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ROUNDTABLE ON COMPETITION IN ROAD FUEL

-- Background Note by the Secretariat --

The note by the Secretariat is submitted FOR DISCUSSION under Item IX of the forthcoming Competition Committee meeting to be held on 19-20 June 2013.

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Executive Summary

1. Periods of sharp price increases in road fuel commonly generate acute concern by the public and by governments, often suspecting that suppliers are colluding to raise prices. Parallel pricing, price cycling patterns and “rockets and feathers” pricing in the road fuel sector all raise suspicions which often require detailed analysis by competition agencies.
2. Market conditions in the retail gasoline markets, such as high transparency, an essentially homogenous product, a stable and inelastic demand, and extensive vertical relations, often favour coordination. Parallel pricing, price cycling patterns and rockets and feathers pricing may result from tacit or explicit coordination, but there may be other explanations, according to the specific conditions in the markets. Competition agencies have the difficulty of distinguishing lawful from unlawful conduct, in the absence of direct evidence of an agreement.
3. Parallel behaviour may serve as a first clue to the presence of collusion and to form a suspicion of illegality, but it does not suffice to prove an illicit conduct. In the absence of direct evidence of an agreement, competition agencies rely on “plus factors” or circumstantial evidence to establish a concerted practice or a “meeting of the minds” to a common purpose or result. It has to be shown that the conduct resulted from concerted behaviour rather than simply a rational and spontaneous independent response of each firm to the recognized mutual interdependence.
4. Some retail gasoline markets exhibit regular and asymmetric price cycles where prices increase rapidly over a short period of time and then steadily decrease over longer periods. The leading theory behind asymmetric price cycles following a ‘sawtooth’ pattern in retail gasoline markets is the Edgeworth Price Cycle theory, but the causes of such a pattern are not fully understood. Some studies consider price cycles to be indicative of stronger competition, with firms repeatedly undercutting price to steal market share. However, others have attributed cycling to tacit or explicit collusion that presumably harms consumers. Some competition authorities have found evidence that communication was used by competitors to facilitate or achieve coordination on the timing and magnitude of price changes.
5. Communication evidence may play a fundamental role as a “plus factor”. However, in certain jurisdictions an understanding or commitment may not be established by communication and exchanges of price information unless there has been commitment or obligation to act according to a common scheme. It may also be required by Courts that a concerted practice constitutes the only plausible explanation for such a parallel conduct. The evidentiary standards regarding “plus factors” as elements of proof continues to be one of antitrust laws’ most difficult and unsettled area.
6. Evidence of “rockets and feathers” pricing has been found in many countries by academic researchers and competition agencies and may impose an extra cost to consumers when compared to the situation of symmetric pricing. Retail gasoline prices adjust more rapidly to increases in input prices (crude oil prices or international benchmark prices for refined products) than to decreases. It is often suggested that the delay in fully cutting price when input costs decrease is a result, at least temporarily, of collusion between companies to increase prices. However, several possible explanations have been advanced for such asymmetry in price responses.
7. The traditional explanation to the “rockets and feathers” phenomenon is market power and tacit collusion. Firms may have less incentive to reduce prices as costs fall. The old retail price becomes a focal point, and retail price stickiness may occur. Another possible explanation are search costs, as consumers may find it worthwhile to search more actively when prices are rising than when prices are decreasing. This may allow gasoline retailers to take a longer period to adjust their prices downwards, thus maintaining temporarily higher margins. Adjustment costs in refining and wholesale may also justify asymmetric

pricing, as refiners and wholesalers (particularly importers) may have limited capability to alter supply in the short term, in response to price changes. Finally, inventory management by consumers is another possible explanation for such phenomenon. When prices are decreasing, consumers expect prices to fall even further and may delay filling up their tanks. Conversely, consumers rapidly drive to the pump to refill their tanks when prices are rising.

8. Antitrust enforcement is fundamental to guarantee anticompetitive conduct is detected and penalised. Merger control in the road fuel sector is also important to prevent unilateral effects resulting from the accumulation of excessive market power or coordinated effects, if the merger makes coordination between the firms in the market easier, more stable or more effective. Whilst enforcement activity by competition authorities is essential to the well functioning of these markets, structural conditions in road fuel markets could also be altered, as suggested by several competition authorities in recommendations to government or to legislators.

9. Fostering price transparency to reduce consumers' search costs, while avoiding an imbalance of transparency towards suppliers, and reducing barriers to entry at different levels of the supply chain, could stimulate competition in these markets and can also be seen as a policy response to asymmetric pricing. Facilitating imports of road fuel, by creating conditions which permit access to logistic infrastructures, such as ports, pipelines and storage depots, or reviewing regulations which restrict entry in the retail market, for instance, can also reduce the potential for coordination, lawful or unlawful, which may impose supra-competitive prices on consumers, by promoting greater competition in these markets.

1. Introduction

10. Gasoline and other petroleum refinery products are important not only to consumers' budgets but to the functioning of the economy as a whole. Road fuel price increases affect not only motorists but also the prices of many other goods due to the rise in transport costs. In periods of high gasoline prices, heightened public attention is drawn into the functioning of fuel markets with concerns of possible anticompetitive practices.

11. Many competition agencies have been solicited or otherwise decided to investigate suspected antitrust violations in the fuel sector, have developed detailed and extensive research and have published studies on the sector. In several cases, recommendations advocating improvement in the competitive conditions in fuel markets have been suggested.

12. Crude oil prices in international markets are considered the main driver of gasoline prices for road use. However, gasoline pump price changes and volatility are also a result of changes in many other factors and are affected by the competitive conditions in the several markets along the supply chain. Anticompetitive practices in any of the markets across the supply chain can be expected to lead to higher prices at the retail level. Mergers promoting changes to the competitive structure at any level of the chain may lead to changes in gasoline prices.

13. This background note will discuss the main determinants of gasoline prices, highlighting relevant competition features of the markets for road fuel along the supply chain. In some countries, there is evidence of parallel pricing at the retail level, of price cycling patterns of adjustment in retail gasoline prices, or of asymmetric price responses to changes in input costs, with prices rising as rockets and falling as feathers (known as "rockets and feathers"). This background note will also discuss possible explanations for these pricing patterns, drawing from the experience of competition agencies and academic research, which may result from lawful or unlawful conduct.

14. This paper is organised as follows. Section 2 provides an overview of the road fuel sector, section 3 introduces the main determinants of gasoline prices, while section 4 approaches collusion and parallel behaviour. Section 5 provides an overview of asymmetric price adjustments, also known as “rockets and feathers”. Section 6 presents final remarks.

2. Road Fuel Sector Overview

15. The fuel sector can be divided into two main segments: the upstream segment (exploration of oil, development, extraction, transport and sales of crude oil); and the downstream segment (refining, primary transport and storage of refined products, wholesale operations, secondary transport and storage and retail sales in service stations on and off the motorways). The supply chain of petroleum products involves several stages. Four main stages in the value chain of refined products may be highlighted:

- **Prospecting and Extraction** – refers to the prospection and extraction of crude oil and its transportation to the location where it is refined or processed. Crude oil is extracted in many parts of the world and is an internationally traded commodity on various different exchanges for immediate or future delivery.
- **Refining or Importing of Road Fuel** – refers to the refining of crude oil to produce petrol or diesel, the blending of semi-processed crude oil and fuel components, or the import of gasoline from abroad.
- **Wholesale Transportation and Bulk sales of refined products** – Refined products are then transported to a large capacity storage which serves as a distribution terminal. Transport modes from refineries to secondary storage may include marine tankers, pipelines, road tankers, rail, and barges. Large-scale operators may resell part of their purchases in bulk to other operators, to retailers and to major industrial clients. This is a second level of distribution, as it normally involves lower quantities when compared to ex-refinery sales. The refined products are transported to the customer (either a wholesaler or a retailer) by road tanker.
- **Retailing** – refers to sales in service stations to final consumers. Three main categories of service stations may be identified: service stations selling under the brand of oil companies, independent service stations, and service stations selling under the brand of large retail distribution chains.

16. There are several markets in the fuel sector, placed at different stages of the value chain, with diverse supply and demand characteristics. The various markets have different geographic dimensions, from markets with a global scale to markets which are national, regional or local in scope. In the short term, price movements in these markets do not always go together. Nonetheless, these groups of markets are closely interconnected, and although time lags and asymmetries in the adjustment of prices downstream to changes in the prices upstream exist, prices in these different markets are interrelated in the long term.

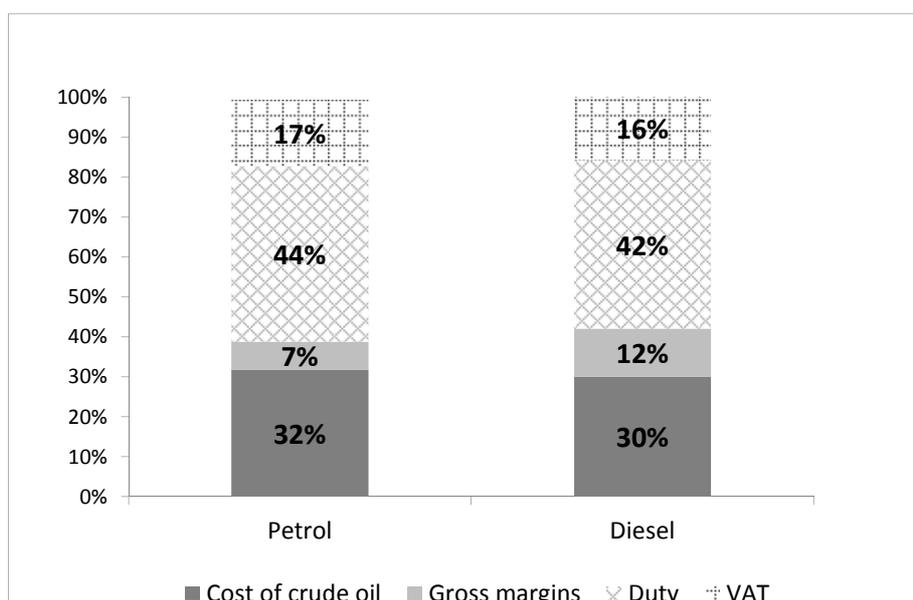
3. Main determinants of gasoline prices

17. Prices of crude oil in international markets are considered to be the main driver of petrol and diesel prices for road use. However, gasoline pump price changes and volatility are not only the result of variations in crude oil prices, but also of changes in other factors. International benchmark prices or quotations of refined products serve as reference to ex-refinery prices of petrol and diesel which will be reflected in retail gasoline prices. Exchange rates also influence retail gasoline prices. Increasing demand for gasoline, higher prices of ethanol and loss of refinery capacity or situations of refinery outages have all contributed to increases in prices. Furthermore, gasoline price spikes may emanate from disruptions resulting from natural disasters such as hurricanes or from political turmoil.

