

Supplementary FIGS report - empty container movements

December 2014



Empty container movements

A supplementary FIGS report

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1. Overview

Empty container movements are significant, around 23 percent of our import and export TEUs¹ (excluding re-exports²) are empty. This supplementary Freight Information Gathering System (FIGS) report provides more detailed information on empty container movements than the quarterly FIGS report.

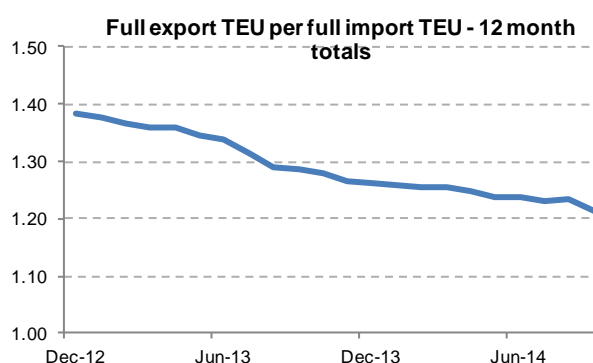
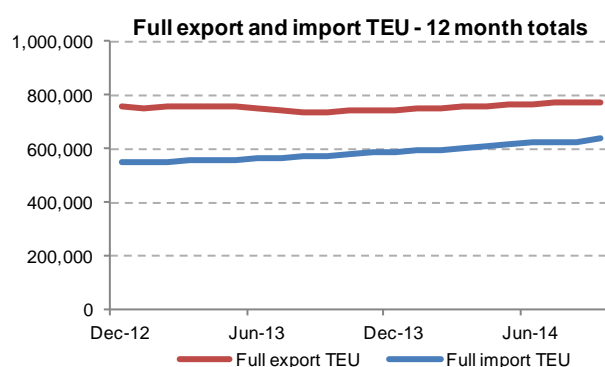
There is an imbalance in the New Zealand container trade in three ways – volume, container type and location:

- we export more containerised cargo than we import
- we export a different container mix than we import
- we export far more from some ports than we import, and import more than we export in Auckland

2. Containerised cargo volumes

We are currently exporting 25 percent more full TEU than we import.

The export/import ratio has dropped from a high of 40 percent more export TEU than import. That change may have been influenced by lower import demand while the economy and consumer confidence were recovering. The graph below shows that containerised imports have grown relative to exports.



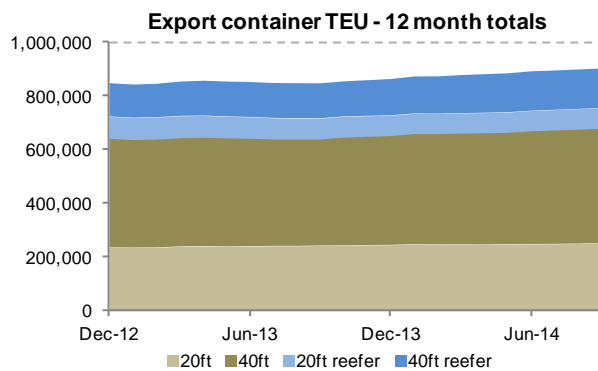
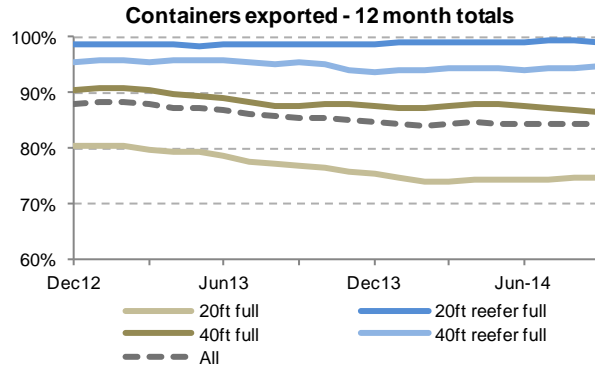
¹ TEU means Twenty ft equivalent units. A 20 ft container is one TEU, and a 40 ft container is two TEU

² Re-export containers come into New Zealand from overseas and are then exported to another country without any change to the container or cargo. An example is USA-NZ-Fiji.

