

Australian Sea Port Activity to 2029–30

Godfrey Lubulwa, Rob Bolin and Anatoli Lightfoot

Bureau of Infrastructure, Transport and Regional Economics (BITRE)

Department of Infrastructure, Transport, Regional Development & Local Government

GPO Box 501, Canberra, ACT 2601

ABSTRACT

The main objective of this paper is to present forecasts of Australian sea port activity to 2029-30, taking into account GDP growth rates of the world economy dampened by the global financial crisis (GFC). To provide some context, these are compared to equivalent forecasts using the same models calibrated using pre-GFC GDP growth assumptions. The differences between these two scenarios are used to assess the impact of the GFC.

Forecasting models are developed using data on maritime trade volumes, Australian and world population, Australian real final demand, and GDP of Australia's trading partners from 1995-96 to 2007–08. These models are used to forecast the number of containers and tonnes of non-containerised freight loaded and unloaded in each mainland state capital and other ports. Estimates of elasticities with respect to GDP or final demand per head are also presented.

1. KEY RESULTS

The global financial crisis (GFC) is likely to dampen Australian sea port activity and is expected to have greater impact in the shorter term.

Average growth in containerised exports is predicted to be substantially lower over the next three to five years due to the GFC. Subsequently, growth rates are expected to return to levels in line with historical growth, and comparable those forecast using GDP growth assumptions from before the GFC.

Containerised imports, like exports, are expected to experience a period of reduced or negative growth over the short term before returning to levels of growth expected prior to the GFC.

Non-containerised exports are also predicted to continue to grow over the long term, and while a moderate decline in the short term is forecast this is expected to be less severe than the decline in containerised exports. Non-containerised imports are least affected by the GFC in these forecasts, although average growth rates are still predicted to fall in the next three to five years.

Figure 1 All Australian ports: Containerised trade, 1995–96 to 2029–30

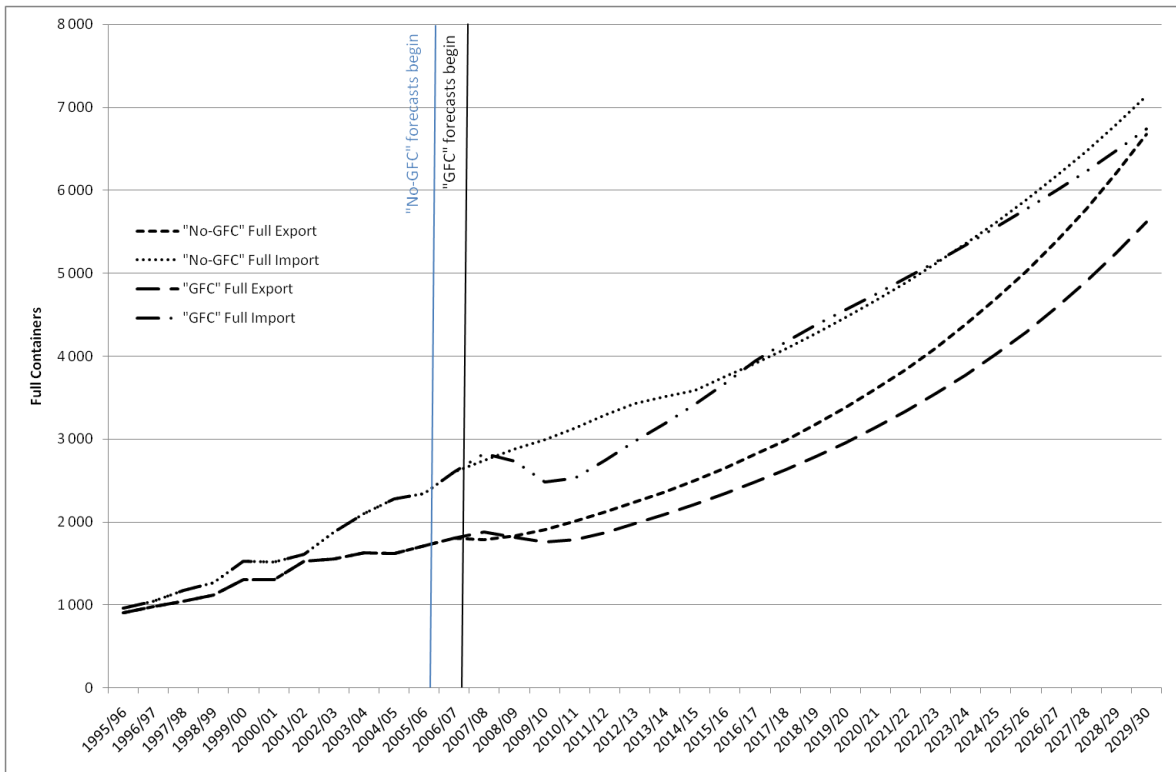
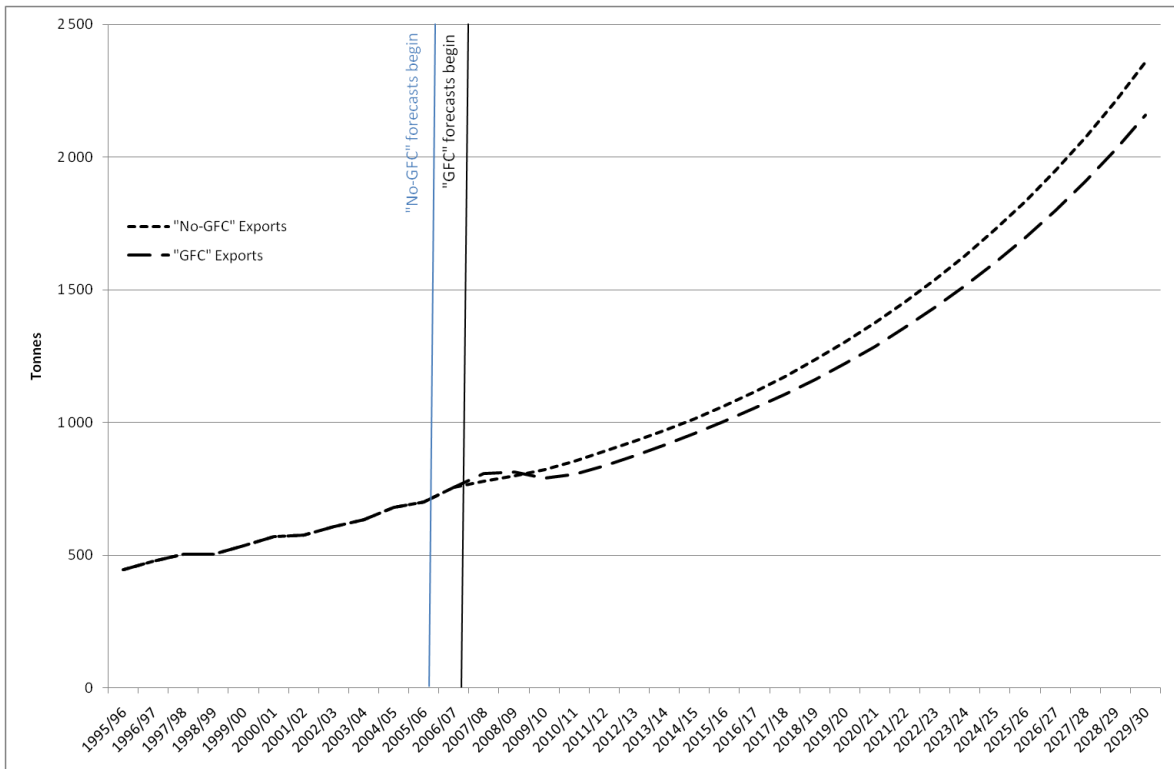


Figure 2 All Australian ports: Non-containerised exports, 1995–96 to 2029–30



2. INTRODUCTION

During the final months of 2008 and early 2009 the world experienced a significant downturn in economic growth, resulting in widespread recessionary pressures on the economies of the world. The long-term ramifications of this Global Financial Crisis (GFC) will likely be debated for many years, however its immediate effects have been clear: falling commodity prices, rising rates of unemployment, failing financial institutions and stalling trade figures.

It is the drop in commodity prices and stalled trade that have apparently affected the Australian economy the most, due to its reliance on the mining and agriculture sectors to generate export income. As the global economy slows, it is expected that demand for raw materials such as iron ore, coal and alumina will fall. Demand for consumer goods is expected to be lower as a result of reduced household incomes.

