

11 Petrol pricing: an international perspective

Key points

- Australia's experience with petrol prices is not unique.
- Similar to Australia, retail petrol prices in other countries closely track movements in relevant international benchmark prices and are influenced by movements in their exchange rates against the USD.
- Crude oil prices and taxes account for the majority of the retail price of petrol in other countries:
 - Movements in crude oil prices drive changes in international refined petrol prices and ultimately domestic retail prices, while fuel taxes largely determine different price levels in different countries.
- There is evidence of retail petrol price cycles in some overseas markets in Canada and the US.
- Excluding the impact of taxes, retail petrol prices in a number of countries, including Australia, are broadly similar.
- Including taxes, Australia had the fourth lowest retail prices in the OECD in 2011–12.

11.1 Introduction

The key themes regarding the behaviour and composition of petrol prices in Australia can be described in three main points:

- Retail prices generally reflect international market prices of both crude oil and refined petrol benchmarks. Retail prices are also influenced by changes in the AUD–USD exchange rate.
- The final pump price that consumers pay is largely made up of the international price of refined petrol and taxes.
- In the very short term, retail prices in the large capital cities typically fluctuate in a cyclical pattern, changing frequently over the course of a week.

This chapter considers how this experience compares with other countries around the world.

To provide continuity with the analysis presented in the 2011 ACCC petrol monitoring report this chapter considers how Australia's experience compares with the petrol pricing experience in five other countries:¹³³

- Canada
- United States (US)
- New Zealand
- Germany
- United Kingdom (UK).

¹³³ ACCC, *Monitoring of the Australian petroleum industry*, December 2011, pp. 229–62.

Located across three regions of the world, these five countries provide a useful yardstick for examining Australia's experience with petrol prices.

Similar to Australia, each of these countries are members of the Organisation for Economic Co-operation and Development (OECD) and have petroleum operations in both upstream and downstream sectors.¹³⁴

11.2 Determinants of petrol prices around the world

Over the medium to longer term, Australian retail petrol prices are largely driven by movements in the international benchmark price of refined petrol, which is used to set prices in Australia.

Singapore Mogas 95 Unleaded (Mogas 95) is the refined petrol benchmark product traded in the Singapore market, the largest petrol-trading centre in the Asia-Pacific region, which forms the basis for setting refined regular unleaded petrol prices in Australia. The price of Mogas 95 is affected by demand and supply conditions for refined petrol in the Asia-Pacific region. It is also driven by changes in the price of crude oil.

Chapter 8 highlighted the influence of international market prices as well as movements in the AUD–USD exchange rate in determining the retail price of petrol in Australia.

Just as they do in Australia, international benchmark prices of crude oil and refined petrol also play a major role in determining petrol prices in other countries. Benchmark prices are developed in major trading regions all over the world, including:

- Singapore (Asia)
- New York (North America)
- Rotterdam (Europe).

The markets in which these benchmarks are used are generally located in relatively close proximity to these major trading hubs.

Taxation also plays a significant role in determining the level of petrol prices both in Australia and overseas. As the level of tax applied to the sale of petrol varies from country to country, the overall price level also varies.

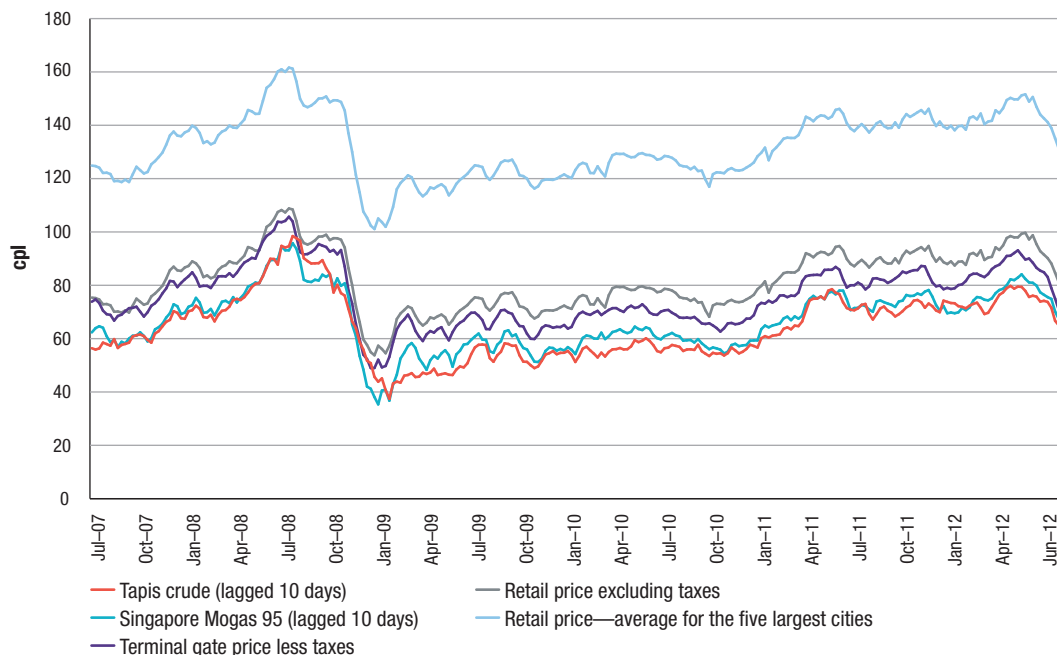
11.2.1 Influence of crude oil and petroleum benchmark prices

Movements in Australian retail regular unleaded petrol (RULP) prices are displayed in chart 11.1. Retail prices are shown alongside wholesale, refined petrol and crude oil prices over the five years to June 2012.

The price of crude oil and refined petrol are key drivers of retail prices, with changes in the price of these base products closely reflected by retail prices.

¹³⁴ Further background regarding the petroleum industry in each of these countries is provided in the 2011 ACCC petrol monitoring report.

Chart 11.1 Weekly movements in crude oil, refined petrol, wholesale and retail prices for RULP in Australia: July 2007 to June 2012



Source: ACCC calculations based on data from Informed Sources, Platts, RBA and information provided by monitored companies

Canada

In Canada retail petrol prices are also affected by similar determinants. Chart 11.2 shows movements in crude oil and refined petrol benchmark prices applicable to the Canadian market as well as wholesale prices and retail prices with and without taxes.

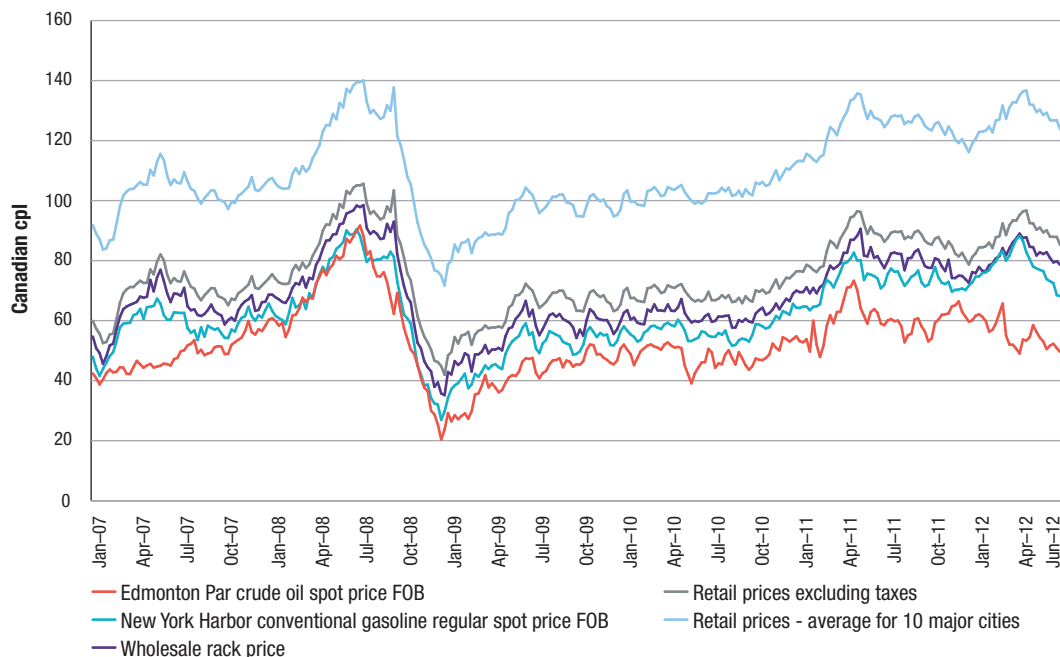
Traditionally, Edmonton Par crude has been the appropriate crude benchmark for a number of locations in the Canadian market.¹³⁵ Recently the price of Edmonton crude has traded at a discount compared with other types of crude. Similar to the recent behaviour of WTI prices, continued pipeline constraints in the US Midwest have meant that Canadian Par crude derived from the tar sands production has also experienced difficulties in finding a market, leading to significant discounting.¹³⁶

