In this issue

The feature article in this issue of the Queensland Economic Review discusses an industry level economic model that has been recently developed by the Office of Economic and Statistical Research for Queensland Tourism. The model can be used to analyse the effects of policies and economic shocks on tourism, both in the present and into the future.

This issue also contains the usual detailed updates on the Queensland, national and international economies. The Queensland economy continues to perform solidly, characterised by strong domestic demand more than offsetting a weaker trade sector. Gross state product grew by 0.9% in September quarter 2004 and by 3.7% over the year. The unemployment rate in the December quarter was the lowest since the 1970s.

Forthcoming issues of the Queensland Economic Review will include more articles on China. These articles will follow on from the article on Chinese economic reform, which appeared in the 2004/3 issue. The next article will examine the modern Chinese economy and detail the economic challenges faced by China. A third article will look at the relationship between Queensland and China and the implications for Queensland of the growth of the Chinese economy.

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Highlights of this issue
The Queensland Economic Review is also now available through the Queensland Treasury Internet site:
www.treasury.qld.gov.au

For further economic, financial and statistical information relating to Queensland, visit the Office of Economic and Statistical Research internet sites:

OESR: www.oesr.qld.gov.au
Statistics Queensland: www.statistics.qld.gov.au
Economics Queensland: www.economics.qld.gov.au

Notes for Contributors

The Queensland Economic Review (QER) invites articles from organisations and individuals on a broad range of topics suitable for inclusion in future issues of the publication. Three or four issues are published each year and 16 pages are set aside in each issue for articles. Some of the articles are prepared by officers of Queensland Treasury.

To get an idea of the types of articles that are published, please peruse previous issues. Please note aspects such as length and style of articles. Each article is usually two, three or four pages in length. Allow about 750 words per QER page, without headings or illustrations. Articles should be written in a style that is understandable to a diverse range of readers, and should include tables/charts/diagrams and one or two levels of headings.

Completed articles or ideas for articles can be emailed to oesr@treasury.qld.gov.au. Text should preferably be in Word. All tables, charts and diagrams should be in Excel, Illustrator, etc. as appropriate rather than imported into the Word document. Some editing of articles may occur. A typeset copy will be sent to authors for approval before printing.
Summary

International economy
The international economy is estimated to have grown by 5.0% in 2004, driven by solid growth in the United States, Japan and emerging markets such as China.

National economy
National economic growth continued to moderate in September quarter 2004, with trend GDP rising 0.5%, after peaking at 1.2% in December quarter 2003.

Exchange rates
After appreciating to slightly below US80¢ in late November 2004, the $A has since traded between US75¢ and US78¢.

Monetary policy
The Reserve Bank left the cash rate unchanged at 5.25% in 2004, but notes that interest rates may rise in future months in the current economic expansion.

Bond and bill yields
After falling below the cash rate by mid December 2004, Australian 10-year bond yields increased to around 5.3% in January 2005, following strong US economic data released during late December 2004.

Queensland economy
Domestic demand continued to underpin Queensland economic growth in September quarter 2004, with exports also showing signs of strengthening during the quarter.

Employment
Employment growth in Queensland remained strong, at 1.6% in trend terms in December quarter 2004, with Queensland accounting for more than one-third of all jobs created nationally in the quarter.

Unemployment
The State’s trend unemployment rate fell to 4.8% in the December quarter, its lowest rate since the inception of the current ABS series in 1978.

Job vacancies
Annual growth in job vacancies eased in the December quarter, suggesting that Queensland’s jobs growth should remain positive, but more subdued relative to the very strong jobs growth recorded in 2004.

Employment by industry
Jobs growth in Queensland was broad-based over the year to the December quarter, with strong job gains in the services sector, manufacturing and mining.

State economic growth
The Queensland economy recorded solid trend growth of 0.9% for the second consecutive quarter in September quarter 2004, driven by high levels of business investment and consumer spending.

Consumption
Growth in Queensland consumer spending continued to ease in the September quarter, but remained at a higher annual rate than the rest of Australia, driven by strong population growth and housing activity.

Housing investment
Dwelling investment in Queensland was largely unchanged in trend terms in September quarter 2004, maintaining its historically high level.

Business investment
Business investment in Queensland continued to grow strongly in September quarter 2004, increasing by 6.5% in trend terms, driven primarily by further growth in machinery and equipment investment.

Business conditions
According to the latest surveys, business conditions in Queensland remained strong in September quarter 2004, and are expected to continue to improve in the December quarter.

Agricultural and mining trends
Rainfall in late 2004 has strengthened the outlook for the State’s summer crop production, while strong demand from Asia and greater exploration activity continue to underpin growth in the mining sector.

Overseas merchandise exports
The value of Queensland’s overseas exports of goods rose by 29.1% over the year to September quarter 2004, driven by growth in crude and processed mineral exports, as well as metals and rural exports.

Commodity prices
The international price index for Queensland commodity exports rose 2.2% in SDR terms in December quarter 2004. In $A terms, the index remained relatively unchanged, as the $A strengthened against the $US over the quarter.

Tourism
Short-term visitor arrivals to Australia rose by 4.5% over the year to December quarter 2004, reflecting the passing of the major impact from previous terrorist events and a stronger global economy.

Inflation
Inflation rose strongly, at 0.8%, in Brisbane in the December quarter, with increases in food prices the main reason for the rise.

Wages
The two main ABS measures of wages recorded solid annual growth in September quarter 2004, driven by ongoing productivity improvements and tight labour market conditions.

Population
Population growth in Queensland remained steady at 0.5% in June quarter 2004, representing an increase in the resident population of 18,500 persons.
International and national economies

International economy

In its latest World Economic Outlook, the International Monetary Fund (IMF) revised the growth forecast for the international economy in 2004 from 4.6% to 5.0%. If this estimate proves accurate, it will be the strongest growth rate since 1976. The IMF attributes this growth to a strong upturn in industrial production, private consumption and business investment. It also cites rapid economic expansion in emerging markets, notably China. However, stronger than expected growth in 2004 has led the IMF to revise its 2005 forecast down slightly from 4.4% to 4.3%, as global growth moderates during the first half of 2005.

The US economy appears to have strengthened solidly after a ‘soft patch’ in the June quarter. It is likely that the United States will record economic growth of over 4% in 2004, driven primarily by an increase in domestic demand. One constraining factor in the United States is the current account balance (which measures annual trade and financial flows). This has gone from zero in 1990 to a deficit of around $US600 billion in 2004. Over the past two years the United States has borrowed more than $US1 trillion from abroad to fund its current account deficit. Many analysts believe that at some point interest rates in the United States may need to rise to attract the foreign capital required to finance its deteriorating deficit position. Higher interest rates in the United States may impact on global growth.

Non-Japan East Asia continues to outperform other areas of the global economy, with China estimated to record an annual growth rate of 9.4% in 2004. Rapid credit growth, high business investment and consumer spending were the main contributors to growth in China during 2004.

Growth in the Euro Zone remained subdued relative to other regions during 2004. Low consumer confidence and persistently high unemployment have constrained any sustained pick-up in domestic consumption in key economies such as Germany and Italy.

National economy

National economic growth continued to moderate in September quarter 2004. Trend gross domestic product (GDP) rose 0.5% in the quarter, after peaking at 1.2% in December quarter 2003. As in previous quarters, household consumption was the primary driver of economic growth, rising 1.0% in the quarter and contributing 0.6 percentage point to overall GDP growth.

Growth in dwelling investment moderated sharply to 0.5% in the September quarter, following growth of 1.1% in the previous quarter. Despite growth easing steadily over the past year, dwelling investment remains at historically high levels. Business investment rose 1.2% in the September quarter, the fourteenth consecutive quarter of growth. Non-dwelling construction declined by 2.5%, while machinery and equipment investment rose 3.1%. Despite growth in business investment moderating, surveys indicated that business conditions firmed nationally in the September quarter.