This paper attempts to measure the effect of the GFC by comparing two forecast scenarios. The first of these, the “GFC” scenario, uses the most current data to produce forecasts that reflect present global economic conditions and those expected into the future. The second “no-GFC” scenario uses GDP forecasts and long-term growth assumptions developed prior to the onset of the GFC. This scenario forecasts future trade volumes under the assumption of continued uninterrupted economic growth. Comparing freight volume forecasts between these two scenarios can provide an insight into the actual effect that the GFC has had on activity at Australia’s major ports. Figures 1 and 2 illustrate the results for these two scenarios.

This work draws on and extends Lubulwa et al. (2008), presented at the 2008 ATRF conference.

3. INPUT DATA

The data used comes from a variety of different sources. This necessitated the creation of a new dataset for each of the four models (containerised exports, containerised imports, non-containerised exports, and non-containerised imports) which combined the source data into the observations used to fit these models.

Each observation in the combined datasets contains the following variables:

- Financial year
- Australian port
- Export region (exports models only)
- Freight movement measure
- Income measure
- Price measure (imports models only)

The datasets used to fit export models contain one observation per financial year per Australian port per export region, or 78 observations per financial year. Each of these observations contains a measure of aggregate freight movement from a particular Australian port to an export region for that financial year, and an income measure for that export region for that financial year (repeated for each Australian port). The export regions used are as presented by Lubulwa et al. (2008) and detailed in BITRE (2009b).

The datasets used to fit import models contain one observation per financial year per Australian port, or 6 observations per financial year. Each observation contains a measure of aggregate freight movement to a particular Australian port for that financial year, an income measure for the Australian state in which that port resides, and a price measure for that financial year (repeated for each Australian port).

The data used for the three measures is described in detail below.

Freight movement measures

The natural logarithm of freight movement measured in twenty-foot equivalent units (TEU) or tonnes per capita of destination is the response variable in each of the four models presented in this paper. Forecasts of future values are produced by the models, using existing forecasts and the authors' assumptions regarding future values of the other measures (demand and price).

International imports and exports data are based on ABS (2009). The source for this is data collected by Customs. The data is aggregated from quarterly to financial year.

Non-liner cargo is used as a proxy for non-containerised cargo, as there is no data element in ABS (2009) that can be used to distinguish non-containerised from containerised cargo. This is an approximation. While there are small quantities of containerised cargo moved on non-liner vessels, these constitute a negligible proportion of total non-liner cargo. Additionally, quantities of non-containerised cargo moved on liner services are negligible or zero.

Full container movement data used is as published in BITRE (2009a), and previous editions. This data is collected quarterly, so it is aggregated to financial year. This provides total imported and exported containers (in TEU) by port. For exports this total is then apportioned amongst the trading regions according to the proportion of the total weight of liner cargo exported to that region in each year, according to ABS (2009).

Australian coastal freight data used is as published in BITRE (2009b), and previous editions. This data is collected by BITRE directly from various port authorities each financial year.

For the no-GFC scenario, freight movement data from 1995–96 to 2006–07 are used, and forecasts begin in 2007–08. For the GFC scenario actual data for 2007–08 are included, so the first forecasts are for the 2008–09 financial year.

Income measures

All four models incorporate an income measure as a covariate. This is the natural logarithm of state real final demand per capita for Australia and the natural logarithm of real “gross regional product” per capita for foreign countries. The sources used include forecasts of varying lengths; in order to be able to forecast freight movements to 2029–30 the income data forecasts were projected beyond the end of their forecast periods based on an assumption of constant growth rates.

In the two export models (containerised and non-containerised), foreign countries are grouped into 12 overseas trading regions. For each of these, the population and real GDP of each of the countries in the region are used to calculate per capita “gross regional product”. Historical and forecast GDP and population for countries other than Australia are obtained from IMF (2008) for the no-GFC scenario and IMF (2009) for the GFC scenario.

Per capita real final demand by Australian state from Access Economics (2007) is used for the no-GFC scenario. Demand for imports to a particular port was assumed to be driven by final demand for the state in which the port is situated. The income measure for “Other ports” in the no-GFC import model and for the “Coastal” export region in the pre-GFC export model is based on Australian real final demand per capita.

For the GFC scenario, the income variable for Australia is constructed by BITRE from Access Economics (2009), Treasury (2009a), Treasury (2009b), and Monash University (2008) which reflects projections published by Treasury in its inter-generational report.

Price measures

The price measure used in the imports models is the natural logarithm of the AU\$/US\$ exchange rate, obtained from RBA (2009). The exchange rate used for each financial year is the average of daily exchange rates as recorded at 4pm. No price measure was used for export models. The price measure was assumed to remain constant throughout the forecast period – no attempt was made to use forecasts of exchange rates as inputs.

4. MODELS

The current models elaborate the models presented in Lubulwa et al. (2008), which in turn were based on earlier work: BTRE (2002), Hamal et al. (2006), and BITRE (2006). Earlier studies used the gross domestic product (GDP) 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 in relation to the entire world. Lubulwa et al. (2008) defined 13 trading regions for Australia and estimated trading-region-specific elasticities of demand with respect to GDP per head for Australia’s exports. This extension made it possible to explicitly accommodate differential GDP growth rates across Australia’s trading

partners in port-level projections of container and non-container freight volumes and ship movements.

The latest models aim to build on the success of previous modelling efforts while overcoming some of their perceived shortcomings. Lubulwa et al. (2008) estimated 13 demand functions (one for each trading region) for containerised exports for each port, using a separate linear model for each based on a small number of highly disaggregated observations. This was repeated for non-containerised exports. The new export models estimate a single demand function per port for containerised exports, and a second for non-containerised. The new methodology combines 91 small datasets used previously for container exports into one much larger dataset, and does the same for non-containerised exports. The number of linear models is rationalised allowing each model to leverage much more information to produce predictions. Imports models have been similarly rationalised to two models – one for containerised imports and one for non-containerised imports. Using more data to fit each model means more stable estimates of elasticities and more reliable forecasts, and aggregation avoids some of the issues associated with highly variable data encountered previously.

Model methodology

Leveraging detailed region-specific data in the estimation of fewer, more robust port level projection equations required a significant shift in the type of model used. New modelling uses the more flexible linear mixed model methodology; see Littell et al. (1996). This generalisation of simple linear regression relaxes some of the assumptions and introduces additional parameters which allow the observed covariance between observations to be modelled explicitly. The general form of model equations for all four models, expressed using matrix notation, is:

$$\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \mathbf{Z}\boldsymbol{\gamma} + \boldsymbol{\varepsilon} \quad (1)$$

where:

- y** is a vector containing the response variable – the freight movement measure;
- X** is a matrix whose columns contain the explanatory variables associated with the fixed-effects part of the model – the intercept term, the income measure, and for imports models the price measure;
- β** is a vector of fixed-effect parameters to be estimated – the intercept, the coefficient of income, and for imports models the coefficient of price;
- Z** is a matrix whose columns contain the explanatory variables associated with the random-effects part of the model – indicator variables for the destinations (export regions or Australian ports for export or import models respectively);

$\boldsymbol{\gamma}$ is a vector of random-effect parameters to be estimated – modifications to the fixed intercept for each destination in the model; and

$\boldsymbol{\varepsilon}$ is a vector of random errors (residuals).

The $\boldsymbol{\varepsilon}$ are assumed to be normally distributed with zero mean. However, the constraints of constant variance and zero covariance are relaxed. Instead, the variance-covariance matrix of $\boldsymbol{\varepsilon}$, denoted by \mathbf{R} , is assumed to have a particular structure. The parameters associated with that structure are then estimated. The structure chosen for all models was a homogeneous 1st-order autoregressive structure grouped by destination, in which pairs of observations in adjacent time periods have covariance ρ , and pairs of observations in non-adjacent time periods have covariance ρ^{1+n} where n is the number of intervening observations. Observations for different destinations have zero covariance. \mathbf{R} therefore has two parameters to be estimated: The covariance parameter ρ and a variance parameter σ_R^2 .

The random effects parameters $\boldsymbol{\gamma}$ are likewise assumed to be normally distributed with mean zero, and they are also estimated during model fitting along with the parameters associated with \mathbf{G} , the variance-covariance matrix of $\boldsymbol{\gamma}$. Like \mathbf{R} , \mathbf{G} is assumed to have a particular structure. In all models $\mathbf{G} = \sigma_G^2 \mathbf{I}$, where \mathbf{I} is the identity matrix, and the single variance parameter σ_G^2 is estimated. This structure does not allow for any covariance in $\boldsymbol{\gamma}$.