3. Empty container exports and imports

Containers exported

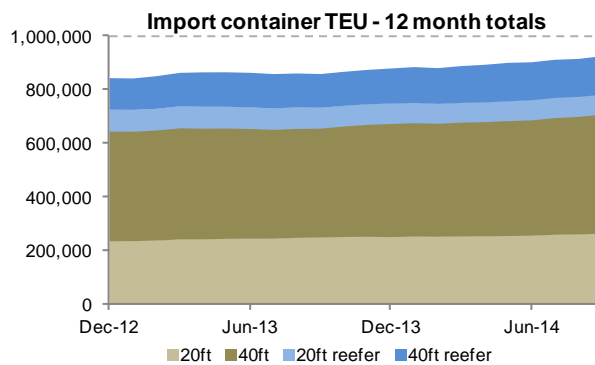
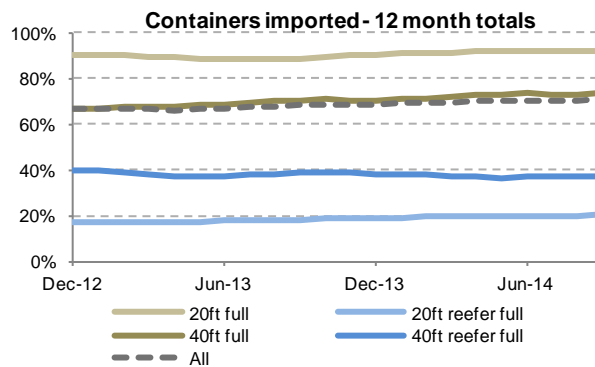
Almost all refrigerated containers (termed reefers) are exported full, but under 75 percent of 20 foot dry (non-refrigerated) export containers are full. Export volumes were just over 900,000 TEU for the 12 months ended September 2014, and 14.3 percent were empty. Half of the empty TEU were 20 ft dry containers.

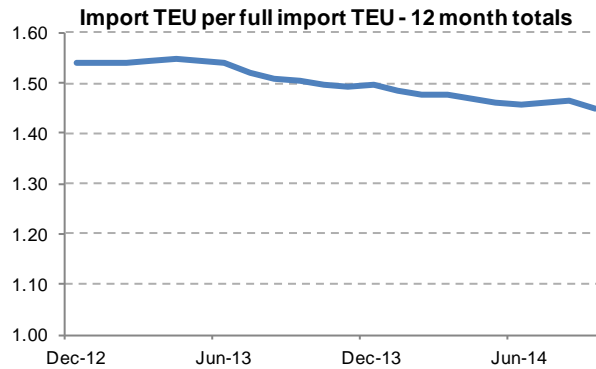
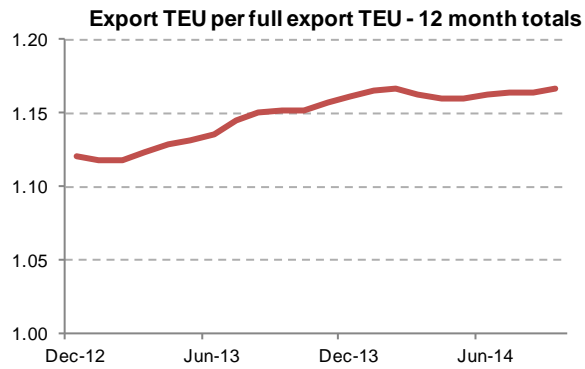


Containers imported

Around 90 percent of imported 20 ft dry containers are full, but only about 70 percent of 40 ft dry containers are imported full. Fewer than 30 percent of reefer containers are imported full.

Import volumes were also just over 900,000 TEU for the 12 months ended September 2014, and 31.1 percent were empty. Overall just under 23 percent of TEU imported to and exported from NZ were empty.





