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TRADE FORECASTS

PORT OF MELBOURNE

FINAL SUMMARY REPORT & SENSITIVITY ANALYSIS TO INFORM THE PORT CAPACITY EXPANSION PROGRAM

19th September 2023

Deloitte
Access **Economics**

Summary of findings – containerised trade, mainland and overseas

In the forecasts developed by Deloitte Access Economics, mainland and overseas container trade, including all categories, is forecast to grow at 2.8% CAGR from FY23 to FY53

Summary

The forecasts highlight a positive outlook for container trade with continued growth in container trade over the forecast period to FY53.

The level of total mainland and overseas container trade through PoM is forecast to increase to 6.5 million TEUs in FY53 and the largest component of container trade will continue to be containerised imports from overseas. The strong growth in overseas imports relative to exports over the medium term results in strong growth in empty container trade.

Total container trade volumes fall in FY23 reflecting challenging economic conditions in Australia and globally. Containerised trade recovers in FY24 across all categories.
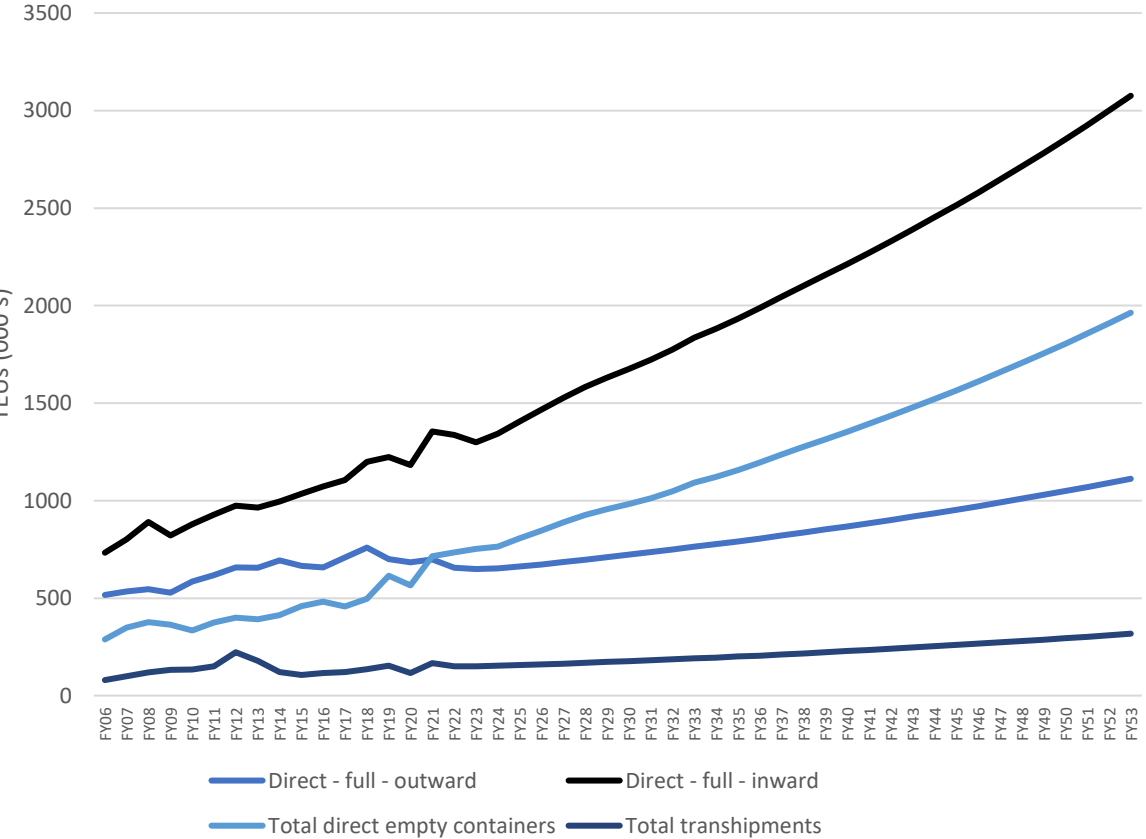
Table 1: 5 year (FY23 to FY28) and 30 year (FY23 to FY53) growth outlook, mainland and overseas

Trade Category	FY23	FY24	FY25	FY26	FY27	FY28	FY23 to FY28 CAGR	FY23 to FY53 CAGR
Direct - full - outward	-0.9%	0.4%	1.4%	1.6%	1.8%	1.8%	1.4%	1.8%
Direct - full - inward	-2.7%	3.4%	4.7%	4.3%	4.2%	3.6%	4.0%	2.9%
Total direct full containers	-2.1%	2.4%	3.6%	3.4%	3.5%	3.1%	3.2%	2.6%
Total direct empty containers	2.6%	1.5%	5.5%	5.0%	5.0%	4.1%	4.2%	3.2%
Total transhipments	0.0%	2.4%	1.5%	2.3%	2.4%	2.9%	2.3%	2.5%
Total containers (direct and transhipments)	-0.8%	2.2%	4.0%	3.8%	3.8%	3.3%	3.4%	2.8%

low high
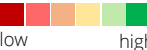
Source: Deloitte Access Economics

Chart 1: Forecasts of mainland and overseas container volumes, Baseline Scenario, Port of Melbourne, TEUs (000s)

Legend: Direct - full - outward, Direct - full - inward, Total direct empty containers, Total transhipments

Source: PoM, Deloitte Access Economics

Sensitivity analysis – containerised trade, mainland and overseas

Sensitivity analysis by Deloitte Access Economics places growth in total containerised mainland and overseas trade between 2.5% and 3.0% (CAGR) from FY23 to FY53

Summary

The sensitivity analysis supports a positive outlook for mainland and overseas container trade.

Deloitte Access Economics conducted a sensitivity test around the central forecast of mainland and overseas containerised trade, informed by statistical variance observed in historical Port of Melbourne trade data.

Total mainland and overseas containerised trade volumes reach 5,950 TEU by FY53 in the low scenario (at a CAGR of 2.5%); and 7,000 TEU by FY53 in the high scenario (at a CAGR of 3.0%).

Table 2: Sensitivity analysis, containerised trade, mainland and overseas

Trade Category	Trade volume (TEUs 000's)				FY23 to FY53 CAGR		
	FY23	FY53 Low	FY53 Central	FY53 High	Low	Central	High
Direct - full - outward	650	1,039	1,113	1,187	1.6%	1.8%	2.0%
Direct - full - inward	1,300	2,804	3,076	3,348	2.6%	2.9%	3.2%
Direct - empty	754	1,802	1,964	2,126	2.9%	3.2%	3.5%
Transhipment - full – outward	73	133	142	152	2.0%	2.2%	2.5%
Transhipment - full - inward	64	122	133	145	2.2%	2.5%	2.8%
Transhipment - empty	15	39	43	46	3.3%	3.6%	3.8%
Total containerised trade	**2,855**	**5,939**	**6,472**	**7,004**	**2.5%**	**2.8%**	**3.0%**

Source: Deloitte Access Economics

Chart 2: Sensitivity analysis - total container volumes, mainland and overseas, Port of Melbourne, TEUs (000s)
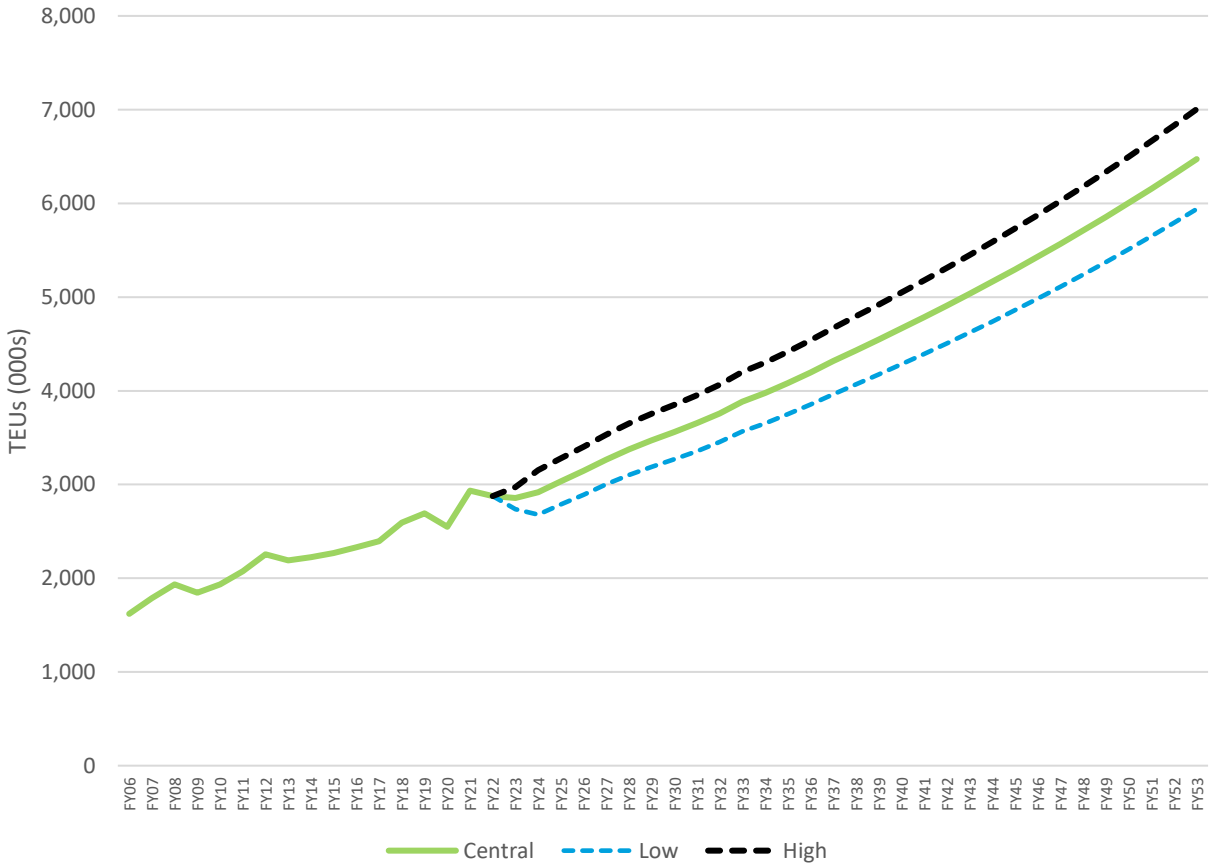
Source: PoM, Deloitte Access Economics