Total exports declined marginally in the September quarter (down 0.1%). However, increases in each of the previous three quarters meant that exports rose by 5.1% over the year. Growth in imports continued to outpace exports, although the growth differential narrowed. Imports increased 1.8% in the September quarter, easing from 2.9% in the June quarter. Overall, net exports detracted 0.5 percentage point from GDP growth, similar to the detraction recorded in each of the previous three quarters. Public final demand increased at a similar pace as overall economic growth in the September quarter (up 0.6%), continuing the pattern of previous quarters.

Despite the easing in economic growth, total employment recorded solid growth of 0.5% in the September quarter. Employment growth accelerated further in the December quarter, with total employment rising 0.9% and the trend unemployment rate falling to 5.2%, the lowest quarterly average unemployment rate on record since the inception of the ABS labour force series in 1978.

Japan grew relatively strongly over 2004, although growth did ease off during the second half. Japan’s exports to Asia and an increase in business investment were the main contributors to growth, although a pick-up in domestic demand also contributed.

Major trading partner economic growth (annual % change)

Source: Consensus Economics, Consensus Forecasts (January 2005); and Queensland Treasury

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004(e)</th>
<th>2005(f)</th>
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<tr>
<td>Australia</td>
<td>3.3%</td>
<td>3.2%</td>
<td>3.2%</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

(e) estimated actual
(f) forecast
(a) weighted in terms of Queensland’s overseas merchandise exports
**Exchange rates**

The $A appreciated strongly in late 2004, rising from just under US70c in September to just under US80c in late November. Since that time, the $A has traded in the range US75c to US78c. The appreciation of the $A has not been driven by $A strength, but more the result of weakness in the $US. This weakness appears to be due to investor concerns about the large current account deficit in the United States.

**Australian dollar**

(daily; TWI: May 1970 = 100)

Source: Datastream

While the $A has risen strongly against the $US, the performance of the $A has been mixed against other major currencies. Over the period September 2004 to late January 2005, the $A fell in value against the euro and the British pound, but remained slightly higher against the Japanese yen.

The outlook for the $A over coming quarters will rely heavily on developments in the United States. A key driver of the $A strength has been the wide differential between Australian and US interest rates, making $A-denominated assets attractive to international investors. The ongoing recovery in the US economy is likely to see US official interest rates continue to rise, thus narrowing this interest-rate differential, which may place downward pressure on the $A. This process could take some time though, particularly given concerns about the level of the US current account deficit. While the US economy continues to be stronger than other major economies in the world (in particular, Europe and Japan), the large current account deficit is likely to persist as US export activity remains subdued and imports remain strong.

**Monetary policy**

In the most recent *Statement on Monetary Policy*, the Reserve Bank of Australia (RBA) said that ‘... the Board decided at its February meeting to leave interest rates unchanged, while noting that the likelihood of further monetary tightening being required in the months ahead had increased’. The RBA noted that the cooling in the housing market during 2004 was associated with a slowdown in the growth of credit. However, they then pointed out that in spite of the slowdown, the growth of credit to both the household and business sectors remains high.

The RBA expects that growth in the international economy is likely to continue at an above-average pace in 2005 for the third successive year. Strong global activity has resulted in rising commodity prices, which have been a significant stimulus to national income and spending. The strength in the global economy, together with high levels of household and business confidence, is consistent with continued strong growth in the domestic economy.

The RBA is beginning to highlight inflation as a concern. For the past couple of years, inflation has been held down by the lagged effects of the exchange rate appreciation that took place during 2002 and 2003, but from here, further impacts from the exchange rate appreciation are likely to be limited. At this stage the RBA is forecasting inflation to reach 3% by the end of 2006. The existence of upside risks to this forecast, including continued pressure on raw materials prices, evidence of capacity constraints in some sectors, and reports of higher employment costs, mean that current forecasts of inflation could prove to be too low.

**Bond and bill yields**

Australian 10-year bond yields reached a low point in mid December 2004 of around 5.16%, below the official cash rate of 5.25%. However, with movements in Australian bond yields being heavily influenced by movements in US yields, strong US economic data released during late December saw Australian 10-year bond yields increase to around 5.3% in January.

Because of the strong link to US yields, Australian bond yields have now fallen to levels not consistent with economic activity. At current levels, the Australian bond market is pricing in a scenario of unchanged cash rates, or even a fall. This position differs from that put forward by the RBA (see previous section).

Interest rates at the short end of the yield curve also imply that financial markets have priced in very little chance of an imminent interest rate rise. Yields on 90-day bank bills have remained largely unchanged over the past three months at around 5.4%.
Overview

The Queensland economy recorded solid growth of 0.9% in trend terms for the second quarter in a row in September quarter 2004, well above growth of 0.4% in the rest of Australia. While the domestic sector continued to drive overall growth in the State, the September quarter Queensland State Accounts have signalled some evidence of a change in the composition of growth, with domestic activity beginning to gradually ease and exports growth continuing to strengthen.

Consumer spending continued to grow in the September quarter, but eased from the exceptionally high quarterly growth rates of a year earlier. This continued growth has been driven by the ongoing wealth effects of house price rises, as well as high levels of interstate and overseas migration. Dwelling investment remained largely unchanged at a historically high level during the quarter, with a backlog of construction work yet to be done likely to maintain housing activity in coming quarters. Business investment made the strongest contribution to growth during the quarter, with a high $A exchange rate assisting business in the purchase of imported machinery and equipment.

Growth in exports accelerated for the third consecutive quarter, following a stronger global economy in 2004 and significant increases in major export items, such as coal and meat. In comparison, imports growth eased for the third consecutive quarter, in line with some easing in domestic economic activity over this period.

With overall economic growth remaining solid, Queensland has continued to generate significant gains in employment in recent quarters. Trend employment increased by 95,700 persons over the year to December quarter 2004, accounting for around 40% of the annual rise in employment nationally.

Employment

Queensland’s employment growth eased slightly in December quarter 2004, with employment increasing by 1.6% in trend terms. This follows growth of 1.7% in the previous quarter. Queensland continued to record stronger jobs growth than the rest of Australia, where employment growth rose by 0.5 percentage point to be 0.7% in the December quarter.

Queensland accounted for more than one-third (34.4%) of all jobs created nationally in the quarter, with employment rising by 30,200 persons, compared with a rise of 57,600 persons in the rest of Australia.

Unemployment

Queensland has consistently recorded strong quarterly jobs growth since December quarter 2001, resulting in the State’s unemployment rate in December quarter 2004 reaching its lowest level since the inception of the current series in 1978.

The State’s trend unemployment rate fell from a recent high of 8.7% in June quarter 2001 to 4.8% in December quarter 2004. In comparison, the rate for the rest of Australia fell 1.0 percentage point to 5.4% over the same period. Queensland’s unemployment rate in the December quarter was lower than that in the rest of Australia by 0.6 percentage point.

Queensland’s unemployment rate has fallen consistently since December quarter 2001, with employment growth exceeding labour force growth during this period.

The State’s labour force growth in the December quarter was 1.0%, driven by robust civilian population growth of 0.6% (the fourteenth consecutive quarter of growth at or above 0.6%), as well as a 0.3 percentage
point increase in the trend participation rate to 65.5%, the highest rate in the current series.

In comparison, the labour force in the rest of Australia grew by 0.5% in the December quarter. Labour force growth in the rest of Australia was driven by civilian population growth of 0.3% and a slight increase of 0.1 percentage point in the participation rate to 63.3% in the quarter.