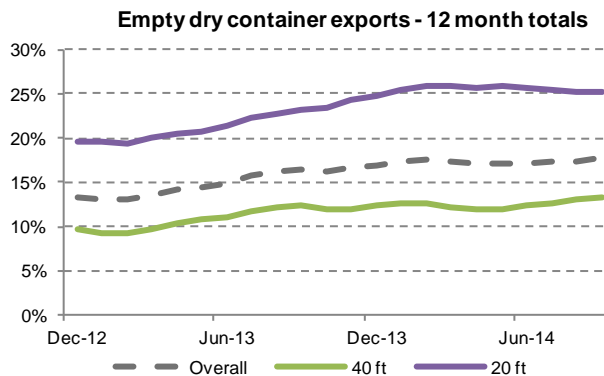
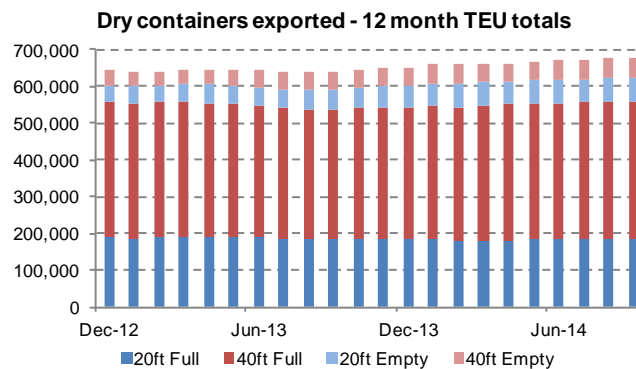
Dry container exports

We have a tendency to:

- import full 20 ft dry containers and empty 40 ft dry containers
- export empty 20 ft containers and full 40 ft containers

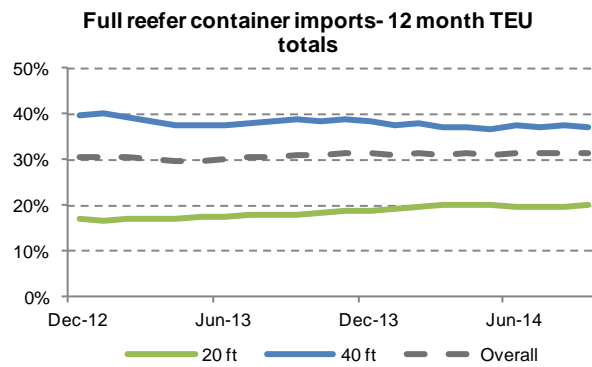
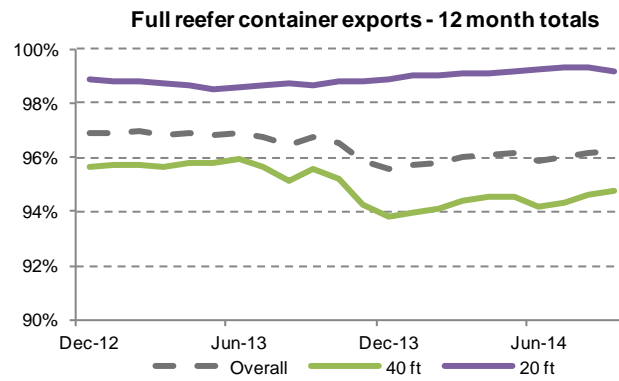
This does not seem an efficient use of ship or port capacity, but Section 4 reveals that this largely makes sense when analysed regionally.

The bottom graph below shows the percentage of dry container export TEU that are empty. The fraction of dry container exports that are empty has increased from 13 percent to 18 percent of TEU.

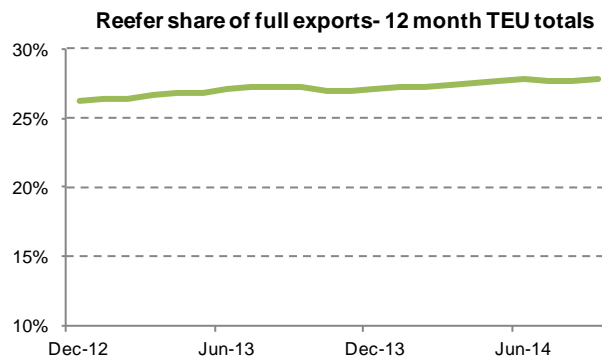


Reefer containers

The high utilisation of reefer containers for export is shown in the graph below. Very few reefer containers are exported empty. One of the reasons is that fewer than 30 percent of reefer TEU are imported full, and the associated costs mean that almost all of them are used for exports.

