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COMPETITION ISSUES IN AFTERMARKETS

-- Background note by the Secretariat --

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More documentation related to this discussion can be found at www.oecd.org/daf/competition/aftermarkets-competition-issues.htm

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COMPETITION ISSUES IN AFTERMARKETS

Background paper by the Secretariat[*]

Abstract

Aftermarkets are widespread across the economy. From a competition perspective, the manufacturer of the primary good is often a major supplier in the aftermarket and may enjoy market power in the secondary market, which raises questions as to whether antitrust intervention is warranted to protect consumer welfare on the primary and secondary markets.

The number of successful public and private enforcement cases in recent years is somewhat limited due to the high standard of proof required by courts to pursue an aftermarket case. There are different views on the rationale for monopolising aftermarkets and the assessment of the effects of unilateral conduct by dominant suppliers on both the primary and the secondary market can be complex. Such conduct (often of an exclusionary nature) can be objectively justified by IP and efficiency considerations. From a policy perspective, antitrust enforcement in this area requires competition agencies to strike a balance between encouraging innovation and efficiency-enhancing strategies in the primary market and promoting effective competition in the aftermarket. Some have argued that antitrust may not offer the most suited remedies to aftermarket monopolisation and that remedies under contract law or consumer protection law should also be considered when addressing possible competition concerns.

This paper reviews the economic debate around aftermarkets and how it has influenced the legal approach to assessing aftermarket concerns. It examines the main enforcement issues related to aftermarket cases, focussing on the key questions of market definition and market power. It also reviews abusive conduct typical in aftermarkets and their possible justifications. The last part of the paper touches upon remedies other than traditional antitrust enforcement against aftermarket monopolisation, such as the use of commitment decisions and remedies under contract law and consumer protection laws, and provides examples of regulatory approaches to the risk of aftermarket restrictions.

The aim of the paper is to offer an analytical framework that can be considered by agencies when assessing aftermarkets concerns and concludes that antitrust claims against aftermarket monopolisation are possible but competition agencies and courts tend to accept them only in limited circumstances.

[*] This paper was prepared by Antonio Capobianco, Satoshi Ogawa and Carolina Abate of the OECD Competition Division.

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1. Introduction

1.1. Purpose and background

1. Aftermarkets are markets for the supply of products or services needed for or in connection with the use of a relatively long-lasting piece of equipment that has already been acquired.[1] This is referred to as the "primary product" (and hence its market is called "primary market" or "(be)foremarket"); the complementary product(s) (typically spare parts or consumables) and services used in connection with the primary product are referred to as "secondary products" (and their market is called "secondary market" or "aftermarket").

2. Aftermarkets are widespread across the economy and examples are ubiquitous: game consoles and video games, cars and spare parts, hardware and software, printers and toners, DVD players and DVDs, razors and blades, mobile phones and mobile calls, coffee machines and coffee capsules, hotels rooms and hotel services (spa, Wi-Fi, mini-bar, etc.), just to mention a few examples. The aftermarket product is generally a consumable product (e.g. toner for printers or spare parts for car), but can also simply consist of a complementary product for associated use with a primary product (a DVD with respect to a DVD player, or a game with respect to a game console), or even upgrades and add-on products and applications to the primary product.[2] Aftermarkets can be brand-specific, i.e., proprietary, where only a secondary product of the brand of the primary product can be used for repair or replacement service. But they need not be: if secondary products are transferable from one brand to another, there cannot be brand-specific aftermarkets.

3. Once a primary product is purchased, consumers are required to buy aftermarket products or services that are compatible with that primary product. If the primary good is a durable good (i.e. with a long life expectancy) and is highly priced consumers will be 'locked in' to certain supplier(s) in the aftermarket, since switching to alternative primary goods will be costly. Depending on the degree of interchangeability of the secondary products, the value and the life expectancy of the primary product and the degree of competition in the primary market, the manufacturer of the primary good may enjoy market power in the secondary market. And this may be true regardless of whether it has market power also in the primary market.

4. The existence of market power raises a question as to whether antitrust is warranted to protect consumer welfare on the primary and secondary markets. The manufacturer of the primary product, who has the technology, know-how, information and incentives to produce high quality secondary products, is often a major supplier in the aftermarket. If primary markets are subject to stronger competition than the corresponding aftermarkets, the supplier of the primary product may adopt a business strategy whereby it competes strongly in the primary product (i.e. charging a small mark-up) and attempts to maximise profits in the less competitive aftermarket. This is the reason why it is often the case that a supplier active in both primary and secondary markets has a high market share in both or a higher market share in the secondary market compared to the one on the primary market.

5. If a manufacturer lowers the price of the primary good this will raise the demand for parts and service, and vice versa. Customers, however, rarely purchase all the parts and service they will need over time when they purchase the primary good, and years can go by between a buyer's original-equipment purchase and aftermarket transactions by that same buyer. The temporal gap between the primary and the secondary transaction plays an important role the analysis of aftermarkets.

6. While this "waterbed" effect[3] may be justified by the need to recoup the investments made to develop and market the primary product, it raises the question of whether competition in the aftermarket is hampered. This relation between primary and secondary markets can be the source of competition

concerns, often addressed by competition authorities. Concerns can be exclusionary in nature, if the manufacturer of the primary good engages in exclusionary conduct to leverage or preserve its market power in the secondary market, or exploitative in nature if it is able to extracts monopoly rents in the secondary market that cannot be extracted in the market for the primary good.

7. Even if lack of competition in aftermarkets is often observed, the number of antitrust cases involving aftermarkets seems to have fluctuated over the years. Difficulties in pursuing such cases may derive from the different economic views on the rationale for monopolising aftermarkets, but also from the challenges that competition authorities face when assessing both pro and anticompetitive effects of unilateral conduct by dominant suppliers in the primary markets and/or aftermarkets. Defendants have also put forward justifications for such conduct, including intellectual property claims and efficiency claims which call the agencies to strike the right balance between encouraging innovation and efficiency-enhancing strategies in the primary market and promoting competition in the aftermarket.

8. Competition in aftermarkets can take place on different levels: primary goods compete with each other on the foremarket; in the aftermarket competition can be intra-brand (when proprietary aftermarket products are sold by the manufacturer and by independent suppliers) or inter-brand (when proprietary aftermarket product compete with non-proprietary ones) or between systems. The fact that competition can take place at different levels in primary and secondary markets is the reason behind the emergence of different business models with different effects on the pattern of innovation. On one end of the spectrum, some firms have developed integrated business models ensuring end-to-end control by the manufacturer of the original equipment, of the aftermarket services and of any add-on service or product used with the original equipment. At the other end of the spectrum, firms have developed open systems based on open specifications of the primary product and cooperation between manufacturers of secondary products with the original equipment manufacturer allowing the development of competing secondary products.