### Unemployment rate

(\%, quarterly average, trend)

Source: ABS 6202.0

<table>
<thead>
<tr>
<th>Year</th>
<th>Queensland</th>
<th>Rest of Australia</th>
</tr>
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<tbody>
<tr>
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<td>Rest of Australia</td>
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<tr>
<td>Dec-00</td>
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<tr>
<td>Dec-04</td>
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</table>

### Job vacancies

The trend number of job advertisements in Queensland as measured by the ANZ Job Advertisement Series fell 4.3% in December quarter 2004 (nationally, up 1.8%). Over the year to the December quarter, job advertisements increased 7.9% in Queensland and 5.4% nationally. However, caution should be used when interpreting these data, as a significant fall in the December seasonally adjusted data may be largely due to unusual seasonal influences on the survey, such as Christmas Day falling on a Saturday. This lower seasonally adjusted result for December has had a negative impact on the December quarter trend data.

In a similar result to the ANZ series, the DEWR Skilled Vacancy Index for Queensland declined 3.8% in the December quarter, but remained 1.0% higher over the year. Nationally, the index declined 0.3% in the December quarter, to be 4.8% higher over the year.

The recent easing in quarterly job vacancy data in Queensland suggests that employment growth in the State should remain positive in the coming quarter, albeit more subdued compared with the very strong jobs growth recorded in the second half of 2004.

### Employment by industry

Employment growth in Queensland over the year to December quarter 2004 (in original terms) continued to be predominantly driven by the services sector, where employment grew by 46,100 persons. Employment in the primary and secondary sectors also contributed strongly to jobs growth, rising 24,300 persons over the year to the December quarter. This solid growth represents a turnaround in these sectors, which recorded a combined modest increase of 4,400 persons in the September quarter, following five consecutive quarters of declining employment.

The increase in the primary and secondary sectors was due to strong jobs growth in the manufacturing and mining industries (up 20,200 and 5,500 jobs respectively). In contrast, employment in the agriculture, forestry and fishing industry fell a further 1,400 jobs, with the ongoing impact of the drought continuing to constrain employment in this industry.

Ongoing strong activity in the building and retail sectors over the period was reflected in solid jobs growth in the construction and retail trade industries (up 15,500 and 9,500 jobs respectively). Other industries to record strong jobs growth were health and community services (up 11,600), education (up 8,800) and transport and storage (up 5,600).

### State economic growth

Queensland State Accounts data show that economic growth in Queensland continued at a solid pace in September quarter 2004. Queensland recorded growth in real trend gross state product (GSP) of 0.9% in the September quarter, equalling growth in the June quarter. In annual terms, Queensland achieved economic growth of 3.7% over the year to the September quarter. Economic growth in Queensland in the quarter was well above that in the rest of Australia (0.4%) for the second consecutive quarter.
While the quarterly growth rate remained unchanged in Queensland in the September quarter, the composition of growth changed slightly, with domestic demand easing and the trade sector improving marginally.

Household consumption growth eased from the very high rate of recent quarters to a pace closer to overall economic growth. Consumption rose 0.8% in the September quarter, following 1.4% growth in the June quarter. In the rest of Australia, consumption increased 1.0% in the September quarter. However, annual growth in Queensland (7.7%) remained substantially higher than that in the rest of Australia (4.7%).

While household consumption has been the main driver of economic growth in recent quarters, business investment made the largest contribution to growth in the September quarter. Business investment rose 6.5% in the quarter, and contributed 0.8 percentage point to overall growth. Machinery and equipment investment rose by 8.3%, while other buildings and structures investment rose by 2.5%. Business investment accelerated through the first three quarters of 2004.

Although the high growth rates of recent quarters have eased, dwelling construction activity remained robust in the September quarter. The level of dwelling investment was almost unchanged during the quarter (down 0.1%). In annual terms, dwelling investment was 8.7% higher compared with a year earlier (rest of Australia, up 0.6% over the quarter and 6.9% over the year).

Total exports growth of 1.2% in the September quarter was the highest growth achieved since March quarter 2002. While export growth was again outpaced by imports growth in the quarter (up 3.0%), the growth differential between exports and imports has continued to narrow. As a result, net exports detracted 1.0 percentage point from overall growth in the September quarter, after reaching a trough at a 1.9 percentage point detraction a year earlier.

### Consumption

Queensland recorded growth in trend household consumption expenditure of 0.8% in September quarter 2004. Following exceptional growth of 3.2% in both the September and December quarters of 2003, consumption growth in Queensland has eased in each quarter of 2004 to return to a growth rate similar to that in the rest of Australia. Quarterly trend consumption growth in the rest of Australia (1.0% in the September quarter) has also eased over 2004, although from a more modest recent peak of 1.3% in September and December quarters 2003.

Queensland recorded annual consumption growth of 7.7% in September quarter 2004, well above the State’s long-run average rate of 4.6% and higher than annual consumption growth in the rest of Australia of 4.7% in the September quarter. A number of factors have generated stronger growth in consumer spending in Queensland relative to the rest of Australia. These include stronger population and employment growth, as well as the greater wealth effects from higher house price rises in Queensland relative to other states over the past year.

Growth in retail turnover (which accounts for more than 40% of household consumption expenditure)
has followed a similar pattern to growth in consumer spending in recent quarters. Real (trend) retail turnover growth eased to 1.5% in September quarter 2004, following 1.7% growth in the June quarter and a recent peak of 4.0% growth in September quarter 2003.

**Housing investment**

Dwelling investment in Queensland was largely unchanged (down 0.1%) in trend terms in September quarter 2004, maintaining its high level of the past few years. Quarterly growth in housing activity in the State has steadily moderated in recent quarters. Dwelling investment in the rest of Australia rose 0.6% in the September quarter, easing from 1.3% growth in the June quarter.

**Business investment**

As in recent quarters, business investment in Queensland rose strongly in September quarter 2004, increasing by 6.5% in trend terms. After growth eased in mid 2003, business investment accelerated through 2004, exceeding 5% growth in each of the March, June and September quarters. As a result, business investment in the September quarter was 22.7% higher than the level of a year earlier. Business investment in the rest of Australia declined marginally in the September quarter (down 0.1%).

Investment in other buildings and structures rose by 2.5% in the September quarter, moderating slightly from the 3.2% growth recorded in the June quarter. Conditions for other buildings and structures investment remained positive over the first half of 2004-05, particularly for the State’s export-focused mining and metals manufacturing industries. Although economic growth in Japan has shown signs of slowing, growth in Queensland’s other major Asian trading partners remains strong, and world prices of most of the State’s mineral and processed metal exports are at high levels.

Investment in machinery and equipment in Queensland has accelerated over the past several quarters, increasing a further 8.3% in September quarter 2004. Businesses continued to be assisted by strong $A exchange rates in the purchase of imported capital items, while business surveys continued to indicate a high level of confidence among Queensland business owners.

The outlook for business investment over the coming quarters remains encouraging. Despite domestic demand in Australia moderating, demand for the State’s export products is expected to remain strong. In particular, historically high mineral and metal prices will assist investment projects under consideration in these industries to achieve required rates of return.

Queensland dwelling construction continues to grow at a faster rate than that nationally in annual terms. Housing investment in Queensland rose by 8.7% over the year to the September quarter, compared with 6.9% growth in the rest of Australia. A high level of interstate and overseas migration has contributed to stronger annual growth in housing activity in Queensland, with the State’s population growing at around twice that in the rest of Australia. Brisbane has also experienced stronger annual growth in house prices relative to other capital cities over the past year, helping to sustain interest in the State’s housing market.

