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An update on the recent trends in New Zealand's international freight transport

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Abstract

This paper investigates the extent to which New Zealand's international freight transport is recovering from the 2008 global financial crisis. We also look at changes in transport modal shares, key commodity types and freight movements between New Zealand and its key trading partners.

We observed the imbalance between export and import volumes by sea has widened, resulting in a high level of empty container movements. We also noted a large increase in export volume of low-value heavy cargo (for example, logs) by sea to China. Both of these trends can have important implications regarding the performance of New Zealand's international freight transport movements and the achievement of the government's export growth goal.

Disclaimer

The opinions expressed in this paper are those of the authors, and do not necessarily represent the views of the Ministry of Transport.

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1 Introduction

One of the Government's objectives in the Business Growth Agenda is to increase the ratio of exports to gross domestic product (GDP) from 30% to 40%¹ by 2025. This is an ambitious goal but as a small country, international trade is important for New Zealand's economic growth. As noted in Ministry of Business, Innovation and Employment (2012),

“The ability of businesses to sell their goods and services to customers in overseas markets is critical. It enables New Zealand businesses to access a larger market. Businesses are then able to benefit from economies of scale, and to specialise in areas they have an advantage in.”

Following the global financial crisis (GFC) in mid-2008, world merchandise trade experienced the sharpest contraction (14% by volume and 23% by value in 2009) in more than seven decades (UNCTAD², 2010). In a recent analysis of external trade in the USA and the EU27³, the International Transport Forum (ITF) found external trade (by value) in these countries has fully recovered⁴ from the downturn (ITF, 2012). So how is New Zealand's external trade doing by comparison?

This paper looks at the recent trends in New Zealand's international freight transport⁵ to find out how New Zealand is performing and to identify any emerging trends that can affect the performance of the transport sector and its economic growth potential.

In Section 2, we look at the extent to which New Zealand's international freight transport is recovering from the global trade downturn. In Section 3, we discuss the impact of trade imbalance on transport costs and the mitigation strategies adopted by the industry. In Section 4, we look at the trends in exports to China and the effects on international transport.

2 Effects of global trade downturn on New Zealand's external trade

Over the last decade, total value of New Zealand's international merchandise trade (imports and exports)⁶ has fluctuated around 45% of the nation's GDP⁷. The majority of this international cargo is transported by sea (99% by volume⁸ and around 85% by value).

Figure 1 shows that similar to the trends in the USA and the EU27 (Appendix 1), New Zealand's external trade by sea declined following the GFC but exports recovered relatively quickly compared

¹ These include both cargo and service trades.

² UNCTAD stands for United Nations Conference on Trade and Development

³ EU27 refers to the European Union (EU), an economic and political union of 27 member states that are located primarily in Europe

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⁵ The data we analysed excluded parcel post movements because such information cannot be broken down by mode. However, ignoring parcel post transaction has no real impact on the analysis since it contributes to less than 1% of the totals.

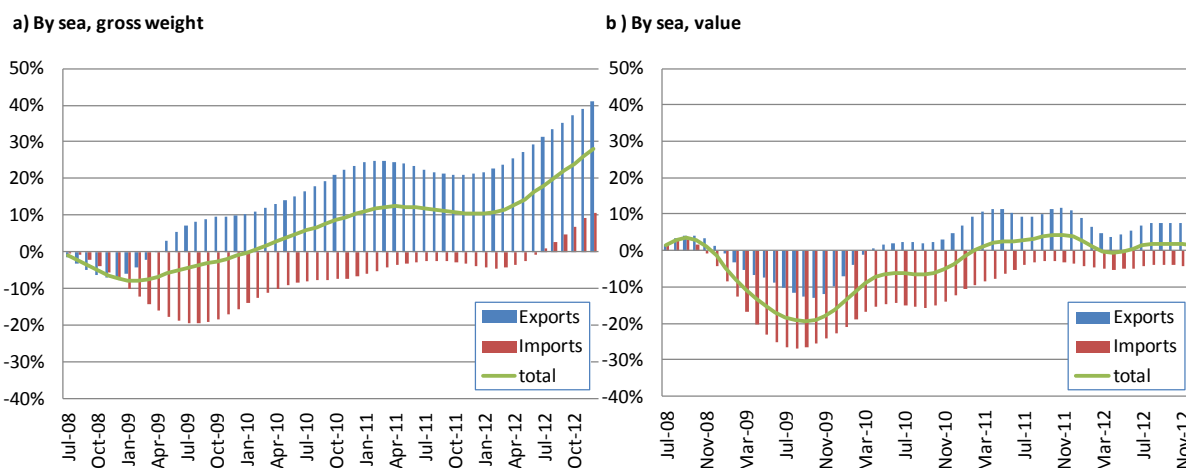
⁶ To identify the extent to which New Zealand's international merchandise trade has recovered from the pre-crisis peak (June 2008), this paper focuses on the relative performance since June 2008. However, data on freight volumes and values is tabulated in Appendix 2. Monthly merchandise trade over the time period from January 2005 to December 2012 was obtained from Statistics New Zealand. This data was seasonally adjusted using the Census X12 ARIMA programme in the EViews software package.