However, movements in the local benchmark price of refined petrol, the price of gasoline at New York Harbour, are very closely reflected in both wholesale and retail prices.

¹³⁵ Natural Resources Canada, *Review of issues affecting the price of crude oil*, October 2010, p. 15.

¹³⁶ Natural Resources Canada, *Fuel Focus: Understanding Gasoline Markets in Canada and Economic Drivers Influencing Prices*, Volume 7, Issue 8, 4 May 2012, p. 5.

Chart 11.2 Weekly movements in crude oil, refined product benchmarks, wholesale and retail prices for regular unleaded gasoline in Canada: July 2007 to June 2012



Source: ACCC calculations based on data from US Energy Information Administration (US EIA), Bank of Canada and MJ Ervin & Associates

Note: Retail prices are an average of a weekly observed Tuesday price across 10 major Canadian cities. Wholesale prices reflect a snapshot of wholesale prices at a particular point in time and at specific locations. Full data collection methodology on wholesale and retail prices is available at: <http://kentmarketingservices.com/dnn/PetroleumPriceData/Methodology.aspx>.

United States—California

Movements in retail petrol prices in California also suggest a similar relationship with the relevant international benchmark prices.

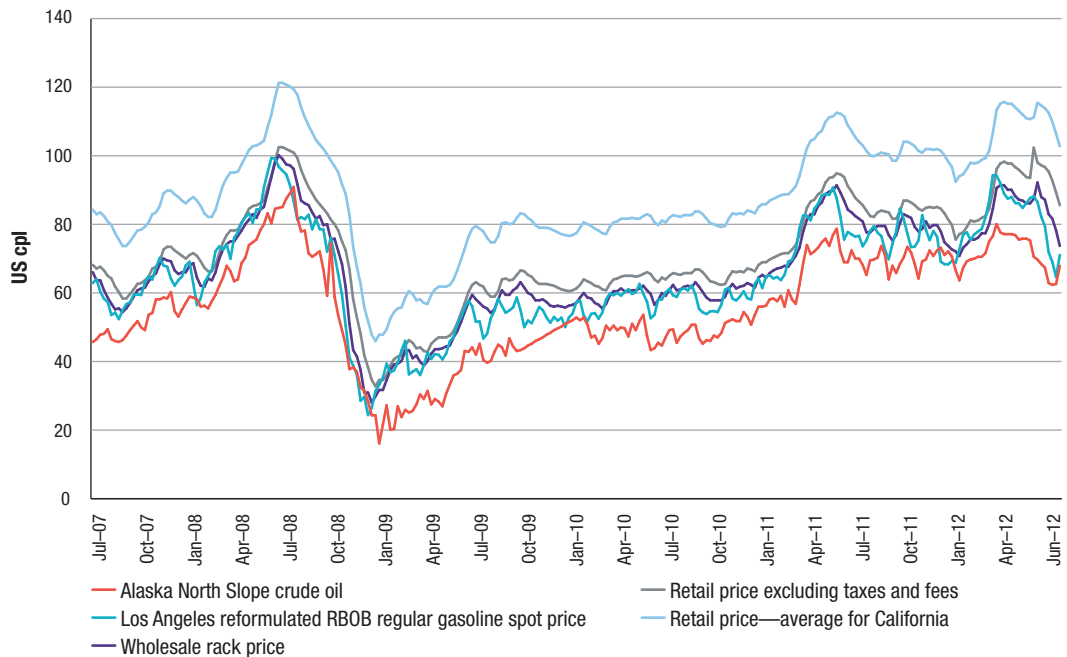
Alaska North Slope crude oil is used as the benchmark for the acquisition cost of composite crude oil for California refineries.¹³⁷ In terms of a refined petrol benchmark, the Los Angeles Reformulated Gasoline Blendstocks for Oxygenate Blending (RBOB) price represents a benchmark price for the base petrol that suits the Californian market.

Chart 11.3 shows the relevant international benchmarks compared with wholesale and retail prices of regular branded petrol across California.¹³⁸

¹³⁷ California Energy Commission, at <http://energyalmanac.ca.gov/gasoline/margins/index.php>

¹³⁸ Gasoline is required to be blended with oxygenates to meet local environmental standards in California.

Chart 11.3 Weekly movements in crude oil, refined product benchmarks, wholesale and retail prices for regular petrol in California: July 2007 to June 2012



Source: ACCC calculations based on data from US EIA and the California Energy Commission

Note: Retail prices are weekly prices collected by the US EIA. Wholesale prices reflect the average of 13 unbranded and 13 branded wholesale prices at various wholesale fuel loading racks around California. This average price is for the same day as US EIA's weekly average gasoline price. Full data collection methodology on wholesale prices is available at: <http://energyalmanac.ca.gov/gasoline/margins/index.php#terms>.

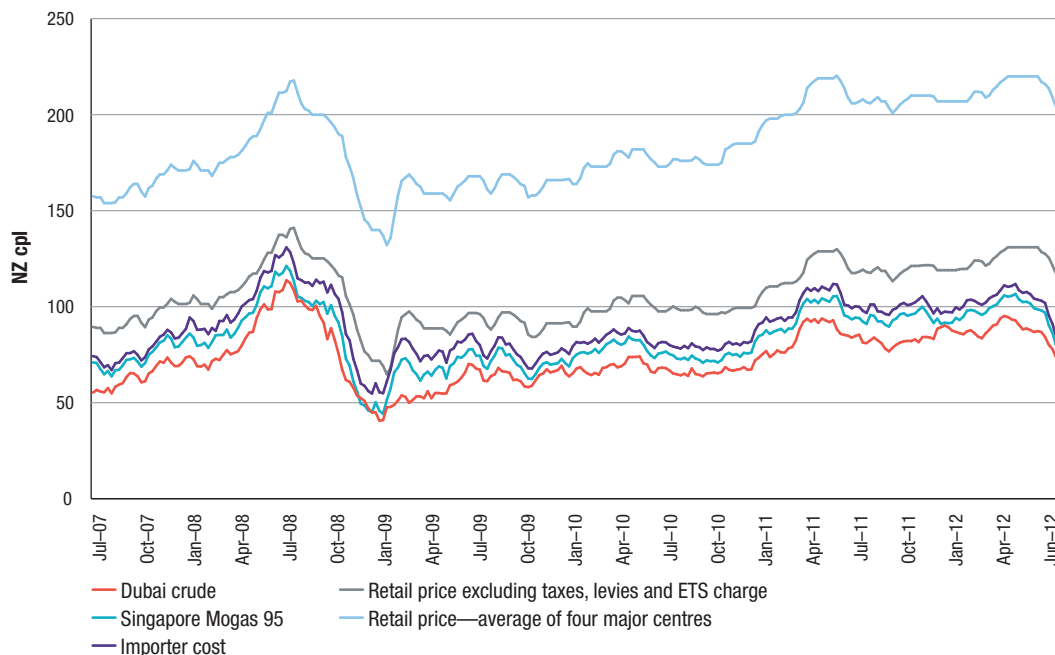
New Zealand

The experience in the geographically closest developed country to Australia, New Zealand, is also very similar to Australia's experience with petrol prices. Chart 11.4 shows the relationship between retail petrol prices and wholesale, refined product and crude oil benchmarks in New Zealand.

