Container and ship movements through Australian ports – 2007–08 to 2029–30, preliminary estimates

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1 Introduction

The Australian maritime trade task is divided between containerised and non-containerised cargoes. Containerised freight is hauled by container vessels, these being cargo vessels that carry their entire load in containers. Non-containerised freight is either bulk or break-bulk freight and is hauled in a variety of vessels including chemical tankers, liquefied petroleum gas tankers, liquefied natural gas tankers, dry bulk carriers and general cargo ships. Full import containers grew at an average rate of 7.8 per cent between 2003–04 and 2006–07, while full export containers grew at an average of 5.7 per cent. Export containers contain primarily agricultural produce while imported containers carry mainly manufactured goods. Non-containerised exports were 91.7 per cent of the non-containerised freight task between 2003–04 and 2006–07. However, imports grew at a greater rate than exports. Imports grew at an average rate of 10.4 per cent while exports grew at a rate of 5.9 per cent. The tonnes of freight exported grew by an average of 33.7 million tonnes per annum over the period.

The outline of the rest of the paper is as follows: Section 2 discusses models and sources of data used in the estimation of the models covered by the paper and presents estimates of port-level elasticities for: exports of full containers of sea freight from Australia, by Australian port of origin, and by each of Australia's 13 trading regions, exports of tonnes of non-containerised sea freight from Australia to each of Australia's 13 trading regions, imports of full containers of sea freight by Australian port of destination, imports of tonnes of non-containerised sea freight by Australian port of destination. Section 3 outlines our approach to constructing projections to 2029–30. Section 4 presents the key results of the study. Section 5 makes some concluding remarks.

2 Models of Australia's maritime trade

There have been previous projections of container and ship movements through Australian ports. Examples include BTRE (2002), BTRE (2006a;b). Previous studies used the gross domestic product of Japan and/or the Organisation of Economic Cooperation and Development (OECD) as proxies for income in the estimation of Australia's export demand functions. This paper instead defines 13 trading regions for Australia and estimates trading region-specific elasticities of demand with respect to GDP per head for Australia's exports. This extension makes it possible to explicitly accommodate differential GDP growth rates across Australia's trading partners in port-level projections of container and ship movements. Thus the increasing importance of China and India in Australia's trade is introduced explicitly in the models and projections. Furthermore, the paper uses an extended time series, from 1995–96 to 2006–07, in the estimation of the underlying models.

2.1 Australia's maritime exports

Containerised freight exported is measured as counts of containers in TEUs. Non-containerised freight is measured in tonnes. For each one of these measures the paper reports estimates corresponding to equation (1):

$$\ln(PX_{ijt}) = \alpha_{ij0} + \alpha_{ij1}*\ln(Exchange\ rate_t) + \alpha_{ij2}*\ln(PGDP_{jt}) + u_t \quad (1)$$

where:

PX_{ijt} = a generic measure of the volume of exports per head of population in the overseas destination region j, from the i^{th} port in Australia in year t. If equation (1) refers to number of containers, then X_{ijt} denotes the full container exports from the i^{th} port in TEUs, per head of population in region j. Data on total full containers by Australian port is from BITRE (2008a). For each year in the sample, these totals are disaggregated by overseas trading region using data on tonnes of liner freight, by Australia's trading region and by port from ABS (2008a). If equation (1) refers to the weight of non-containerised freight then X_{ijt} denotes the tonnes of non-containerised freight exports from the i^{th} port, per head of population in region j. Data on tonnes of non-containerised sea freight are from ABS (2008b).

Port *i* = Brisbane, Sydney, Melbourne, Adelaide, Fremantle, Other ports. The order of the first five ports (clockwise following the Australian coastline) follows the convention in BITRE's *Waterline* journal.

Trading region *j* = Africa, North and Central America, South America, East Asia, South East Asia, South Asia, Japan, Korea, Europe, Middle East, New Zealand, Pacific Islands and Papua New Guinea, Australia (coastal shipping). The ordering of trading regions follows the convention in BITRE (2008b). Data on population and GDP for member countries of various trading regions is from the International Monetary Fund (IMF, 2008). Data on exchange rates of individual country currencies is from the Reserve Bank of Australia (RBA, 2008).

Exchange rate = The exchange rate used in the particular model. Apart from the equation for Australian coastal shipping where the exchange rate term does not apply, various measures of the exchange rate term have been used as follows: The US dollar per Australian dollar is used in regression equations for Africa, North and Central America, and Middle East. The Chinese Renminbi is used for East Asia. Trade weighted index (TWI) is used for South East Asia. The New Zealand dollar/$A is used for New Zealand. The unit of Special Drawing Rights (SDR), in terms of the Australian dollar, is used for South America, South Asia, Japan, Korea, Europe, Pacific Islands and Papua New Guinea. SDR is a unit of account by the IMF. SDRs per Australian dollar are determined by IMF based on the relative importance of the Australian dollar in international trade and finance. The choice of which measure is used in a given regression was made depends on the quality of the estimates and the overall R^2.

$PGDP_{jt}$ = the per head real Gross Domestic Product in the j^{th} export destination region in US dollars. *t* = is a time subscript and ranges from 1994–95 to 2006–07, *u* = error term.

α_{ji0}, α_{ij1}… α_{ij2} are coefficients to be estimated.

In equation (1), irrespective of how measured, Australia's maritime exports depend on the GDP per head of the destination region for Australia's exports and on an exchange rate variable.

As GDP rises (or falls) in Australia's trading partner regions, the demand for Australia's exports rises (or falls). In equation (1) the paper reports estimates of coefficients for income (represented by GDP) per head in 13 regions which trade with Australia (including Australian coastal trade). The null hypothesis is that the estimate for the coefficient for trading region income per head in (1) is positive. The exchange rate term in equation (1) is a proxy for the prices of Australian exports. Devaluation (appreciation) of the Australian dollar in terms of the overseas currency is equivalent to a decrease (increase) in the price of Australian exports which in turn translates into an increase (decrease) in the demand for Australia's exports. The null hypothesis is that the estimate for the coefficient for the exchange rate in (1) is negative.

2.2 Australia's maritime imports

Containerised freight imported is measured as counts of containers in TEUs. Non-containerised freight imported is measured in tonnes. For each one of these measures the paper reports estimates corresponding to the following function (2):

$$\ln(PM_{it}) = \beta_{io} + \beta_{i1} \ln(EXUSAU_t) + \beta_{i2} \ln(PSFD_{it}) + e_t \quad (2)$$

where:

PM_{it} is a generic measure of the volume of imports to the i^{th} port in Australia, per head of population in the Australian state where port *i* is located. If equation (2) refers to full containers imported then PM_{it} is the full container imports to the i^{th} port in twenty feet equivalent units per head of population in the Australian state where port *i* is located. If equation (2) refers to imports of non-containerised freight, then X_{it} denotes the tonnes of non-containerised freight imported to the i^{th} port per head of population in the Australian state where port *i* is located.

Port *i* = Brisbane, Sydney, Melbourne, Adelaide, Fremantle, Other ports.

EXUSAU = Exchange rate of the US dollar per Australian dollar.

$PSFD_{it}$ = the chain volume measure of real State Final Demand (SFD) per head in the state where port *i* is located. In the equation for 'other ports' the chain volume measure for per head real Gross National Expenditure (GNE) of Australia is the income variable.

t is a time subscript and ranges from 1994–95 to 2006–07.

e is an error term, and

β_{i0}, β_{i1}… β_{i2} are coefficients to be estimated.

In equation (2), irrespective of how measured, Australia's maritime imports depend on the SFD per head of the Australian state where the importing port is located and on the exchange rate of the United States dollar to the Australian dollar. As SFD rises (or falls) in Australia, the demand for imports in Australia rises (or falls). The null hypothesis is that the estimate for the coefficient for SFD per head in (2) is positive. The exchange rate of the United States dollar to the Australian dollar in equation (1) is a proxy for the prices of Australian imports. Devaluation (appreciation) of the Australian dollar is equivalent to an increase (decrease) in the price of Australian imports which in turn translates into a decrease (increase) in the demand for imports in Australia. The null hypothesis is that the estimate for the coefficient for the exchange rate in equation (2) is negative.

2.3 Empty containers

A number of studies have attempted to explain and estimate the volume of empty containers and their role in international maritime trade. These include Hanh (2003), Lopez (2003), Tioga Group (2002), Jarman (2004), United Nations Economic and Social Commission for Asia and the Pacific (2001) and BTRE (2006a; b). The need to reposition and thereby transport empty containers arises because of imbalances in international trade. For example not every container used for an import load to a given port can be immediately filled with an outward bound export load.

This paper adopts an approach similar to that in United Nations Economic and Social Commission for Asia and the Pacific (2001). The first step in this approach is the construction of a dataset of counts of inbound and outbound containers from the historical data in BITRE (2008a). The second step is to establish for each port and each projection year, the major directional movement (MDM) for containers, by comparison between total full export containers and total full import containers. Third, use data in the most recent observed data (2006–07) to estimate μ, the proportion of MDM empty containers to MDM full containers. We assume that μ is constant during the projection period. In the fourth step, the MDM empty containers are calculated, by multiplying the MDM full containers by μ, the proportion of MDM empty containers. Finally, the empty containers in the minor flow direction are then estimated as the residual of total MDM containers less the full containers in the minor flow direction.