Macroeconomic context - Australian economic snapshot

The sustained increase in global inflation has led to the tightening of interest rates across most advanced economies, impacting disposable income and consumer spending in both Australia and abroad. These trends have implications for PoM trade
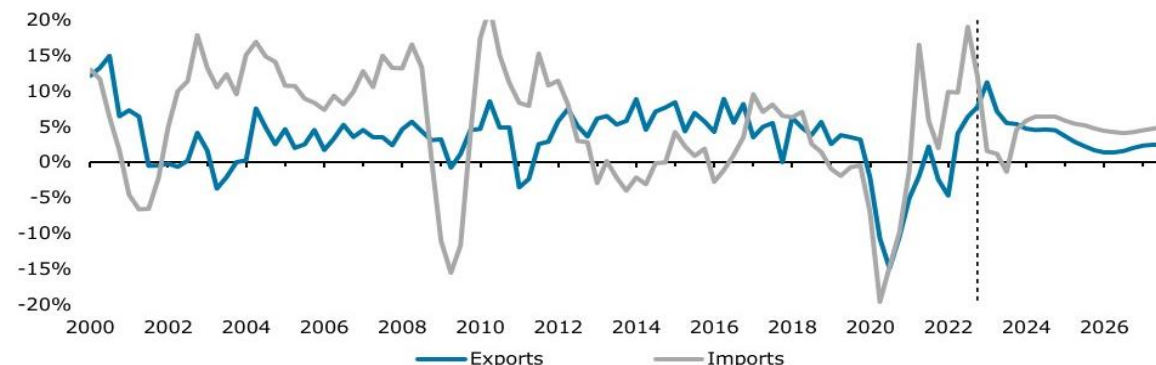
Economic growth

The two further cash rate increases In 2023 - after the eight straight rises from May 2022 - will likely contract economic performance due to weaker household consumption and dwelling investment. Deloitte Access Economics has revised down expectations for Australian economic growth in 2023 and 2024 to 1.5% and 1.2% respectively. If realised, this would be the weakest rate of growth outside of the pandemic since the recession of the early 1990s. Australians will likely draw on savings in the wake of falling housing prices, rising interest rates, high inflation, low levels of consumer confidence and negative real wage growth. The population outlook is positive with a faster than expected rebound in net overseas migration in 2022. That said, the pandemic will have long term effects on the size of Australia's population, with a projected 567,000 fewer people living in Australia than there otherwise would have been without the pandemic in 2025. Australia's key economic forecasts to are presented in Table 3.

Australian industry output will reflect slowing global and domestic economic conditions, including the effects of weaker household spending. However, some sectors of the economy are better positioned to face the slowdown than others. Deloitte Access Economics expects retail and construction to mostly reflect the subdued outlook, with agriculture to also pull back despite recent highs.

Exports and imports

Net exports were the key driver of growth in the Australian economy in late 2022. Although exports rose, weak imports were the key contributor. Looking ahead, import volumes are forecast to grow through 2023, but the slowdown in domestic demand is set to limit the pace of these gains. Exports rose for the third consecutive quarter in December 2022, with the driver of this growth changing from commodities to services. This has seen services exports driving gains in total exports. According to the Department of Industry, Science and Resources, however, the value of exports is forecast to fall by almost 10% in 2023 and 15% in 2024 as commodity prices moderate. This adjustment is already underway, with prices easing alongside the slowdown in the global economy and an improvement in the supply of energy commodities.

Chart 3: Growth in exports and imports to 2026, change over previous 12 months, calendar year

Source: Deloitte Access Economics; Australian Bureau of Statistics

Table 3: Australia's key economic forecasts, FY22 to FY28

	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Real GDP	3.7%	3.1%	0.9%	1.6%	2.0%	2.4%	2.5%
Population Growth	0.7%	1.7%	1.5%	1.4%	1.4%	1.3%	1.3%
Employment Growth	3.3%	3.8%	1.0%	1.1%	1.5%	1.6%	1.4%
Wage Price Index	2.4%	3.5%	3.7%	3.3%	3.0%	3.1%	3.3%
Trade Balance (ratio to nominal GDP)	5.8%	5.7%	4.4%	3.9%	3.4%	3.0%	2.5%
AUD/USD exchange rate	0.73	0.67	0.68	0.71	0.71	0.71	0.70

Source: Deloitte Access Economics

The forecasts in Table 2.1 assume that inflation will return to the mid point of the RBA's target band from late 2024.

Macroeconomic context - Victorian economic snapshot

There are positive signs for Victoria's economy with a return to population growth however growth is expected to remain subdued in 2023

Economic growth

Quarterly household consumption growth in Victoria slowed to just 0.4% in the December 2022 quarter as the momentum of post-lockdown spending was slowed by cost-of-living pressures. Discretionary items such as clothing, recreation and culture were impacted in terms of spending as households attempt to balance their budgets. Cost-of-living pressures are unlikely to be alleviated soon, meaning consumption growth will continue to be slow. Additionally, many households are feeling the pressure of increased mortgage repayments resulting from consecutive cash rate increases from the RBA. However, there is potential upside for consumption growth resulting from an increase in the number of households, rather than spending per household, as population growth returns after stagnating in Victoria through the pandemic period. Victoria's economy should continue to benefit from business investment growth in the medium term. The expected rebound in population growth, and subsequent demand for both public and private infrastructure, will likely boost business confidence and willingness to invest in the state.

Industry and trade

Goods exports from Victoria are forecast to experience mild growth over the next few years. The volume of exports has returned to roughly on-par with 2019 levels, with less capacity for growth than was the case during the pandemic recovery. Service exports remain well below 2019 levels but experienced a fifth consecutive quarter of significant growth in December 2022 with the recovery of both the tourism and international education industries.

Business investment in Victoria grew marginally in the December 2022 quarter and is stabilising slightly above 2019 levels. The Victorian government has committed to a large pipeline of health, education and transport infrastructure. However, this activity is not expected to offset headwinds acting to slow growth in demand from households and businesses. Recent data shows a slowdown in both dwelling and non-dwelling construction. The number of houses and other residential unit approvals both fell to monthly lows not seen since the pandemic-related lockdown. The outlook for housing overall is a contraction in 2023.

Chart 4: Victorian economic growth and employment, change over previous 12 months, calendar years
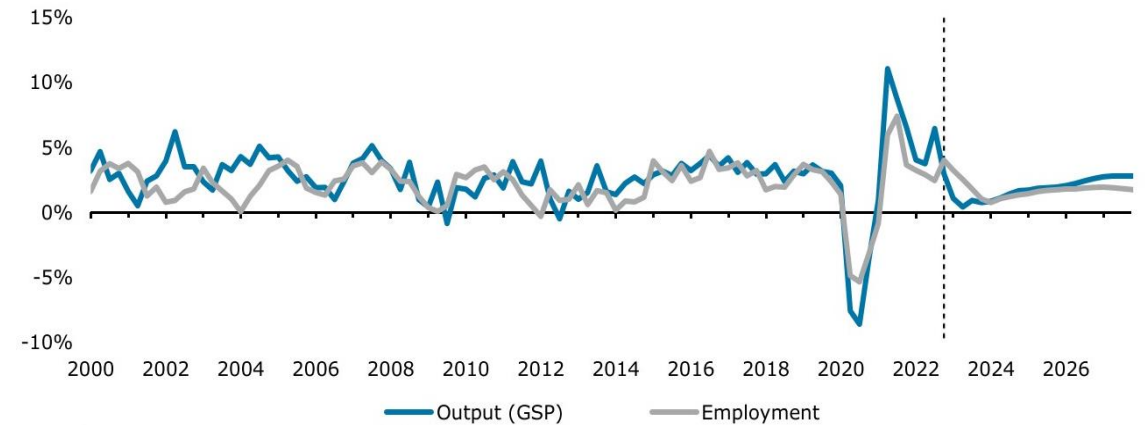
Source: Deloitte Access Economics; Australian Bureau of Statistics

Table 4: Victoria's key economic forecasts, FY22 to FY28

	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Gross State Product	5.7%	2.7%	0.9%	1.7%	2.0%	2.7%	2.8%
State share of Australian output,%	23.2%	23.1%	23.1%	23.1%	23.1%	23.2%	23.3%
Population Growth	0.3%	2.0%	1.9%	1.6%	1.6%	1.6%	1.5%
Real Final Demand	7.1%	3.5%	1.0%	2.4%	3.0%	3.3%	3.5%
International Exports	-1.0%	14.8%	13.6%	6.9%	3.4%	3.6%	4.0%
International Imports	8.5%	7.9%	4.1%	6.3%	4.6%	4.7%	5.6%

Source: Deloitte Access Economics

Macroeconomic context - major trading partners

Australia's major trading partners face a challenging year ahead as global conditions weaken off the back of inflationary concerns and lagged effects of monetary policy

Global economy

Global economic growth will be subdued in 2023 as efforts to control inflation come to a head in several economies. Emerging economies, including India and China, will continue to be affected as they face higher costs of food and higher interest payments on dollar-denominated debt. Deloitte Access Economics forecasts moderate growth in United States, Japan, Eurozone and a contraction in the United Kingdom. Forecast for economic growth in major economies is illustrated in Chart 5 (based on calendar year).

