

# The “servicification” of trade

Research Note 2016/4

December 2016

**Author:** Shanella Rajanayagam, Ministry of Foreign Affairs and Trade

**New Zealand Productivity Commission Research Note: The “servicification” of trade**

**Date:** December 2016

**Authors:** Shanella Rajanayagam, Ministry of Foreign Affairs and Trade

**JEL classification:** F14: Empirical Studies of Trade; L80: Industry Studies: Services: General

**ISBN:** 978-0-478-44034-8 (online only)

**Acknowledgements:** I would like to thank all those who provided comments and feedback on this research note at various stages of drafting. Many thanks also to the Productivity Commission – particularly Paul Conway and Lisa Meehan – for helpful discussion and for publishing this research note.

**Disclaimer:** The views expressed in this Research Note are strictly those of the author. They do not necessarily reflect the views of the New Zealand Ministry of Foreign Affairs and Trade, the New Zealand Productivity Commission, or the New Zealand Government. The author is solely responsible for any errors or omissions.

Information on the Productivity Commission can be found on [www.productivity.govt.nz](http://www.productivity.govt.nz) or by contacting +64 4 903 5150.

# Abstract

Services play an important and growing role in international trade. They are an important export earner for New Zealand – representing 29% of our total exports on a gross basis. Today, however, services are not only traded across borders on their own but are also combined with goods exports (ie, embedded services) and are critical inputs in the production process of exported goods (i.e. embodied services). When the contribution of embodied services to New Zealand’s exports is considered, the share of services in New Zealand’s exports rises substantially to 57% – above the OECD average. This trend toward the increasing “servicification” of manufacturing has important implications for how trade policy and domestic regulation are crafted.

# Contents

<b>Abstract</b> .....	<b>iii</b>
<b>Overview</b> .....	<b>v</b>
<b>1 Introduction</b> .....	<b>6</b>
<b>2 Treatment of Services under GATS</b> .....	<b>6</b>
<b>3 “Servicification” of manufacturing</b> .....	<b>7</b>
<b>4 Empirical evidence on New Zealand’s services exports</b> .....	<b>8</b>
4.1 Trade in Value-Added .....	9
4.2 Domestic services inputs .....	10
4.3 Foreign services inputs .....	13
<b>5 Services employment in value chains</b> .....	<b>14</b>
<b>6 Implications for trade and trade policy</b> .....	<b>16</b>
<b>7 Implications for domestic regulation</b> .....	<b>17</b>
<b>8 Conclusions</b> .....	<b>19</b>
<b>References</b> .....	<b>20</b>
<b>Appendix A OECD’s typology of business functions in value chains</b> .....	<b>22</b>
 <b>Figures</b>	
Figure 1 Services that manufacturing firms may use and offer .....	7
Figure 2 Typology of services inputs .....	8
Figure 3 Services share of GDP and exports for New Zealand and the world, 1987-2015 .....	9
Figure 4 Services content of gross exports by selected country in gross and value-added terms, 2011 .....	10
Figure 5 'Mode 5' - domestic services content of New Zealand's gross exports, by industry ..	11
Figure 6 Source of domestic valued-added in New Zealand's agriculture, mining and manufactured exports .....	12
Figure 7 Sources of New Zealand's foreign sourced services inputs .....	14
Figure 8 Domestic employment by business function and by industry in New Zealand .....	15

# Key points

- Traditionally defined, services account for 29% of New Zealand's total exports.
- A more comprehensive view of services trade also considers: embedded services (ie, services bundled with goods exports such as customer care and follow up training) and embodied services (ie, services that are used in the process of producing exported goods for example, R&D, ICT and logistics).
- When the contribution of embodied services to New Zealand's exports is considered, the share of services in New Zealand's total exports rises to 57% – above the OECD average.
- Highly servicified manufacturing and primary product industries in New Zealand include: the coke and refined petroleum products industry; the food and beverage industry; and the wood products industry. Domestic services inputs comprise over 30% of total exports from each of these industries.
- The services sector is also a large employer in New Zealand, accounting for more than 80% of employment. Globally, there is a trend towards fewer jobs in the core operations of firms (ie, manufacturing and processing) and more jobs in 'services' business functions (eg, R&D, design, distribution, logistics, marketing, customer services).
- The trend toward the increasing "servicification" of manufacturing has important implications for trade policy including how trade agreements are negotiated and what firms are consulted, as well as for domestic regulation given the importance of services as inputs into manufacturing.

# 1 Introduction

Services are pervasive. As a sector, services comprise nearly 70% of New Zealand's GDP, over 80% of employment in New Zealand, and account for 57% of the value of our total exports when services inputs to goods exports are included. It is a growing sector that is closely linked to the rest of the economy as many other sectors use services extensively as inputs. The recently completed Business Operations Survey (BOS) showed that 61% of New Zealand businesses provided services in 2015 and of these businesses, over half (52%) sold their services to the domestic market only and a further 8% sold services to both New Zealand and overseas markets – supporting the idea that services are used extensively by other parts of the domestic economy.

The manufacturing industry, in particular, is becoming more and more “servicified” – meaning that services are increasingly used as inputs in the production process (eg, cloud-based software applications), and that services are increasingly included in the manufacturing industry's sales offerings (eg, after-sales service) (Swedish National Board of Trade, 2010). As a result, the line between what constitutes ‘goods’ and what constitutes ‘services’ has become progressively blurred – leading to some activities of manufacturing firms today being classified as services activities.

In general, services that are used as inputs into the manufacturing production process tend to be high-value added and linked to technology – for example R&D, ICT services, engineering services. Such services can be difficult to copy as they often incorporate technological knowledge and skills. Services can also play an important role in promoting the uniqueness of a product – enabling the good to be diversified from the competition and ensuring competitive advantages for the manufacturer. It has also been found that service inputs positively affect the export capabilities of firms by raising firms' productivity and improving their competitiveness abroad (Lodefalk, 2012).

This note examines the characteristics of New Zealand's intermediate services that are used in the production of our primary and manufacturing exports, and the related implications for trade policy and domestic regulation. The trend toward servicification has important implications for international trade – particularly in formulating trade policy and in trade negotiations – as barriers to services trade are likely to significantly impact manufacturing, as well as the extent to which firms in the services sector themselves can connect internationally and participate in global value chains. The note also examines the implications of servicification on New Zealand's domestic policy settings by synthesising work undertaken by the Productivity Commission in their Services Inquiry.

## 2 Treatment of services under GATS

The General Agreement on Trade in Services (GATS) is the legal platform for services trade at the multilateral level and defines trade in services in terms of four modes of supply:

- **Mode 1: Cross-border supply**, ie, the service is delivered from New Zealand to the overseas customer. For example: an architecture firm in New Zealand provides plans and advice to clients in the foreign country through internet/phone/email.
- **Mode 2: Consumption abroad**, ie, the overseas customer travels to New Zealand to acquire the service. For example: tourism services; foreign students travelling to New Zealand to study at a New Zealand educational institution; foreign residents travelling to New Zealand for medical treatment in New Zealand.
- **Mode 3: Commercial presence**, ie, when an enterprise establishes a foreign affiliate/subsidiary abroad to deliver services internationally. For example: a New Zealand engineering firm establishing a branch overseas to provide engineering services to those overseas customers.