2.4 Elasticities: estimates and their interpretation

The estimates for equation (1) are reported in Table 1 (containerised exports) and Table 2 (non-containerised exports). Table 3 gives the results for the estimates for equation (2) – for number of full containers of imports and for tonnes of non-containerised (bulk) imports.

The use of a double logarithmic function in equations (1) and (2) means that the coefficients reported in Table 1 to Table 3 for GDP per head and for the exchange rate term can be interpreted as the elasticity of demand for Australia's non-containerised sea freight in the different overseas markets with respect to those variables.

2.4.1 Containerised sea freight

Table 1 shows the estimates corresponding to the number of full export containers. The results were strongest for the aggregate equation ('all ports'). For individual ports the relationship estimated was strongest for the larger of Australia's trading regions. Japan was an exception in this regard. For the less important trading regions (in terms of trade volumes) the estimated equations were of poor quality. The results for other ports were not significant and have not been reported in the paper. The lack of significance for the relationship related to other ports is as expected because 'other ports' play a minor role in the Australia's sea-freight container trade.

2.4.2 Non-containerised sea freight

Table 2 shows the results for all Australian ports and for 'other ports'. Most of the coefficients were significant and the coefficients for both GDP per head and for the exchange rate term have the expected sign.

The regression equations for Brisbane, Sydney, Melbourne, Adelaide and Fremantle by trading region were of poor quality and are not reported. Generally their adjusted–R^2 were low (below 0.50), many coefficients were insignificant or had unexpected signs. This lack of strong results for capital city ports for non-containerised (bulk) sea-freight is not surprising given that these ports have only a small share of the non-containerised (bulk) sea freight.

A key assumption in classical regression models is that there is no serial correlation, or equivalently, no autocorrelation (Gujarati, 1995, p63). Durbin and Watson devised a method for deriving a lower bound and upper bound critical values which can be used to decide whether there is autocorrelation or not. These critical limit values depend only on N, the number of observations and k, the number of explanatory variables (excluding the constant). The lower bound and upper bound critical values for the set of models discussed in this paper where N = 13 and k = 2 are shown to be 0.861 and 1.562 respectively at a 5 per cent level of significance (Gujarati, 1995, Table D.5a, p.818). With these values, the null hypothesis that there is no autocorrelation is accepted when the Durbin-Watson statistic lies between 1.562 and 2.438 which is the case in: 55 of the 78 regressions for full containerised exports (Table 1); 19 of 26 regressions reported for non-containerised exports (Table 2); and 8 of 14 regressions reported for Australia's imports (Table 3). For the balance of the regression equations in these three tables, the Durbin-Watson statistic falls in the zone of indecision where it is not possible to decide whether there is autocorrelation.

3 Projections

This section discusses the assumptions underlying the projections, the strategy adopted in generating the projections, and presents projection results on container and ship movements through Australian ports to 2029–30. To develop projections of these variables to 2029–30 it is necessary to make assumptions about several macro-economic settings. IMF (2008) is the source for the assumptions about population growth and GDP for the short-term period to 2012–13. From then on, the growth rate is assumed to equal the rate in the last year for which an IMF forecast is available. Table 4 summarises the assumptions about the growth in GDP per head over the forecast period for each regions included in the analysis. The bottom half of Table 4 also summarises the assumptions about Australian growth in GNE per head for the short term period to 2016–17, derived from Access Economics (2006). As with the IMF forecasts, the long-term growth rate is assumed to equal the rate in the last year.

The following are assumed to be the values, from 2007–08 to 2029–30, of these exchange rate terms used in the projections:

- Chinese Renminbi / $A = 6.52,
- European Euro / $A = 0.60,
- Japanese Yen / $A =97.33,
- New Zealand Dollar / $A=1.15,
- United States Dollar / $A = 0.89,
- Special Drawing Rights / $A = 0.57, and
- Trade-weighted index (March 1995=100) = 139.04.

Other key assumptions relating to the proportion of 40 foot equivalent containers in total containers by Australian port, the average TEUs per vessel and the average tonnes per ship needed to estimate ship visits are from BTRE (2006b).

Full export containers and non-containerised exports projections were derived using port level regression equations. Similarly full import containers and non-containerised imports were derived using the port level set of regression equations.

Within the short-run period, the projections are completely reliant on the short-term elasticities reported in Table 1, Table 2 and Table 3 as well as the macro-economic assumptions discussed earlier. The short run is a period of 5 years from the start of the projection period.

Projections over the long run period—from the 6th year to the end of the projection period are achieved through a two step process. First the short-term elasticities in and the macro-economic assumptions are used to generate initial long run projections. These initial projections assume that growth rates observed in the short run will continue in the long run. The short term growth rates based on short-term elasticities may not be achievable in the long run due to a variety of reasons including likely future port capacity constraints both in Australia and overseas, lower growth rates in Australia's trading regions and general maturing of Australia's export markets. The reported long run projections are derived by qualitatively adjusting the initial long run projections based on, published and unpublished projections by port authorities and previous BITRE long run projections. Table 5 gives the average short- and long-term growth rates for Australia's exports, by trading region. Apart from Pacific Islands and Papua New Guinea, growth rates for containerised exports are projected to be lower in the long run than in the short run. This holds for all Australia's trading regions with respect to non-containerised exports.

The projections are presented in the following tables:

(i) count of full export and import containers, TEUs (Table 6)
(ii) count of empty containers—total of import and export, TEUs (Table 6)
(iii) tonnes of non-containerised sea freight exports and imports (Table 7)
(iv) number of container ship visits (Table 8) and
(v) the number of non-container ship visits (Table 8).

In each case the 'all ports' results are compared with BTRE (2006b).

4 Key results

Econometric results from the estimation of export demand functions suggest that Gross Domestic Product (GDP) per head in Australia's trading regions is an important factor explaining the growth in Australia's exports over time. The Australian export elasticity with respect to Gross domestic product (GDP) per head varies by region. For containerised exports the elasticity is greater than 2.5 for North and Central America, South America, Japan and New Zealand, but is low (over 1 but less than 2) in most of the remaining eight regions including in the emerging regions of Korea, South Asia, East Asia and South East Asia. For non-containerised exports, demand is inelastic with respect to GDP per head in all Australia's trading regions except Japan. The statistically significant estimates of elasticities are summarised in Tables 9 to 12.

In these preliminary estimates, full containerised exports are projected to grow by 5.4 per cent per annum during the projection period increasing full containerised exports from all Australian ports by a factor of 3.3 from 1.80 million twenty foot equivalent units (TEUs) in 2006–07 to 6.01 million TEUs by 2029–30. Australia's imports of containerised freight are projected to grow by 5.1 per cent per annum during the projection period leading to full containerised imports increasing by a factor of 3.1 from 2.61 million TEUs in 2006–07 to 8.19 million TEUs in 2029-30 (Figure 1).

Similarly the preliminary estimates indicate that non-containerised exports are projected to grow by 5.0 per cent per annum increasing total non-containerised exports from all Australian ports by a factor of 3.1 from 692 million tonnes in 2006–07 to 2 155 million tonnes by 2029–30. Australia's imports of non-containerised freight are projected to grow at 1.8 per cent per annum during the projection period leading to non-containerised imports increasing by a factor of 1.5 from 118 million tonnes in 2006–07 to 180 million tonnes in 2029–30 (Figure 2).