18. One of the components of pump price is tax. It normally displays less volatility, but often represents a large proportion of the retail price. Tax differences are responsible for significant differences in average retail prices across countries. Tax may also introduce distortions in the relative price of gasoline and diesel.

19. Only a small proportion of road fuel prices are commonly subject to national or local competition – the gross margins for refining, wholesaling and retailing road fuel. However, the competitive conditions in each market along the road fuel supply chain will ultimately affect gasoline prices at the retail level. The level of market concentration at different levels of the supply chain, as well as vertical integration, access to logistic infrastructures (such as ports, pipelines, and storage deposits), among other factors, is due to influence retail pump prices. These competitive conditions may be affected by mergers¹ and anticompetitive practices.

Figure 1. Components of the Price of a litre of petrol and diesel: example from the UK (December 2012)



Source: Data from OFT (2013)²

¹ Between 1981 and 2005, the Federal Trade Commission (FTC) in the US investigated 16 large petroleum mergers, requiring divestitures in 12 of those transactions. In the remaining four cases, the parties abandoned the transaction after antitrust challenge (FTC, 2005). The Bundeskartellamt has prohibited the “Total/OMV” merger case, as it would further increase the concentration on the market. The case was not upheld by the Higher Regional Tribunal of Düsseldorf and the Bundeskartellamt has lodged an appeal at the Federal Court of Justice (see Bundeskartellamt, 2011b).

² In the UK, duty is levied on both petrol and diesel. Duty is an additional tax that is applied to gasoline before it is sold. This fuel duty is applied before VAT (value-added tax), a consumption tax.

Box 1. Irving Oil /ExxonMobil merger case - Federal Trade Commission (US)

In 2011, the FTC considered that Irving Oil's acquisition of Exxon-Mobil's diesel and gasoline related assets in Maine was anticompetitive, and could result in higher gasoline and diesel prices for consumers. Competitive concerns were identified in markets for gasoline and distillates terminaling services in the South Portland and Bangor/Penobscot Bay areas.

As the merger was originally structured, Irving would have acquired ExxonMobil's terminals in South Portland and Bangor as well as ExxonMobil's intrastate pipeline connecting the two terminals. Terminals were considered critical to the sale and distribution of fuels, and the FTC required Irving to relinquish the rights to purchase the terminal and pipeline assets in Maine that it acquired from ExxonMobil, except for the right to purchase a 50 percent interest in ExxonMobil's South Portland terminal.

The settlement resolved the FTC's charges that the acquisition was anticompetitive and could increase prices for consumers.

Source: Press Release, "FTC Approves Final Order Settling Charges That Irving Oil's Acquisition of ExxonMobil Assets in Maine Was Anticompetitive", available at <http://www.ftc.gov/opa/2011/07/competition.shtml>

3.1 Crude oil prices and gasoline prices

20. Many prices occur along the petroleum products supply chain – crude oil prices, various wholesale prices, and finally, retail pump prices. Reactions to price changes at one level do not occur instantaneously on other levels, but with lags, with different adjustment speeds. In the short term, it is common that prices of crude oil vary differently from the prices of refined products. However, in the long run, there is a close correlation between them.

21. Prices of crude oil in international markets are considered to be the main driver of petrol and diesel prices for road use³. The price of crude oil has risen steeply over the past decade. Increased world-wide demand for crude oil has put an upward pressure on prices, even though world supply of crude oil also increased. Refiners take an increase in crude oil prices as a cost increase. Crude oil price increases lead to a rise in wholesale gasoline prices, which, in turn, is viewed as a cost increase by retailers. Pump prices are hence also affected. A reverse process occurs when crude oil prices decrease.

22. Crude oil markets are global. On the supply side, OPEC has a significant degree of market power and has been successful in sustaining prices above competitive levels, by setting production quotas⁴. Several refineries constitute the demand for crude oil, which is considerably dispersed. However, no single refinery can be said to have the ability to significantly influence the price of crude.

23. Crude oil is a non-renewable resource. As reserves are depleted in a given field, extraction costs tend to rise, for a given level of technology. The costs of finding and developing new reserves influence crude oil supply. New extraction technology and the increase of crude oil prices have permitted the extraction in new fields, thereby making non-conventional oil extraction processes economically viable. Supply is also influenced by the opportunity cost of producing today, as it implies foregoing production in the future. Futures markets prices affect the spot price. Whenever future prices are higher than the spot price, producers change their behaviour, by reducing their current production or increasing their inventories. Buyers, in turn, have an incentive to increase their stocks before the price increases. Spot prices are hence influenced by future prices. Production disruptions from natural disasters or political turmoil also affect world supply of crude oil.

³ See, e.g., FTC (2011) and OFT (2013).

⁴ Current members of OPEC (Organisation of Petroleum Exporting Countries): Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela. Not only is OPEC's share of world crude production extremely significant, but also most of the world crude oil reserves are under their control.

24. The cost of the supply of crude to a refinery is affected by the geographical location of the refinery (to account for the transport costs between the production and the refining facilities); the quality of the crude oil purchased, which may depend on the demand mix and on the mandatory production specifications of each country (often related to environmental requirements); and political factors (privileged or tense relationships with certain producer countries affect the source of supply of crude).

25. For each refinery, the cost of acquiring crude will essentially depend on the international prices used as a reference (Brent or WTI)⁵; the geographical location of the refinery (transport costs); the quality of the crude oil purchased (dependent on product specifications). Since there are different qualities of crude, not all refineries will buy crude oil at the Brent or WTI price. These will only serve as a reference to which crude oil prices are indexed. Positive or negative spreads to the reference price will be added to take into account different quality levels, transport costs and other factors. The international price of crude is quoted in USD/barrel. As such, exchange rates will also have an important impact in price formation in domestic markets.

3.2 *Ex-refinery prices, wholesale and bulk sales*

26. Ex-refinery sales consist in the sale of big quantities of refined products from a refinery in bulk to wholesalers, retailers and to large-scale traders. It constitutes a first level of distribution. Refined products are supplied at the gates of the refineries' facilities or delivered on primary transport (generally pipeline, ship or train) to client terminals (storage points)⁶.

27. In the absence of barriers to import (either by land or by sea), the ex-refinery price for road fuel may not necessarily depend on the cost of refining at domestic refineries, or directly on the price of crude oil, but rather on the international reference or benchmark price, plus relevant spreads such as a quality premium⁷, transport costs, insurance, discharge and wharfage costs. This price is commonly called the import parity price (IPP).

28. There may be no incentive for a domestic refinery to price significantly below the IPP, given that potential purchasers would have no alternative supply from imports at a lower price. On the other hand, a refinery would have no incentive in charging prices higher than the IPP if potential purchasers could opt for imports at the IPP. This reflects the competitive pressure imports may exert on domestic refineries. One justification for differences between prices ex-refinery charged by a certain refinery and the IPP could be the existence of barriers to imports, including logistics or other obstacles.

29. In Europe, for instance, the quotations for refined products published on a daily basis by Platts⁸ for transactions carried out with refineries in North Western Europe (NWE) or in the Mediterranean (MED) serve as reference prices for negotiated ex-refinery prices.

⁵ Brent (Crude) and Western Texas Intermediate (WTI, also known as Light Sweet Crude) are the two specifications of crude used internationally as a reference.

⁶ Large-scale operators buying at the ex-refinery stage may then resell, at a second level of distribution, part of their purchases in bulk to other operators (oil companies and independent retailers without storage capacity, large retailers and major final customers).

⁷ A "quality premium" is introduced when domestic specifications of petrol or diesel for road use do not correspond to the specifications reported by Platts.

⁸ Platts is not a stock market or a platform for regulated trading, but simply a price reporting agency. Beside Platts other "Price Reporting Agencies" (PRAs) include Argus Media, Asia Petroleum Price Index (APPI) and ICIS London Oil Report.

30. Platts quotations for refined products serve as the basis for calculating the IPP (and are its major component). Freight costs are then added⁹ and the costs of loading and discharge at the seaport are also considered. Unit costs are generally lower the larger the load discharged. Losses at interfaces (wharfage), related essentially to evaporation, are also taken into account as costs.

Box 2. Alleged manipulation of reference prices

On 14 May 2013, the European Commission “carried out unannounced inspections at the premises of several companies active in and providing services to the crude oil, refined oil products and biofuels sectors. These inspections took place in two EU Member States. At the Commission's request, inspections were also carried out on its behalf by the EFTA Surveillance Authority in one European Economic Area (EEA) Member State. The Commission has concerns that the companies may have colluded in reporting distorted prices to a Price Reporting Agency to manipulate the published prices for a number of oil and biofuel products. Furthermore, the Commission has concerns that the companies may have prevented others from participating in the price assessment process, with a view to distorting published prices. Any such behaviour, if established, may amount to violations of European antitrust rules that prohibit cartels and restrictive business practices and abuses of a dominant market position (Articles 101 and 102 of the Treaty on the Functioning of the EU and Articles 53 and 54 of the EEA Agreement).

The prices assessed and published by Price Reporting Agencies serve as benchmarks for trade in the physical and financial derivative markets for a number of commodity products in Europe and globally. Even small distortions of assessed prices may have a huge impact on the prices of crude oil, refined oil products and biofuels purchases and sales, potentially harming final consumers.

In the EU, Commission officials were accompanied by their counterparts from the relevant national competition authorities. In the EEA Member State, Commission officials accompanied their counterparts from the EFTA Surveillance Authority and from the national competition authority¹⁰.

The Portuguese Competition Authority had stated, in its report of 2009, that “bearing in mind the rules imposed by the publishers of Platts on traders and on the specifications of the products they publish the price of, the number and volumes of transactions based on which the reference price of the product is determined may raise issues that only a supra-national competition authority would be in a position to clarify”.