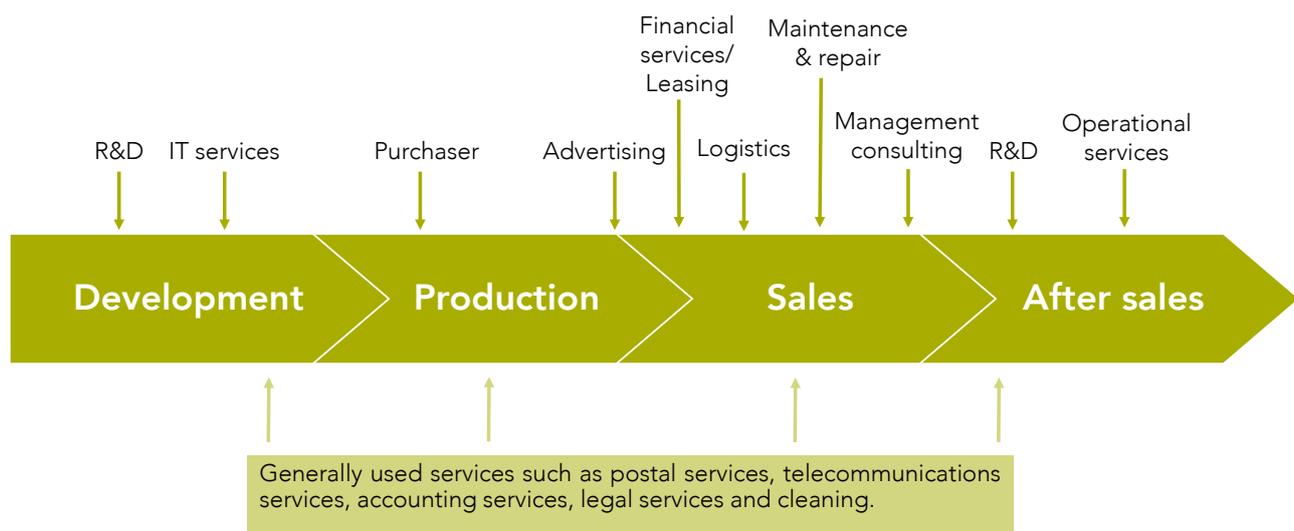
- **Mode 4: Presence of natural persons**, ie, the New Zealand supplier travels overseas to deliver the services. For example: an employee of a New Zealand IT firm is sent to a country overseas to deliver IT services.

These four modes of supply are important as they determine “the way and modalities in which multilateral services liberalisation efforts are negotiated” (Cernat & Kutlina-Dimitrova, 2014) as WTO members’ commitments are undertaken with respect to each of the four different modes of service supply.<sup>1</sup>

### 3 “Servicification” of manufacturing

The four modes of supply outlined in the GATS do not account for the increasing share of services embodied in products and traded internationally. This phenomenon is known as the “servicification of manufacturing” and is increasingly evident across the manufacturing industries of OECD countries. “Servicification of manufacturing” refers to the fact that the manufacturing industry is increasingly using services as inputs into the production process, as well as producing and exporting more services along with its goods offerings. As demonstrated in Figure 1, servicification encompasses the whole life-cycle of a product.

**Figure 1 Services that manufacturing firms may use and offer**



Source: Swedish National Board of Trade (2010)

Therefore, services can not only be traded directly, but also indirectly by being either embedded or embodied in goods exports (Drake-Brockman & Stephenson, 2012).

- **Embedded** services exports can be thought of as those services that are bundled with goods, such as customer care (service) provided with the sale of a mobile phone (good); while
- **Embodied** services exports refer to those services that are used to produce goods, for example communications, transport, energy, R&D, and insurance.

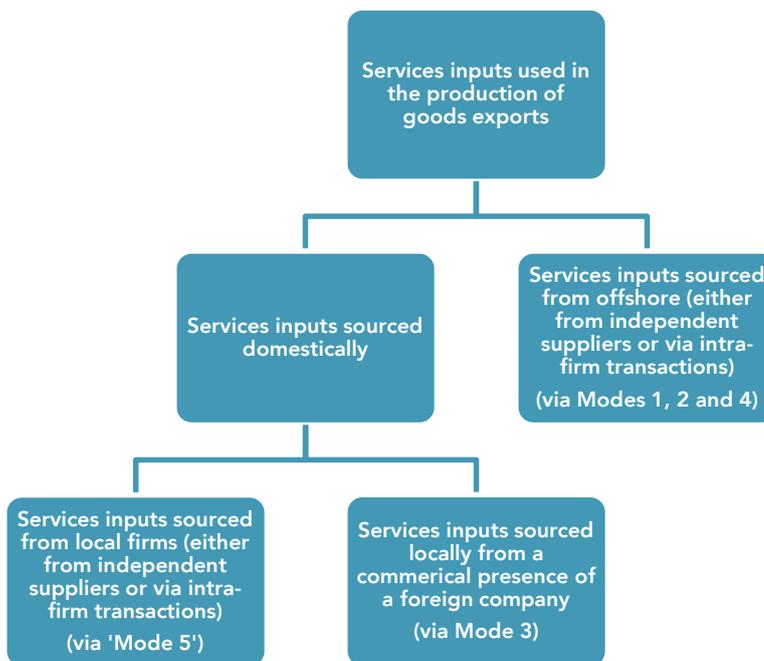
<sup>1</sup> At the global level, estimates on the relative importance of services trade indicate that Mode 3 (commercial presence) is the most significant mode of supply. Unfortunately, no directly comparable data is available for New Zealand. Instead, data has been collected on New Zealand’s commercial services exports (that is, total services excluding travel including tourism, transportation, government and insurance services) via Modes 1, 2 and 4. For New Zealand, 86% of our commercial services exports are delivered via Mode 1 (mainly business services), and we also have a disproportionately high share of services delivered via Mode 4 (mostly engineers working on overseas project sites, and New Zealand teachers temporarily teaching overseas). New Zealand has a relatively low value of ODI so delivery via Mode 3 is unlikely to be significant.

As pointed out by the EU Commission (Cernat & Kutlina-Dimitrova, 2014), this distinction between embodied and embedded services exports is important because, in trade-terms, after-sales services are already supplied internationally through other modes (ie, Modes 1, 2, 3 and 4).

Servicification can involve either domestic sourcing or international sourcing of services inputs. Taking account of this phenomenon has led to a new mode of supply being coined: 'Mode 5' services trade. Mode 5 refers to those services that are embodied in goods exports and which are therefore an inseparable part of the production process for a manufactured good. Mode 5 represents a subset of servicification and can be formally defined as "domestic intermediate services inputs that are incorporated in one country's merchandise exports" (Cernat & Kutlina-Dimitrova, 2014).

Mode 5 refers only to services inputs that are sourced domestically as services sourced from abroad result in cross-border trade that is covered by other modes of supply. More specifically, sourcing services inputs domestically results in no cross-border services trade (although there might still be Mode 3 services trade if the manufacturing firm sources services inputs locally from a commercial presence of a foreign company). On the other hand, if services inputs are sourced from offshore, there will be cross-border trade covered by Modes 1, 2 and 4 of GATS. Figure 2 depicts the delivery of domestic and foreign sourced services inputs used in the production of goods exports.