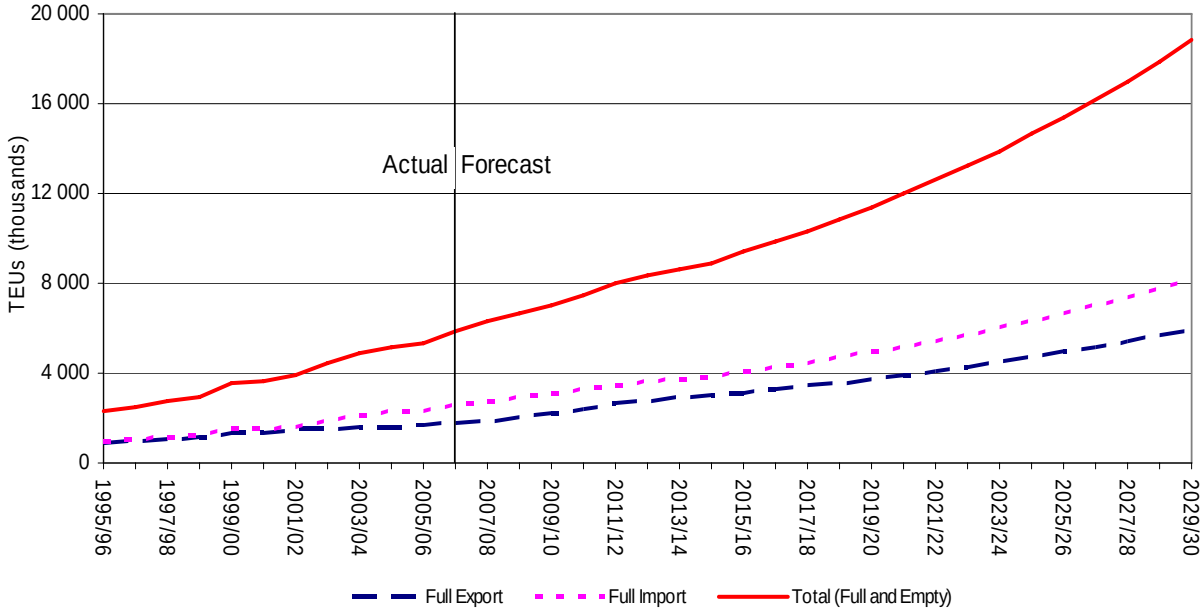

Figure 1 – Containerised Trade, 1995–96 to 2029–30: All Ports

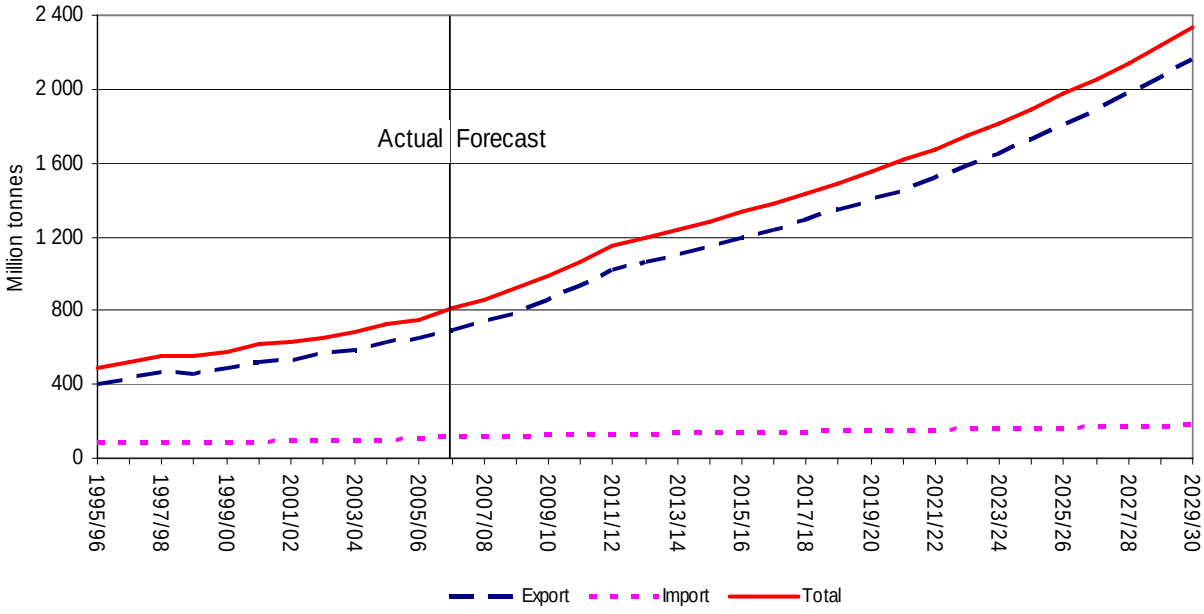

Figure 2 – Non–Containerised Trade, 1995–96 to 2029–30: All Ports

The preliminary estimates suggest that the number of ship visits of container and non-container vessels to all Australian ports, is likely to increase by a factor of 2.4 from an annual total of 28 147 in 2006–07 to an annual total of 68 400 in 2029–30 with container vessel visits growing faster at 4.2 per cent per annum while non-container vessels are projected to grow at 3.6 per cent per annum over the projection period.

4.1 Comparison with previous BITRE projections

Full containerised exports are projected to increase by 0.5 per cent per annum to 2024–25 *faster* than in previous projections in BTRE (2006b), largely due to the incorporation of higher rates of economic growth in (previously–omitted) regions outside of the USA, Japan and OECD. Some of these regions have high elasticities with respect to GDP per head for containerised exports as shown in Table 9.

Empty containerised exports are included in port totals (Table 6) and are projected to grow at a *slower* rate than in BTRE (2006a) while empty containerised imports are projected to grow at a *faster* rate. These differences are mainly due to use, in this paper, of a different methodology for estimating the number of empty containers. Overall, projection of growth in total containerised trade (full and empty containers) reported in this paper is broadly similar to BTRE (2006b) (see Table 6).

Full containerised imports (Table 6) are projected to increase at a growth rate to 2024-25 that is 0.3 per cent *lower* than projected in BTRE (2006b). This difference is largely due to two factors: (a) this paper uses State final demand while BTRE (2006b) used Australia's real GNE/ head to explain State demand for imports, and (b) for most States, at least in the short run, final demand is projected to grow slower than Australia's per capita expenditure.

Non–containerised import growth (Table 7) is projected to increase by an average rate of 1.8 per cent per annum to 2024–25—that is 0.2 per cent *higher* than the previous forecast. This higher forecast despite the lower estimated elasticities in this paper is largely due to corrections in the import data series with down-ward revisions in the earlier years and upward revisions in the more recent years.

Non-containerised export growth (Table 7) are projected to grow at an average annual growth rate in exports which is 2.6 per cent *higher* to 2012–13 and 1.3 per cent *higher* to 2024-25 than in BTRE (2006b), lifted by upward revised observed data to 2006–07 and, as with containerised exports, higher economic growth in destination regions.

Projected container ship visits are close to those in BTRE (2006b), while non–container ship visits are now projected to expand at 3.7 per cent per annum to 2024–25, resulting in at least an additional 7000 visits each year of bulk and break-bulk carriers more than previously anticipated.

5 Conclusions

This paper proposes a different way to develop projections of exports and imports of containerised and non-containerised freight and the associated ship movements through Australian ports. The proposed approach starts from export demand in Australia's trading regions and aggregating these demands to Australian port-level projections. This approach leads to similar projections to those which are based on an aggregated approach. However, this new approach generates information about elasticities with respect to GDP per head and the exchange rate which was previously not available.

Table 1 – Full containerised exports—estimates of elasticities of demand for Australian exports by port and trading region, 1994–95 to 2006–07

