

12 Petrol pricing: an international perspective

Key points

- Australia's experience with petrol prices is not unique.
- A number of major petroleum markets around the world exhibit many of the characteristics of retail price behaviour seen in Australia. In particular:
 - Retail petrol prices closely track movements in relevant international benchmark prices.
 - Exchange rates affect retail petrol prices.
 - Crude oil prices and taxes account for the majority of the retail price of petrol.
- In at least one other country, there is also evidence of retail petrol prices moving in consistent patterns over the course of the week.
- Excluding the impact of taxes, retail petrol prices in a number of countries, including Australia, are similar.
- Including taxes, Australia had the fourth lowest retail prices in the OECD in 2010–11.

12.1 Introduction

Over the last few years the ACCC's analysis of the Australian downstream petroleum industry has shown that Australia's experience with retail petrol prices is characterised by a number of key features.

First, the major determinants of changes in Australian retail petrol prices have been global factors including changes in the refined petrol benchmark price (Singapore Mogas 95 Unleaded or, simply Mogas 95), which is largely driven by the international price of crude oil. Movements in the exchange rate of the AUD against the USD also influence retail petrol prices.

Short-term movements observed in the weekly price cycle in the largest capital cities also affect day-to-day retail petrol prices.²¹⁹

In addition, taxes are a key component of petrol prices in Australia.

While these features of petrol prices in Australia have long been recognised it is pertinent to examine the experience of other countries around the world to give international context to Australia's experience.

This chapter considers the determinants, components and behaviour of petrol prices in selected countries around the world and how they compare with Australian petrol prices.

219 ACCC, *Monitoring of the Australian petroleum industry*, December 2010, p. xix.

In doing so, the chapter focuses on petrol prices in a number of countries which provide a reasonable comparison. These include:

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

The chapter also shows how Australian petrol prices rank among other major economies around the world and finally looks at the general level of petrol prices and prices of other goods, both in Australia and overseas.

12.2 Petroleum markets around the world

Petrol prices in most countries are typically established with reference to the relevant refined petrol benchmark price in their respective regions.

Just as retail petrol prices in Australia are influenced by international benchmark prices of crude oil and refined petrol, petrol prices in other countries are also influenced by similar international benchmark prices.

Platts, a provider of benchmark prices and assessments of commodity markets, publish crude oil and refined petrol benchmark prices in all major trading regions. For refined petrol, Platts establishes benchmark prices in New York (North America), Singapore (Asia) and Rotterdam (Europe).

These prices are established using a Market On Close (MOC) assessment methodology which is applied consistently across regions.²²⁰ The refined petrol benchmark for Australia is based on traded product in the Singapore market, the largest petrol-trading centre in the Asia-Pacific region.

As benchmark prices across regions are quoted in USD, retail petrol prices in different countries are also influenced by changes in the value of their currency relative to the USD. The levels of petrol prices are also influenced by taxes. Most countries apply a tax to the sale of petrol and this varies from country to country.

In this chapter, petrol prices in Canada, the US, New Zealand, Germany and the UK are considered in detail for comparative purposes (figure 12.1).

²²⁰ The MOC process means that Platts publish prices calculated from actual transactions of physical and paper swap trades to reflect a market price paid by the market participants for a particular product.

Figure 12.1 Countries included in the comparative analysis of international petrol prices



These countries are located across three major regions of the world: North America, Europe and Asia-Pacific. All countries are members of the Organisation for Economic Co-operation and Development (OECD) and, similar to Australia, the petroleum industries in each of these countries have operations in both the upstream and downstream sectors.

The rest of this section provides an overview of the petroleum industries in these countries including the sources of petroleum products and their similarities with Australia.

Canada

Canada's geographic size, gross domestic product and low population density are comparable to Australia.

However, unlike Australia, Canada is a growing net exporter of crude oil, exporting significant volumes of heavier crude to refineries in the US. Canada's oil reserves are considered to be among the largest in the world.²²¹ The majority of Canada's oil reserves, around 97 per cent, are non-conventional oil sands reserves which typically require far more processing and are less economic to extract and process than conventional reserves.²²² Canada is also a net exporter of petroleum products (see sections 5.4.2 and 5.4.3 in chapter 5).

221 International Energy Agency, *Oil and gas security emergency response of IEA countries: Canada*, 2010, p. 5. © OECD/IEA International Energy Agency.

222 Natural Resources Canada, *Canadian crude oil, natural gas and petroleum products: review of 2009 and outlook to 2030*, May 2011, p. 8.

Some features of the Canadian downstream petroleum industry can be likened with elements of the Australian industry:

- Petroleum products are generally imported, exported and transferred around four regional areas in Canada (Western Canada, Quebec, Ontario and Eastern Canada), similar to the largely state based markets in Australia.
- Canadian refiners enter into product exchange agreements with one another to access petrol in different regions, similar to arrangements previously in place in Australia.²²³
- The number of refineries operating in Canada has decreased from around 40 in the 1970s to 18 in 2010.
- The Canadian retail market consists of both refiner-marketer operated retail sites as well as independently operated sites. The number of retail sites in Canada has fallen from about 20 000 in 1989 to around 12 710 in 2010 (a fall of around 38 per cent).²²⁴
- At the end of 2010 around 74 per cent of retail sites operating in Canada were under the price control of individual outlet proprietors or non-refiner marketers, with 26 per cent of sites under the price control of the refiner-marketing companies.²²⁵
- Supermarket chains also operate in the retail petrol market, and are known for their high-volume, low-margin strategies.
- According to the US Federal Trade Commission (US FTC) there is evidence of petrol price cycles occurring in some parts of Canada.²²⁶

California (US)

While the state of California is one of many that make up the US, California is a significant economy in itself. It is rich in energy resources and is one of the largest producers of crude oil in the US.²²⁷

Refineries in California are mostly located in the San Francisco Bay area, the Los Angeles area and in the Central Valley. At the beginning of 2011 there were 20 oil refineries in California operated by 14 companies.²²⁸ Along with crude that is sourced locally, Californian refiners also process significant volumes of Alaskan and foreign crude oil including from the Middle East and South America.

Since 1996, environment regulations have meant that Californian motorists have been required to use cleaner fuels, including reformulated petrol and low-sulphur diesel. Californian refineries are capable of producing petrol to the appropriate clean fuel standards, and are usually utilised at, or very close to, their maximum capacity.²²⁹

223 Natural Resources Canada, *Overview of the Canadian downstream petroleum industry*, July 2005, p. 13.

224 MJ Ervin, *National retail petroleum site census 2010*, 30 April 2011, p. 5.

225 MJ Ervin, *National retail petroleum site census 2010*, 30 April 2011, p. iii.

226 US Federal Trade Commission, *Gasoline price changes and the petroleum industry: an update*, September 2011, at <http://www.ftc.gov/os/2011/09/110901gasolinepricereport.pdf>, accessed 30 November 2011.

227 US Energy Information Administration, October 2009, at <http://www.eia.gov/state/state-energy-profiles-analysis.cfm?sid=CA>, accessed 30 November 2011.

228 US Energy Information Administration, *2011 Refinery capacity report*, 24 June 2011, pp. 1–10.

229 US Energy Information Administration, October 2009, at <http://www.eia.gov/state/state-energy-profiles-analysis.cfm?sid=CA>, accessed 30 November 2011.

In terms of the retail market, there were approximately 10 200 retail sites supplying gasoline in California in July 2008.²³⁰ Similar to the Australian market, as well as many other markets around the world, the Californian retail market comprises a variety of retailers:

- Branded retail sites sell a specific company's brand of fuel such as Chevron, Shell or Arco. These sites can have varying owner/operator arrangements.
- Independent retail sites not affiliated with a well-known brand name but which are nevertheless supplied from the same refineries as the branded outlets.²³¹

The US FTC has reported that in some cities in the US, primarily in the Midwest, retail prices move in regular patterns or cycles.²³²

New Zealand

New Zealand is geographically the closest developed country to Australia. It can also be regarded historically as well as culturally as the country most like Australia in the Asia-Pacific region.

New Zealand has reserves of relatively light and sweet indigenous crude. The one refinery operating in New Zealand, however, is more suited to heavier types of crude. As a result the indigenous crude is largely exported, mostly to Australia, and heavier crude is imported from the Middle East and other parts of the world.²³³

The refinery is owned by New Zealand Refining Company (NZRC). BP, Chevron, ExxonMobil and Greenstone Energy are significant shareholders and customers of the refinery.²³⁴ Shell previously operated in the downstream industry before confirming the sale of its downstream business in March 2010.

Similarities between the New Zealand and the Australian downstream petroleum industries include:

- Although there is only one refinery in New Zealand, there are effectively four refiner-marketing companies operating at the refining, wholesale and retail level.
- Gull Petroleum, a major wholesaler-retailer in Western Australia, operates in the wholesale market and imports petrol directly into New Zealand.²³⁵
- In 2008 there were about 1265 retail sites in New Zealand with the share of retail sites split between refiner-marketers, independent operators and supermarkets.²³⁶
- Similar to the trend in Australia, there has been an ongoing downward trend in the number of retail sites in New Zealand.

230 The terms 'gasoline' and 'petrol' are used interchangeably throughout this chapter.

231 Californian Energy Commission, *Oil to car*, July 2008, p. 10.

232 US Federal Trade Commission, *Gasoline price changes and the petroleum industry: an update*, September 2011, at <http://www.ftc.gov/os/2011/09/110901gasolinepricereport.pdf>, accessed 30 November 2011.

233 Hale and Twomey, *2007 ACCC report into Australian petrol prices: review of applicability to the New Zealand petrol market*, July 2008, p. 13.

234 New Zealand Refining Company Limited, *NZRC Annual report 2010*, p. 10.

235 Greenstone Energy website: <http://z.co.nz/about-z/getting-z-products-to-you/>, accessed 30 November 2011.

236 Hale and Twomey, *2007 ACCC report into Australian petrol prices: review of applicability to the New Zealand petrol market*, July 2008, p. 19.

Germany

Germany's fuel requirements, including both gasoline and diesel fuel, are largely met by domestic refinery production using imported crude oil. Most of the crude oil is imported from Russia and Norway as well as a variety of other sources. Crude oil supplies are mainly imported by pipelines connected to Germany as well as through sea vessels. Imported petroleum products make up a smaller proportion of fuel requirements.²³⁷

In 2008, there were 14 refineries in Germany. The majority of the refineries are operated by the five vertically integrated companies, with a small number operated by independent companies.²³⁸ Refineries are located throughout the country.

Some features of the German downstream petroleum industry show certain similarities with the Australian industry:

- Five vertically integrated companies have significant operations in all levels of the German downstream petroleum industry.
- Some, but not all, companies have arrangements in place whereby they exchange products with one another from a refinery or storage facility, similar to the arrangements that previously existed in Australia.
- In addition to the five vertically integrated companies, the retail sector includes specialist retail operators. While a small number of operators are associated with international integrated petrol companies, a large number of independent small enterprises also operate at the retail level.²³⁹
- The German authority responsible for overseeing competition, the Bundeskartellamt, has reported in its recent fuel sector inquiry that cyclical fuel price movements occur over the course of a week in parts of Germany.²⁴⁰

United Kingdom

The UK has significant crude oil reserves, mostly in the North Sea, and in 2010 was regarded as having the largest reserves in the European Union (EU).²⁴¹ UK North Sea oil, however, is steadily declining.

The UK's refining industry is relatively large and produces more refined products than it consumes. However, recently product demand has not matched refinery production leaving excess gasoline and fuel oil (which are exported) and insufficient gas oil and jet fuel (which are imported).

At the end of 2010, there were eight major refineries located around the coast of the UK with a range of pipelines and terminal infrastructure linking the refineries to supply chains further downstream. Products are distributed to around 60 major terminals, some of which can also directly import products.

²³⁷ Bundeskartellamt, *Fuel sector inquiry: interim report*, June 2009, p. 10.

²³⁸ The five fully integrated companies are BP/Aral, ConocoPhillips/Jet, ExxonMobil/Esso, Shell and Total.

²³⁹ Bundeskartellamt, *Fuel sector inquiry: interim report*, June 2009, p. 14.

²⁴⁰ Bundeskartellamt, *Fuel sector inquiry: final report summary*, May 2011, p. 21, at http://www.bundeskartellamt.de/wEnglisch/Publications/sector_inquiriesW3DnavidW2651.php, accessed 30 November 2011.

²⁴¹ US Energy Information Administration, Country analysis brief: United Kingdom, September 2010, p. 2.

Some features of the UK downstream petroleum industry are also common to elements of the Australian industry:

- Exchange arrangements are common where a company does not have access to its own supplies in a particular location.²⁴²
- Oil majors account for around 25 per cent of retail sites while independents and supermarkets account for around 60 and 15 per cent respectively.
- There has been a long-term decline in the number of retail sites in the UK decreasing from over 37 500 in 1970 to 8787 at the end of 2010.²⁴³
- There has also been a change in the structure of the retail sector in the UK with a significant increase in supermarket sites and some oil majors recently exiting the retail market.