⁷ See The Ministry of Transport's Transport Indicator Monitoring Framework (see <http://www.transport.govt.nz/ourwork/TMIF/Pages/FT019.aspx>)

⁸ Measured in gross weight (kilograms and tonnes).

to imports. Sea export volume surpassed its pre-crisis peak by mid-2009 (and export value by late 2011) but sea import volume only recovered in late 2012 (with import value still below its pre-2008 level).

Figure 1: New Zealand's international sea freight transport movements relative to June 2008

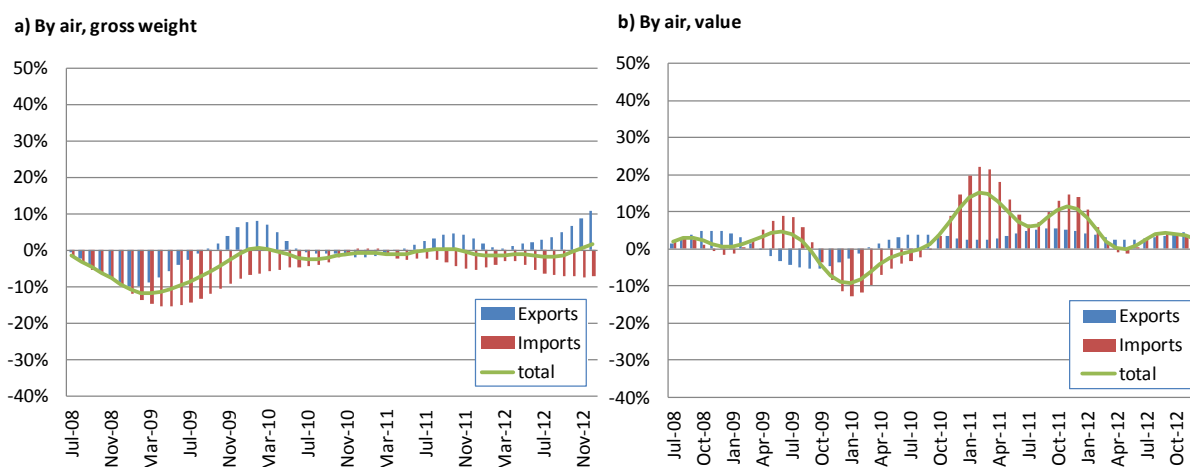


Note: Based on month trends and seasonally adjusted data.

Source: Statistics New Zealand and Ministry of Transport

Figure 2 shows the corresponding picture for international air freight movements. Although there was also an initial reduction in air freight exports by volume, the impacts and the recovery were much smaller in scale than the sea trade counterpart. Unlike sea imports, air import (by volume) is still below its pre-GFC peak. In terms of external trade by value, both imports and exports by air had recovered by 2010 (whereas only exports have recovered in the sea trade counterparts).

Figure 2: New Zealand's international air freight transport movements relative to June 2008

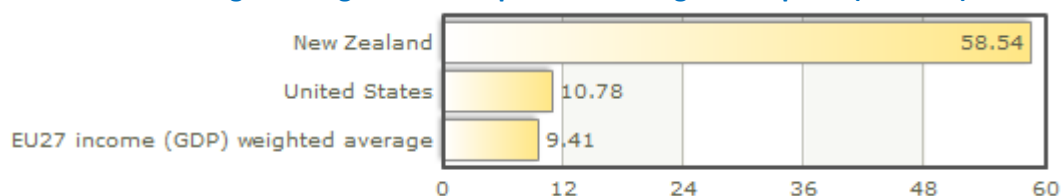


Note: Based on month trends and seasonally adjusted data.