Source: Press release by the European Commission “Antitrust: Commission confirms unannounced inspections in oil and biofuels sectors”, on 14 May 2013, available at http://europa.eu/rapid/press-release_MEMO-13-435_en.htm?locale=en and Portuguese Competition Authority (2009)

31. Even if ex-refinery prices follow closely the IPP formula, there is no single ex-refinery price. This price depends on the contracts established between the various operators and the domestic refineries, with differences in terms of spreads. Relative negotiating strengths are very important and depend essentially on the alternative supply options of customers. If there are barriers to imports, such as access to seaports and import depots, pipelines and storage depots, competitive pressure on domestic refiners may be reduced and they may enjoy a higher market power.

32. Some refiners establish between one another “buy-sell” or reciprocal purchase agreements of refined products. This may allow refiners to compete in wholesale and retail markets where they do not have refining capacity, avoiding transport costs, which may benefit consumers. It also assists refiners to maintain refinery throughput, avoiding operating below an optimal level.

⁹ Daily freight quotations are used (Worldscale index), based on the size of the ship (the bigger the tanker the smaller the unit costs of transport), and on the contractual conditions for the journey.

¹⁰ Press release by the European Commission “Antitrust: Commission confirms unannounced inspections in oil and biofuels sectors”, on 14 May 2013, available at http://europa.eu/rapid/press-release_MEMO-13-435_en.htm?locale=en.

33. The use of the IPP formula to set domestic refinery prices, in particular in buy-sell agreements, has implications for road fuel pricing along the supply chain. Market transparency on the supply side is further increased and domestic refiners may be able to set and sustain uniform prices for a substantial part of their refinery output, when the IPP formula is used. This may lessen competition in wholesale gasoline markets, limiting effective price competition between refiners¹¹.

34. The existence of buy-sell arrangements between refiners may also create reciprocal regional commercial dependencies between them. Refiners may be more cautious to compete aggressively with other refiners with which they established buy-sell arrangements, as they may be concerned with competitive responses in another wholesale market. Buy-sell arrangements may also reduce the incentives for individual refiners to consider alternative sources of supply, as they could suffer retaliation in areas where they operate refineries. “In the extreme, buy-sell arrangements can create an environment of tacit (or even explicit) collusion” (ACCC, 2007)¹².

35. Independent wholesalers and resellers may have few alternative sources of supply, particularly if they do not have easy access to road fuel imports (given their size, access to logistics, pipelines or storage). Their bargaining power will reflect those limitations, as the price charged to the wholesale customers will reflect their cost of importing the fuel rather than the refiner’s cost or its cost of imports. As such, resellers and independent retailers may be at a competitive disadvantage compared to refiners with buy-sell arrangements, as they may face a higher input cost.

3.3 Road fuel retail

36. At the retail level, demand for petrol and diesel is dispersed and atomized, consisting of a large number of individual drivers, acquiring road fuel at service stations. Demand is typically not very sensitive to prices¹³. In most countries, taxes are levied on road fuel, such as excise duty and energy tax, as well as value added tax.

37. There are three different types of retailers: vertically integrated oil companies¹⁴, usually present at all levels of the value chain, independent retailers and supermarkets (and hypermarkets).

38. In the case of vertically integrated sites, prices are determined by refiners at those gasoline stations directly run by oil companies and at the stations run by oil companies’ agents. Dealers operating under the oil companies’ brands normally bear the commercial risk and set their own prices, but these may be influenced by refiners¹⁵. Supply agreements between oil companies and dealers usually involve complex

¹¹ See, *e.g.*, Bundeskartellamt (2009) and ACCC (2007).

¹² International reference prices can also be a focal point for operators as they “can use the gasoline spot market price to form expectations about price changes of their competitors” (Faber and Janssen, 2011). Faber and Janssen discuss the effects of suggested prices in gasoline markets, which by reducing strategic uncertainty can be another focal point.

¹³ See, *e.g.*, FTC (2005), Bundeskartellamt (2009), and CNC (2009) which refer to the low price elasticity of demand for road fuel, as consumers do not easily find substitutes for gasoline.

¹⁴ The vertically integrated retailers can be classified as: Company Owned Company Operated (COCO), owned and run by the oil company; Company Owned Dealer Operated (CODO), owned by the oil company, but run by a third party (dealer or agent); and Dealer Owned Dealer Operated (DODO), owned and run by a third party.

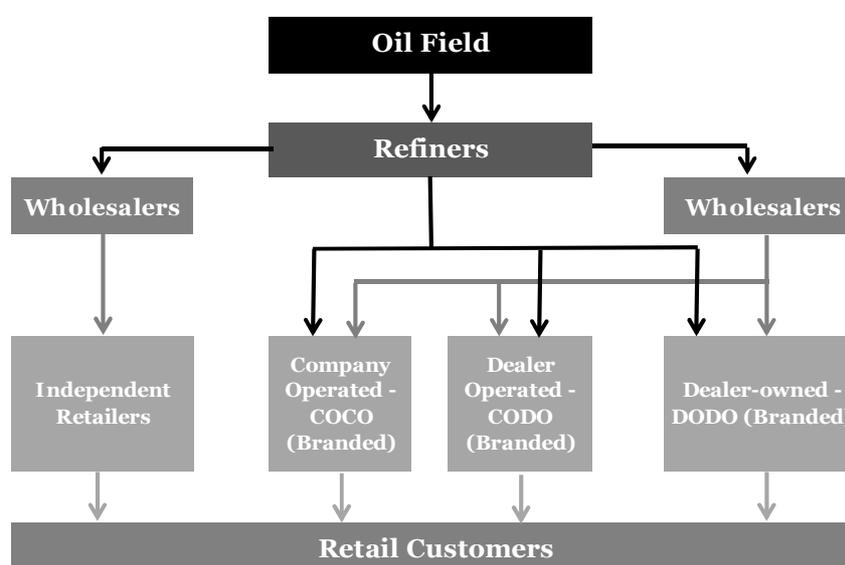
¹⁵ Oil companies may influence prices at dealers’ sites through mechanisms of financial compensation (often known as “price supporting mechanisms”) or through physical and computer mechanisms to define pump prices.

contractual arrangements, such as exclusive purchase agreements, licence to use branding, the form of payment of fuel, financial stipulations (resale margins, commissions, bonuses, joint participation in advertising campaigns and so on), minimum annual quantities, duration of the contract, renewal terms, amongst others.

39. Gasoline service stations may be owned and operated by independent retailers, selling fuel under brands that are different from those of the oil companies. Independent retailers determine the prices charged at their service stations. Most frequently, these retailers are supplied by an oil company.

40. Supermarkets have certain characteristics differentiating them from the rest of independent retailers: the retail sales of road fuel are accessory to their core business and may serve as a way to attract customers to their attached retail stores. Supermarkets' service stations are usually located near big population centres, and their business model usually relies on buying very high volumes of fuel at a lower wholesale price than their rivals and selling it at a gross margin lower or as low as rivals.

Figure 2. Road Fuel Supply Chain



Source: Adapted from Deck and Wilson (2004)

41. Running a service station involves significant fixed costs with possible economies of scale. Service stations with lower throughputs may require a higher gross margin¹⁶ to cover costs other than wholesale fuel and stay in business. Operators with higher throughputs at their service stations are normally able to purchase wholesale fuel more cheaply and may operate on lower gross margins given the high volumes of gasoline they sell. Retailers located closer to refineries or other storage facilities are expected to face lower transport costs.

42. In countries where supermarkets have entered the road fuel retail market, this appears to have had a positive impact for motorists. Supermarkets tend to have a high volume business model and are generally considered to be aggressive price discounters in the market. Most often, supermarkets aim at having the cheapest price or to at least match the lowest price in the neighbouring local area. Low supermarket fuel

¹⁶ See OFT (2013). Gross margins here are understood as the difference between the retail price and the acquisition costs of wholesale fuel (not deducting other costs).

prices also put pressure on independent retailers and oil companies to reduce their prices¹⁷. Historically, independent retailers were seen as discounters, but this role was reduced in countries where supermarkets entered road fuel retail¹⁸.

43. Retail fuel markets for road use have strong local characteristics, as motorists tend to meet their fuel needs near their home and place of work. Competition in gasoline retail is most intensely felt at a local level. Even though demand price elasticity may be low, motorists may be rather sensitive to price differences between neighbouring service stations¹⁹. Geographic market definition in antitrust enforcement and merger control normally takes local competition into account²⁰.

44. Retail service stations generally monitor the prices charged by their neighbouring competitors in a regular manner²¹. Oil companies are usually more sophisticated in price monitoring, requiring retail gasoline stations operating under their brand to regularly report prices of neighbouring service stations. The pricing strategy of oil companies makes use of this information. Price setting by oil companies may be done centrally or locally, and may involve the use of price algorithms.

45. The level of retail and wholesale competition in a certain area, the costs associated with transporting road fuel to a location, the throughput of the gasoline retail stations in the area, and the sensitivity of consumers to price, all influence retail prices at the local level, and may be responsible for local variation in road fuel prices²².

46. Entry in gasoline retail markets is often limited by regulatory constraints, usually related to public safety, land use, stability of supply and environmental protection. Barriers to entry may also relate to financial ability, location, the necessary logistics and securing supplies of road fuel, amongst other factors.

47. Retail fuel is perceived as a fundamentally homogeneous product. The marketing strategy of market operators, however, often focuses on non-price characteristics, such as quality (*e.g.* sulphur content, additives, compliance with standards). Differentiation between service stations may also result from additional services provided, such as automobile service centres or other amenities (*e.g.* convenience stores). Additionally, special programmes, including discount and bonus schemes, have been introduced, as well as loyalty cards.

48. Gasoline retail markets are oligopolistic markets, normally characterized by extensive vertical relations and mutual dependencies, with high transparency and the perception of motorists, most often, is that the product is homogeneous. These conditions may favour implicit (or explicit) coordination between suppliers.

¹⁷ A significant presence in retail sales of supermarkets tends to render markets more competitive, as is shown by the experience in various European countries, such as France and the United Kingdom.

¹⁸ See, *e.g.*, OFT (2013) and ACCC (2007).

¹⁹ See, *e.g.*, Bundeskartellamt (2009).

²⁰ In Germany, the Bundeskartellamt applied an accessibility model to determine geographic markets in the merger cases “Shell/HPV“ and “Total/OMV“, identifying those service stations that can be reached, accounting for local road infrastructure, from a particular target petrol station within specified driving times (maximum 60 minutes in rural areas and 30 minutes in urban areas). Different weights (different intensity of competition) is given to each service station, depending on their distance to the centre of the market (see Bundeskartellamt, 2009).

²¹ See, *e.g.*, Bundeskartellamt (2009) and OFT (2003).

²² See OFT (2013).