9. The debate on aftermarkets has taken a new impetus recently thanks to cases at the interface between IP and competition and the development of the digital economy. Aftermarket cases involving IP rights often pose an additional policy challenge: how to balance IP values and competition values. The underlying question before policymakers often is whether society's interest in protecting lawfully obtained patents should prevail on society's interest in promoting competition, or if there is a role to be preserved for competition policy considerations in the presence of patent rights. In parallel, there is also a debate over whether consumer protection law or remedies other than competition law are more suitable to address possible concerns raised by aftermarket monopolisation strategies.

1.2. Roadmap and main conclusions of the paper

10. This paper will discuss the close relationship of complementarity between the primary and secondary products. Such relationship is at the basis of the questions explored in the literature and in the enforcement practice on the possible concerns arising from monopolisation of the aftermarket by the manufacturer of the primary product. It will discuss the methods used by firms to extend their sales into the aftermarket for their primary products which are varied and pervasive, and often justified by sound efficiency reasons. The analysis in this paper will focus on the possible anticompetitive effects on the secondary market where the supplier may find it profitable to charge supra-competitive prices to a captive customer base once it has secured the monopoly in the aftermarket for its product. This paper will not review possible monopolisation strategies in the primary market, but will limit the analysis to potential consumer harm in the secondary market.

11. After this introductory Chapter, **Chapter 2** will summarise the economic debate around aftermarkets and its influence on the legal framework for assessing aftermarket concerns. **Chapter 3** will deal with issues related to the enforcement of competition laws to aftermarket, and will discuss in

particular the importance of market definition and of market power for aftermarket cases, as well as the main aftermarket restraints investigated by competition authorities and their possible justifications. **Chapter 4** will then elaborate on remedies to aftermarket concerns alternative to traditional antitrust enforcement: in particular it will discuss the use of commitment decisions, the use of remedies under contract law and under consumer protection laws, and examples of regulatory approaches to the risk of aftermarket monopolisation. **Chapter 5** will draw some conclusions from the analysis in this paper.

12. This paper concludes that antitrust claims against aftermarket monopolisation are possible, but competition agencies and courts tend to accept them only in limited circumstances. Certainly, a case-by-case approach is required to establish anticompetitive effects of an aftermarket monopolisation strategy. No jurisdiction pursues a *per se* approach. Most cases have been run under exclusionary theories of harm, and the high standard of proof required in establishing exclusionary behaviour in aftermarkets has made successful cases rare. Lack of competition in the primary market seems also to be a prerequisite to establish consumer harm. Competition agencies must show weak competition both in the secondary market *and* in the primary market to establish consumer harm. Because aftermarket strategies can be justified by efficiency reasons, agencies have been open to consider objective justifications to allegedly exclusionary conduct.

13. The review of the enforcement practice reveals that market power by equipment manufacturers in aftermarkets is more likely to arise if aftermarkets are proprietary. Moreover, in order for aftermarket concerns to arise, the primary product should be a durable product with a long life-cycle. The likelihood of anticompetitive effects rests on the establishment of a number of factors such as:

- The availability to consumers of sufficient information on the life-cycle costs of the primary good and its secondary products at the moment of the purchase of the primary good, and whether consumers can use that information to make informed and rational choices.

- The degree of the lock-in effect of old customers during the life time of the primary good and their ability to switch to competing suppliers, should the price of aftermarket products/services rise above competitive levels.

- The strength of reputational effects on the primary market and their ability to constrain opportunistic behaviour in the secondary market by the supplier of the primary good who would want to exploit locked-in consumers in the aftermarket.

2. The Economic Debate around Aftermarkets and its Impact on Enforcement

14. Over the last decades, a number of aftermarkets cases brought to the attention of academics and practitioners the possible competition issues arising from aftermarket monopolisation, giving rise to a wide economic debate. The debate sparkled in particular following the US Supreme Court's judgment in *Eastman Kodak Co. v. Image Technical services, Inc.* (from now on referred to as *Kodak*).[4]

15. The main question at the heart of this economic debate is whether firms operating in a primary market can profit from monopolising the corresponding aftermarket, and if such monopolisation is capable of reducing consumers' welfare. Indeed, a manufacturer with significant market power in the aftermarket for its products may use it to charge supra-competitive prices; concerns arise in particular when this could possibly happen even if the manufacturer lacks market power in the foremarket. The answer to this question, however, seems to depend not only on the degree of competition in the primary market, but on many other factors, such as: the quality of information available to consumers, the size of the aftermarket relative to the foremarket, the availability of contractual solutions, the number of uninformed consumers, the magnitude of lock-in effect and the switching costs.

Box 1. Lock-in and the reputational effects

The literature has identified risks for competition only if there are "lock-in effects". The ability of the manufacturer of the primary good to exploit its installed base is mainly due to the inability of customers either to (i) substitute the secondary product with competing secondary products or to (ii) purchase a different primary product without incurring in substantial switching costs. Factors that make lock-in effects likely include high switching costs due to physical or technological differences between aftermarket products and tying of aftermarket products to primary products. Other factors that can favour lock-in effects are contractual provisions in the sale of the primary good which impose penalties in cases of switching to competing products or contractual provisions offering incentives to use specific primary and aftermarket products.

The magnitude of the lock-in effects will influence the incentives of the manufacturer of the primary good to monopolise the corresponding secondary market and its ability to charge supra-competitive aftermarket prices. In turn, such incentives depend on whether monopolisation of the aftermarket could be profitable for the manufacturer of the primary good. This depends on the trade-off between the increased profits from exploitation of locked-in customers in the aftermarket and the potential loss of sales in the primary market, due to existing customers switching to other primary goods as well as new customers choosing competing suppliers of the primary product because of the expectation of high prices in the aftermarket (so called "reputational effect").

Depending on the emphasis that the literature puts on the likelihood of lock-in effects and reputational effects, authors reach different conclusions on whether anticompetitive effects may arise or not from a monopolisation strategy of the aftermarket.