Source: Statistics New Zealand and Ministry of Transport

New Zealand's external merchandise trade is more resilient than that in the USA and EU27 partly because of the difference in the commodities being traded. NZ has a relatively high agricultural exports share of merchandise trade. For the years from 2006 to 2009, 60% of New Zealand's exports (by value) were agricultural products compared to around 10% in the USA and EU27 (Figure 3). Dairy produce is New Zealand's key agricultural export commodity (accounts for 25% by value), followed by wood and related products (accounts for 8% by value).

Figure 3: Agricultural exports share of goods exports (2006-09)

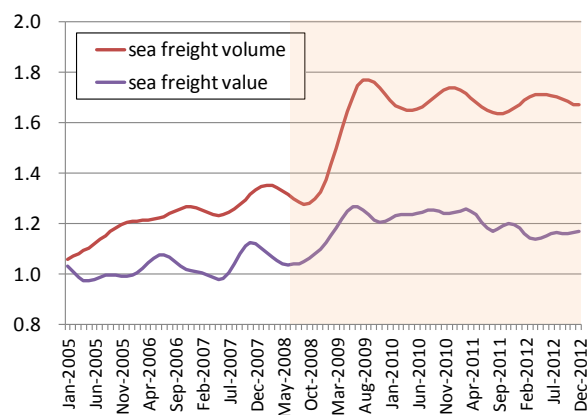


Source: The World Bank (World Trade Indicators)

3 Trade imbalance and transport issues

Over the past 8 years, New Zealand's freight volume exported by sea has been consistently higher than that imported and the gap has widened since early 2009. Figure 4 shows that the ratio of exports to imports in gross weight has increased from between 1.2 and 1.4 (prior to June 2008) to between 1.6 and 1.8 (since 2009). This trade imbalance raises challenges for the transport sector and has significant impacts on transport arrangements and transport costs.

Figure 4: Ratio of exports to imports by sea



Source: Statistics New Zealand and Ministry of Transport

The trade and operational imbalances resulted in empty containers being moved into, out of and around New Zealand. This issue has been discussed in previous studies (for example, CTS and Njord, 2009, Wang and Leung, 2012) but the size and scale of the problem was unclear due to a lack of information.

Ministry of Transport (2013) recently published the results of the Freight Information Gathering System, a data collection programme that has been developed to provide an overview of freight movements in to, out of and around New Zealand, including containerised freight, rail freight, and

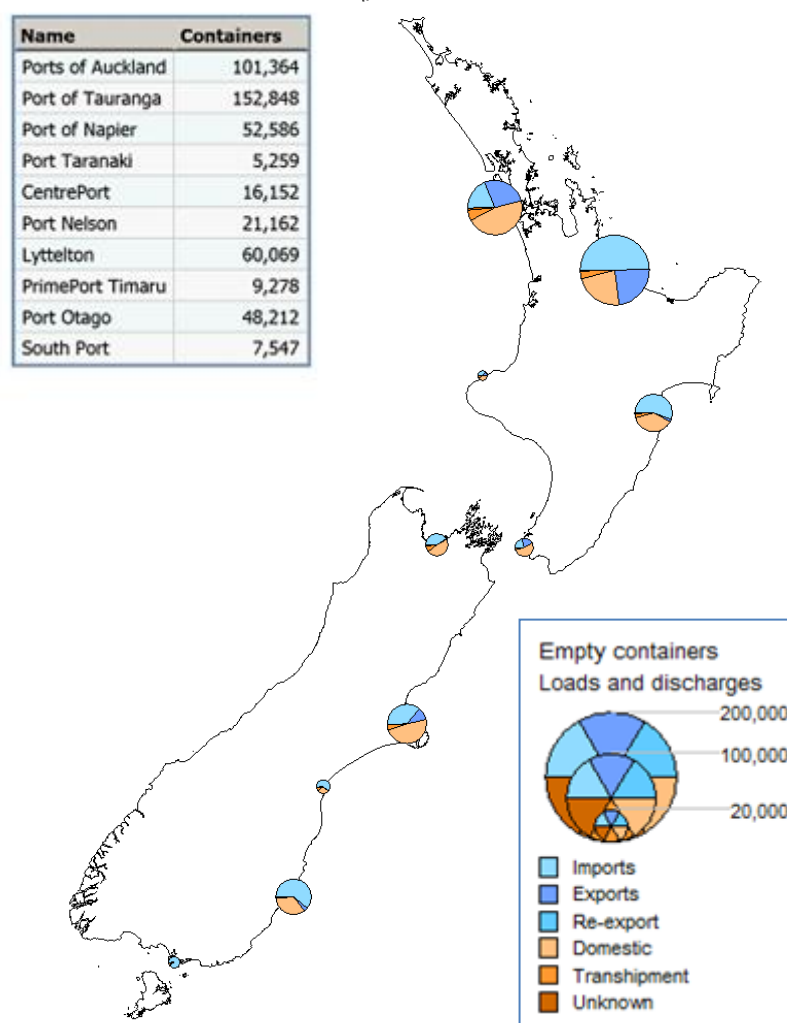
bulk coastal freight. Data for 2012 (the first full year of data available) shows that empty container loads and discharges⁹ represent nearly 30% of total container movements (Table 1). The extent of the imbalances is different between seaports and is illustrated in Figure 5.