12.3 Determinants of petrol prices in other countries

Results of ACCC analysis of retail pricing data (presented in chapter 9) has shown that the major determinants and drivers of the retail price of petrol in Australia are:

- the international benchmark price of refined petrol in Australia (Mogas 95), which is largely driven by the price of crude oil
- taxes (including excise and GST)
- the AUD–USD exchange rate
- short-term movements in the day-to-day retail price of petrol, largely as a result of the weekly price cycles that operate in the largest capital cities.

This section looks at the extent to which similar factors influence the retail price of petrol in other parts of the world and compares this with the experience of petrol prices in Australia.

12.3.1 Influence of international factors

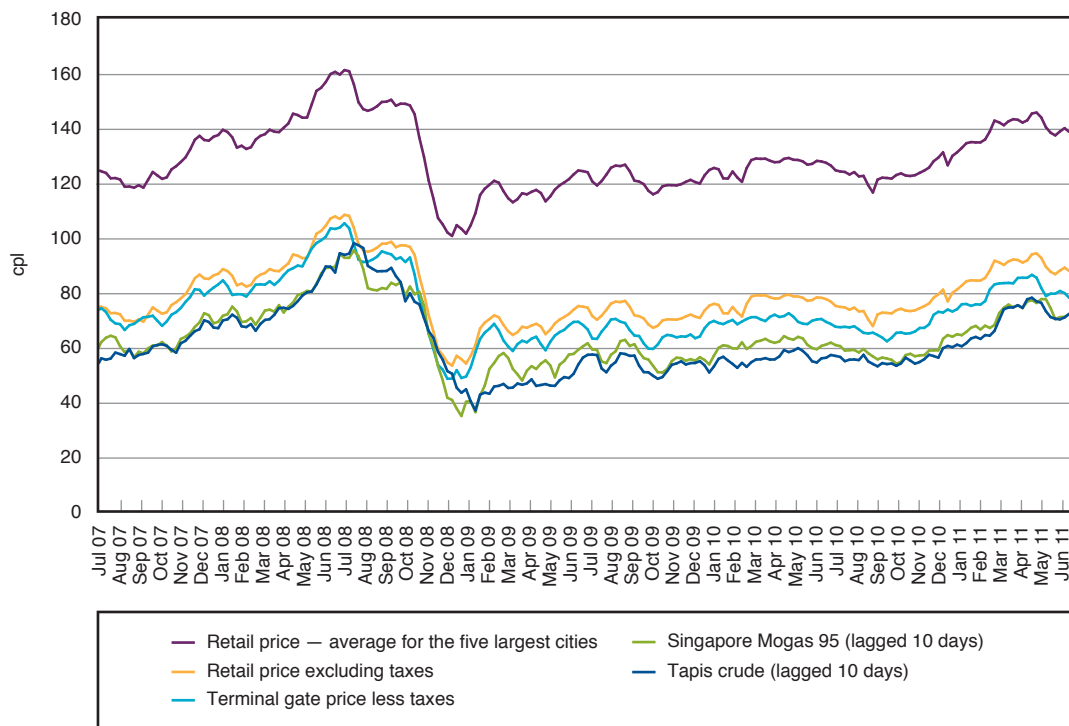
The influence of international benchmark prices on retail petrol prices in Australia has been discussed in detail in chapter 9.

Chart 12.1 shows the close relationship between weekly average retail prices of regular unleaded petrol (RULP) in Australia's five largest cities and average wholesale, refined petrol and crude oil benchmark prices in the four years to June 2011. Over the long term, Australian retail prices are largely determined by international benchmark prices and follow their movements very closely.

242 International Energy Agency, *Oil and gas security emergency response of IEA countries: United Kingdom*, 2010, p. 10. © OECD/IEA International Energy Agency.

243 United Kingdom Petroleum Industry Association (UKPIA), *UKPIA Statistical review 2011*, June 2011, p. 28.

Chart 12.1 Weekly movements in crude, refined product, wholesale and retail prices for RULP in Australia: July 2007 to June 2011



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

The sections that follow consider the relationship between retail petrol prices and international benchmark prices in Canada, California, New Zealand, Germany and the UK. Prices are shown in local currency to illustrate the experience within each country.

Canada

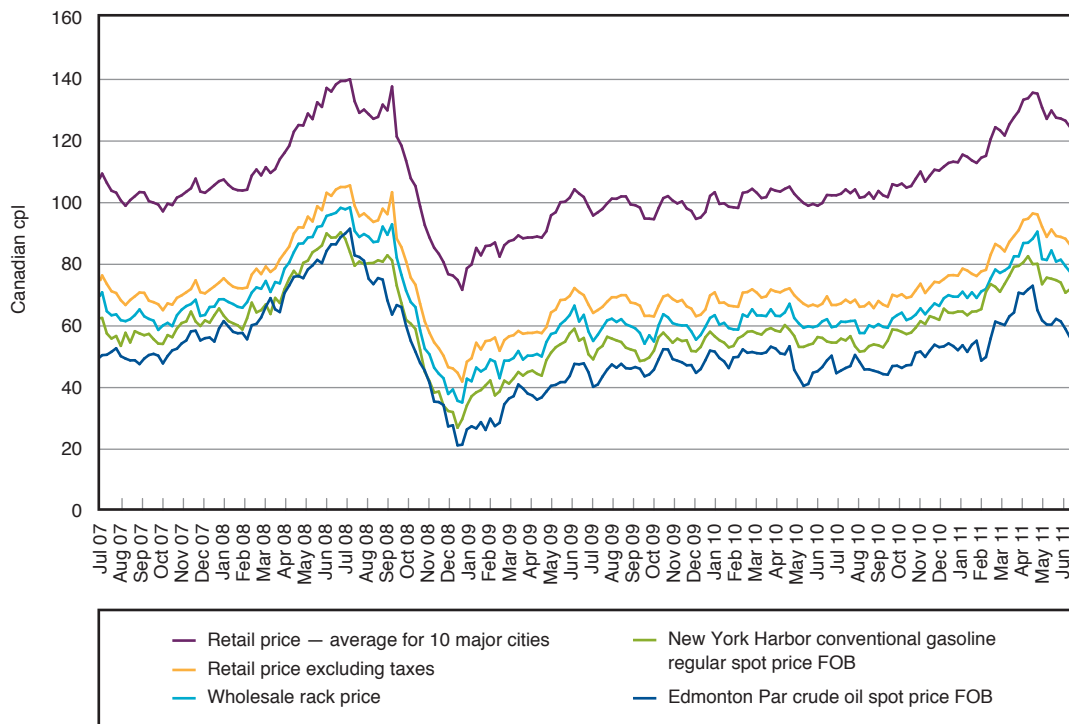
Chart 12.2 shows the average retail price for regular unleaded gasoline and the appropriate wholesale and international benchmark prices in Canada. Retail prices are shown including and excluding taxes.

As Canada is located in a different region of the world, petrol prices are based on different international benchmark prices than in Australia. In Canada, wholesale rack prices are based on the benchmark price of gasoline at New York Harbour²⁴⁴ and the price of Edmonton Par crude oil is used as the crude price benchmark.²⁴⁵ The wholesale rack price is paid by small independent wholesalers at the terminal and is the only observable reference for wholesale prices in Canada.

²⁴⁴ Natural Resources Canada, *Petroleum product market outlook*, May 2007, at <http://www.nrcan.gc.ca/eneene/sources/petpet/reprap/2007-06/pripr-eng.php>, accessed 30 November 2011.

²⁴⁵ Natural Resources Canada, *Review of issues affecting the price of crude oil*, October 2010, p. 15, at <http://www.nrcan.gc.ca/eneene/sources/crubru/index-eng.php>, accessed 30 November 2011.

Chart 12.2 Weekly movements in crude, refined product benchmarks, wholesale and retail prices for regular unleaded gasoline in Canada: July 2007 to June 2011



Source: ACCC calculations based on data from US EIA, Bank of Canada, MJ Ervin.

Note: Retail prices are an average of a weekly observed Tuesday price across 10 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>, accessed 30 November 2011.

Similarities between the Canadian and Australian experiences are evident. Chart 12.2 indicates that:

- Retail petrol prices in Canada track wholesale, refined gasoline and crude oil benchmark prices very closely.
- Over the longer term, the movements in petrol prices have been broadly similar to those in Australia, for example, where higher prices occurred through mid-2008 and lower prices around January 2009.

California (US)

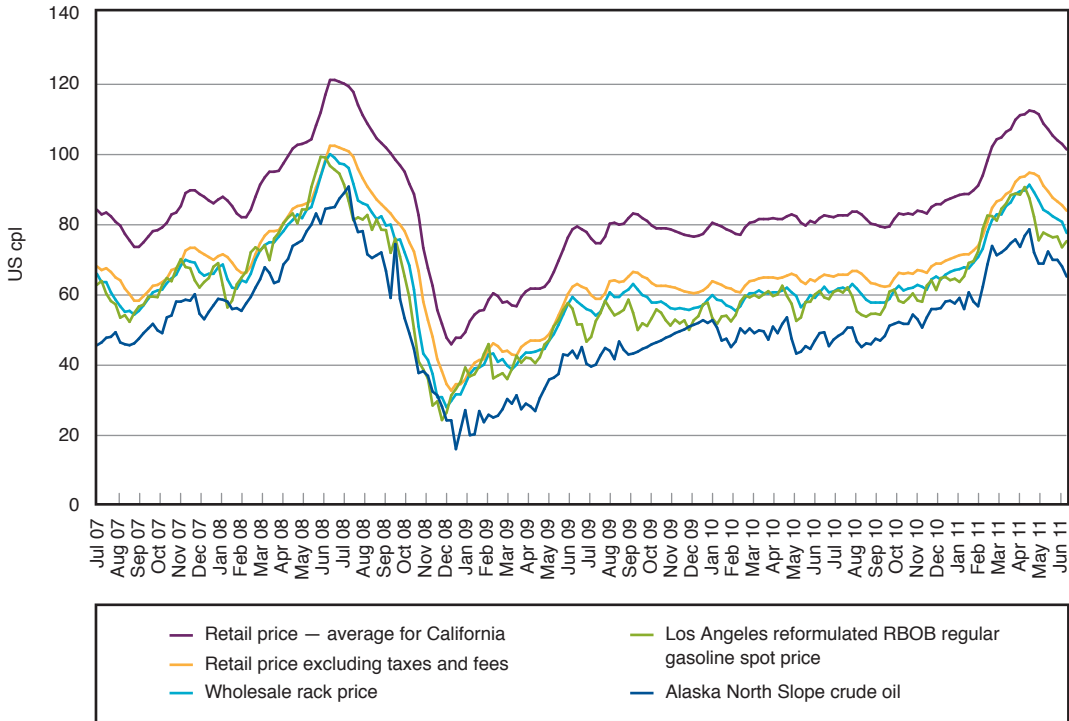
The relationship between Californian benchmark prices of crude oil, refined product, and wholesale and retail petrol prices is also considered.

Chart 12.3 shows the relevant international benchmark and wholesale prices along with retail prices of regular branded gasoline across California.²⁴⁶ In California, regular gasoline is blended with oxygenates to meet the local environmental standards.

²⁴⁶ Branded gasoline refers to fuel that is sold under a brand name such as BP, Shell, Exxon, Chevron and Valero.

The Californian wholesale rack price is an average of wholesale prices at various wholesale fuel loading racks around the state. The Los Angeles Reformulated Gasoline Blendstocks for Oxygenate Blending (RBOB) price is a wholesale price for a base gasoline designed to be blended with an oxygenate to comply with environmental regulations for finished reformulated gasoline.²⁴⁷ Alaska North Slope crude oil is used as the benchmark for the acquisition cost of composite crude oil for California refineries.²⁴⁸

Chart 12.3 Weekly movements in crude, refined product benchmarks, wholesale and retail prices for regular gasoline in California: July 2007 to June 2011



Source: ACCC calculations based on data from US EIA, Californian 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>, accessed 30 November 2011.

Similar to the experience illustrated in the Australian and Canadian cases, chart 12.3 shows a close relationship between movements in benchmark prices and retail prices in California. Again, higher price levels in both benchmark and retail prices are evident in mid-2008 as well as the ease of prices later that year and relatively stable price levels through most of 2010.

In the case of California there appears to be a smaller difference between wholesale prices and retail prices relative to Australia. This is largely due to the lower tax rates of petrol in the US compared with many other parts of the world.

²⁴⁷ Californian Energy Commission, at http://energyalmanac.ca.gov/gasoline/types_of_gasoline.html, accessed 30 November 2011.

²⁴⁸ Californian Energy Commission, at <http://energyalmanac.ca.gov/gasoline/margins/index.php>, accessed 30 November 2011.