16. All of these elements have been extensively discussed and analysed in the economic literature, mainly following the conflicting views of two major economic schools of thought, the Chicago view and the Post-Chicago view. A first fundamental point on which the two views in the economic literature differ is indeed the trade-off between installed based opportunism (i.e. the exploitation of locked-in consumers) and the strength of the reputation effect, with important implications for antitrust enforcement. The specific arguments behind each view, with Chicago seeing anticompetitive harm as improbable and Post-Chicago arguing that the lock-in effect would generally prevail, will be described in more detail below.

2.1 The views on aftermarket monopolisation of the Chicago School

17. According to the views of the Chicago School, it is in general not profitable for a firm operating in a primary market to exploit its consumers in the aftermarket by charging supra-competitive prices. Indeed, customers are regarded as able to protect themselves from such risk of exploitation, by considering the total life-cycle costs of a product[5] when choosing which foremarket product to buy.

18. Even when this does not occur and customers do not have full knowledge of the total life-cycle cost of the primary/secondary products, healthy competition in the foremarket is believed to be capable of preventing any anticompetitive harm from arising, in that aftermarket overcharges would be counterbalanced by lower prices in the primary market.[6]

19. The main thrust of the Chicago view is that customers perceive the primary and secondary products as closely linked and make informed purchasing choices as if the two products belonged to the same broad market. To the extent that this broad market can be disciplined by effective competition, enforcers should not be concerned by monopolisation strategies in the aftermarket as such strategies will ultimately not be profitable.

20. The views of the Chicago School on aftermarket monopolisation rest on three main arguments.

Argument 1 - Customers are rational and farsighted and make informed purchasing decisions based on full information on the life-cycle costs of the primary and secondary goods

21. Informed and rational consumers are capable of making decisions taking into account the cost of purchasing the primary good and the secondary goods. While the sophistication in such a calculation may vary depending on the type of consumer (i.e. occasional consumers tend to be less likely to make such a calculation as opposed to professional and regular consumers) or the quality of information available on the cost of the primary and secondary products, for the Chicago School, Argument 1 it is sufficient to discipline competition downstream and to prevent that a manufacturer can exploit its customers in the secondary market. This consideration is largely based on the fact that information is widely available and in most cases readily accessible to consumers, allowing them to make sometimes even complex calculations on the total cost of their overall investment.

22. Chicago scholars emphasise that suppliers of the primary equipment themselves have a strong self-interest in disclosing full information on their products (primary and secondary) and in comparing their offerings to those of their competitors and in advertising to consumers the advantages and benefits of their products. This information does not only relate to product characteristics but also to the pricing schemes offered, i.e. to warn consumers of the higher aftermarket prices offered by competitors. Incentives to do so rest especially with low-cost firms whose interest in educating myopic customers about their competitive advantage in the aftermarket is particularly strong.[7]

23. As it will be discussed later when reviewing the position of the Post-Chicago school, over the years some studies have questioned empirically the ability or the willingness of consumers to make such informed choices and have emphasised a tendency of consumers towards myopic behaviour, especially when facing a complex choice between competing systems including a primary and a secondary product or service.[8] While these studies offer a valuable contribution to understanding consumers' purchasing patterns, their results should now be read in light of recent developments: digital and on-line services are much more widely available to consumers than they used to be and offer a wealth of information that was not available before. Price comparison websites, for example, make price information more easily accessible and usable by consumers; they collect, compile, analyse and present in a user-friendly fashion product information to a degree which is unprecedented. Such services have developed steadily and organically over the last decade, gaining popularity among consumers and becoming the online tool of choice for those who want to secure a good value deal easily. They can help consumers to feel more empowered by allowing them to compare prices and services from different providers in a matter of a few clicks.[9]

24. Although these studies warn against an unconditional reliance on Argument 1, the idea that consumers are farsighted and rational remains a fundamental pillar of the Chicago view which considers consumers as capable of engaging in full life-cycle pricing, thus disciplining firms' behaviour in aftermarkets. Shapiro and Teece (1994) conclude that "*at least in mature markets, and often in emerging ones as well, implicit and often explicit life-cycle cost comparisons are frequently made*", as "*there are strong economic forces helping buyers to become well informed*".

Argument 2 - Competition in the primary market would jeopardise monopolisation strategies in the secondary market, because monopoly profits in the aftermarket will be eroded by prices driven down by competition in the primary market, eliminating over time incentives to charge supra-competitive prices in the aftermarket.

25. The second argument put forward by the Chicago School to support the theory that consumers are generally protected from possible anticompetitive harm from aftermarket monopolisation, is linked to the central role of foremarket competition. This idea is developed in Shapiro (1995), which builds a model to quantify the concept that "*equipment market competition will tend to rebate any aftermarket*

overcharges to buyers in the form of equipment discounts" and consequently "*significant or long-lived consumer injury based on monopolized aftermarkets is likely to be rare, especially if equipment markets are competitive*." Indeed, even when consumers do not take into account full life-cycle costs when making their purchasing decisions, and are thus at risk of being subjected to supra-competitive aftermarket prices, the final price for the overall package will be competitive, in that competition for customers in the primary market would lower foremarket prices enough to offset the increase in the monopolised aftermarket.

26. Along the same lines, Klein (1996) demonstrated that rivalry in the primary market can eliminate supra-competitive profits in the aftermarket by reducing prices in the primary market by the same amount of the supra-competitive rent in the aftermarket. He concluded that this is the only way in which suppliers can win consumers in the primary market in order to lock them into the aftermarket. This strategy holds true regardless of whether Argument 1 is met, i.e. even if consumers are totally unaware of the life-cycle cost of the whole package. The result will be an overall competitive price for the package. Such assumption, however, has been questioned in cases where price competition in the primary market may not always be sufficient to compensate the monopoly prices in the aftermarket. In this case, it is argued that competition in the primary market might not offset consumer harm in the secondary market.

Box 2. Farrell & Klemperer (2007)
Coordination and lock-in: competition with switching costs and network effects

The issue of switching costs and consumers' lock-in is comprehensively analysed in a 2007 study by Farrell and Klemperer, who draw attention to the so-called "bargain-then-rip off"[10] structure and underline how the existence of switching costs can shift competition towards a broader target, i.e. customers' needs over multiple periods. Although this doesn't necessarily lead to anticompetitive outcomes, for example if sellers compete with complete contracts[11] that indicate detailed life-cycle prices, it can have strong repercussions in terms of weaker competition when "*contracts do not specify all the future prices, so that a long-term relationship is governed by short-term contracts*", pattern that "*creates ex-post monopoly, for which firms compete ex-ante*".

