Trade Survey. |
| Transport, postal and warehousing | Single deflation by the PPI for the sub-industry is used for road transport, warehousing and storage services.<br><br>Double deflation by the PPI for the sub-industry is used for other water transport, other transport and transport support services.<br><br>Extrapolation based on volume indices is used for rail transport (freight volumes and passenger revenue), ferry transport (passengers, cars, commercial vehicles and freight) and scenic and sightseeing transport (total visitor arrivals).<br><br>Extrapolation based on output volume indices is used for postal and courier delivery (the number of posted items) and air transport (domestic and international air passenger and freight revenue). |
| Information media and telecommunications | See Table C.1 |
| Financial and insurance services | Extrapolation of the base year value-added using output volume indices is used for the following sub-industries:<br><br>• Reserve Bank. Output volume – full-time equivalent employees.<br><br>• Other banking and financing. Output volume- financial intermediation services indirectly measured indicator (FISIM), deflated by sub-indices of the producers price index and the consumers price index, and bank transactions data.<br><br>• Financial asset investing and auxiliary finance. Output volume- constant-price value-added for the banking and financing industry. |

| Industry | Data source |
|---|---|
| | • Auxiliary finance and insurance. Output volume – combined constant-price value-added for all finance and insurance industries.<br><br>Double deflation, using annualised versions of the PPI for each sub-industry, is used for the other sub-industries.<br><br>The experience of the Global Financial Crises has raised the question of whether FISIM is a good measure of value-added. Some argue that it overestimates value-added by including the risk margin in addition to risk-management and other services. This is examined in Burgess (2012) and Haldane (2010). |
| Rental, hiring and real estate services | Double deflation, by annualised versions of the PPI for each sub-industry, is used for rental and hiring services and non-financial asset leasing.<br><br>Extrapolation of the base year constant-price value-added by output volume indices is used for non-residential property operators (using deflated annual output) and real estate operators (using the number of property sales). |
| Professional, scientific and technical services | Extrapolation by a factor-of-production indicator is used for non-market output. The indicator is compiled in two parts. The first part is based on salary and wages sourced from the Central Government Enterprise Survey and the Crown Financial Information System, deflated by a sub-index of the labour cost index. The second part uses constant-price consumption of fixed capital.<br><br>Double deflation, deflated by annualised versions of the PPI for each sub-industry, is used for market output. |
| Administrative and support services | Double deflation, deflated by annualised versions of the PPI, is used for each sub-industry. |
| Arts and recreation services | Double deflation, deflated by annualised versions of the PPI, is used for the market output of sports and recreation activities and for gambling activities.<br><br>Extrapolation by a factor-of-production indicator is used for non-market output. The indicator is compiled in two parts. The first part is based on compensation of employees sourced from the national accounts, deflated by a sub-index of the labour cost index. The second part uses quarterly constant-price consumption of fixed capital. |
| Other services | Double deflation, by annualised versions of the PPI for each sub-industry, is used for repair and maintenance; personal, care and other personal services; and the market output of civil, professional and other interest groups.<br><br>Extrapolation by a factor-of-production indicator is used for religious services and the non-market output of civil, professional and other interest groups. The indicator is compiled in two parts. The first part is based on compensation of employees sourced from the national accounts, deflated by a sub-index of the labour cost index. The second part uses quarterly constant-price consumption of fixed capital. |

*Source:* Productivity Commission; Statistics New Zealand (2013a).

## C.5 Quality changes

As stated previously, it is difficult to measure changes in the quality of outputs and new innovations in service industries. Similar challenges, perhaps less severe, exist in measuring the quality of goods outputs.

Statistics New Zealand's method to capture quality changes in industries' value-added is to deflate industries' value-added in current prices by price indices that *exclude* any observed quality change. The price effects of quality change are then captured in the resulting measure of value-added[67].

To get price indices that exclude observed quality change, the price effects of quality change need to be calculated. Statistics New Zealand estimates quality changes in its producer price index (PPI) data by adding

[67] Sourced from Statistics New Zealand in a customised information request.

new or improved services to its sample and by changing the weights of different services[68]. Most prices used to calculate Statistics New Zealand's PPIs come from price quotes collected in its Commodity Price Survey, a quarterly postal survey. Statistics New Zealand surveys approximately 13,000 individual commodity items from about 3,000 respondents. Some commodities are not directly priced but are derived from other data sources. For example, revenue and volume data is sometimes used to calculate unit prices. Other sources of price data used in the PPI include prices collected for the consumers price index, the labour cost index and overseas trade indices. Publicly available data is also used, including prices published in regular publications (Statistics New Zealand, no date b).