Equation (1) does not have an analytic solution so parameters are estimated using an approximate iterative process. The technique used was REML (restricted maximum likelihood), as implemented by the MIXED procedure in SAS. This algorithm attempts to choose the set of parameters ($\boldsymbol{\beta}$, $\boldsymbol{\gamma}$, σ_G^2 , σ_R^2 , and ρ) which are most likely given the observed data (\mathbf{y} , \mathbf{X} , and \mathbf{Z}) and the constraints on $\boldsymbol{\varepsilon}$, $\boldsymbol{\gamma}$, \mathbf{R} and \mathbf{G} .

This paper uses the approach proposed in UNESCAP (2001) and used in Lubulwa et al. (2008) in forecasting the number of empty container movements, making use of the major directional movement for containers for each port. A consequence of this methodology is that growth in total container movements is closely tied to growth in full container movements in the major direction for each port, while changes in volumes moved in the minor direction have little effect on the total.

Model selection

The choice of the linear mixed model framework was motivated by the need to account for covariance between related observations. The structure of the models (including the choice of variables to include in the fixed- and random-effects parts of the models and the choice of covariance matrices) was determined through examination of a number of alternative models, and by the need to produce particular outputs (e.g. estimates of elasticities). Candidate models were compared using the residual log-likelihood from the model fit, as well as more qualitative examinations of parameter estimates, standard errors, and forecasts produced by each model.

5. RESULTS

This section summarises the main differences in results between the two forecast scenarios: GFC and no-GFC. Each model (containerised exports, containerised imports, non-containerised exports, and non-containerised imports) was fit to two different sets of input data and forecasts were produced using the corresponding growth assumptions (GFC and no-GFC). Although much of the difference between the two scenarios is due to the effect of the GFC on the input variables, some of the change must be attributed to other differences between the scenarios' input data. One of these differences is that the GFC scenario includes an additional data point for 2007–08 which in the no-GFC scenario is forecast. Additionally, Treasury forecasts of Australian final demand and GDP were incorporated into GFC scenario growth assumptions, while these were not available for the no-GFC scenario. As such, differences due to differing forecast methodology between Access Economics and Treasury may have contributed to some observed differences in forecast behaviour.

Table 1 presents some important parameters estimated by the models (detailed above). As shown, much higher elasticities of demand are estimated for containerised freight than non-containerised. This suggests that both imports and exports of containerised goods are more sensitive to changes in income variables than non-containerised goods. A high proportion of containerised freight is consumer goods, while non-containerised freight is generally commodities such as raw materials, fuel, machinery, or bulk foodstuffs. One possible conclusion is that the market for consumer goods is the hardest hit by an economic downturn while demand for essentials such as fuel and grain remains comparatively stable.

Containerised freight

The difference between the two scenarios for containerised freight is most marked in the 5-year forecast. The forecast average annual growth rate for total container movement (import and export, including empty containers) for the period 2007–08 to 2012–13 is 1.2 per cent in the GFC scenario, compared with 4.8 per cent predicted for the same period in the no-GFC scenario (Table 3). While actual container movement in 2007–08 exceeded the no-GFC forecast value, total container movement is predicted to be 13.6 per cent lower in the GFC scenario by 2012–13. The five-year average growth rate for exported full containers is predicted to slow to 1.1 per cent in the GFC scenario, compared with 4.6 per cent over the same period in the no-GFC scenario. Growth over this period in imported full containers is forecast at 1.0 per cent, compared with a prediction of 4.5 per cent for no-GFC.

In the latter part of the forecast period (2012–13 to 2029–30), the average annual growth rate for total container movements in the GFC scenario is predicted to return to levels similar to the no-GFC scenario – 4.9 per cent and 4.4 per cent respectively. These are also the growth rates forecast for containerised imports in the two scenarios. This is not a coincidence: Because full container imports exceed full container exports Australia is a net

exporter of empty containers. Any growth in exported full containers causes a corresponding drop in exported empty containers (not separately shown in Table 3), and hence total container movements are not affected. This effect can also be seen in some forecasts of individual ports' container movements. See UNESCAP (2001) for details on the method used for estimating empty container movements.

Of the ports, Adelaide is arguably the hardest hit in percentage terms, with the average annual growth rate of exported containers over five years forecast to be negative 6.6 per cent in the GFC scenario compared to 2.7 per cent in the no-GFC scenario (Table 3). It is the only major port expecting negative growth in either imports or exports over this period, and although this rather alarming figure is exaggerated somewhat by the choice of base year for the average growth calculation, shifting the year by one in either direction still results in substantially negative average growth to 2012–13, whereas the other major ports are all predicted to post net positive growth over this period. Containerised exports from Fremantle are also forecast to drop substantially over five years, falling from 4.7 per cent average annual growth in the no-GFC scenario to 0.1 per cent in the GFC. There are smaller (albeit still substantial) differences between the two scenarios for the other ports.

Import growth forecasts are lowest for Brisbane over 5 years: Average annual growth of 0.1 per cent is forecast over 5 years in the GFC scenario, compared to 3.8 per cent no-GFC. Both Melbourne and Sydney are also expected to experience substantial falls in import growth over this period – forecast annual growth for Sydney is 0.7 per cent in the GFC scenario compared with 5.0 per cent for no-GFC, and Melbourne is expected to experience annual growth of 1.0 per cent compared with 4.5 per cent for no-GFC.

Over the longer term (2012–13 to 2029–30), the predicted growth rates in the GFC scenario for both imports and exports are forecast to return to levels similar to those forecast by the no-GFC scenario, and in some cases exceed them. This is consistent with the recovery in demand/GDP seen in the GFC scenario input data.

Non-containerised freight

Australia's non-containerised trade is forecast to experience reduced growth over a five year period, similar to containerised trade. By 2012–13 the total volume of non-containerised trade in the GFC scenario will have fallen 5.7 per cent below the no-GFC prediction (Table 4). In contrast to the container forecasts, the majority of this fall is due to a lower five-year average growth rate for exports. Average growth rates for imports over the period 2007–08 to 2012–13 are only marginally lower in the GFC scenario. Longer-term growth rates (2012–13 to 2029–30) are also similar with the growth rates forecast to be slightly higher in the GFC scenario due to marginally higher long-term Australian final demand growth assumptions (Table 2). In the longer term, average growth rates for non-containerised exports remain slightly lower in the GFC scenario (5.7 per cent compared with 5.9 per cent annually for the period 2012–13 to 2029–30).

For the capital city ports, the effect of the GFC on non-containerised trade will be relatively minor. For Melbourne and Sydney the effect is arguably non-existent, while in Adelaide, Brisbane, and Fremantle non-containerised imports and exports are expected to return to levels comparable to those forecast using the no-GFC scenario within five to ten years.

For other ports, which includes the major bulk ports (and therefore comprises the majority of Australian non-containerised trade), the effect of the GFC on exports is expected to be more noticeable. During the first five years of forecasts, non-containerised exports (which represent 96.3 per cent of total non-containerised trade at these ports) are forecast to grow on average 1.8 per cent annually in the GFC scenario, lower than the no-GFC forecast of 3.9 per cent. Over the longer term (2012–13 onwards) the GFC scenario predicts growth rates similar to those in the no-GFC scenario. However the volume of exports remains approximately 10 per cent lower in the GFC scenario for the remainder of the forecast period.

6. CONCLUSION

Forecasts suggest that the GFC will have a major negative effect on containerised exports in the short term. Due to higher growth in later years, exports are expected to return to levels similar to those forecast in the pre-GFC scenario. In contrast, containerised imports are expected to suffer less in the short term but recover more slowly, returning to similar rates of growth as in the pre-GFC scenario, but remaining at lower levels into the future.

Non-containerised trade is predicted to be affected to a lesser extent than containerised trade. This may be due to the contribution of non-cycle-sensitive commodities such as fuel and bulk foodstuffs. Nonetheless, non-containerised exports and imports are forecast to be lower in the short term in the GFC scenario. Growth is expected to return to pre-GFC forecast levels relatively quickly, resulting in only small differences in long-term forecasts of non-containerised freight volumes.

It is clear that the drivers of international maritime trade are extremely complicated, and that further work is needed to better understand the processes involved. Additionally, ensuring greater reliability and consistency of input data and improving data preparation may also contribute to improved modelling results.

REFERENCES

Access Economics. (2007). *Business outlook, January 2007 edition*, Canberra.

Access Economics. (2009). *Business outlook, March 2009 edition*, Canberra.

ABS see Australian Bureau of Statistics.

Australian Bureau of Statistics (2009), *International Cargo Statistics*, unpublished, Canberra.