Box 3. Indirect fixing of retail prices, a vertical agreements case in Spain

In 2009, the Comisión Nacional de la Competencia (CNC) has sanctioned REPSOL, CEPSA and BP with an aggregate fine of €7.9 million for indirectly fixing the retail prices charged by the service stations in their networks that are operated by independent operators. This was achieved through several contract clauses and the terms of their commercial relations with the service station owners. The trading practices were considered indirect fixing of retail prices. The practices eliminated the retailer's ability to determine prices, and the recommended practices became fixed prices.

The supply of fuel to retailers by the oil companies and the method for establishing the commissions received by retailers as compensation for their service, combined with other factors in their trading relations, eliminated the incentives for station owners to apply discounts and compete on price. Resellers take on important risks and should determine prices independently and freely.

The CNC considered that these arrangements were meant to control the retail price of fuel sold at their branded service stations, so as to avoid price competition with stations in their respective networks, especially with stations operated by the oil company itself or under agency agreements (direct price fixing in this case is legally permissible). Indirect fixing of prices also prevents competition between service stations from different networks, because the maximum and recommended prices issued by the three oil companies (and followed by the service stations given the impossibility of applying discounts) are contractually based on the prices in the relevant area of influence and, therefore, are the same. As a result, irrespective of the brand, location or the arrangement under which each service station is operated, they all apply the same maximum or recommended price fixed by their brand owner, and that price, in turn, is aligned with the maximum or recommended price fixed by the other operators as well. This vertical practice for fixing prices indirectly results in a horizontal fixing of prices as well, with the consequent absence of competition between the service stations of the three main operators (inter-brand competition).

Source: Press release "CNC fines REPSOL, CEPSA and BP" by the Comisión Nacional de la Competencia, 30/7/2009, available at <http://www.cncompetencia.es/Inicio/Noticias/tabid/105/Default.aspx?Contentid=256255&Pag=46>

49. Various contractual arrangements, terms, conditions, or restrictions can be reached between upstream refiners and retail distributors and stations, including vertical integration (when a company operates both refineries and retail outlets)²³. Vertical integration has been the subject of much debate and unbundling of retail gasoline stations from refineries as a means to deal with inefficiencies and market power has often been promoted, although it is recognized that vertical integration also brings about efficiency gains. Empirical evidence on mandatory vertical unbundling generally find this measure to have little or no benefit to consumers, often being associated with higher retail prices²⁴. There is, however, evidence of the importance of the presence of unbranded independent retailers to competition in gasoline retail, which is intrinsically related to their contractual relations with refiners and wholesalers²⁵.

4. Collusion and parallel behaviour

50. Cartel agreements on prices are often suspected to exist in gasoline markets. Evidence of parallel behaviour may exist, whilst there is no direct evidence of explicit coordination.

51. In oligopolistic markets, under certain market conditions, firms recognize their mutual interdependence, understanding that they are players in a repeated game, and each firm consciously adapts its own strategy to the expected reaction of its competitors. Supra-competitive prices may result from this situation, even in the absence of an explicit agreement. "Tacit collusion exists where in the absence of any formal attempts to implement a collusive outcome, firms understand that if each firm competes less

²³ See Borenstein and Bushnell (2005).

²⁴ For a discussion on vertical relations in gasoline retailing, in particular on vertical integration and unbundling, see OECD (2008).

²⁵ See, e.g., Hastings (2004), Borenstein and Bushnell (2005), and OECD (2008).

vigorously they might all be able to enjoy higher prices and higher profits. For example, a firm may realise that cutting prices will lead to rival firms following suit. Hence, the best the firm can do given the likely reactions of its rivals is to maintain prices at the current level” (Bishop and Walker, 2002).

52. For competition authorities, the difficulty lies in distinguishing whether the outcome of supra-competitive prices is the result of an illicit collusion or simply a rational and spontaneous independent response of each firm to the recognized mutual interdependence.

Box 4. Concerted practices regarding price reductions and rebates for payments with credit cards - Sweden

In 1999, the five main road fuel distribution companies in Sweden (Norsk Hydro, OK-Q8, Preem, Shell and Statoil) were involved in concerted practices regarding price reductions and rebates for payments with credit cards whose object was to restrict competition on retail sales of motor fuels in Sweden.

The investigation confirmed that representatives of the companies had met in secret, planned and fixed prices and discounts for customers purchasing petrol. As a result of a procedure initiated by the Swedish Competition Authority (SCA), the Swedish Market court imposed fines on these five competitors, amounting to 740 million SEK.

Source: “Sweden: Competition Law and Policy in 2000”, available at <http://www.oecd.org/sweden/39554244.pdf> and European Commission Decision on Case No COMP/M.4545 - STATOIL / HYDRO, of 03 May 2007, available at http://ec.europa.eu/competition/mergers/cases/decisions/m4545_20070503_20310_en.pdf

4.1 Road fuel retail and background conditions for collusion

53. There are conditions which favour the existence of coordination between firms in a market²⁶. Firms must be able to reach the terms of coordination. Transparency tends to facilitate reaching these terms. A few number of players, a stable demand, low innovation markets, symmetry in terms of cost structures, capacity levels, levels of vertical integration, make it easier to reach this terms, particularly in cases of homogeneous goods.

54. Firms must also be able to monitor deviations from the terms of coordination, and to punish those deviations. Transparency, voluntary publication of information, announcements, exchange of information inside a trade association, cross-directorships, the existence of joint-ventures between the firms, all contribute to a greater ability to monitor deviations. Punishment of deviations may imply a temporary price war, or a significant increase in output, for which capacity is important. If the market conditions involve infrequent orders or large volume orders, or if firms see the actions of other firms with delay, these may make it more difficult to react and punish the firms which deviated.

55. The reaction from outsiders, competitors or customers, must also be taken into account. The existence of fringe competitors with excess capacity or the inexistence of barriers to entry or expansion reduce the stability of coordination, as well as if customers have countervailing buying power.

56. In most countries, these background conditions are present in road fuel retail, favouring collusive outcomes²⁷. The gasoline retail market is frequently given as a stylized example to illustrate that

²⁶ See, e.g., Ivaldi et al (2003) and Motta (2004).

²⁷ See, e.g., Bundeskartellamt (2009), recognizing a number of conditions which facilitate coordination in road fuel in Germany, CNC (2009) in Spain, ACCC (2007) in Australia, and AGCM (2013) in Italy. Jiménez and Perdiguero (2012) apply a variance filter to gasoline retail markets in the Canary Islands (Spain) and the situation assessed was considered closer to collusion than to a competitive outcome.

oligopolists may achieve high price-cost margins, by understanding their interdependent relationship, without the need for an explicit agreement or absent any communication between them²⁸.

Box 5. Hypothetical case in the retail gasoline market

Hay (2005) presents a hypothetical case which strikingly captures how parallel pricing may result without the need for any direct and indirect communication, under certain market conditions:

“Consider two gas stations across the street from one another that only two stations for miles around with (for whatever reason) no likelihood of entry in the foreseeable future. Assume that the profit-maximizing cartel price is \$2, and that this is clear to both sellers, but there is no brand loyalty; *i.e.*, consumers will buy from whichever is cheaper and each has the capacity to service most or all of the customers. (If both charge the same price, each will get half of the total sales.) Hence the two stations collectively have a degree of market power but there is little or no individual market power. Finally, assume further that, to this point, each firm has been selling at \$1.

In this scenario, each firm would wish that the market price were \$2 but would also realize that if one firm were to raise the price to \$2 and the other were to maintain the price at \$1, the firm initiating the price increase would lose all its business to the firm with the lower price. If that happens, the high priced firm will be worse off than the status quo and the low price firm will be better off. Hence, at first blush, it appears that neither firm will want to initiate the price increase (without prior agreement that its rival will follow).

But all is not lost for our would-be oligopolists. By law or industry custom, prices are posted prominently on signs in front of each station. Each firm realizes that if it increases price to \$2 it can easily see whether the other has followed and can rescind the price increase promptly if it observes that the other has not followed. Consumers cannot easily store gasoline, so only a limited volume of sales will shift in the interim before the price collapses back to \$1. Thus, there is very little risk in initiating a price increase. From the second firm’s perspective, the short-run advantage of not following a rival’s price increase is limited and the long-run consequence may be to preserve the lower price. Hence, it can be in the second firm’s interest to follow a rival’s price increase (and the rival knows this). The result is that the market price can move to (and remain at) \$2 without any direct or indirect communication between the parties (unless one counts the posting of the price as “communication”).” (Hay, 2005)

There seems to be consensus that conduct such as the one described in the hypothetical “cannot – and should not” constitute an antitrust violation, concludes Hay (2005). This pattern of conduct is the consequence solely of oligopolistic interdependence. There seems to be no reason to infer any kind of agreement from such conduct, albeit parallel. In the absence of an explicit agreement, an agreement may nonetheless be inferred from conscious parallelism when certain ‘plus factors’ exist.

Source: Hay (2005)

57. Gasoline retail markets are often highly concentrated and very transparent, as prices are usually visibly posted. Transparency allows firms to detect deviations from the implicit coordination. The predominant consumer perception is that gasoline in different service stations is essentially the same product. Homogeneity also contributes to increased market transparency. Price elasticity and product innovation in these markets are generally low. Moreover, the road fuel sector is normally characterized by wide vertical relations and mutual dependencies as well as interlocks between firms companies, with firms often interacting with one another. Punishment of deviations is hence facilitated.

58. Demand is extremely fragmented with no effective countervailing buying power to constrain suppliers. Barriers to entry may also be significant, as there may be regulatory restrictions on establishing service stations or, for instance, difficulties in setting up a retail network, such as financial ability, location, necessary logistics, securing supplies of road fuel, among others.

59. All these conditions could logically produce similar or identical prices without an agreement, favouring implicit coordination.

²⁸

See, *e.g.*, Carlton et al (1997), Hay (2005), and Kovacic et al (2010).

4.2 *Parallel behaviour and “plus factors”*

“Parallel pricing occurs if firms change their prices simultaneously, in the same direction, and proportionally. A concise representation of the degree of price parallelism is given by the correlation between prices.” (Buccirossi, 2006)

60. Unlike price-fixing agreements, which constitute *per se* violations of the antitrust rules, parallel behaviour is generally not sufficient to prove the existence of unlawful anti-competitive behaviour. Even though both in the US and the EU, for example, parallel behaviour may serve as a first clue to the presence of collusion and to form a suspicion of illegality, it does not suffice to establish the existence of a contract, combination, or conspiracy as required by the Sherman Act (paragraph 1), or an agreement or concerted practice as required by Article 101 of the Treaty on the Functioning of the European Union (TFEU)²⁹.