Table 1: Containers and TEUs loads and discharges (January 2012 to December 2012)

	Container loads and discharges	TEUs loads and discharges
Total	1,653,831	2,411,847
Empty	474,477	701,327
% empty	29%	29%

Source: Ministry of Transport (2013)

Figure 5: Empty containers loads and discharges (January 2012 to December 2012)



Source: Ministry of Transport (2013)

⁹ Around 40% of the empty containers were transported between ports within New Zealand, the remaining were transported in to and out of New Zealand.

Trade imbalances and the need to reposition empty containers is not unique to NZ but the scale of the problem for NZ is larger (compared to around 20% of total global container flows at sea that are empty¹⁰).

Konings et al (2011) estimated that the total costs of sea transport, container handling and storage for the repositioning of an empty container over a distance of 400 km between two ports is about US\$555 (or NZ\$700). Based on this estimate, the total cost of moving empty containers alone would be over \$500 million in New Zealand. This figure excludes other land-side transport costs and other indirect impacts such as delays at the terminal while empty containers are loaded and unloaded and emission effects from transporting empty containers.

Various strategies have been adopted by the shipping industry to minimise empty containers frequency and the associated transport costs¹¹ through technology and innovation. For example, container pooling¹² (although this is still an uncommon practice) and the use of real-time information to match fleet capacity with potential freight (Konings et al, 2011).

Over the last two decades¹³, the shipping industry has also attempted to design collapsible containers for storage or trans-shipment purposes. The potential benefit of using collapsible containers is significant, a reduction by up to 70% of the cost of shipping a standard empty container was reported by Konings et al (2011)¹⁴.

Despite this potential benefit, the uptake has been low. Earlier collapsible containers require two to three workers to manually dismantle and assemble unit which adds cost and delays at ports. There were also reports of insufficient protection in the seals, high wear and tear of hinges and other related structural problems (Moon et al, 2013).

More recent designs of collapsible containers are said to be able to overcome previous problems encountered (Konings et al, 2011). However, studies found that since the purchasing cost and the transport cost are met by different parties, the conflicting interests have constrained the uptake of collapsible containers (see Konings et al, 2011).

Further research is required to better understand the extent to which collapsible containers are utilised in New Zealand's external cargo movements and the role of government involvement to better manage the empty container repositioning issue.

¹⁰ Source: Konings (2005).

¹¹ <http://piertransportation.wordpress.com/2011/10/20/imbalance-in-trade-prompts-clever-solution-for-empty-containers-2/>

¹² The free-label containers, also known as grey-boxes are easily interchangeable between different organisations (source: Konings and de Brito, 2011).