**Figure 2** Typology of services inputs



Source: Author's depiction

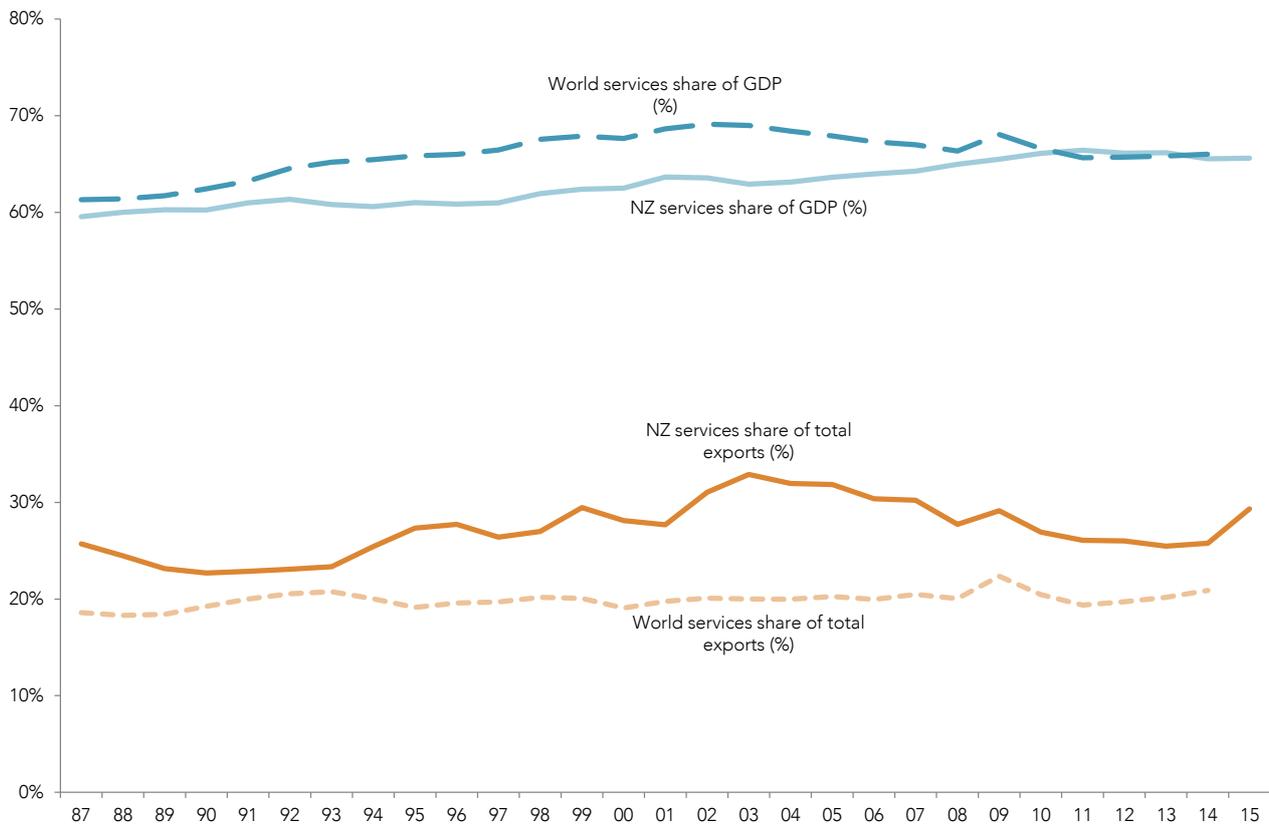
## 4 Empirical evidence on New Zealand's services exports

Traditionally, data on international services trade are drawn from a country's Balance of Payments statistics and reflect transactions between residents and non-residents. It typically includes sales of services via modes 1, 2 and 4 only.<sup>2</sup> New Zealand's share of services exports in total exports has fluctuated between 23-33% since 1990 (currently 29%) – significantly higher than the global share which has hovered at around 20% over the same period. However, it is evident from Figure 3 that services

<sup>2</sup> Like most countries, New Zealand does not collect information on services trade via mode 3. Direct investment stocks can be used as proxies of mode 3 trade but as aforementioned, New Zealand has a relatively low value of ODI so delivery via this mode is unlikely to be significant.

account for a much higher share of value added in an economy, representing around two-thirds of New Zealand's GDP and an equivalent share of global GDP today.

**Figure 3 Services share of GDP and exports for New Zealand and the world, 1987-2015**



Source: WTO, UNCTAD and Statistics New Zealand.

It is likely that some of the difference between the share of services in exports and in GDP is in part due to the fact that many services are traded indirectly as being embodied in goods (Meehan, 2014).

Balance of Payments statistics only measures the "gross value of direct cross-border services trade but not the services value added included in goods traded across borders" (Lanz & Maurer, 2015).

## 4.1 Trade in Value-Added

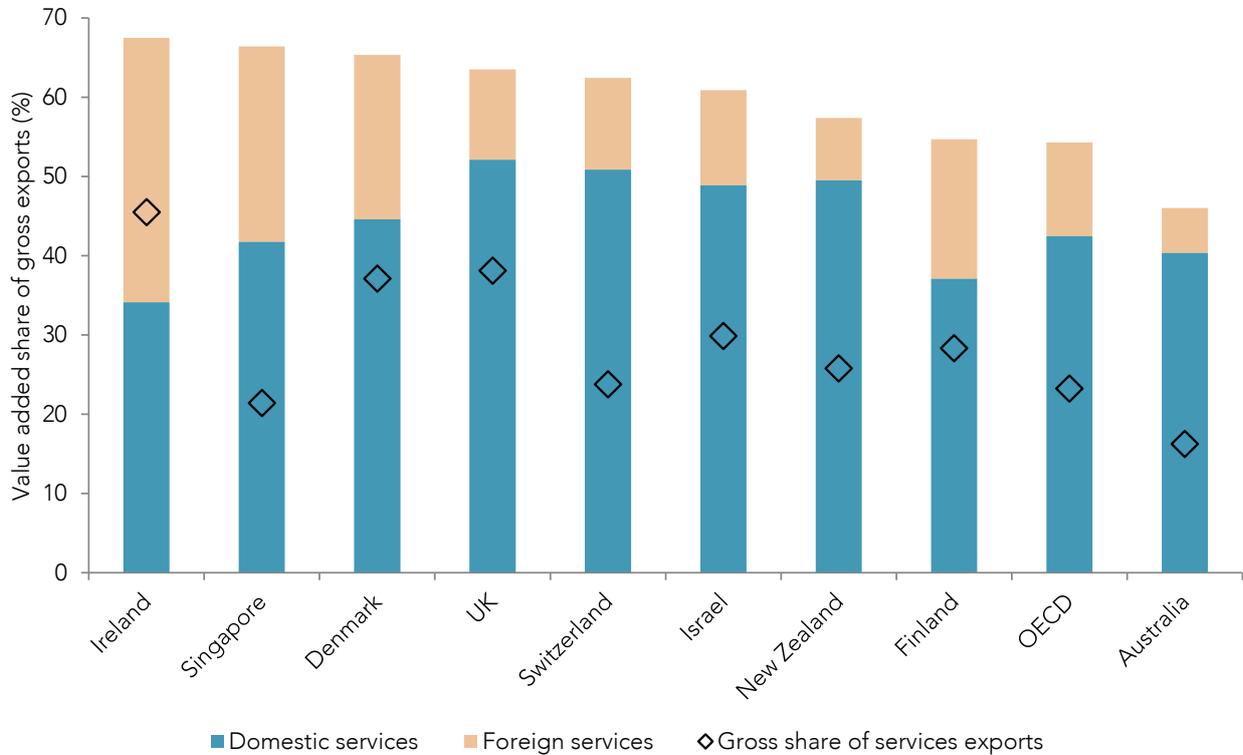
The joint OECD-WTO Trade in Value-added (TiVA) database was developed to overcome these statistical shortcomings and measures the value added by each country in the production of goods and services that are traded.<sup>3</sup> This data shows that over 57% of New Zealand's total exports in 2011 comprised of services (approximately 50% domestic services, 8% foreign services) – above the OECD average of 54.3% and much higher than the 29% export share of services that are directly traded on a gross basis. For New Zealand's exports of manufactured goods alone, 40.5% (30% domestic, 10% foreign) of the total value reflected services sector value added, above the OECD average of 36.9% in 2011.

In comparison, the services content of exports is above 80% for Hong Kong, Luxembourg and Cyprus, and is lowest for exporters of primary commodities such as Saudi Arabia (9%), Brunei Darussalam (11%), Colombia (26%) and Indonesia (29%) whose export structures are focused on natural resources. New Zealand's key comparator countries (Figure 4) also vary in terms of their services content of exports – with Ireland and Singapore recording a share of over 65% given the importance of the services sector in these economies, while Australia's services content of exports (46%) was below the OECD average reflecting the country's resource-rich export profile.

<sup>3</sup> The TiVA database combines different national input-output tables to one consistent inter-country input-output table that allows measuring trade in value added terms. Therefore, value-added exports of services consist of the services content of direct services exports and of indirect services exports (i.e. the services content embodied in exported goods).

As evidenced in Figure 4, New Zealand's comparatively low level of foreign services content of exports could be attributed, in part, to our distance from foreign markets and to the structure of our exports (a large part of which is based on primary products).