Following the strong growth achieved over the past year, indicators suggest that dwelling investment will remain at a high level in coming quarters. While the number of building approvals in trend terms has declined gradually over the past 12 months, private sector house approvals have risen modestly over the past four months. Further, low borrowing costs and a large volume of residential building work yet to be done should maintain construction activity at a high level.
Business conditions

According to the latest surveys, business conditions in Queensland remained strong in September quarter 2004, and are expected to continue to improve in the December quarter.

The September quarter 2004 National Australia Bank Quarterly Business Survey reported continued improvement in business conditions in Queensland, with the business conditions index (BCI) rising 5 percentage points to 30% in the quarter. Of the three components that comprise the overall BCI, trading performance (up 9 percentage points to 38%) and profitability (up 10 percentage points to 31%) improved strongly in the September quarter, while the index measuring employment intentions (down 4 percentage points to 21%) declined marginally. All three components of the BCI in Queensland continue to remain well above those reported nationally and were expected to improve, from their already strong levels, in the December quarter.

The November 2004 Sensis Business Index survey indicated that business confidence in Queensland improved over the three months to October 2004, compared with the previous three month period, rising 3 percentage points to 73%. Regional business confidence (77%) was substantially higher than that recorded in metropolitan regions (69%) in Queensland in the three months to October, with both areas reporting higher confidence than that nationally.

The Commerce Queensland Pulse Business Index reported a solid improvement in overall business conditions in September quarter 2004, rising 1.6 points to 64.2, the highest level in at least nine years. Further, business conditions were expected to remain strong, with 41% of surveyed Queensland businesses reporting that they expected profitability to improve in the December quarter.

Agricultural and mining trends

The Australian Bureau of Agricultural and Resource Economics forecast Queensland’s 2004-05 winter crop production to fall by 10%, to 1.23 million tonnes, after almost doubling in 2003-04. Barley and wheat production is expected to decrease, by 12% and 5% respectively, to total 1.19 million tonnes. Despite the anticipated fall, the 2004-05 forecast remains considerably higher than Queensland’s drought affected 2002-03 winter crop production.

Summer crop production is forecast to rise by 8.0% to 1.92 million tonnes in Queensland in 2004-05, with an anticipated increase of 24% in the area planted to summer crops. Rain in the eastern Downs during October and early November is expected to result in a larger area planted to sorghum in 2004-05. Subsequently, sorghum production is forecast to total 1.33 million tonnes, slightly higher than the 2003-04 crop, which increased by about 50% from 2002-03.

The area planted to cotton in Queensland is expected to rise by 55% to 157,000 hectares in 2004-05. Rainfall in early 2004 partially refilled storage dams and additional falls in spring improved subsoil moisture conditions. Accordingly, cotton lint and cotton seed production is forecast to rise by 80% and 63% respectively, to total 0.6 million tonnes.

The performance of Queensland’s key agricultural exports has been mixed. The Queensland Department of Primary Industries and Fisheries forecasts the quantity of sugar cane produced in the State to remain relatively unchanged in 2004-05. Preliminary estimates by the Australian Bureau of Statistics indicate that Queensland produced 33.4 million tonnes of sugar cane in 2003-04.

Demand for Australian beef exports has remained strong in 2004, partially due to the continued ban on Canadian and US beef exports to Japan (following the discovery of BSE or mad cow disease in those countries in late 2003). However, the US and Japanese governments have recently negotiated for the import ban on some beef products to be lifted, which may impact on demand for Australian export beef.

The outlook for Queensland’s mining sector remains strong, with continued growth in demand, particularly from Asia for coking coal. Production of coal totalled 164.8 million tonnes in Queensland in the year to September 2004, 5.3% higher than the same period a year earlier. Overseas exports of coal also rose by 5.3% to total 137.8 million tonnes in the same period, representing around 80% of coal produced in the State. Coking and thermal coal exports increased by 6.1% and 3.7% respectively over the year to September.

Demand for minerals has been supported by increased exploration expenditure in Queensland. The ABS reports that expenditure on mineral exploration in Queensland (excluding petroleum) rose by 19.6% to $140.1 million in the year to September 2004, when compared with the same period a year earlier. Around 16.2% of exploration expenditure in Australia was spent in Queensland over the period, of which around half was spent on coal exploration.

Overseas merchandise exports

The nominal value of Queensland’s overseas merchandise exports rose by 29.1% over the year to September quarter 2004. Strong rises in the value of most of Queensland’s major exports, including crude minerals, processed minerals and metals and most rural exports, drove the overall rise in merchandise exports from Queensland.
The value of rural exports rose significantly, by 40.2%, over the year to the September quarter. The rise was mainly driven by continued strong growth in meat exports, which accounted for 55.7% of Queensland’s rural exports during the quarter. Exports of meat and meat products from Queensland rose by 36.0% in the September quarter, when compared with September quarter 2003. The continued ban by Japan on beef imports from the United States and Canada in the September quarter increased demand from Asia for Australian beef. Cereal exports also rose, by over fourfold, in value terms during the quarter. Textile fibres and vegetable and fruit exports also rose, while the value of fish exports fell over the year.

Overseas merchandise exports, Queensland
(nominal)

<table>
<thead>
<tr>
<th></th>
<th>September quarter</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
<td>2004</td>
</tr>
<tr>
<td>Rural (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td>668.8</td>
<td>909.8</td>
</tr>
<tr>
<td>Cereals</td>
<td>18.5</td>
<td>76.3</td>
</tr>
<tr>
<td>Textile fibres</td>
<td>116.4</td>
<td>198.1</td>
</tr>
<tr>
<td>Fish</td>
<td>71.5</td>
<td>66.8</td>
</tr>
<tr>
<td>Vegetables and fruit</td>
<td>87.7</td>
<td>99.8</td>
</tr>
<tr>
<td>Other rural</td>
<td></td>
<td>201.9</td>
</tr>
<tr>
<td>Total rural</td>
<td>1,164.8</td>
<td>1,633.3</td>
</tr>
<tr>
<td>Crude minerals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>1,473.1</td>
<td>2,020.1</td>
</tr>
<tr>
<td>Other crude minerals</td>
<td>390.5</td>
<td>535.4</td>
</tr>
<tr>
<td>Total crude minerals</td>
<td>1,863.6</td>
<td>2,555.5</td>
</tr>
<tr>
<td>Manufactures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-ferrous metals</td>
<td>349.0</td>
<td>507.5</td>
</tr>
<tr>
<td>Other processed metals</td>
<td>15.2</td>
<td>15.3</td>
</tr>
<tr>
<td>Total</td>
<td>405.0</td>
<td>570.2</td>
</tr>
<tr>
<td>Chemicals</td>
<td>116.1</td>
<td>130.8</td>
</tr>
<tr>
<td>Leather, rubber, etc.</td>
<td>43.3</td>
<td>46.1</td>
</tr>
<tr>
<td>Machinery</td>
<td>183.4</td>
<td>217.3</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>78.6</td>
<td>74.7</td>
</tr>
<tr>
<td>Miscellaneous manufactures</td>
<td>57.1</td>
<td>57.4</td>
</tr>
<tr>
<td>Other manufactures – other</td>
<td>5.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td>484.2</td>
<td>526.9</td>
</tr>
<tr>
<td>Total manufactures</td>
<td>1,043.0</td>
<td>1,120.4</td>
</tr>
<tr>
<td>Confidential and special (a)</td>
<td>1,043.0</td>
<td>1,120.4</td>
</tr>
<tr>
<td>Total</td>
<td>4,960.6</td>
<td>6,406.4</td>
</tr>
</tbody>
</table>

(a) Most of the value of sugar exports, a major commodity export for Queensland, is included in the confidential and special category.