Port	*Trading region name*	*GDP/head*	*SE [1]*	*Exchange rate [2]*	*SE [1]*	*Intercept*	*SE [1]*	*Adjusted R^2*	*N [3]*	*DW [4]*
All ports	Africa	1.68	0.68	-1.17	0.36	-10.35	0.23	0.51	13	0.98
All ports	North and Central America	2.83	0.57	-0.58	0.29	-17.69	1.77	0.72	13	1.50
All ports	South America	3.76	1.69	NS	NS	-16.79	2.85	0.23	13	1.88
All ports	East Asia	1.12	0.13	NS	NS	-9.44	0.42	0.86	13	2.47
All ports	South East Asia	1.54	0.17	-0.54	0.17	-7.91	0.02	0.92	13	2.11
All ports	South Asia	1.65	0.33	NS	NS	-9.92	0.45	0.68	13	1.83
All ports	Japan	2.57	1.03	NS	NS	-16.42	3.83	0.33	13	1.62
All ports	Korea	1.77	0.29	-1.28	0.46	-11.89	0.77	0.78	13	2.14
All ports	Europe	1.89	0.32	-1.23	0.32	-14.86	0.87	0.81	13	2.07
All ports	Middle East	1.70	0.22	-1.46	0.14	-11.66	0.34	0.92	13	1.58
All ports	New Zealand	3.21	0.18	0.80	0.31	-13.28	0.56	0.96	13	0.90
All ports	Pacific Islands and PNG	4.15	1.19	NS	NS	-5.34	0.28	0.46	13	1.89
All ports	Australia (coastal)	3.45	0.76	.	.	-16.70	2.66	0.62	13	1.72
Brisbane	Africa	8.72	0.92	-2.20	0.49	-11.66	0.31	0.89	13	2.19
Brisbane	North and Central America	3.96	0.74	NS	NS	-23.33	2.33	0.73	13	1.67
Brisbane	South America	11.55	4.38	NS	NS	-31.03	7.37	0.33	13	0.74
Brisbane	East Asia	1.12	0.19	NS	NS	-10.61	0.60	0.74	13	2.60
Brisbane	South East Asia	NS	NS	NS	NS	-10.15	0.22	0.10	13	2.62
Brisbane	South Asia	2.92	1.10	NS	NS	-11.07	1.52	0.30	13	1.46
Brisbane	Japan	1.98	0.67	-1.13	0.28	-15.98	2.48	0.60	13	2.11
Brisbane	Korea	3.03	0.36	-1.75	0.59	-16.83	0.98	0.86	13	2.02
Brisbane	Europe	6.39	0.54	-3.29	0.55	-31.19	1.46	0.94	13	1.93
Brisbane	Middle East	8.71	1.14	-5.72	0.74	-26.79	1.75	0.89	13	1.42
Brisbane	New Zealand	5.75	0.41	NS	NS	-23.09	1.24	0.95	13	1.60
Brisbane	Pacific Islands and PNG	-5.00	1.74	NS	NS	-5.72	0.42	0.34	13	1.80
Brisbane	Australia (coastal)	7.86	1.87	.	.	-36.19	6.52	0.58	13	2.34
Sydney	Africa	NS	NS	-1.92	0.44	-12.40	0.28	0.59	13	1.13
Sydney	North and Central America	NS	NS	-1.23	0.29	-13.51	1.80	0.64	13	1.99
Sydney	South America	6.68	2.38	-3.71	1.17	-25.24	4.01	0.46	13	1.82
Sydney	East Asia	0.57	0.13	0.58	0.23	-11.32	0.41	0.66	13	1.92
Sydney	South East Asia	1.04	0.40	NS	NS	-9.29	0.04	0.74	13	2.16
Sydney	South Asia	2.04	0.29	-1.60	0.49	-11.59	0.41	0.82	13	2.30
Sydney	Japan	-1.88	0.69	NS	NS	NS	NS	0.44	13	2.10
Sydney	Korea	NS	NS	-4.40	1.06	-13.13	1.75	0.58	13	2.36
Sydney	Europe	-1.16	0.49	-1.25	0.50	-8.43	1.33	0.42	13	2.15
Sydney	Middle East	2.95	0.58	-1.34	0.38	-15.68	0.90	0.71	13	1.88
Sydney	New Zealand	2.01	0.35	NS	NS	-10.72	1.08	0.73	13	1.28
Sydney	Pacific Islands and PNG	5.01	1.48	NS	NS	-6.77	0.36	0.45	13	2.49
Sydney	Australia (coastal)	7.43	1.37	.	.	-33.11	4.79	0.70	13	1.61
Melbourne	Africa	NS	NS	-1.38	0.41	-11.79	0.26	0.44	13	0.82
Melbourne	North and Central America	5.04	0.37	NS	NS	-25.41	1.15	0.94	13	1.56
Melbourne	South America	NS	NS	NS	NS	-12.28	3.27	-0.19	13	1.82
Melbourne	East Asia	1.26	0.15	0.56	0.28	-11.01	0.49	0.85	13	1.92
Melbourne	South East Asia	0.65	0.26	-0.58	0.25	-8.96	0.02	0.27	13	0.99
Melbourne	South Asia	NS	NS	NS	NS	-11.23	0.70	0.08	13	3.13
Melbourne	Japan	3.71	0.68	-1.31	0.28	-22.11	2.52	0.76	13	1.86
Melbourne	Korea	1.57	0.57	NS	NS	-11.49	1.52	0.33	13	2.45
Melbourne	Europe	NS	NS	-1.38	0.61	-13.69	1.64	0.36	13	1.82
Melbourne	Middle East	0.41	0.20	-1.04	0.13	-10.08	0.30	0.85	13	2.04
Melbourne	New Zealand	3.89	0.23	1.56	0.41	-16.21	0.72	0.96	13	2.41
Melbourne	Pacific Islands and PNG	6.61	1.84	NS	NS	-6.38	0.44	0.48	13	1.78
Melbourne	Australia (coastal)	2.98	0.47	.	.	-15.73	1.65	0.76	13	2.78
Adelaide	Africa	NS	NS	NS	NS	-13.38	0.48	-0.08	13	0.87
Adelaide	North and Central America	5.72	2.22	NS	NS	-30.99	6.95	0.36	13	1.86
Adelaide	South America	NS	NS	NS	NS	-36.06	11.35	0.13	13	2.33
Adelaide	East Asia	2.38	0.30	NS	NS	-11.23	0.41	0.84	13	2.25
Adelaide	South East Asia	2.95	0.42	-1.69	0.78	-10.66	1.34	0.82	13	1.91
Adelaide	South Asia	2.11	0.43	NS	NS	-10.73	0.04	0.90	13	2.27
Adelaide	Japan	-4.43	1.39	2.19	0.58	NS	NS	0.59	13	1.84
Adelaide	Korea	NS	NS	4.87	1.29	-7.57	2.14	0.51	13	1.96
Adelaide	Europe	6.36	0.46	-1.69	0.46	-28.89	1.24	0.95	13	3.01
Adelaide	Middle East	8.11	1.32	-4.78	0.85	-25.01	2.02	0.82	13	1.31
Adelaide	New Zealand	-8.71	2.39	NS	NS	18.11	7.29	0.52	13	0.82
Adelaide	Pacific Islands and PNG	NS	NS	NS	NS	-17.71	4.03	-0.09	13	2.98
Adelaide	Australia (coastal)	NS	NS	.	.	-19.80	9.28	0.00	13	2.14

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Table 1 – Full containerised exports—estimates of elasticities of demand for Australian exports by port and trading region, 1994–95 to 2006–07 (continued)

Port	*Trading region name*	*GDP/head*	*SE* [1]	*Exchange rate* [2]	*SE* [1]	*Intercept*	*SE* [1]	*Adjusted* R^2	*N* [3]	*DW* [4]
Fremantle	Africa	4.00	1.90	NS	NS	-11.15	0.64	0.17	13	1.07
Fremantle	North and Central America	NS	NS	NS	NS	-10.59	3.69	-0.18	13	2.37
Fremantle	South America	NS	NS	NS	NS	-14.47	4.54	-0.02	13	1.58
Fremantle	East Asia	1.74	0.20	NS	NS	-11.41	0.65	0.86	13	2.00
Fremantle	South East Asia	4.04	0.54	-1.62	0.54	-10.13	0.05	0.88	13	2.31
Fremantle	South Asia	2.43	0.74	NS	NS	-11.81	1.03	0.43	13	1.37
Fremantle	Japan	3.96	1.17	-1.07	0.49	-23.61	4.34	0.48	13	2.59
Fremantle	Korea	1.13	0.48	NS	NS	-11.91	1.29	0.23	13	1.07
Fremantle	Europe	NS	NS	NS	NS	-12.64	1.65	0.07	13	2.34
Fremantle	Middle East	2.44	0.76	NS	NS	-14.62	1.16	0.41	13	1.90
Fremantle	New Zealand	NS	NS	NS	NS	-12.69	3.49	0.09	12	1.16
Fremantle	Pacific Islands and PNG	NS	NS	NS	NS	-9.97	2.79	0.23	13	2.58
Fremantle	Australia (coastal)	NS	NS	.	.	-19.57	7.20	0.11	13	1.04

Notes:
1. Standard error of estimate.
2. Exchange rate term refers to the US$/A$ exchange rate for Africa, North and Central America and Middle East, to the Chinese renminbi/A$ for East Asia, to the Trade-weighted Index for South East Asia, and to the New Zealand dollar/A$ for New Zealand. For other regions the exchange rate term refers to the Special Drawing Right in terms of A$.
3. Number of observations.
4. Durbin-Watson statistic.

NS: not statistically significant.

Table 2 – Non-containerised exports— estimates of elasticities of demand for Australian exports by port and trading region, 1994–95 to 2006–07

Port	*Trading region name*	*GDP/head*	*SE* [1]	*Exchange rate* [2]	*SE* [1]	*Intercept*	*SE* [1]	*Adjusted* R^2	*N* [3]	*DW* [4]
All ports	Africa	2.55	1.18	NS	NS	-4.07	0.39	0.25	12	2.30
All ports	North and Central America	NS	NS	-0.61	0.18	-2.94	1.30	0.46	12	1.44
All ports	South America	NS	NS	NS	NS	-4.87	1.56	-0.13	12	1.63
All ports	East Asia	1.73	0.06	0.56	0.11	-3.95	0.19	0.99	12	2.39
All ports	South East Asia	1.33	0.22	-0.69	0.22	-4.12	0.18	0.76	12	1.96
All ports	South Asia	0.67	0.12	NS	NS	-3.80	0.15	0.74	12	3.07
All ports	Japan	3.33	0.43	-0.47	0.13	-9.61	1.41	0.84	12	1.01
All ports	Korea	0.99	0.08	-0.38	0.12	-2.49	0.22	0.94	12	1.17
All ports	Europe	-1.21	0.24	NS	NS	NS	NS	0.74	12	1.66
All ports	Middle East	-1.78	0.55	NS	NS	NS	NS	0.62	12	2.13
All ports	New Zealand	NS	NS	NS	NS	NS	NS	0.01	12	2.45
All ports	Pacific Islands and PNG	8.24	1.22	-1.45	0.27	-1.89	0.11	0.82	12	2.29
Alll ports	Australia (coastal)	NS	NS	.	.	1.52	0.36	0.12	12	2.33
Other ports	Africa	2.64	1.10	NS	NS	-4.18	0.36	0.33	12	2.07
Other ports	North and Central America	NS	NS	-0.53	0.21	-4.91	1.46	0.32	12	1.50
Other ports	South America	NS	NS	NS	NS	-5.09	1.54	-0.13	12	1.63
Other ports	East Asia	1.75	0.06	0.55	0.11	-3.97	0.19	0.99	12	2.37
Other ports	South East Asia	1.50	0.25	-1.00	0.24	-4.59	0.19	0.79	12	2.20
Other ports	South Asia	0.78	0.14	NS	NS	-3.80	0.18	0.73	12	2.47
Other ports	Japan	3.39	0.44	-0.47	0.13	-9.83	1.45	0.84	12	1.01
Other ports	Korea	1.00	0.08	-0.39	0.12	-2.53	0.22	0.93	12	1.19
Other ports	Europe	-1.22	0.25	NS	NS	NS	NS	0.73	12	1.64
Other ports	Middle East	-1.92	0.52	NS	NS	NS	NS	0.65	12	2.03
Other ports	New Zealand	NS	NS	NS	NS	NS	NS	0.09	12	2.44
Other ports	Pacific Islands and PNG	2.10	1.00	NS	NS	-2.03	0.09	0.21	12	2.16
Other ports	Australia (coastal)	NS	NS	.	.	1.19	0.33	0.04	12	1.74

Notes:
1. Standard error.
2. Exchange rate term refers to the Trade-weighted Index for Africa, to the US$/A$ for North and Central America, Middle East and Pacific Islands and PNG, to the Chinese renminbi/A$ for East Asia, to the Japanese yen for Japan, to the euro for Europe and to the New Zealand dollar/A$ for New Zealand. For other regions the exchange rate term refers to the Special Drawing Right in terms of A$.
3. Number of observations.
4. Durbin-Watson statistic.