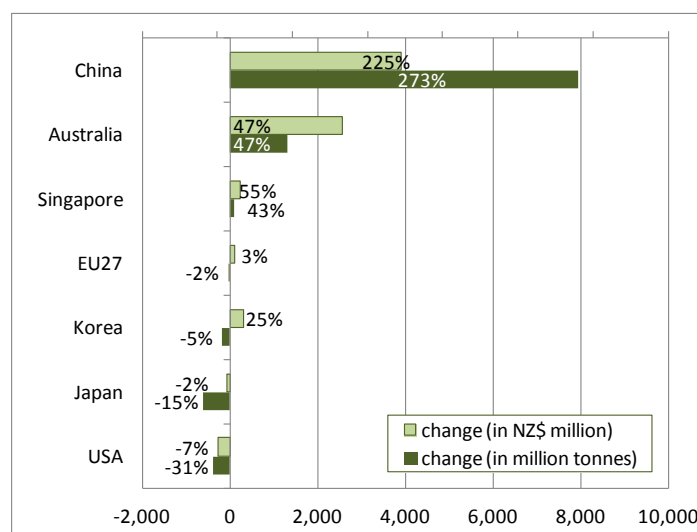
¹³ For example, a Swiss based company launched a hinge-less foldable containers in the early 1990s. (Source: Konings and de Brito, 2011)

¹⁴ Based on Konings and de Brito, the use of foldable container can reduce the sea transport and container handling and storage costs by US\$400 (or roughly 70% of US\$555).

4 Increasing importance of China as New Zealand's export trading partner

Figure 6 shows that since the New Zealand-China Free Trade Agreement (FTA) came into force in October 2008 China's share in freight volume exported by sea has more than doubled (increased by 125% by value and 173% by weight for the three-year periods from 2005-07 to 2010-12). China is now New Zealand's top export trading partner by sea in gross weight terms (or second by export value)¹⁵. Export volume to China is likely to further increase in the future as the remaining provisions of the FTA gradually come into force over the next few years.

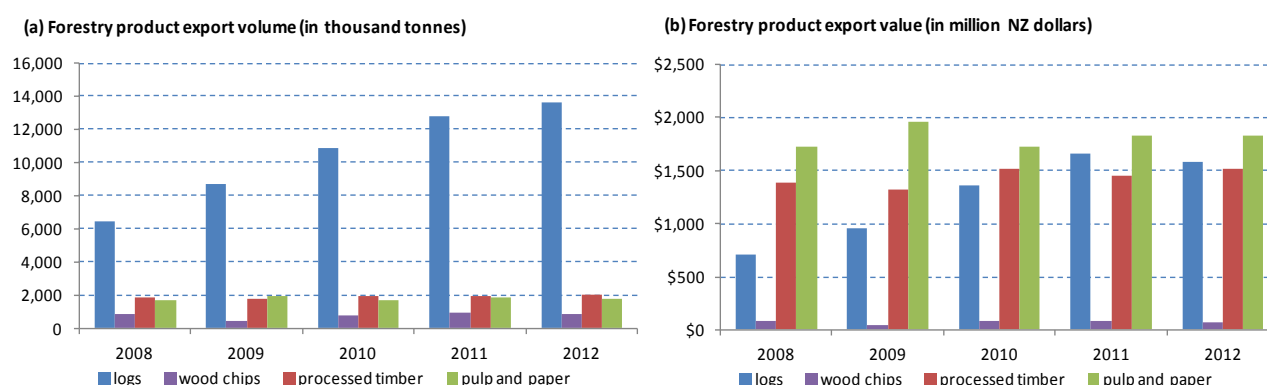
Figure 6: Exports growth by country
Average 2005-2007 compared to average 2010-2012



Source: Statistics New Zealand and Ministry of Transport

Logs exported (in tonnes)¹⁶ by sea have more than doubled since 2008 (Figure 7). This increase was mostly driven by the increase in China's demand. In 2012, 80% of the sea freight exported to China (by weight) was logs, wood and wood articles. This accounts for about 30% of total merchandise exports by weight.

Figure 7: Forestry exports volume and value

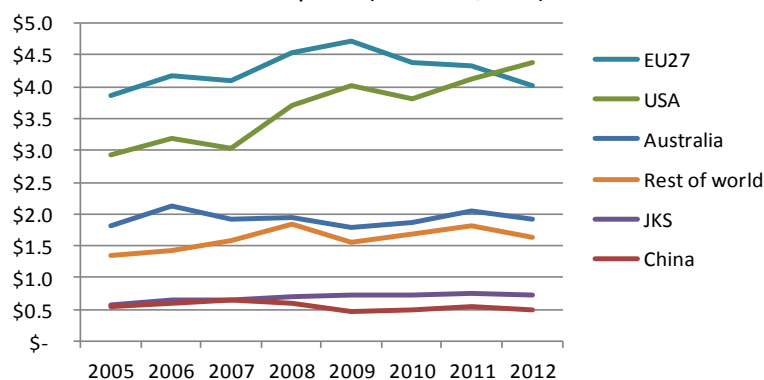


Source: Statistics New Zealand and Ministry of Transport

¹⁵ In 2012, China accounts for 38% of New Zealand's export volume by sea and 16% by value whereas Australia accounts for 12% of New Zealand's export volume by sea and 22% by value.