The information media and telecommunications industry is particularly affected by quality change. Its products often change rapidly and have large price falls. A common problem is that price falls reflect both cost reductions and quality changes and it is difficult to disentangle them (Djellal & Fallouj, 2008).

[68] Sourced from Statistics New Zealand in a customised information request.

# Appendix D Industry classifications and abbreviations

This appendix is a reference for the industry classifications and abbreviations used in this report. It also shows the broad correspondence between the ANZSIC06 industry classification and the other industry classifications used.

Table D.1 ANZSIC06 industry composition

| Industry | Sub-industries |
|---|---|
| Agriculture, forestry and fishing | Agriculture |
| | Aquaculture |
| | Forestry and logging |
| | Fishing, hunting and trapping |
| | Agriculture, forestry and fishing support services |
| Mining | Coal mining |
| | Oil and gas extraction |
| | Metal ore mining |
| | Non-metallic mineral mining and quarrying |
| | Exploration and other mining support services |
| Manufacturing | Food product manufacturing |
| | Beverage and tobacco product manufacturing |
| | Textile, leather, clothing and footwear manufacturing |
| | Wood product manufacturing |
| | Pulp, paper and converted paper product manufacturing |
| | Printing (including the reproduction of recorded media) |
| | Petroleum and coal product manufacturing |
| | Basic chemical and chemical product manufacturing |
| | Polymer product and rubber product manufacturing |
| | Non-metallic mineral product manufacturing |
| | Primary metal and metal product manufacturing |
| | Fabricated metal product manufacturing |
| | Transport equipment manufacturing |
| | Machinery and equipment manufacturing |
| | Furniture and other manufacturing |
| Electricity, gas, water and waste services | Electricity supply |
| | Gas supply |
| | Water supply, sewerage and drainage services |
| | Waste collection, treatment and disposal services |

| Industry | Sub-industries |
|---|---|
| Construction | Building construction |
| | Heavy and civil engineering construction |
| | Construction services |
| Wholesale trade | Basic material wholesaling |
| | Machinery and equipment wholesaling |
| | Motor vehicle and motor vehicle parts wholesaling |
| | Grocery, liquor and tobacco product wholesaling |
| | Other goods wholesaling |
| | Commission-based wholesaling |
| Retail trade | Motor vehicle and motor vehicle parts retailing |
| | Fuel retailing |
| | Food retailing |
| | Other store-based retailing |
| | Non-store retailing and retail commission-based buying and/or selling |
| Transport, postal and warehousing | Road transport |
| | Rail transport |
| | Water transport |
| | Air and space transport |
| | Other transport |
| | Postal and courier pick-up and delivery services |
| | Transport support services |
| | Warehousing and storage services |
| Information media and telecommunications | Publishing (except internet and music publishing) |
| | Motion picture and sound recording activities |
| | Broadcasting (except internet) |
| | Internet publishing and broadcasting |
| | Telecommunications services |
| | Internet service providers, web search portals and data processing services |
| | Library and other information services |
| Financial and insurance services | Finance |
| | Insurance and superannuation funds |
| | Auxiliary finance and insurance services |
| Professional, scientific and technical services | Professional, scientific and technical services (except computer system design and related services) |
| | Computer system design and related services |
| Accommodation and food | Accommodation |

| Industry | Sub-industries |
|---|---|
| services | |
| | Food and beverage services |
| Rental, hiring and real estate services | Rental and hiring services (except real estate) |
| | Property operators and real estate services |
| Administrative and support services | Administrative services |
| | Building cleaning, pest control and other support services |
| Arts and recreation services | Heritage activities |
| | Creative and performing arts activities |
| | Sports and recreation activities |
| | Gambling activities |
| Other services | Repair and maintenance |
| | Personal and other services |
| | Private households employing staff and undifferentiated goods- and service-producing activities of households for own use |
| Public administration and safety | Public administration |
| | Defence |
| | Public order, safety and regulatory services |
| Education and training | Preschool and school education |
| | Tertiary education |
| | Adult, community and other education |
| Health care and social assistance | Hospitals |
| | Medical and other health care services |
| | Residential care services |
| | Social assistance services |

*Source:* Productivity Commission; Australian Bureau of Statistics ANZSIC 2006, Codes and Titles tables

