Fuelling Australia: Structural Changes and New Policy Challenges in the Petrol Industry

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1. Introduction

Few industries attract the attention of the general public like the petrol industry does. This is for good reason: petrol costs represent a large share of household expenses; prices are printed on large signs, are highly visible and fluctuate wildly day-to-day in ways that appear to be independent of wholesale prices; and there is a high degree of retail price dispersion across stations despite the fact that petrol is a relatively homogeneous product. For these reasons anti-trust authorities like the Australian Competition and Consumer Commission (ACCC) closely monitor the industry, and consumers worry that companies are colluding.

While the above features of the industry are likely to persist into the foreseeable future, structural changes in global crude oil markets, as well as in Australia’s wholesale and retail petrol markets, pose new challenges and concerns. Global demand for crude oil is surging because of rapid economic development in countries like China and India. New, efficient oil refineries have emerged throughout Asia. Australian refineries, in contrast, are shutting down in favour of import terminals that supply the domestic petrol market with refined fuel from foreign suppliers.

In retail markets, information technologies have taken centre stage. As of the writing of this paper the ACCC has taken action against dominant petrol retailers for their use of “Informed Sources,” an online platform that enables them to exclusively share price information in real-time. In addition, the ACCC has recently taken action supermarket-petrol retailers like Coles and Woolworths to limit their use of shopper dockets that tie petrol prices to grocery purchases. In a “big data” world where these companies can more accurately track consumers’ shopping behaviour in the store and at the pump, it reasonable to suspect they can sharpen their ability to price discriminate with shopper dockets overtime. In doing so they can become even more dominant over smaller petrol retailers who are not supported by a national grocery store chain.

This article documents these and other changes in ever evolving Australian petrol industry. I discuss their implications for market structure in the short and long run, and new challenges for policymakers. The discussion is organized like the petrol industry: from crude oil, to refining and wholesale supply, to pricing at the pump.

2. The Global Crude Oil Market: Here Comes Asia

Rapid economic development in Asian countries such as China and India (among others) is, and will continue to be, the most important factor driving global trends in petroleum prices and market structure. The emerging middle classes in these countries is bringing global demand for petroleum products such as motor fuel, heating oils, asphalt/tar, and plastics to new levels which in turn is putting significant upward pressure on crude oil prices.¹

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¹ Much of Section 2 derives its facts from ACCC (2013). I strongly encourage the interested reader to read through ACCC (2013) and (2011) for an excellent background on industrial facts, basic stats and industrial characteristics. In fact, the ACCC’s annual reports are some of the best background reading on the petrol industry in the world.
Figures one and two depict the growth in demand for petroleum and refined motor oil across continents and countries. While there has been persistent demand growth since the 1980’s, the trend steepens for China in particular starting around 2000. Indeed, Figure 1 shows Chinese demand nearly doubles from roughly five million to ten million barrels of crude per day, or from five to eleven percent of world crude demand.

Turning to the supply-side of the crude oil market, Figures three and four highlights the evolution of the global supply chain. Figure three clearly illustrates the dominance of the Middle-East-based Organization of the Petroleum Exporting Countries (OPEC) in the global supply chain for crude. On average, countries in this region account for 30 percent of the world’s crude oil supply year-to-year.

Figure four shows much of the recent action in the global supply chain for refined fuel has come from Asia. Refining capacity has been ramping up in these countries since the mid-1990’s and has continued to do so through to today. For instance, China has seen its share of refined petroleum capacity rise from 2.9 to 6.8 millions barrels of refined petroleum per day between 1995 and 2010, or from four to eight percent of global supply.

What has been the impact of the observed growth in demand for and supply of world crude oil and refined petroleum prices? Figures five provides a clear answer: rapid price growth. The figure plots monthly indices for Tapis crude (Malaysia), Brent Crude (Europe) and West Texas Intermediate crude (USA) in terms of real (2012=100) Australian cents per Gallon.

Source: U.S. Energy Information Administration (www.eia.gov)
The trends in these price indices highlight a remarkable near five-time increase in crude oil prices between 2003 and 2010.