BITRE see Bureau of Infrastructure, Transport and Regional Economics.

BTRE see Bureau of Transport and Regional Economics.

Bureau of Infrastructure, Transport and Regional Economics (2009a) *Waterline 45*, Canberra.

Bureau of Infrastructure, Transport and Regional Economics (2009b) *Australian sea freight 2007–08, information paper 64*, Canberra.

Bureau of Transport and Regional Economics (2002) *Australia’s seaborne containerised freight forecast to 2010–11, working paper 50*, Canberra.

Bureau of Transport and Regional Economics (2006) *Container and ship movements in Australia: 2004–05 to 2024–25, working paper 65*, Canberra.

Hamal, K., James, B., and Cregan, M. (2006) *Port level forecasts of container and ship movements in Australia: 2004–05 to 2024–25*, staff paper presented at the Australian Transport Research Forum, held 27–29 September 2006, Gold Coast.

IMF see International Monetary Fund.

International Monetary Fund (2008) *World Economic Outlook database, April 2008 Edition*, viewed at <<http://www.imf.org/external/pubs/ft/weo/2008/01/weodata/index.aspx>>.

International Monetary Fund (2009) *World Economic Outlook database, April 2009 Edition*, viewed at <<http://www.imf.org/external/pubs/ft/weo/2009/01/weodata/index.aspx>>.

Littell, R.C., Milliken, G.A., Stroup, W.W., and Wolfinger, R.D. (1996) *SAS System for Mixed Models*, Cary, NC, USA.

Lubulwa, G., Bolin, R., Slatter, B., and Carmody, T. (2008) *Container and ship movements through Australian ports: 2007–08 to 2029–30, preliminary estimates*, Australian Transport Research Forum, 2-3 October 2008, Gold Coast.

Monash University (2008), *MMRF Model*, Centre for Policy Studies and IMPACT Project, Monash University, Melbourne.

Ports Australia (formerly Association of Australian Ports and Marine Authorities) (2009) *Trade Statistics*, viewed at <<http://portsaustralia.com.au/tradestats/>>.

RBA see Reserve Bank of Australia.

Reserve Bank of Australia (2009) *Exchange Rate Statistics*, viewed at <<http://www.rba.gov.au/Statistics/HistoricalExchangeRates/index.html>>.

Treasury (2009a), *Budget 2009*, Commonwealth of Australia, Canberra.

Treasury (2009b), *Economic growth projections* (as reported in press), Commonwealth of Australia, Canberra.

UNESCAP see United Nations Economic and Social Commission for Asia and the Pacific

United Nations Economic and Social Commission for Asia and the Pacific (2001), *Maritime Policy Planning Model: Regional Shipping and Port Development Strategies Under a Changing Maritime Environment*, viewed at <<http://www.unescap.org/publications/detail.asp?id=455>>.

Table 1 Estimates of elasticities of demand for Australian exports and imports by port, 1995–96 to 2007–08

Model	Port	Income elasticity	Standard Error	P-value	Price elasticity	Standard Error	P-value
GFC scenario							
Exports containerised							
	Adelaide	0.8385	0.1206	<.0001	na	na	na
	Brisbane	1.0069	0.1320	<.0001	na	na	na
	Fremantle	0.9481	0.1185	<.0001	na	na	na
	Melbourne	1.1611	0.1193	<.0001	na	na	na
	Sydney	1.0707	0.1280	<.0001	na	na	na
	Other ports	0.9215	0.1337	<.0001	na	na	na
Exports non-containerised							
	Adelaide	0.4004	0.1416	0.0048	na	na	na
	Brisbane	0.5202	0.1450	0.0004	na	na	na
	Fremantle	0.5746	0.1404	<.0001	na	na	na
	Melbourne	0.4368	0.1476	0.0032	na	na	na
	Sydney	0.2973	0.1552	0.0556	na	na	na
	Other ports	0.9887	0.1281	<.0001	na	na	na
Imports containerised							
	All ports	2.4231	0.3269	<.0001	-0.1874	0.1583	0.2405
Imports non-containerised							
	All ports	0.6845	0.3905	0.0840	-0.0432	0.1947	0.8251
No-GFC scenario							
Exports containerised							
	Adelaide	0.8770	0.1261	<.0001	na	na	na
	Brisbane	1.0540	0.1372	<.0001	na	na	na
	Fremantle	0.9945	0.1241	<.0001	na	na	na
	Melbourne	1.2143	0.1263	<.0001	na	na	na
	Sydney	1.1228	0.1330	<.0001	na	na	na
	Other ports	0.9870	0.1363	<.0001	na	na	na
Exports non-containerised							
	Adelaide	0.4370	0.1381	0.0016	na	na	na
	Brisbane	0.5483	0.1427	0.0001	na	na	na
	Fremantle	0.6097	0.1365	<.0001	na	na	na
	Melbourne	0.4630	0.1465	0.0016	na	na	na
	Sydney	0.3170	0.1531	0.0387	na	na	na
	Other ports	1.0251	0.1241	<.0001	na	na	na
Import containerised							
	All ports	2.4917	0.3599	<.0001	-0.1302	0.1684	0.4421
Imports non-containerised							
	All ports	0.5470	0.4053	0.1819	-0.0437	0.2132	0.8384

na Not applicable

Table 2 Summary of average annual growth rates in per capita income variables, observed and assumed

Region (exports)	Historical (observed)		Forecasts, to 2012 (assumed)		Forecasts, from 2012 (assumed)	
	No-GFC	GFC	No-GFC	GFC	No-GFC	GFC
	per cent					
Africa	1.97%	1.74%	3.17%	1.54%	3.51%	3.17%
North and Central America	1.77%	1.64%	1.00%	0.05%	2.01%	1.60%
South America	1.35%	1.29%	2.38%	0.95%	2.61%	2.64%
East Asia	6.66%	6.29%	6.27%	4.98%	7.27%	7.37%
South East Asia	2.51%	2.37%	3.63%	0.99%	4.84%	4.06%
South Asia	4.17%	3.95%	5.05%	3.76%	5.83%	5.89%
Japan	1.08%	1.00%	1.42%	-0.13%	1.80%	2.61%
Korea	3.63%	3.36%	3.60%	1.47%	4.12%	4.06%
Europe	2.30%	2.14%	2.05%	0.06%	2.76%	2.42%
Middle East	2.51%	2.27%	2.60%	0.72%	2.89%	1.69%
New Zealand	1.77%	1.71%	1.18%	-0.17%	1.63%	1.99%
Pacific Islands and PNG	-0.40%	-0.39%	1.26%	0.91%	2.56%	2.73%
Australia	2.73%	2.64%	1.19%	-0.12%	1.22%	1.46%
State (imports)						
	Historical (observed)		Forecasts, to 2012 (assumed)		Forecasts, from 2012 (assumed)	
	No-GFC	GFC	No-GFC	GFC	No-GFC	GFC
	per cent					
South Australia	2.92%	2.69%	0.57%	0.33%	0.93%	1.62%
Queensland	3.02%	3.03%	1.02%	-0.27%	1.26%	1.17%
Western Australia	3.03%	3.18%	0.85%	-0.79%	1.10%	1.21%
Victoria	2.90%	2.79%	1.02%	-0.22%	1.13%	1.47%
New South Wales	2.14%	2.14%	1.57%	0.06%	1.38%	1.63%
Australia	2.73%	2.64%	1.19%	-0.12%	1.22%	1.46%