**Figure 4 Services content of gross exports by selected country in gross and value-added terms, 2011**



Source: OECD Trade in Value-Added database & UNCTAD

## 4.2 Domestic services inputs

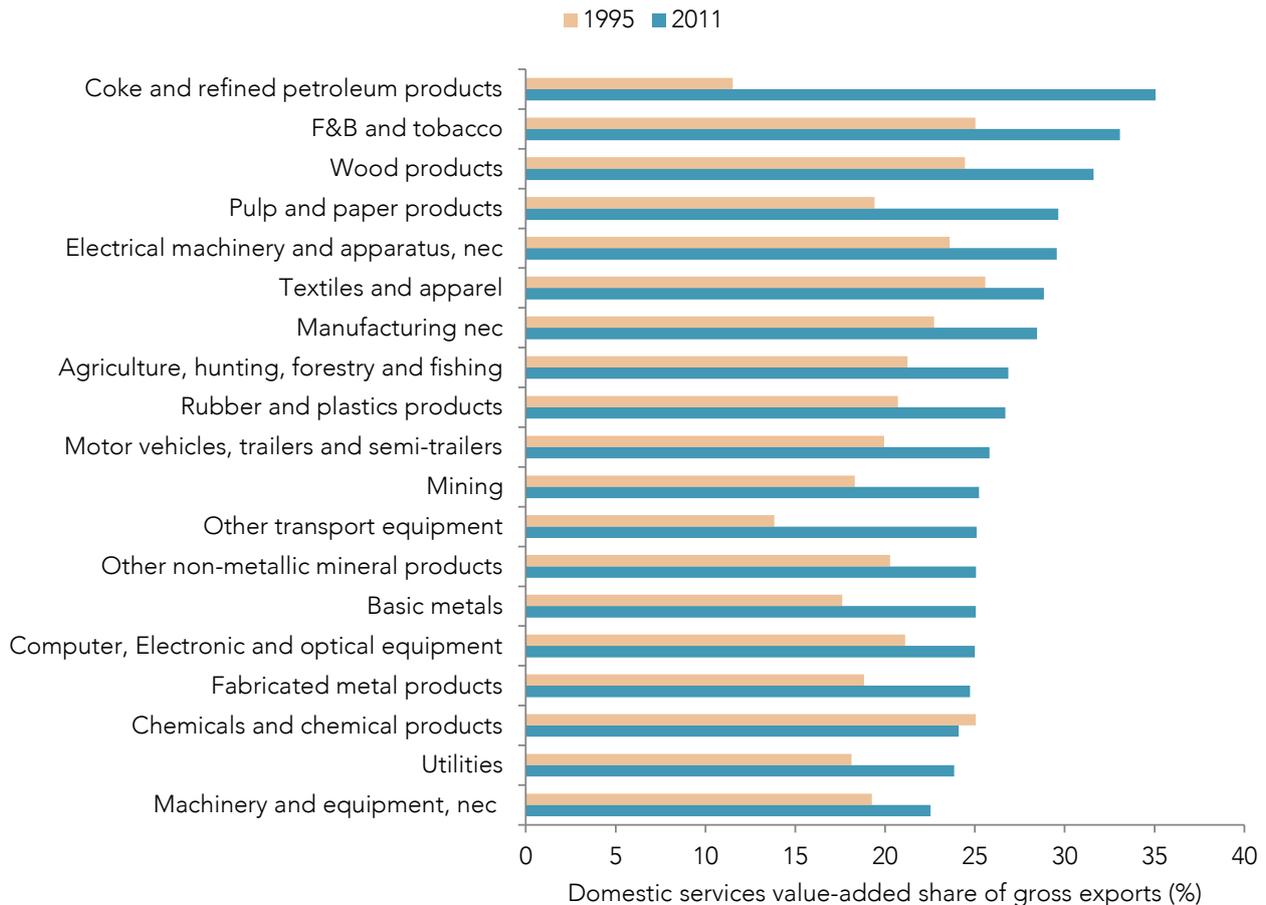
### Which exporting industries in New Zealand are the most “servicified”?

The industry with the highest share of domestic services valued-added in New Zealand's gross exports is the **coke and refined petroleum products** industry (Figure 5). For this industry, domestic services valued-added comprised 35% of New Zealand's gross exports in 2011 – up from 11.5% in 1995, driven by an increase in the value of R&D and other business services.

The **Food & Beverage and tobacco industry** also recorded a relatively high level of servicification, with domestic services valued-added comprising 33% of gross exports in 2011 (up from 25% in 1995).

Domestic services valued-added accounted for 27% of New Zealand's exports from the **agriculture, forestry and fishing** industry in 2011 – up from 21% in 1995.

Compared to 1995, New Zealand's 'mode 5' exports increased in all primary and goods producing industries with the exception of the chemicals and chemical products industry. The coke and refined petroleum products industry recorded the largest increase in mode 5 exports, followed by the other transport equipment industry (up from 11% in 1995 to 25% in 2011).

**Figure 5 'Mode 5' - domestic services content of New Zealand's gross exports, by industry**

Source: OECD Trade in Value-Added database

### What services do these industries use in the production of exports?

As evidenced above, New Zealand's manufacturing and primary product exports incorporate sizeable proportions of services inputs. This analysis can be further extended by tracing which domestic services inputs are embodied in New Zealand's exports of manufactures and primary products.

Figure 6 shows the source of domestic valued-added in New Zealand's agriculture, mining and manufactured exports. For the **agriculture and mining** industries, direct valued-added (ie, valued-added from the agriculture and mining industries respectively) accounts for over 60% of total domestic valued-added in gross exports. **Wholesale and retail trade and other business services** (which includes services for example computer services, R&D, legal services, accounting services, advertising and market research) also account for substantial portions of valued-added in gross exports from the agriculture industry, while other intermediate inputs (namely, manufactures) accounts for a sizeable proportion of valued-added in gross exports from the mining industry.

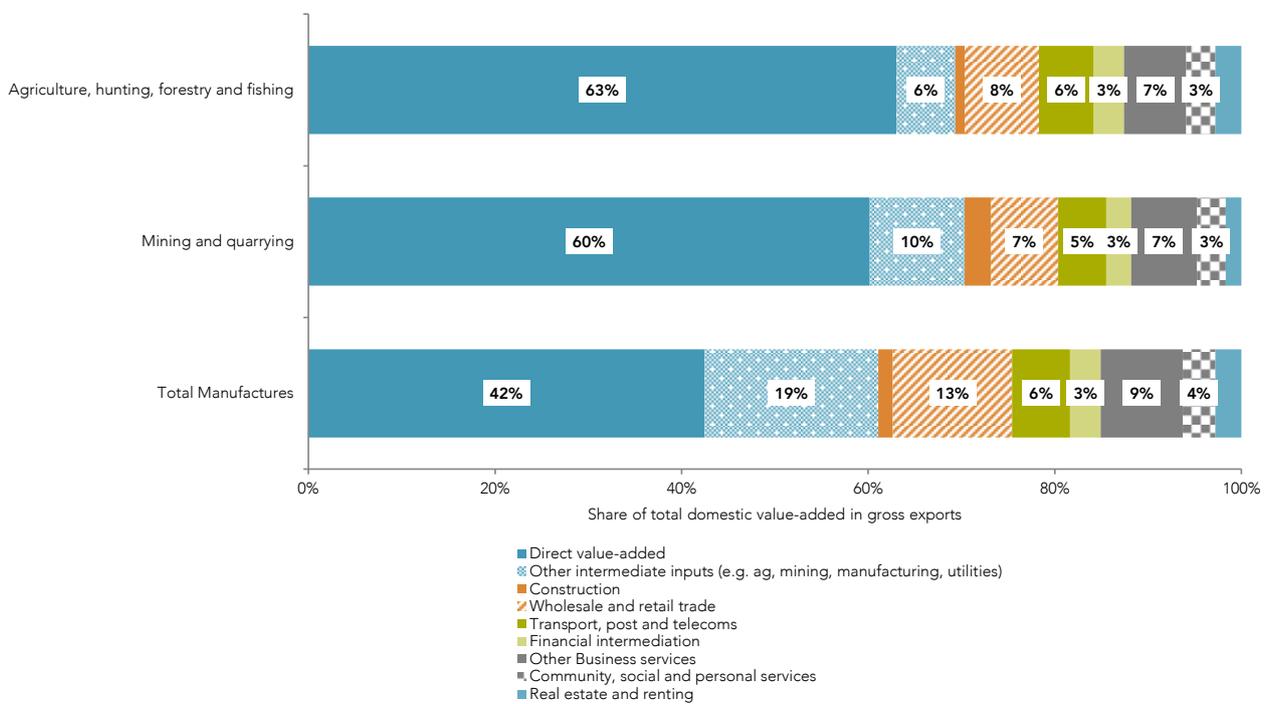
To note, wholesale and retail trade typically account for the bulk of services embodied in primary and manufactured exports as these industries (also known as the 'distributive trades sector') represent the "intermediate steps in the distribution of merchandise between producers and consumers of goods" (Eurostat-OECD, 2014) and are critical to the efficient flow of goods from producer to consumer.