NS: not statistically significant.

Table 3 – Estimates of elasticities of demand for Australian imports by port

Port	*SFD/head* [1]	*SE* [2]	*Exchange rate (US$/A$)*	*SE* [2]	*Intercept*	*SE* [2]	*Adjusted R²*	*N* [3]	*DW* [4]
				Full containerised imports, 1994-95 to 2006-07					
All ports	2.36	0.10	NS	NS	-27.56	1.05	0.98	13	1.75
Brisbane	3.64	0.14	-0.53	0.13	-41.77	1.51	0.98	13	2.02
Sydney	2.50	0.08	0.13	0.05	-29.07	0.80	0.99	13	1.69
Melbourne	1.98	0.05	0.21	0.05	-23.03	0.57	0.99	13	1.44
Adelaide	1.88	0.34	-0.67	0.31	-23.74	3.53	0.74	13	0.71
Fremantle	2.51	0.29	-0.84	0.25	-29.74	3.12	0.86	13	1.02
Other ports	3.40	0.81	NS	NS	-41.47	8.62	0.57	13	1.43
				Non-containerised imports, 1995-96 to 2006-07					
All ports	0.30	0.11	NS	NS	NS	NS	0.41	12	1.28
Brisbane	NS	NS	NS	NS	NS	NS	-0.21	12.00	1.89
Sydney	0.86	0.36	NS	NS	-8.87	3.81	0.31	12	1.84
Melbourne	NS	NS	NS	NS	NS	NS	0.06	12	1.45
Adelaide	-1.16	0.43	NS	NS	12.62	4.49	0.49	12	2.10
Fremantle	NS	NS	NS	NS	NS	NS	0.26	12	2.71
Other ports	0.32	0.11	NS	NS	NS	NS	0.42	12	1.69

Notes: 1. State final demand. For 'all ports' and 'other ports', Australian real gross national expenditure per head is used as the explanatory variable.
2. Standard error.
3. Number of observations.
4. Durbin-Watson statistic.
NS: not statistically significant.

Table 4 – Average annual observed growth rates, and assumed over the projection period

Region	*Gross Regional Product per head*		
	2001–02 to 2006–07	*2007–08 to 2012–13*	*2013–14 to 2029–30*
		(per cent)	
Africa	3.0	3.8	3.3
North and Central America	1.7	1.5	2.1
South America	3.0	2.8	2.6
East Asia	8.4	7.6	6.8
South East Asia	4.3	4.5	4.8
South Asia	6.1	6.1	5.6
Japan	1.9	1.8	1.9
Korea	4.2	4.4	4.2
Europe	2.5	2.5	2.7
Middle East	4.3	3.2	2.9
New Zealand	1.8	1.5	1.7
Pacific Islands and Papua New Guinea	0.4	1.6	2.6
Australia	2.0	2.0	2.2
Country / State	*Gross National Expenditure / State Final Demand per head*		
	2001–02 to 2006–07	*2007–08 to 2016–17*	*2017–18 to 2029–30*
		per cent	
Australia	3.7	1.4	1.5
Queensland	4.9	1.2	1.3
New South Wales	2.6	1.6	1.6
Victoria	2.9	1.4	1.5
South Australia	3.4	1.2	1.5
Western Australia	6.2	1.2	1.3

Source: ABS 2008, Access Economics 2006, IMF 2008, BITRE projections

Table 5 – Average annual observed growth rates for full containerised and non-containerised exports, by trading region, and assumed over the projection period

Region	*Full export containers*			*Non-containerised exports*		
	2001–02 to 2006–07	*2007–08 to 2012–13*	*2013–14 to 2029–30*	*2001–02 to 2006–07*	*2007–08 to 2012–13*	*2013–14 to 2029–30*
			(per cent)			
Africa	-0.2	13.6	6.2	-4.2	12.2	5.2
North and Central America	2.4	5.4	4.8	-4.7	1.1	0.7
South America	8.4	21.1	7.8	7.4	4.9	1.4
East Asia	4.6	9.3	4.5	19.6	13.2	6.2
South East Asia	6.4	7.6	3.8	5.9	7.0	3.5
South Asia	4.6	12.6	5.8	7.5	5.3	2.5
Japan	-4.9	3.6	2.3	3.0	5.4	2.8
Korea	-2.1	7.8	4.8	2.6	4.2	2.0
Europe	-1.6	7.5	4.4	-3.2	-2.4	-1.3
Middle East	-2.8	8.8	4.2	-12.8	-2.6	-0.8
New Zealand	5.3	6.1	4.0	-1.3	1.8	0.9
Pacific Islands and Papua New Guinea	3.7	6.7	7.5	-6.4	8.0	3.5
Australia (coastal)	10.2	8.7	5.2	1.1	0.9	0.4