China

The latest forecasts for China are filled with uncertainty in the previous quarter as the country saw an end to its zero-COVID era. Expectations of a sharp rise in infections and deaths played out in January, however supply–side bottlenecks and price pressures have not yet materialised. Early data shows that China's reopening had a relatively modest impact on the global economy to date. Initial economic data shows that China's reopening is gathering momentum with a rise in consumer spending, investment and manufacturing output. However growth in 2023 is forecast around 5%, which is the lowest in decades and highlights the uncertainty that lies ahead.

USA

In the United States, the Federal Reserve's aggressive tightening of monetary policy is expected to begin to take hold. Job vacancies have stayed elevated and continue to exceed the number of unemployed persons in the US by a large margin. Continued tightness in the labour market is expected to keep nominal wage growth higher than the level consistent with 2.0% inflation over the short term. Higher interest rates are likely to eventually weigh on the labour market, consumer spending, and on elevated corporate earnings. Construction and manufacturing are also likely to come under pressure. Weaker consumer spending is likely to weigh on imports, but exports are also expected to deteriorate through the year due to weakness in key export destinations.

Eurozone

The economic outlook for the Eurozone, which was until now centred around the outlook for energy prices, is beginning to take another direction. Concerns have shifted to the risk of cross-Atlantic tremors in the banking sector, the persistence of core inflation, and labour strikes. Annual growth is forecast to be lower than 1% and while several factors will contribute to disinflation in the latter half of the year, price growth is likely to stay well about target in 2023.

UK

The outlook for the UK economy remains particularly weak relative to both the Eurozone and the US. The labour market remains tight with the unemployment rate at historical lows and wage growth at historical highs. The UK economy is forecast to contract in 2023 (refer Chart 2.3).

Japan

Higher prices, along with a very tight labour market, have pushed nominal wages up in Japan. This has resulted in a slight rebound in consumer confidence; however, sentiment remains very low as real wages continue to fall. Consumer spending and business investment remained very weak in the final quarter of 2022. Japan's exports, though supported by a weak yen, are likely to come under pressure from weaker global demand in 2023 and export growth will be subdued.

India

India remains a relatively bright spot in the global economy. The country continues to benefit from largely domestically driven growth. However, navigating 2023 is likely to be challenging. A recent slowdown in consumer spending and business investment due to sticky core inflation and higher interest rates is becoming evident. However growth is forecast to be solid in India at around 6%.

Chart 5: Historical and forecast economic growth in major economies, 2006-2032, calendar years

Legend: USA — Japan — United Kingdom — China — India — Australia's major trading partners
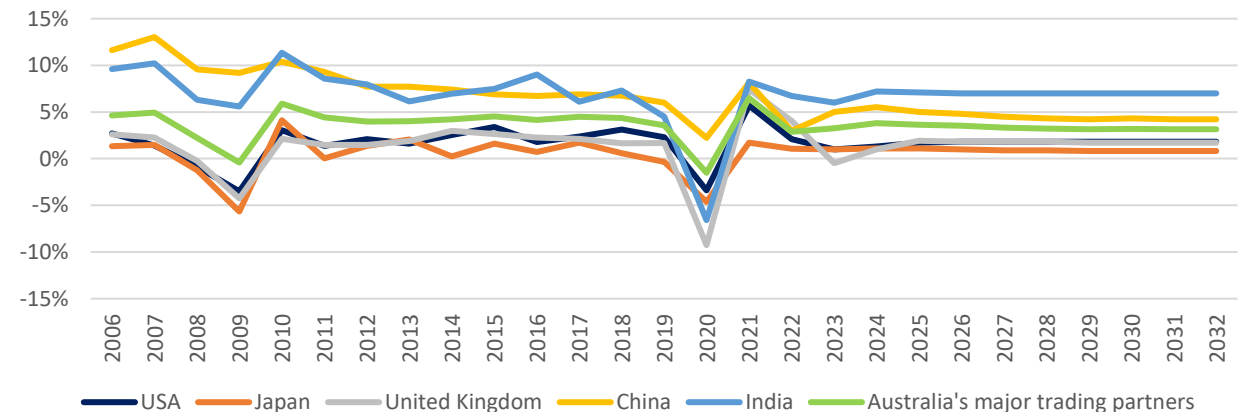
Introduction

Introduction

The Port of Melbourne is the nation's busiest port, handling over one third of Australia's containerised trade each year. As the largest general cargo and container port in the Southern hemisphere, the Port of Melbourne is a significant economic asset to Australia as both a major employer and a facilitator of trade.

Deloitte Access Economics was engaged by the Port of Melbourne (PoM) to develop forecasts of trade volumes through the Port of Melbourne. Deloitte's forecasts are robust, arrived at on a reasonable basis and represent the best estimation possible given the current data and available information at the time the forecasts were developed.

Deloitte Access Economics' Business Outlook for FY23 Q2 and all associated datasets have been used to identify macroeconomic drivers that affect Port of Melbourne trade volumes. These drivers include trends in population, average weekly earnings, Gross Domestic Product (GDP), Gross State Product (GSP), and Trade Weighted Index (TWI).

Deloitte Access Economics has combined these macroeconomic inputs with PoM's most recent trade data to develop forecasts for all trade through the Port of Melbourne - across 18 trade categories defined by PoM.

Purpose of this document

This purpose of this report is to provide a summary of the trade forecasts produced by Deloitte Access Economics for PoM. A sensitivity analysis on trade forecasts for mainland and overseas containerised trade is provided for the purpose of informing PoM's long term infrastructure planning. Details of Deloitte Access Economics' methodology, model specification and limitations are not included in this summary report.

Historical trends in containerised trade

Containerised imports have historically made up the largest share of all container trade, with an increasing share of total container trade over time. Before COVID-19, between FY06 and FY19, containerised imports grew at a CAGR of 4.0% whilst exports grew at a CAGR of 2.4%.

Global supply chains were significantly disrupted by COVID-19, causing a noticeable impact on trade flows at the Port between FY20 Q4 to FY22 Q4. The extent of this impact varied across the different commodity groups examined.

Chart 6: Historical share of container trade, FY06 to FY22

Legend:
- Containerised - Full - outward
- Containerised - Full - inward
- Containerised - Full Bass Strait
- Total empty direct containers
- Containerised transhipment (total)
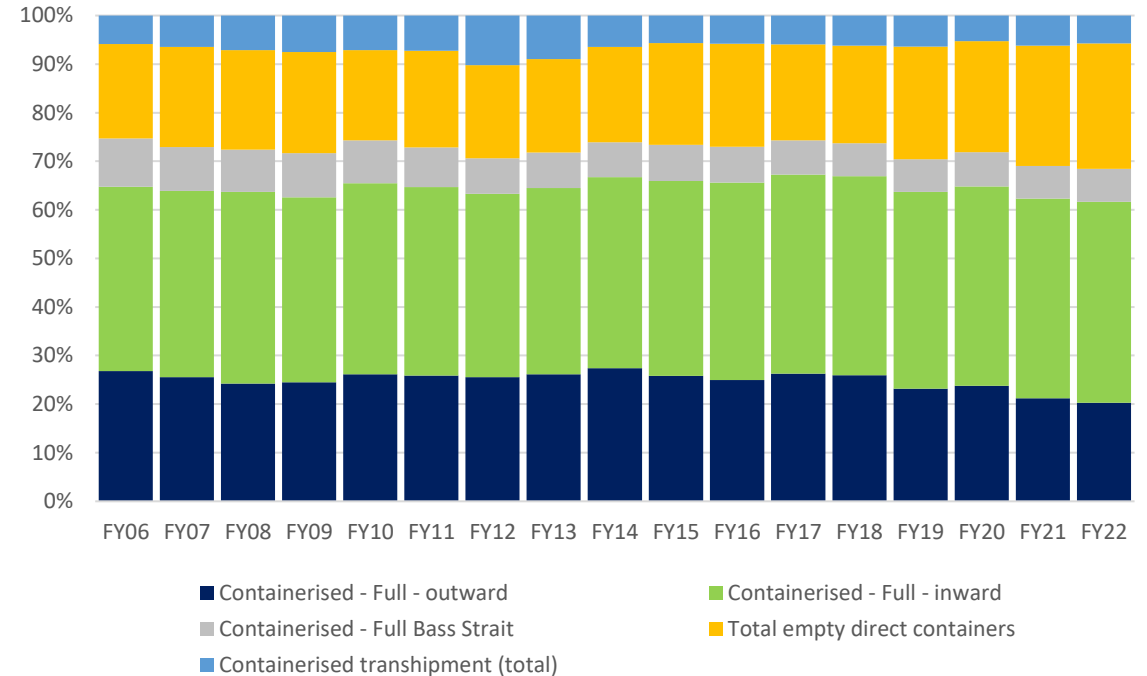
The Port of Melbourne – exports snapshot

Between 2021 and 2022, 26 million tonnes were exported from the Port of Melbourne to overseas markets, with 20% of all international exports going to China