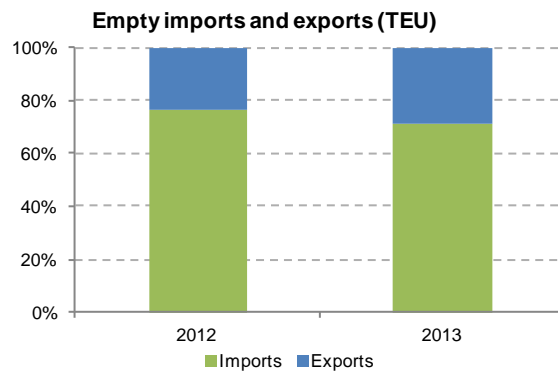


To put this in context, reefer containers make up just over a quarter of the full export TEU.

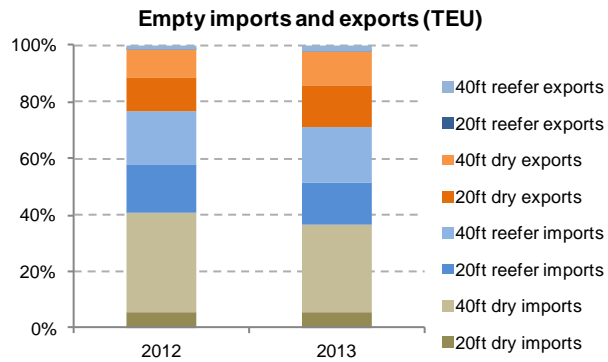


Empty container breakdown

Our import/export volume imbalance means that empty imports make up 75-80 percent of empty TEU imports and exports.



Empty container movements are dominated by imported empties which are then used for exports. Imports of 40 ft dry and reefers made up 65-70 percent of empty TEU imports and exports in 2012 and 2013.



4. Regional patterns

Full imports and exports

There is an imbalance in the volumes of TEU imported and exported full by each port, even before container types are considered. Auckland has many surplus containers, and Tauranga, Napier and Otago export many more containers than come in full. This is a core reason for empty container imports and movements.

Auckland is the largest import port, and has substantial numbers of empty containers after they have been unloaded. Many are loaded for movement along the coasts to other ports and some are exported.

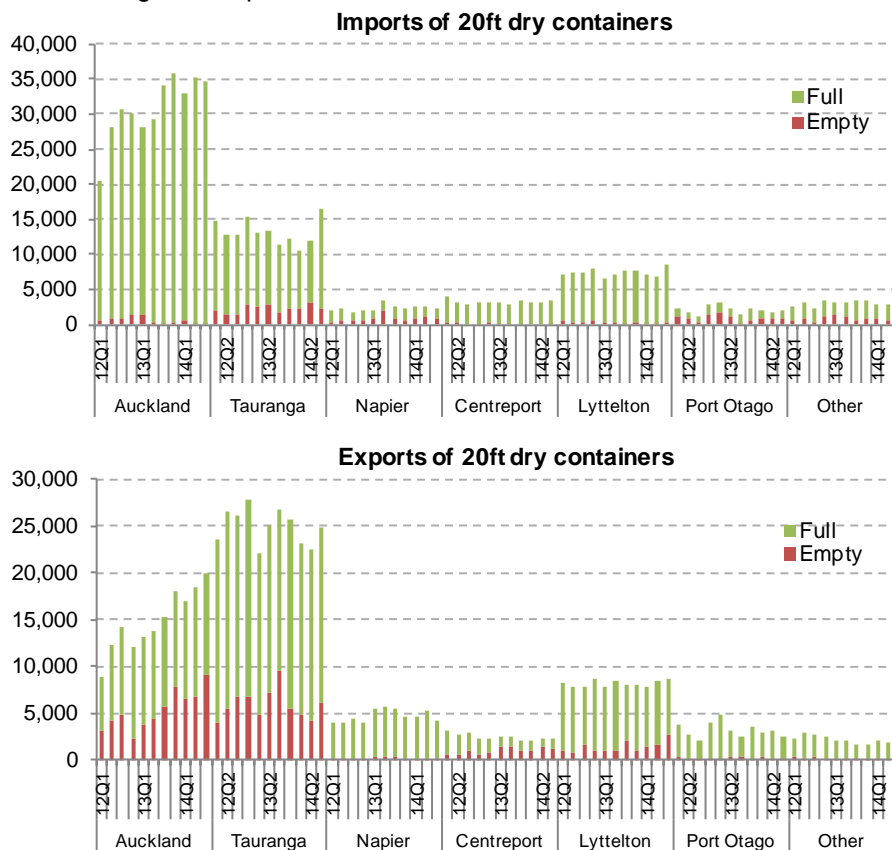
Tauranga is the largest export port, and it imports a substantial number of empties as do Napier and Port Otago.