Table D.2 ANZSIC06 Industry abbreviations

| Abbreviation | Industry name | Shortened version |
|---|---|---|
| Agri | Agriculture, forestry and fishing | Agriculture, forestry and fishing |
| Mining | Mining | Mining |
| Manufac | Manufacturing | Manufacturing |
| Electric | Electricity, gas, water and waste services | Electricity, gas, water and waste |
| Construc | Construction | Construction |
| Wholesale | Wholesale trade | Wholesale |
| Retail | Retail trade | Retail |
| Transport | Transport, postal and warehousing | Transport, postal and warehousing |
| Info | Information media and telecommunications | Information media and telecommunications |
| Finance | Financial and insurance services | Finance and insurance |
| Profess | Professional, scientific and technical services | Professional, scientific and technical |
| Accomm | Accommodation and food services | Accommodation and food |
| Rental | Rental, hiring and real estate services | Rental, hiring and real estate |
| Admin | Administrative and support services | Administration and support |
| Arts | Arts and recreation services | Arts and recreation |
| Other | Other services | Other services |
| Public | Public administration and safety | Public administration |
| Educ | Education and training | Education |
| Health | Health care and social assistance | Health |

*Source:* Productivity Commission; Australian Bureau of Statistics ANZSIC 2006, Codes and Titles tables

Table D.3 OECD industry abbreviations

| Abbreviation | ISIC Rev.3 2008 Industry name | Shortened version |
|---|---|---|
| I Agri | C01t05 Agriculture, hunting, forestry and fishing | Agriculture, forestry and fishing |
| I Mining | C10t14 Mining and quarrying | Mining |
| I Manufac | C15t37 Manufacturing | Manufacturing |
| I Electric | C40t41 Electricity gas and water supply | Electricity, gas and water supply |
| I Construc | C45 Construction | Construction |
| I Trade | C50t52 Wholesale and retail trade; repairs | Wholesale and retail trade |
| I Transport | C60t63 Transport and storage | Transport and storage |
| I Telecomms | C64 Post and telecommunications | Post and telecommunications |
| I Finance | C65t67 Finance and insurance | Finance and insurance |
| I Computers | C72 Computer and related activities | Computer services |
| I Business | C74 Other business activities | Other business services |
| I Hotels | C55 Hotels and restaurants | Hotels and restaurants |
| I Real Est. | C70 Real estate activities | Real estate |
| I Rentals | C71 Renting of machinery and equipment | Renting of machinery |
| I Personal | C90t93 Other community, social and personal services | Community and personal |
| I Households | C95 Private households with employed persons | Households with employed persons |
| I Finance & business | C65t74 Finance, insurance, real estate and business services | Finance and business |
| I Business Sector | C50t74x Business sector services excluding real estate | Business sector services |

*Source:* Productivity Commission; OECD structural analysis statistics tables

Table D.4 ANZSIC96 Industry abbreviations

| Abbreviation | Industry name | Shortened version |
|---|---|---|
| Agri | Agriculture, forestry and fishing | Agriculture, forestry and fishing |
| Mining | Mining | Mining |
| Manufac | Manufacturing | Manufacturing |
| Electric | Electricity, gas and water supply | Electricity, gas, water and waste |
| Construc | Construction | Construction |
| Wholesale | Wholesale trade | Wholesale |
| Retail | Retail trade | Retail |
| Transport | Transport and storage | Transport and storage |
| Commun | Communications services | Communications |
| Finance | Finance and insurance | Finance |
| Business | Property and business services | Business services |
| Accomm | Accommodation, cafes, and restaurants | Accommodation, cafes, and restaurants |
| Cultural | Cultural and recreational services | Cultural and recreational |
| Personal | Personal and other services | Personal |
| Govern | Government administration and defence | Government |
| Educ | Education | Education |
| Health | Health and community services | Health |

*Source:* Productivity Commission; Statistics New Zealand household labour force survey tables