Chart 7: Map of international export destinations from the Port of Melbourne

USA 5%

China 20%

Japan 5%

South Korea 5%

Vietnam, 7%

Malaysia, 6%

Singapore,5%

Indonesia 7%

New Zealand 9%

Legend:
- >1 million tonnes
- >800,000 tonnes
- >10,000 tonnes
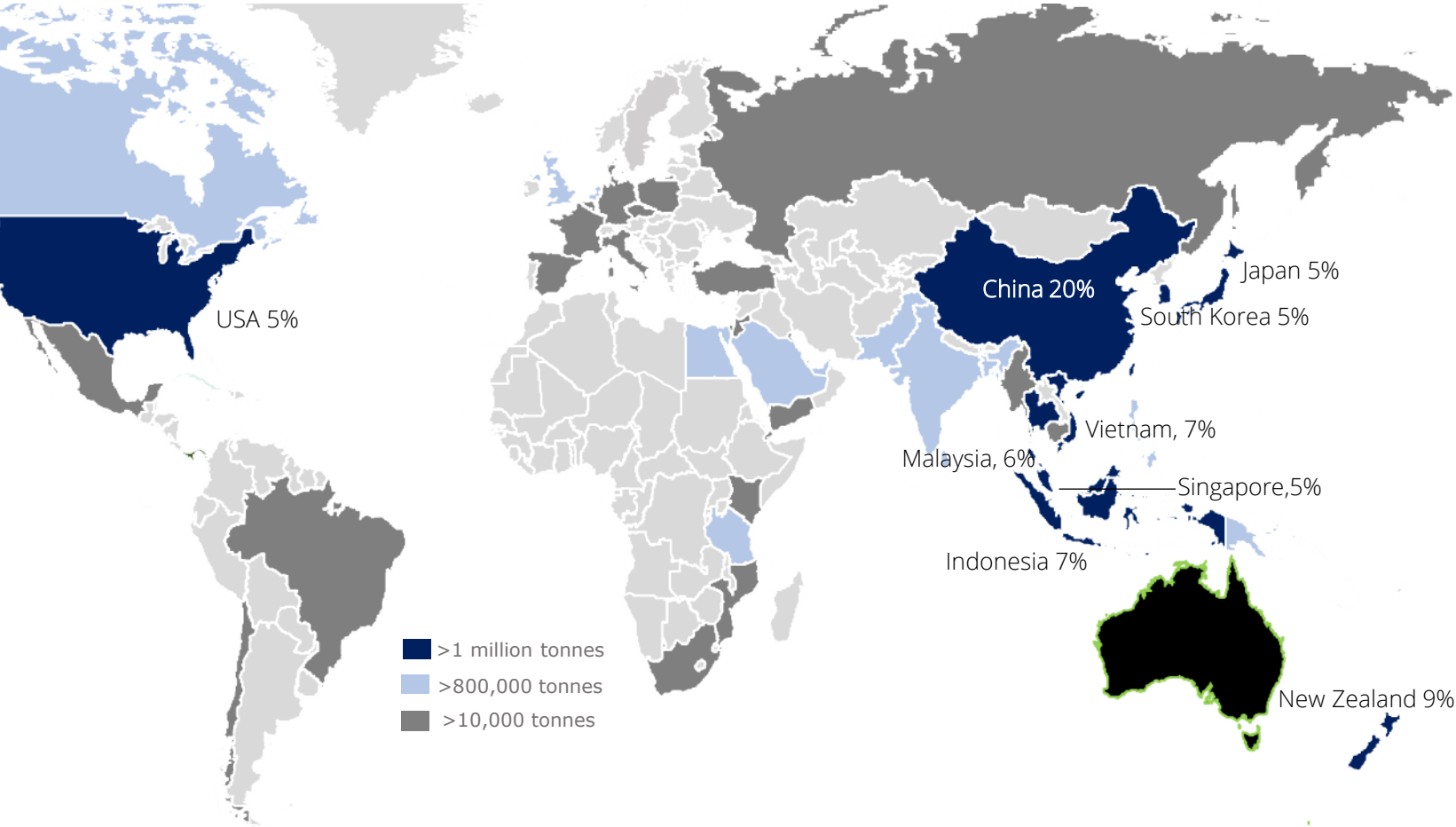
From the Port of Melbourne in In 2021 and 2022:

87% of international exports were containerised

In 2021 and 2022, agricultural goods made up the largest share of international exports

4,000,000 tonnes of wheat were exported

900,000 tonnes of Barley were exported

800,000 tonnes of Hay, chaff and fodder e were exported

The Bass Strait between 2021 and 2022:

4,400,000 tonnes were exported from PoM to Tasmania

Miscellaneous manufacturing products had the highest share of exports (40%)

Cereals had the second highest share of Bass Strait exports (12%)

The Port of Melbourne – imports snapshot

Between 2021 and 2022, 34 million tonnes were imported from overseas markets to the Port of Melbourne, with 27% of all international imports coming from China and 12% coming from Singapore

Chart 8: Map of international import origins going to the Port of Melbourne

China 27%

Japan 6%

South Korea 5%

India 4%

Thailand 4%

U.S.A 6%

Singapore 12%

New Zealand 5%

>1 million tonnes
>100,000 tonnes
>10,000 tonnes
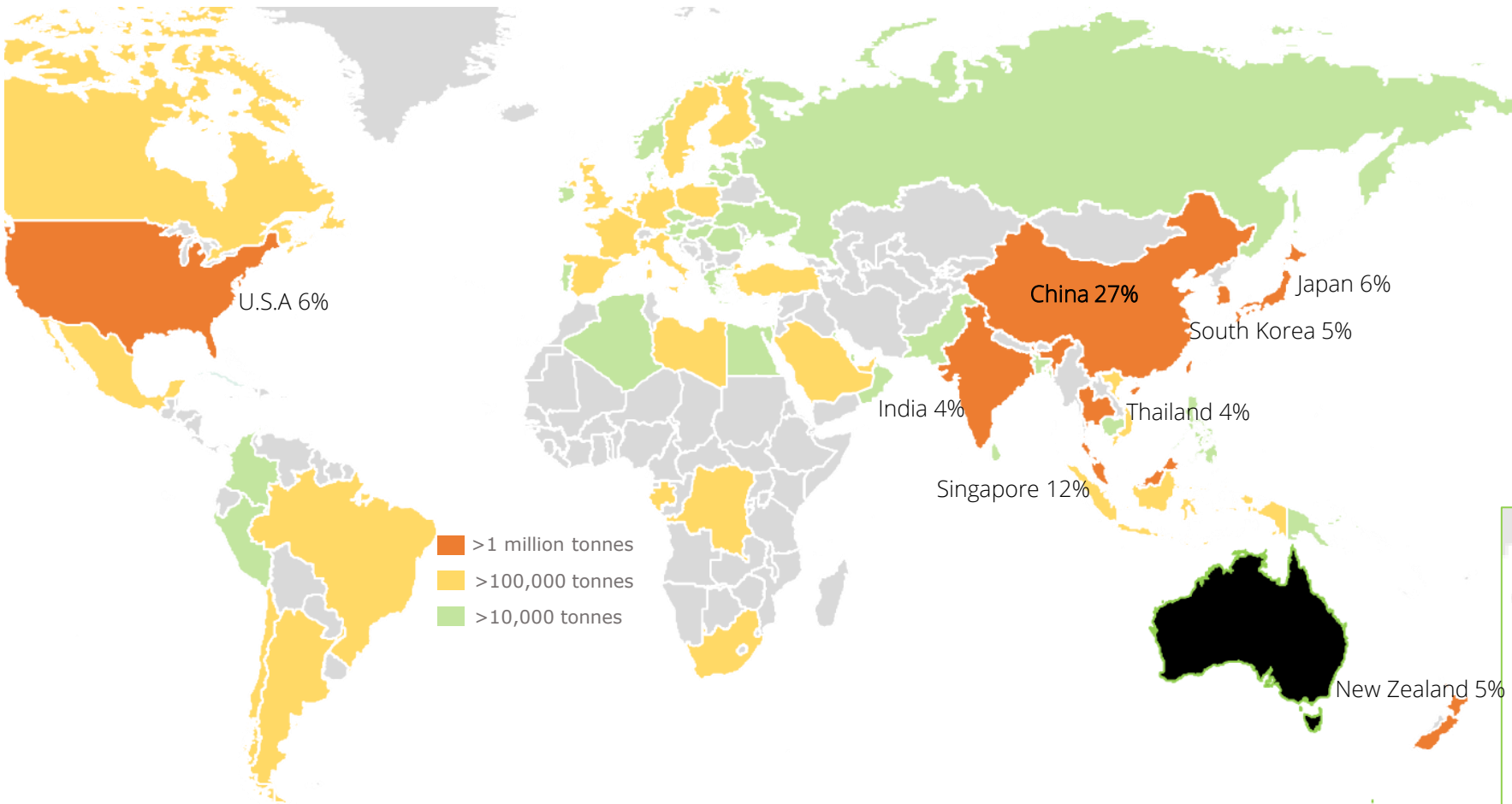
From overseas markets to the Port of Melbourne In 2021 and 2022:

67% of all imports were containerised and 23% were liquid bulk

In 2021 and 2022, fuel products and manufacturing products made up the largest share of international imports:

2,700,000 tonnes of distillate fuels were imported

2,200,000 tonnes of motor spirit were imported

1,500,000 tonnes of crude oil were imported

The Bass Strait between 2021 and 2022:

6,580,000 tonnes were imported from Tasmania to the PoM

Cement was the most imported good, with a 35% share of total Bass Strait imports

Miscellaneous food preparations had the second highest share of Bass Strait imports (11%)

Approach overview

Approach

The approach was governed by the purpose of the engagement - to create robust, reasonable forecasts with a replicable method and traceable data

Forecast approach overview

Deloitte Access Economics took a data-driven, bottom-up approach to developing robust forecasts for 18 trade categories defined by PoM. An overview of Deloitte Access Economics' approach is provided below.

1. Thorough examination of the detailed trade data provided by PoM, which was then mapped to trade categories using advanced software capable of handling large data sets.

2. Bottom-up statistical analysis of trade patterns over time was conducted, with a focus on the most detailed commodity classifications.

3. Commodities were grouped into sensible bundles based on similarities in characteristics and mutual relationships with macroeconomic factors. Caution was taken to ensure that the inclusion of the specific commodity did not materially dilute the statistical pattern of the bundle.

4. Commodities with significant volume shares and unique trends were isolated.

5. Econometric analysis was carried out to produce robust statistical models capable of forecasting trade activity over the short to medium term, with a revision of previous steps as necessary.