Southport, Port Otago and Timaru get the majority of their empty containers as imports, rather than distributed from the North Island. They are catered to by shipping services starting in Australia that come around the bottom of New Zealand and visit a sequence of east coast ports dropping off empties and loading exports.

Lyttelton loads a substantial number of empties for coastal transshipment, many for Nelson.

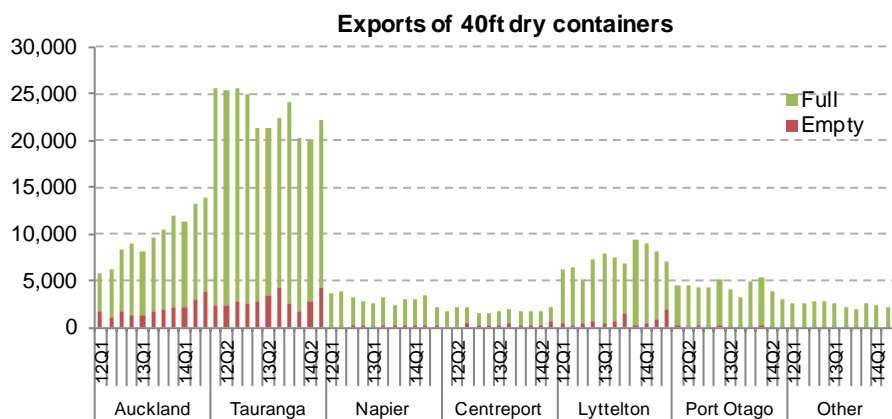
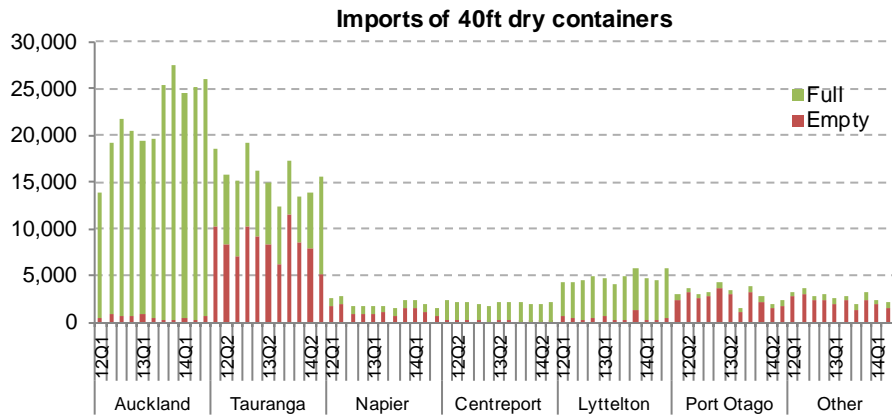
20 ft dry containers

Although a substantial surplus of 20 ft dry containers is exported from Auckland and Tauranga, we also import some empty 20 ft dry containers through those ports.