2.1 The 2008 Price Spike and Crash

Two other striking patterns in Figure 5 are the large, bubble-like crash in crude prices in 2008, and the jump in monthly volatility in prices that follows. Hamilton (2009) posits two non-mutually exclusive explanations for these phenomena: (1) changes in fundamentals in global supply and demand for oil; and (2) speculation effects from the increasing presence of investors who treat oil as both a commodity and a financial asset.

The fundamentals-based explanation has been hinted at by the above data plots: the 2008 price spike and corresponding new levels of prices today is simply the effect of the large increase in Chinese crude oil demand that are not matched by a corresponding large increase in global supply. Specific details put forth by Hamilton (2009) in support of a fundamentals-based explanation include:

1. Saudi Arabian-based suppliers have scaled back on their historical price-smoothing behaviour whereby they use their crude oil reserves to supply international markets facing excess demand for crude.
2. Short run crude demand is very inelastic, with elasticity estimates in the range of 0.06
4. The income elasticity of petroleum, unlike price elasticity, is much closer to 1, and even above 1 in developing countries.
5. World GDP experienced large growth rate in 2006-2007 of 10.1 percent, which along with point 4 implies further upward pressure on crude oil prices. As large countries such as China and India continue develop, income effects should continue to put upward pressure on crude prices.

While changes in the demand and supply for oil can explain the stark positive trend in prices and the observed increase in price volatility, the rapid rise and fall in prices in 2008 does give rise to concerns about the existence of a price bubble. Indeed, the short run boom and bust in 2008 oil prices is not unlike what was observed in the early 2000’s stock market bubble (Shiller, 2000), nor the more recent U.S. housing market price bubble that led to The Great Recession.

As Hamilton (2009) and Masters (2008) discuss, if investors treat crude oil as a financial asset, then in periods with rising prices, investors can take long positions on near-term futures contracts, and sell them just before expiry. This strategy ensures one makes commodity purchases at lower prices and sells them later at higher prices. Such financial transactions are
profitable and do not require investors to actually own the commodity at all. Moreover, they give rise to speculation by investors on short run price changes so as to earn further profits. Implications of this investor behaviour are market-level price bubbles, crashes, and a general rise in speculation-driven price volatility.

3. Refining and Wholesale Supply: Going Global in Australia

Regardless of the channel(s) through which surging crude price levels and volatility arises, the global movement in crude prices has large and immediate effects on both domestic wholesale and retail prices in the small open economy that is Australia. This can be easily seen in Figure 6, where the aggregate price estimates for Tapis crude, Terminal Gate Prices (TGP), and before and after-tax retail Prices are plotted. The common trends in the figure show how the international Tapis crude price explains most of the variation in domestic terminal gate prices, and how terminal gate prices explain much of the variation in retail prices. This includes the historical rise in prices in 2008, where prices at the pump passed the 140 cpl level.

While the above integration between crude, wholesale and retail prices have existed in Australia for some time, recent structural changes in the country’s wholesale sector should further increase Australia’s reliance on foreign markets for wholesale supply. There are three structural changes of particular note.

First, while Australia has historically produced crude oil, over time it has increasingly been exported to foreign markets. This can be seen in Figure 7, which plots annual volumes of Australian crude oil production that is exported or refined and used domestically. The figure illustrates how Australia crude oil production has evolved from having a 50/50 export/domestic-use split in 2002 to having a 75/25 split by 2012.

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2 It is worth noting that the observed movements in crude oil products will have an effect on many other prices for petroleum-based products such as plastics, heating oil, etc. The price effects are, however, far less salient to consumers than the effects on petrol. In what follows, I focus on the petrol industry because wholesale and retail price data are readily available, the price effects on international crude oil prices is quite salient, petrol is a particular important commodity in households’ weekly expenditures, and it is an industry that I have research experience with.

3 Terminal Gate Prices correspond to the spot purchase of refined crude from an import terminal in the country. This corresponds to the price a purchaser expects to pay when arriving at a wholesaler’s import terminal looking to purchases a tanker load of 30 000 litres of petrol (ACCC, 2013). The TGP price in Figure 6 corresponds to the average TGP price across all major Australian markets in a given market.