Table 3 Containerised trade—observed and projected

	All ports BTRE (2006a)			All ports						Adelaide						Brisbane					
	Full export	Full import	Total (incl. empty)	No-GFC Full export	No-GFC Full import	GFC Total (incl. empty)	No-GFC Full export	No-GFC Full import	GFC Total (incl. empty)	No-GFC Full export	No-GFC Full import	GFC Total (incl. empty)	No-GFC Full export	No-GFC Full import	GFC Total (incl. empty)	No-GFC Full export	No-GFC Full import	GFC Total (incl. empty)			
	(thousand teus)																				
1995/96	na	na	na	908	967	2 300	908	967	2 300	36	19	69	36	19	69	110	76	249	110	76	249
1996/97	na	na	na	982	1 055	2 458	982	1 055	2 458	46	25	88	46	25	88	122	89	273	122	89	273
1997/98	na	na	na	1 043	1 182	2 720	1 043	1 182	2 720	49	36	108	49	36	108	134	112	318	134	112	318
1998/99	na	na	na	1 119	1 271	2 966	1 119	1 271	2 966	54	39	121	54	39	121	153	124	358	153	124	358
1999/00	1 306	1 532	3 513	1 306	1 532	3 513	1 306	1 532	3 513	55	35	116	55	35	116	170	153	414	170	153	414
2000/01	1 302	1 520	3 635	1 302	1 520	3 635	1 302	1 520	3 635	63	38	133	63	38	133	194	154	453	194	154	453
2001/02	1 526	1 620	3 928	1 526	1 620	3 928	1 526	1 620	3 928	70	41	145	70	41	145	199	174	482	199	174	482
2002/03	1 554	1 889	4 456	1 554	1 889	4 456	1 554	1 889	4 456	71	41	148	71	41	148	193	223	570	193	223	570
2003/04	1 633	2 107	4 859	1 633	2 107	4 859	1 633	2 107	4 859	86	42	169	86	42	169	205	262	639	205	262	639
2004/05	1 625	2 284	5 171	1 625	2 284	5 171	1 625	2 284	5 171	80	40	171	80	40	171	227	292	726	227	292	726
2005/06	1 714	2 356	5 380	1 719	2 347	5 311	1 719	2 347	5 311	91	48	189	91	48	189	246	321	766	246	321	766
2006/07	1 859	2 452	5 669	1 804	2 608	5 829	1 804	2 608	5 829	97	54	219	97	54	219	257	364	875	257	364	875
2007/08	1 988	2 701	6 188	1 788	2 752	6 142	1 879	2 832	6 313	78	55	239	117	57	280	258	377	907	255	412	941
2008/09	2 136	2 889	6 640	1 837	2 889	6 543	1 813	2 736	6 175	76	56	206	85	58	209	259	388	912	253	403	934
2009/10	2 273	2 974	6 917	1 912	3 001	6 795	1 758	2 483	5 605	78	57	212	77	53	191	264	399	936	243	362	839
2010/11	2 407	3 135	7 309	2 012	3 138	7 105	1 791	2 534	5 720	82	59	220	77	55	191	272	416	977	244	361	838
2011/12	2 526	3 327	7 740	2 123	3 294	7 460	1 877	2 746	6 199	85	61	230	80	60	197	282	437	1 027	251	384	890
2012/13	2 656	3 472	8 096	2 241	3 433	7 773	1 981	2 974	6 713	89	63	241	83	64	205	294	455	1 068	261	415	962
2013/14	2 802	3 657	8 523	2 367	3 515	7 961	2 094	3 187	7 194	93	65	251	86	68	213	307	465	1 092	273	446	1 034
2014/15	2 931	3 853	8 965	2 503	3 594	8 139	2 214	3 419	7 718	97	66	263	90	72	222	322	475	1 116	286	478	1 109
2015/16	3 065	4 059	9 426	2 652	3 757	8 508	2 343	3 671	8 285	102	68	275	94	77	232	338	498	1 169	300	511	1 185
2016/17	3 205	4 277	9 913	2 813	3 920	8 877	2 482	3 944	8 901	106	70	288	98	83	242	357	520	1 221	316	550	1 274
2017/18	3 352	4 506	10 426	2 988	4 093	9 268	2 630	4 173	9 420	111	73	301	102	87	253	377	544	1 277	334	585	1 356
2018/19	3 506	4 749	10 967	3 176	4 275	9 681	2 787	4 377	9 880	117	76	315	107	90	264	399	569	1 337	352	615	1 427
2019/20	3 667	5 005	11 539	3 381	4 468	10 119	2 957	4 563	10 298	122	78	330	112	95	276	423	597	1 402	373	634	1 471
2020/21	3 836	5 276	12 142	3 602	4 673	10 582	3 139	4 748	10 716	128	81	346	117	99	289	449	626	1 471	395	653	1 515
2021/22	4 013	5 561	12 780	3 841	4 889	11 072	3 336	4 943	11 156	134	84	363	122	104	302	477	658	1 545	419	673	1 562
2022/23	4 198	5 863	13 453	4 101	5 118	11 590	3 548	5 136	11 592	141	87	381	128	109	316	508	691	1 624	445	693	1 608
2023/24	4 391	6 182	14 163	4 383	5 360	12 138	3 778	5 339	12 051	148	90	400	134	114	331	542	727	1 709	474	714	1 656
2024/25	4 594	6 519	14 915	4 689	5 616	12 718	4 027	5 553	12 534	156	94	420	140	119	346	578	766	1 800	505	737	1 708
2025/26	na	na	na	5 022	5 888	13 332	4 296	5 779	13 043	163	97	442	147	125	363	618	807	1 897	538	760	1 763
2026/27	na	na	na	5 384	6 175	13 982	4 588	6 001	13 546	172	101	464	154	130	380	661	851	2 000	574	783	1 817
2027/28	na	na	na	5 778	6 479	14 671	4 904	6 236	14 074	181	104	488	161	136	398	708	899	2 111	613	808	1 873
2028/29	na	na	na	6 207	6 801	15 402	5 247	6 482	14 630	190	108	514	169	142	418	759	949	2 230	656	834	1 933
2029/30	na	na	na	6 675	7 143	16 176	5 620	6 741	15 214	200	112	541	178	149	439	814	1 003	2 357	702	861	1 996
Annual average growth rates																					
Actual historical	4.5%	8.3%	8.0%	6.4%	9.4%	8.8%	6.2%	9.4%	8.8%	9.4%	9.8%	11.0%	10.3%	9.5%	12.3%	8.0%	15.2%	12.1%	7.3%	15.1%	11.7%
Entire forecast period	5.3%	5.4%	5.4%	5.9%	4.5%	4.5%	5.1%	4.0%	4.1%	3.2%	3.2%	4.0%	1.9%	4.4%	2.1%	5.1%	4.5%	4.4%	4.7%	3.4%	3.5%
2007–08 to 2012–13	6.0%	5.2%	5.5%	4.6%	4.5%	4.8%	1.1%	1.0%	1.2%	2.7%	3.0%	0.2%	-6.6%	2.4%	-6.1%	2.6%	3.8%	3.3%	0.5%	0.1%	0.4%
2012–13 to 2029–30	4.7%	5.4%	5.2%	6.6%	4.4%	4.4%	6.3%	4.9%	4.9%	4.9%	3.4%	4.9%	4.6%	5.0%	4.6%	6.2%	4.8%	4.8%	6.0%	4.4%	4.4%

na Not applicable

(continued over page)