As in Australia, the appropriate refined petrol benchmark in New Zealand is Mogas 95. Prices in New Zealand are established with reference to the 'importer cost' which is conceptually similar to the notional import cost or import parity price in Australia.¹³⁹ The importer cost is also based on the price of Mogas 95. Dubai crude is the most relevant crude oil benchmark price in New Zealand as the only refinery in New Zealand is suited to cheaper heavier crude than is the case for Australian refineries.

¹³⁹ Importer cost is based on the Singapore benchmark petrol price plus an estimated quality premium and an assessment of the importation costs of freight, insurance, losses, and wharfage.

Chart 11.4 Weekly movements in crude oil, refined product benchmarks, wholesale and retail prices for regular petrol in New Zealand: July 2007 to June 2012



Source: ACCC calculations based on data from Platts, RBA, and the New Zealand Ministry of Business, Innovation and Employment, see <http://www.med.govt.nz/sectors-industries/energy/liquid-fuel-market/weekly-oil-price-monitoring> (Crown copyright)

Note: Retail prices are based on more than 90 per cent of total petrol transactions across all major centres.

Germany

From a European standpoint, retail petrol prices also closely track relevant international benchmark prices.

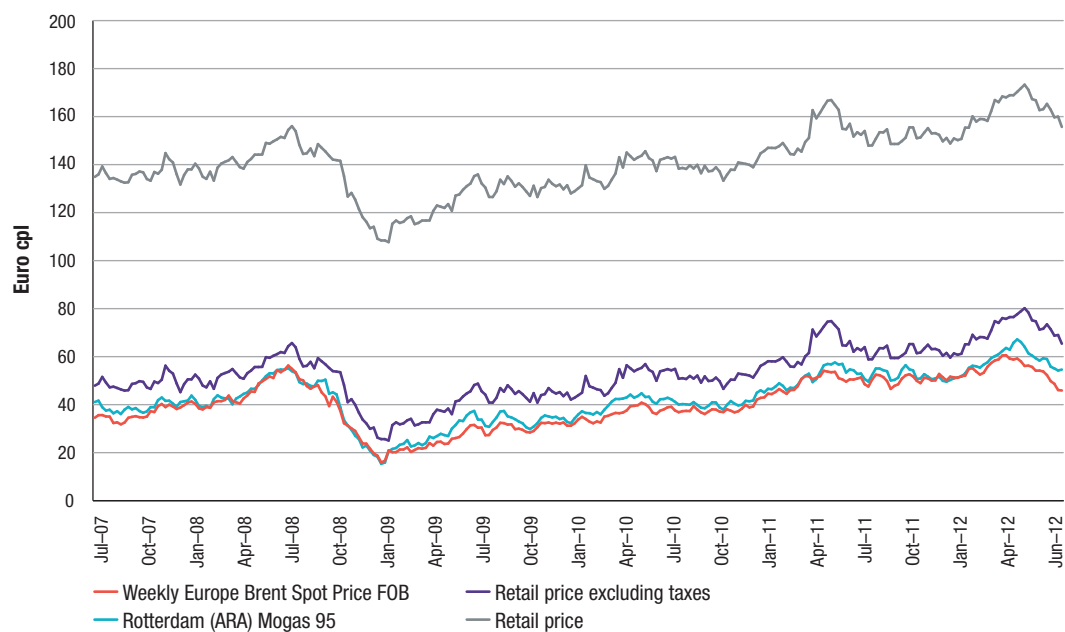
Germany is Europe's biggest motor fuel market.¹⁴⁰ Chart 11.5 shows German retail prices of Euro-Super 95, a 95 RON grade of petrol, as well as crude oil and refined petrol benchmark prices over the five years to June 2012. This particular grade of fuel is a higher standard than Australia's RULP, but is nevertheless one of the most commonly used types of fuel across the European market.

Crude oil and refined petrol benchmark prices applicable to most European countries differ to those affecting the Australian market, but the relationship with retail prices remains very similar. Brent crude oil is the dominant oil benchmark in Europe and the most applicable international benchmark price of refined petrol is the average price of Mogas 95 in the Antwerp/Rotterdam/Amsterdam region.¹⁴¹

¹⁴⁰ Platts, *Oilgram News*, Volume 90, Number 165, 21 August 2012, p. 9.

¹⁴¹ Rotterdam is the largest European port for the import of crude oil. German refining and importing companies base their prices on the relevant benchmark prices in Rotterdam.

Chart 11.5 Weekly movements in crude oil, refined product benchmarks and retail prices for Euro-Super 95 petrol in Germany: July 2007 to June 2012



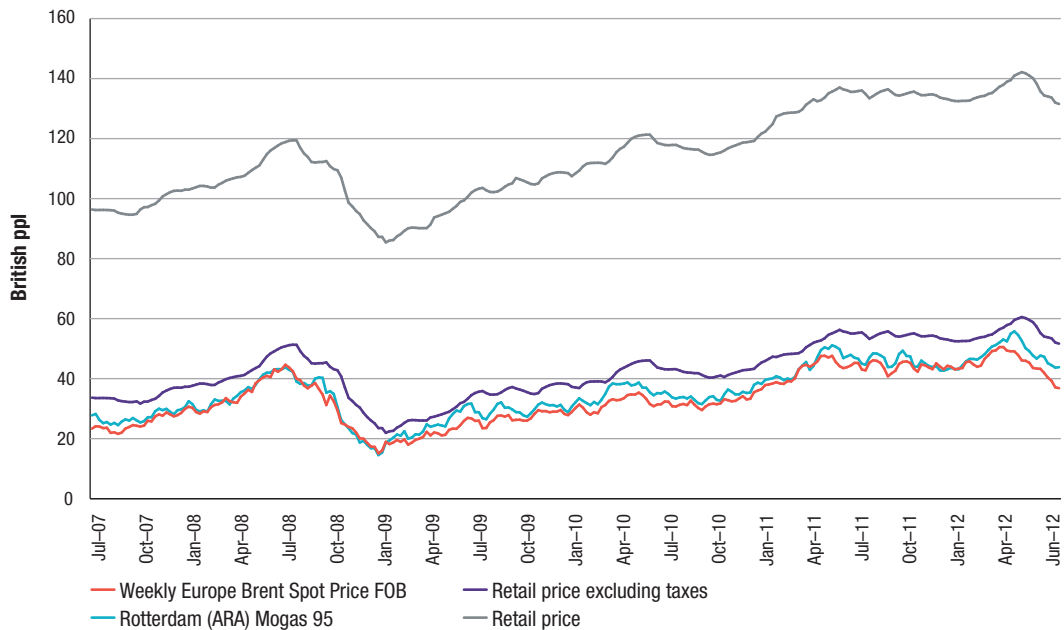
Source: ACCC calculations based on data from US EIA, Bloomberg, US Federal Reserve Bank, European Commission

Note: Retail prices are the average of a weekly observed Monday price. Prices are collected from five oil companies which cover most of the market. A small number of prices represent a calculated average of the preceding and following weeks as prices were not collected in some weeks. Full data collection methodology is available at: http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm.

United Kingdom

Chart 11.6 tracks retail prices of Euro-Super 95 petrol with crude and refined petrol benchmarks in the UK.