The nominal value of coal and processed mineral and metal exports also rose strongly in the year to September quarter 2004. The nominal value of coal exports rose by 37.1% over this period. The Queensland Department of Natural Resources and Mines states that the volume of coal exports increased by 8.7% to 35.8 million tonnes in September quarter 2004, when compared with September quarter 2003.

Overall, the nominal value of ‘other manufactures’ exports rose by 8.8% over the year, reflecting strong increases in both machinery and chemical exports (up 18.4% and 12.7% respectively).

The nominal value of Queensland’s merchandise exports to all of the State’s major export destinations rose over the year to the September quarter. Exports to Japan, South East Asia and North East Asia (excluding Japan) rose over the year, by 40.5%, 32.8% and 31.9% respectively. Coal exports to Asia, which accounted for around one-third of the value of Queensland’s merchandise exports to the region, rose by 42.8% in September quarter 2004, when compared with September quarter 2003. Exports to the European Union and the United Kingdom also rose strongly, by 32.3% and 28.6% respectively. Meanwhile, exports to the United States and New Zealand rose by 7.3% and 4.7% respectively.

Commodity prices

The weighted index of international prices for Queensland’s major commodity exports rose by 2.2% in special drawing rights (SDR) terms in December quarter 2004. In $A terms, the index remained relatively unchanged (down 0.3%) over the quarter as the $A strengthened against the $US.

In SDR and $A terms, the agricultural index rose by 5.2% and 2.6% respectively in the December quarter. In quarterly average terms, a 9.2% rise in the world price of sugar and a 1.2% rise in the average export price of beef drove the overall rise in the index. The price of wheat also rose over the quarter, by 4.2%. However, this rise was partially offset by falls in the prices of cotton and wool (down 10.9% and 5.7% respectively).

Queensland Commodity Price Index
(index base 2001-02 = 100, quarterly)

<table>
<thead>
<tr>
<th>Month</th>
<th>All commodities (SA)</th>
<th>All commodities (SDR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-99</td>
<td>70</td>
<td>54</td>
</tr>
<tr>
<td>Dec-00</td>
<td>72</td>
<td>56</td>
</tr>
<tr>
<td>Dec-01</td>
<td>74</td>
<td>58</td>
</tr>
<tr>
<td>Dec-02</td>
<td>76</td>
<td>59</td>
</tr>
<tr>
<td>Dec-03</td>
<td>79</td>
<td>61</td>
</tr>
<tr>
<td>Dec-04</td>
<td>82</td>
<td>64</td>
</tr>
</tbody>
</table>

Note: The components of the Queensland Commodity Price Index have recently been re-weighted to reflect their current shares of total Queensland exports. Accordingly, the index is not directly comparable with those published in previous editions of the Queensland Economic Review.

The minerals index rose by 0.7% in SDR terms and fell by 1.8% in $A terms in December quarter 2004. In quarterly average terms, world prices of zinc, aluminium and copper rose by 13.8%, 7.0% and 5.4% respectively.
respectively in the quarter. In addition, the world price of lead rose by 3.0%, while nickel prices remained relatively unchanged. Silver and gold prices also rose, by 12.2% and 8.1% respectively in the December quarter.

Tourism

In trend terms, short-term visitor arrivals to Australia rose 2.0% in December quarter 2004, to be 4.5% higher over the year. The increase reflects the fact that the direct effects of the major international shocks, which have had an adverse effect on visitor numbers in recent years, have passed for the time being. In the absence of future shocks, the main factor that will influence visitor arrival numbers in the short term is the global economy, which is expected to continue to grow, albeit at a lower rate than experienced in 2004.

The ABS Survey of Tourist Accommodation showed an increase in tourism activity in Queensland for September quarter 2004. The number of guest nights in all establishments in Queensland grew 6.7% over the year to the September quarter, while the rest of Australia recorded an increase of 3.1%.

The stock of guest rooms in Queensland increased only marginally over the year to the September quarter (up 0.8%). Room occupancy rates in Queensland also rose over the year, from 69.3% in September quarter 2003 to 72.6% in September quarter 2004. Queensland’s average room occupancy rate of 65.8% over the year to the September quarter was the highest of any state in Australia.

Inflation

Consumer price inflation, measured by the change in the Consumer Price Index (CPI) for Brisbane, rose 0.8% in December quarter 2004, to be 2.6% higher over the year. This is a slight acceleration from the 2.4% annual inflation rate recorded in the September quarter.

The December quarter CPI result for Brisbane was relatively strong, as solid increase in food prices drove the increase in overall consumer prices during the quarter. Fruit and vegetable prices contributed over a third of the December quarter increase in the overall Brisbane CPI, with housing and transport costs also rising considerably.

Nationally, headline consumer prices also rose by 0.8% in the December quarter, to be 2.6% higher than a year earlier. Underlying or core measures of inflation, which traditionally exclude the more volatile items, are currently recording growth below the headline inflation figure. This reflects the fact that a large amount of the recent rise in consumer prices has occurred in traditionally ‘volatile’ items such as house purchase costs, fruit and vegetables and automotive fuel.

Another feature of the current level of national inflation is the large divergence between traded goods inflation and non-traded goods inflation. For the past two years, traded goods inflation has been muted due to the downward pressure on global manufacturing prices, largely from China. More recently, the strong appreciation of the $A has lowered the price of imported goods. Weak traded goods inflation has been offset by strong non-traded goods inflation, which has been a direct result of robust domestic economic activity, particularly the housing market.

The stabilisation in the value of the $A relative to major trading partners over the past few months, if maintained, will begin to remove the downward pressure on imported inflation. Furthermore, a continued recovery in global economic activity may put upward pressure on globally traded goods prices. Although non-traded goods inflation has begun to moderate recently, several market analysts see the possibility of upward pressure on wages and non-traded goods inflation over 2005.
Wages

Wages in Queensland and nationally recorded solid growth in September quarter 2004, according to the two key labour cost measures produced by the ABS. The Wage Price Index (WPI) is the preferred measure of growth in wages and salaries as it removes the increase in wages due to productivity improvements, giving a clearer indication of growth in actual wage costs. The WPI shows that the total hourly rate (excluding bonuses) in Queensland and nationally increased 1.3% in the September quarter. Over the year, the WPI rose by 4.0% in Queensland and 3.5% nationally.

**Wages growth**
(annual % change, quarterly, original, WPI)
Source: ABS 6345.0

<table>
<thead>
<tr>
<th>Queensland</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td>4.0</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Trend average weekly ordinary time earnings (AWOTE) for full-time adults in Queensland grew 1.4% in the September quarter. As a result of growth of 1.0% or above in each of the six previous quarters, annual growth in AWOTE remained relatively strong, at 5.2% over the year. Nationally, AWOTE grew 0.7% in the September quarter, with annual growth easing from 3.9% in the June quarter to 3.2% in the September quarter.

Queensland’s relatively strong wages growth over the year reflects, in part, labour market tightening, with the trend unemployment rate at its lowest quarterly rate since the inception of the ABS current labour force series. Strong wages growth in the State also reflects ongoing improvements in productivity, with annual growth in the WPI (4.0%) in Queensland remaining below growth in AWOTE (5.2%).

Population

Queensland’s population growth remained steady at 0.5% in June quarter 2004, with the State’s estimated resident population increasing by 18,500 persons to 3,882,000. In annual terms, population growth eased slightly, down 0.1 percentage point to 2.1% or 81,000 persons over the year to June. Queensland has now recorded annual population growth of 2% or above for 12 consecutive quarters, although the rate of growth has eased from a recent peak of 2.5% in March quarter 2003.

In the rest of Australia, population growth also eased in the June quarter, down 0.1 percentage point to 0.2% to total 31,000 persons, while over the year, growth remained steady at 1.0% (157,700 persons). Population growth in the June quarter resulted in Queensland’s share of the national estimated resident population of 20,111,300 persons remaining unchanged at 19.3%.