“By operationalizing the idea of an agreement, antitrust law clarified that the idea of an agreement describes a process that firms engage in, not merely an outcome that they reach. Not every parallel pricing outcome constitutes an agreement because not every such outcome was reached through the process to which the law objects: a negotiation that concludes when the firms convey mutual assurances that the understanding they reached will be carried out.” (Baker, 1993)

61. Direct evidence of an agreement is not always available. Most countries in their enforcement activities make use of circumstantial evidence to prove unlawful conduct³⁰, often as a complement to the direct evidence gathered. Although some courts have required that each piece of circumstantial evidence put forward by competition agencies directly relate to a specific agreement, it is usually considered as a best practice to use circumstantial evidence holistically. Assessing the overall picture given by the cumulation of the different pieces of circumstantial evidence is usually more suitable to conclude whether there has been an unlawful conduct than the separate evaluation of each piece of evidence.

62. Competition laws provisions, although generally written in a broad manner to apply to all forms of agreements, formal and informal, explicit and implicit, will only apply to parallel conduct when there is evidence that such conduct is the result of an agreement or at least a conscious common intention of coordination among competitors. To prove a competition law infringement, it has to be shown that the conduct resulted from concerted, rather than unilateral, behaviour, a “meeting of the minds” to a common purpose or result³¹.

63. To determine if a suspicious parallel behaviour constitutes an anticompetitive practice, a ‘parallelism plus’ approach has been adopted by the US and European courts³². A parallel behaviour may only serve as proof of an antitrust violation if ‘plus factors’ are shown to have existed.

²⁹ Parallel behaviour is often considered a collusive marker. However, it may also be consistent with non-collusive equilibria, as shown by a vast body of literature such as Turner (1962), MacLeod (1985), Baker (1993) and Buccirossi (2006).

³⁰ For a discussion on the use of circumstantial evidence in cartel cases, see, *e.g.*, OECD (2006).

³¹ For a notion of concerted action in the US, see Supreme Court decisions in cases *Interstate Circuit, Inc. v. United States* 306 U.S. 208 (1939), *American Tobacco Co. v. United States* 328 U.S. 781 (1946), *United States v. Paramount Pictures, Inc.* 334 U.S. 131 (1948), and *Theatre Enterprises v. Paramount Film Distributing Corp.* 346 U.S. 537 (1954).

³² For a notion of concerted practice in the EU, see decisions by the European Court of Justice (ECJ) in cases *Suiker Unie v Commission* case [1975] ECR 1663, *Imperial Chemical Industries v Commission (Dyestuff) case* [1972] ECR 619, *A. Ahlström Osakeyhtiö and others v Commission (Woodpulp II) case* [1993] ECR

64. These plus factors may include³³:

- Actions contrary to each economic operator's self-interest unless pursued as part of a collective plan.
- Phenomena that can be explained rationally only as the result of concerted action.
- Evidence that economic operators created the opportunity for regular communication.
- Industry performance data, such as extraordinary profits, that suggest successful coordination.
- The absence of a plausible, legitimate business rationale for suspicious conduct (such as certain communications with rivals), or the presentation of contrived rationales for certain conduct.

Box 6. Concerted practice of common discount policy - Greece

The Hellenic Competition Commission imposed a fine of € 30.066.585 on “BP HELLAS S.A.” and a fine of €19.664.888 on “SHELL HELLAS S.A.” for concerted practices with respect to the discount policy applied in regions of Greece. The two companies converged in their net wholesale prices by means of a common discount ratio policy, which amounted to a price-fixing agreement.

The only plausible explanation for the systematically and stable relationship between the discounts and final prices of unleaded petrol across the Greek regions was found, through empirical analysis, to be linked to the existence of a concerted practice carried by the two oil companies. The common discount policy pattern could not be explained by reasonable economic factors (such as transportation cost, economic geography across regions, or demand conditions).

Source: Press release “Publication of the Competition Commission's decision regarding the Directorate General for Competition's ex officio investigation to identify possible infringements of law 703/77 by oil products trading companies”, on Decision No. 421/V/2008 of 20 November 2008, available at http://www.epant.gr/news_details.php?Lang=en&id=89&nid=170.

65. These “plus factors” may be circumstantial evidence from which concerted, rather than unilateral, behaviour, may be found or inferred to have existed. Circumstantial evidence may consist of “communication” evidence or “economic” evidence.

66. Communication evidence is evidence that economic operators met or otherwise communicated. However, the substance of those communications is not known. Economic evidence provides elements not only on the firms’ conduct that suggests an agreement or concerted practice was reached, but also on the industry as a whole and the market structure to ascertain, in particular, whether a concerted action would be feasible and sustainable³⁴.

“The most important threshold element of proof in this framework would consist of evidence showing how the defendants communicate their intentions and confirm their commitment to a proposed course of action. Perhaps the most probative proof of the mechanism for achieving consensus would consist of evidence demonstrating that a pattern of extensive communication among the defendants preceded a complex, parallel adjustment in behavior that could not readily be explained as the product of the defendants’ independent efforts to identify and adhere to focal points for organizing their conduct. The existence of a means for detecting cheating might be

I-1307, stating in the latter that “Parallel conduct cannot be regarded as furnishing proof of concertation unless concertation constitutes the only plausible explanation for such conduct”.

³³ See Kovacic et al (2010).

³⁴ See OECD (2006).

revealed by establishing a pattern of bilateral exchanges of pricing information among competitors or exchanges of data through trade associations". (Kovacic et al, 2010)

67. Communication may hence play a fundamental role in establishing a concerted practice. However, the flow of information among competitors should be analysed according to the rule of reason. "Courts (and economists) should analyze how a specific type of communication did in fact affect prices and output in a specific market setting" (Carlton et al, 1997). Facilitating practices³⁵, such as exchanges of information, assists competitors to reach a common understanding and to monitor each other's conduct so as to ensure deviations are detected and punished, enhancing the ability of competitors to coordinate their behaviour³⁶.

Box 7. Exchange of price information in motorway service stations - France

In France, the Conseil de la Concurrence sanctioned Total France, Esso, BP France and Pétroles Shell, imposing a fine of € 27 million, for having, almost on a daily basis, exchanged information on the prices charged in their service stations on certain motorway sections³⁷.

In its decision regarding gasoline retail on motorways, in a market which could be characterized as a tight oligopoly, it was considered that such telephone exchange of price information substantially reduced the information collection costs. These practices would artificially increase price transparency between sellers. Although prices charged by competitors could be obtained by service stations by driving by, to check posted prices, such physical efforts were considered to be too costly: "even though the effect of these information exchanges on the speed of the alignment of the prices and on their levels cannot be precisely measured, they necessarily favoured a higher level than what would have prevailed in the absence of this collective practice. Indeed, each oil company was induced to reduce its prices at a petrol station relative to the prices charged by competing petrol stations since, as a result of this exchange of information, it had to inform these other stations of the price cut, thereby giving them the possibility to react more quickly to the initial price cut than would have been the case had the information exchange not existed". Supra-competitive outcomes would be easier to sustain given these frequent exchanges of information, allowing for regular monitoring and immediate retaliation in case of deviation.

The decision by the Conseil de la Concurrence was not upheld by the Paris Court of Appeal. The degree of price alignment was not sufficient for the Court to consider that it could only be explained by a concerted practice. Moreover, information collection costs would not have been considerably reduced by direct exchanges of price information between competitors to cause an artificial increase of transparency within the market. These practices were therefore not considered as having facilitated reaching a higher price outcome or having reduced price-based competition.

Source: Autorité de la Concurrence, Press Release of 1 April 2003, "Fuel distribution on motorways : the Conseil de la concurrence hands down sanctions against the major oil companies", available at http://www.autoritedelaconcurrence.fr/user/standard.php?id_rub=127&id_article=239 and written submission of France to OECD (2010).

68. However, in certain jurisdictions an understanding or commitment may not be established by communication and exchanges of price information unless there has been commitment or obligation to act according to a common scheme. It may also be required by Courts that a concerted practice constitutes the only plausible explanation for such a parallel conduct.

69. The evidentiary standards regarding "plus factors" as elements of proof of unlawful conduct vary across jurisdictions. Although central to antitrust analysis, the analysis of "plus factors" to determine whether a parallel conduct may constitute an illegal anticompetitive practice continues to be one of

³⁵ For a discussion on facilitating practices, see OECD (2007).

³⁶ Facilitating practices may lead to competitors reaching what is often called a "tacit agreement" or an "implicit agreement". The use of these terms is not, however, uniform across jurisdictions, but it is meant to distinguish these practices which facilitate coordination, and may be unlawful, from explicit agreements.

³⁷ *Conseil de la Concurrence* decision 03-D-17 of 31 March 2003 relative to practices within the market for the distribution of fuels on the motorway.

antitrust laws' most difficult and unsettled area. In general, the analysis of plus factors is particularly difficult when the market itself presents characteristics which favour implicit coordination, where parallel behaviour may be explained by each competitor acting rationally, given the structure of the industry, as a result of oligopolistic interdependence.

4.3 Price transparency and competition

70. Consumers may face high search costs when comparing prices between different service stations. Most often consumers only conduct limited comparisons of prices when they must fill up their tanks and are not aware of all the prices quoted by the service stations they could reach at a reasonable cost.

71. Better informed consumers will search more aggressively for low prices, generally leading to higher competition among suppliers. Visibly posted prices or tools which allow consumers to compare prices, such as those based on mobile phones, reduce consumer's search costs. Price transparency may hence reduce the stability of a collusive outcome in gasoline retail.

72. However, when markets are particularly susceptible to anti-competitive coordination, increased transparency may also significantly increase the risk of such coordination³⁸. This may be so especially when transparency in the market is asymmetric and imbalanced towards suppliers. Sellers may be better informed about prices than consumers. This may be the case when prices are rather volatile, making it more difficult for consumers to compare prices, increasing consumer's search costs.

73. Conscious parallelism is more likely to occur if sellers are able to monitor prices in a quick and precise manner. If one seller acts as price leader, raising its price, it will monitor whether other sellers will follow. Other sellers may quickly follow the lead and adjust their prices, and the price leader will only take a small risk of losing the more price sensitive buyers for a short period. If other sellers choose not to follow the lead, the leader may quickly readjust its price, reducing the risk, when price transparency is high. Price transparency may also increase the stability of a collusive outcome, either tacit or explicit, as it makes it easier to detect and punish deviations.