Chart 11.6 Weekly movements in crude oil, refined product benchmarks and retail prices for Euro-Super 95 petrol in the UK: July 2007 to June 2012



Source: ACCC calculations based on data from US EIA, Bloomberg, US Federal Reserve Bank, European Commission

Note: Retail prices represent a weekly observed Monday price. Prices are collected from five oil companies and two supermarkets which cover the majority of the market. A small number of prices represent a calculated average of the preceding and following weeks as prices were not collected in some weeks. Full data collection methodology is available at: http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm.

One notable difference between the characteristics of petrol prices in Germany, the UK and many other parts of Europe compared with Australia, is the amount of tax applied to the price of fuel. European countries generally impose higher taxes on fuel, making it relatively more expensive than in Australia.

The components of petrol prices are examined in more detail in the following section, but despite the differences in fuel taxation retail petrol prices in the countries considered in this chapter follow movements in relevant international benchmark prices.

11.2.2 Influence of exchange rate changes on prices

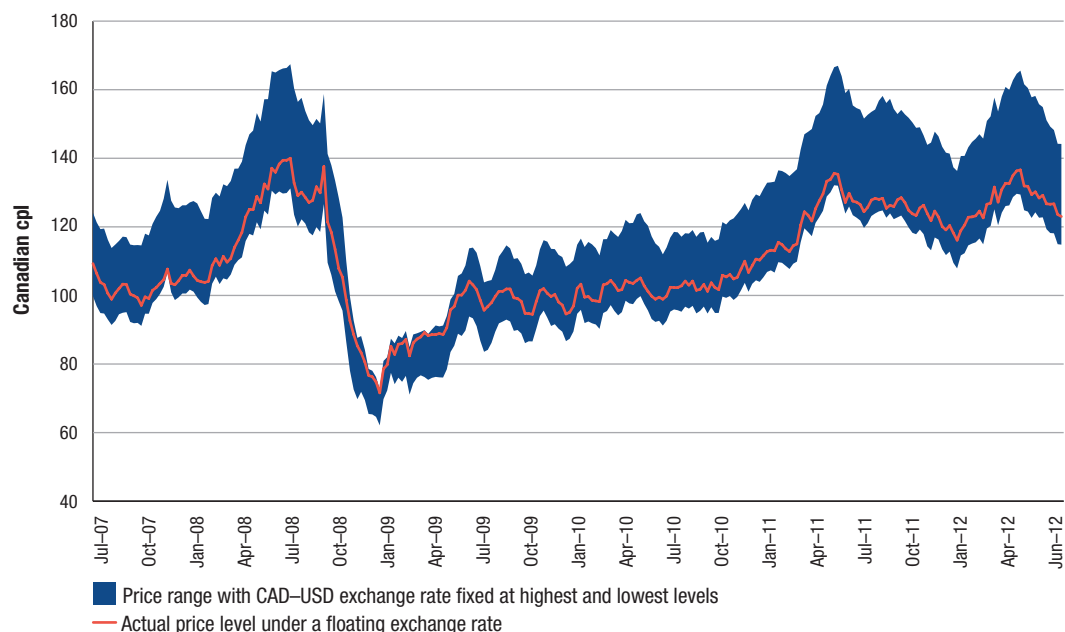
Just as changes in the value of the AUD against the USD has an impact on retail petrol prices in Australia, changes in other exchange rates against the USD have a similar influence on petrol prices in those countries. Since international benchmark prices are largely set in USD, the price of petrol is susceptible to local exchange rate movements against the USD.

Chapter 8 describes the impact of movements in the AUD–USD exchange rate on Australian retail petrol prices. Chart 8.8 illustrates the Australian case over the five years to June 2012, showing what retail prices would have been if the AUD–USD exchange rate was held constant at the highest or lowest daily rate over the last five years, all else being equal. Overall, the relatively high value of the AUD in recent years, reaching almost USD 1.11 in July 2011, has led to lower retail petrol prices in Australia than otherwise may have been the case.

A similar effect is evident in the behaviour of petrol prices in Canada, where a higher value of the Canadian dollar (CAD) against the USD has contributed to lower Canadian petrol prices.

Chart 11.7 shows the actual retail price of petrol in Canada as well as the price had the CAD–USD rate been held constant at the highest or lowest daily rate over the five years to June 2012, all else being equal. During this period the value of the CAD against the USD ranged from a high of about USD 1.08 in November 2007 to USD 0.77 in March 2009.

Chart 11.7 Weekly retail price movements of regular petrol in Canada based on actual and five year minimum and maximum CAD–USD exchange rates: July 2007 to June 2012



Source: ACCC calculations based on data from US EIA, US Federal Reserve Bank, Natural Resources Canada

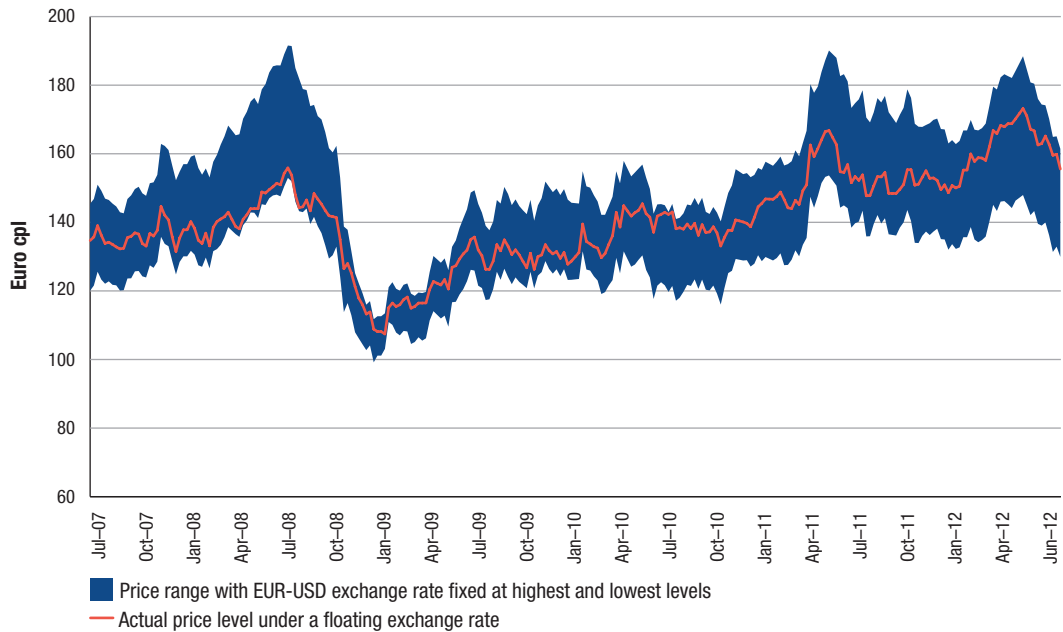
Over the same period, the value of the Euro (EUR) against the USD has ranged from a peak of almost USD 1.60 just prior to the Global Financial Crisis (GFC) in April 2008, to a low of around USD 1.20 in June 2010 and again in June 2012. Chart 11.8 shows actual retail petrol prices in Germany as well as what the price of petrol would have been had the highest or lowest EUR–USD exchange rate been held constant over the five years to June 2012, all else being equal.

In contrast to the Australian and Canadian cases, where in particular the AUD has remained at relatively strong levels against the USD in recent years, the EUR–USD rate has not shown the same pattern. The value of the EUR has on many occasions weakened against the USD, largely through economic uncertainty in the Eurozone, and has as a result had less favourable effects on German petrol prices than the Australian and Canadian currencies have had on their domestic petrol prices.

During 2012, the weaker EUR–USD rate, in conjunction with higher crude oil prices, has put upward pressure on fuel prices across Europe and led to Germany's average petrol pump price reaching an all time high in August 2012, surpassing the previous high seen in April 2012.¹⁴²

¹⁴² Platts, *Oilgram News*, Volume 90, Number 165, 21 August 2012, p. 9.