6. Key findings from relevant literature informed the approach, including guidance on forecasting empty container volumes outlined by the Bureau of Infrastructure, Transport and Regional Economics; and previous trade forecasts, informed by stakeholder consultation, produced by Deloitte Access Economics for Freight Victoria (2023).^

7. Trade forecasts were produced using forecasts for relevant explanatory macroeconomic variables sourced from Deloitte Access Economics Quarterly Business Outlook, December Quarter 2022.

Sensitivity analysis overview

Deloitte Access Economics performed a sensitivity analysis on mainland and overseas containerised trade forecasts, informed by statistical variance observed in historical Port of Melbourne trade data (FY06 to FY22). The analysis is designed to capture a range of potential trade volumes from FY23 to FY53.

Sensitivity analysis was applied to the central forecasts for specific commodity bundles before being aggregated up to the trade category level. This bottom-up approach was taken for the following trade categories:

- Direct full outward
    - Wheat
    - Other agriculture
    - Household, intermediate and capital goods
- Direct full inward
    - Consumer goods
    - Intermediate and capital goods

Sensitivity analysis on the remaining containerised trade categories was derived using shares of direct full trade in the high and low scenarios. The remaining trade categories are:

- Transhipment full outward
- Transhipment full inward
- Direct empty
- Transhipment empty

In aggregate, the high and low cases represent +/- 8.2% on the central forecast for total containerised mainland and overseas trade. Over the last 10 years, 80% of the observed levels of total containerised mainland and overseas trade have been within +/- 8.2% of the trend-adjusted mean.

Results of the sensitivity analysis are summarised on page 5 and detailed on pages 28-30.

^Deloitte Access Economics, January 2023, Victorian Commercial Port Strategy: Trade and Industry Trends Report.

Containerised trade forecasts – mainland and overseas

Containerised full direct – exports vs imports

Exports (mainland and overseas)

Containerised exports are forecast to grow at a CAGR of **1.8%** between FY23 and FY53.

- Forecasts have been derived from an analysis of the following commodity groupings: wheat (-**0.6%** CAGR), other agricultural commodities (**2.5%** CAGR), and household, intermediate and capital goods (**1.2%** CAGR).

- Containerised export volumes are mainly driven by economic growth in major export markets. Total volume is expected to fall -**0.9%** in FY23, reflecting deteriorating global economic conditions in the near term.

Chart 9: Containerised exports forecast growth, FY23 – FY53, % change
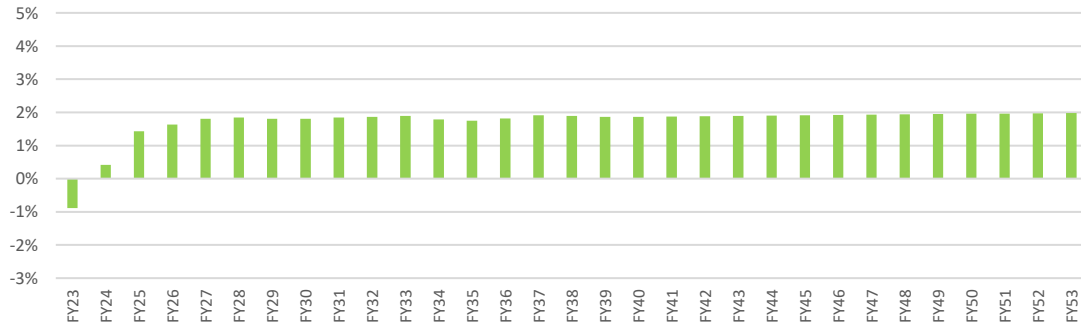
Chart 10: Containerised exports historical and forecasts by FY, TEU

Imports (mainland and overseas)

Containerised imports are forecast to grow at a CAGR of **2.9%** between FY23 and FY53.

- Forecasts have been derived from an analysis of the following commodity groupings: consumer goods (**2.5%** CAGR), and intermediate and capital goods (**3.2%** CAGR).

- High-volume commodity groups in this category include building materials, manufacturing products, plastics, and other goods associated with capital investment and industrial production. Total volume is expected to fall -**2.75%** in FY23 due to weak domestic conditions reflected by subdued economic growth.

Chart 11: Containerised imports forecast growth, FY23 – FY53, % change
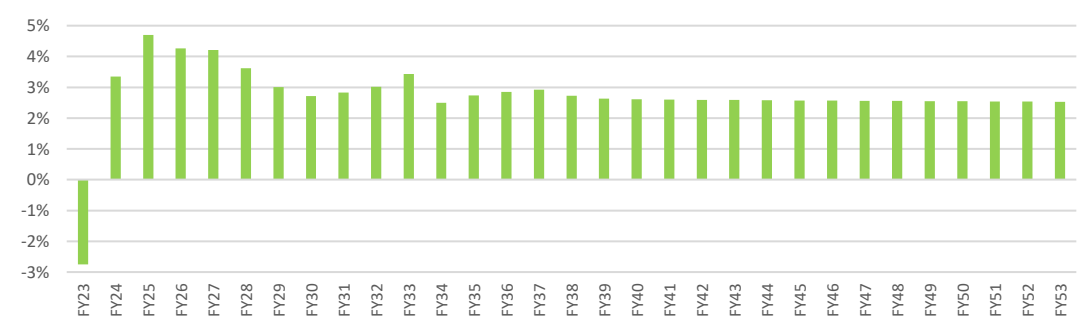
Chart 12: Containerised imports historical and forecasts by Financial Year, TEU

Containerised transhipment - exports vs imports

Exports (mainland and overseas)

Transhipped full exports are forecast to grow at a CAGR of **2.2%** between FY23 and FY53.

Chart 13: Containerised transhipment exports forecast growth, FY23 – FY53, % change

Chart 14: Containerised transhipment exports historical and forecasts by FY, TEU

Source: PoM, Deloitte Access Economics

Imports (mainland and overseas)

Transhipped full imports are forecast to grow at a CAGR of **2.5%** between FY23 and FY53.

Chart 15: Containerised transhipment imports forecast growth, FY23 – FY53, % change
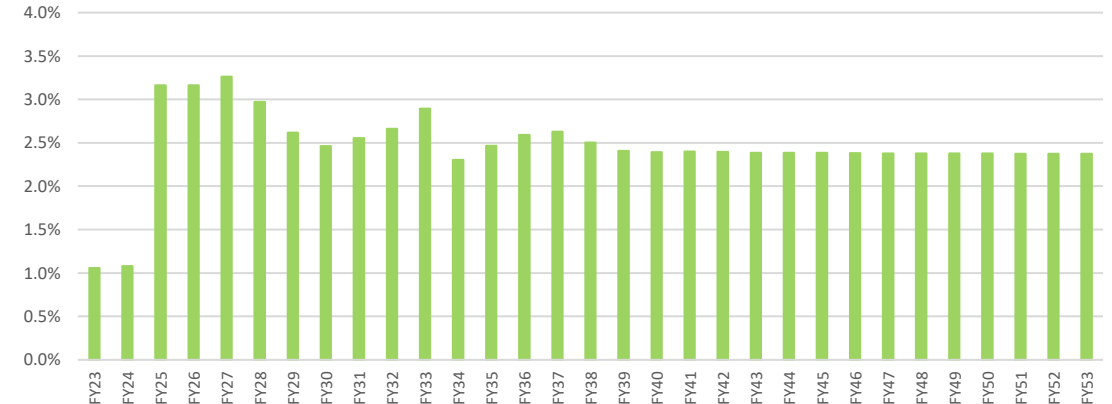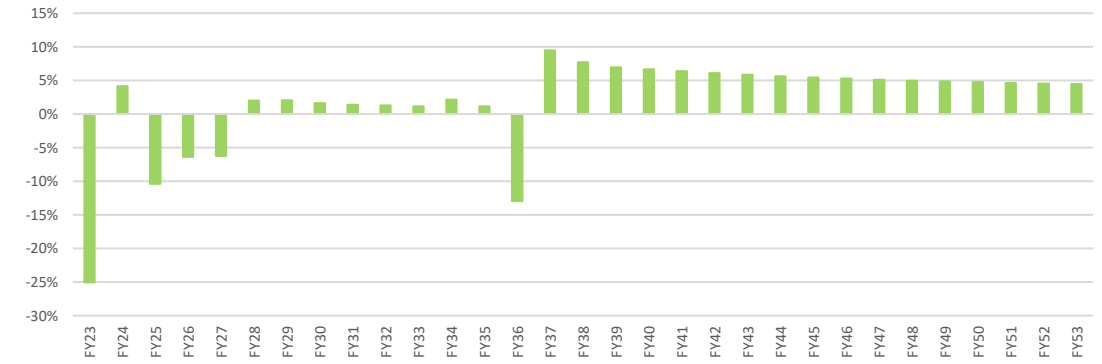

Chart 16: Containerised transhipment imports historical and forecasts by Financial Year, TEU

Source: PoM, Deloitte Access Economics

Note: Export and import forecasts are a function of direct containerised exports forecasts and assumptions regarding the ratio between direct and transhipped containerised exports over the forecast period.