Table D.5 ANZSIC06 correspondence to OECD's ISIC Rev.3 2008

| ANZSIC06 | Sub-industries | NZIER OECD (ISIC Rev.3 2008) industry |
|---|---|---|
| Agriculture, forestry and fishing | | Agriculture, hunting, forestry and fishing |
| Mining | | Mining and quarrying |
| Manufacturing | Meat and meat product manufacturing | Food products, beverages and tobacco |
| | Seafood processing | |
| | Dairy product manufacturing | |
| | Fruit, oil, cereal and other food product manufacturing | |
| | Beverage and tobacco product manufacturing | |
| | Textile and leather manufacturing | Textiles, textile products, leather and footwear |
| | Clothing, knitted products and footwear manufacturing | |
| | Wood product manufacturing | Wood and products of wood and cork |
| | Pulp, paper and converted paper product manufacturing | Pulp, paper and paperboard |
| | Printing | Printing |
| | Petroleum and coal product manufacturing | Coke, refined petroleum products and nuclear fuel |
| | Basic chemical and basic polymer manufacturing | Chemicals and chemical products |
| | Fertiliser and pesticide manufacturing | |
| | Pharmaceutical, cleaning and other chemical manufacturing | |
| | Polymer product and rubber product manufacturing | Rubber and plastics products |
| | Non-metallic mineral product manufacturing | Other non-metallic mineral products |
| | Primary metal and metal product manufacturing | Basic metals |
| | Fabricated metal product manufacturing | Fabricated metal products except machinery and |
| | Transport equipment manufacturing | Motor vehicles, trailers, semi-trailers |
| | | Other transport equipment |
| | Electronic and electrical equipment manufacturing | Medical, precision and optical instruments |
| | | Radio, television and communication equipment |
| | | Office, accounting and computing machinery |
| | | Electrical machinery and apparatus not elsewhere classified (nec). |
| | Machinery manufacturing | Machinery and equipment nec. |
| | Furniture manufacturing | |

| ANZSIC06 | Sub-industries | NZIER OECD (ISIC Rev.3 2008) industry |
|---|---|---|
| | Other manufacturing | |
| Electricity, gas, water and waste | Electricity generation and on-selling | Electricity, gas and water |
| | Electricity transmission and distribution | |
| | Gas supply | |
| | Water supply | |
| | Sewerage and drainage services | |
| | Waste collection, treatment and disposal services | Other community, social and personal service activities |
| Construction | | Construction |
| Wholesale trade | | Wholesale and retail trade; repairs |
| Retail trade | | Wholesale and retail trade; repairs |
| Accommodation and food | | Hotels and restaurants |
| Transport, postal and warehousing | Road transport | Transport and storage |
| | Rail transport | |
| | Other transport | |
| | Air and space transport | |
| | Postal and courier pick up and delivery services | Post and telecommunications |
| | Transport support services | Transport and storage |
| | Warehousing and storage services | |
| Information media and telecommunications | Publishing (except internet and music publishing) | Publishing, printing and reproduction of recorded media |
| | Motion picture and sound recording activities | Other community, social and personal service activities |
| | Broadcasting and internet publishing | Other community, social and personal service activities |
| | Telecommunications services including internet service providers | Post and telecommunications |
| | Library and other information services | Other community, social and personal service activities |
| Financial and insurance services | | Finance and insurance |
| Rental, hiring and real estate services | Rental and hiring services (except real estate); non-financial asset leasing | Renting of machinery and equipment without operator and of personal and household goods |
| | Residential property operation | Real estate, renting and business activities |
| | Non-residential property operation | |

| ANZSIC06 | Sub-industries | NZIER OECD (ISIC Rev.3 2008) industry |
|---|---|---|
| | Real estate services | |
| | Owner-occupied property operation (excluded) | |
| Professional, scientific and technical services | | Other business activities |
| Administrative and support services | Travel agency and tour arrangement services | Transport and storage |
| | Employment and other administrative services | Other business activities |
| | Building cleaning, pest control and other support services | |
| Public administration and safety (excluded) | | Public administration and defence; compulsory social security |
| Education and training | | Education |
| Health and social assistance | | Health and social work |
| Arts and recreation services | Heritage and artistic activities | Other community, social and personal services |
| | Sport and recreation activities | |
| | Gambling activities | |
| Other services | Repair and maintenance | Wholesale and retail, repairs |
| | Personal services; domestic household staff | Private household with employed persons |
| | Religious services; civil, professional and other interest groups | Other community, social and personal services |

*Source:* Productivity Commission; Australian Bureau of Statistics ANZSIC 2006, Codes and Titles tables; NZIER research performed for the NZPC.