Chart 11.8 Weekly retail price movements of Euro-Super 95 petrol in Germany based on actual and five-year minimum and maximum EUR–USD exchange rates: July 2007 to June 2012



Source: ACCC calculations based on data from Bloomberg, US Federal Reserve Bank, European Commission

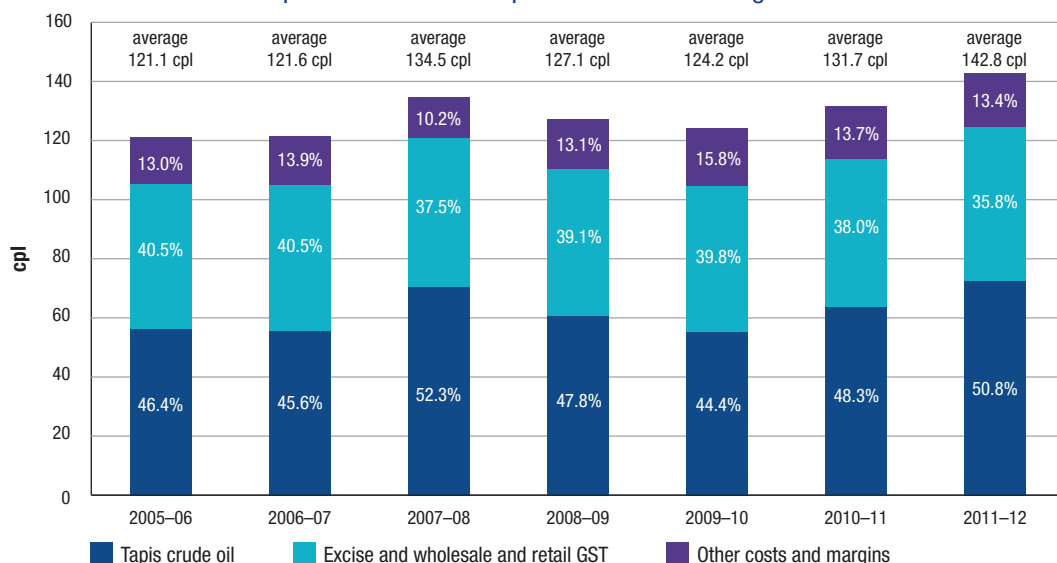
11.3 Components of petrol prices

The composition of Australian petrol prices is covered in detail in chapters 6 and 8. Essentially, the retail price of petrol in Australia is a combination of:

- the cost of crude oil
- taxes
- other costs and margins in the refinery, wholesale and retail sectors.

Chart 11.9 provides the components of annual average Australian retail RULP prices over the seven years to 2011–12. The cost of crude oil represents the largest component, followed by taxes, which together account for the bulk of the price of RULP in Australia. In 2011–12 the average price of RULP was the 142.8 cpl, the highest on record, with the cost of crude oil contributing over 50 per cent.

Chart 11.9 Australian components of retail RULP prices across the five largest cities: 2005–06 to 2011–12

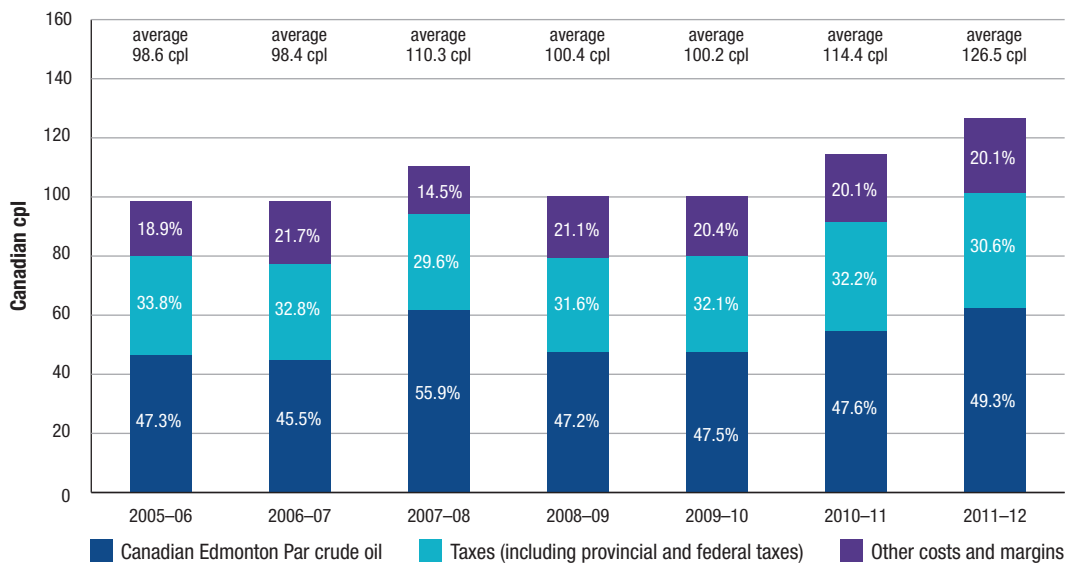


Source: ACCC calculations based on data from Informed Sources, Platts, RBA, WA FuelWatch data and information provided by monitored companies

Note: Annual averages are calculated from daily data.

The cost of crude oil and taxes also appear to make up the majority of the price of petrol in other countries, although their specific contribution varies from country to country. Charts 11.10 and 11.11 show the components of petrol prices in Canada and Germany respectively from 2005–06 to 2011–12.

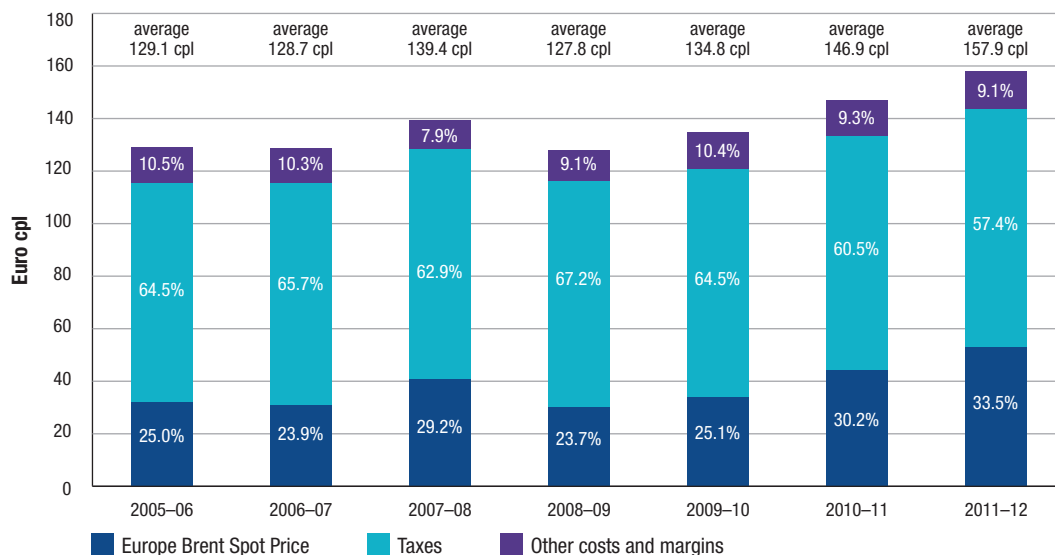
Chart 11.10 Canadian components of retail regular unleaded gasoline prices in 10 major cities: 2005–06 to 2011–12



Source: ACCC calculations based on data from MJ Ervin & Associates

Note: Annual averages are calculated from monthly data.

Chart 11.11 Components of retail Euro-Super 95 petrol prices in Germany: 2005–06 to 2011–12



Source: ACCC calculations based on data from US EIA, US Federal Reserve Bank and the European Commission

Note: Annual averages are calculated from weekly data.

Similar to Australia, the cost of crude oil also represents the largest component of the retail pump price in Canada, while taxes also contribute a significant portion of the final price.