Source: BITRE projections

Table 6 – Containerised trade—observed to 2006–07 and projections to 2029–30

Financial year	All ports BTRE (2006b)			All ports			Brisbane			Sydney			Melbourne			Adelaide			Fremantle			Other ports		
	Full Exports	Full Imports	Total	Full Exports	Full Imports	Total	Full Exports	Full Imports	Total	Full Exports	Full Imports	Total	Full Exports	Full Imports	Total	Full Exports	Full Imports	Total	Full Exports	Full Imports	Total	Full Exports	Full Imports	Total
												(thousand teus)												
1994–95	NA	NA	NA	952	1 036	2 468	99	80	233	204	348	667	352	392	880	33	19	67	74	81	189	190	116	433
1995–96	NA	NA	NA	908	967	2 300	110	76	249	217	347	685	372	395	923	36	19	69	84	84	203	89	46	170
1996–97	NA	NA	NA	982	1 055	2 458	122	89	273	232	373	730	402	432	984	46	25	88	84	90	210	96	46	173
1997–98	NA	NA	NA	1 043	1 182	2 720	134	112	318	250	404	798	410	461	1 041	49	36	108	95	109	251	104	60	205
1998–99	NA	NA	NA	1 119	1 271	2 966	153	124	358	256	445	879	436	496	1 121	54	39	121	105	111	276	115	55	213
1999–00	1 306	1 532	3 513	1 306	1 532	3 513	170	153	414	295	518	1 011	501	574	1 288	55	35	116	112	122	297	173	129	387
2000–01	1 302	1 520	3 635	1 302	1 520	3 635	194	154	453	306	492	989	524	571	1 317	63	38	133	126	136	354	90	129	388
2001–02	1 526	1 620	3 928	1 526	1 620	3 928	199	174	482	307	507	1 009	554	605	1 421	70	41	145	142	154	382	254	139	489
2002–03	1 554	1 889	4 456	1 554	1 889	4 456	193	223	570	294	587	1 161	569	696	1 594	71	41	148	153	186	431	275	156	552
2003–04	1 633	2 107	4 859	1 633	2 107	4 859	205	262	639	304	643	1 270	591	775	1 718	86	42	169	160	204	457	287	182	605
2004–05	1 625	2 284	5 171	1 625	2 284	5 171	227	292	726	320	687	1 376	653	854	1 910	80	40	171	161	210	467	184	202	521
2005–06	1 714	2 356	5 380	1 719	2 347	5 311	246	321	766	345	721	1 445	670	873	1 930	91	48	189	154	205	455	213	179	525
2006–07	1 859	2 452	5 669	1 804	2 608	5 829	257	364	875	370	800	1 620	699	949	2 094	97	54	219	164	235	505	218	207	516
2007–08	1 988	2 701	6 188	1 898	2 763	6 277	273	363	886	388	875	1 786	730	1 025	2 295	106	50	246	174	239	525	226	215	542
2008–09	2 136	2 889	6 640	2 036	2 927	6 669	294	385	939	415	947	1 932	774	1 072	2 401	118	51	275	196	252	553	239	226	575
2009–10	2 273	2 974	6 917	2 207	3 072	7 028	319	406	992	447	1 003	2 045	828	1 113	2 492	134	52	311	223	263	579	255	240	613
2010–11	2 407	3 135	7 309	2 419	3 248	7 461	353	439	1 072	485	1 062	2 167	895	1 163	2 606	155	54	359	257	275	604	274	259	657
2011–12	2 526	3 327	7 740	2 665	3 446	7 967	395	478	1 166	530	1 125	2 295	969	1 219	2 731	180	56	417	298	291	655	294	279	706
2012–13	2 656	3 472	8 096	2 781	3 623	8 360	416	512	1 248	548	1 181	2 409	1 011	1 270	2 845	187	58	434	312	307	687	308	298	738
2013–14	2 802	3 657	8 523	2 901	3 739	8 646	437	532	1 299	567	1 218	2 485	1 054	1 304	2 920	195	59	451	328	318	721	321	309	771
2014–15	2 931	3 853	8 965	3 024	3 850	8 928	459	553	1 350	586	1 253	2 556	1 098	1 336	2 993	202	60	469	343	328	755	335	320	805
2015–16	3 065	4 059	9 426	3 155	4 056	9 381	483	595	1 453	607	1 317	2 687	1 144	1 393	3 120	210	62	488	360	346	792	350	341	840
2016–17	3 205	4 277	9 913	3 292	4 262	9 838	510	637	1 553	628	1 383	2 821	1 193	1 449	3 246	219	64	508	377	363	830	366	363	878
2017–18	3 352	4 506	10 426	3 438	4 479	10 330	538	681	1 661	651	1 452	2 963	1 244	1 507	3 376	228	66	528	396	382	870	382	386	927
2018–19	3 506	4 749	10 967	3 591	4 707	10 854	568	728	1 776	675	1 525	3 111	1 298	1 568	3 512	237	68	549	415	401	913	399	411	986
2019–20	3 667	5 005	11 539	3 754	4 948	11 406	601	778	1 899	700	1 601	3 267	1 354	1 631	3 654	247	70	572	435	421	958	417	437	1 049
2020–21	3 836	5 276	12 142	3 926	5 201	11 988	636	832	2 030	726	1 682	3 430	1 413	1 697	3 801	257	73	595	457	443	1 006	436	465	1 115
2021–22	4 013	5 561	12 780	4 107	5 468	12 602	674	889	2 170	754	1 766	3 602	1 476	1 765	3 954	267	75	620	480	465	1 056	456	494	1 186
2022–23	4 198	5 863	13 453	4 299	5 749	13 249	715	951	2 320	783	1 854	3 782	1 541	1 836	4 113	278	78	646	504	489	1 109	477	526	1 262
2023–24	4 391	6 182	14 163	4 503	6 046	13 932	760	1 017	2 481	814	1 947	3 972	1 610	1 910	4 279	290	80	673	530	513	1 166	499	559	1 342
2024–25	4 594	6 519	14 915	4 718	6 358	14 651	808	1 087	2 652	846	2 045	4 171	1 682	1 987	4 451	302	83	701	557	540	1 225	523	595	1 428
2025–26	NA	NA	NA	4 946	6 687	15 410	859	1 162	2 836	880	2 147	4 380	1 759	2 067	4 630	315	86	731	586	567	1 288	547	633	1 519
2026–27	NA	NA	NA	5 188	7 034	16 210	915	1 243	3 032	916	2 254	4 599	1 839	2 150	4 816	329	88	762	616	596	1 355	573	673	1 615
2027–28	NA	NA	NA	5 445	7 400	17 055	976	1 329	3 242	954	2 367	4 829	1 924	2 237	5 010	343	91	795	648	626	1 426	600	716	1 718
2028–29	NA	NA	NA	5 717	7 785	17 945	1 041	1 420	3 466	994	2 486	5 071	2 013	2 327	5 212	357	94	829	682	658	1 501	629	762	1 828
2029–30	NA	NA	NA	6 005	8 192	18 886	1 111	1 519	3 706	1 037	2 610	5 325	2 107	2 420	5 422	373	97	865	718	691	1 580	659	810	1 944
Annual average growth rate (per cent)																								
1999–00 to 2006–07	5.2	6.9	7.1	4.7	7.9	7.5	6.0	13.2	11.3	3.3	6.4	7.0	4.9	7.5	7.2	8.4	6.2	9.6	5.6	9.8	7.9	3.4	6.9	4.2
2007–08 to 2012–13	6.0	5.2	5.5	7.9	5.6	5.9	8.7	7.1	7.1	7.2	6.2	6.2	6.7	4.4	4.4	12.0	2.7	12.0	12.4	5.1	5.5	6.4	6.8	6.4
2007–08 to 2024–25	5.0	5.3	5.3	5.5	5.0	5.1	6.6	6.7	6.7	4.7	5.1	5.1	5.0	4.0	4.0	6.4	3.0	6.4	7.1	4.9	5.1	5.1	6.2	5.9
2007–08 to 2029–30	NA	NA	NA	5.4	5.1	5.1	6.6	6.7	6.7	4.6	5.1	5.1	4.9	4.0	4.0	5.9	3.0	5.9	6.6	4.9	5.1	5.0	6.2	6.0

Note: Total for each port includes empty (import and export) containers.
NA: Not available
* Figures below line are forecasts.

Table 7 – Non-containerised trade – observed to 2006–07 and projections to 2029–30