Table D.6 ANZSIC06 broad[1] correspondence to ANZSIC96

| ANZSIC06 industry | ANZSIC96 industry |
|---|---|
| Agriculture, Forestry and Fishing | Agriculture, forestry, and fishing |
| Mining | Mining |
| Manufacturing | Manufacturing |
| Electricity, Gas, Water and Waste Services | Electricity, gas, and water supply |
| Construction | Construction |
| Wholesale Trade | Wholesale trade |
| Retail Trade | Retail trade |
| Accommodation and Food Services | Accommodation, cafes, and restaurants |
| Transport, Postal and Warehousing | Transport and storage |
| Information Media and Telecommunications | Communication services, Manufacturing, Cultural and recreational services |
| Financial and Insurance Services | Finance and insurance |
| Rental, Hiring and Real Estate Services | Property and business services |
| Professional, Scientific and Technical Services | |
| Administrative and Support Services | |
| Public Administration and Safety | Government administration and defence |
| Education and Training | Education |
| Health Care and Social Assistance | Health and community services |
| Arts and Recreation Services | Cultural and recreational services |
| Other Services | Personal and other services |

*Source:* Productivity Commission; Statistics New Zealand household labour force survey table: people employed by industry (ANZSIC 1996 and ANZSIC 2006)

*Notes:*

1. The correspondence occurs at the sub-industry level. This table shows the closest ANZSIC96 industry to the ANZSIC06 industry, based on people employed.

# Appendix E Influences on productivity

This appendix summarises the main influences that have been identified for firm and industry productivity, which ultimately impact economy-wide productivity.

Numerous studies have documented differences in productivity over time, across countries and across industries. Some have found large and persistent differences in productivity across firms in the same industry. Research has identified many influences on productivity, but there are many questions that research still needs to answer. Influences on firm productivity can be roughly divided into two areas: influences that firms have some degree of control over (internal influences) and influences from firms' external operating environment (external influences). Influences can operate together. Some influences can operate internally and externally[69] (Syverson, 2010). It is important to note that relationships found in research will not apply in every situation.

## E.1 Internal influences

Internal influences are actions by management or workers that impact their firm's productivity. While firms seek to maximise their profitability, these actions also impact their productivity. In many cases, actions by management and workers to improve firm profitability also increase productivity.

Table E.1 Factors within a firm that influence productivity

| Influence | Description |
|---|---|
| Human capital investment | Human capital is the set of knowledge, abilities and skills that a person brings to a job.<br>Human capital is important for labour productivity and multi-factor productivity (MFP) through its positive impact on job performance, levels and adoption of innovation and entrepreneurship.<br>Studies have shown a link between greater human capital and higher productivity. However, some of these studies have shown that human capital only explains a small proportion of the variation in productivity between firms (Syverson, 2010).<br>Managerial human capital is particularly important as mangers organise firms' production processes. Some studies have found links between the quality of management and firm productivity (Syverson, 2010). |
| Capital investment | Capital refers to equipment, machinery, vehicles, land improvements, structures and fittings used to produce goods and services.<br>Capital investment can increase the amount of capital per labour input (capital deepening), including substituting capital for labour input, which raises labour productivity. Some studies have found capital investment can also raise MFP, for example, when new equipment enables workers to improve their work practices and to gain new skills (New Zealand Treasury, 2008c; Syverson, 2010). |
| ICT investment | ICT investment is a subset of capital investment that covers hardware (IT equipment), software and communication equipment.<br>Studies have shown that ICT is important in explaining productivity growth, such as the US's relatively strong productivity growth over the past couple of decades and the EU's comparably low productivity growth over the same period (Timmer, Inklaar, O'Mahony & van Ark, 2011).<br>The use of ICT can increase labour productivity through capital deepening. The use of ICT can also increase MFP by enabling innovation in products, processes and organisational structures (Australian Productivity Commission, 2004).<br>Studies have shown that productivity gains from the use of ICTs generally arise when |

[69] For example, knowledge spillovers (called 'learning-by-doing' within a firm) and capital investment (called 'infrastructure' when external to the firm).

| Influence | Description |
|---|---|
| | combined with complementary investments in training and innovation in products, processes, organisational structure and supplier and customer relationships. Skilled staff and management skills are also required (Australian Productivity Commission, 2004; Banks, 2002; Pilat, 2004). |
| R&D investment | Many studies positively link firms' R&D investment and their productivity. Investment in R&D can result in improvements in production processes and product quality and lead to new products (New Zealand Treasury, 2008a). |
| Learning-by-doing | Doing the same or similar tasks can raise firms' MFP. Firms can identify process improvements that increase the speed of production (reduce input costs) and improve quality (Levitt, List, & Syverson, 2012). Workers can also increase their labour productivity by repeating the same and similar tasks (Syverson, 2010). |
| Workplace culture | The culture of a firm has been identified as an important influence on its productivity. Features of a firm's culture that can aid firm productivity include a shared strategy for the firm; good relationships between management and employees; a commitment by workers to quality and improvement; a push for innovation and the use of technology; the use of networking and collaboration; and robust performance measurement and reward structures (Department of Labour, 2009c). |
| Business models and processes | Business models and processes have also been identified as important influences on a firm's productivity. These include the firm's organisational structure, leadership and management; business and strategic planning; and processes for decision making, human resources, communication and production (Department of Labour, 2009c). |

## E.2 External influences

External influences do not directly affect firms' productivity. Instead, they affect firms' incentives to apply internal tools that impact their productivity, as well as how responsive firms' market share and survival are to productivity differences between firms. External influences impact both individual firms' productivity and industry productivity (Syverson, 2010).