4 The majority of Australian domestic crude is light and sweet and mainly sourced from two locations: the North West Shelf in Western Australia and the South East Gippsland Basin in Victoria (ACCC, 2013).
Second, in recent years, new efficient refineries have started coming online on Asian and Middle Eastern countries, and are expected to continue to emerge in the medium run (ACCC, 2013). Indeed the 2012 Energy White Paper from The Department of Resources, Energy, and Tourism has noted that recent investments in foreign refining has led to refineries, particularly those in Asia, having excess refining capacity. Figure 8 depicts as of 2013 where the major import sources of Australia are. These include Indonesia, United Arab Emirates, and Malaysia. The effects of these new emerging international competitors in the global market for refined oil have had affected the Australian refinery sector in at least three important ways.

First, there has been recent wave of domestic refinery shutdown, and a move toward having import terminals. Refinery shutdowns include: (1) Shell’s closing refinery operations at its Clyde refinery near Sydney; (2) Caltex’s 2014 refinery shut down at Kurnell; (3) Shell’s sale of its Corio/Geelong refinery operations shot down in Geelong; (4) Mobil’s shut down of its Port Sanvac refinery near Adelaide. In many cases, refineries have been replaced with import terminals. These terminals are connected to ports by pipeline and mainly receive all of their refine petrol from foreign suppliers via ships. New import terminals and expansions include those at Kurnell, Clyde, Corio, Newport, Newcastle, Parramatta, Mackay, Gladstone, Outer Harbour, Largs North, Birkenhead, Hastings, and Yarraville.5

Second, the move toward having import terminals supplying the country with lower-cost imports of refined petrol has led to an increase in wholesale competition by independent importers. Traditionally, most terminals and refineries have been run by major petrol refiner-wholesalers (BP, Caltex, Mobil and Shell). Since 2007-2008, independent importers have increased their absolute petrol imports by a multiple of five. From consumers’ point of view, having an increased presence of independent wholesalers and importers is likely a good thing: they provide a competitive pressure in upstream petrol markets on traditional petrol majors. This should reduce the degree of wholesale market power as suppliers, mitigate the degree of double-marginalisation, and thus lower prices at the pump.

The third structural change of note is the emergence of international investors. 2012-2013 was landmark year in that Puma Energy (Netherlands) purchased terminals in Queensland and Western Australia, and Idemitsu Kosan (Japan) purchased retail stations in Queensland and New South Wales and import terminals near Sydney and Brisbane. This new wave of new foreign entry into Australian petrol wholesaling and retailing in Australia perhaps reveals the potential profitability going forward in these sectors, which are rapidly globalizing in the face of international growth in foreign petrol refining, particularly in Asia.

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5 See ACCC (2013) for further specifics on refinery shutdowns and import terminal start-ups.
They again represent another form of foreign competition that potentially can keep dominant petrol majors’ historical levels of upstream market power in check.

4. Retail pricing at the Pump: IT and Anti-trust

Moving from wholesaling to retailing, I now discuss retailers’ price response to the observed wholesale cost changes. We have already seen in Figure 6 that a major determinant of retail prices is the Tapis crude oil price. Moreover, the difference between pre-tax and after-tax retail prices in the figure highlights the large fraction of prices at the pump that fuel taxes represent. As ACCC (2013) notes, nearly 51% of posted prices at the pump comes from fuel taxes. While this may seem high, Australia has relatively low petrol taxes, in fact the fourth lowest among OECD countries behind Canada (37.3%), United States (13.5%), and Mexico (11.5%).