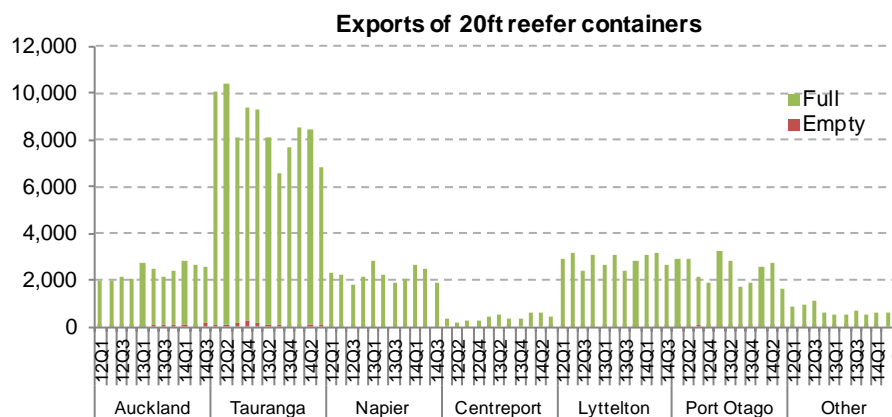
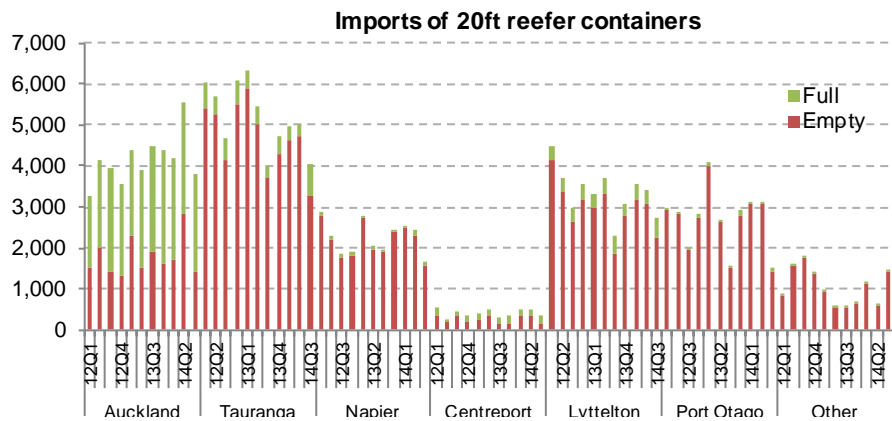
40 ft dry containers

40 ft dry containers are quite different to 20 ft dry containers. Many are imported empty, but those movements are concentrated in Tauranga, Napier and Port Otago. A high percentage of 40 ft dry containers are exported full. There are a number exported empty from Tauranga despite the supply chains having imported empties through the same port.



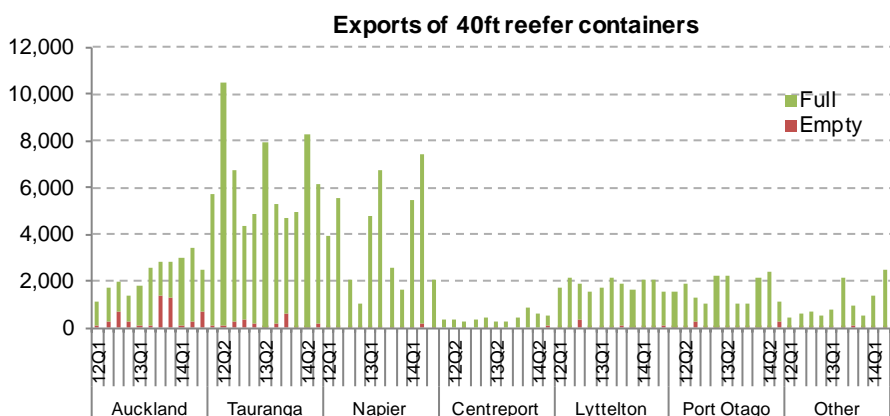
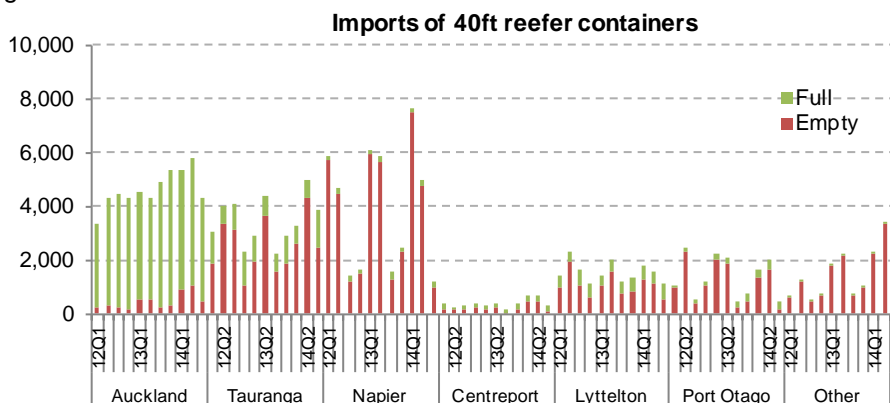
20 ft reefer containers