74. Greater transparency amongst sellers may result from exchange of information or communication, which may facilitate conscious parallelism or anti-competitive coordination³⁹.

³⁸ In a dynamic context, "Increasing transparency in the market will therefore have two effects: it tends to increase the incentive to deviate from collusive agreements because it decreases consumer search costs, but it also increases the ability of firms to detect and punish deviations from (implicit) collusive agreements" (Kühn and Vives, 1995).

³⁹ For a discussion on price transparency see OECD (2001).

Box 8. Informed Sources price sharing service - Australia

In Australia, Informed Sources, an electronic subscription service, provides a centralised exchange of retail petrol pricing information for its subscribers, primarily the major refiner-marketers and larger independent retailers.

Price data is collected from retailers that subscribe the service through an automated electronic system and also manually from various other retailers. In certain geographic areas information is updated every 15 minutes. Covering about 3500 sites, subscribers can access the data and generate reports using an internet service.

Consumers do not have access to similar depth of real time information as available to Informed Sources subscribers. The ACCC believes this raises particular concerns for the relative levels of price transparency between retailers and consumers in the retail petrol market in Australia.

The ACCC considers that the petroleum market has many of the characteristics of a market where (tacit) price coordination is likely to be easier and profitable. Frequent, or near real time, exchange of price information between retailers may facilitate collusive outcomes. Retailers who seek to lead prices up in a market will face reduced risks from higher transparency of competitors' prices. It makes it easier for the leader to observe whether competitors follow the price rise or not. If not, the price leader can quickly adjust its price downwards, to have it back in line with the market.

Unless there is a net public benefit, the ACCC believes there is a case for removing such mechanisms from the market. Increasing the overall information available to consumers, by expanding the availability to consumers of the same pricing information that Informed Sources subscribers have, could be beneficial to reduce the relative current imbalance in price transparency between buyers and sellers.

Source: ACCC (2007)

75. Having launched an inquiry, in May 2008, into the state of competition in the markets for petrol and diesel fuel, the Bundeskartellamt expressed its concerns on efforts taken by oil companies and their petrol stations to obtain prompt information about retail prices, which could result in “inadmissible market information systems”⁴⁰. The Bundeskartellamt stated it would take up information and initiate suitable measures on incidents of exchange of information between petrol stations of various companies, which allegedly informed each other by telephone of their own price changes.

4.4 Gasoline Price Cycles and Coordination

76. Some retail gasoline markets exhibit regular and asymmetric price cycles. This is the case in some cities in Australia and Canada, but also, for instance, in Norway, the US, Germany and Austria. These pricing patterns resemble a ‘sawtooth’ where prices increase rapidly over a short period of time and then steadily decrease over longer periods and by smaller increments. This asymmetric pricing dynamics in the gasoline retail markets could be explained through the lens of the Maskin and Tirole (1988) Edgeworth price cycle equilibrium⁴¹.

77. One explanation for this pattern could be that competing retailers try and win market share by continuously undercutting each other by a small margin. At some point, to guarantee financial sustainability, a substantial increase in price is eventually required. Increases in prices are most likely to be initiated by large retailer groups who, however, tend to match rather than undercut their smaller competitors at the undercutting stage. Other explanations to price cycles have been advanced, such as cost asymmetry, changes in inventory level, explicit coordination, among others.

⁴⁰ Bundeskartellamt (2009).

⁴¹ See Atkinson (2003), Eckert (2003), Eckert and West (2004), and Noel (2007a, 2007b, 2011).

Box 9. Edgeworth Price Cycles

“Edgeworth Price Cycles are the leading theory behind the asymmetric price cycles that appear in many retail gasoline markets around the world” (Noel, 2011). According to the theory, firms selling homogenous goods repeatedly undercut one another by small amounts to steal market share. When margins get too low, one firm will raise its price significantly higher. Other firms adjust their prices quickly to the higher prices and then from the new higher prices another round of undercutting begins.

“While research continues, the weight of the current evidence also points to the conclusion that Edgeworth Price Cycles are indicative of stronger competition. They benefit consumers with lower and more efficient prices relative to the less controversial stable price equilibrium” (Noel, 2011).

The Bundeskartellamt (2011a), however, notes that “the existence of substantial competition cannot be deduced merely from the existence of price cycles or their alteration over a specific period. At no stage in theoretical research is the existence of Edgeworth cycles interpreted as proof of substantial competition. Rather, it is even interpreted by different authors, above all by Maskin/Tirole themselves, as implicit coordination”.

Lewis (2012) analyses 280 cities in the US to screen for the existence of Edgeworth price cycles where gasoline stations repeatedly coordinate price increases followed by a periods of aggressive price undercutting. Lewis (2009) found that in price cycling markets, prices rise in large jumps, initiated by price leaders, and fall in small increments, leading to a clear coordination pattern.

Byrne and Ware (2011), focusing on the Canadian market, found significant evidence of coordination to initiate price increases between the four major brands. In the undercutting phase, they follow average prices. Independent retailers were, however, less likely to increase their prices and would undercut more aggressively in the following stage.

78. When prices are at the cycle bottom, increases in prices by all competitors would benefit all. However, every firm would like to be the last to increase price, given that consumers may be highly sensitive to price differences between local competitors. A price leader may lose sales during the time between its price increase and being followed by the other firms. This is known as a war of attrition problem which could be solved tacitly through implicit coordination.

79. However, the probability that an attempt to increase price is successful decreases as the number of firms becomes large⁴². Despite the fact that prices in gasoline retail are transparent, being posted for everyone to see, communication between the firms may be needed for them to overcome the war of attrition problem, ensuring that all firms commit to the price rise initiated by the price leader. Following such hike in price, communication between competitors, such as notification calls, may alert competitors of the price rise attempt more quickly and reduce the losses in volume the price leader could incur⁴³.

⁴² See, *e.g.*, Noel (2006) and Wang (2008).

⁴³ See Wang (2008), who considered as background the case of conspiracy, including phone calls between competitors, investigated by the ACCC in the Ballarat market.

Box 10. Ballarat and Geelong Petrol Cases - Australia

In 2005, the ACCC found that some petrol stations conspired to set petrol prices during 1999 and 2000, in the Ballarat area, in Australia (Ballarat Petrol Case⁴⁴). The ACCC presented records of telephone calls between the service station operators just before they lifted petrol prices, as well as witnesses who said the calls were to ensure that members of the price-fixing circle stuck to the deal. One of the companies, Apco Service Stations PTY Ltd. appealed the decision to the Federal Court.

The Court found evidence that some petrol station owners had entered into arrangements or understandings regarding the retail price of petrol. However, in relation to Apco, despite having received information regarding its competitors pricing, there was no expectation that it would match price increases initiated by other suppliers. The mere hope or factual expectation that Apco would act in a particular way fell short of an understanding. The Court concluded that Apco was not a party to any understanding to fix prices and the part of the decision establishing Apco's infringement was reversed.

Also in 2005, the ACCC brought forward another case where some companies were considered to be involved in fixing the retail price for petrol, especially during 1999 and 2000, in the Geelong area (Geelong Petrol Case⁴⁵). The ACCC established that the price fixing was implemented through telephone calls between retailers, communicating the amount and timing of petrol price rises. Follow-up calls were also made between sellers. The ACCC relied on circumstantial evidence, as the ACCC did not find any direct evidence. The ACCC alleged that there is a correlation between the timing of the calls and the timing of the petrol price rise.

The case was appealed and the same reasoning in Apco was applied to this case by the Federal Court. The conduct comprised regular communications between the parties on proposed future petrol pricing changes, but the recipient of the information regularly (but not always) followed the proposed price change. Moreover, the court considered that the price rises were routinely implemented, even without phone calls, and the 'sawtooth' pattern of price increases and decreases was not itself proof to a price-fixing cartel in the Geelong petrol market, as the same pattern occurred in Melbourne. The decision was not upheld in Court as the element of commitment or obligation was absent. The evidence was insufficient to establish an understanding to fix prices.

80. Although gasoline retail markets often present characteristics which make collusion easier, such as high concentration, an homogeneous product and price transparency, communication between competitors may be necessary to ensure a collusive outcome. This can be explained by the above mentioned war of attrition problem, but also by important asymmetries or heterogeneity between firms⁴⁶. Gasoline retailers may differ in storage capacities, in the services they provide (primarily selling gasoline or offering other complementary services), in their ownership structure and vertical arrangements, resulting in heterogeneous costs.

81. When firms are heterogeneous, there may be enforcement and agreement problems when organizing a cartel. Coordination on a common price does not allow coordinating firms to control where consumers shop, in retail markets with posted prices. Market shares will tend reflect the quality of each service station (e.g., location, store amenities). The gains from deviation from a collusive arrangement may differ according to a firm's cost level or market share. Coordination may fail as it may be difficult to reach an agreement on the coordinated price when some firms are low-cost and single-station while others are high-cost or multi-station. Moreover, low-cost and single-station firms may have a greater incentive to deviate from the common strategy.

82. One way for coordinating firms to solve the enforcement and arrangements problem could be to implement transfers between them, not necessarily through side-payments, but based on adjustment delays during price changes. The most cost-effective firms may be allowed to move last during price-increase

⁴⁴ See *ACCC v Leahy Petroleum [2007] FCA 794* (Ballarat case), available at <http://www.austlii.edu.au/cgi-bin/sinodisp/au/cases/cth/FCAFC/2005/161.html?stem=0&synonyms=0&query=apco&nocontext=1>

⁴⁵ See *ACCC v Leahy Petroleum [2007] FCA 794* (Geelong), available at <http://www.austlii.edu.au/cgi-bin/sinodisp/au/cases/cth/FCA/2007/794.html?stem=0&synonyms=0&query=leahy&nocontext=1>

⁴⁶ See Clark and Houde (2012).

episodes, giving them a larger share of the market. One of these firms may then be allowed to initiate price cuts, while the rest of the players move subsequently to match the new price. Inter-temporal transfers may result from this order of play between members which can be part of the coordinated strategy. Asymmetric price cycles, observed in some gasoline retail markets, may be consistent with such sort of coordination⁴⁷. These price cycles are normally characterized by prices increasing rapidly over a short period of time and then steadily decreasing.