Table 3 Containerised trade—observed and projected

	Fremantle						Melbourne						Sydney						Other					
	Full export	No-GFC Full import	Total (incl. empty y)	Full export	GFC Full import	Total (incl. empty y)	Full export	No-GFC Full import	Total (incl. empty y)	Full export	GFC Full import	Total (incl. empty y)	Full export	No-GFC Full import	Total (incl. empty y)	Full export	GFC Full import	Total (incl. empty y)	Full export	No-GFC Full import	Total (incl. empty y)	Full export	GFC Full import	Total (incl. empty y)
	(thousand teus)																							
1995/96	84	84	203	84	84	203	372	395	923	372	395	923	217	347	685	217	347	685	89	46	170	89	46	170
1996/97	84	90	210	84	90	210	402	432	984	402	432	984	232	373	730	232	373	730	96	46	173	96	46	173
1997/98	95	109	251	95	109	251	410	461	1 041	410	461	1 041	250	404	798	250	404	798	104	60	205	104	60	205
1998/99	105	111	276	105	111	276	436	496	1 121	436	496	1 121	256	445	879	256	445	879	115	55	213	115	55	213
1999/00	112	122	297	112	122	297	501	574	1 288	501	574	1 288	295	518	1 011	295	518	1 011	173	129	387	173	129	387
2000/01	126	136	354	126	136	354	524	571	1 317	524	571	1 317	306	492	989	306	492	989	90	129	388	90	129	388
2001/02	142	154	382	142	154	382	554	605	1 421	554	605	1 421	307	507	1 009	307	507	1 009	254	139	489	254	139	489
2002/03	153	186	431	153	186	431	569	696	1 594	569	696	1 594	294	587	1 161	294	587	1 161	275	156	552	275	156	552
2003/04	160	204	457	160	204	457	591	775	1 718	591	775	1 718	304	643	1 270	304	643	1 270	287	182	605	287	182	605
2004/05	161	210	467	161	210	467	653	854	1 910	653	854	1 910	320	687	1 376	320	687	1 376	184	202	521	184	202	521
2005/06	154	205	455	154	205	455	670	873	1 930	670	873	1 930	345	721	1 445	345	721	1 445	213	179	525	213	179	525
2006/07	164	235	505	164	235	505	699	949	2 094	699	949	2 094	370	800	1 620	370	800	1 620	218	207	516	218	207	516
2007/08	162	267	558	162	267	558	720	997	2 195	727	1 051	2 257	381	841	1 728	385	888	1 778	189	216	514	212	159	481
2008/09	168	283	648	169	275	630	750	1 040	2 287	733	998	2 184	396	897	1 835	388	844	1 725	187	225	581	185	158	451
2009/10	175	295	676	163	241	552	788	1 080	2 373	721	919	2 011	415	938	1 919	381	763	1 559	193	232	599	172	145	420
2010/11	184	307	703	167	235	539	834	1 131	2 487	740	944	2 066	439	983	2 011	390	788	1 609	201	241	622	173	150	422
2011/12	194	325	743	174	255	584	884	1 189	2 614	782	1 024	2 241	466	1 031	2 109	410	859	1 754	211	251	649	180	165	440
2012/13	205	341	781	183	287	658	938	1 241	2 727	830	1 106	2 421	496	1 072	2 193	435	921	1 881	221	260	673	189	181	461
2013/14	216	352	806	193	321	736	994	1 271	2 795	881	1 182	2 586	527	1 097	2 244	461	975	1 991	231	266	686	198	195	484
2014/15	228	363	830	204	354	810	1 054	1 300	2 858	936	1 266	2 769	560	1 120	2 291	490	1 038	2 121	241	270	699	208	211	516
2015/16	241	381	872	215	379	869	1 121	1 359	2 988	994	1 360	2 976	597	1 170	2 392	521	1 114	2 276	253	281	727	218	229	558
2016/17	255	399	914	227	409	937	1 194	1 417	3 115	1 058	1 462	3 198	636	1 221	2 497	554	1 193	2 438	266	293	756	229	247	603
2017/18	270	419	958	239	437	1 002	1 272	1 478	3 249	1 124	1 546	3 382	679	1 275	2 608	590	1 256	2 566	279	305	787	240	263	641
2018/19	285	439	1 005	253	461	1 056	1 357	1 542	3 389	1 196	1 620	3 545	725	1 333	2 726	628	1 314	2 683	294	317	820	252	277	676
2019/20	302	460	1 054	267	480	1 098	1 450	1 609	3 537	1 272	1 691	3 701	774	1 394	2 850	669	1 373	2 805	309	331	855	263	290	707
2020/21	321	483	1 106	282	498	1 140	1 550	1 679	3 692	1 355	1 762	3 856	828	1 458	2 982	714	1 433	2 927	325	345	892	276	303	738
2021/22	340	507	1 161	299	517	1 184	1 660	1 754	3 855	1 445	1 837	4 019	887	1 527	3 122	762	1 496	3 056	343	360	931	289	316	770
2022/23	362	533	1 219	316	535	1 226	1 779	1 832	4 027	1 542	1 911	4 181	950	1 599	3 270	813	1 559	3 185	361	377	973	303	329	802
2023/24	384	559	1 280	335	555	1 270	1 909	1 914	4 208	1 647	1 989	4 352	1 019	1 675	3 427	869	1 626	3 321	381	394	1 017	318	343	836
2024/25	409	588	1 346	355	575	1 316	2 050	2 001	4 508	1 762	2 070	4 530	1 094	1 756	3 592	930	1 696	3 464	403	412	1 064	334	357	871
2025/26	435	618	1 415	377	596	1 364	2 205	2 092	4 848	1 887	2 156	4 718	1 175	1 842	3 768	996	1 770	3 616	426	431	1 114	352	372	907
2026/27	463	650	1 488	400	616	1 411	2 374	2 188	5 219	2 023	2 241	4 905	1 263	1 933	3 953	1 068	1 844	3 766	451	452	1 167	370	387	943
2027/28	494	684	1 566	425	637	1 460	2 559	2 289	5 626	2 171	2 331	5 100	1 360	2 029	4 150	1 145	1 921	3 925	477	473	1 233	389	402	981
2028/29	526	720	1 649	451	660	1 511	2 762	2 396	6 071	2 332	2 425	5 305	1 465	2 131	4 358	1 229	2 003	4 092	506	496	1 307	410	418	1 020
2029/30	562	759	1 736	480	683	1 565	2 983	2 509	6 558	2 508	2 523	5 521	1 579	2 239	4 579	1 321	2 090	4 269	536	521	1 386	432	435	1 062
Annual average growth rates																								
Actual historical	6.3%	9.8%	8.7%	6.7%	10.1%	9.1%	5.9%	8.3%	7.7%	5.7%	8.5%	7.7%	5.0%	7.9%	8.1%	4.9%	8.2%	8.3%	8.5%	14.6%	10.6%	7.5%	10.9%	9.0%
Entire forecast period	5.5%	5.2%	5.5%	4.5%	4.4%	4.7%	6.5%	4.3%	5.1%	5.8%	4.1%	4.2%	6.5%	4.6%	4.6%	5.8%	4.0%	4.1%	4.0%	4.1%	4.4%	3.3%	4.7%	3.7%
2007–08 to 2012–13	4.7%	5.0%	7.0%	0.1%	1.6%	2.7%	5.4%	4.5%	4.4%	2.7%	1.0%	1.4%	5.4%	5.0%	4.9%	2.4%	0.7%	1.1%	3.2%	3.8%	5.5%	-2.3%	2.6%	-0.8%
2012–13 to 2029–30	6.1%	4.8%	4.8%	5.8%	5.2%	5.2%	7.0%	4.2%	5.3%	6.7%	5.0%	5.0%	7.1%	4.4%	4.4%	6.8%	4.9%	4.9%	5.4%	4.2%	4.3%	5.0%	5.3%	5.0%