Almost all the 20ft reefer containers are exported full. Very few are imported full, with the exception of those imported through Ports of Auckland.



40 ft reefer containers

40 ft reefer containers show a similar pattern to 20 ft reefers. Almost all of these containers are exported full, but only those imported through Ports of Auckland tend to come in full.



20 ft and 40 ft dry regional patterns

It was identified in Section 3 that to a degree we:

- import full 20 ft dry containers and empty 40 ft dry containers
- export empty 20 ft containers and full 40 ft containers

This is broken down regionally in the table that follows, and it becomes apparent that the opportunity to improve on this is limited.

| | |
|------------|---|
| Auckland | 20 ft - sizeable exports of empty 20 ft containers, very few coming in empty 40 ft - some exports of empty 40 ft containers, few coming in empty |
| Tauranga | 20 ft – some imports of empty dry 20 ft containers, and sizable exports of empties 40 ft - significant imports of empty 40 ft dry containers, and some exports of empties This is the only port where the supply chains might be able to alter their 20 ft/40 ft import balance (some imports in 40 ft dry containers rather than 20 ft) to lift export container utilisation |
| Napier | 20 ft - some imports of empties, high utilisation for exports 40ft - many of the containers coming in are empty, high utilisation for exports |
| Centreport | 20 ft - almost all imports are full, many empty containers are exported 40 ft - high utilisation on both imports and exports |
| Lyttelton | 20 ft - high utilisation for imports, some exported empty 40 ft - high utilisation on both imports and exports |
| Port Otago | 20 ft - some empties are imported, high utilisation for exports 40 ft - significant imports of empty 40 ft dry containers, high utilisation for exports |

5. How much could empty container imports and exports be reduced by?

Reducing unnecessary imports of empty 20ft and 40ft dry containers

The leading factors in our empty container imports and exports are:

- importing goods in dry 20 ft containers but exporting in dry 40 ft containers
- importing empty reefer containers
- export volumes are greater than import volumes

Assuming that the 20 ft / 40 ft dry container cargo mix continues then what are the other opportunities? What would the result be if the logistics chains could:

- reduce the imports of empty dry 20 ft containers into Auckland and Tauranga by 80% (those regions have a surplus anyway, and this would reduce the surplus to be exported from those ports. See page 7)
- reduce the exports of empty 40 ft dry containers through Tauranga by 75% (exporting these containers empty suggests we bring too many empties in, see page 7)