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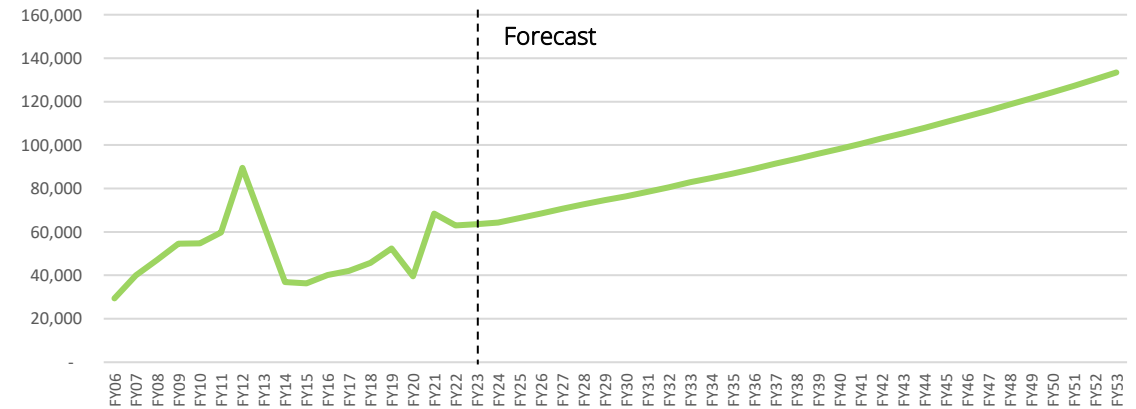
Empty containers – total trade

The Port of Melbourne is a net exporter of empty containers due to the high volume of full imported containers received relative to full exported containers. The Port's net export position continues to grow wider over the forecast period, driving growth in empty exports.

Direct (imports and exports)

- Mainland and overseas direct empty containers are forecast to grow at a CAGR of **3.2%** between FY23 and FY53.

Transhipment (imports and exports)

- Mainland and overseas transhipped empty containers are forecasted to grow at a CAGR of **3.6%** between FY23 and FY53.

Chart 17: Direct empty containers forecast growth, FY23 – FY53, % change

Chart 19: Tranship empty containers forecast growth, FY23 – FY53, % change
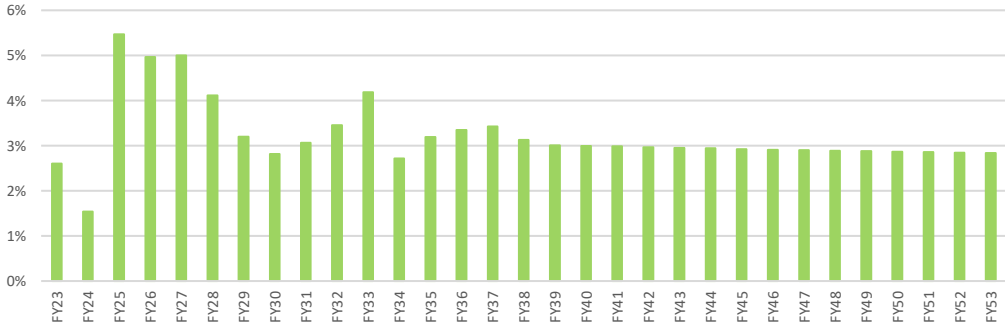
Chart 18: Direct empty containers historical and forecasts by Financial Year, TEU
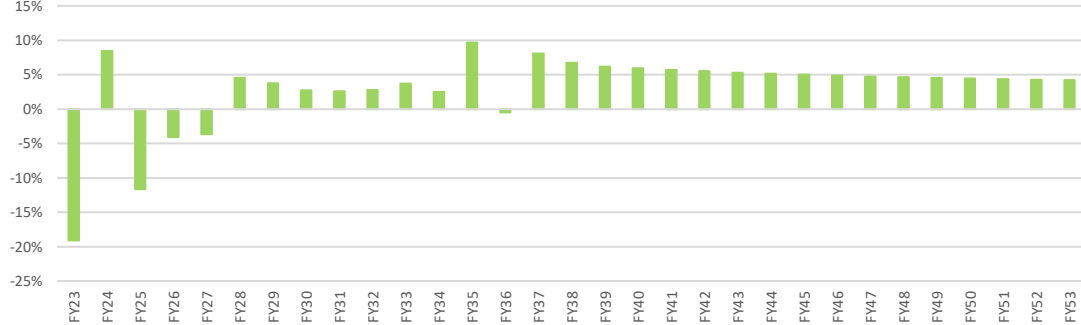
Chart 20: Tranship empty containers historical and forecasts by Financial Year, TEU

Source: PoM, Deloitte Access Economics
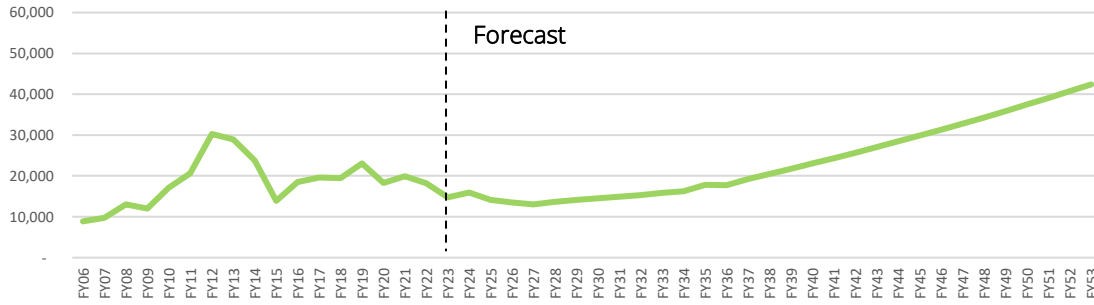
Source: PoM, Deloitte Access Economics

Containerised returns – total trade

Direct (imports and exports)

- Mainland and overseas empty returns are forecast to grow at a CAGR of **3.2%** between FY23 and FY53.

Transhipment (imports and exports)

- Mainland and overseas transhipped empty returns are forecast to grow at a CAGR of **2.5%** between FY23 and FY53.

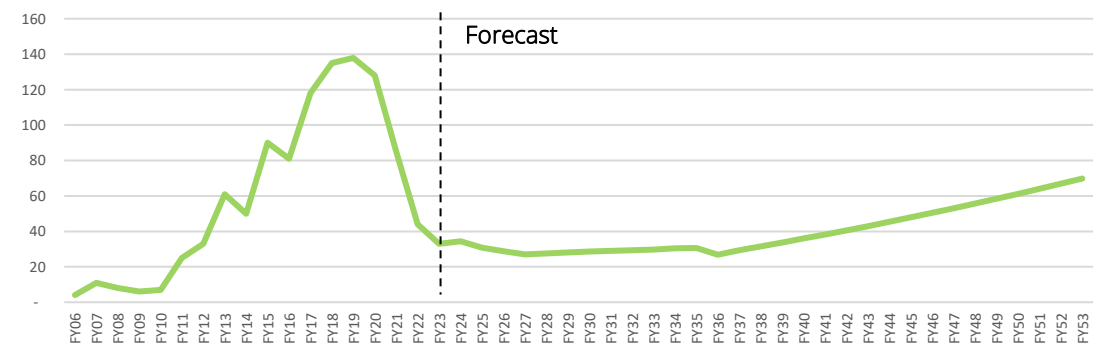Chart 21: Empty direct returns forecast growth, FY23 – FY53, % change

Chart 23: Empty transhipment returns forecast growth, FY23 – FY53, % change
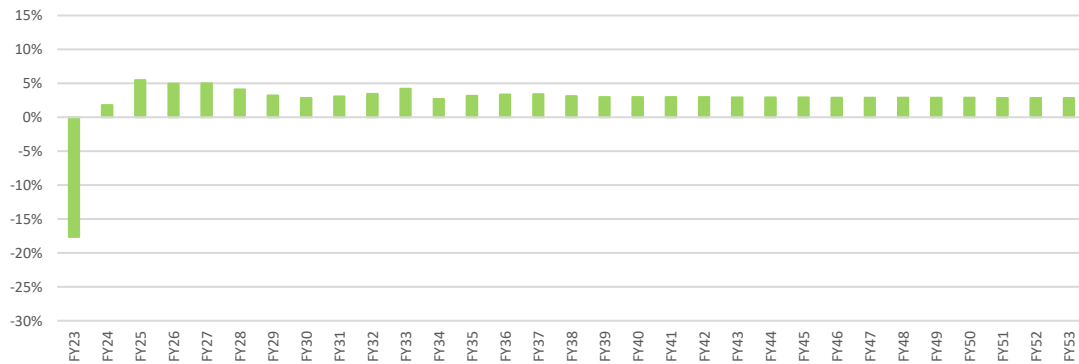
Chart 22: Empty direct returns historical and forecasts by Financial Year, TEU

Chart 24: Empty transhipment returns historical and forecasts by Financial Year, TEU

Source: PoM, Deloitte Access Economics

Source: PoM, Deloitte Access Economics

Sensitivity analysis – mainland and overseas containerised trade

Sensitivity analysis – containerised full direct

The sensitivity analysis is derived using 50% of the standard deviation (volatility around the mean) observed in historical Port of Melbourne trade data (FY06 to FY22).

Direct - full – outward

- Direct full outwards trade increases over FY23 to FY53 from **650,000 TEU** to:
    - **1,039,000 TEU** in the low scenario **(1.6% CAGR)**
    - **1,113,000 TEU** in the central scenario **(1.8% CAGR)**
    - **1,187,000 TEU** in the high scenario **(2.0% CAGR)**
- Results were derived from historical analysis of the following commodity bundles: wheat (+/- 24%); other agricultural goods (+/- 7%); and household, intermediate and capital goods (+/- 4%).
- After aggregation to the trade category level, the high and low scenarios represent around +/- 7% on the central forecast.