Indeed, in moving away from the simple model introduced in this study, where competition *for* the market easily and efficiently replaces traditional competition *in* the market, consumer harm often arises. Overall switching costs are believed to usually decrease efficiency and generally "*the ex-post rents may be less than fully competed away*". Ultimately, the authors observe that in the presence of such issues, alternative remedial actions under consumer protection and improved information can be crucial from a policy perspective, given the importance of consumers' early decisions.[12] Furthermore, they encourage a thoughtful screening in those cases "*where incompatibility is strategically chosen rather than inevitable*".

27. Argument 2 can be illustrated by a well-known aftermarket strategy: the "razor-and-blades" business model, also referred to as "freebie marketing". If the primary market is highly competitive, suppliers may decide to sell the primary product at a largely discounted price or even for free as a loss leader, in order to increase the sales of its complementary goods sold in the aftermarket. This is often the case of durable goods which are offered at a low price (even below marginal cost) in order to attract new customers amid competitive primary markets, with the loss from the primary market being offset by the profits from consumables in the aftermarket. Classic examples of this strategy are common in the sale of razors and blades, printers and cartridges, game consoles and accessories or games. As suggested by Glick and Cameron (1999), the "razor-and-blades strategy" can be frequently beneficial to consumers, on the grounds that this pricing scheme "*provides important consumer information about product quality and continued support*" and "*makes the products accessible to a larger base of users*".

Argument 3 - Aftermarket monopolisation can be driven by procompetitive reasons, such as quality enhancing investments and innovation, signalling of product quality, metering and pro-competitive price discrimination.

28. Aftermarket monopolisation is often seen by the Chicago School as a strategy motivated by procompetitive reasons. According to the Chicago School any attempt by governments to interfere with such procompetitive rationales of aftermarket monopolisation may lead to inefficient outcomes.

29. The main efficiency rationale for aftermarket monopolisation relates to the ***promotion of investments*** by manufacturers in the primary market in order to improve the quality of their products or to innovate in the primary market itself. Such investments can then be recovered through pricing strategies in the secondary market. Chicago scholars argue that without the ability to monopolise the secondary market, firms would either offer lower quality products or increase primary product prices, thus harming consumers in the long run. In this perspective, aftermarket monopolisation is seen as a way to engage in efficient pricing for firms operating in both markets. Consumers will benefit in terms of improved quality and innovation in the primary market, which would otherwise be forgone.[13]

Box 3. Carlton & Waldman (2009) - Competition, monopoly and aftermarkets

Carlton and Waldman (2009) present three models to show how "*the act of monopolizing the maintenance market by the durable goods monopolist can increase social welfare by reducing the inefficient maintenance decisions*". Their study reaches the conclusion that aftermarket monopolisation not only can increase social welfare, but it is also much more frequent than indicated by the literature and, above all, it can often improve overall consumer welfare. The authors propose three different market models to illustrate the effects of aftermarket monopolisation on efficiencies and social welfare. All three models are based on a two or three-period setting and a manufacturer producing a durable good, with the choice of monopolising its secondary market or allowing competition. The primary market is competitive but due to switching costs the supplier can exercise a certain degree of market power in the second period, when some consumers return to the primary market to purchase new replacement units.

- The first model considers a two-period setting with a maintenance aftermarket. In the second period customers can choose to buy a new product in the foremarket to replace their existing one, or to buy maintenance goods/services in the aftermarket and extend the life of the primary product. If the maintenance market is competitive, with P=MC, while the supplier is able to charge P>MC in the primary market, in the second period consumers will make inefficient maintenance decisions by over-maintaining their used units instead of replacing them with new ones, to be purchased in the foremarket. In equilibrium manufacturers will then monopolise their secondary market (the maintenance market) to eliminate the inefficiency. This outcome, together with the presence of competition in the primary market, leads to an overall increase in consumer and social welfare.

- In the second model the aftermarket consists of the market for upgrades, i.e. complementary products that can be purchased in order to improve the quality of the used good or to increase its functionality. This two-period model follows the same lines of the previous one and it is based on the assumption that, in the second period, an upgraded used good has a lower functionality than a new unit, but consumers value the superior functionality of the new product differently. The logic of the analysis is equivalent to the first model, with the competitive price for upgrades resulting in inefficient purchasing decisions in the second period.[14] However, heterogeneity in consumers' valuations means that customers that choose to upgrade, with P=MC, are subsidised by those who buy new units in the primary market in the second period, with P>MC. The outcome in equilibrium is once again the monopolisation of the aftermarket for upgrades, this time with the result of eliminating not only inefficiencies but also consumer cross-subsidisation, and increasing both social and consumer welfare.

- The third model is structured in three periods and takes into consideration the role of remanufactured parts, i.e. used parts which, after a reconditioning process, regain functionality similar to the one of new parts. In this last model, in addition to an aftermarket for maintenance there is also a remanufacturing one. For instance, a worn out unit can be replaced with a new one, which has to be purchased in the primary market, replaced with a remanufactured part, or maintained. The remanufacturing practice implies a discount offered by producers to customers who are willing to return the used part.

Moreover the discount, also called "core charge", is often higher than the scrap price of the unit, which could make it burdensome for other firms to profitably compete in the remanufacturing market.[15] The third model starts by assuming competition in this aftermarket as well as economies of scope, which provide the original manufacturer with cost advantages in remanufacturing. Through monopolisation of the secondary market, obtained thanks to the use of the core charge, the producer is able to remanufacture worn out parts at the lowest cost possible, with the result of increasing social welfare.