Financial year	All ports BTRE (2006b)			All ports			Brisbane			Sydney			Melbourne			Adelaide			Fremantle			Other ports		
	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total
	(thousand tonnes)																							
1995–96	NA	NA	NA	406 576	83 706	490 282	7 789	8 566	16 356	1 455	7 602	9 057	2 798	3 288	6 086	2 300	3 127	5 427	9 544	7 334	16 878	382 690	53 789	436 479
1996–97	NA	NA	NA	436 457	86 937	523 394	8 532	8 396	16 928	1 531	6 937	8 468	3 126	3 913	7 039	2 910	3 682	6 592	10 546	9 006	19 552	409 812	55 002	464 814
1997–98	NA	NA	NA	461 689	91 667	553 356	7 671	8 826	16 497	1 656	6 239	7 895	4 259	4 093	8 353	3 099	4 921	8 020	11 733	7 204	18 936	433 272	60 384	493 656
1998–99	NA	NA	NA	459 607	89 269	548 876	7 434	9 182	16 616	719	7 862	8 581	3 110	5 164	8 274	2 578	3 011	5 589	11 032	8 503	19 534	434 735	55 547	490 282
1999–00	436 364	90 604	526 969	491 364	89 372	580 736	8 341	9 791	18 132	1 219	7 081	8 300	3 248	4 497	7 745	2 885	3 183	6 068	11 074	7 562	18 636	464 597	57 258	521 856
2000–01	453 546	86 628	540 174	526 203	90 911	617 115	8 772	9 237	18 009	1 681	8 126	9 807	3 901	3 761	7 662	3 363	3 764	7 127	10 775	7 296	18 071	497 711	58 727	556 438
2001–02	464 076	86 891	550 967	531 665	94 372	626 037	9 477	8 966	18 442	1 099	7 986	9 085	4 477	4 597	9 074	4 050	4 270	8 320	9 465	7 843	17 309	503 097	60 710	563 808
2002–03	485 004	90 089	575 093	559 592	95 609	655 200	8 382	9 667	18 048	846	7 415	8 260	2 825	4 582	7 407	3 495	3 748	7 242	9 888	8 757	18 645	534 157	61 440	595 597
2003–04	492 435	94 874	587 309	586 998	95 957	682 955	7 870	9 907	17 777	998	8 359	9 358	3 254	3 951	7 205	2 990	2 333	5 323	11 664	9 367	21 031	560 220	62 041	622 261
2004–05	550 615	98 953	649 568	630 624	98 321	728 945	8 198	9 986	18 183	1 203	8 266	9 469	2 998	4 550	7 548	3 052	2 344	5 396	11 744	9 803	21 547	603 429	63 372	666 802
2005–06	577 834	100 813	678 646	647 507	103 667	751 174	8 347	9 694	18 041	1 268	9 387	10 655	2 119	4 783	6 902	3 383	2 609	5 991	11 690	9 656	21 346	620 701	67 538	688 239
2006–07	608 067	102 174	710 241	691 884	117 842	809 726	8 907	11 557	20 464	2 198	11 443	13 640	3 617	7 251	10 867	3 110	2 730	5 841	10 258	9 677	19 935	663 794	75 184	738 978
2007–08	645 459	106 366	751 824	739 397	122 069	861 465	9 199	11 838	21 037	2 530	12 165	14 695	3 609	7 508	11 117	3 417	2 461	5 877	10 975	10 343	21 318	709 666	77 754	787 421
2008–09	688 115	108 861	796 976	796 227	124 547	920 773	9 641	12 089	21 730	2 746	12 606	15 352	3 832	7 680	11 512	3 645	2 429	6 075	11 195	10 596	21 791	765 168	79 146	844 314
2009–10	725 057	109 417	834 473	861 305	126 828	988 133	10 134	12 342	22 475	3 023	12 940	15 964	4 173	7 832	12 005	3 906	2 411	6 317	11 490	10 803	22 293	828 579	80 501	909 080
2010–11	758 639	111 029	869 668	936 097	129 273	1 065 370	10 730	12 595	23 325	3 383	13 287	16 670	4 614	8 007	12 621	4 230	2 380	6 610	11 819	11 009	22 828	901 321	81 996	983 317
2011–12	790 774	113 285	904 059	1 019 523	131 778	1 151 301	11 428	12 850	24 278	3 839	13 640	17 479	5 159	8 191	13 350	4 623	2 346	6 969	12 196	11 230	23 426	982 278	83 521	1 065 799
2012–13	820 954	114 419	935 373	1 061 301	134 152	1 195 453	11 563	13 106	24 669	3 946	13 959	17 905	5 276	8 362	13 638	4 739	2 316	7 055	12 296	11 449	23 745	1 023 480	84 960	1 108 441
2013–14	849 472	115 979	965 451	1 103 911	136 213	1 240 124	11 699	13 363	25 062	4 055	14 199	18 254	5 403	8 493	13 897	4 857	2 303	7 160	12 396	11 657	24 053	1 065 500	86 198	1 151 698
2014–15	878 253	117 892	996 145	1 147 211	138 249	1 285 460	11 836	13 622	25 458	4 164	14 428	18 592	5 532	8 622	14 154	4 977	2 293	7 270	12 495	11 865	24 360	1 108 206	87 419	1 195 625
2015–16	908 007	119 837	1 027 844	1 192 775	140 727	1 333 502	11 977	13 883	25 860	4 277	14 772	19 049	5 667	8 803	14 470	5 102	2 261	7 363	12 597	12 093	24 690	1 153 155	88 916	1 242 071
2016–17	938 768	121 814	1 060 582	1 240 732	143 199	1 383 931	12 121	14 146	26 267	4 395	15 117	19 513	5 808	8 981	14 789	5 233	2 230	7 463	12 702	12 321	25 023	1 200 473	90 404	1 290 877
2017–18	970 572	123 823	1 094 395	1 291 215	145 717	1 436 932	12 270	14 414	26 683	4 518	15 471	19 990	5 955	9 162	15 117	5 369	2 200	7 569	12 809	12 553	25 362	1 250 294	91 916	1 342 210
2018–19	1 003 456	125 866	1 129 321	1 344 368	148 282	1 492 650	12 422	14 687	27 109	4 647	15 834	20 480	6 109	9 347	15 456	5 512	2 170	7 682	12 919	12 790	25 709	1 302 760	93 454	1 396 214
2019–20	1 037 453	127 942	1 165 395	1 400 341	150 895	1 551 236	12 578	14 965	27 543	4 780	16 204	20 985	6 269	9 536	15 805	5 661	2 141	7 801	13 032	13 031	26 064	1 358 021	95 018	1 453 038
2020–21	1 072 602	130 052	1 202 654	1 459 296	153 556	1 612 852	12 739	15 248	27 987	4 919	16 584	21 503	6 437	9 729	16 166	5 816	2 111	7 928	13 148	13 277	26 425	1 416 236	96 607	1 512 843
2021–22	1 108 940	132 197	1 241 137	1 521 401	156 269	1 677 670	12 904	15 537	28 441	5 065	16 972	22 037	6 612	9 925	16 538	5 978	2 083	8 061	13 267	13 528	26 794	1 477 575	98 224	1 575 799
2022–23	1 146 509	134 378	1 280 887	1 586 837	159 031	1 745 868	13 073	15 831	28 905	5 216	17 369	22 585	6 796	10 126	16 922	6 148	2 054	8 202	13 389	13 783	27 171	1 542 215	99 867	1 642 083
2023–24	1 185 352	136 595	1 321 947	1 655 795	161 845	1 817 640	13 248	16 131	29 378	5 373	17 776	23 150	6 988	10 330	17 318	6 325	2 027	8 351	13 513	14 043	27 556	1 610 348	101 538	1 711 886
2024–25	1 225 511	138 848	1 364 359	1 728 476	164 711	1 893 187	13 427	16 436	29 863	5 538	18 192	23 730	7 189	10 539	17 728	6 509	1 999	8 508	13 641	14 308	27 949	1 682 173	103 237	1 785 410
2025–26	NA	NA	NA	1 805 095	167 632	1 972 727	13 611	16 747	30 358	5 709	18 618	24 327	7 399	10 752	18 151	6 701	1 972	8 673	13 772	14 578	28 350	1 757 903	104 965	1 862 868
2026–27	NA	NA	NA	1 885 879	170 606	2 056 486	13 800	17 065	30 864	5 887	19 054	24 941	7 619	10 969	18 589	6 902	1 945	8 847	13 907	14 852	28 759	1 837 765	106 721	1 944 486
2027–28	NA	NA	NA	1 971 069	173 636	2 144 705	13 994	17 388	31 382	6 072	19 500	25 572	7 850	11 191	19 041	7 111	1 919	9 030	14 045	15 133	29 177	1 921 997	108 506	2 030 503
2028–29	NA	NA	NA	2 060 919	176 723	2 237 643	14 194	17 717	31 911	6 266	19 957	26 223	8 092	11 417	19 509	7 329	1 893	9 222	14 186	15 418	29 604	2 010 853	110 322	2 121 175
2029–30	NA	NA	NA	2 155 701	179 868	2 335 569	14 400	18 052	32 452	6 467	20 424	26 891	8 345	11 648	19 992	7 557	1 867	9 424	14 330	15 709	30 039	2 104 602	112 168	2 216 770
Annual average growth rate (per cent)																								
1999–00 to 2006–07	NA	NA	NA	5.0	4.0	4.9	0.9	2.4	1.7	8.8	7.1	7.4	1.5	7.1	5.0	1.1	-2.2	-0.5	-1.1	3.6	1.0	5.2	4.0	5.1
2007–08 to 2012–13	4.9	1.5	4.5	7.5	1.9	6.8	4.7	2.1	3.2	9.3	2.8	4.0	7.9	2.2	4.2	6.8	-1.2	3.7	2.3	2.1	2.2	7.6	1.8	7.1
2007–08 to 2024–25	3.8	1.6	3.6	5.1	1.8	4.7	2.2	1.9	2.1	4.7	2.4	2.9	4.1	2.0	2.8	3.9	-1.2	2.2	1.3	1.9	1.6	5.2	1.7	4.9
2007–08 to 2029–30	NA	NA	NA	5.0	1.8	4.6	2.1	1.9	2.0	4.4	2.4	2.8	3.9	2.0	2.7	3.7	-1.2	2.2	1.2	1.9	1.6	5.1	1.7	4.8

NA: Not available

* Figures below line are forecasts.

Table 8 – Container and non–container ship visits—observed to 2006–07 and projections to 2029–30