Population growth in Queensland continues to be driven by net interstate migration, which accounted for almost half (49.4% or 9,140 persons) of total population growth over the quarter. Natural increase (births minus deaths) added 6,980 persons to the Queensland population in the June quarter, which represents the largest quarterly natural increase in the State’s population since March quarter 2000.

In contrast, net overseas migration to Queensland of 2,370 persons in the June quarter was well down on the 5,870 persons recorded in the previous quarter. However, the June quarter is traditionally weak for net overseas migration with a fall also recorded in the rest of Australia, down from 31,800 persons in the March quarter to 11,900 in the June quarter.

Over the year to June quarter 2004, net interstate migration contributed 36,700 persons to Queensland’s population growth, while natural increase and net overseas migration contributed 24,600 persons and 19,700 persons respectively.

Queensland net migration
(persons, four quarter moving total)
Source: ABS 3101.0

<table>
<thead>
<tr>
<th>Interstate</th>
<th>Overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td>70,000</td>
<td>60,000</td>
</tr>
<tr>
<td>60,000</td>
<td>50,000</td>
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<tr>
<td>50,000</td>
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<td>20,000</td>
<td>10,000</td>
</tr>
<tr>
<td>10,000</td>
<td>0</td>
</tr>
</tbody>
</table>

Jun-99 | Jun-00 | Jun-01 | Jun-02 | Jun-03 | Jun-04
QGEMF-T: A dynamic economy-wide model of tourism

Introduction

OESR has recently developed a recursive dynamic computable general equilibrium model for tourism in Queensland (QGEMF-T). This model can be used to analyse policies or economic shocks directly related to tourism. For example, the model could be used to provide industry-specific projections in response to changes in international tourism demand. Alternatively, QGEMF-T can be used to analyse the impact, on tourism, of policies or economic shocks that are seemingly unrelated to tourism.

The purpose of this article is to provide the reader with a brief overview of QGEMF-T. The article describes the advantages of general equilibrium models like QGEMF-T, the key features of the model and the results of a hypothetical policy simulation.

Reliability of estimates

Much of the tourism data used by OESR to produce estimates at the state level are derived from surveys that are designed to produce reliable estimates on a national scale, although these surveys have larger standard errors and reduced reliability at the state and regional level. For this reason a degree of care should be adopted when interpreting the results presented in this article.

CGE modelling

A Computable General Equilibrium (CGE) model is a mathematical representation of an economy. At the core of the model is a set of equations describing the behaviour of various economic agents (for example, industries, households and governments). These behavioural equations determine the response of the various economic agents to changes in key economic variables, the most important being changes in relative prices.

The theoretical structure of a CGE model is typically derived from neoclassical microeconomics. Households maximise economic welfare subject to a budget constraint, and industries minimise costs subject to production functions. The core behavioural equations are supplemented with market clearing equations that equate supply and demand for labour, for capital and in all commodity markets.

QGEMF-T is a recursive dynamic model based on the Monash Multi-Region Forecasting model developed by the Centre of Policy Studies at Monash University (Peter, Horridge, Meagher and Naqvi, 1996; and Adams and Horridge, 2002).

Why use CGE modelling to analyse tourism impacts?

A method commonly used to value the contribution of tourism to an economy is input-output (I-O) modelling. However, as Dwyer, Forsyth & Spurr (2002) explain, I-O models are insufficient for this task:

The model is calibrated to a numerical database, the central core of which is a set of input-output (I-O) accounts. These accounts show, for a given year, the flows of commodities and wages and profits between groups of economic agents.

There are various types of CGE models and one way in which these can be distinguished is according to the treatment of time. A comparative static model, for example, compares the economy at two distinct points in time, without modelling any explicit time periods or time path. Typically, the two positions that are compared are the economy with a given policy change and the economy without the policy change. Consequently, this method of analysis does not provide any details of the economy’s adjustment path between the two points in time.

An alternative category of CGE models, recursive dynamic modelling, deals with time explicitly. These models perform year-to-year simulations with several types of between-year links rather than calculating just a snapshot of the economy before and after the policy implementation. Therefore, these models are able to provide the analyst with information on the adjustment path resulting from a given policy shock.

For some policy simulations, understanding the adjustment path is as important to the analyst as the final outcome. As such, the results obtained from a recursive dynamic model are more informative and detailed than those obtained from a comparative static model.

QGEMF-T is a recursive dynamic model based on the Monash Multi-Region Forecasting model developed by the Centre of Policy Studies at Monash University (Peter, Horridge, Meagher and Naqvi, 1996; and Adams and Horridge, 2002).

1 This article was prepared by Matt Clark, Siobhan Dent and Greg Watts of the Office of Economic and Statistical Research.

2 For more information, see the working paper ‘Development of QGEMF-T - A computable general equilibrium model of tourism’ at www.oesr.qld.gov.au/queensland_by_theme/economic_performance/state_accounts/research_papers/qgemf_t_development.shtml
and on its direct relationships with other parts of the economy. It effectively assumes that there is a free, unrestricted flow of resources to these parts of the economy. The effects which come about because of resource limitations, the workings of the labour and other markets, the interactions between the economy and the rest of the world, are all ignored. As a result, it does not capture the feedback effects, which often work in opposite directions to the initial change. As a consequence, I-O estimates of impacts, on economic activity generally or on specific variables such as employment, are usually overestimates, very often by large margins. Indeed it can even get the direction of the change wrong.

In analysing the impact of tourism on the economy it is important to distinguish between ‘direct’ and ‘indirect’ effects. In the Tourism Satellite Accounts (1997-98), the Australian Bureau of Statistics notes:

The estimates of tourism gross value added and tourism GDP in this publication relate to the direct impact of tourism activity. For an activity to be included as part of tourism, there needs to be a direct relationship (physical and economic) between the visitor and the producer of the good or service. Indirect tourism demand is a broader notion that includes downstream effects of tourism demand and is out of the scope of this study. A full analysis of indirect effects is best done using a general equilibrium model of the economy.

While the I-O table and the related tourism satellite accounts can be used to determine the direct contribution of tourism (OESR, 2001) I-O analysis is inadequate for analysing the (direct and indirect) economy-wide impacts of any specific tourism issue. Therefore, a more rigorous evaluation technique is required that addresses the limitations of the I-O method.

**Key features of QGEMF-T**

QGEMF-T has the capacity to model expenditure relating to eighteen distinct tourism categories. These tourism categories are in part determined by the project’s definition of tourism activity. Resulting from this, the scope of tourism covered in this research project has three important elements:

- visitor sources and destinations;
- the purpose of tourism visit; and
- the length of stay – only expenditure related to overnight visits is explicitly modelled with day-visitor expenditure allocated to expenditure in the non-tourism commodity flows.

The eighteen tourism categories in QGEMF-T arise from:

- domestic travellers and travellers from overseas visiting for three purposes, namely holiday, visiting friends and relatives (VFR) and business;
- three destinations for domestic travellers (intrastate, interstate, and overseas); and
- for domestic travellers, going interstate or overseas, expenditure at the destination is distinguished from local travel-related expenditure.

The response of each of the eighteen categories to economic stimuli varies according to the purpose of travel. For example, holiday expenditure is assumed to be more price-sensitive than VFR and business travel expenditure.

QGEMF-T allows for substitution between destinations. The behavioural rules that govern this substitution vary according to the reason for travel. For household tourism expenditure, changes in relative prices drive destination substitution. For business tourism expenditure, changes in the geographical distribution of the industry’s sales are also taken into account.

QGEMF-T captures both the direct and indirect effects of economic changes, taking into account impacts on both the price and quantity of production.