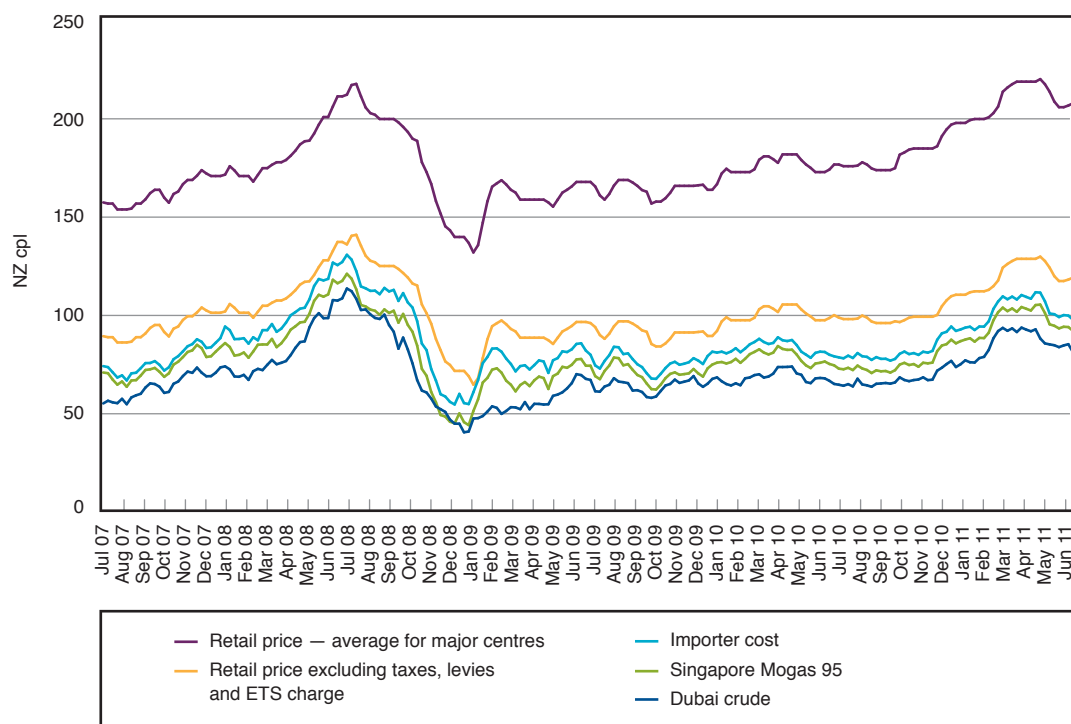
New Zealand

Retail petrol prices in New Zealand also track movements in their relevant crude oil, refined petrol benchmark and wholesale benchmark prices closely. Chart 12.4 shows the retail price of regular petrol across major centres in New Zealand.

The international benchmark prices relevant to New Zealand are similar to those used in the analysis of the Australian market. The appropriate refined petrol benchmark is Singapore Mogas 95, the same as in Australia. The importer cost shown in chart 12.4 represents the landed cost of petrol in New Zealand, conceptually similar to the Import Parity Price (IPP) in Australia, and is also based on the price of Mogas 95.

The crude oil benchmark price used in New Zealand is Dubai crude. This is because the only refinery in New Zealand is suited to a cheaper heavier crude than the Australian refineries, with more crude oil sourced from the Middle East.²⁴⁹

Chart 12.4 Weekly movements in crude, refined product benchmarks, wholesale and retail prices for regular petrol in New Zealand: July 2007 to June 2011



Source: ACCC calculations based on data from Platts, RBA, New Zealand Ministry of Economic Development.

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

²⁴⁹ Hale and Twomey, 2007 ACCC report into Australian petrol prices: review of applicability to the New Zealand petrol market, July 2008, pp. 8, 13.

As in Australia, international benchmarks also have a strong influence on retail prices in New Zealand. This can be seen in chart 12.4 which shows that:

- retail and wholesale prices in New Zealand track closely with the international price of Mogas 95
- shifts in the price of Mogas 95 are closely linked with movements in the price of crude oil.

The overall tax rate of regular petrol in New Zealand is higher than in Australia, resulting in a slightly larger difference between international benchmarks and final retail prices.

Germany

Chart 12.5 shows retail prices of Euro-Super 95, a widely used grade of petrol in Europe, along with refined petrol and crude oil benchmark prices in Germany. Unlike Australia and the US, a premium or 95 RON grade of petrol is more popular than RULP among motorists throughout most of Europe.

The benchmark price of refined petrol shown in chart 12.5 is the average price of Mogas 95 in the Antwerp/Rotterdam/Amsterdam region. Rotterdam is the largest European port for the import of crude oil.²⁵⁰ German refining and importing companies base their prices on the relevant benchmark prices in Rotterdam.²⁵¹ Brent crude oil is the dominant oil benchmark in Europe and its price is increasingly being utilised as a marker for crude oil prices around the world (see chapter 5 for a discussion on the emergence of Brent crude as a leading indicator of crude oil prices).²⁵²

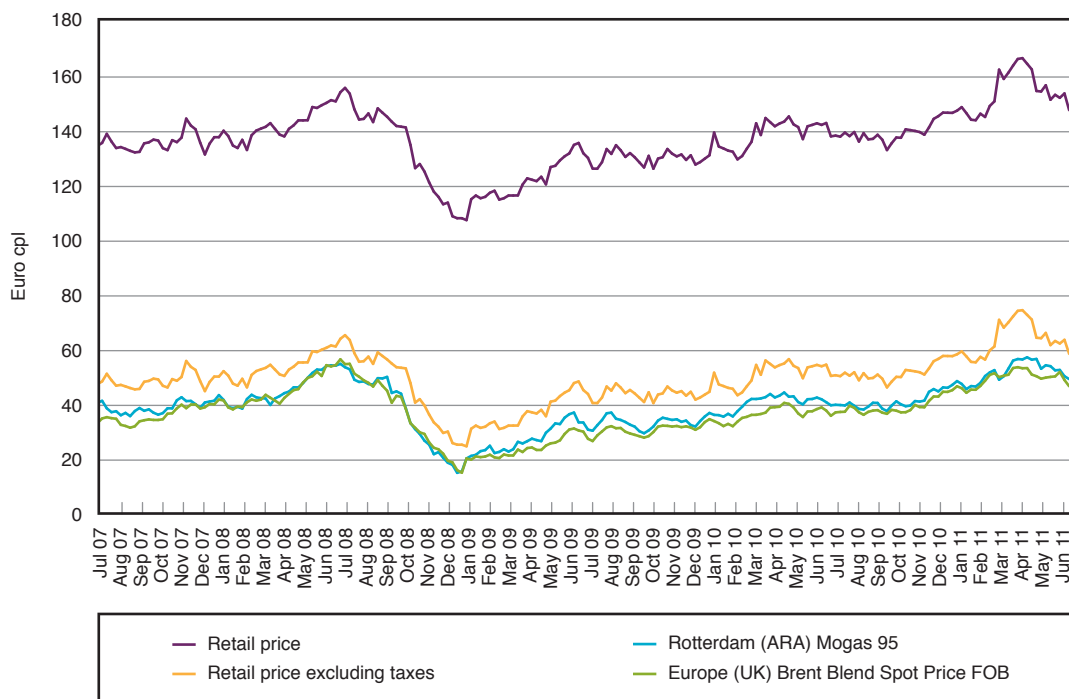
Chart 12.5 shows that the experience in Germany is also not dissimilar to that in Australia.

250 Reuters, 'FACTBOX-Rotterdam port, Europe's biggest', 6 Jan 2011, at <http://af.reuters.com/article/energyOilNews/idAFLDE7051Q320110106>, accessed 30 November 2011.

251 European Commission, Survey on the petroleum products' price data collection, *Weekly oil bulletin*, Feb 2009, p. 11.

252 *Oil and gas journal*, Transatlantic energy prices show need for realignment, 6 June 2011, at <http://www.ogj.com/index/article-display.articles.oil-gas-journal.volume-109.issue-23.general-interest.transatlantic-energy-prices-show-need-for.html.html>, accessed 30 November 2011.

Chart 12.5 Weekly movements in crude, refined product benchmarks and retail prices for Euro-Super 95 petrol in Germany: July 2007 to June 2011



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, accessed 30 November 2011.

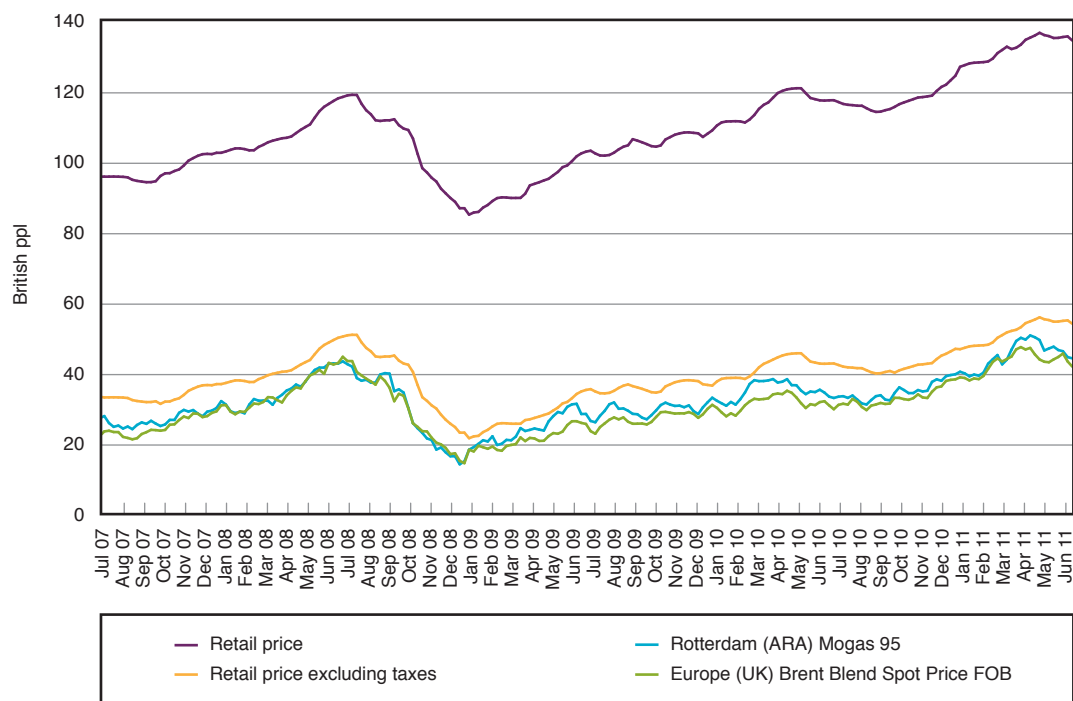
The difference between benchmark prices and the final retail price can be explained largely by taxes as well as other costs and margins.

While European countries generally set a higher level of taxation on petrol than countries in the Asia-Pacific and North American regions, the pre-tax retail prices in Germany generally track international benchmark prices closely.

United Kingdom

In the UK retail prices of petrol have also followed international benchmark prices. Chart 12.6 shows the pump price of Euro-Super 95 in the UK along with the Rotterdam Mogas 95 benchmark and the price of Brent crude oil.

Chart 12.6 Weekly movements in crude, refined product benchmarks and retail prices for Euro-Super 95 petrol in the UK: July 2007 to June 2011



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, accessed 30 November 2011.

It is evident from chart 12.6 that retail petrol prices in the UK are also driven by movements in international benchmark prices. The tax component of the price of petrol in the UK is higher than in Australia (see section 12.4).

Key observations on the influence of international factors

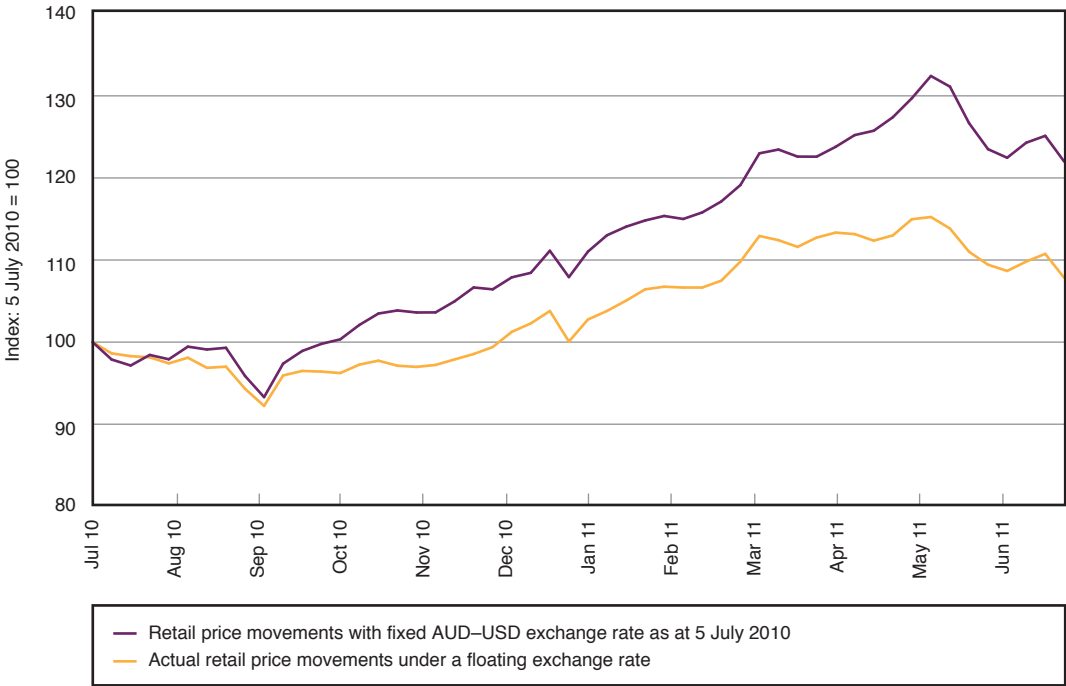
The close relationship between movements in international benchmark prices and domestic retail petrol prices is a common experience in other countries. The Australian experience is not only similar to neighbouring New Zealand, but to countries in North America and Europe as well.