¹⁶ In 2012, logs made up 39% of sea export volume with other forestry products made up another 14%.

Figure 8: Value of merchandise trade per kilogram by trading partner
Sea exports (Nominal, NZ\$)



Source: Statistics New Zealand and Ministry of Transport

The increasing importance of China is also apparent when considering freight value but the scale is much lower. This is because 80% of exports to China are logs, wood and wood articles which have lower value density. The average value-per-kilogram export to China is the lowest (Figure 8). As transport and infrastructure are used for supporting the transport of low-value heavy weight products, it reduces the resource available for supporting the growth of other high value-added products (eg manufactured goods). If this trend continues, it could affect the achievement of the government's goal of increasing the ratio of exports to GDP.

5 Summary

Similar to that experienced in the USA and the European Union, the 2008 financial crisis also impacted on New Zealand's international trade and freight transport. Overall, New Zealand exports have shown a stronger growth than imports for both sea and air freight.

We observed the imbalance between export and import volumes by sea has widened. This has resulted in a high level of empty container movements. We discussed the strategies adopted by the industry with an attempt to lessen the effects and the issues facing by the shipping industry.

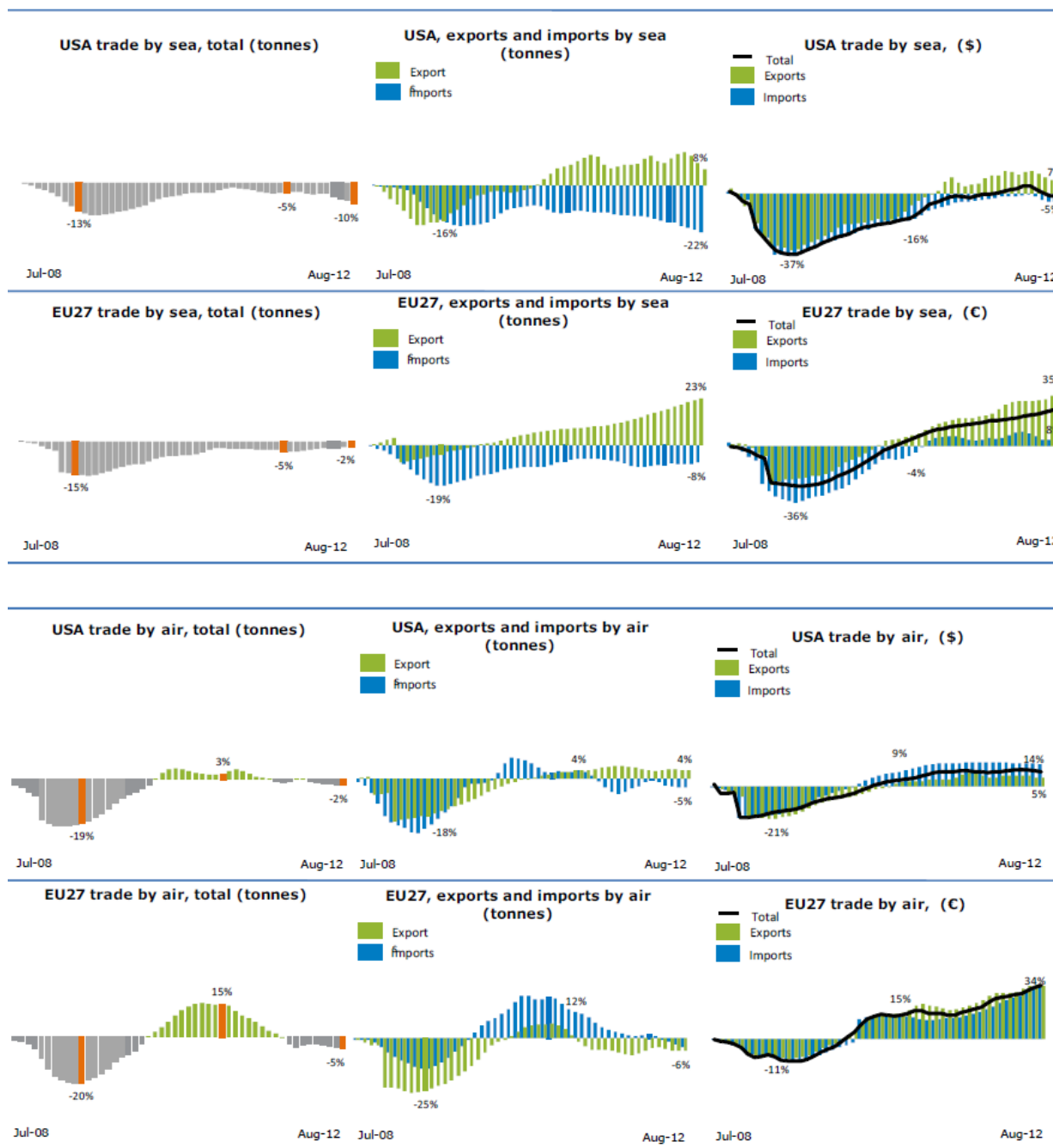
We also noted a significant redistribution of freight movements between New Zealand and its key trading partners. The most pronounced change was a large increase in export volume by sea to China. However, exports to China are of lower value density and therefore resulting in a more moderate increase in export value.