Overall, these models show how in specific settings monopolisation of the aftermarket does not create deadweight loss but instead eliminates social welfare distortions caused by competitive aftermarkets. As the authors underlie, "*from a public policy perspective this is a crucial difference*", since in these situations "*the behaviour should typically be allowed rather than prohibited*"

30. A second (and closely related) rationale for aftermarket monopolisation refers to the ability of suppliers to ***signal*** the quality of their offerings. High prices in the aftermarket inform consumers of the fact that the supplier has made investments in quality and innovation in the primary product. What suppliers do is to spread R&D costs across the complementary primary and secondary markets. Elzinga and Mills (2001) explain that during the life of the primary good, consumers have the choice between replacing it with a new one or to extend its life through additional purchases in the secondary market (spare parts, services, etc.). This mechanism makes consumption patterns more efficient: if manufacturers were forced to raise the prices of the primary good to recover R&D costs, this would force consumers to buy too much of the (cheaper) secondary product and too little of the (more expensive) primary product. This would impact on the balance between sales of primary and secondary products, leading to potential economic inefficiencies. Along similar lines, Schwartz and Werden (1996) consider that tying the aftermarket product to the sale of the foremarket one can be a way for the manufacturer to signal the quality of the primary good to consumers who are unaware of its quality prior to the purchase.[16]

31. Emch (2003) looks at a third procompetitive rationale for aftermarket monopolisation: ***metering***. The close relationship between the price in the primary market and the price in the secondary market allows manufacturers of both products to discriminate customers based on the usage of the system. According to this scheme, the degree of customer's demand for secondary goods can be used as a meter of the consumers' willingness to pay for the foremarket good, resulting in a form of welfare enhancing price discrimination. Klein (1996) explains how "*such pricing is a ubiquitous and important element of the competitive process*" and, although "*such discriminatory pricing could not exist in a perfectly competitive world, it is not indicative of antitrust market power*". According to OECD (2016a) the ability of a monopolist to price discriminate can increase output by allowing it to set lower prices for a group of consumers that would otherwise not purchase. If price discrimination is not perfect it increases consumer welfare, that is to say, if the price does not equal each consumer's valuation of the product, then the discrimination allows additional consumers to purchase the product for a price that is less than what they would have been willing to pay for it.

32. Cabral (2014) confirms the well-known idea that an increase in aftermarket power is compensated by an increase in foremarket competition, with the important qualification that, under increasing returns, the increase in competition in the foremarket exceeds the increase in power in the aftermarket. The study concludes that "*[i]f the aftermarket is characterized by constant returns to scale, then social surplus and consumer surplus are invariant with respect to aftermarket power. Under increasing returns to scale, however, greater aftermarket power leads to: greater concentration in the foremarket; higher barriers to entry; higher social surplus; and possibly higher consumer surplus.*" He therefore adds a novel reason why aftermarket power may lead to efficiency gains, namely a better exploitation of increasing returns to scale, so much so that even consumers may benefit from aftermarket power.

2.2 The opposing views of the Post-Chicago School

33. The Post-Chicago School contends that anticompetitive harm can actually arise due to aftermarket monopolisation, even when the conditions identified by the Chicago School, i.e. fully informed, far-sighted customers and a competitive foremarket, are present. This follows the idea that producers would generally have the ability and the incentives to exploit their installed base. In other words, the benefits deriving from exploiting locked-in consumer are believed to be superior to the loss of sales linked to the reputational effect, resulting in an overall increase in prices above the competitive level. As observed in Borenstein et al. (2000), "*equipment competition will not prevent firms from charging supracompetitive prices in their proprietary aftermarkets; the incentive to exercise at least some degree of market power in the aftermarket is unambiguous.*"

34. The views of the Post-Chicago School on aftermarket monopolisation rest on two main arguments.

Argument 1 - Consumer behaviour is often myopic and purchasing choices are not necessarily rationale and farsighted.

35. At the core of the Post-Chicago views there is the concept of consumer myopia. This concept refers to the fact that often customers are not able to make efficient purchasing choices in terms of life-cycle pricing and usually are more sensitive to upfront costs than to future aftermarket costs. Indeed, a study on the inkjet aftermarket by Hall (1997) reports how "*survey evidence shows that consumers have little knowledge of replacement ink prices when they purchase printers*" and, "*as a result, they become locked in to particular aftermarkets*", in that "*only competition in those aftermarkets can discipline price while competition in the printer market is not effective to restrain aftermarket ink prices.*" Customer myopia makes it easier for manufacturers to profitably charge supra-competitive prices in the secondary market, even though the degree of myopia might not be the same in different sectors and could evolve over time.

Box 4. Studies on consumers' purchasing choices in the energy-using appliance sector

Hausman (1979) addressed the issue of consumers' choices by analysing a model applied to the energy-using appliances sector, where households have a trade-off between buying expensive products with low aftermarket costs (i.e. efficient in terms of energy consumption) or cheaper ones with high life-cycle costs.[17] By estimating discount rates, the author shows that customers value the upfront cost, i.e. those incurred at the moment of the primary purchase, more than aftermarket costs. In other words, consumers fail to correctly engage in life-cycle pricing in that they do not take into consideration operating costs (i.e. energy consumption) in a timely and rational manner.

The conclusions in Hausman (1979) were further complemented by Gately (1980), who briefly presented his findings on the market for refrigerators. Considering the high discounts rates resulting from his analysis, the study concluded that the consumer's choice of purchasing low efficiency products is likely to follow from ignorance of the future operating costs and the complexity of calculations, rather than a real preference.

Along these same lines, Hausman and Joskow (1982) identify potential causes of consumers' decisions with regard to purchasing energy-using appliances. The authors remark how "*consumers may have a pervasive tendency to underestimate the rate at which energy prices will increase over time*" thus making purchasing choices that fail to correctly account for the real life-cycle costs.[18] Moreover, high consumer discount rates might reflect lack of information. The authors conclude that programs able to enhance the quality of available information "*seem to represent the most productive short-run strategy*".

36. The Post-Chicago School also questions the incentives of manufacturers to disclose detailed information about aftermarket pricing over the life-time of the primary product. Post-Chicago scholars rather emphasise the so-called "adverse selection theory", according to which hiding aftermarket costs can be a profitable strategy as it makes it more difficult for consumers to engage in full life-cycle pricing and

allows manufacturers to exercise some degree of market power over them.[19] As explained in Gabaix and Laibson (2006), "*optimizing firms exploit myopic consumers through marketing schemes that shroud high priced add-ons.*" Furthermore, with regard to the role of add-on practices, Ellison (2005) reaches the similar conclusion that firms "*can raise equilibrium profits by creating an adverse selection problem that makes price-cutting unappealing*", and ultimately profits earned in the aftermarket will not be competed away through low primary market prices. Post-Chicago scholars thus bring into the discussion the matter of incentives, which affect firms' behaviour with clear consequences for consumers in both primary and secondary markets.

Box 5. Gabaix & Laibson (2006)
Shrouded attributes, consumer myopia, and information suppression in competitive markets

Starting by remarking how firms deliberately hide information from their customers, often in those cases where a supplier operates both in the foremarket and in the aftermarket for its products, Gabaix and Laibson (2006) introduce a model of consumer myopia to analyse this phenomenon, i.e. "shrouding".