Direct valued-added in gross exports from the **manufacturing** industry comprises just 42% of overall valued-added. This is because a sizeable portion of domestic valued-added in gross exports from this industry is sourced from the agriculture industry, as well as from the wholesale and retail trade industry and the other business services industry. This reflects the fact that the manufacturing industry sources more of its intermediate inputs from other parts of the economy compared to the agriculture and

mining industries – which have higher direct value-added as they are based more on natural resources inputs that are typically used at the start of a value chain.

While necessary inputs to the production of exported goods, embodied services also represent input costs for the manufacturer. In the example of an exported log (Box 1) there is an implied preference for the forest owner to reduce the ‘services costs’ (eg, logging costs, other harvest-related costs, domestic trucking costs, port costs) in order to get a more favourable return on investment. Therefore, these (embodied) services differ from embedded services in the sense that embedded services can be thought of as directly ‘adding value’ to a good, while embodied services can add value indirectly (in the case of R&D or other business services), but are often simply natural inputs to production (in the case of logistics services, insurance services etc) and are treated as such from a producer’s perspective. Accordingly, access to cost-efficient services inputs (both domestically sourced and imported) plays an important role in enhancing the export competitiveness of a country’s manufacturing and primary producing sectors.

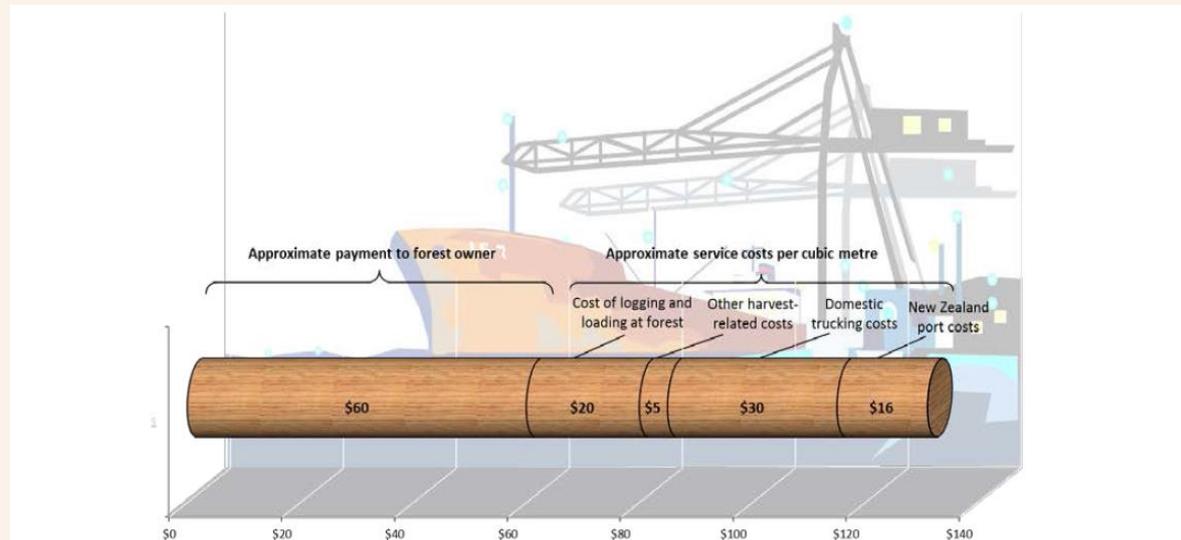
**Figure 6 Source of domestic valued-added in New Zealand's agriculture, mining and manufactured exports**



Source: OECD Trade in Value-Added database

### Box 1 Services embodied in New Zealand's log exports

Log exports, a relatively unprocessed commodity export, provides a compelling example of the extent to which services are embodied in New Zealand's goods exports. The figure below shows that over half the value of a log leaving New Zealand comes from services such as: logging and loading, harvesting, trucking, marshalling of logs at the port, and fumigation.



Source: Information provided by the Ministry for 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. Other harvest-related costs include harvesting costs and weighbridge costs. Domestic trucking costs are based on a trip from Taupo to the Port of Tauranga.
3. In the Australian and New Zealand Standard Industrial Classification ANZSIC06, logging and forestry support services are included in the primary sector. Not counting those as services reduces the services content of the value of the exported log to 35%.

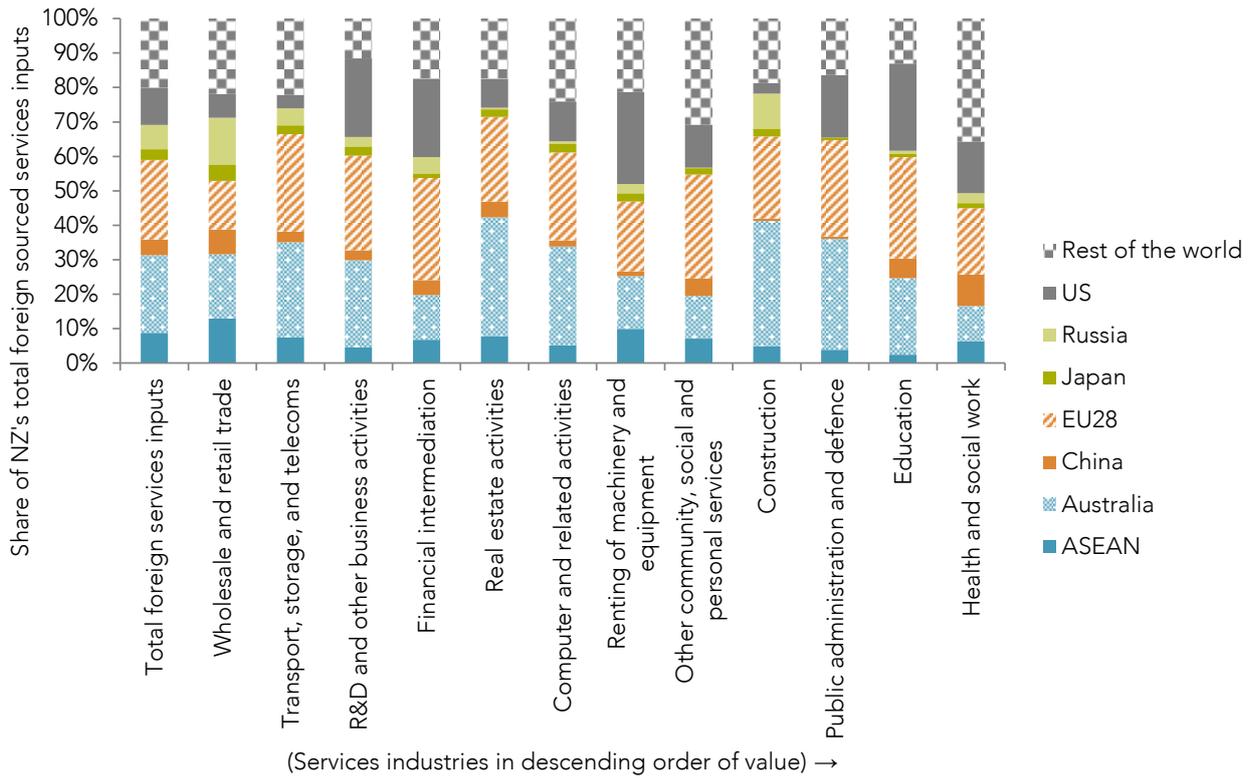
Source: New Zealand Productivity Commission (2014)

## 4.3 Foreign services inputs

In 2011, 8% (US\$3.8 billion) of New Zealand's total exports reflected foreign services content. Services sourced from overseas were mostly from the **wholesale and retail trade** industries (US\$1.2 billion) and the **transport, storage and telecoms** industry (US\$1.0 billion). Foreign sourced inputs from these industries mostly went into New Zealand's exports of food and beverage manufactures.