83. Firms with little bargaining power (for instance the high-cost firm) may use transfers towards firms with more bargaining power (for instance low-cost firms) to coordinate a higher price equilibrium. Firms with more incentive to deviate may be recurrently allowed to price below the collusive price. These periods of temporary price differences may facilitate reaching a collusive agreement. To identify the timing of transfers, given that wholesale prices are volatile, an obvious focal point may be observable cost measures, such as the posted-rack price. Instead of coordinating on the level of prices or markups, gasoline retailers may coordinate on the timing and magnitude of price changes.

84. Monitoring and communication efforts may be necessary to detect deviations from the coordinated timing and magnitude of price changes. For a cartel leader, it is important to guarantee that followers move early during price increase periods. However, the timing of price changes may not be perfectly observable, and many stations may be tempted to delay their actions. This may render coordination unsuccessful.

Box 11. Gasoline cartel in Quebec⁴⁸ – Canada

The Competition Bureau in Canada started an investigation to an alleged price-fixing agreement, after an article was published in the Victoriaville newspaper. According to the article one of the station owners was harassed by other station owners, because he did not want to go along with their price-fixing agreement. In 2005, the Bureau began recording private conversations of the alleged participants of the cartel, in Victoriaville, Quebec.

During the investigation, wiretaps, searches and the immunity program were used to find evidence. After the execution of search warrants, some undertakings cooperated in the investigation. The evidences gathered during the investigation led to further investigations in other local markets in Quebec, namely Thetford Mines, Sherbrooke and Magog.

The Bureau found evidence of a conspiracy between competitors to fix gasoline pump prices. The Bureau established that the price-fixing was implemented through telephone calls between the local operators of gasoline stations, during which the gasoline price and timing of price rises were agreed.

As of September 2012, 14 companies and 31 individuals were accused of price-fixing and fined. Some of the individuals and companies appealed the decision and the proceedings are still pending⁴⁹.

5. Asymmetric pricing: rockets and feathers

“The first thing that comes to mind when talking about rockets and feathers is collusion. A classical example is gasoline retailing, a market operated by a handful of players with output and input prices easily observable by everyone. Asymmetric gas price adjustments are usually associated with collusive behaviour by both government and the media.” (Tappata, 2009)

⁴⁷ Clark and Houde (2012) look at the recent gasoline cartels in Canada to characterize the mechanism used to sustain collusion.

⁴⁸ Press releases: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/02693.html>, <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/02694.html>.

⁴⁹ Detailed data available at: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03079.html>.

85. Adjustments to price changes in a part of the supply chain do not instantaneously ‘pass through’ to prices in other levels of the chain. Adjustments in prices along the supply chain generally occur with lags, with different adjustment speeds.

86. The speed or the pattern of price responses to cost changes has been of particular interest to sector analysts, particularly to assess whether ‘asymmetric price adjustments’ occur. There may be asymmetry in the pattern of price responses and in the total length of time it takes for gasoline prices to adjust to a cost increase when compared to a cost decrease, referred to as pattern asymmetry. Retail prices may adjust more rapidly in response to a cost increase (prices go up like a rocket) than in response to a cost decrease (prices go down like a feather). This phenomenon is popularly known as “rockets and feathers”⁵⁰. It is often suggested that the delay in fully cutting price when input costs decrease is a result, at least temporarily, of collusion between companies to increase prices.

87. This section will discuss theoretical explanations for asymmetric pricing and provide a concise overview of both academic and competition agencies’ empirical studies on the “rockets and feathers” phenomenon. Evidence of asymmetric pricing has been found in several countries and it may imply costs to the consumer. Lastly, policy responses to asymmetric pricing will be discussed, some of which were suggested by several competition authorities in recommendations to government or to legislators.

5.1 Possible explanations for asymmetric pricing

88. Understanding whether the “rockets and feathers” phenomenon actually occurs and why it arises has been a topic of interest not only to sector analysts, but also to competition agencies in different parts of the world. Several explanations to such phenomenon of “rockets and feathers” or “asymmetric price adjustment” have been advanced: market power and tacit collusion; search costs; adjustment costs in refining and wholesale; and inventory management by consumers.

5.1.1 Market power and tacit collusion

89. Market power and tacit collusion is the traditional possible explanation to the “rockets and feathers” phenomenon⁵¹. Greater retail market power may be associated with asymmetric pass-through, as firms may have less incentive to reduce prices as costs fall. Retail price stickiness may occur, as the old retail price becomes a focal point. Oligopolist operators with market power collude, tacitly or explicitly, instead of competing with each other.

90. In the case of increases in international prices, firms in an oligopolistic structure will tend to pass the increased input cost through to their selling prices. They will expect their competitors prices to respond similarly, as a reduction in margins could harm all oligopolists if it could start a price war. When faced with decreases in international prices, however, firms will fear triggering a price war by cutting their price. Only when they suffer significant falls in their sales, indicating competitors have reduced prices, will they cut their own prices. The old retail price will hence become a focal point.

⁵⁰ Peltzman (2000), in his comprehensive study of 165 producer goods and 77 consumer goods, concluded that the rockets and feathers pattern could be found in two thirds of these markets, not only in concentrated markets but also in atomistic ones.

⁵¹ See Borenstein et al (1997) which is considered a benchmark for recent academic work in asymmetric pricing.

91. This possible explanation for the “rockets and feathers” phenomenon may occur not only in the road fuel retail markets, but also at the wholesale level⁵².

5.1.2 *Search costs*

92. When prices are rising, consumers are more prone to search for better prices, increasing search intensity. On the contrary, consumer search intensity is expected to be lower when prices are decreasing, which may allow gasoline retailers to take a longer period to adjust their prices downwards, thus maintaining temporarily higher margins. Search costs and intensity may hence partly explain asymmetric adjustment in prices.

93. Comparing prices between different service stations may involve high search costs for consumers. Most often consumers do not know all the prices quoted by the firms and conduct merely limited comparisons of prices only when they must fill up their tanks.

94. Given the high search costs, consumers may find it worthwhile to search more actively when prices are rising than when prices are decreasing. Higher search intensity during price rises will constrain the market power of retailers, intensifying competition between service stations. Service stations will tend to pass through the increases in wholesale costs without widening their margins⁵³.

95. Lower search intensity in periods of decreases in prices will reduce the constraints on the market power of retailers, which will tend not to immediately pass through to retail prices the decreases in wholesale costs.

96. This explanation for the “rockets and feathers” phenomenon only applies to the retail level of the chain, as search cost are significantly higher at this level when compared with upstream levels. Additionally, this explanation will apply to consumer behaviour in the medium term. Changes in search intensity are more likely to occur in the medium term, rather than as the result of changes in prices in the short-term.

5.1.3 *Adjustment costs in refining and wholesale*

97. In response to price changes, refiners and wholesalers may have limited capability to alter supply in the short term. The refining process may take several weeks and there may be rigidities in fuel imports (of contractual nature or due to the reception infrastructure in the destination country). When input prices decrease and demand increases, increased sales by reducing fuel stocks will also increase average storage costs. The increase in storage costs may at least partially offset the drop in input prices. Reducing the inventories might also endanger the fulfilment of pre-existing contracts⁵⁴. When the price of inputs increases and demand decreases, on the contrary, stocks temporarily increase reducing the average storage costs due to better exploitation of economies of scale. This may justify asymmetry in price transmission, as

⁵² Several empirical studies support the explanation of “rockets and feathers” resulting from market power and tacit collusion. See, *e.g.*, Borenstein and Shepard (2002), Deltas (2008), and Verlinda (2008).

⁵³ See, *e.g.*, Borenstein et al (1997), Lewis (2004) and Lewis and Marvel (2011). See also Tappata (2009) who shows that asymmetric pricing can well be the outcome in non-cooperative markets, as consumer search decisions affect the firms’ elasticity of the demand and their cost pass-through.

⁵⁴ See OFT (2013).

refiners and wholesalers adjust more rapidly to increases in input prices⁵⁵. Even though this phenomenon occurs at the refining and wholesaling level, it may be reflected in pump prices at the retail level.

5.1.4 *Inventory management by consumers*

98. When prices are rising, consumers react more rapidly in filling up their tanks. The opposite may occur when prices are decreasing, as consumers tend to delay filling up because they may expect prices to fall even further⁵⁶.

5.2 *Empirical studies on asymmetric pricing*

99. Most empirical studies on asymmetric pricing concern the North American market, followed by studies based on European countries⁵⁷. However, the rockets and feathers phenomenon has been a topic of great interest in many countries, particularly during periods of high and fluctuating petroleum product prices. Some studies have found evidence of asymmetric pricing, while others have found no statistically significant evidence of such a phenomenon.

100. Studies differ not only in the country under examination, but also on the level of the transmission mechanism (wholesale or retail), on the time frequency and period of the data used (*e.g.*, daily, weekly or monthly observations) or on the econometric model employed⁵⁸. Using the most disaggregated time unit available is preferable, as important movements within the period may be concealed in lengthier time intervals. Station-level data, when available, may better inform studies on lag lengths and degree of price asymmetry⁵⁹ than aggregate series data at the national, state or city-level.

5.2.1 *United States*

101. The Federal Trade Commission (FTC) recently published an updated report on gasoline price changes⁶⁰. Empirical research on asymmetric pricing conducted since 2005 by academic researchers and FTC Bureau of Economics staff have generally found evidence of the rockets and feathers phenomenon, observing asymmetric price response between the wholesale (rack) level and gasoline retail⁶¹.

102. Earlier studies on asymmetric pricing were reviewed by Shin (1994), Geweke (2004), Radchenko (2005), Grasso and Manera (2007), and Deltas (2008). Shin (1994) re-estimated earlier studies based on the US market using a common data, a common period and a common model, not finding evidence of asymmetry between crude oil and wholesale gasoline prices, or between wholesale and retail gasoline prices.

⁵⁵ See, *e.g.*, Brown and Yucel (2000), Borenstein and Shepard (2002) and Kaufman and Laskowski (2005).

⁵⁶ See Brown and Yucel (2000).

⁵⁷ See, *e.g.*, Polemis and Fotis (2013) who assess asymmetric pricing in 11 euro zone countries.

⁵⁸ Grasso and Manera (2007) review some of the leading studies from the United States and the European Union on rockets and feathers. Asymmetric pricing was found in 16 out of 23 of such studies. Bacon and Kojima (2010) review eight studies carried out in developing countries and found statistical evidence of rockets and feathers in all eight countries.

⁵⁹ Recent studies have used station-level data, such as Verlinda (2008) and Hosken, McMillan, and Taylor (2008).