12.3.2 Influence of exchange rates

As the international benchmark prices of crude oil and refined petroleum are typically traded in USD all over the world, the value of the exchange rate between the USD and a local currency influences the level of local retail petrol prices in terms of the local currency.

Exchange rate movements between different currencies against the USD can be explored to gauge the likely effect on local retail prices over time. Chart 12.7 compares Australian retail prices with prices calculated with the exchange rate fixed as at 5 July 2010, that is 1 AUD = USD 0.84.

Chart 12.7 Index of Australian weekly retail price movements of RULP with a fixed and actual AUD–USD exchange rate: 2010–11



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

As discussed in chapter 9, the appreciation of the AUD against the USD over 2010–11 has contributed to lower retail prices than otherwise may have been the case. This is clearly evident from the data in chart 12.7.

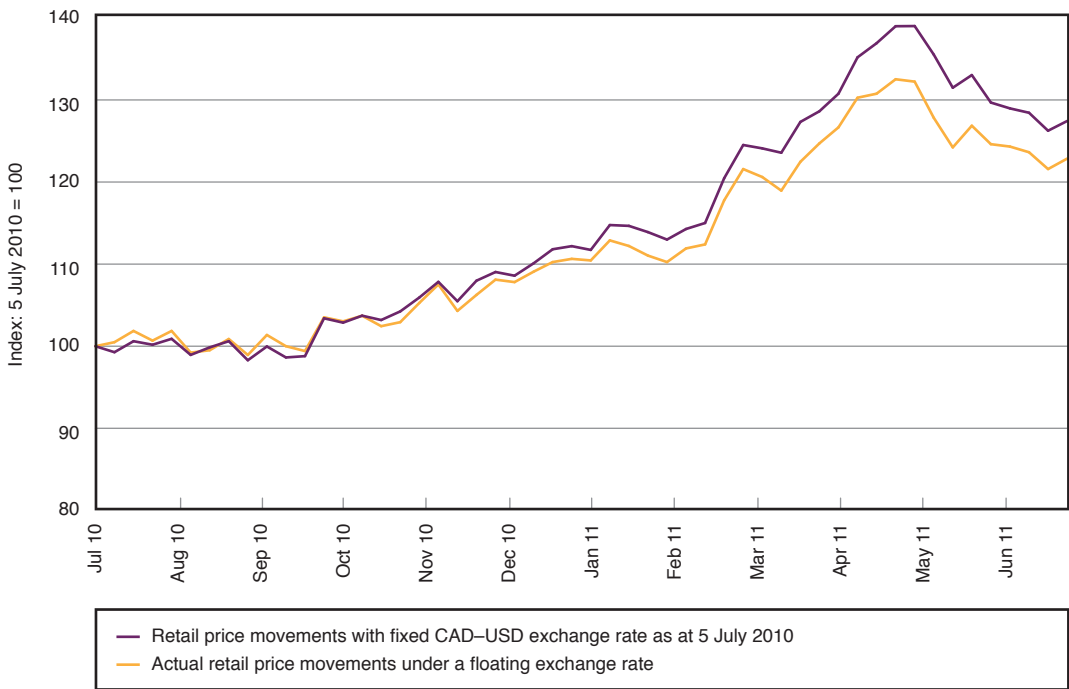
Data in charts 12.8 and 12.9 show similar exchange rate effects in Canada and Germany respectively. In 2010–11, the value of the Canadian dollar (CAD) appreciated against the USD. As a result actual retail petrol prices were lower than if the exchange rate had been fixed at its 5 July 2010 level.

A similar trend is also evident in Germany. The value of the Euro (EUR) also appreciated against the USD over 2010–11, thus protecting motorists in Germany from even higher prices had the EUR not appreciated against the USD.

The extent of the exchange rate effects differs across currencies.

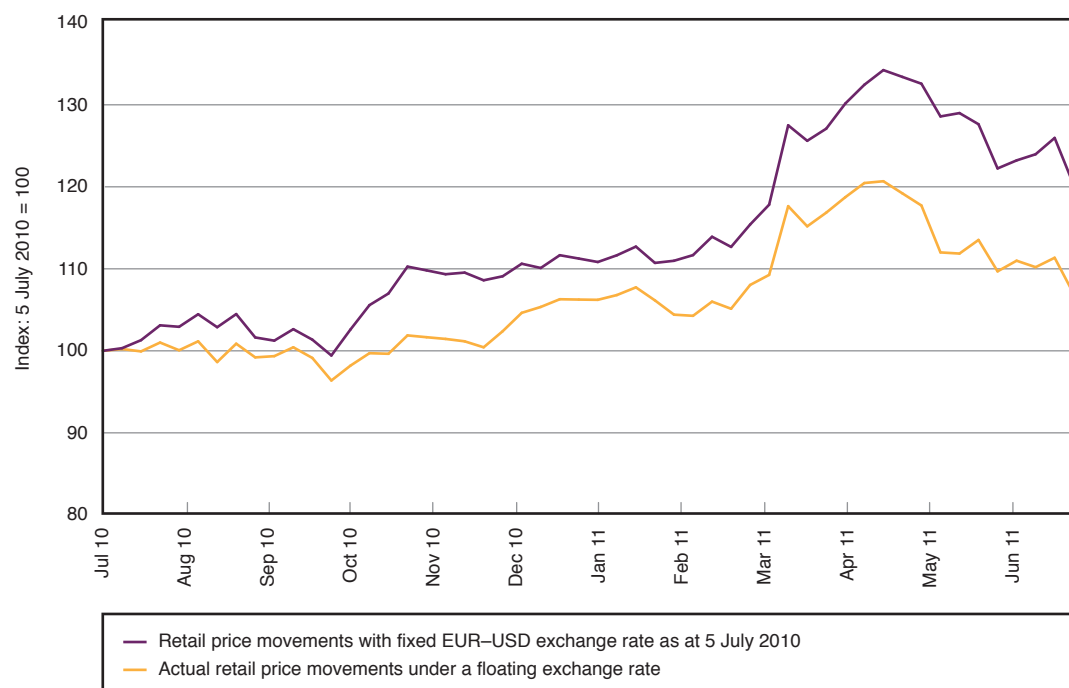
For example, as the CAD has historically tracked relatively closely with the USD, the size of any exchange rate effect on Canadian retail prices is likely to be generally smaller than for currencies which are less correlated with the USD, for example, the Euro (see charts 12.8 and 12.9).

Chart 12.8 Index of Canadian weekly retail price movements of regular petrol with a fixed and actual CAD–USD exchange rate: 2010–11



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

Chart 12.9 Index of German weekly retail price movements of Euro-Super 95 petrol with a fixed and actual EUR–USD exchange rate: 2010–11



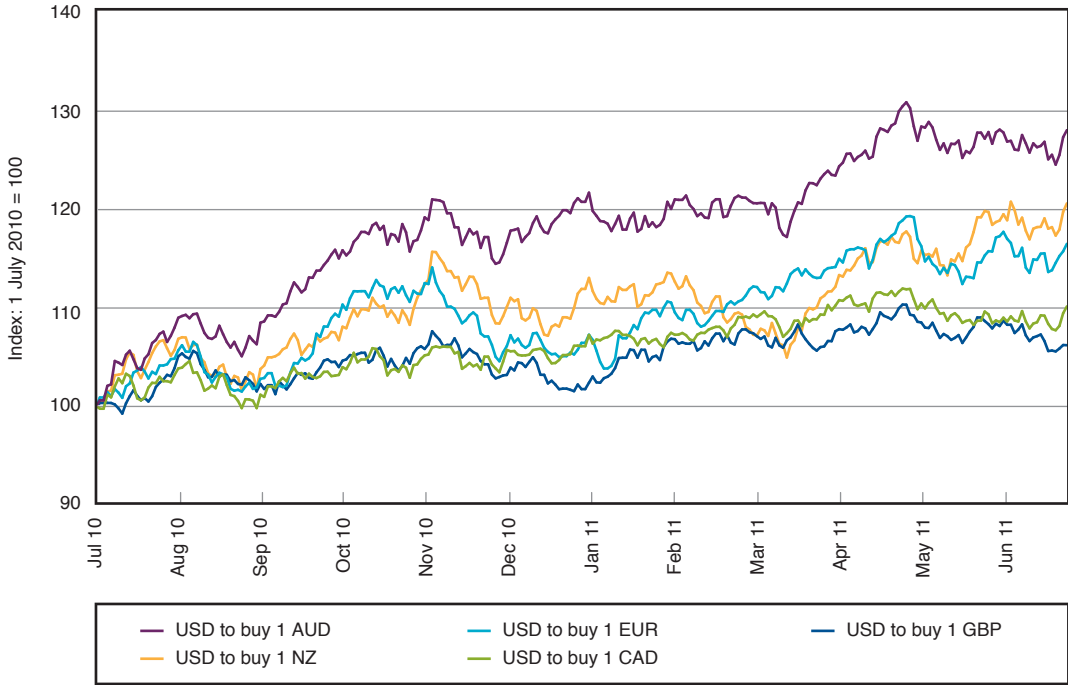
Source: ACCC calculations based on data from Bloomberg, US Federal Reserve Bank, European Commission.

Looking more broadly at how the exchange rates of a number of currencies have moved against the USD shows that the recent strengthening in the AUD–USD exchange rate has been particularly favourable for motorists in Australia compared with other countries.

Chart 12.10 illustrates movements in the exchange rates of five currencies against the USD, starting from levels at 1 July 2010 through to 30 June 2011. The value of the AUD, CAD, EUR, British pound (GBP) and New Zealand dollar (NZD) all strengthened against the USD over this period.

The movement of the AUD–USD exchange rate has been particularly significant, appreciating by about 28 per cent from around USD 0.84 to USD 1.07. Over the same period, the CAD–USD exchange rate appreciated by about 10 per cent, the EUR–USD rate appreciated by 17 per cent and the NZD–USD rate appreciated by around 21 per cent.

Chart 12.10 Index of daily movements in exchange rates of a number of currencies against the USD:
1 July 2010 to 30 June 2011



Source: ACCC calculations based on data from US Federal Reserve Bank.

Key observations on exchange rates

As noted, exchange rate movements throughout 2010–11 have led to lower retail petrol prices in Australia than otherwise may have been the case. Data presented in this chapter indicates that other countries have also benefited from movements in their respective currencies against the USD; however, the degree of protection provided by the appreciation of the AUD appears to have been greater than other major currencies.²⁵³

²⁵³ There may be situations where a rise in the AUD against the USD may not necessarily have a favourable impact on domestic prices. For example, it might be argued that because crude prices are denominated in USD, a fall in the value of the USD could result in higher prices (in USD/bbl) as sellers seek compensation for the loss of the USD's purchasing power. To the extent that there are no other fundamental demand–supply factors affecting prices, then a fall in the USD could lead to higher prices in the global market for crude. All else equal, in such a scenario the concomitant rise in the AUD against the USD would be offset by the rise in crude prices thus leaving domestic petrol prices unaffected. See, for example, S Blomberg and E Harris, 'The commodity–consumer price connection: fact or fable?', *Economic policy review*, vol. 1, October 1995, pp. 21–38.

12.3.3 Short-term movements in petrol prices

In addition to the influence of global factors on retail petrol prices there are also short-term factors that influence the day-to-day retail price of petrol. In Australia, the weekly retail price cycle, discussed in chapter 11, affects the day-to-day movements in the price of petrol in the largest capital cities.

Short-term movements in the price of petrol are not unique to Australia. The 2007 ACCC petrol inquiry report noted that although price cycles are not widespread around the world, they do occur in various cities and regions in other countries, including Canada, the US, Germany and also Norway.²⁵⁴

Recent studies have again identified retail price cycles in some markets in Canada and parts of the US, particularly in states in the Midwest.²⁵⁵ These types of cycles resemble those occurring in the largest Australian cities where a significant price increase is followed by subsequent decreases until another restoration phase occurs.

In May 2011 the German competition authority, the Bundeskartellamt, released a comprehensive inquiry into the fuel sector, analysing fuel prices in four German cities from January 2007 to June 2010. The English summary of the final report refers to the German fuel market and the 'cyclical price movements within one week'.²⁵⁶ For example, the summary noted the following pattern in regard to the retail price of diesel in Cologne:

In 2007 and 2008 the fuel price reached its peak, above all, on Friday afternoons and evenings ... the high price level on Fridays continues until Saturday afternoons. Only then do prices begin to fall, resulting in a lower price level on Sundays and Mondays. Prices can then be seen to rise by the latest on Tuesday mornings. Whilst prices can be seen to fall from Tuesdays to Thursdays, at least in the evenings ... The analysis has shown that in each of the years examined, the price on Fridays was among the highest. The fuel price was lowest on Sundays and Mondays.