In Germany the final pump price shows a slightly different mix of components. Taxes account for the largest component of retail prices, contributing over 57 per cent of the retail price in 2011–12, reflecting higher fuel taxation regimes throughout most of Europe. Because of the larger tax component in European countries, the cost of crude oil represents a relatively smaller but substantial component of the retail price.

Despite the differences in the level of fuel taxes across Australia, Canada and Germany, a number of features are common across these countries:

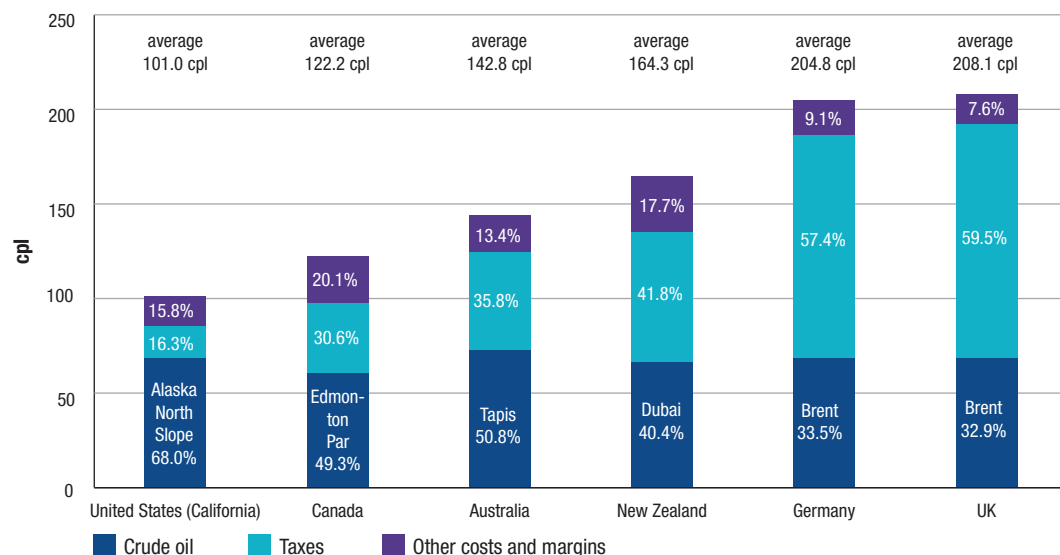
- the cost of crude oil and taxes make up the bulk of the price of petrol
- taxes are relatively stable over time leaving movements in petrol prices largely driven by changes in the cost of crude oil
- in 2011–12 the average price of petrol in each country reached their highest levels.

11.3.1 Petrol price components around the world in 2011–12

Chart 11.12 shows the components of average retail prices for 2011–12 across the six countries considered in this chapter after all prices have been converted to AUD.

While the final retail price of petrol differs in each country, the key driver of these differences is the level of taxation applied to the price of petrol.

Chart 11.12 Components of annual average retail petrol prices in Australia, California, Canada, New Zealand, Germany and the UK on an Australian cpl basis: 2011–12



Source: ACCC calculations based on data from RBA, Informed Sources, Platts, California Energy Commission, MJ Ervin & Associates, US EIA, European Commission, information provided by the monitored companies and the New Zealand Ministry of Business, Innovation and Employment, see <http://www.med.govt.nz/sectors-industries/energy/liquid-fuel-market/weekly-oil-price-monitoring> (Crown copyright)

Note: Fuel types shown in this chart are those described throughout section 11.2.1 and vary from country to country. The basis of weekly retail prices shown varies across countries. Details of retail price data collection methodologies can be found in notes to charts 11.1 to 11.6.

As a variety of crude oil benchmarks are adopted in different parts of the world, the exact crude component applicable to local retail markets also differ. In Australia, the crude component is based on Tapis crude oil, which trades at a small premium to many other types of crude due to its light and sweet properties. Other heavier crudes such as Dubai and Edmonton Par generally trade at a slight discount.

Nevertheless, even when adjusting for exchange rate movements and converting foreign prices to AUD, the size of the crude oil component is largely similar across these countries.

11.4 Petrol price cycles: overseas evidence

The regular petrol price cycles evident in the five largest capital cities, as well as a small number of regional locations across Australia, have a significant impact on day-to-day prices. Chapter 10 discusses Australia's experience with petrol price cycles in detail, showing that retail petrol prices can cycle by 15 cpl or more over the course of a week.

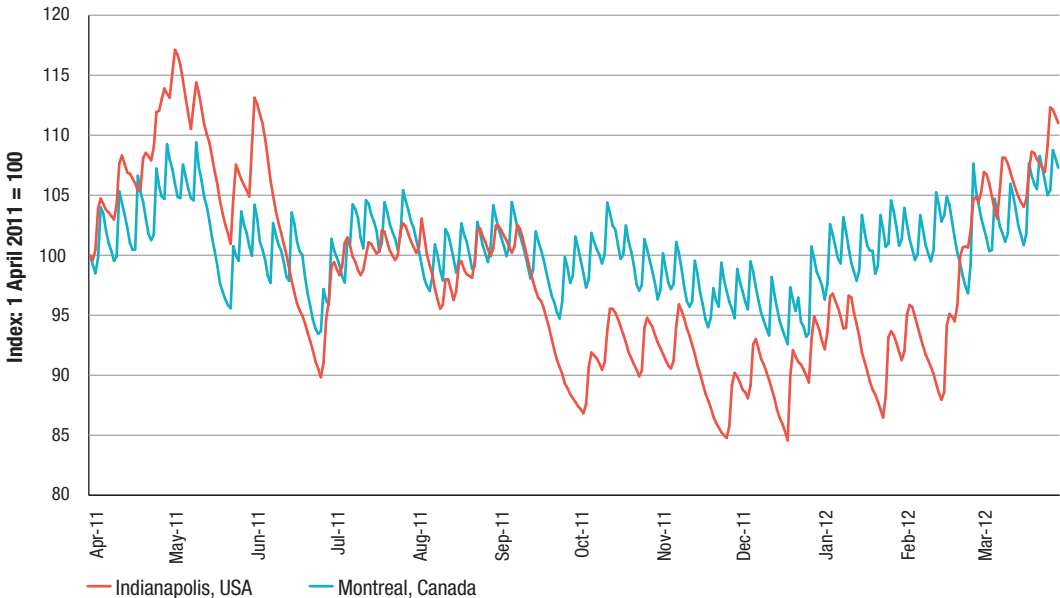
Evidence from overseas indicates that these short-term cyclical movements in petrol prices are not limited to Australian markets.

The 2011 ACCC petrol monitoring report noted similar, but not identical, cyclical petrol price movements in a number of German cities where fuel prices regularly moved up and down a number of times within a week.¹⁴³ A number of studies have also identified petrol price cycles in other countries, including in the US, Canada and Norway.

¹⁴³ ACCC, *Monitoring of the Australian petroleum industry*, December 2011, pp. 247–8.

Chart 11.13 shows an index of price movements of regular grade petrol in two cities in North America: Indianapolis in the US Midwest and Montreal in Canada. The chart covers a 12-month period to the end of March 2012 where prices move in the familiar sawtooth pattern associated with price cycles, although not at the same frequency.