Further, the model is dynamic, which has several advantages over an earlier static model developed by OESR in that it:

- traces out the time path of economic adjustments occurring in response to the policy change or economic shock;
- facilitates modelling scenarios where the policy changes or economic shocks are spread over several years; and
- provides the information necessary to facilitate a net present value calculation of the economic impact of the policy over the observed period.

**The economic modelling scenario**

In order to demonstrate QGEMF-T’s tourism modelling capabilities, a hypothetical modelling scenario was devised involving regulatory change affecting aviation in Australia. The hypothetical scenario involves the Commonwealth Government mandating an increase in security standards within the air transport industry following the terrorist attacks in the US on 11 September 2001.

As a result of this hypothetical regulatory change, increased security-related costs are assumed to be incurred by the air transport industry, and additional
costs are also assumed to be imposed on all other industries through increased business travelling time.

These issues were modelled as productivity losses in the relevant industries. The scenario is purely hypothetical and the results should not be interpreted as estimates of the economic impacts that resulted from the September 11 terrorist attacks.

**Insights and observations from the results of the modelling scenario**

The results presented below are intended to give the reader an insight into the range of results that QGEMF-T can provide.

QGEMF-T results represent the state of the economy with the policy change relative to the state of the economy without the policy change. More specifically, the model provides projections of the deviation of the economy away from the business as usual situation (referred to as the basecase) in response to the policy change.

**Macroeconomic results**

As expected, the simulated permanent productivity decline leads to a net negative economic impact. At the macroeconomic level, this is reflected in a loss relative to the basecase in:

- overall activity, as measured by gross state product (GSP);
- household consumption expenditure, due to a decline in real household incomes; and
- overseas exports, due to the reduced competitiveness of some exported goods and services.

The direct impact of the productivity losses is to increase output prices in the affected industries. These price increases are the mechanism by which the impacts of the productivity losses are transmitted to the broader economy.

Figure 1 shows that the peak of the negative employment impact occurs in the first year of the simulation, whereas the fall in economic activity, as measured by GSP, peaks in the second year. After year two, both employment and economic activity recover, although only partially so in the case of GSP. This economic adjustment to the initial shock is in part due to additional capital creation in the air transport industry.

The most significant aspect of the longer term adjustment occurs through the labour market. Real wage adjustments allow employment, which is negatively affected in the initial years, to return to business as usual levels by the end of the simulation period.

Figure 2 shows the change in Queensland GSP over the simulation period and tourism’s contribution to this change. It indicates that tourism’s contribution to the decline in GSP is to some extent offset by policy-induced changes in the rest of the economy. This relatively greater impact on tourism is not unexpected since tourism is highly dependent on air transport, which is directly affected by the policy change.

**Figure 2: Tourism’s contribution to change in real GSP**

(cumulative % deviation from basecase)

An interesting feature of Figure 2 is that tourism’s contribution to the decline in GSP increases over time. This result demonstrates the dynamic features of QGEMF-T. It arises because, in QGEMF-T’s basecase, tourism activity is growing slightly faster than GSP. In the policy simulation, tourism is more adversely affected than the overall economy, leading to minor share effects (Dixon and Rimmer, 2002).

In QGEMF-T, household consumption of tourism is determined by household income, the relative price of tourism and the behavioural rules that are assumed to apply to the various tourism categories.

In QGEMF-T, luxury goods such as tourism are assumed to be sensitive to changes in income. As illustrated in Figure 3, real tourism consumption by households is projected to decline considerably more than aggregate real household consumption.

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3 In QGEMF-T, wages are assumed to be inflexible in the short run, yet adjust over time such that the underlying level of employment is unchanged in the long run.
Tourism category results

The relative contributions of the various categories on total tourism activity in Queensland are highlighted in Figure 4. It shows that the most significant contribution to the decline in tourism activity comes from the decline in foreign inbound holiday travel. The second most significant contributor is the decline in interstate holiday travel (i.e. holiday travellers from the rest of Australia). Small increases in intrastate travel help to offset, to some extent, the decline in the remaining tourism categories.

Figure 3: Tourism and aggregate consumption
(cumulative % deviation from basecase)
Source: QGEMF-T simulation

![Figure 3](chart3.png)

<table>
<thead>
<tr>
<th>Year</th>
<th>Real tourism consumption</th>
<th>Real aggregate consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>-0.2</td>
</tr>
<tr>
<td>2</td>
<td>-0.4</td>
<td>-0.6</td>
</tr>
<tr>
<td>3</td>
<td>-0.8</td>
<td>-1.0</td>
</tr>
<tr>
<td>4</td>
<td>-1.2</td>
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</tr>
<tr>
<td>5</td>
<td></td>
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<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tourism category results

In QGEMF-T the household demand for individual tourism categories is largely determined by relative price changes. As illustrated in Figure 5, among the tourism categories,* the price of foreign inbound is projected to increase the most, reflecting its high usage of air transport. As it is assumed that foreign holiday travellers are relatively more price sensitive, the projected demand for this category falls significantly over the simulation period relative to the basecase.

The impact of these price changes on tourism demand also depends on the behavioural assumptions imposed on the various tourism categories. For example, aggregate expenditure by tourists visiting friends and relatives is assumed to be less price sensitive than holiday travel. However, the net impact on VFR travel demand will depend on a combination of its relatively low price sensitivity and the relatively high air transport share in total VFR travel costs.

Figure 4: Contribution of Queensland tourism categories
(cumulative % deviation from basecase)
Source: QGEMF-T simulation

![Figure 4](chart4.png)

<table>
<thead>
<tr>
<th>Year</th>
<th>Inbound holiday</th>
<th>Interstate holiday</th>
<th>Other tourism categories *</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-4.0</td>
<td>-3.0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-3.5</td>
<td>-3.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-3.0</td>
<td>-3.0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-2.5</td>
<td>-3.0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-2.0</td>
<td>-3.0</td>
<td></td>
</tr>
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</table>

Figure 5: Price changes to Queensland tourism categories
(cumulative % deviation from basecase)
Source: QGEMF-T simulation

![Figure 5](chart5.png)

*Air transport price changes have been scaled down by a factor of three in order to highlight the price changes occurring in the selected tourism categories.

In addition to household tourism demand, QGEMF-T also models business travel demand. Each industry is assumed to demand business travel in fixed proportion to output.

As shown in Figure 6, aggregate business travel demand tracks relatively closely to aggregate output (as measured by GSP). The reason why this correlation, between total output and aggregate business travel demand, is less than perfect is because of the interaction of two features of QGEMF-T.

Firstly, each industry has a different share of business travel in its production function. The second aspect is that in this simulation all industries are not equally affected by the policy shocks.

Figure 6: Queensland aggregate business travel demand
(cumulative % deviation from basecase)
Source: QGEMF-T simulation

![Figure 6](chart6.png)

An interesting feature of Figure 6 is that business travel rebounds faster than GSP such that, by the end of the simulation, the ratio of business travel to GSP has increased. This effect arises because those industries that use relatively high shares of business travel are relatively less adversely affected by the policy shocks than other industries.

* Other tourism categories is the sum of the six remaining tourism categories.

---

4 The price of air transport increases the most, but it is an input into the tourism categories, rather than one of them.
Specific industry effects

The effect of the policy shock has a negative impact on several industries, such as air transport and accommodation. However, as shown in Figure 7, some industries, for example services to agriculture and motor vehicles and parts, are projected to be positively impacted by the policy induced shock.

Figure 7: Output for selected industries (cumulative % deviation from basecase)

![Figure 7](image)

The results for these two industries are interesting since they show very different adjustment patterns. Output of the services to agriculture industry is projected to follow a similar pattern to the projected effect on the exchange rate. Wherein, in the case of the motor vehicles and parts industry, it is initially assisted by the exchange rate movements, but it is also positively assisted by the partial recovery in household incomes in the final years of the simulation.