Figure 7 below shows New Zealand's foreign sourced services inputs as a share of total foreign inputs sourced from each services industry. In 2011, the EU28 was the single largest source of foreign services inputs used in New Zealand's exports (of goods and services), followed by Australia. Foreign inputs from the wholesale and retail trade industry were mainly sourced from Australia, followed by ASEAN, the EU28, and Russia, while services inputs from the transport, storage and telecoms industry predominantly came from the EU28 and Australia.

**Figure 7 Sources of New Zealand's foreign sourced services inputs**



Source: OECD Trade in Value-Added database, 2011

## 5 Services employment in value chains

The services sector is a large employer in New Zealand accounting for more than 80% of employment. Today, services are not only sourced from independent (foreign or local) suppliers, but are also being increasingly produced inside manufacturing firms. In order to capture the extent to which domestic services are used by manufacturing firms we can look at the share of employment corresponding to various ‘business functions’ in each industry in New Zealand.

The concept of business functions was introduced by Michael Porter (1985) of Harvard Business School – one of the first to introduce the concept of a value chain. Business functions refer to activities undertaken within an organisation to add value to the products that the firm produces. Using a business functions framework allows us to split firms’ activities between a) primary or core activities of the firm (ie, its operations), and b) support activities (eg, R&D, sales, marketing, IT services etc).<sup>4</sup>

According to the OECD, “the analysis of production through these business functions...highlights the role of services in the creation of value” (OECD, 2016). In general, the support activities have ‘service-like’ characteristics and are more suited to being outsourced.<sup>5</sup> Over time in almost all countries, less employment growth has occurred in the core operations of manufacturing firms (ie, the manufacturing, processing and assembly part of the value chain) and more jobs have been created in ‘services’ business functions (eg, R&D, transport, logistics, marketing, after-sales services) (OECD, 2016).

Figure 8 below shows the share of employment corresponding to various business functions in each high-level industry in the New Zealand economy. Employment in firms’ ‘core business functions’ accounts for around 40% of total domestic employment in New Zealand with the relative importance of

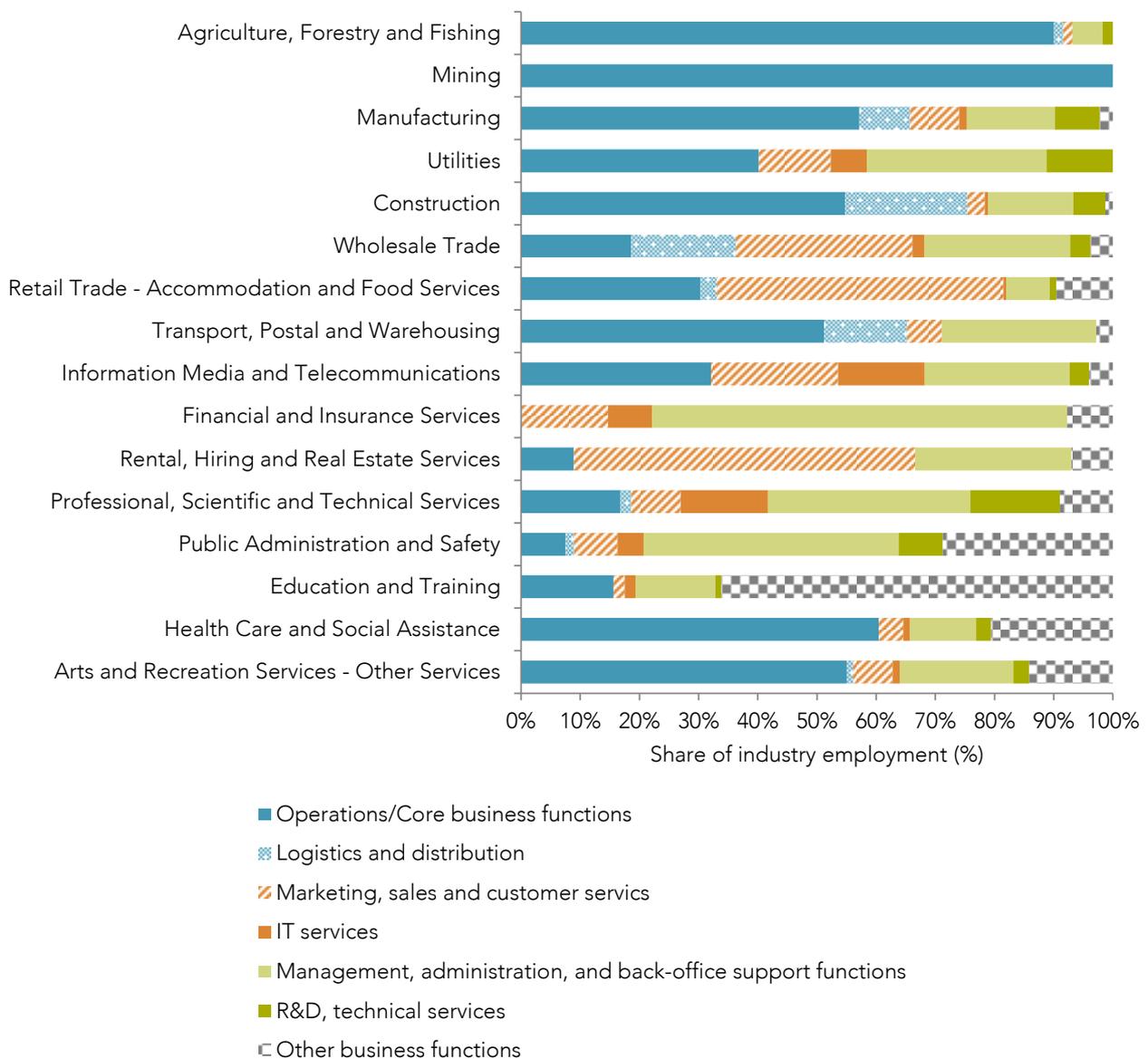
<sup>4</sup> For further information on the typology of business functions used in this report refer to the Appendix.

<sup>5</sup> It is also important to note that within manufacturing industries, there are an increasing number of occupations corresponding to business functions that are services and that are measured as manufacturing value-added in the context of TiVA (particularly in those larger firms that have near-complete vertical integration).

this function varying between industries (ie, greater in primary- and goods-producing industries). Business functions to support the execution of core functions comprise an integral part of the value chain for both, manufacturing and services firms with these functions accounting for the remaining 60% of total employment. More specifically, management, administration and back-office support functions comprise 19% of total employment in New Zealand, followed by other business functions (eg, cleaners, helpers, legislators and senior officials) which accounts for 14% of total employment in New Zealand.

A forthcoming paper by the OECD (2016) aims to further examine the role of services in GVCs and more generally, as activities creating value and leading to productivity growth. The paper includes new evidence at the country and industry level on the prevalence of services in GVCs through an analysis of business functions based on occupational data (similar to the data used in Figure 8 above). This will allow inter-country comparisons to be made between New Zealand and other countries for which data has been collected (at this stage: Australia, Brazil India, Japan, Switzerland, Turkey, the US and EU countries).