Looking at the margin between before-tax retail and Tapis crude prices, I provide a ten year plot of before-tax profits, Tapis crude prices, and the price-Tapis margin. On average, the margin is about 31 cpl AU in real terms (2012=100), however the margin fluctuates wildly. In fact retail prices did not keep up with wholesale price movements following the 2008 wholesale price shock, leading to a negative margin from 2010 onward. That is, recent instability in wholesale markets has led to much less profitable Australian petrol retailing.6

4.1 Market-level retail price dynamics

There are two types of market-level price dynamics that underlie the national retail price movements from Figure 9. These are depicted in Figures 10-12. More specifically, the first pair of pictures highlights dynamics in price levels and dispersion commonly observed in Australian cities like Perth. As I discuss in Byrne (2012), these price dynamics are typically called petrol price cycles. Their name derives from the Maskin and Tirole (1988) dynamic oligopoly pricing model which has an Edgeworth Cycling Equilibrium where firms: (1) commit to sequentially setting prices in alternating periods; (2) undercut their rival’s previous price in each period to steal all the market share; and (3) undercut prices until both firms prices equal marginal cost, at which point both rivals enter a war of attrition until one firm randomly relents and starts a market-wide price jump.

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6 It is important to stress that this margin does not provide a precise measure of profitability. While crude oil prices make up a large part of firms’ marginal costs of petrol, they does not account for shipping costs, insurance, or quantity discounts from large downstream retailers. The trends in profitability should be similar as those based on actual marginal costs since Tapis Crude dominates trends in marginal costs.
In addition to observing cycles in retail price levels, petrol price cycles also involve price dispersion cycles. Figure 11 illustrates this. The jump in price dispersion after the relenting phase of the cycle arises as stations attempt to coordinate on a new (higher) price level. During price jumps, some firms quickly reach the new price levels while some are slow to adjust prices and still price at the bottom of the previous cycle, near marginal cost. The existence of price leaders and followers around price jumps thus gives rise to spikes in price dispersion. As firms begin undercutting each others’ prices between price jumps, there is gradual decline in price dispersion until the next price jump.

Who leads the price jumps? Evidence from Australia (Wang, 2009; De Roos and Katayama, 2013; ACCC, 2013), Canada (Byrne et. al, 2014), and the U.S. (Lewis, 2011) show in general it is petrol majors like BP, Caltex and Shell. The likely explanation for this is: (1) these firms have large networks of stations and thus have the ability to signal the start of market-wide price jumps to their geographically disperse rivals; and (2) because of the size of their station networks, dominant firms have the most to gain from market-wide price jumps. Price leadership involving these firms thus naturally arises in cycling markets.

In contrast to having price cycles, regional markets tend to have prices that remain constant for long periods of time. Noel (2007) was the first to label such price dynamics as sticky prices. Figure 12 depicts an example of a sticky pricing market in Kalgoorlie. Unlike the continual changes in daily prices seen in cycling cities like Perth, Kalgoorlie’s retail prices tend to stay constant despite daily variation in Tapis crude oil prices. The rigidity in prices likely reflects infrequent wholesale petrol deliveries in regional markets, with firms resetting their mark-ups once they refill their inventories. This is in contrast to cities which have their inventories refilled far more frequently and thus adjust retail margins more often.

4.2 Anti-trust concerns in cycling markets

Price cycles raise a number of questions from the general public and anti-trust authorities. Why do retail prices move day-to-day in ways that independent of wholesale costs? How can market prices miraculously jump seven to ten cents per litre in one day? How is the observed coordination on price jumps not collusive behaviour?

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7 Similar patterns have been documented in similar-sized regional Canadian markets by Noel (2007) and Byrne et. al. 2014.
There is indeed evidence from recent price fixing cases in Australia and Canada that gives credence to these concerns. Wang (2008) documents a collusive arrangement that existed in Ballarat in 1999-2000. The market exhibited price cycles during this period, and multiple station managers admitted in court that they explicitly colluded via telephone to coordinate market-wide price jumps, but not price undercutting. The brands involved in the cartel mainly consisted of petrol majors (BP, Mobil, Caltex, and Shell); in total there were more than 30 stations involved in explicit collusion. Further evidence of collusive behaviour in cycling markets comes from Wang (2009) who finds the evolution of the price cycle and price jumps in Perth around the introduction of Western Australia’s “Fuelwatch” policy (discussed below) is best characterized by tacit collusion among petrol majors.