The report also identified a number of characteristics of the intra-week cyclical price movements in parts of Germany:

- Steps of the price increases were generally greater than the price reductions, while price reductions occurred at a greater frequency.
- Price increases often occur simultaneously at the majority of petrol stations of an oil company, while price reductions are generally offered only at specific individual sites.²⁵⁷

The ACCC has used data presented in the final report by the Bundeskartellamt to construct a daily price chart for a number of cities in Germany. Chart 12.11 illustrates average prices for gasoline at different times during each day of the week in four large cities across Germany in 2010.

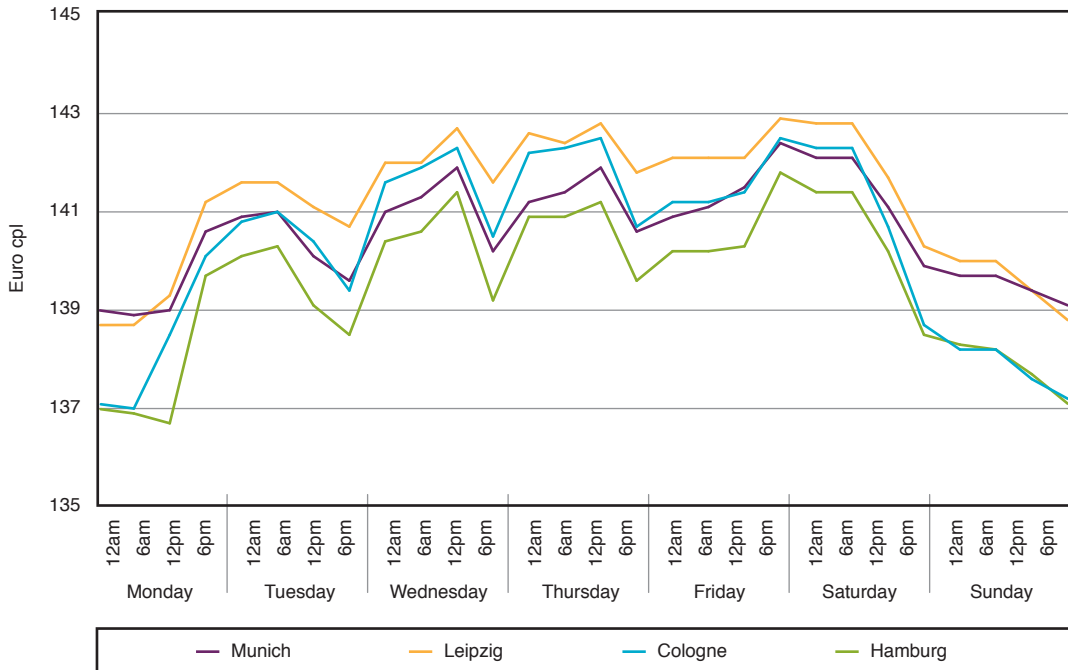
254 ACCC, *Petrol prices and Australian consumers: report of the ACCC inquiry into the price of unleaded petrol*, December 2007, pp. 162–3.

255 US Federal Trade Commission, *Edgeworth price cycles in gasoline: evidence from the US*, May 2011, at <http://www.ftc.gov/bc/workpapers/wp303.pdf>, accessed 30 November 2011.

256 Bundeskartellamt, *Fuel sector inquiry: final report summary*, May 2011, p. 21, at http://www.bundeskartellamt.de/wEnglisch/Publications/sector_inquiriesW3DnavidW2651.php, accessed 30 November 2011.

257 Bundeskartellamt, *Fuel sector inquiry: final report summary*, May 2011, pp. 22–3, at http://www.bundeskartellamt.de/wEnglisch/Publications/sector_inquiriesW3DnavidW2651.php, accessed 30 November 2011.

Chart 12.11 Average annual retail prices for gasoline by day of the week and six hour period in Cologne, Hamburg, Munich and Leipzig: 2010



Source: ACCC calculations based on data from Bundeskartellamt, Sektoruntersuchung Kraftstoffe Anhänge (Fuel Sector Inquiry: Final report Appendices), May 2011, pp. 8–15. See also Bundeskartellamt, Fuel Sector Inquiry, Final Report Summary, May 2011.

A recent study by the US FTC²⁵⁸ notes that on the basis of information relating to certain local markets in the US and Canada, there are two main ingredients necessary for petrol price cycles:

- a sufficiently large number of refiner-marketer affiliated service stations
- a sufficiently large number of independent service stations.

The refiner-marketer affiliated stations are reportedly instrumental in the price rising phase and independent stations are more active in the price cutting phase. According to the US FTC study, it is the interaction between these two groups of market participants that promote price cycles.

While there is clear evidence of petrol price cycles, or at least regular short-term movements of retail petrol prices in other countries, the extent to which these cycles mimic those observed in Australia is uncertain. Evidence presented in the 2007 ACCC petrol inquiry suggested that petrol price cycles in Australia had larger amplitudes than those occurring in other countries.²⁵⁹ The ACCC is presently in the process of considering evidence on overseas price cycles.

²⁵⁸ US Federal Trade Commission, *Gasoline price changes and the petroleum industry: an update*, September 2011, at <http://www.ftc.gov/os/2011/09/110901gasolinepricereport.pdf>, accessed 30 November 2011.

²⁵⁹ ACCC, *Petrol prices and Australian consumers: report of the ACCC inquiry into the price of unleaded petrol*, December 2007, pp. 155–80.

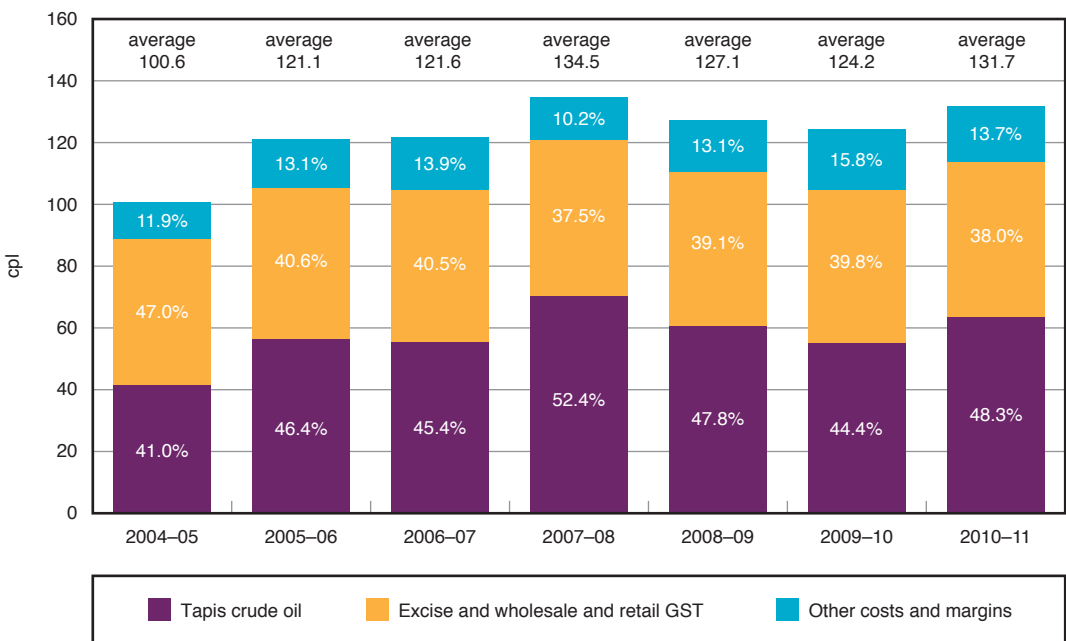
12.4 Components of petrol prices in other countries

The major components of Australian retail petrol prices were considered in detail in chapter 9. Chart 12.12 again illustrates that the major components of average retail prices of RULP from 2004–05 to 2010–11 were:

- the price of crude oil
- taxes
- other costs and margins at the refining, wholesale and retail levels.

For the last six years the cost of crude oil has been the largest component, and clearly the biggest contributor to changes in the retail price of RULP. Taxes have also been a significant component of the retail price.

Chart 12.12 Australian components of retail RULP prices across the five largest cities: 2004–05 to 2010–11



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.

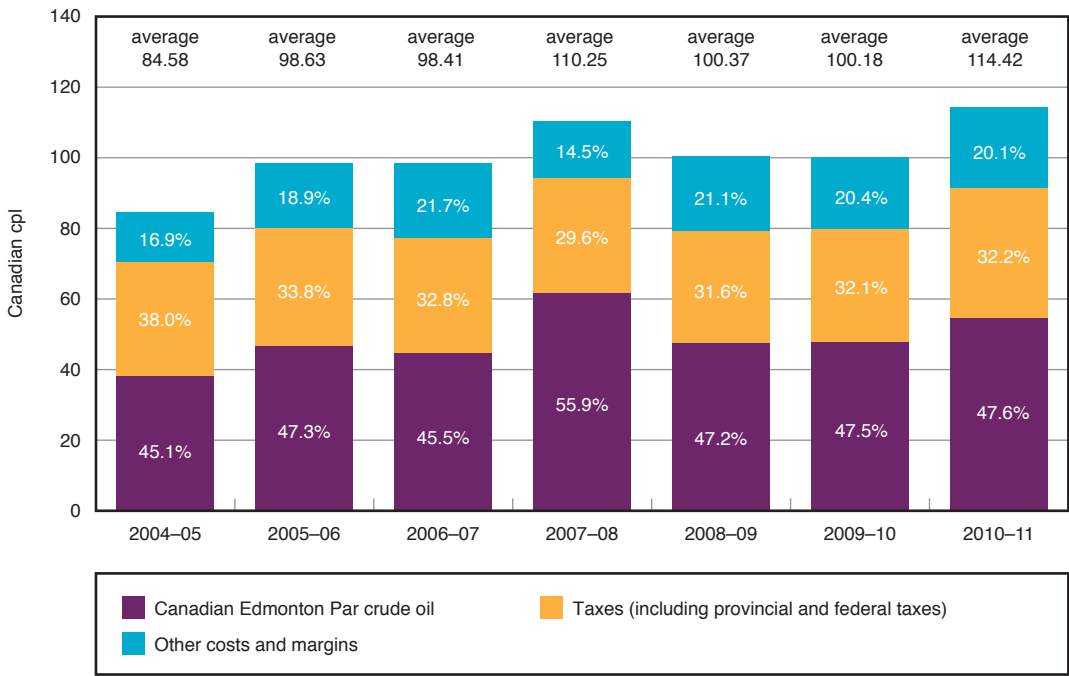
Evidence on price components for other countries again suggests that Australia’s experience is not unique. Charts 12.13 to 12.17 show the major components of retail petrol prices in Canada, California, New Zealand, Germany and the UK in local currency.

Due to data limitations it is not possible to make precise comparisons of margins at each of the retail, wholesale and refinery levels across countries. It is possible, however, to examine the crude oil and fuel tax components of retail prices in other countries as well as the collective component representing other costs and margins.

Chart 12.13 shows the components in the price of regular gasoline in Canada from 2004–05 to 2010–11. Overall, the chart indicates that:

- the Canadian benchmark for the cost of crude oil, Edmonton Par crude, has been the largest component, and the main contributor to changes in the price of gasoline for the last seven years
- the tax component appears to be slightly smaller than in Australia.

Chart 12.13 Canadian components of retail regular unleaded gasoline prices in 10 major cities: 2004–05 to 2010–11



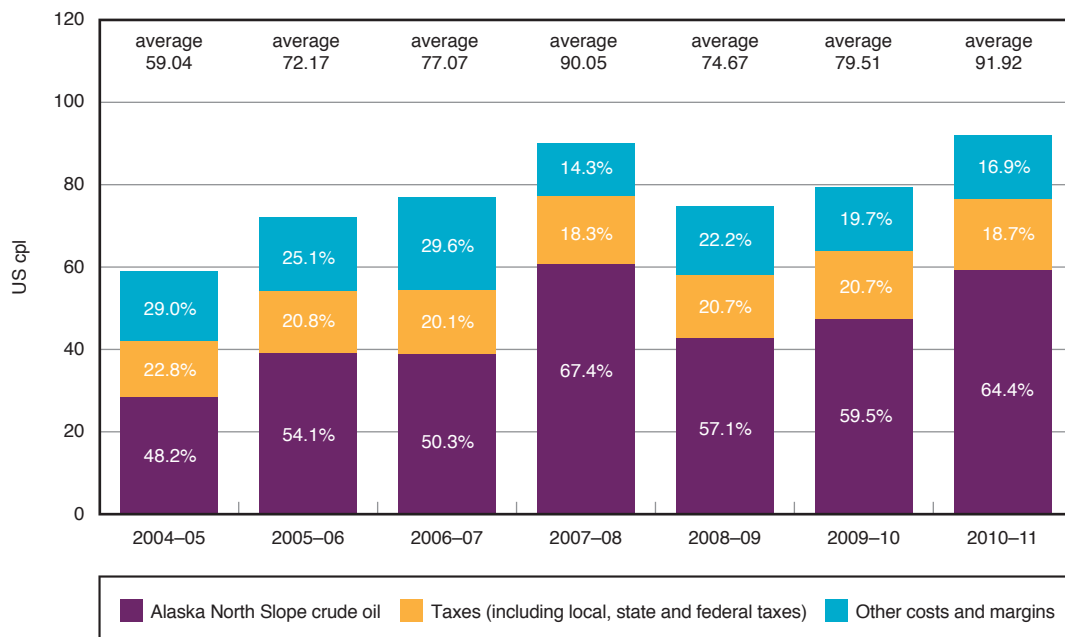
Source: ACCC calculations based on data from MJ Ervin.
 Note: Annual averages are calculated from monthly data.