Chart 25: Sensitivity analysis – direct full outwards (mainland and overseas)
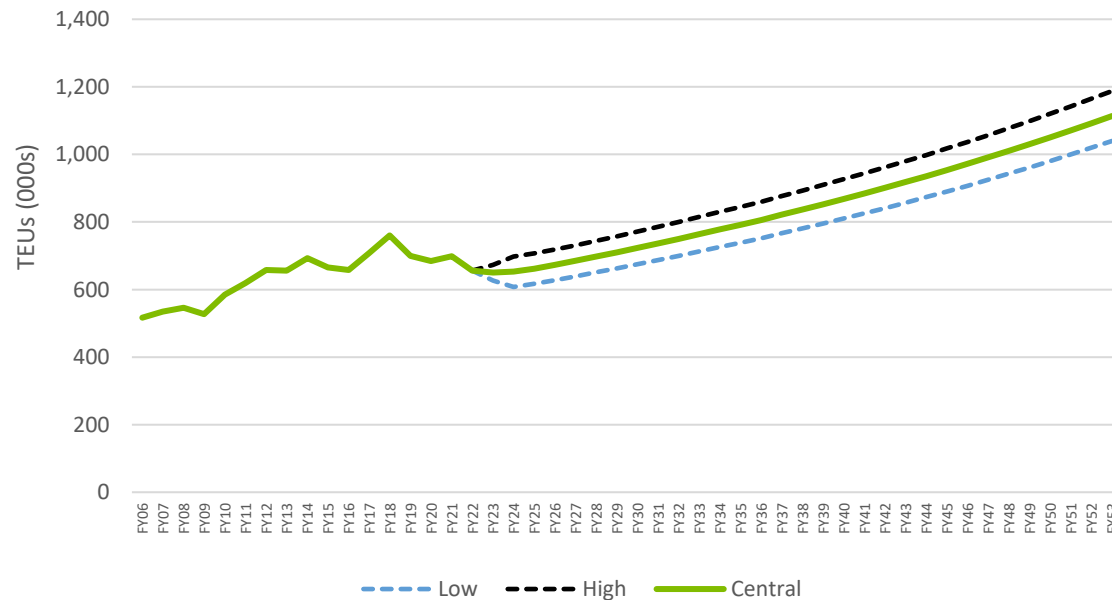
Direct - full – inward

- Direct full inwards trade increases over FY23 to FY53 from **1,300,000 TEU** to:
    - **2,804,000 TEU** in the low scenario **(2.6% CAGR)**
    - **3,076,000 TEU** in the central scenario **(2.9% CAGR)**
    - **3,348,000 TEU** in the high scenario **(3.2% CAGR)**
- Results were derived from historical analysis of the following commodity bundles: consumer goods (+/- 8%); and intermediate and capital goods (+/- 9%).
- After aggregation to the trade category level, the high and low scenarios represent around +/- 9% on the central forecast.

Chart 26: Sensitivity analysis – direct full inwards (mainland and overseas)
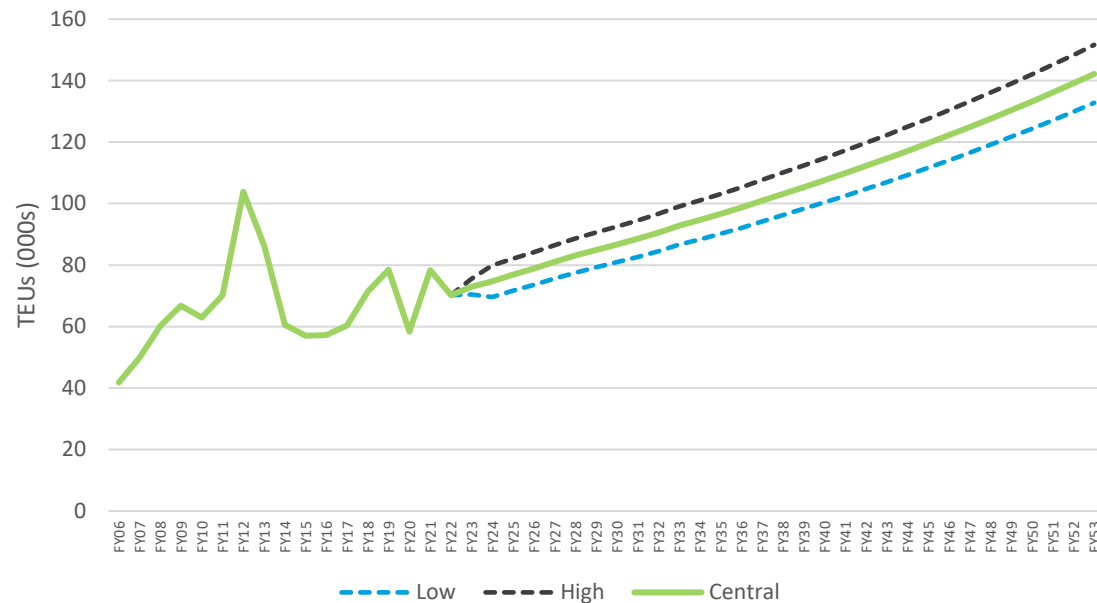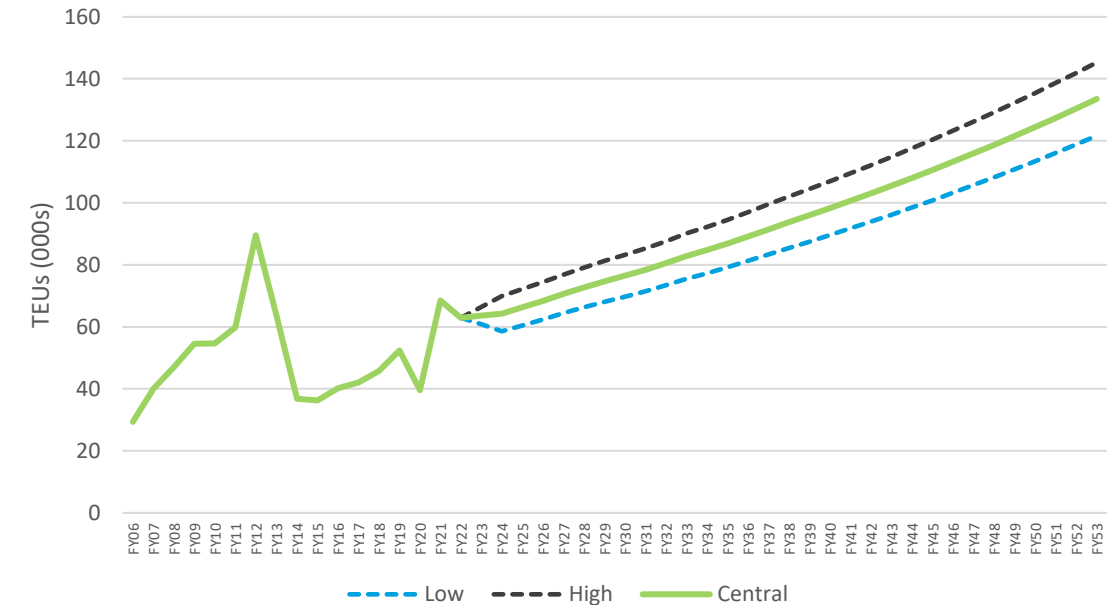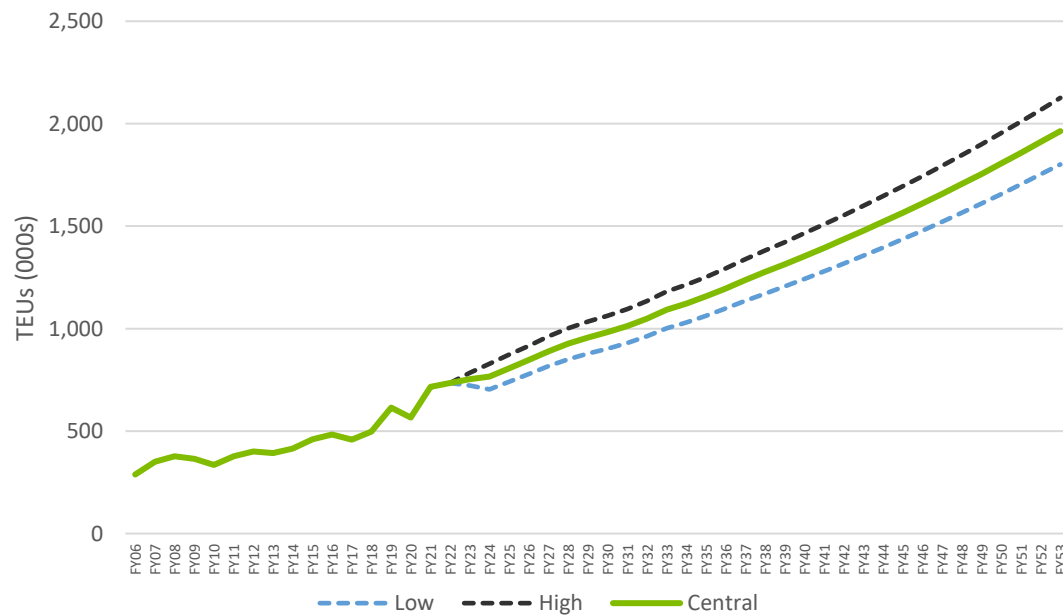

Source: PoM, Deloitte Access Economics
Note: Figures are rounded throughout
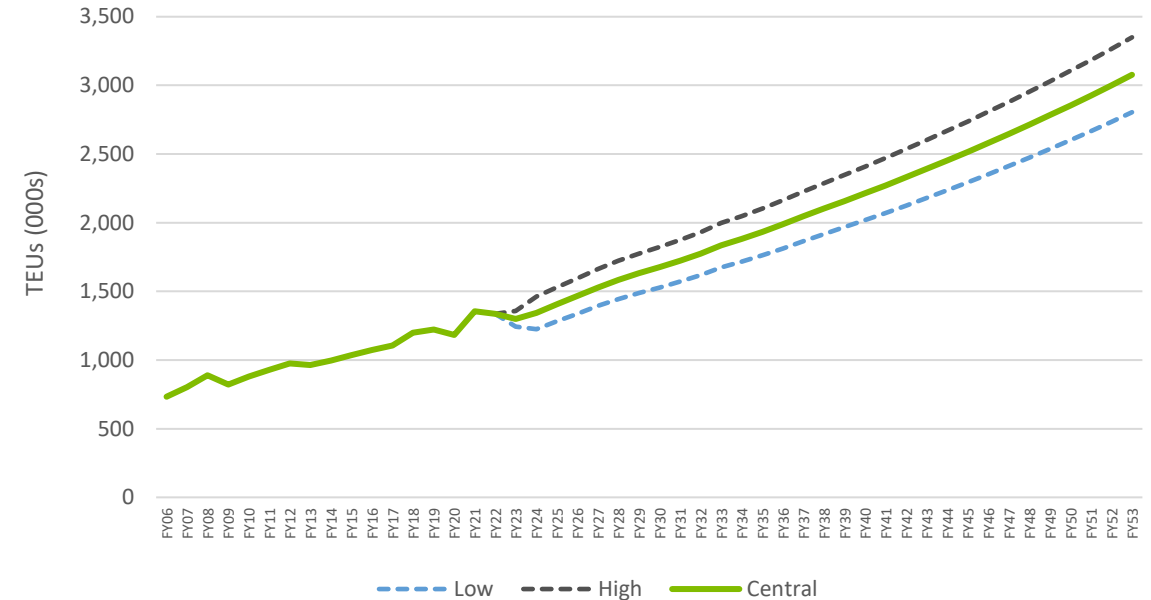
Sensitivity analysis – containerised full tranship