Future research

OESR has undertaken a significant amount of research to produce the tourism data and the dynamic tourism model. While developing QGEMF-T, areas identified for possible future research were:

- analysis of the most appropriate treatment for tourism-related industries that operate nationally rather than conducting region-specific operations, that is, in the sense that their cost structure is only marginally influenced by factors pertinent to one particular state. An example is airlines whose staff and planes are not limited to working within specific state boundaries;
- the impact of changes in the future profile of the terms of trade for tourism; and
- extending QGEMF-F’s business travel theory.

References


5 The exchange rate is shown as $A/$Foreign. An increase in the rate represents a depreciation of the $A such that it lowers the foreign currency price of exports.
## Major economic indicators by state

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</table>

Note: All data are in trend terms unless otherwise indicated. Annual growth rates represent the percentage change between the latest quarter and the same quarter a year earlier. Quarterly growth rates represent growth on the previous quarter.

(a) The Queensland State Accounts are the source of all Queensland data, except state final demand. Remaining data, i.e. for other states, Australia, and state final demand for Queensland, are sourced from ABS 5206.0.

(b) Commonwealth Department of Employment and Workplace Relations.

cvm - chain volume measure
l - level or rate, i.e. not rate of change
o - original
q - quarterly data
v - value
na - not available
Economic indicator charts

Retail trade
(quarterly change, % CVM, trend)
Source: ABS 8501.0

Residential building approvals
(quarterly % change, trend)
Source: ABS 8731.0

Queensland commodity price indices
($A, index base 2001-02 = 100, quarterly)
Source: Queensland Treasury

Red meat production and wool receivals
(annual % change, quarterly, trend, Queensland)
Source: ABS 7215.0

New motor vehicle sales
(quarterly % change, trend)
Source: ABS 9314.0

Private non-residential construction indicators
(annual % change, quarterly, Queensland)
Source: ABS 8731.0, 8752.0 and 8762.0

Coal production
(kt, quarterly)
Source: ABARE, Quarterly Mineral Statistics

Overseas merchandise exports
(annual % change, 12 month rolling sum, Queensland)
Source: ABS 5432.0
Commodity price charts

Note: All charts show quarterly average data.

Sugar prices
(US cents/pound, quarterly)
Source: New York Commodities Exchange

Wheat prices
($US/t, quarterly)
Source: Australian Wheat Board

Export coal price*
($A/t, weighted export price, quarterly, Queensland)
* Recent movements in coal prices may not be accurately reflected, due to lags in receiving coal price data.
Source: Department of Natural Resources and Mines; and Queensland Treasury

Beef prices
(Index base 2001-02 = 100, $US, quarterly)
Source: Livestock and Meat Authority - Weighted Export Price Index

Wool prices
($A/kg, quarterly)
Source: Australian Wool Corporation - Wool Market Indicator

Gold prices
($US/ounce, quarterly)
Source: New York Mercantile Exchange

Nickel and lead prices
($US/t, quarterly)
Source: London Metals Exchange

Aluminium and copper prices
($US/t, quarterly)
Source: London Metals Exchange

Note: All charts show quarterly average data.
**Glossary**

**ABARE**  
Australian Bureau of Agricultural and Resource Economics

**ABS**  
Australian Bureau of Statistics

**annual change, monthly**  
percentage change between one month and the same month a year earlier

**annual change, quarterly**  
percentage change between one quarter and the same quarter a year earlier

**AWE**  
average weekly total earnings for all employees. Includes overtime earnings and part-time workers' earnings, in addition to full-time workers' ordinary time earnings.

**AWOTE**  
average weekly ordinary time earnings for full-time adults. Includes award wages and over award (or ‘drift’) payments.

**chain volume measures (cvm)**  
conversion of prices (by means of an index) in order to abstract from the effects of inflation. Designed to reflect changes in quantity, rather than price, they are often referred to as ‘real’ terms. Chain volume measures are compiled by linking together (compounding) movements in volumes, calculated using the average prices of the previous financial year, and applying the compounded movements to the current price estimates of the reference year.

**CPI**  
Consumer Price Index

**current prices**  
the total value in today's dollars. Movements reflect both quantity and price changes. Often referred to as ‘nominal’ terms.

**DEWR**  
Department of Employment and Workplace Relations (formerly DEWRSB, DEETYA, DEET)

**EMU**  
European Monetary Union – launched on 1 January 1999. Comprises Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain.

**EU**  
European Union – comprises Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom

**GDP**  
Gross Domestic Product – the total value of final output produced in the nation in a given period of time

**GNE**  
Gross National Expenditure – the total value of final household and general government consumption spending, gross private and public investment and change in inventories by the nation in a given period of time

**GSE**  
Gross State Expenditure – the total value of household final consumption spending, gross private investment and government spending in a given period of time

**GSP**  
Gross State Product – the total value of final output produced in the State in a given period of time

**IMF**  
International Monetary Fund

**leading indicators**  
statistics or data which provide an early indication of a likely change in the pattern of economic activity

**moving average**  
average value of a series of data calculated over a set period such that, as new data become available, the earliest dated observation is removed from the calculation of the average and the most recent observation added in its place

**natural increase**  
the excess of births over deaths

**net exports**  
exports minus imports. For Queensland, includes interstate as well as overseas trade.

**net interstate migration**  
the excess of interstate migrant arrivals over departures

**net overseas migration**  
the excess of overseas migrant arrivals over departures

**OECD**  
Organisation for Economic Cooperation and Development

**original data**  
raw or unadjusted survey based data

**seasonally adjusted data (sa)**  
original data are adjusted to remove the effect of identifiable movements due to regular seasonal factors, e.g. Christmas, Easter, etc.

**SDR**  
Special Drawing Rights. Calculated by the International Monetary Fund, based on a weighted average of five key world currencies – the $US, German mark, French franc, Japanese yen and Pound sterling.

**State Final Demand**  
the total value of final household and general government consumption spending, and gross private and public investment, in a given period of time

**tourism**  
interstate (overseas) tourism exports refers to interstate (overseas) residents holidaying in Queensland. Imports are Queensland residents holidaying interstate (overseas).

**trend data**  
seasonally adjusted statistical data are smoothed to reduce the impact of irregular factors and allow analysis of the underlying behaviour of the series over time

**TWI**  
Trade Weighted Index

**year average growth**  
percentage change between the average over one year and the average over the previous year

**yield curve**  
plots market yields against the term to maturity for a range of securities. If the yield on longer-term securities is higher (lower) than short-term securities the yield curve is said to be positively (negatively) sloped
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The Office of Economic and Statistical Research (OESR), a portfolio office of Queensland Treasury, is the principal agency for independent economic, social and demographic information, advice and research for the Queensland Government.

The main office is located in Brisbane, with regional offices in Townsville, Rockhampton and Cairns.

Core business
OESR provides the following services:

- Economic and statistical research – the office advances research agendas in economic, social and demographic issues in partnership with Government agencies and the academic community
- Economic and statistical modelling – OESR conducts a range of economic, social and demographic modelling to improve Government decision making
- Statistical services – the office designs, collects, analyses and disseminates a wide range of accurate and timely information to aid high quality planning, decision making, resource allocation and policy development
- Statistical coordination and information management – the office performs various coordination and information management functions across Government.

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Examples of the products and services produced by the office are:

- Economic and statistical information, econometric and social modelling
- Major surveys on social issues such as crime victimisation, consumer issues, the environment, government services, and community issues and attitudes
- Publications and reports on a range of economic and statistical issues important to the growth and development of the State and its regions
- The Queensland State Accounts and state and regional input-output tables.

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