Table 4 Non-containerised trade—observed and projected

	All ports BTRE (2006b)			All ports						Adelaide						Brisbane					
	Exports	Imports	Total	No-GFC			GFC			No-GFC			GFC			No-GFC			GFC		
				Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total
	(million tonnes)																				
1995/96	na	na	na	406.6	37.9	444.5	406.6	37.9	444.5	2.3	2.4	4.7	2.3	2.4	4.7	7.8	6.3	14.1	7.8	6.3	14.1
1996/97	na	na	na	436.5	39.9	476.3	436.5	39.9	476.3	2.9	2.9	5.8	2.9	2.9	5.8	8.5	6.0	14.5	8.5	6.0	14.5
1997/98	na	na	na	461.7	40.1	501.8	461.7	40.1	501.8	3.1	2.9	6.0	3.1	2.9	6.0	7.7	6.5	14.1	7.7	6.5	14.1
1998/99	na	na	na	459.6	44.3	503.9	459.6	44.3	503.9	2.6	2.3	4.9	2.6	2.3	4.9	7.4	7.0	14.5	7.4	7.0	14.5
1999/00	436.4	90.6	527.0	491.4	43.3	534.6	491.4	43.3	534.6	2.9	2.4	5.3	2.9	2.4	5.3	8.3	7.4	15.7	8.3	7.4	15.7
2000/01	453.5	86.6	540.2	526.2	42.8	569.0	526.2	42.8	569.0	3.4	3.0	6.4	3.4	3.0	6.4	8.8	6.8	15.6	8.8	6.8	15.6
2001/02	464.1	86.9	551.0	531.7	44.2	575.9	531.7	44.2	575.9	4.0	3.2	7.2	4.0	3.2	7.2	9.5	6.5	16.0	9.5	6.5	16.0
2002/03	485.0	90.1	575.1	559.6	46.4	606.0	559.6	46.4	606.0	3.5	2.8	6.3	3.5	2.8	6.3	8.4	7.5	15.9	8.4	7.5	15.9
2003/04	492.4	94.9	587.3	587.0	46.4	633.4	587.0	46.4	633.4	3.0	1.4	4.4	3.0	1.4	4.4	7.9	7.5	15.4	7.9	7.5	15.4
2004/05	550.6	99.0	649.6	630.6	49.6	680.2	630.6	49.6	680.2	3.1	1.4	4.5	3.1	1.4	4.5	8.2	7.9	16.1	8.2	7.9	16.1
2005/06	577.8	100.8	678.6	647.5	52.8	700.3	647.5	52.8	700.3	3.4	1.7	5.0	3.4	1.7	5.0	8.3	7.9	16.3	8.3	7.9	16.3
2006/07	608.1	102.2	710.2	691.9	62.2	754.1	691.9	62.2	754.1	3.1	1.8	4.9	3.1	1.8	4.9	8.9	9.5	18.4	8.9	9.5	18.4
2007/08	645.5	106.4	751.8	714.4	62.2	776.6	714.4	65.9	807.0	3.0	1.9	4.9	2.6	1.8	4.4	8.9	9.6	18.5	10.4	9.7	20.2
2008/09	688.1	108.9	797.0	734.6	62.5	797.1	747.6	65.3	812.9	3.1	2.0	5.1	2.7	1.9	4.6	9.1	9.8	18.8	9.0	9.8	18.8
2009/10	725.1	109.4	834.5	759.0	63.0	821.9	727.1	63.5	790.6	3.2	2.1	5.4	2.8	2.0	4.8	9.2	9.9	19.2	8.8	9.7	18.5
2010/11	758.6	111.0	869.7	790.6	63.6	854.2	739.1	63.9	803.1	3.3	2.2	5.6	2.9	2.1	5.0	9.4	10.1	19.6	8.9	9.8	18.8
2011/12	790.8	113.3	904.1	824.9	64.5	889.5	769.6	65.6	835.2	3.4	2.3	5.8	3.1	2.2	5.3	9.7	10.4	20.1	9.1	10.2	19.3
2012/13	821.0	114.4	935.4	862.3	65.5	927.7	806.9	67.5	874.4	3.5	2.4	6.0	3.2	2.3	5.5	9.9	10.6	20.5	9.4	10.6	19.9
2013/14	849.5	116.0	965.5	902.4	66.2	968.6	845.8	69.4	915.2	3.7	2.5	6.2	3.3	2.4	5.7	10.1	10.8	20.9	9.6	10.9	20.6
2014/15	878.3	117.9	996.1	945.9	67.1	1 013.0	886.5	71.2	957.7	3.8	2.6	6.3	3.4	2.5	5.9	10.3	11.1	21.4	9.9	11.3	21.2
2015/16	908.0	119.8	1 027.8	993.8	68.3	1 062.1	930.5	73.2	1 003.7	3.9	2.6	6.5	3.5	2.6	6.1	10.5	11.3	21.9	10.1	11.7	21.8
2016/17	938.8	121.8	1 060.6	1 045.6	69.5	1 115.1	978.0	75.3	1 053.3	4.0	2.7	6.7	3.6	2.7	6.3	10.8	11.6	22.4	10.4	12.1	22.5
2017/18	970.6	123.8	1 094.4	1 101.6	70.9	1 172.5	1 028.9	77.1	1 106.0	4.1	2.8	6.9	3.7	2.8	6.5	11.0	11.9	22.9	10.6	12.5	23.1
2018/19	1 003.5	125.9	1 129.3	1 162.2	72.2	1 234.5	1 083.5	78.8	1 162.3	4.2	2.8	7.1	3.8	2.9	6.7	11.3	12.2	23.5	10.9	12.9	23.8
2019/20	1 037.5	127.9	1 165.4	1 227.8	73.6	1 301.4	1 142.2	80.4	1 222.6	4.4	2.9	7.2	3.9	3.0	6.9	11.5	12.5	24.1	11.1	13.2	24.3
2020/21	1 072.6	130.1	1 202.7	1 298.6	75.1	1 373.7	1 205.5	81.9	1 287.5	4.5	2.9	7.4	4.0	3.1	7.1	11.8	12.8	24.6	11.4	13.5	24.9
2021/22	1 108.9	132.2	1 241.1	1 375.2	76.6	1 451.9	1 273.9	83.5	1 357.5	4.7	3.0	7.6	4.1	3.2	7.3	12.1	13.2	25.3	11.7	13.8	25.4
2022/23	1 146.5	134.4	1 280.9	1 458.1	78.2	1 536.3	1 347.7	85.1	1 432.8	4.8	3.0	7.8	4.2	3.2	7.5	12.4	13.5	25.9	11.9	14.1	26.0
2023/24	1 185.4	136.6	1 321.9	1 547.8	79.8	1 627.6	1 427.4	86.8	1 514.2	5.0	3.1	8.0	4.4	3.3	7.7	12.7	13.8	26.5	12.2	14.4	26.6
2024/25	1 225.5	138.8	1 364.4	1 644.9	81.4	1 726.3	1 513.5	88.5	1 602.0	5.1	3.1	8.2	4.5	3.4	7.9	13.0	14.2	27.2	12.5	14.7	27.2
2025/26	na	na	na	1 750.1	83.1	1 833.1	1 606.7	90.2	1 696.9	5.3	3.2	8.4	4.6	3.5	8.1	13.3	14.5	27.9	12.8	15.0	27.8
2026/27	na	na	na	1 864.1	84.7	1 948.8	1 707.4	91.9	1 799.3	5.4	3.2	8.7	4.7	3.5	8.3	13.7	14.9	28.6	13.1	15.3	28.4
2027/28	na	na	na	1 987.7	86.5	2 074.1	1 816.4	93.7	1 910.1	5.6	3.3	8.9	4.9	3.6	8.5	14.0	15.3	29.3	13.5	15.6	29.1
2028/29	na	na	na	2 121.8	88.2	2 210.0	1 934.5	95.4	2 029.9	5.8	3.3	9.1	5.0	3.7	8.7	14.4	15.6	30.0	13.8	15.9	29.7
2029/30	na	na	na	2 267.3	90.0	2 357.3	2 062.4	97.2	2 159.6	6.0	3.4	9.4	5.2	3.7	8.9	14.7	16.0	30.8	14.1	16.3	30.4
Annual average growth rates																					
Actual historical	4.8%	1.8%	4.3%	5.0%	4.6%	4.9%	5.1%	4.7%	5.1%	2.8%	-2.7%	0.3%	1.0%	-2.3%	-0.6%	1.2%	3.8%	2.5%	2.5%	3.7%	3.1%
Entire forecast period	4.1%	1.7%	3.8%	5.3%	1.6%	5.1%	4.8%	1.8%	4.6%	2.9%	2.8%	2.9%	3.2%	3.3%	3.3%	2.2%	2.3%	2.3%	1.4%	2.4%	1.9%
2007–08 to 2012–13	4.9%	1.5%	4.5%	3.8%	1.0%	3.6%	1.7%	0.5%	1.6%	3.7%	4.9%	4.2%	4.2%	5.1%	4.6%	2.2%	2.1%	2.1%	-2.1%	1.6%	-0.2%
2012–13 to 2029–30	3.4%	1.6%	3.2%	5.9%	1.9%	5.6%	5.7%	2.2%	5.5%	3.1%	1.9%	2.7%	2.9%	2.8%	2.9%	2.4%	2.4%	2.4%	2.4%	2.6%	2.5%
na	Not applicable																				

(continued over page)