Transhipped trade is derived using a share of direct trade in the high and low scenarios

Transhipment - full - outward

- Tranship full outwards trade increases over FY23 to FY53 from **73,000 TEU** to:
  - **133,000 TEU** in the low scenario **(2.0% CAGR)**
  - **142,000 TEU** in the central scenario **(2.2% CAGR)**
  - **152,000 TEU** in the high scenario **(2.5% CAGR)**
- High and low scenarios represent around +/- 7% on the central forecast.

Chart 27: Sensitivity analysis – tranship full outwards (mainland and overseas)

Transhipment - full - inward

- Tranship full inwards trade increases over FY23 to FY53 from **64,000 TEU** to:
  - **122,000 TEU** in the low scenario **(2.2% CAGR)**
  - **133,000 TEU** in the central scenario **(2.5% CAGR)**
  - **145,000 TEU** in the high scenario **(2.8% CAGR)**
- High and low scenarios represent around +/- 9% on the central forecast.

Chart 28: Sensitivity analysis – tranship full inwards (mainland and overseas)

Source: PoM, Deloitte Access Economics
Note: Figures are rounded throughout

Source: PoM, Deloitte Access Economics

Sensitivity analysis – containerised empty and returns

Empty container trade is derived using a share of direct and transhipped trade in the low and high scenarios

Direct - empty

- Direct empty trade increases over FY23 to FY53 from **754,000 TEU** to:
  - 1,802,000 TEU in the low scenario **(2.9% CAGR)**
  - 1,964,000 TEU in the central scenario **(3.2% CAGR)**
  - 2,126,000 TEU in the high scenario **(3.5% CAGR)**
- High and low scenarios represent around +/- 8% on the central forecast.

Chart 29: Sensitivity analysis – tranship full outwards (mainland and overseas)

Source: PoM, Deloitte Access Economics
Note: Figures are rounded throughout

Transhipment - empty

- Tranship empty trade increases over FY23 to FY53 from **15,000 TEU** to:
  - 39,000 TEU in the low scenario **(3.3% CAGR)**
  - 43,000 TEU in the central scenario **(3.6% CAGR)**
  - 46,000 TEU in the high scenario **(3.8% CAGR)**
- High and low scenarios represent around +/- 8% on the central forecast.

Chart 30: Sensitivity analysis – tranship full inwards (mainland and overseas)
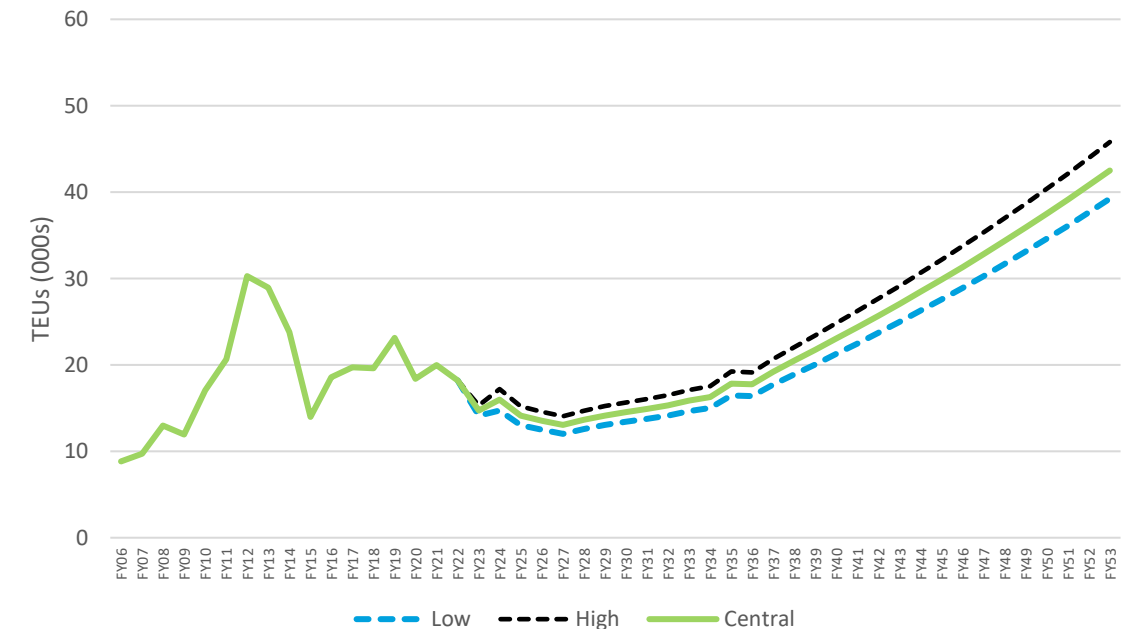
Source: PoM, Deloitte Access Economics

Validation and conclusion

Validation and conclusion

Deloitte's forecasts are robust and represent the most reasonable estimation possible.

Conclusion

Deloitte Access Economics has approached this forecasting analysis with the aim of producing robust trade forecasts for the Port of Melbourne. The approach taken has been governed by the purpose and Scope of the engagement. Deloitte has therefore produced a detailed methodology that is robust and replicable. Using this methodology, Deloitte Access Economics has produced forecasts for 18 different trade categories over the medium term.

Consistency of the methodology with standard industry approach

Deloitte Access Economics has arrived at the trade forecasts on a reasonable basis. The Port of Melbourne's historical data was used to develop the forecasts, and macroeconomic drivers that affect different trade were built into forecasting analysis. Assumptions, adjustments and controls to the data have been discussed, and each model has been subject to extensive diagnostic testing to ensure validity. The models chosen include Autoregessive Distributed Lag Model, Cointegrated Autoregressive Distributed Lag Model and Error Correction Model are standard across economic practice and econometricians. The methodology used to develop the forecasts is considered to be in line with industry best practice.

The consultant's credentials and experience producing similar forecasts for other parties

Deloitte Access Economics has extensive experience in developing macro-economic and trade forecasts and is widely recognised as one of the leading macroeconomic forecasters in Australia. Deloitte Access Economics is also known for producing reliable and accurate forecasts for numerous government and non-government clients that value the rigorous quantitative analysis provided through this process.

Deloitte Access Economics also has extensive Victorian-specific experience having previously been engaged by Freight Victoria to prepare trade demand forecasts as well as analysis of industry trends, and energy sector trends, to inform the Victorian Commercial Ports Strategy. The data and information from these forecasts have been used to inform the current set of forecasts where relevant as extensive industry consultation was undertaken with stakeholders that informed these forecasts.

The reasonableness of the methodology and assumptions

Deloitte Access Economics takes a pragmatic approach to forecasts and combines rigorous statistical methods with industry intelligence; namely a detailed understanding of both supply side and demand side factors that are likely to influence commodity trades for both exports and imports. It is not a 'one size fits all approach' and for some commodities that are volatile or lumpy in nature (e.g. capital imports) out of model adjustments were made as required as standard econometric methods would not be suitable.

Extensive research was conducted during the development of the forecasts taking into consideration 'what was in containers' and the level at which to undertake forecasts through a detailed commodity mapping process. The commodity bundles were developed such that the commodities being forecast in a bundle all had similar drivers (so the method used by Deloitte is intuitive and easy to explain). This is one of the main differentiators in Deloitte's approach making it reasonable and justifiable. Furthermore, Deloitte has used the most recent available PoM trade data to make any adjustments over the short–term as relevant to take into account FY-to-date growth in key import and export commodities traded through the Port.

The methodology makes extensive use of the historical data to take a 'bottom up' approach identifying long term commodity trends and adjusting for COVID and accounting for structural breaks with use of dummy variables. The forecasts have been developed in tonnes and converted from tonnes to TEUs at the commodity bundle level to take into account average tonnes per container as this would vary for different commodity type as well as 20ft and 40ft containers. Where forecasts have been informed by historical ratios (e.g. transhipment containers) the analysis been done at a detailed level and takes into account past trends and projected forward into the future based on those past trends using either a logarithmic or stationary trend. A detailed methodology has been developed for empty containers (which forms a substantial amount of container trade) as described in the methodology appendix and uses an adaptation of an approach developed by BITRE in previous work.

Sensitivity analysis conducted by Deloitte Access Economics produced high and low cases representing +/- 8.2% on the central forecast for total containerised mainland and overseas trade. Over the last 10 years, 80% of the observed levels of total containerised mainland and overseas trade have been within +/- 8.2% of the trend-adjusted mean.

Lastly, while Deloitte has developed its forecasts independently, multiple checks have been done with available forecasts in the public domain as part of the QA process and these demonstrate the forecast are reasonable. The forecasts have also been developed at a quarterly level (that includes seasonal factors) and can be aggregated to financial or calendar years.

Deloitte.