The strategy of masking add-on prices creates a substantial obstacle for life-cycle pricing, thus preventing consumers from making rational and informed purchasing decisions in the primary market. Assuming the presence of myopic consumers in an economy with add-ons leads to an equilibrium where "*competitive price cutting and educational advertising will not occur*", in that firms do not have any incentive to educate uninformed consumers, and thus increase market efficiency, even if the unshrouding process is free.

The model shows how this result holds also in a competitive environment due to the so-called "curse of debiasing": when consumers are educated by producers and become sophisticated they are then able to understand that prices kept hidden are typically high prices, thus avoiding exploitation and lowering profits for the supplier. In other words, while unshrouding would increase consumer welfare, firms would not only be unable to reap any benefit from it, but it would also be difficult for them to "*drive away such debiased consumers without losing (profitable) myopic consumers*".

Argument 2 - Even if the primary market is perfectly competitive, aftermarket monopolisation can still lead to consumer harm in some circumstances.

37. Post-Chicago scholars also question the Chicago School arguments that competition in the primary market will offset any attempt to monopolise prices in the aftermarket. The reasons they bring forward relate to the fact that monopoly prices in the aftermarket will only lead to some losses in new sales in the primary market but will allow the manufacturer to continue reaping monopoly profits from the larger installed customer base. This line of thought does not criticise the Chicago perspective so much, but rather questions its magnitude.

38. Voortman (1993), for example, notes that even though it is true that often foremarket prices are kept low to counterbalance higher prices in the secondary market, the net effect in terms of the final price[20] may not be competitive. His argument is based on the assumption that customers will discount future prices of aftermarket products given the uncertainty of such future costs; this allows firms to maintain higher aftermarket costs without fearing consequences on the primary market. According to Voortman (1993), "*the price of equipment plus its maintenance is higher when there is a monopoly in the aftermarket than when there is competition in both the original equipment and the aftermarket*", and "*if any governmental activity related to replacement parts is desirable, it is action to encourage aftermarket competition; not to create aftermarket monopolies.*"

39. Post-Chicago scholars submit that the effects on the incentives to monopolise a secondary market by the manufacturer of the primary good rest on a number of factors:

- The size of the installed base (i.e. the number of locked-in customers): the larger the locked-in customer base, the higher the incentives to monopolise the aftermarket;

- The magnitude of the switching costs on the primary product: the higher the switching costs, the higher the incentives to monopolise the aftermarket;

- The degree of customer myopia: the larger the share of myopic customers, the higher the incentives to monopolise the aftermarket;[21]

- The degree of the discount rates: the higher the discount rates in the aftermarket, the higher the incentives to monopolise the aftermarket;

- The relative size and growth of primary versus secondary product sales: a larger (and slower growing) primary market provides more incentive to exploit the locked-in customers.[22]

Box 6. Borenstein, MacKie-Mason & Netz (2000)
Exercising Market Power in Proprietary Aftermarkets

Borenstein et al. (2000) develops a differentiated Bertrand duopoly model, with a primary market for equipment and an aftermarket for services, to illustrate firms' incentives to exercise market power in the secondary market and thus assess if competition in the foremarket actually prevents manufacturers from setting supra-competitive aftermarket prices. The 2-period model considers two rival firms that sell new equipment, with each firm acting as a monopolist in its own aftermarket and under the assumption that firms cannot credibly commit to specific future prices in the aftermarket for their brand. Consumers take the service price that they are able to observe in the first period as an indicator of the one they will be charged within the following period. In the second period they can keep the used product, improve its conditions by purchasing services in the secondary market, or buy new equipment from one of the two suppliers. In this scenario there are no switching costs in the primary market but customers are locked-in to the equipment supplier when it comes to purchasing services in the secondary market.

Based on these assumptions, the authors undertake an analysis of this model in order to detect if it is indeed possible to have a constant-price equilibrium of P=MC in the service aftermarket. The result reached by the analysis indicates that this is not the case. As a matter of fact, "*if the price of service is equal to its marginal cost, a small increase in that price will have only a second-order effect on future profits once the price of the equipment is optimally adjusted downward, because this creates only second-order deadweight loss; but it will have a first-order effect on current-period profits from selling the service product, because the associated equipment units already have been sold*". Therefore, firms will always have the incentive to set aftermarket prices above the marginal cost, since it would always be profitable. The study also looks at how this result holds even when there is no installed base and under conditions of perfect competition in the foremarket.

Two further scenarios are taken into consideration:

- First, the authors analyse the possibility that consumers decide to buy new equipment instead of purchasing services for the used product. In this case, the higher the degree of competition in the foremarket, the lower the aftermarket price, due to the fact that "*as competition increases the consumer must be left with more surplus from service to prevent her from abandoning her used equipment*". However, it is still true that if servicing used units is an efficient choice,[23] prices will in any case not be brought down to marginal cost.

- Second, they substitute the duopoly in the equipment market with a monopoly and prove that the main result of this study, i.e. supra-competitive service prices, continues to hold true.

40. Zegner and Kretschmer (2013 and 2016) also study the impact on firms' profits of aftermarket market power and conclude that high aftermarket market power and thus high aftermarket profits can induce firms to engage in inefficiently aggressive below-cost pricing in the foremarket. This inefficiency is driven by the presence of unprofitable consumers who have a valuation below marginal production costs. The authors concentrate their analysis on markets where competition in the foremarket is sufficiently fierce that firms sell their durable good below cost. Under these circumstances, firms will not only attract profitable consumers with whom they can earn profits in the aftermarket, but also unprofitable consumers who will not buy sufficient numbers of complementary products for firms to recoup their foremarket losses. Depending on the relative share of profitable and unprofitable customers, this may lead to lower levels of firms' profits, consumer welfare and social welfare than in the absence of aftermarket power.

2.3 The impact of the economic debate on antitrust policy and enforcement

41. It is difficult to infer legal rules from the Chicago and Post-Chicago debate. However, it is fair to say that the Post-Chicago scholars have criticized the Chicago School's implication from the self-defeating use of monopoly power (also known as "the single-monopoly-profit theory") that aftermarket monopolisation should be legal *per se*, but they have not argued in favour of a *per se* prohibition either. The theories developed by the Post-Chicago scholars have also not provided a universally valid set of conditions that could be used as a checklist to implement a *modified per se rule*. Instead, these models establish some "necessary", albeit not "sufficient" conditions, for triggering antitrust scrutiny. The Post-Chicago economic literature should therefore be interpreted as an argument for applying a *rule of reason* analysis to aftermarket cases.[24]

42. One thing is certain, however: the review of the economic debate spanning over more than twenty five years shows how important economic analysis is for the development of the antitrust policy in determining the effects on consumer welfare of aftermarket monopolisation strategies. It is inevitable that this economic debate has also strongly influenced how enforcers and courts have looked at aftermarket cases. Two court decisions illustrate the different approaches that have characterised this area of antitrust law. Although these approaches may differ significantly in many ways, they all recognise the importance of analysing market power simultaneously in the foremarket and in the aftermarket. This is because of the close links between primary and secondary products and their pricing in consumer choices and purchasing decisions.