⁶⁰ See FTC (2011).

⁶¹ Evidence of asymmetric pricing further up the supply chain is mixed, as noted by the FTC (2011). Some studies find no evidence of asymmetric pass-through, such as Bachmeier and Griffin (2003).

103. However, different conclusions were reached by many later studies focusing on the US gasoline market, finding evidence of asymmetric pricing. Borenstein et al (1997) found that crude oil prices are transmitted asymmetrically into retail prices, each stage of the supply chain contributing to the observed lags. Relatively robust evidence of asymmetric pricing is shown by Verlinda (2008), Noel (2009), Lewis (2009), Chen et al (2005) and Deltas (2008)⁶².

104. The FTC presents in its study some possible explanations to asymmetric pass-through, such as search cost, market power and tacit collusion, and inventory management.

5.2.2 *United Kingdom*

105. A recent market study by the Office of Fair Trading (OFT, 2013) analysed the relationship between retail and wholesale prices at a national, local area and site level, as well as the relationship between crude oil prices and wholesale prices at a national level. The OFT concluded from its empirical research, based on the data available, that “rocket and feather pricing is not a distinctive feature of the UK markets for road fuels”.

106. Although the perception of consumers and motorists is that price increases are passed through more quickly than price decreases, the OFT found no compelling evidence of such asymmetric pattern. In the survey conducted by the OFT, respondents put forward two possible explanations to asymmetric pricing: consumer search behaviour and the fact that dealers, especially independent ones, “buy their wholesale fuel based on the previous day’s Platts price, lose margin when wholesale prices rise and may therefore be slow to cut pump prices when wholesale prices fall again, so that they can recover foregone profits”.

107. Supermarkets stated that they were quicker at cutting prices than at raising them, as they wanted to have the lower prices in their area. In turn, oil companies believe that the fact that changes in crude oil prices are not always similarly reflected in pump prices does not necessarily imply asymmetry. Currency fluctuation or changes in supply and demand at different levels of the supply chain – determined by geopolitical events, refining and storage capacity – all influence prices at the retail level. Pump prices may also reflect the price paid for the fuel by the retailer to wholesalers, rather than the current wholesale or crude oil prices.

108. The OFT empirical analysis covered, at the national level, the period January 2000 to August 2012, while data at the local⁶³ and site level covered the period November 2011 to October 2012. No evidence of rocket and feather pricing was found in diesel, on a daily or weekly basis, nor in petrol on a daily basis, at the local area. Evidence in petrol pricing in some areas could be consistent with asymmetric pricing, but the evidence was not considered to be clear cut.

5.2.3 *Australia*

109. The ACCC⁶⁴ carried out an econometric analysis to assess whether retail gasoline prices respond asymmetrically to changes in the international reference prices (Singapore Mogas prices). Using data from 1998 to 2007, the ACCC did not find that prices would adjust more rapidly in response to an increase in

⁶² Asymmetric pass-through may vary across different geographical areas, as shown by Johnson (2002) and Chesnes (2010).

⁶³ The study analysed eighteen local areas in the UK.

⁶⁴ See ACCC (2007).

reference prices than in response to a decrease. On average over time, retail gasoline prices tend to respond in a symmetric way to changes Singapore Mogas prices.

110. Deviations of retail prices from the international reference prices have, however, been identified in two instances (in January 2007 and late May/early June 2007). Retail prices did not reflect reductions in Singapore refined petrol prices in those instances⁶⁵.

111. Even though average movements in retail gasoline prices are correlated to changes in the international reference price, retail prices in the largest metropolitan cities in Australia (Sydney, Melbourne, Adelaide, Brisbane and Perth) tend to follow a “saw-tooth” pattern. The regular price cycles (typically weekly) observed in these markets are asymmetric, with an average time from through to peak much shorter than average time from peak to through⁶⁶. Price rises tend to be initiated by the refiner-marketers in Australia who will then match others’ prices during the undercutting stage.

5.2.4 *Spain*

112. The Comisión Nacional de la Competencia (CNC) has released in 2012 a new Report monitoring the Automotive Fuel Distribution Market in Spain⁶⁷. This report includes an econometric study on the response of retail gasoline prices to changes in international prices, during the period 2005-2011. The analysis undertaken found evidence of the existence of rockets and feathers. This evidence was found to be robust in the case of unleaded petrol, but weaker in the case of diesel.

113. Although collusion (tacit or explicit) may explain such phenomenon, other justifications are also consistent with the Spanish case. The CNC (2012) considers, however, that these explanations are associated with markets where competition is weak which recommend the removal of barriers which hinder competition in the sector.

5.2.5 *Portugal*

114. The Portuguese Competition Authority⁶⁸ undertook an econometric analysis to evaluate the adjustment responses of Platts quotations to Brent quotations, as well as the response of retail gasoline prices to changes in the international benchmark prices of refined products. Evidence of asymmetric pricing was found, as average retail prices before tax responded faster to an increase in the international reference prices than to a decrease. The competition authority found a difference of one more week in the lagged adjustment to price decreases, when compared to price increases⁶⁹.

5.3 *Policy responses to asymmetric pricing*

115. While several studies have assessed the existence of asymmetric pricing, very few studies were dedicated to evaluate the associated welfare consequences. The presence of rockets and feathers pricing

⁶⁵ Some market participants inquired by the ACCC explained that firms were increasing prices to recover margins, following a period of deep discounting, even though international prices were falling.

⁶⁶ The ACCC states that “the existence of price cycles alone does not seem to provide evidence of a lack of retail competition” in the largest metropolitan cities in Australia.

⁶⁷ See CNC (2012).

⁶⁸ See Portuguese Competition Authority (2009).

⁶⁹ In Portugal, for the period between 2004 and 2008, average pre-tax prices tended to adjust completely to changes in international reference prices (Platts) with a 4 to 5 week lag for diesel and a 5 to 6 week lag for 95-octane gasoline.

may, however, impose an extra cost to consumers compared to the situation of symmetric pricing⁷⁰. Estimating the associated consumer costs is difficult and requires making assumptions on the speed of price adjustment that would have occurred had there been a symmetric pass-through.

“The existence of these asymmetries in a market is not desirable, given their negative effects in terms of efficiency losses and in the transfer of income from consumers to producers. Moreover, if reductions in the cost of the raw material are transferred faster in other countries, this will imply a competitive disadvantage for products that use fuel as a production input during times when the international price of the raw material is dropping. And what is more, when combined with periods of instability in international fuel prices, or with stages of medium-term increases in those prices, the rigidities can drive inflation upward in the fuel market and generate a transfer of income from consumers to wholesale and retail operators in the form of larger margins”. CNC (2012)

116. Policy makers have different options to tackle the problem of asymmetric prices⁷¹. These could include:

- Fostering transparency in the retail prices of service stations to reduce price-search costs by customers.
- Reducing barriers to entry, in particular to fuel imports, by ensuring equal access to sources of supply (storage, pipelines, and refineries) and removing certain legal or technical barriers for the establishment of new service stations to allow for new entrants.
- Competition law enforcement in antitrust investigations (*i.e.*, price fixing, concerted practices, abuse of a dominant position) and in merger control.

117. One approach is to foster transparency in the retail prices and reducing the relative imbalance in price transparency between buyers and sellers. Better informed consumers will search more aggressively for low prices and retailers will not be able to hold up prices for a long time⁷². Public information can be improved in several ways. The simplest way is to force retailers to post current prices in an easily accessible way (displaying prices), so the passing by motorists can see them. To provide a benchmark to the motorists against which they can compare the prices, governments can require from the firms to report their posted prices weekly, so the average of the prices can be posted on a government website⁷³. Transparency could also be accomplished by enhancing real-time access to service stations prices from mobile devices.

118. Reducing barriers to entry, in particular to fuel imports could also contribute to reducing asymmetry in the price response lags to changes in input costs. Barriers to entry can arise from small market size, government regulation, entry costs or asymmetric supply conditions between existing firms and new entrants.

⁷⁰ See Borenstein et al (1997), Chesnes (2010) and Bacon and Kojima (2010) for estimation of the extra consumer cost imposed by asymmetric pricing.

⁷¹ See, *e.g.*, Bacon and Kojima (2010), CNC (2012) and Polemis and Fotis (2013).

⁷² On the importance of price transparency for consumers see, *e.g.*, Kühn and Vives (1995) and OECD (2001).

⁷³ This practice or similar practices already exist among others in the EU, US, Guatemala, Argentina, Chile, Brazil, South Africa.

119. Rigidities in fuel imports may render importers unable to respond to price declines by increasing their fuel imports. Bottlenecks or delays in fuel imports confer greater temporary market power on the operators with refining capacity. Improved access to storage capacity and pipelines could attenuate those rigidities and strengthen the role of wholesalers. Removing certain legal or technical barriers for the establishment of new service stations to allow for new entrants such as hypermarkets or big stores, could improve competition in retail.

120. Lastly, competition law enforcement may also contribute to reducing asymmetric pricing, both through merger control and through antitrust investigations.

Box 12. Advocacy: examples of recommendations by competition authorities

In Portugal, where evidence on asymmetric pricing was found, the Portuguese Competition Authority made a recommendation to the government aimed at eliminating barriers, rendering the market less concentrated and more competitive. Access to infrastructure (import depots, pipelines and storage facilities) should be guaranteed to market operators, import capacity should be increased, licensing of new service stations should be expedited and facilitated in particular in the case of service stations next to supermarkets, the process of awarding and renewing concessions for service stations on motorways should be reviewed, visible price displays should be enforced and the consumer should be supplied with real time information on prices (e.g., through mobile devices).

In Spain, the CNC (2009) recommended that the oil pipeline network should at least be subject to a legal obligation of transparency in its methodology for setting the access price, the operating companies should not be shareholders of the oil pipeline network or participate in its management, the process of application for opening new service stations should be simplified (including the opening of service stations in the facilities of large commercial complexes) and competition criteria should be strengthened in the processes for concession or authorisation of service stations. Additionally, the CNC (2012) recognizes that “measures aimed at fostering transparency in the retail prices of service stations, such as enhancing real-time access to service stations prices from mobile devices” would contribute to lowering consumer search costs. Nevertheless, the CNC (2012) acknowledges that these measures to increase price transparency must be weighed carefully, given the risks that transparency may also facilitate collusion.

Source: Portuguese Competition Authority (2009), Comisión Nacional de la Competencia (CNC ,2009) and CNC (2012).

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