Both of these trends can have important implications regarding the performance of New Zealand's international freight transport movements and the achievement of the government's export growth goal.

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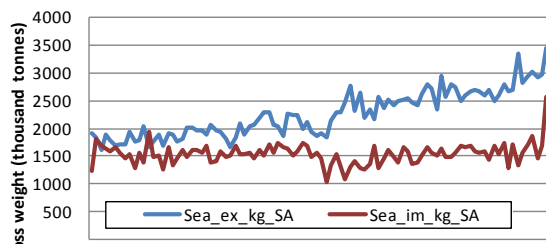
Appendix 1: External trade in the EU27 and the USA, percentage change from pre-crisis peak of June 2008 (tonnes, monthly trend, seasonally adjusted) – July 2008 to August 2012



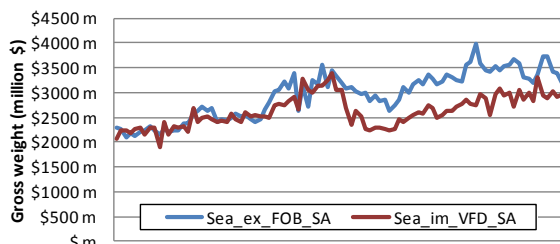
Source: International Transport Forum, 2012.

Appendix 2: International freight transport volumes (thousand tonnes) and value (million NZ dollars) in New Zealand, January 2005 to December 2012 (monthly seasonally adjusted)

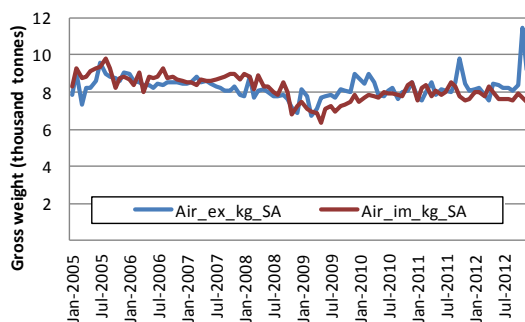
(a) Sea freight volume



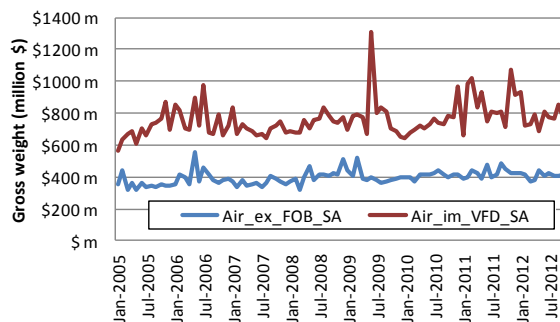
(c) Sea freight value



(b) Air freight volume



(d) Air freight value



Notes: Im = imports, Ex = exports, GW = gross weight, VFD = value for duty (the value of imports before insurance and freight costs are added), FOB = free on board (the value of goods at New Zealand ports before export), SA=seasonally adjusted.