**Figure 8 Domestic employment by business function and by industry in New Zealand**



Source: Statistics New Zealand, customised request

## 6 Implications for trade and trade policy

Global value chains (GVCs) have changed the way in which firms do business and in which trade is conducted, and the patterns of trade. However, this has "not yet been reflected in trade rules, trade negotiations or trade governance structures" (Drake-Brockman & Stephenson, 2012). Services, in particular, play a more important role as links or enablers in GVCs than previously understood. This has important implications for trade policy.

The Swedish National Board of Trade (2012) investigated the implications of servicification for trade and trade policy. It contended that the main policy implication of servicification is to think in terms of goods and services, rather than simply goods or services. This calls for policies (particularly trade policies) that take account of the interdependence between goods and services, and that look at the role of manufacturing to understand services. Examples of such policies discussed in the Swedish National Board of Trade's report are listed below:

- **Manufacturing companies should be consulted in the formulation of services trade policy** – both as consumers and suppliers of services. It is recommended that manufacturing companies be more actively included in services consultations and that trade policy officials should consider outreach activities to help companies understand their services interests and identify barriers (as there can often be a discrepancy between what manufacturers and trade officials consider being a 'service').
- **If services and manufacturing are complements, they should not be measured against each other in trade negotiations.** This means that sensitivities in one field should not stand in the way of liberalisation in other fields. An example of this is that defensive positions on manufacturing have affected the possibility of liberalising services in some EU FTAs.
- In general, **servicification strengthens the case for comprehensive trade liberalisation of services, goods and information flows.** The increased use of services as inputs into production highlights the need for accessible and competitive service markets and there is a case for liberalisation of services – particularly FDI – to improve industry productivity and competitiveness. New Zealand already has relatively low barriers on imports of goods and services but, as the Productivity Commission (2014) found, there is still scope to lower barriers further in order to facilitate access to foreign services inputs.<sup>6</sup>
- **Goods trade policy should be adapted** particularly if firms find that traditional barriers to trade in goods (e.g. tariffs and product standards) are the most problematic for their servicified offerings. This is most applicable to goods that have services embedded (rather than embodied) at the point of sale. For example, there have been instances where higher service content in a good (e.g. decoders for satellite TV) has resulted in a different tariff classification being applied to the good as it is judged that the service content (e.g. the ability to communicate with the satellite) was the defining feature of the product. For such goods, higher service content can also increase the regulatory and compliance burden on firms particularly if there are more stringent requirements regarding testing or certification in place.
- The interdependence between goods and services has led to ideas for **new ways to negotiate services trade** being put forward (Swedish National Board of Trade, 2012). Options for alternative methods include:
  - **Negotiate goods and services together** – similar to the WTO Government Procurement Agreement. It is argued that if related goods and services are negotiated together in 'clusters', it could help address barriers faced by servicified companies in a more comprehensive way.

<sup>6</sup> The Productivity Commission listed our foreign investment screening requirements and some behind-the-border barriers (including those identified in the Australia-New Zealand Productivity Commissions' (2012) joint study into barriers to trans-Tasman trade in services) as barriers that affect competition in the New Zealand services sector.

However, this approach makes it difficult to draw the line as to what services/goods to include in each cluster.

- **Negotiate clusters of services only.** This could arguably be done without any major changes in the negotiation frameworks but the issue of delimitation would remain. It was also suggested that for greater effect, clusters could be combined with sector-specific regulatory commitments regarding: competition, technical barriers to trade, licensing, trade facilitation etc.
- **Rationalise services negotiations by agreeing on horizontal benchmarks** with a particular focus on removing barriers to Mode 3 and Mode 4 services trade. These Modes were found to be of most importance to businesses as these modes enable proximity to the consumer.
- **'New' types of trade barriers should also be considered.** One such issue that is growing in importance is that of data transfer rules. Transferring data across borders is posing challenges to servicified firms that want to handle data in several countries. However, this might be prohibited for a range of reasons including laws concerning personal data storage. Therefore, thought should be given to how a barrier might be reformed so that it meets the policy objective in the least trade-distorting manner (rather than simply removing the barrier altogether). Another issue that has been raised is around the application of subsidies to services. In general, subsidies to services are multilaterally much less disciplined than subsidies to goods.
- And finally, in order for trade negotiations to properly support servicification, **thought should be given to all service sectors** – not just those that have long been identified as key interests in negotiations (mostly through input from services companies). Sectors that are less well covered include: maintenance and repair services, R&D services, technical testing and analysis services, and rental and leasing services.

## 7 Implications for domestic regulation

Given the importance of services as an input into manufacturing, the performance of service industries has a wide-ranging impact on the effective functioning of other parts of the domestic economy. New Zealand's overall labour productivity has been below the OECD average since the 1970s, with the services sector having contributed to this continuing gap. While performance differs significantly between industries, the services sector overall has not achieved the productivity boost seen in the US, Australia and some other OECD economies since the mid-1990s (New Zealand Productivity Commission, 2014).

Service industries are often highly regulated (Meehan, 2014). The Productivity Commission's Inquiry (2014) into New Zealand's services sector considered the effects of regulation on productivity in the services sector and contended that the potential benefits of effective and efficient regulation of service industries are likely to be large as service industries make up a relatively large part of the economy and provide important inputs to other industries. According to Westcott (2011):

- Network services such as: utilities, telecommunications, transport etc, typically require **significant infrastructure investment** which subsequently, requires large economies of scale. In general, these services tend to be most sensitive to regulatory restrictions (eg, foreign investment laws that restrict overseas investment or restrictions on the entry for the provision of port or aviation services), arguably making them a priority for liberalisation efforts.
- Business services rely on a **skilled labour force** and policies targeting these industries should enable effective competition. FDI in the business services sector has been found to spur specialisation and therefore, increase productivity in other industries using these services.

- Other domestic services (eg, construction or cleaning services) are fast-growing, labour-intensive industries where it is recommended that policies should promote **flexibility, easy entry** and keep industry-specific regulations to a minimum.

Firms in parts of New Zealand's services sector tend to operate in small, domestic markets that are insulated from competition and learning opportunities – presenting little opportunity for these firms to scale up. This lack of competitive pressure allows low-productivity firms to survive for longer than they would in a more competitive environment (Conway, 2016). Moreover, regulatory barriers to competition and technology diffusion tend to be highest in service industries, including the service industries that use ICT intensively (Conway & Nicoletti, 2006).

Lifting competitive intensity is therefore critical to improving services sector productivity. In its inquiry into boosting services sector productivity, the Productivity Commission highlighted the following opportunities to **strengthen competition** in the services sector:

- reduce barriers to trade in services (for example, by encouraging increased international regulatory coherence);
- enhance the capacity of consumers to drive competition (eg, via comparison websites, processes for switching service providers etc);
- reform occupational regulation to remove entry barriers and conduct regulations that hamper competition; and
- sharpen competition law.

ICT is also an important driver of productivity growth in the services sector. The Productivity Commission's services inquiry identified ways to sharpen competition, as well as changes that would help firms to harness ICT more effectively such as improving framework policies (eg, labour market, education and infrastructure policies), improving ICT skills in New Zealand, and reducing regulatory barriers to adopting cloud computing (given the host of benefits offered by cloud computing).

When crafting domestic regulation pertaining to the services sector, it is also important to look outwards and assess the potential impact of domestic regulation on international connection (Conway, 2016). This is because cross-country differences in regulation (and enforcement of regulation) of service industries can restrict cross-border economic activity and limit competition intensity domestically. Therefore, where appropriate, domestic regulation in New Zealand should be crafted with a view towards international regulatory coherence.

## 8 Conclusions

On a valued-added basis, services account for a greater share of New Zealand's exports than previously understood. This is because manufacturing firms today buy and produce more services than ever before. This research note examines the trend towards servicification of manufacturing in New Zealand. It takes an initial look at the characteristics of New Zealand's intermediate services that are used in the production of our primary and manufacturing exports, and the related implications for trade policy and domestic regulation.