**Chart 11.13 Index of daily average prices of regular grade petrol in Indianapolis and Montreal:
1 April 2011 to 31 March 2012**

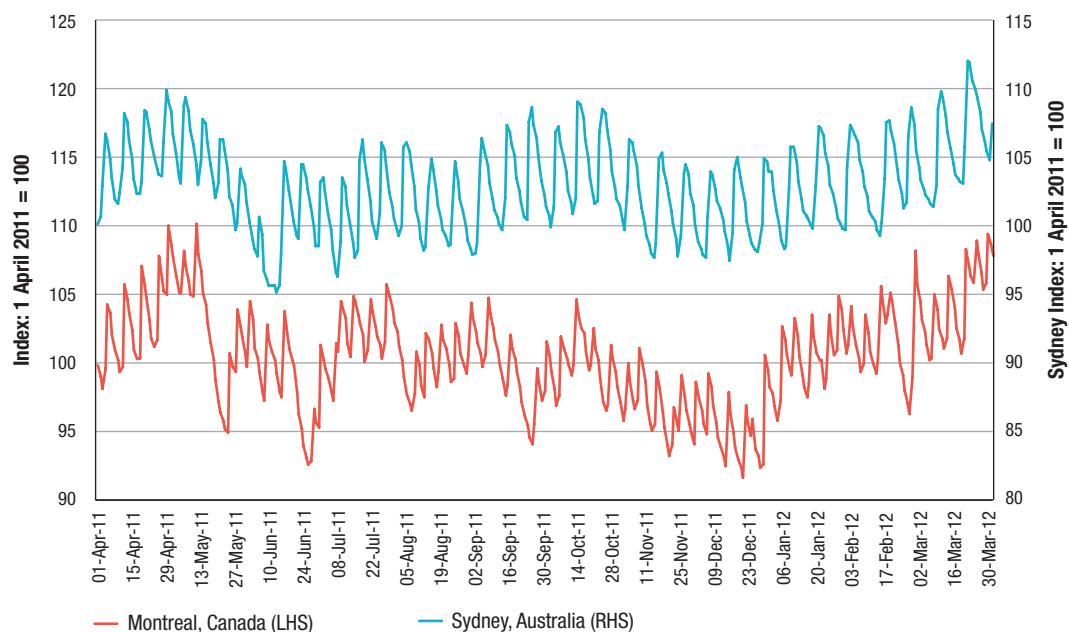


Source: Oil Price Information Service (OPIS)

In Indianapolis, price changes appear to be less regular, but more pronounced. This may result from lower fuel taxes applied in the US, with retail petrol prices therefore reflecting volatility in crude oil and petroleum benchmark prices to a greater extent.

Price movements in Montreal appear to be more regular and bear a closer resemblance to those in the large Australian cities. Chart 11.14 compares changes in daily average retail prices in Montreal and Sydney over the same period.

Chart 11.14 Index of daily average prices of regular grade petrol in Montreal and Sydney:
1 April 2011 to 31 March 2012



Source: OPIS and Informed Sources

While day-to-day petrol price movements and cycling behaviour seen in Montreal shows a similarity with that observed in Sydney, the extent of price movements differs. The Sydney price cycles appear, on average, to be more regular and exhibit larger amplitudes compared with those in Montreal.

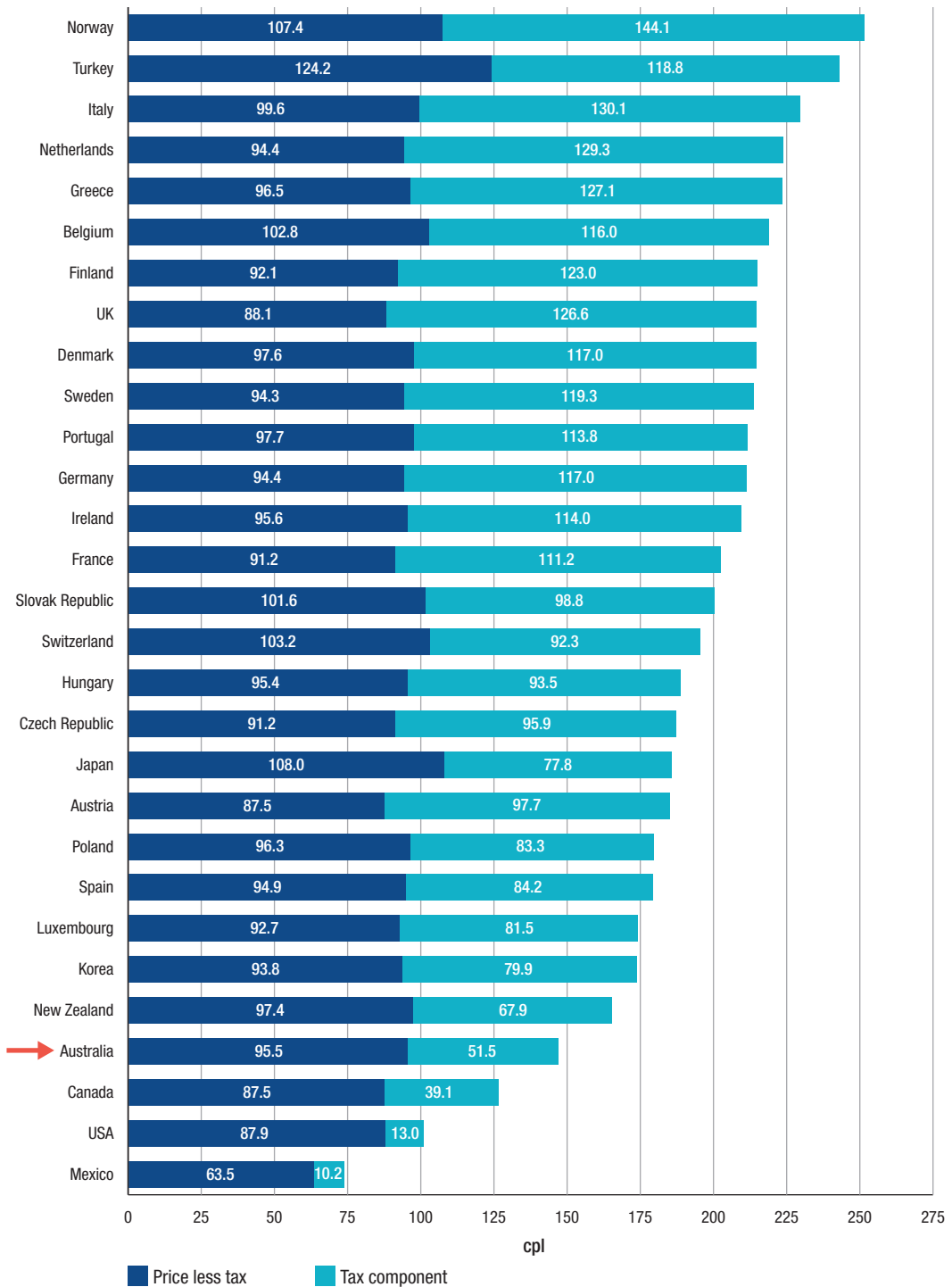
11.5 Australian petrol prices compared to other countries

The Bureau of Resources and Energy Economics (BREE) publishes a ranking of Australia's petrol, diesel and LPG prices relative to prices of other countries in the OECD. Chart 11.15 shows the retail price of petrol among countries in the OECD both including and excluding the tax component.

The chart shows that Australia has the fourth lowest petrol prices in the OECD.¹⁴⁴

¹⁴⁴ Care must be taken when making international comparisons as fuel quality standards (for example, octane rating and the content of MTBE and sulphur) for the most commonly used form of petrol in each market may differ between countries.