| | Containers | Reduction | Reduction in containers |
|--|-----------------------------------|----------------------|--------------------------|
| 20 ft dry containers: Auckland and Tauranga | | | |
| There is a surplus of dry 20 ft containers in Auckland and Tauranga, so why import any empties into those ports? | 16,000 empties currently imported | 80% of empty imports | 12,800 imports |
| As a result of the reduction in empty imports, there will be a corresponding reduction in the empties exported | | | 12,800 exports |
| Reduction in the number of containers imported and exported | | | 25,600 containers |
| 40 ft dry containers: Tauranga | | | |
| Empty 40 ft containers are only imported to be used for exports, but some are being exported empty via Tauranga. | 10,000 currently exported empty | 75% of empty exports | 7,500 exports |
| Tighter supply chains could reduce the number brought in unnecessarily | | | |
| As a result of the reduction in empty imports, there will be a corresponding reduction in the empties exported | | | 7,500 imports |
| Reduction in the number of containers imported and exported | | | 15,000 containers |
| TEU Totals (20 ft + 2 x 40 ft) | | | TEU |
| Possible reduction in empty imports and exports (TEU) | | | 55,600 |
| Empty imports and exports (TEU, year to June 2014) | | Exports | 132,000 |
| | | Imports | 290,000 |
| Possible reduction in import and export of empties (TEU) | | | 13.2% |
| All imports and exports (TEU, year to June 2014) | | Exports | 901,000 |
| | | Imports | 910,000 |
| Possible reduction in import and export of TEU | | | 3.1% |

What could be achieved if more of the empty 20ft reefer imports came in full?

If imported 20 ft reefers could carry the cargo currently coming in 20 ft dry containers, then the export of empty 20ft dry containers would be reduced.

What precludes that from happening? We have had feedback from the industry:

| | |
|---|--|
| Cargo that is not suitable for use in non-operating reefers | <ul style="list-style-type: none"> • hazardous goods • goods with strong odours • full loads - reefers are slightly smaller than dry containers and a lot of packing is precisely geared to dry dimensions • heavy cargo can damage expensive reefer equipment |
| Time and cost | when cargo is loaded into non-operating reefers you lose 14-21 days minimum at origin and destination. and daily charges for reefers are higher |
| Risk of damage and cost | reefers are expensive to repair, using them as dry containers is not justified. |
| Availability of reefers at the origin | 20 ft reefers may not be available where the cargo is loaded |
| Import locations in New Zealand | many imports are into Auckland, but then the reefer would need to be repositioned to other ports for export, which involves time and cost |

So far greater utilisation of the empty 20 ft reefer imports is unlikely, but what would the impact be if 30 percent came in full rather than the current 20 percent (substituting for 20 ft dry containers)?

| Utilisation of 20 ft reefer containers | Containers | Reduction | Reduction in containers |
|---|-----------------------------------|--------------------------------------|-------------------------|
| Utilisation of 20 ft reefers imported increased from 20% to 30% | 75,000 imported, 60,000 are empty | 7,500 replace full 20 ft dry imports | 7,500 imports |
| As a result of using some of the empty reefers for imports, there will be a corresponding reduction in the number of dry empties exported | | 7,500 fewer empty 20 ft dry exports | 7,500 exports |
| Reduction in the number of dry containers imported and exported | | | 15,000 containers |
| 20 ft dry containers: Auckland and Tauranga | | | |
| There is a surplus of dry 20 ft containers in Auckland and Tauranga, so why import any empties into those ports? | 16,000 empties currently imported | 80% of empty imports | 12,800 imports |
| As a result of the reduction in empty imports, there will be a corresponding reduction in the empties exported | | | 12,800 exports |
| Reduction in the number of containers imported and exported | | | 25,600 containers |
| 40 ft dry containers: Tauranga | | | |
| Empty 40 ft containers are only imported to be used for exports, but some are being exported empty via Tauranga. Tighter supply chains could reduce the number brought in unnecessarily | 10,000 currently exported empty | 75% of empty exports | 7,500 exports |
| The containers not exported will not have been imported in the first place | | | 7,500 imports |
| Reduction in the number of containers imported and exported | | | 15,000 containers |
| TEU Totals (20 ft + 2 x 40 ft) | | | TEU |
| Possible reduction in empty imports and exports (TEU) | | | 70,600 |
| Empty imports and exports (TEU, year to June 2014) | | Exports | 132,000 |
| | | Imports | 290,000 |
| Possible reduction in import and export of empties (TEU) | | | 16.7% |
| All imports and exports (TEU, year to June 2014) | | Exports | 901,000 |
| | | Imports | 910,000 |
| Possible reduction in import and export of TEU | | | 3.9% |