Services bundled with goods can be 'embodied' (ie, services inputted during the production process such as ICT or R&D services), or 'embedded' (ie, services accompanying the sale of goods such as after-sales services). Over 57% of New Zealand's total exports in 2011 comprised of services (around 50% domestic services, 8% foreign services) – above the OECD average of 54.3% and much higher than the 29% share the services sector comprises of New Zealand's total exports on a gross basis.

New Zealand's manufacturing and primary product exports incorporate sizeable proportions of services inputs, particularly wholesale and retail trade and other business services. Moreover, the services sector is a large employer in New Zealand, accounting for more than 80% of employment. Globally, it is evidenced that there is a trend towards fewer jobs in the core operations of firms (ie, manufacturing and processing) and more jobs in 'services' business functions (eg, R&D, design, distribution, logistics, marketing, customer services etc). These support business functions are essentially services – highlighting the role of services in the creation of value.

Services (embedded services, in particular) have important implications for trade policy – spanning how trade agreements are negotiated, what firms are consulted, and understanding the wider benefits of services trade liberalisation for goods trade. More generally it suggests that the focus of trade policy should be on goods and services, not goods or services.

On the other hand, embodied services have implications for New Zealand's domestic policy settings given the importance of such services as inputs into manufacturing. Domestic industry (eg, manufacturing, agriculture, mining) stand to benefit the most from domestic regulatory reforms impacting the services sector such as: opening services markets to greater competition, and lowering barriers to investment and other behind-the-border barriers.

## References

- APC & NZPC. (Australia Productivity Commission & New Zealand Productivity Commission). (2012). *Strengthening trans-Tasman economic relations, Joint Study, Final Report*. Retrieved from [www.productivity.govt.nz/sites/default/files/trans-tasman.pdf](http://www.productivity.govt.nz/sites/default/files/trans-tasman.pdf)
- Cernat, L., & Kutlina-Dimitrova, Z. (2014). *Thinking in a Box: A 'Mode 5' Approach to Service Trade*. Chief Economist Note, Issue 1. Retrieved from <http://trade.ec.europa.eu/doclib/html/152237.htm>
- Conway, P., & Nicoletti, G. (2006). *Product market regulation in the non-manufacturing sectors of OECD countries: Measurement and highlights*. OECD Economics Department Working Paper no. 530.
- Conway, P (2016). *Achieving New Zealand's Productivity Potential*. Retrieved from <http://www.productivity.govt.nz/research-paper/achieving-new-zealands-productivity-potential>
- Drake-Brockman, J., & Stephenson, S. (2012). *Implications for 21<sup>st</sup> Century Trade and Development of the Emergence of Services Value Chains*. Retrieved from [www.ictsd.org/themes/services/research/implications-for-21st-century-trade-and-development-of-the-emergence-of](http://www.ictsd.org/themes/services/research/implications-for-21st-century-trade-and-development-of-the-emergence-of)
- Eurostat-OECD. (2014). *Methodological Guide for Developing Producer Price Indices for Services*. Retrieved from [www.oecd.org/publications/eurostat-oecd-methodological-guide-for-developing-producer-price-indices-for-services-9789264220676-en.htm](http://www.oecd.org/publications/eurostat-oecd-methodological-guide-for-developing-producer-price-indices-for-services-9789264220676-en.htm)
- Lanz, R., & Maurer, A. (2015). *Services and Global Value Chains – Some Evidence on Servicification of Manufacturing and Services Networks*. Retrieved from [https://www.wto.org/english/res\\_e/reser\\_e/ersd201503\\_e.pdf](https://www.wto.org/english/res_e/reser_e/ersd201503_e.pdf)
- Lodefalk, M. (2012). *The Role of Services for Manufacturing Firm Exports*. Retrieved from [https://www.kth.se/polopoly\\_fs/1.337226!/Menu/general/column-content/attachment/paper17.pdf](https://www.kth.se/polopoly_fs/1.337226!/Menu/general/column-content/attachment/paper17.pdf)
- Lodefalk, M. (2015). *Servicification of Manufacturing Firms Makes Divides in Trade Policy-Making Antiquated*. Retrieved from [https://www.researchgate.net/publication/270875940\\_Servicification\\_of\\_Manufacturing\\_Firms\\_Makes\\_Divides\\_in\\_Trade\\_Policy-Making\\_Antiquated](https://www.researchgate.net/publication/270875940_Servicification_of_Manufacturing_Firms_Makes_Divides_in_Trade_Policy-Making_Antiquated)
- Meehan, L. (2014). *New Zealand's international trade in services: A background note*. Productivity Commission Research Note 2014/1. Available from [www.productivity.govt.nz](http://www.productivity.govt.nz)
- New Zealand Productivity Commission. (2014). *Boosting Productivity in the Services Sector: Final Report*. Retrieved from [www.productivity.govt.nz/sites/default/files/services-inquiry-final-report.pdf](http://www.productivity.govt.nz/sites/default/files/services-inquiry-final-report.pdf)
- OECD. (2016). *Services as Value-Creating Activities: Chains, Networks and Shops*. (Forthcoming).
- Porter, M. (1985). *Competitive Advantage*. Free Press.
- Swedish National Board of Trade. (2010). *Servicification of Swedish Manufacturing*. Retrieved from [www.kommers.se/In-English/Publications/2010-and-older/Servicification-of-Swedish-Manufacturing/](http://www.kommers.se/In-English/Publications/2010-and-older/Servicification-of-Swedish-Manufacturing/)

- Swedish National Board of Trade. (2012). *Everybody is in Services – The Impact of Servicification in Manufacturing on Trade and Trade Policy*. Retrieved from [www.kommers.se/In-English/Publications/2012/Everybody-is-in-Services/](http://www.kommers.se/In-English/Publications/2012/Everybody-is-in-Services/)
- Westcott, T. (2011). *The importance of embodied services for trade and investment in the APEC region: Issues, conclusions and next steps*. Report prepared for the Regional Forum on services trade policy: "Recognising the importance of open services to manufacturing trade and investment in the APEC region". Retrieved from [www.apec.org.au/docs/05-2012%20embodied%20services/05-2012%20Discussion%20Paper%20.pdf](http://www.apec.org.au/docs/05-2012%20embodied%20services/05-2012%20Discussion%20Paper%20.pdf)

## Appendix A OECD's typology of business functions in value chains

No.	Business function	Definition	Examples of occupations (ISCO 2008)
1	Operations/Core business functions	The core/primary business function of the firm. Generally the production of goods or services intended for the market or third-parties.	Food processing and related trades workers; Wood processing and papermaking plant operators; Assemblers; Garment and related trades workers.
2	Transport, logistics and distribution support functions	A support function that includes activities related to procurement, transportation, warehousing and the delivery of goods and services to customers.	Material-recording and transport clerks; Heavy truck and bus drivers; Transport and storage labourers.
3	Marketing, sales, after sales service support function	A support function focusing on market analysis, advertising, selling, retail management, as well as customer services (including help desks and call centres).	Sales, marketing and development managers; Sales, marketing and public relations professionals; Cashiers and ticket clerks; Client information workers.
4	IT services and software support functions	Activities related to data processing, software development and the provision of ICT services.	Software and applications developers and analysts; Database and network professionals; Information and communications technology technicians.
5	Management, administration, and back-office support functions	Activities associated with the administration of the firm, including legal, finance, accounting and human resources management.	Managing directors and chief executives; General office clerks; Administrative and specialised secretaries.
6	R&D, engineering and related technical services and R&D support functions	This support function includes activities related to experimental development, research, design, engineering and related technical consultancy, technical testing, analysis and certification.	Mathematicians, actuaries and statisticians; Architects, planners, surveyors and designers; Engineering professionals; Life science technicians and related associate professionals; Ship and aircraft controllers and technicians.
7	Other business functions	Activities related to maintenance and repair, security, as well as other activities not belonging to specific firm-level business functions. Also includes education and training.	Domestic, hotel and office cleaners and helpers; Protective services workers; Machinery mechanics and repairers; Armed forces officers; legislators and senior officials; religious professionals; Secondary education teachers.

Source: OECD, 2016 (forthcoming)