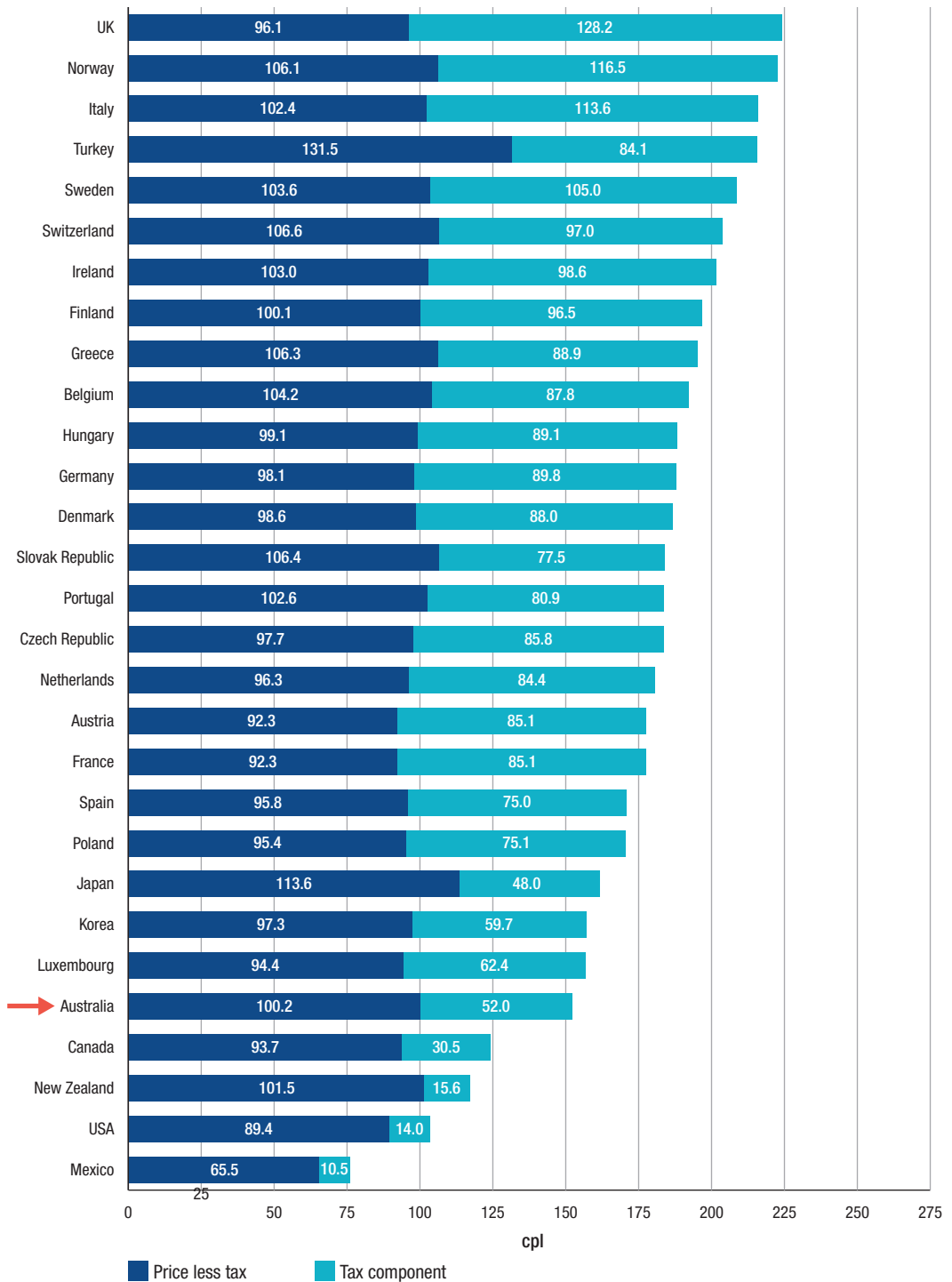
Chart 11.15 Petrol prices and taxes in OECD countries: June quarter 2012



Source: BREE, *Australian Petroleum Statistics*, issue no.194, September 2012

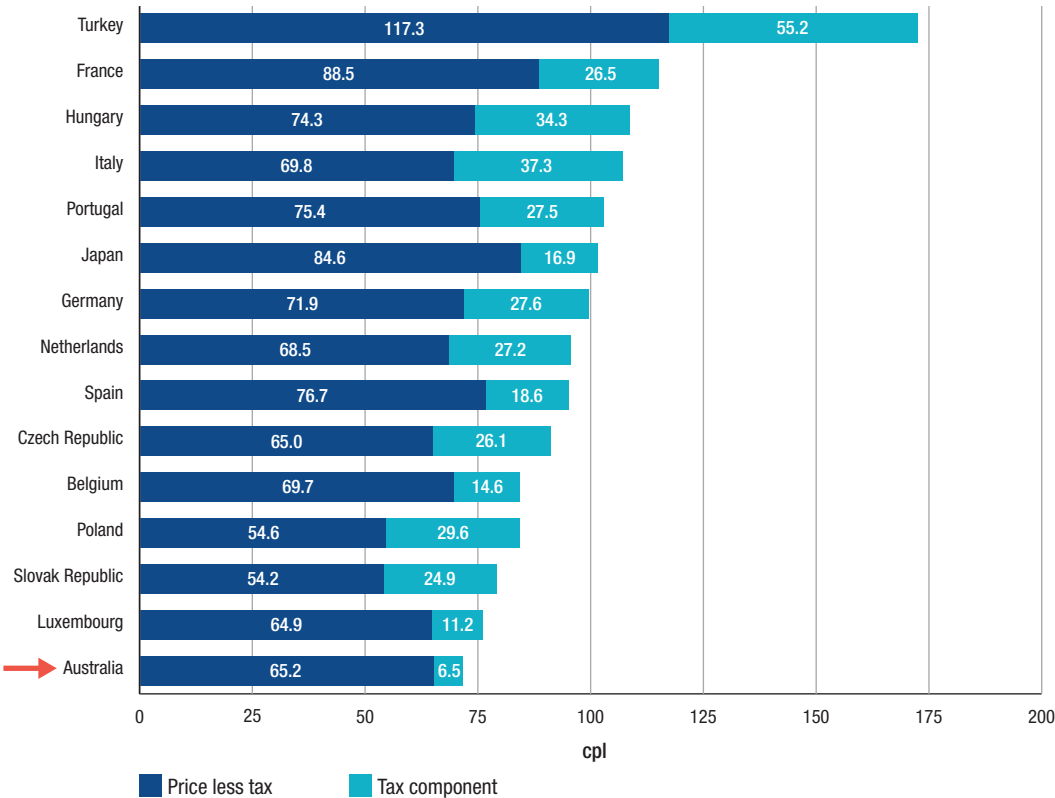
Similarly, the price of diesel and LPG in Australia also compares well with other OECD countries. Charts 11.16 and 11.17 shows that Australian retail diesel prices are the fifth lowest in the OECD while LPG prices are the lowest in the OECD.

Chart 11.16 Diesel prices and taxes in OECD countries: June quarter 2012



Source: BREE, *Australian Petroleum Statistics*, issue no. 194, September 2012

Chart 11.17 LPG prices and taxes in OECD countries: June quarter 2011



Source: BREE, *Australian Petroleum Statistics*, issue no. 194, September 2012

11.6 Conclusions

Australia's experience in petrol pricing is in many respects not unique. A number of fundamental elements of the Australian petrol pricing experience are also seen in Canada, the US, New Zealand, Germany and the UK:

- Retail petrol prices appear to be driven by and track movements in relevant international crude oil and petroleum benchmark prices.
- Changes in the exchange rate of local currencies against the USD appear to have an effect on retail prices. While this has continued to benefit Australian motorists in 2011–12, exchange rate influences do not appear to have been uniform across all the countries considered in this chapter.
- The price of crude oil and taxes make up the majority of the final retail petrol price.

Price cycles and other day-to-day movements in retail petrol prices are also evident in a small number of overseas markets. Evidence suggests that there are forms of price cycles in some Canadian and US cities as well as in Germany, although Australian price cycles appear to be more regular and have a larger amplitude.

Taxes on fuel prices largely differentiate the level of retail petrol prices in countries highlighted in this analysis, while movements in crude oil and petroleum benchmark prices are key drivers of weekly, monthly and annual changes in retail prices.

While the behaviour and composition of petrol prices in Australia is similar to countries considered in this chapter, in 2011–12 Australia had the fourth lowest retail petrol prices, the fifth lowest diesel prices, and the lowest LPG prices in the OECD, principally due to lower taxation on fuel.