Table 4 Non-containerised trade—observed and projected

	Fremantle						Melbourne						Sydney						Other					
	No-GFC			GFC			No-GFC			GFC			No-GFC			GFC			No-GFC			GFC		
	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total
	(million tonnes)																							
1995/96	9.5	5.3	14.8	9.5	5.3	14.8	2.8	2.6	5.4	2.8	2.6	5.4	1.5	7.2	8.7	1.5	7.2	8.7	382.7	14.1	396.8	382.7	14.1	396.8
1996/97	10.5	6.3	16.9	10.5	6.3	16.9	3.1	2.9	6.0	3.1	2.9	6.0	1.5	6.4	7.9	1.5	6.4	7.9	409.8	15.4	425.2	409.8	15.4	425.2
1997/98	11.7	5.9	17.7	11.7	5.9	17.7	4.3	2.3	6.6	4.3	2.3	6.6	1.7	5.7	7.4	1.7	5.7	7.4	433.3	16.8	450.1	433.3	16.8	450.1
1998/99	11.0	6.5	17.5	11.0	6.5	17.5	3.1	4.1	7.2	3.1	4.1	7.2	0.7	7.5	8.2	0.7	7.5	8.2	434.7	16.9	451.6	434.7	16.9	451.6
1999/00	11.1	5.9	16.9	11.1	5.9	16.9	3.2	3.4	6.6	3.2	3.4	6.6	1.2	6.5	7.7	1.2	6.5	7.7	464.6	17.7	482.3	464.6	17.7	482.3
2000/01	10.8	4.6	15.4	10.8	4.6	15.4	3.9	2.7	6.6	3.9	2.7	6.6	1.7	7.7	9.4	1.7	7.7	9.4	497.7	18.0	515.7	497.7	18.0	515.7
2001/02	9.5	5.9	15.4	9.5	5.9	15.4	4.5	2.5	7.0	4.5	2.5	7.0	1.1	7.5	8.6	1.1	7.5	8.6	503.1	18.6	521.7	503.1	18.6	521.7
2002/03	9.9	6.5	16.3	9.9	6.5	16.3	2.8	3.4	6.2	2.8	3.4	6.2	0.8	7.0	7.9	0.8	7.0	7.9	534.2	19.3	553.4	534.2	19.3	553.4
2003/04	11.7	6.7	18.4	11.7	6.7	18.4	3.3	3.3	6.5	3.3	3.3	6.5	1.0	7.7	8.7	1.0	7.7	8.7	560.2	19.8	580.0	560.2	19.8	580.0
2004/05	11.7	7.1	18.8	11.7	7.1	18.8	3.0	3.8	6.8	3.0	3.8	6.8	1.2	7.8	9.0	1.2	7.8	9.0	603.4	21.6	625.1	603.4	21.6	625.1
2005/06	11.7	6.7	18.4	11.7	6.7	18.4	2.1	4.3	6.5	2.1	4.3	6.5	1.3	9.0	10.2	1.3	9.0	10.2	620.7	23.1	643.8	620.7	23.1	643.8
2006/07	10.3	7.7	17.9	10.3	7.7	17.9	3.6	6.4	10.1	3.6	6.4	10.1	2.2	10.8	13.0	2.2	10.8	13.0	663.8	26.0	689.8	663.8	26.0	689.8
2007/08	10.9	7.8	18.8	12.0	8.4	20.4	3.3	6.2	9.4	3.0	6.7	9.8	1.6	10.7	12.3	2.1	11.2	13.3	686.8	26.0	712.8	711.0	27.9	738.9
2008/09	11.6	7.9	19.5	11.4	8.4	19.8	3.4	6.0	9.4	3.1	6.5	9.5	1.4	10.7	12.1	1.6	11.0	12.6	706.1	26.2	732.3	719.9	27.7	747.6
2009/10	12.1	8.0	20.1	11.4	8.1	19.4	3.5	5.9	9.3	3.2	6.2	9.4	1.4	10.7	12.0	1.5	10.6	12.1	729.6	26.4	756.0	699.5	27.0	726.5
2010/11	12.6	8.1	20.7	11.7	8.0	19.6	3.6	5.8	9.3	3.3	6.1	9.4	1.4	10.7	12.1	1.4	10.7	12.1	760.3	26.7	787.0	710.9	27.2	738.2
2011/12	13.1	8.2	21.3	12.1	8.2	20.3	3.7	5.7	9.4	3.4	6.2	9.6	1.4	10.8	12.2	1.4	11.0	12.4	793.7	27.0	820.7	740.5	28.0	768.5
2012/13	13.5	8.4	21.9	12.5	8.5	21.0	3.8	5.7	9.5	3.5	6.3	9.7	1.4	10.8	12.3	1.4	11.2	12.6	830.1	27.4	857.5	776.9	28.8	805.7
2013/14	14.0	8.5	22.5	13.0	8.8	21.7	3.9	5.7	9.6	3.6	6.3	9.9	1.4	10.9	12.4	1.4	11.4	12.8	869.3	27.7	897.0	814.9	29.5	844.4
2014/15	14.5	8.7	23.2	13.4	9.0	22.5	4.0	5.7	9.7	3.7	6.4	10.1	1.5	11.0	12.5	1.5	11.6	13.1	911.9	28.1	940.0	854.7	30.3	885.0
2015/16	15.0	8.9	23.9	13.9	9.3	23.2	4.1	5.8	9.9	3.8	6.6	10.3	1.5	11.1	12.6	1.5	11.9	13.4	958.8	28.6	987.4	897.7	31.1	928.9
2016/17	15.5	9.1	24.6	14.4	9.5	23.9	4.2	5.8	10.0	3.9	6.7	10.6	1.5	11.3	12.8	1.5	12.1	13.7	1009.6	29.1	1038.6	944.3	32.0	976.3
2017/18	16.1	9.3	25.3	14.9	9.8	24.7	4.3	5.9	10.2	4.0	6.8	10.8	1.6	11.4	13.0	1.6	12.4	14.0	1064.5	29.6	1094.1	994.2	32.8	1026.9
2018/19	16.7	9.5	26.1	15.4	10.0	25.4	4.4	6.0	10.4	4.1	6.9	11.0	1.6	11.6	13.2	1.6	12.6	14.2	1124.0	30.1	1154.2	1047.8	33.5	1081.3
2019/20	17.3	9.7	26.9	15.9	10.2	26.1	4.5	6.1	10.6	4.2	7.0	11.2	1.6	11.8	13.4	1.6	12.8	14.5	1188.4	30.7	1219.1	1105.5	34.1	1139.6
2020/21	17.9	9.9	27.8	16.4	10.4	26.8	4.7	6.2	10.8	4.3	7.1	11.4	1.7	12.0	13.7	1.7	13.0	14.7	1258.1	31.3	1289.3	1167.7	34.8	1202.5
2021/22	18.5	10.1	28.7	17.0	10.6	27.6	4.8	6.3	11.1	4.4	7.2	11.7	1.7	12.2	13.9	1.7	13.3	15.0	1333.4	31.9	1365.3	1235.0	35.5	1270.5
2022/23	19.2	10.4	29.6	17.6	10.8	28.4	4.9	6.4	11.3	4.5	7.3	11.9	1.7	12.4	14.2	1.8	13.5	15.3	1415.0	32.5	1447.5	1307.6	36.1	1343.8
2023/24	20.0	10.6	30.6	18.2	11.1	29.2	5.1	6.5	11.5	4.7	7.5	12.1	1.8	12.6	14.4	1.8	13.7	15.5	1503.3	33.2	1536.5	1386.2	36.8	1423.0
2024/25	20.7	10.9	31.6	18.8	11.3	30.1	5.2	6.6	11.8	4.8	7.6	12.4	1.8	12.8	14.7	1.8	14.0	15.8	1599.0	33.8	1632.8	1471.1	37.6	1508.7
2025/26	21.5	11.1	32.6	19.5	11.5	31.0	5.4	6.7	12.1	4.9	7.7	12.7	1.9	13.1	14.9	1.9	14.2	16.1	1702.8	34.5	1737.2	1563.0	38.3	1601.3
2026/27	22.3	11.4	33.7	20.2	11.7	31.9	5.5	6.8	12.3	5.1	7.9	12.9	1.9	13.3	15.2	1.9	14.5	16.4	1815.2	35.1	1850.4	1662.4	39.0	1701.4
2027/28	23.2	11.6	34.8	20.9	12.0	32.9	5.7	6.9	12.6	5.2	8.0	13.2	1.9	13.5	15.5	2.0	14.7	16.7	1937.2	35.8	1973.0	1770.1	39.7	1809.8
2028/29	24.1	11.9	36.0	21.6	12.2	33.8	5.8	7.1	12.9	5.3	8.1	13.5	2.0	13.8	15.8	2.0	15.0	17.0	2069.6	36.5	2106.2	1886.7	40.5	1927.2
2029/30	25.1	12.2	37.2	22.4	12.4	34.9	6.0	7.2	13.2	5.5	8.3	13.8	2.0	14.0	16.0	2.0	15.3	17.3	2213.5	37.2	2250.7	2013.1	41.2	2054.4
Annual average growth rates																								
Actual historical	0.7%	3.5%	1.7%	1.9%	4.0%	2.7%	2.4%	8.4%	5.7%	0.7%	8.1%	5.0%	3.8%	3.8%	3.8%	3.0%	3.8%	3.7%	5.1%	5.7%	5.2%	5.3%	5.9%	5.3%
Entire forecast period	4.0%	2.0%	3.2%	2.9%	1.8%	2.5%	2.2%	0.5%	1.2%	2.7%	0.9%	1.6%	-0.3%	1.1%	0.9%	-0.1%	1.4%	1.2%	5.4%	1.6%	5.3%	4.8%	1.8%	4.8%
2007–08 to 2012–13	4.4%	1.4%	3.2%	0.9%	0.1%	0.6%	2.8%	-1.5%	0.1%	2.6%	-1.4%	-0.1%	-2.3%	0.3%	0.0%	-7.2%	-0.1%	-1.1%	3.9%	1.0%	3.8%	1.8%	0.6%	1.7%
2012–13 to 2029–30	3.7%	2.2%	3.2%	3.5%	2.3%	3.0%	2.8%	1.3%	2.0%	2.8%	1.6%	2.1%	2.1%	1.5%	1.6%	2.1%	1.9%	1.9%	5.9%	1.8%	5.8%	5.8%	2.1%	5.7%