Table E.2 Influences on firms' productivity from the external operating environment

| Influence | Description |
|---|---|
| Knowledge spillovers | Firms can experience productivity gains by learning from other firms and adopting their practices and innovation.<br><br>Studies show firms can experience knowledge spillovers through many mechanisms such as clustering of firms in an area (geographic clustering), having a multi-national presence, locating R& D facilities in a strong research area and through foreign direct investment by multi-nationals. The large and persistent productivity differences between firms within industries indicate, however, that there are significant barriers to less productive firms fully emulating their industry leaders' practices (Syverson, 2010). |
| Economic geography | Economic geography refers to the location, distribution and spatial organisation of economic activities. For instance, the size of an economy, its distance from markets and the density of the population and firms within an area.<br><br>The size of a country's domestic market impacts productivity through economies of scale, competition and the geographic clustering of firms (McCann, 2009). A small domestic market acts to restrict these positive factors. International trade can compensate for a small domestic market.<br><br>Geographic clustering of firms in an industry can create knowledge spillovers. Clustering of an industry's firms, their suppliers or customers can reduce transaction costs (search costs, transport costs) and generate knowledge spillovers. Clustering of firms and employees in an industry can improve job and employee matching (McCann, 2009).<br><br>Distance from major markets impacts productivity by increasing transaction costs. While |

| Influence | Description |
|---|---|
| | technological advances have reduced the impact of distance, there are still significant costs (New Zealand Treasury, 2008a; Chapter 2).<br><br>New Zealand's small economy, located far away from major markets, with only one large city by global standards, negatively impacts firms' productivity (Ellison, Glaeser & Kerr, 2007). Some research indicates that New Zealand's small size and distance to its trading markets may explain as much as 75% of its per-capita income gap with the OECD average (New Zealand Treasury, 2008a). |
| Competition | The threat or presence of competition can positively affect productivity levels within an industry through Darwinian selection and by encouraging productivity improvements (Syverson, 2010).<br><br>Competition can increase the market share of more productive firms and reduce the market share, or force the exit of, relatively high-cost firms (Darwinian selection/creative destruction). Competition can also increase the productivity level required for a firm to successfully enter a market (Syverson, 2010).<br><br>Competition can incentivise firms to adopt innovative business practices and to take other actions to raise productivity to reduce costs. However, under some conditions such as a market of fixed size, competition can decrease a firm's incentives to invest in productivity improvements (Syverson, 2010). |
| International linkages | Studies have shown a strong positive relationship between firm and industry productivity levels and their level of trade exposure. The presence or threat of imports is a form of competitive pressure. Exporting can also increase productivity. While studies show that exporting firms were already more productive than their domestic-only competitors before they began to export, firms also show increases in productivity after they begin to export – 'learning-by-exporting' (Syverson, 2010).<br><br>Other international linkages have positive effects on productivity. These include people, knowledge and capital flows which can all give rise to valuable knowledge transmission and diffusion (New Zealand Treasury, 2009). |
| Regulation | Effective regulation can support firm and industry productivity by working to ensure there are rewards for enterprise and innovation, resources are available, and firms have the flexibility to take advantage of economic opportunities (New Zealand Treasury, 2008a). Poor regulation can create perverse incentives that reduce productivity (Syverson, 2010). |
| Macroeconomic environment | A stable macroeconomic environment is an important foundation for firm and industry productivity. Uncertainty creates costs for firms and influences their production and investment decisions (New Zealand Treasury, 2008a). |
| Quality institutions | Quality institutions, such as property rights, are an important foundation for firm and industry productivity. Property rights enable firms to focus on production, rather than protecting their resources. They also encourage the use of resources for maximum value. Intellectual property rights such as patents and copyright increase incentives for firms and individuals to innovate by ensuring rewards are captured by creators (Parkin, 2005). |
| Infrastructure | Firms can benefit from the availability of infrastructure provided by the government and other firms, such as roads and communication networks. |

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