The 2004 discovery of major cartel involving around 130 stations, sixty firms, and four cycling markets in Quebec, Canada tells a similar story. Stations communicated via telephone on the timing and magnitude of price jumps and undercuts. Clark and Houde (2013a and 2013b) provide an in-depth analysis of the cartel’s operation. They offer a new interpretation of how price cycles can be used to facilitate collusion: by coordinating on the timing of price jumps and undercuts such that firms alternate in leading price jumps and undercuts across price cycles, they can create an inter-temporal revenue-sharing agreement. With major firms taking on a leadership role in coordinating the cycle, they have the ability to monitor all other cartel members to ensure they are timing their price changes as per the collusive arrangement.

Perhaps some of these findings are not overly surprising. Near the bottom of the cycle when retail prices near marginal costs, dominant firms with many stations in a market increasingly experience pressure to relent and raise prices back to a profitable level. To ensure they do not consistently stand out as a high-priced station, it may be profitable in the long run to simply engage in explicit or tacit collusion with competitors to ensure everyone takes turns in being the first to raise prices to initiate price jumps. The countervailing view from firms’ perspective is they do not in fact make supernormal profits through price cycles. The degree of price undercutting is reflective of a competitive market where firms undercut their rivals to capture market share day-to-day, yielding prices that are near marginal costs.

4.3 Informational battles between demand and supply

The evolution of internet-based technologies has led to structural changes on the supply and demand sides of retail petrol markets. Two technologies are currently at the centre of domestic public policy debates. On the supply side, the online platform called Informed Sources has been in the public spotlight for some time. The platform is an exclusive online

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8 A similar price-fixing case was brought upon retailers in Geelong (a cycling market) by the ACCC in 2003, though in this instance the competition authority lost the case.
price-sharing website that only petrol majors have access to. It allows firms to rapidly share station-level price information with their competitors, potentially allowing firms to engage in levels of price coordination that could not otherwise be possible in the absence of such a website. A natural concern of such an arrangement is it facilitates collusive behaviour.

As of the writing of this article, the ACCC has in fact alleged in the Federal Court that BP, Caltex, Coles Express, Woolworths and 7-Eleven share their pump prices in a way that facilitates price coordination and softens competition.\textsuperscript{9} In light of the above discussion of the importance of price coordination in cycling markets, and the related pressure firms feel to either explicitly or tacitly collude in coordinating price jumps and undercuts, the notion that Informed Sources facilitates collusion is a particularly serious concern. Indeed, evidence on the importance of price leadership and coordination in cycling petrol markets (Wang, 2009; Lewis, 2011; Byrne et. al., 2014, Foros and Steen, 2014) lends support to ACCC’s charges.\textsuperscript{10} The parties involved in the case will first appear before the Federal Court in September 2014.

On the demand side, Western Australia’s Fuelwatch Policy has had a significant impact on equilibrium pricing in Perth, and other markets in WA. The 2001 policy involves two key components. The first is the 24-hour rule, where firms must submit their stations’ next-day prices to the state government by 2pm each day. At 6am the next day firms are required to set their prices to the levels they submitted at 2pm the previous day, and must keep prices at these levels for 24 hours. In addition, the government posts today’s and tomorrow’s prices online (http://www.fuelwatch.wa.gov.au/fuelwatch/pages/home). Like Informed Sources, Fuelwatch informs firms about the current price distribution of prices. But it also informs consumers of price distributions. The primary aim of the policy was to reduce within-day price volatility, reduce consumer search costs in finding lowest-priced stations at a point in time, and to help consumers time their purchases to avoid price jumps.

Empirical evidence suggests Fuelwatch works. Perth’s price cycles are more predictable and less volatile than all other price cycles found in Australian cities. Recent work from Byrne and De Roos (2014a) and (2014b) have further looked into the demand- and supply-side effects of Fuelwatch between 1999 and 2003. Byrne and De Roos (2014a) find Perth’s consumers indeed use the Fuelwatch platform to time their purchases to avoid price jumps, and to seek out the lowest-price station at a point in time. That is, Fuelwatch has reduced consumers’ search costs.