The component of retail prices attributable to other costs and margins varies across different countries. This occurs partly because different crude oil markers are used in different locations. The Edmonton Par, for example, generally trades at a lower price than Tapis crude which can have two potential effects: on the one hand, it might mean that the refining margin may be slightly higher in Canada (due perhaps to the lower cost of crude); on the other hand, there may be higher unit costs involved in processing the slightly heavier and lower-yielding grade Edmonton Par crude.

Chart 12.14 shows the components of retail regular gasoline prices from 2004–05 to 2010–11 in California. As with both the Australian and Canadian retail components, the cost of crude oil is the most significant component of retail prices in California. In fact, in California the cost of crude oil exerts a more powerful influence on retail prices, making up over 60 per cent of average retail prices in 2007–08 and 2010–11.

The relatively large influence of crude oil on retail prices in California is partly due to the lower level of fuel taxation compared to many other developed countries.

Chart 12.14 Californian components of retail regular gasoline prices at branded sites: 2004–05 to 2010–11



Source: ACCC calculations based on data from Californian Energy Commission.

Note: Annual averages are calculated from weekly data.

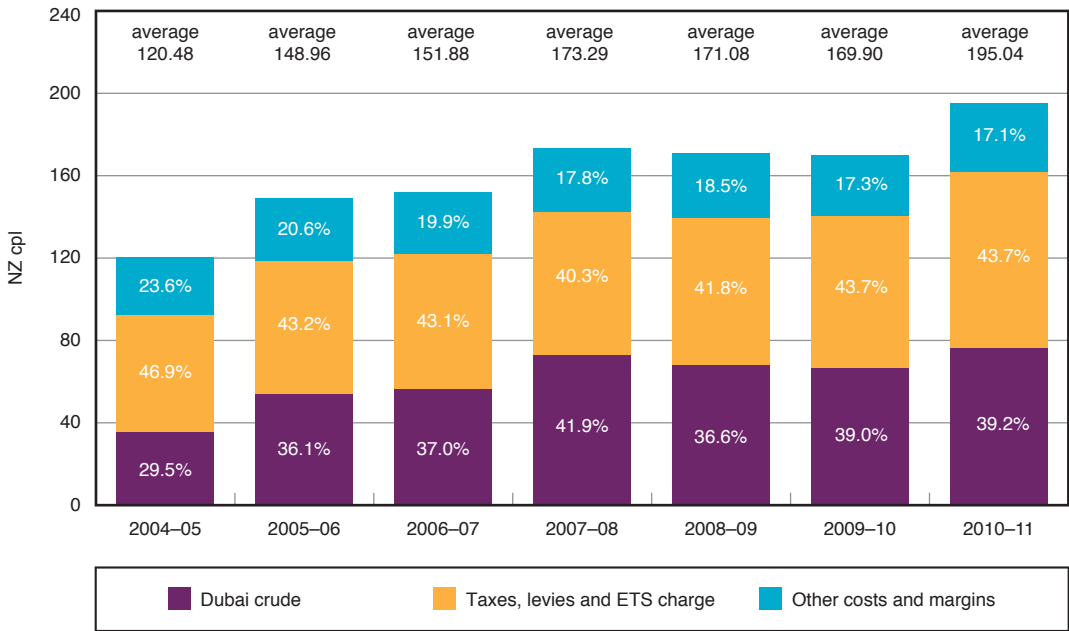
Chart 12.15 illustrates the components of retail petrol prices in New Zealand over the seven years to June 2011. The chart indicates that:

- Taxes generally account for the largest component of retail petrol prices, except in 2007–08 when crude prices were high and thus became the largest component.
- Although the cost of crude oil has generally been the second largest component of retail prices in New Zealand, crude oil costs appear to have been a significant contributor to changes in retail prices.
- Average price levels in 2010–11 appear to be notably higher than other years, partly due to an increase in the cost of crude oil as well as a recent increase in the level of fuel taxation and the GST in New Zealand.²⁶⁰

The margin components of retail petrol prices in New Zealand represents a combination of refining, wholesale and retail costs and margins associated with the use of a relatively cheaper grade of oil (Dubai crude). This may contribute to a margin component slightly higher than in Australia.

²⁶⁰ New Zealand Ministry of Transport, 21 October 2010, at <http://www.transport.govt.nz/ourwork/land/roadusercharges/>, accessed 30 November 2011.

Chart 12.15 New Zealand components of retail regular petrol prices in major centres: 2004–05 to 2010–11



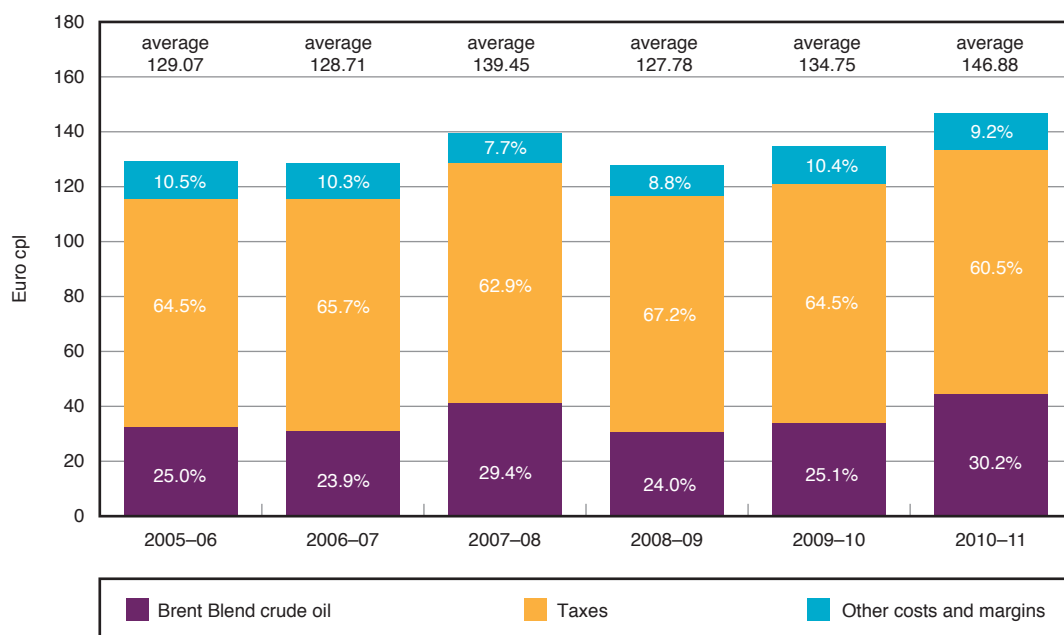
Source: ACCC calculations based on data from New Zealand Ministry of Economic Development.

Note: Annual averages are calculated from weekly data.

Charts 12.16 and 12.17 show the components of retail prices for Euro-Super 95 petrol from 2005–06 to 2010–11 in Germany and the UK respectively. The charts show that:

- Over the last few years, taxation represented over 60 per cent of the price of petrol in both Germany and the UK. The second largest component has been the cost of crude oil.
- Changes in the retail price of petrol appear to be largely driven by changes in the cost of crude oil.

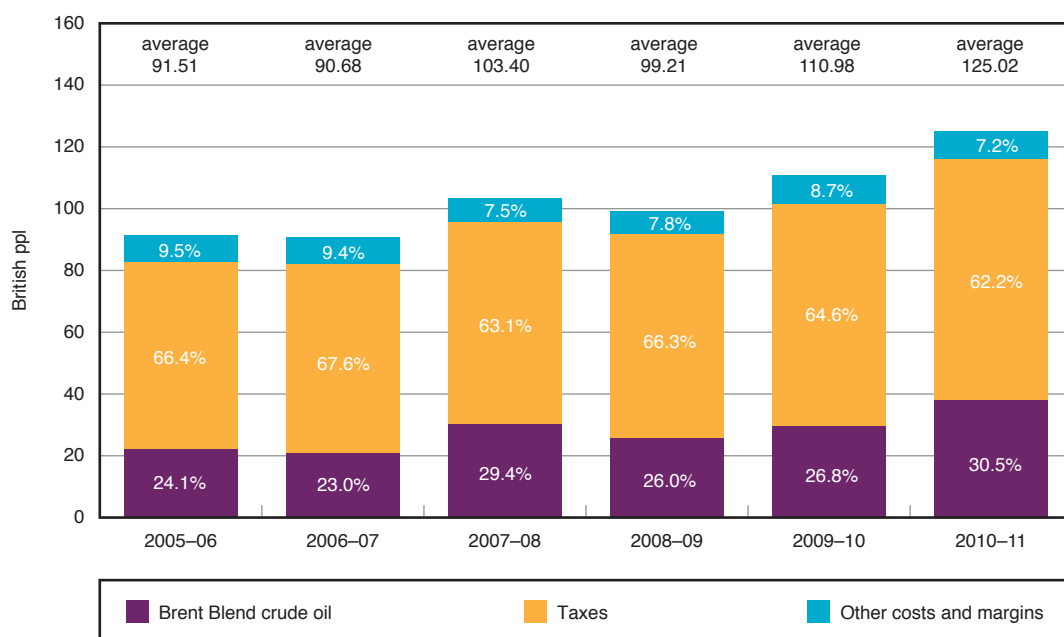
Chart 12.16 Components of retail Euro-Super 95 petrol prices in Germany: 2005–06 to 2010–11



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

Note: Annual averages are calculated from weekly data.

Chart 12.17 Components of retail Euro-Super 95 petrol prices in the UK: 2005–06 to 2010–11



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

Note: Annual averages are calculated from weekly data.

Key observations on components of retail prices

While the exact mix of the components of retail petrol prices varies across the countries considered in this chapter, the components that are common to all countries are crude oil and taxes. Petrol prices in countries with lower levels of fuel taxation such as the US appear to be most heavily influenced by the cost of crude oil.

The cost of crude oil is also the main influence on petrol price movements in European countries such as Germany and the UK. Although these prices include a larger tax component, the level of taxation seems to have remained relatively stable over time.

12.5 Australian retail prices: an international perspective

Chart 12.18 shows retail petrol prices in Australia and the five other countries considered in this chapter in Australian currency over the period July 2007 to June 2011.

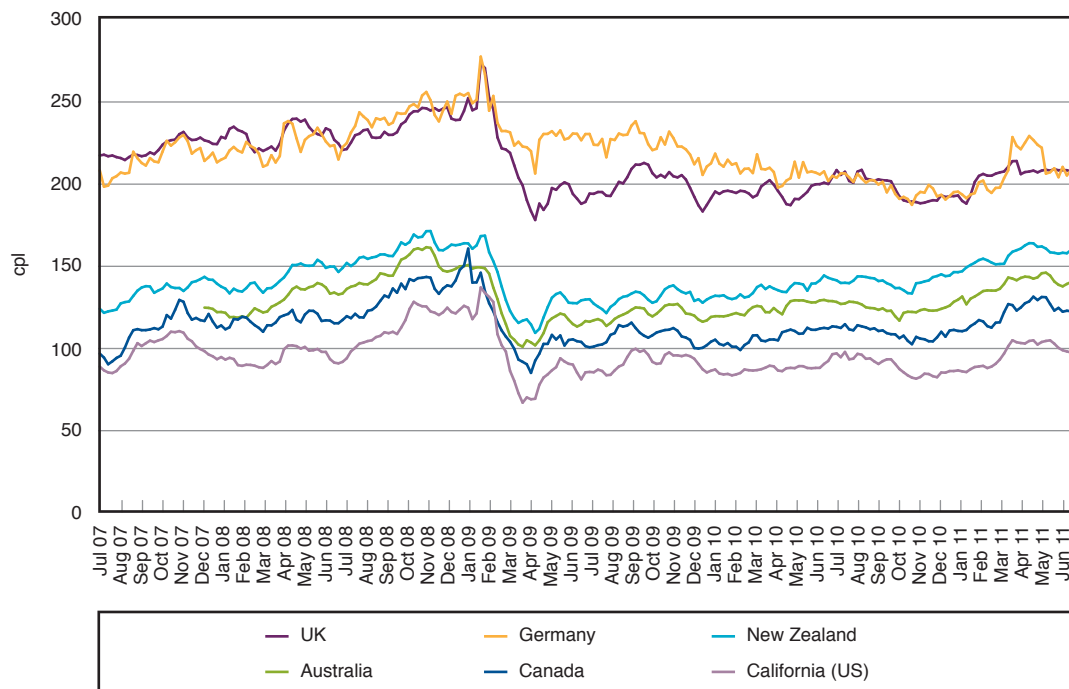
The chart shows that:

- The level of retail petrol prices differs around the world; however, the long-term movements in retail prices appear to be largely similar across a number of countries, reflecting movements in their respective international price benchmarks.
- The level of retail prices in Australia is at the lower end of the range of prices shown for various countries, behind California and Canada.

Another factor that is evident from chart 12.18 is the effect of exchange rate movements in domestic retail prices.