Financial year	All ports BTRE (2006b)			All ports			Brisbane			Sydney			Melbourne			Adelaide			Fremantle			Other ports		
	Container	Non-container	Total	Container	Non-container	Total	Container	Non-container	Total	Container	Non-container	Total	Container	Non-container	Total	Container	Non-container	Total	Container	Non-container	Total	Container	Non-container	Total
	Number of ship visits																							
2000–01	4 948	20 200	25 148	4 948	20 200	25 148	721	1 356	2 077	1 129	1 519	2 648	1 046	1 766	2 812	233	811	1 044	563	1 041	1 604	1 256	13 707	14 963
2001–02	4 950	20 294	25 244	4 950	20 294	25 244	786	1 254	2 040	1 064	1 460	2 524	1 062	1 867	2 929	227	850	1 077	574	1 015	1 589	1 237	13 848	15 085
2002–03	5 003	20 345	25 348	5 003	20 345	25 348	822	1 259	2 081	1 078	1 476	2 554	1 090	2 072	3 162	222	793	1 015	520	1 049	1 569	1 271	13 696	14 967
2003–04	4 941	20 679	25 620	4 941	20 679	25 620	740	1 248	1 988	1 091	1 317	2 408	1 078	2 105	3 183	235	871	1 106	469	1 076	1 545	1 328	14 062	15 390
2004–05	5 281	21 159	26 440	5 281	20 442	25 723	873	1 514	2 387	1 183	1 225	2 408	1 243	1 957	3 200	223	852	1 075	467	1 069	1 536	1 292	13 825	15 117
2005–06	5 453	21 887	27 340	5 720	21 841	27 561	1 024	1 589	2 613	1 307	1 036	2 343	1 356	1 994	3 350	255	849	1 104	483	1 092	1 575	1 295	15 281	16 576
2006–07	5 715	22 680	28 395	5 744	22 403	28 147	1 083	1 549	2 632	1 349	1 039	2 388	1 420	1 981	3 401	282	825	1 107	497	1 131	1 628	1 113	15 878	16 991
2007–08	6 187	23 770	29 957	6 836	23 599	30 434	1 086	1 577	2 663	1 472	1 108	2 580	1 541	2 006	3 548	314	822	1 136	512	1 197	1 709	1 911	16 888	18 799
2008–09	6 582	24 948	31 529	7 184	24 973	32 158	1 139	1 612	2 751	1 577	1 146	2 723	1 596	2 057	3 653	346	841	1 188	534	1 212	1 746	1 992	18 105	20 096
2009–10	6 804	25 863	32 666	7 439	26 535	33 975	1 191	1 651	2 843	1 653	1 180	2 833	1 641	2 124	3 765	389	866	1 255	553	1 228	1 781	2 012	19 486	21 499
2010–11	7 131	26 687	33 818	7 760	28 326	36 086	1 274	1 697	2 971	1 734	1 220	2 954	1 699	2 211	3 909	444	897	1 341	571	1 245	1 816	2 038	21 056	23 094
2011–12	7 489	27 467	34 956	8 164	30 308	38 471	1 373	1 748	3 122	1 819	1 267	3 085	1 762	2 315	4 078	510	937	1 447	613	1 265	1 878	2 086	22 776	24 862
2012–13	7 773	28 137	35 910	8 517	31 158	39 675	1 456	1 759	3 215	1 890	1 285	3 175	1 818	2 342	4 160	526	939	1 465	637	1 269	1 906	2 191	23 564	25 755
2013–14	8 126	28 755	36 881	8 708	32 002	40 710	1 499	1 769	3 269	1 930	1 297	3 227	1 847	2 363	4 210	542	943	1 485	662	1 273	1 935	2 228	24 357	26 585
2014–15	8 479	29 375	37 854	8 887	32 844	41 731	1 543	1 780	3 323	1 965	1 308	3 273	1 874	2 383	4 257	558	948	1 506	686	1 276	1 963	2 259	25 149	27 409
2015–16	8 845	30 010	38 855	9 292	33 734	43 026	1 644	1 790	3 434	2 046	1 327	3 372	1 935	2 412	4 347	574	951	1 525	712	1 281	1 993	2 381	25 974	28 355
2016–17	9 230	30 659	39 889	9 686	34 663	44 349	1 740	1 800	3 540	2 127	1 346	3 472	1 993	2 440	4 433	591	954	1 546	739	1 285	2 024	2 495	26 838	29 333
2017–18	9 632	31 323	40 955	10 107	35 634	45 741	1 843	1 810	3 653	2 211	1 365	3 576	2 053	2 470	4 523	609	958	1 567	768	1 290	2 057	2 624	27 741	30 365
2018–19	10 055	32 003	42 057	10 553	36 650	47 202	1 950	1 821	3 771	2 299	1 384	3 683	2 114	2 500	4 614	628	963	1 591	797	1 294	2 092	2 765	28 686	31 451
2019–20	10 498	32 698	43 196	11 019	37 711	48 730	2 065	1 832	3 896	2 390	1 404	3 795	2 177	2 532	4 709	647	968	1 615	828	1 299	2 128	2 912	29 676	32 587
2020–21	10 963	33 409	44 372	11 506	38 821	50 327	2 186	1 843	4 029	2 485	1 425	3 910	2 243	2 564	4 806	667	974	1 641	861	1 304	2 165	3 065	30 711	33 776
2021–22	11 451	34 137	45 588	12 015	39 981	51 996	2 314	1 854	4 168	2 583	1 446	4 029	2 310	2 597	4 907	687	981	1 668	895	1 309	2 205	3 225	31 794	35 019
2022–23	11 964	34 882	46 845	12 546	41 194	53 741	2 449	1 866	4 315	2 686	1 467	4 153	2 379	2 631	5 010	709	988	1 697	931	1 315	2 246	3 392	32 928	36 320
2023–24	12 502	35 643	48 145	13 102	42 463	55 565	2 593	1 878	4 470	2 793	1 489	4 282	2 450	2 666	5 116	731	996	1 727	969	1 320	2 289	3 567	34 115	37 681
2024–25	13 067	36 423	49 490	13 682	43 790	57 472	2 744	1 890	4 634	2 903	1 511	4 414	2 524	2 702	5 225	755	1 005	1 759	1 008	1 326	2 334	3 748	35 357	39 105
2025–26	NA	NA	NA	14 289	45 178	59 467	2 905	1 902	4 807	3 019	1 534	4 552	2 599	2 739	5 338	779	1 014	1 793	1 049	1 331	2 381	3 937	36 658	40 595
2026–27	NA	NA	NA	14 922	46 630	61 553	3 075	1 915	4 990	3 138	1 557	4 695	2 677	2 777	5 454	804	1 024	1 828	1 093	1 337	2 430	4 135	38 020	42 155
2027–28	NA	NA	NA	15 584	48 149	63 733	3 255	1 927	5 183	3 263	1 581	4 844	2 757	2 816	5 574	830	1 035	1 865	1 138	1 343	2 482	4 340	39 446	43 786
2028–29	NA	NA	NA	16 276	49 738	66 014	3 446	1 941	5 387	3 392	1 605	4 997	2 840	2 857	5 697	857	1 047	1 904	1 186	1 349	2 536	4 554	40 940	45 494
2029–30	NA	NA	NA	16 999	51 401	68 400	3 648	1 954	5 602	3 527	1 629	5 156	2 925	2 899	5 824	886	1 059	1 945	1 236	1 356	2 592	4 777	42 504	47 281
Annual average growth rate (per cent)																								
2000–01 to 2006–07	2.4	1.9	2.0	2.5	1.7	1.9	7.0	2.2	4.0	3.0	-6.1	-1.7	5.2	1.9	3.2	3.2	0.3	1.0	-2.1	1.4	0.2	-2.0	2.5	2.1
2007–08 to 2012–13	4.7	3.4	3.7	4.5	5.7	5.4	6.0	2.2	3.8	5.1	3.0	4.2	3.4	3.1	3.2	10.9	2.7	5.2	4.5	1.2	2.2	2.8	6.9	6.5
2007–08 to 2024–25	4.5	2.5	3.0	4.2	3.7	3.8	5.6	1.1	3.3	4.1	1.8	3.2	2.9	1.8	2.3	5.3	1.2	2.6	4.1	0.6	1.8	4.0	4.4	4.4
2006–07 to 2029–30	NA	NA	NA	4.2	3.6	3.7	5.7	1.0	3.4	4.1	1.8	3.2	3.0	1.7	2.3	4.8	1.2	2.5	4.1	0.6	1.9	4.3	4.3	4.3

NA: Not available.

* Figures below line are forecasts.

Table 9 – Container export elasticity with respect to gross regional product per head

Region	*Brisbane*	*Sydney*	*Melbourne*	*Adelaide*	*Fremantle*
Current estimates					
Africa	8.72				4.00
North and Central America	3.96		5.04	5.72	
South America	11.55	6.68			
East Asia	1.12	0.57	1.26	2.38	1.74
South East Asia		1.04	0.65	2.95	4.04
South Asia	2.92	2.04		2.11	2.43
Japan	1.98	-1.88	3.71	-4.43	3.96
Korea	3.03		1.57		1.13
Europe	6.9	-1.16		6.36	
Middle East	8.71	2.95	0.41	8.11	2.44
New Zealand	5.75	2.01	3.89	-8.71	
Pacific Is & PNG	-5.00	5.01	6.61		
Australia (Coastal)	7.86	7.43	2.96		
BTRE (2006b)					
Japan	5.57				4.8
OECD		1.73	1.73	3.58	

'blank' = Estimated but not significant; NE: Not estimated.

Table 10 – Containerised import elasticity with respect to real State final demand and real GNE, per head

	Brisbane	*Sydney*	*Melbourne*	*Adelaide*	*Fremantle*	*Other ports*
Current estimates						
State final demand	3.64	2.50	1.98	1.88	2.51	NE
Real GNE	NE	NE	NE	NE	NE	3.40
BTRE (2006b)						
Real GNE	3.78	2.06	2.16	2.74	2.88	NE

Table 11 – Non-containerised import elasticity with respect to real State final demand and GNE, per head

Per head	*Brisbane*	*Sydney*	*Melbourne*	*Adelaide*	*Fremantle*	*Others*	*All ports*
Current estimates							
State final demand		0.86	NS	-1.16		NE	NE
Real GNE	NE	NE	NE	NE	NE	0.32	0.30
BTRE (2006b)							
Real GNE	1.21	1.58	1.97	1.06	0.35	NE	1.25

Table 12 – Non-containerised export elasticity with respect to real gross regional product per head

Region	*Brisbane*	*Sydney*	*Melbourne*	*Adelaide*	*Fremantle*	*Others*	*All ports*
Current estimates							
Africa			11.10	5.32		2.65	5.31
North/Central America	-5.85	1.95			-6.71		
South America						0.74	0.67
East Asia		2.44		-0.59	1.22	1.76	1.73
South East Asia				2.89		0.25	1.33
South Asia	-4.35					0.78	0.67
Japan		-11.30				3.39	3.33
Korea	3.32					0.99	0.99
Europe					-2.07	-1.23	-1.21
Middle East						-1.92	-1.78
New Zealand							
Pacific Is. & PNG		15.56	26.11		97.5	2.1	8.24
Australia(coastal)			-1.91				
BTRE (2006b)							
Japan	0.14						
OECD			0.58	1.48	1.54	NE	1.93

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