On the supply-side, Byrne and De Roos (2014b) find that the reduction in search costs caused by Fuelwatch has affected stations’ pricing behaviour. Historically, Australian petrol prices have exhibited an asymmetric “rockets and feathers” pattern (Bacon, 1991) where retail prices “rise like rockets” in response to positive cost shocks, and “fall like feathers” in response to equal-magnitude negative cost shocks. Such asymmetric pricing behaviour has

\textsuperscript{10} Atkinson’s (2008) in-depth study of the cycling market of Guelph, Ontario, Canada also provides relevant empirical insights for the ACCC’s case. Specifically, he collects high-frequency data on petrol price setting in the market (eight observations per station per day for 103 days). With these rich data, he uncovers an important part of majors’ strategies in initiation price jumps: toward the bottom of a given cycle, they send up “flares” whereby they set their stations’ prices to the next price jump level for 15 minutes, and then immediately brings their prices back down to their near-marginal cost levels. The flare signals to the market what the next price jump level will be. The price jump then occurs 15 minutes after a flare. A platform such as Informed Sources would further enhance the signalling ability of firms through flares to tacitly coordinate on price jumps.

In addition to flares, another commonly-used coordination device to establish price jumps is sticking too particular days of week for price jumps. Atkinson (2009), for example, finds 80% of all price jumps in his sample occur between Mondays and Wednesdays. Byrne et al (2014) using data for all cycling markets in the Canadian provide of Ontario similarly find the price jumps tend to occur mid-week. Foros and Steen (2014) find the vast majority of price jumps occurs on Mondays. In Perth it has been found price jumps tend to occur on Thursdays, whereas their timing is much more irregular in other Australian cities. The competitive Maskin and Tirole (1988) does not make any predictions of the timing of when firms leave the war of attrition at the bottom of the cycle, raising concerns about collusive behaviour when stations consistently time their price jumps week to week.
been found in other countries including the U.S. (Borenstein, Cameron, and Gilbert, 1997; Deltas, 2008; Verlinda, 2009; Lewis, 2009) and Canada (Byrne et al. 2014). Peltzman’s (2000) well-known study establishes the asymmetric pricing in fact exist in many retail industries.

Following the introduction of Fuelwatch, we find a significant drop in asymmetric pricing behaviour in Perth. The magnitude of the change is quite large: before Fuelwatch, Western Australian markets saw 80% of a 1 cents per litre (cpl) positive cost shock passed through to retail prices one month after the shock, while only 40% of a one cpl negative cost shock was passed through to retail prices. Following the implementation of Fuelwatch, there were no significant differences in passthrough rates for negative and positive cost shocks. In contrast, in unaffected neighbouring South Australian markets there were no change in asymmetric pricing behaviour before and after the implementation of Fuelwatch. In anything, pricing asymmetries in SA become more severe over the 1999-2003 period.

The implications from these studies is that Fuelwatch has reduced consumer search costs, so much so that firms became less willing to raise prices when costs rise, and more willing to cut prices when they fall. These findings are consistent with predictions of search-based models of retail market competition. In sum, the policy made consumers more aware of prices and firms’ new pricing strategies led to more competitive market outcomes.

If it works, why not implement a national Fuelwatch scheme for all Australian markets? This question was raised in a 2008 Bill entitled “Housing Fuelwatch (Empowering Consumers)” which was supported by Rudd’s Labour Government. The bill did not, however, pass the Senate. Liberals had two main reasons for not supporting bill the (1) it was believed the 24-hour rule reduced stations’ ability to adjust their prices within a given day which would reduce price competition and lead to higher prices; and (2) there was much uncertainty and a lack of transparency with the ACCC’s econometric analysis of the causal impact of the policy in reducing price-cost margins.

Our econometric work in Byrne and De Roos (2014b) suggests that Fuelwatch indeed did have a pro-competitive effect, rejecting point (1). Going forward, we plan to make all of our data and code publicly available and easy to scrutinize; this should address point (2). The difference in our econometric strategy is important: whereas the ACCC and Harding (2008) focused on a static difference-and-difference empirical model for price-cost margins, ours uses a more widely-accepted asymmetric-pricing based approach to modelling price and cost dynamics in the petrol industry, dynamics that ACCC’s examination largely ignored.