While movements in retail prices across most countries track each other fairly closely, prices in Germany in late 2008 and 2009 seemed to be out of step with movements in other countries' retail prices. From November 2008, prices in Germany fell proportionately less than in other countries. This was due to the effect of changes in the value of the Euro (EUR) relative to other currencies. From late 2008, the EUR experienced a period of weakness relative to other currencies, thus limiting the extent to which petrol prices in Germany fell in response to falls in international benchmark prices. When the EUR strengthened again around June 2010, prices in Germany again moved in line with prices in other countries.

Chart 12.18 Weekly retail petrol prices (including taxes) across Australia, Canada, California, New Zealand, Germany and the UK: July 2007 to June 2011



Source: ACCC calculations based on data from Informed Sources, MJ Ervin, Californian Energy Commission, New Zealand Ministry of Economic Development, European Commission, RBA.

Note: Fuel types shown in this chart are those described throughout section 12.3.1 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 12.2 to 12.6.

The most significant difference in the level of retail prices across countries is the level of fuel taxation in each country.

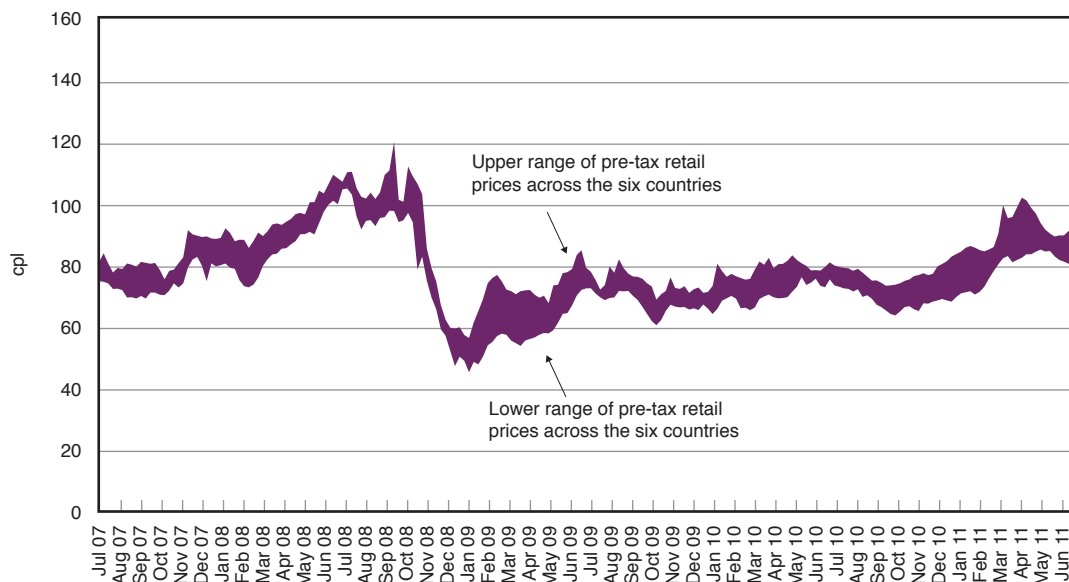
In California and Canada, petrol is taxed at a lower rate than in Australia. In New Zealand, Germany and the UK, the level of taxation on petrol is higher than in Australia.

When the impact of taxes is excluded from the retail petrol prices, the spread of prices across the various countries is very different. Chart 12.19 shows the range of retail petrol prices across the various locations when excluding the impact of taxes over the four years to June 2011. Prices are again shown in Australian currency.

Over the four-year period to June 2011, the range of pre-tax retail prices for these countries, including Australia, has averaged about 10 Australian cents per litre. This compares with an average range of around 125 Australian cents per litre when looking at prices including taxes.

Exchange rate movements as well as local market conditions will mean that retail price levels in countries will differ when looking at pre-tax prices converted to a single currency.

Chart 12.19 Range of weekly retail petrol prices excluding taxes across Australia, Canada, California, New Zealand, Germany and the UK: July 2007 to June 2011



Source: ACCC calculations based on data from Informed Sources, MJ Ervin, Californian Energy Commission, New Zealand Ministry of Economic Development, European Commission, RBA.

Note: Fuel types shown in this chart are those described throughout section 12.3.1 and vary from country to country. The basis of weekly retail prices varies across countries. Details of retail price data collection methodologies can be found in notes to charts 12.2 to 12.6.

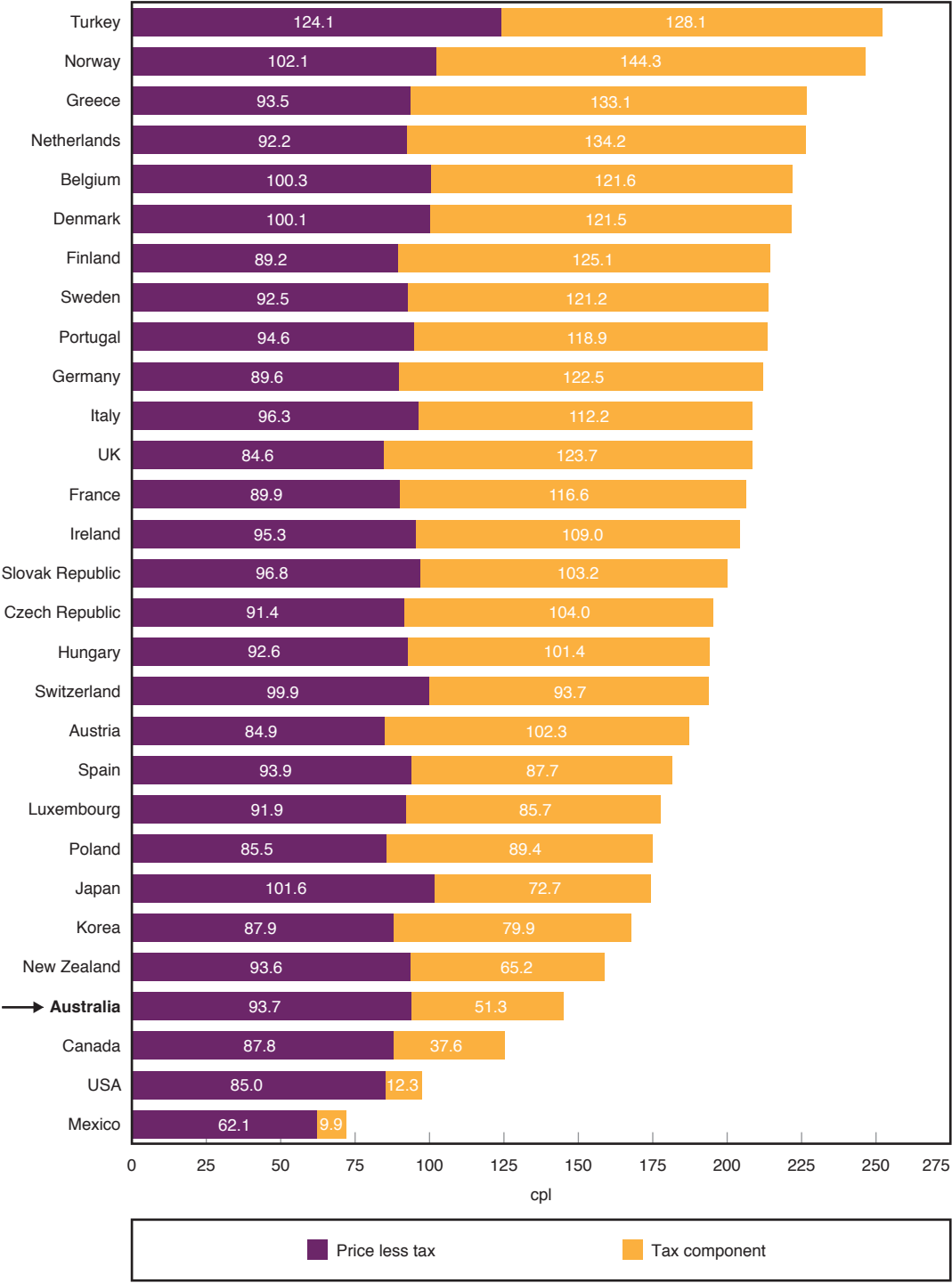
The Department of Resources, Energy and Tourism (RET) publishes a ranking of Australia's retail prices for petrol relative to prices of other countries in the OECD.

Chart 12.20 shows the retail price of petrol among countries in the OECD both including and excluding the tax component.²⁶¹

The chart shows that final retail petrol prices in Australia are among the lowest in the OECD, with the fourth lowest petrol prices.

²⁶¹ The ACCC has previously commented on its methodological concerns about the usefulness of international price comparisons using OECD data. These include that petrol quality varies from country to country; data is based on metropolitan prices only; different sources are used for exchange rates; and government subsidy programs in some countries—and how they may affect the tax rate—are not considered. These issues were outlined in appendix J of the ACCC's 2001 report, *Reducing fuel price variability*. In addition, it must be noted that fuel types may also vary from country to country. Notwithstanding these issues, the data provides a reference by which Australian retail prices can be compared with other developed countries. Furthermore, it enables Australia's retail prices relative to other countries to be examined over time.

Chart 12.20 Petrol prices and taxes in OECD countries: June quarter, 2011



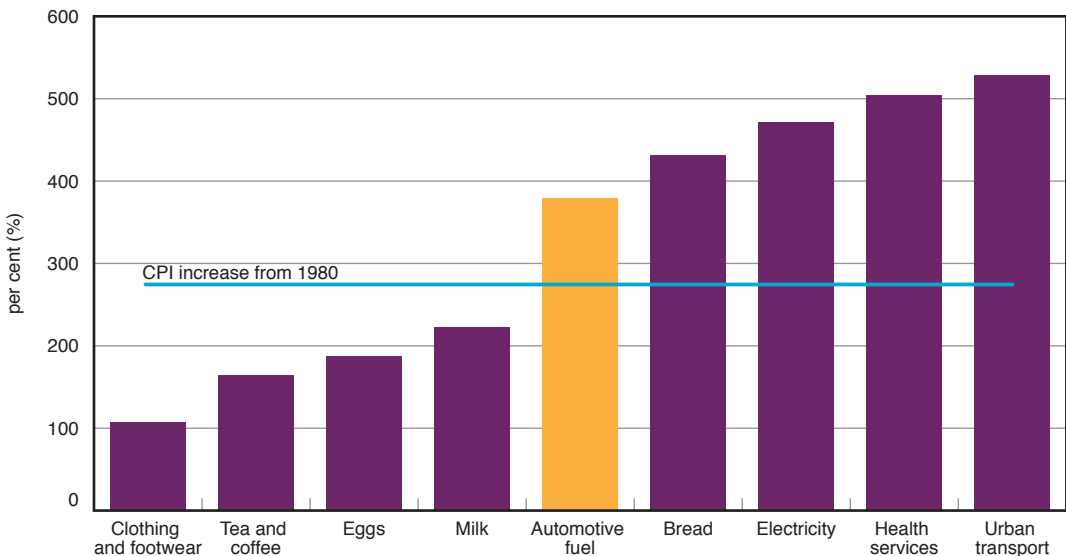
Source: RET, *Australian Petroleum Statistics*, issue 182, September 2011.

12.6 Petrol prices and other goods

In addition to comparing Australia’s experience with the level of retail petrol prices with that of other countries it is pertinent to examine changes in petrol prices relative to the prices of other goods. Chart 12.21 provides a comparison of price movements for automotive fuel as well as a group of commonly used household goods and services in Australia over the past 30 years.

Although the increase in automotive fuel costs has been higher than the increase in the Consumer Price Index (CPI), the general price of electricity has increased by a larger amount, as has the price of urban transport.

Chart 12.21 Australian comparative changes in the retail prices of fuel and other consumer items: 1980 to June 2011



Source: ACCC calculations based on data from Australian Bureau of Statistics (2011), Consumer Price Index, Australia, Table 11: CPI Group, Sub-group and Expenditure Class, Index Numbers by Capital City’, data cube: Excel Spreadsheet, cat. No. 6401.0, at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6401.0Sep%202011?OpenDocument>, accessed 30 November 2011.

Note: ‘Automotive fuels’ includes petrol, diesel fuel, automotive LPG and other gas fuels, oils lubricants and additives.

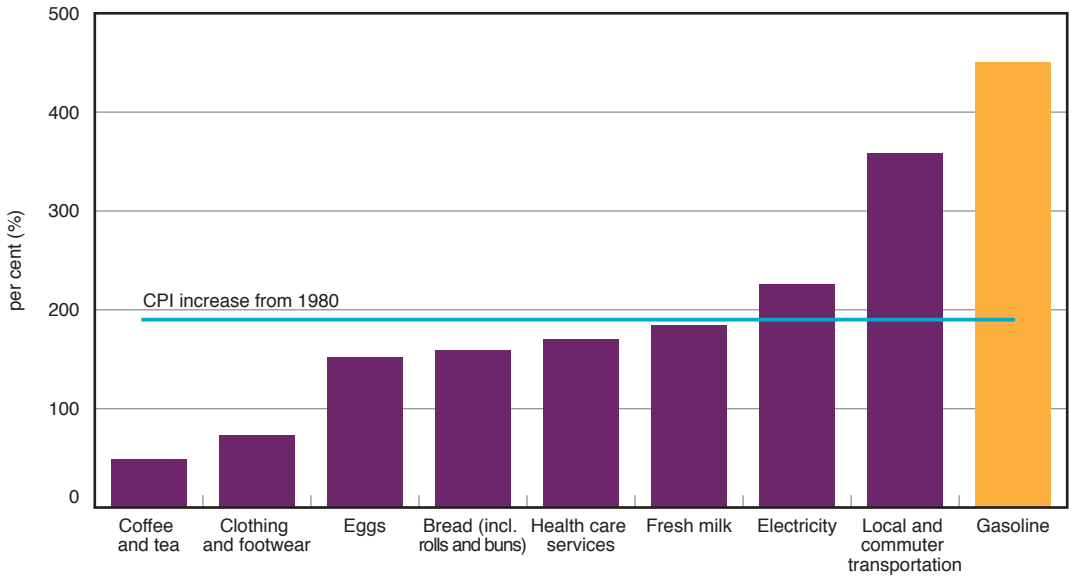
Similar comparisons can be made in respect of petrol price changes in other countries around the world.