2.3.1 The US Supreme Court in Eastman Kodak Co. v. Image Technical Services, Inc. (1992)[25]

43. In 1987, eighteen independent service organisations ("ISOs") that repaired Kodak copiers sued Kodak as a reaction to its decision to stop supplying them with replacement parts for its equipment. As a consequence of this change in commercial strategy by Kodak, ISOs' customers were obliged to switch to Kodak services and a great number of ISOs were put out of business. The antitrust case that followed aimed to determine whether Kodak had engaged in anticompetitive exclusionary conducts in the aftermarket. In defence of its conduct, Kodak claimed in its defence that competition in the foremarket for copiers constrained its ability to exercise market power in the aftermarket for replacement parts and services. It basically aligned its defence to the Chicago School approach that competition in the primary market can discipline the manufacturer's behaviour in the secondary market. On the other hand, plaintiffs ISOs accused Kodak of infringing U.S. antitrust laws by monopolising the aftermarket and illegally tying the sale of services for its primary equipment to the sale of the replacement parts.

44. One of the fundamental points for the final determination on the case was the Court's approach to market definition. As a matter of fact, two separate markets were identified for Kodak's "copier system", one for the copiers and one for the spare parts and services, i.e. the aftermarket. Despite the fact that its share of the foremarket was only 2%, Kodak was found to hold a dominant position in the relevant market for parts (nearly 100%) and services (80-90%). The Court consequently concluded that Kodak had

implemented practices to maintain and strengthen its shares by "*wilful use of monopoly power*" in violation of the Sherman Act.[26]

45. In its 1992 decision, the US Supreme Court decided that lack of market power in the primary equipment market does not necessarily preclude antitrust liability for exclusionary conduct in related aftermarkets. The Court also rejected the possibility that customers could engage in life-cycle pricing. It considered that especially for the kind of equipment at stake, the calculation would have entailed a difficult and costly process for consumers. This assumption, together with other case-specific elements, strengthened the idea that Kodak's position and behaviour could indeed result in anticompetitive harm and reduce consumer surplus. Since then, *Kodak* has been considered a reference point for antitrust law, as well as "*the zenith of the Post-Chicago School's influence*".[27]

Box 7. Bell and Cramer (2025) - The development of the US case law post-Kodak

The current US antitrust treatment of aftermarket power is still largely based on the analytical framework set up by the US Supreme Court in the *Kodak* case. With this decision the Court left open the possibility that, under specific circumstances, profitable exploitation of aftermarket consumers can take place, even in the presence of a competitive foremarket. Since then lower courts have narrowed down the set of circumstances that must be present in order for the plaintiff to bring a successful case even in the presence of a competitive foremarket.[28]

As synthesised in Bell and Kramer (2015):

- **Lock-in and high switching costs**. A successful aftermarket claim typically involves complex durable equipment that is costly and difficult to replace (e.g., the copiers in Kodak), causing customers to be "locked in" by high "switching costs."

- **Information costs and policy changes**. An antitrust plaintiff is usually required to show that "locked in" customers have been exploited, raising the cost of aftermarket goods or services above what they reasonably expected at the time of purchase. Courts tend to look for evidence of high "information costs" or policy changes that increase aftermarket prices.

- **No aftermarket restrictions in purchase contracts**. When a manufacturer lacks market power in the primary market, an aftermarket restriction set forth in the purchase contract for the primary good is generally safe from challenge under the US antitrust laws. Numerous courts have rejected aftermarket claims based on contract provisions that exclude competition in an aftermarket. Because such restrictions are disclosed to customers at the time of purchase, customers can understand and plan for the aftermarket restriction before they are locked-in.

Because of the strict conditions developed by courts post-Kodak, plaintiffs in private antitrust litigations have rarely prevailed under the *Kodak* doctrine. Although in the recent *Avaya* case the jury ruled in favour of the plaintiff almost for the first time after *Kodak*,[29] the US Court of Appeals for the Third Circuit reversed the jury verdict.[30]

2.3.2 The European Commission decision in Pelikan / Kyocera (1995)[31]

46. In 1995, the European Commission rejected a complaint by Pelikan, a German manufacturer of toner cartridges for printers, against Kyocera, a Japanese manufacturer of computer printers and their toner cartridges, contending that Kyocera had abused its dominant position in the aftermarkets for toner cartridges. Pelikan's complaint alleged a number of practices by Kyocera to drive Pelikan out of the toner market and accused Kyocera, among others, of abusing its dominant position in the secondary market, although Kyocera was clearly not dominant in the primary market. The Commission did not find evidence of behaviour that could be considered abusive nor found that Kyocera enjoyed a dominant position in the secondary market for consumables.

47. The case showed that purchasers were well-informed about the price for consumables and appeared to take this information into account when deciding to buy a printer. "Total cost per page" was one of the criteria most commonly used by customers when choosing a printer. This was due to the fact that life-cycle costs of consumables (mainly toner cartridges) represented a very high proportion of the value of a printer. Therefore, if the prices of consumables of a particular brand were raised, consumers would have a strong incentive to substitute the printer with that of another brand. In addition, there was no evidence of possibilities for price discrimination between old/captive customers and new customers.

48. Unlike the US Supreme Court, the European Commission in the Pelikan/Kyocera case held that consumers were well informed and took into account aftermarket prices when choosing a certain piece of equipment. Since there was vigorous competition in the primary market for printers, the Commission argued that Kyocera was not dominant in the market for printer consumables (i.e. the toners). This case has been considered an application of the Chicago School's views on aftermarkets.