Other recent empirical research sheds light on the long run effects of Fuelwatch. Valadkhani (2013) finds significant asymmetric pricing exists in many Australian markets today, mainly in Tasmania, Queensland, and New South Wales. The only state without any asymmetric pricing markets is Western Australia. Again, this could be chalked up to the price-monitoring and search-cost reducing effects of Fuelwatch.

To bring these IT-driven policy questions under a single umbrella, it is useful to think of markets for any good as an informational battle between producers (supply) and consumers (demand). If any technological change, such as Informed Sources (pro-supply) or Fuelwatch (pro-demand) tips the informational advantage in the market to one side or the other, then we should expect technology to affect the relative amounts of producer and consumer surplus delivered by a market. More informed producers can better coordinate on higher prices; better

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12 Specifically, Harding (2008) scrutinizes the ACCC’s estimated policy effects, fails to replicate the ACCC finding that Fuelwatch lead to a significant reduction in petrol price-cost margins, and further notes that through the course of evaluation of the Bill, the ACCC failed to make public their data and code behind their econometric analysis.
informed consumers leads to higher price sensitivity and price elasticity, and in equilibrium, lower prices. Both theory and evidence on these relationships between supplier/consumer informedness and market outcomes support the ACCC’s investigation into Informed Sources, and the use of Fuelwatch in Western Australia, and possibly across the rest of the country.

4.4 Shopper Dockets

The final recent policy question of note is petrol retailers’ use of shopper dockets. To the uninitiated, shopper dockets are price discounts at the pump that consumers can earn if their supermarket purchases are sufficiently large. Such dockets tie petrol prices to supermarket purchases to encourage customers to buy more in the stores and at the pump of different retail chains, and thereby building customer loyalty. Coles and Woolworths, most notably, have the capacity to offer such pricing plans. In recent years they have been offering shopper dockets as high as 40 cpl. Given the substantial growth of Coles and Woolworths as the country’s dominant supermarket and petrol companies since the mid-2000’s, the effects of shopper dockets on equilibrium pricing and market structure in the petrol and supermarket industries are potentially huge. At first glance, shopper dockets seem like a good thing. What’s wrong with having a chance to pay a substantially lower price for petrol in a time where surging petrol prices are drastically changing households’ cost of living? As far as I can tell, the best research to date on the topic comes from Wang (2011) who studies bundling effects using data from Perth. Consistent with intuition, his empirical findings indicate that in the short run shopper dockets indeed are pro-competitive.

The long run effects, however, are much harder to establish empirically. This is because there are many other “moving parts” in industrial structure over time (entry/exit/mergers, price cycles/no price cycles, unobserved trends in fuel consumption week-to-week, and so on). Intuition suggests shopper dockets may in fact be detrimental to the petrol industry’s competitiveness in the long run. Specifically, the major grocery chains that offer large shopper dockets potentially charge petrol prices below marginal costs. They can effectively use petrol as a “loss-leader” to attract consumers to their supermarkets where the price of groceries is well-above cost. Not only can this use of shopper dockets increase in-store profitability in the short run, it also potentially has long run effects to the extent supermarkets can build brand loyalty and grow market share using by offering shopper dockets. Given the importance of brand loyalty effects in the supermarket and petrol industries, it is entirely possible that the record-setting magnitude and frequency of shopper dockets seen in recent years was driven by a petrol price war between Coles and Woolworths to attract consumers and to build their long run market shares.

The just-described long run implications of supermarkets’ use of shopper dockets likely would result in collateral damage among firms who only run petrol stations and do not have a

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14 Other major, non-supermarket retailers such as BP and United as offer shopper dockets. Shell/Coles and Caltex/Woolworths are the only companies who shopper docket use has been actively monitored and acted upon by the ACCC.

15 In 2012, the supermarket-based petrol suppliers Coles/Shell and Caltex/Woolworths accounted for 48% of annual petrol revenue; see ACCC (2013), table 1, page lv.