Charts 12.22 to 12.24 show the price movements of fuels and other common goods and services in Canada, the US and New Zealand.

Comparisons are also shown for Germany and the UK in charts 12.25 and 12.26 respectively although the time period considered for these countries is shorter.

While the basket of goods and services illustrated in the Australian comparison are not exactly replicated for other countries, these charts provide an indication of general price movements for similar goods.

Chart 12.22 Canadian comparative changes in the retail prices of fuel and other consumer items: 1980 to 2011



Source: ACCC calculations based on data from Statistics Canada 2011, Consumer Price Index (Using CANSIM data, dating back to 1980), E-STAT, Learning Resources, at <http://www40.statcan.gc.ca/l01/cst01/cpis01a-eng.htm>, accessed 30 November 2011.

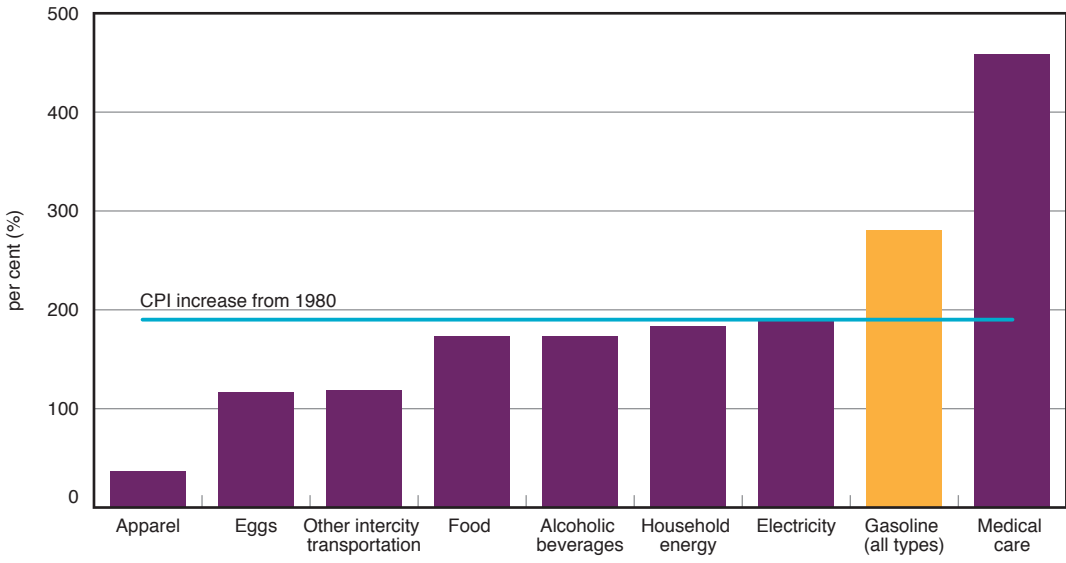
Note: Both bread and health care categories commence from 1985.

The relative price movements of gasoline in Canada over the last 30 years have been somewhat different. Compared with movements in the local CPI and other goods and services, the price of gasoline has increased significantly, more than increases in the price of electricity and local and commuter transportation.

Comparisons of price increases in Germany and the UK begin in 1991 and 1996 respectively. Both countries show the movements in the price of fuel-related goods to be higher than the local CPI as well as higher than the relevant measure of electricity.

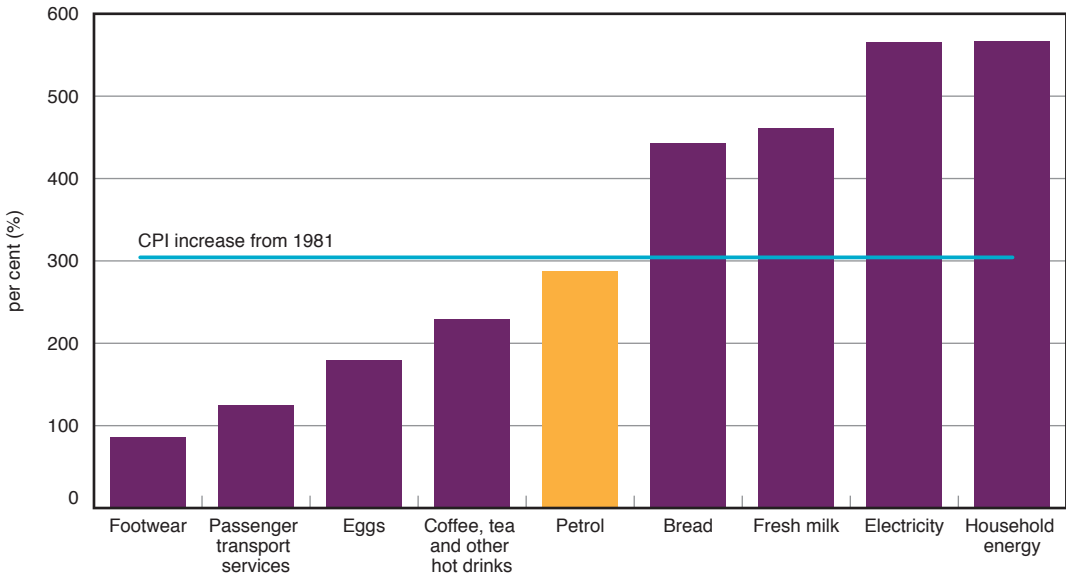
The experience in the US appears to be closest to the Australian experience with price increases in petrol being slightly higher than the increase in the CPI. In New Zealand the price of petrol has increased less than the CPI.

**Chart 12.23 Comparative changes in the retail prices of fuel and other consumer items in the US:
1980 to June 2011**



Source: ACCC calculations based on data from Bureau of Labour Statistics (US), 2011, Consumer Price Index (using CPI Database dating back to 1980), at <http://www.bls.gov/cpi/#data0>, accessed 30 November 2011.

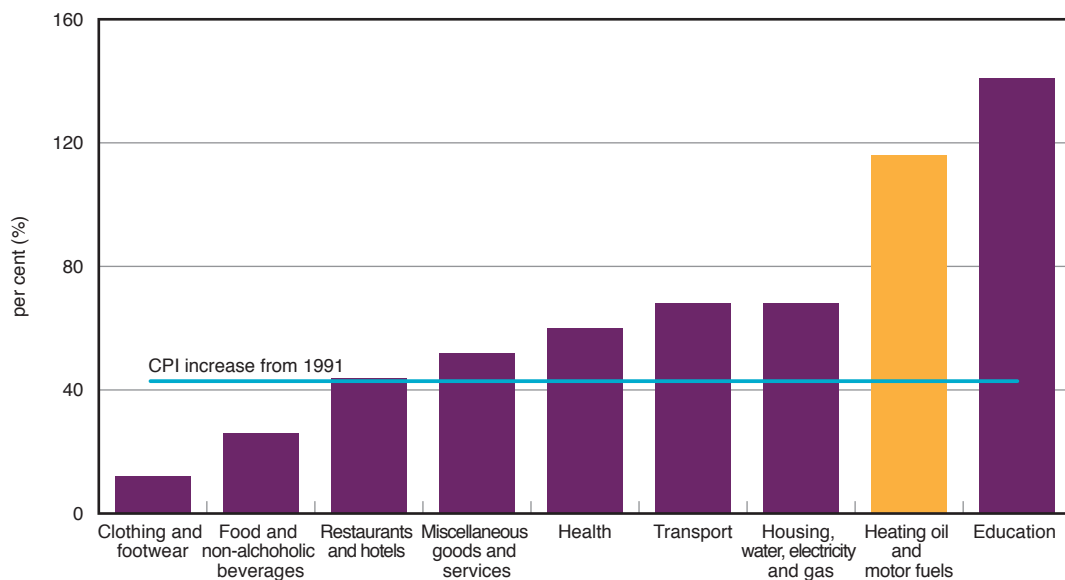
**Chart 12.24 New Zealand comparative changes in the retail prices of fuel and other consumer items:
1981 to June 2010**



Source: ACCC calculations based on data from Statistics New Zealand, Consumer Price Index (using Infoshare data dating back to 1981), at <http://www.stats.govt.nz/infoshare/>, accessed 30 November 2011.

Note: Coffee, tea and other hot drinks commence from 1983.

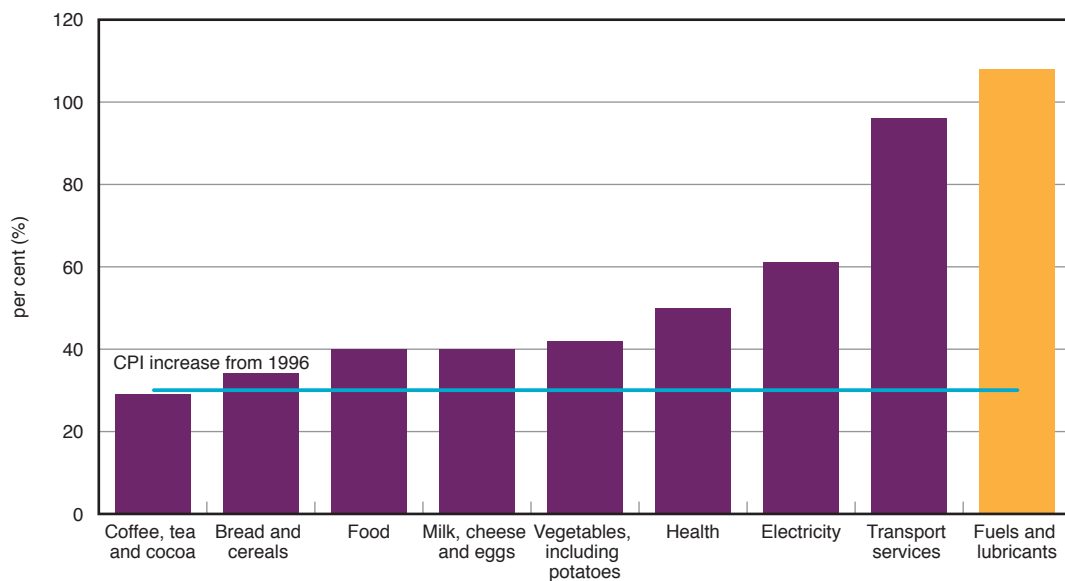
Chart 12.25 Germany comparative changes in the retail prices of fuel and other consumer items: 1991 to June 2010



Source: ACCC calculations based on data from Federal Statistical Office Germany, 2011, Consumer Price Index 1991 to 2010, annual, at <http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/EN/Content/Statistics/TimeSeries/EconomicIndicators/BasicData/Content100/vpi101a,templateId=renderPrint.psm1>, accessed 30 November 2011.

Note: Fuel category contains petrol and home heating oils.

Chart 12.26 Comparative changes in the retail prices of fuel and other consumer items in the UK: 1996 to June 2010



Source: ACCC calculations based on data from Office for National Statistics (UK), 2011, Consumer Price Index (using Statbase 1996 to 2010), at <http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Consumer+Price+Indices>, accessed 30 November 2011.

12.7 Conclusions

Evidence considered in this chapter demonstrates that Australia's experience with petrol prices is similar to a number of major petroleum markets around the world.

In particular:

- Despite some elements of the Australian petrol industry that are different compared with other countries, Australia's experience in petrol pricing is in many respects not unique. The following aspects of petrol pricing behaviour are evident in other countries:
 - retail petrol prices are largely driven by movements in their relevant international benchmark prices
 - changes in exchange rates have significant effects on retail prices.
- Short-term cyclical movements in petrol prices are not limited to the Australian market. In Germany, for example, petrol prices appear to move in regular cyclical patterns over the course of the week in a number of cities.
- Compared with other countries, however, some evidence suggests that Australian price cycles may have a larger amplitude.
- Similar to Australia, the price of crude oil and taxes also account for the majority of the price of petrol in many other countries.
- Australia has the fourth lowest retail petrol prices in the OECD, due mainly to the fact that the level of taxation on petrol is relatively low compared with other OECD countries.
- While Australian petrol prices have moved slightly higher than CPI movements over the last 30 years, with the exception of New Zealand, fuel prices in other countries considered in this chapter appear to have risen considerably more than their respective CPI.
- Similar to the trend evident in Australia, some of the countries examined in this chapter have also experienced a long-term decline in retail site numbers.