16 Wang (2011) notes the growth of supermarkets and discount stores as new competitors in retail petrol markets have been similarly large in the U.S., Canada, the U.K., and France.

17 To be clear, the docket-based pricing strategies that have attracted the most attention are those used by Coles and Woolworths at their Shell/Coles and Caltex/Woolworths sites. The branding arrangements between the petrol majors, Shell and Coles, and the supermarkets, Coles and Woolworths, leave the price-setting power with the supermarkets. Caltex and Shell being major refiner-wholesalers who supply independent stations and other brands such as BP do have indirect effects on pricing and docket use with Coles, Woolworths, and various other retailers via the wholesale supply contracts they enter with different retailers.
large supermarket chains to promote and support their petrol sales. In the long run these companies are likely unable to set near or below cost after-docket retail prices and stay in business; they simply do not have a supermarket to make-up for the losses at the pump. Thus a shopper docket price war would appear to have the same impact as predatory pricing by Coles and Woolworths where smaller competitors are forced out of business. Regardless of whether it is a price war or predation, the upshot of the above discussion is that shopper-dockets can ultimately lead to a reduction of competition in the petrol industry, more market power, and higher long run prices.

The latter potential long run effects of shopper dockets led the ACCC in December 2013 to limit shopper dockets to being a maximum of 4 cpl. At the time both Woolworths and Coles agreed to these limits, though both noted the limits implied customers would no longer realize the short run price relief at the pump.\(^\text{18}\) As recently as April 2014, the ACCC has taken action in enforcing these restrictions with Woolworths who breached the policy by offering an 8 cpl shopper docket conditional on supermarket purchases.

5. Conclusion

Like many resource-based industries, the Australian petrol industry is rapidly globalizing and is feeling strong effects from economic booms in highly populated yet underdeveloped countries such as China and India. As refining and crude exporting infrastructure is developed in these countries, and as the demand for Australian crude continues to rise with the growing demand for natural resources in these countries, we are seeing structural changes in Australia’s crude import and export sectors that further integrate our domestic petrol industry with the global market for petroleum.

These structural demand- and supply-side changes in the market for oil have ultimately seen retail prices reach record levels in Australia. Indeed, Chinese and India’s demand for petroleum is affecting the prices at the pump Australians pay day-to-day. The trends in prices are likely to continue, and as a small open economy, the new levels of crude and retail prices are something Australians are going to simply take as given for the foreseeable future, unless a major economic downturn looms in Asia and other developing countries.

While these trends in petrol costs are likely going to be unavoidable, Australian policymakers have been diligent in ensuring rising retail prices will be mainly due to changes in costs, and not from oil companies exploiting their market power. The openness of the country in using import terminals for crude and facilitating entry of independent wholesalers will help improved the competitiveness of the domestic wholesale market for refined oil in the long run. All else being equal, this should have a retail-price lowering effect at the pump. Authorities have also been actively mitigating pro-supply-side policies and technologies like Informed Sources, and in implementing pro-demand-side policies like Fuelwatch. The latter is a policy innovation that is unique to Australia, that works, and that is now being replicated in various European countries.

In short, as a country that has historically embraced globalization and understood its position in the world economy, has been willing to undertake policy experimentation with policies like Fuelwatch, and one that has leading anti-trust authority on the petrol industry, there is good reason to believe Australia is well-armed and flexible enough to adjust to (global) structural changes in the petrol industry, and well-armed enough to face the policy challenges that such changes bring about.

Going beyond issues and challenges specifically in the petrol industry, there are new questions for macro-policy makers that I will close with. What are the implications of

drastically off-shoring petroleum supply, which affects costs for so many products we use every day such as petrol, plastics and oils, for international relations, negotiation, and politics? How should monetary authorities respond to drastic changes in inflation due to changes in petroleum-based price levels, which are largely determined by supply and demand factors overseas? It is not just industry-based authorities like the ACCC that face new challenges from structural change in the petrol industry. May we live in interesting times.

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**References**


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