Box 8. Treatment of aftermarkets in the EU

The analysis in the Pelikan/Kyocera case differentiates itself from earlier aftermarket cases, where the European Commission and the European Courts considered cases where it was appropriate to define the market narrowly, such as for components of a single brand or product. Many of these cases concerned spare parts or consumables for machines.[32] This made it relatively easy to establish dominance in the proprietary aftermarket where the manufacturer normally enjoyed very large market shares, even in excess of 90%. Such a narrow approach to downstream markets definition made aftermarket claims successful in Europe in the 1980s and early 1990s.

The *Kodak* case in the US strongly influenced the EU approach and made antitrust intervention in aftermarkets much rarer. Because of the economic approach proposed by the *Kodak* doctrine, dominance in the aftermarket became secondary compared to the need to show dominance in the primary market. The Pelikan/Kyocera exemplified this new EU approach. Since then, there have been a number of cases at the EU and national level that have clarified how the law has developed in the aftermath of the *Kodak* case. In *Info-Lab/Ricoh*,[33] applying the same rationale as the Pelican case, the Commission found that, like printer customers, photocopier consumers engage in a life-cycle cost calculation, they make informed choices between competing photocopiers based on the price-per-copy, and new customers would adapt their purchasing behaviour within a reasonable timeframe in response to perceived exploitation in the aftermarket for toners. The Commission therefore concluded that competition in the primary photocopier market constrained Ricoh's conduct in the secondary market for toners. More recently, the European Commission and the European courts looked at aftermarket issues in the *Luxury Watches* case that will be discussed later in this paper in the section on market definition.

3. The Enforcement of Competition Law in Aftermarkets

49. From the review of the main economic literature on aftermarket monopolisation it is not surprising that the key question for any aftermarket case is the one related to market power. In principle, assessing market power in aftermarkets is not different from assessing market power in any other context and enforcers should ask themselves whether a single entity controlling the aftermarket could profitably raise price above competitive levels. This question can be posed as a market-definition question (i.e., is the aftermarket a proper antitrust market?) or as a market power question (i.e. does a manufacturer have market power in its proprietary aftermarkets?).[34]

50. Looking at these fundamental questions, this Chapter provides an overview of enforcement related issues in cases involving aftermarkets, starting from how to define the relevant market(s) to assess market power or dominance in the primary and secondary markets, continuing with a review of what typical anticompetitive conduct may be used by firms to monopolise aftermarkets, and concludes with a discussion on the efficiency gains and objective justifications typically alleged in aftermarkets cases.

3.1 Defining the relevant market in aftermarket cases for enforcement purposes

51. Defining the relevant market(s) in competition cases involving aftermarkets is in principle not different from defining relevant markets in other competition cases. However, it is arguably a more crucial step and to some extent a more delicate one.[35] The reason is straightforward: a too narrow definition may result in an overly broad application of competition rules to aftermarkets, and lead enforcers to apply antitrust provisions in situations where firms are in reality subject to intense competition and consumers are unlikely to be harmed. The risks of chilling effects of pro-competitive business practices associated with over-enforcement are well-known, and how to prevent these risks is a discussion which is at the core of the debate between the Chicago and the Post-Chicago scholars.

52. The different views of the Chicago and Post-Chicago schools on the likelihood that consumers can be harmed by aftermarket monopolisation are clearly underpinned by different views of how markets interact in complementary products and whether antitrust enforcement should indeed interfere with such interaction. The Chicago School sees the links between primary and secondary products to be so tight that the two products should be viewed as belonging to a single relevant market for antitrust purposes. As long as this "broad" market is competitive there is no scope for anticompetitive effects. For the Post-Chicago scholars the ability of the supplier to monopolise the aftermarket implies that the aftermarket price is above the competitive price by a small but significant amount; therefore they view each aftermarket as a separate relevant market for antitrust purposes (i.e. one for each primary product).[36]

Box 9. Salop (2000) - The First Principles Approach

Salop (2000) advocates what is called the "first principles approach" and backs the *Kodak* judgment in that it promptly adapts to new economic ideas and incorporates them into the actual antitrust analysis. This approach is focussed on the direct assessment of the competition effects of the conduct at issue. Market power and market definition play a role as part of and in reference to the economic analysis of the alleged anticompetitive conduct and its competitive effects in the market. In this way the analysis of market power (and market definition) is incorporated into the analysis of the anticompetitive effects within an integrated, single approach.

Salop (2000) argues that market power should be defined as the power to profitably raise prices above the competitive benchmark price, i.e. the price in the absence of the anticompetitive restraint and not the defendant's marginal price. It then identifies two steps to examine the anticompetitive effects: i) whether or not the defendant had the power to exclude its competitors, and ii) whether or not the plaintiffs were injured. It concludes that this approach can make the parties' real disagreement clear and enables to focus on "*the real issue of the actual benefits and harms of alleged anticompetitive conduct*" and avoid "*complicated and often useless disagreements over the identification of the proper market definition*" or "*overly inclusive or incorrectly defined relevant markets*", resulting in proper market definition.

Salop (2000) repeatedly emphasises that the analysis of market definition and market power should not be made independently from the analysis of the conduct and its effects. He criticises an approach in which a threshold test of market power (and market definition as the first necessary step for it) is carried out at an early stage to use as a gauge to evaluate the antitrust claims, because such an approach would lead to several "traps" in antitrust cases, such as the *Cellophane Fallacy* and to erroneous conclusions from applying several cost- and price-related tests.

53. The complexity of defining markets for aftermarket cases is linked to the complementary nature of the goods at stake and the need for agencies to address the ultimate question of whether a price rise in the aftermarket would depress demand for the primary product.[37] To answer this question, the basic methodology for defining relevant markets in aftermarket cases remains the SNIPP (Small but Significant and Non-transitory Increase in Price) test (also called the hypothetical monopolist test), with a focus on both demand and supply-side substitutability. This analysis allows a competition authority to assess whether a hypothetical monopolist on the secondary market would find it profitable to implement a SNIPP

in the secondary product, taking into account the reduction of demand for *both* the primary and the secondary products.

54. While agencies are accustomed to the application –admittedly often theoretical– of the hypothetical monopolist test, one must recognise that aftermarkets is an area where the application of the general principles must be undertaken with care, particularly given the nature and extent of the links between fore and aftermarkets. There is no general rule as to whether the primary and the aftermarket should be considered as separate markets, or as constituting a single market. The appropriate definition will depend on the facts of the case and on the particular circumstances of the market(s) in question. For example, if an agency can demonstrate that following a moderate price increase in the aftermarket enough customers would switch to other primary products to render the price increase unprofitable, it might conclude that there is a single relevant market including both the fore and aftermarket.

55. The need to look at competition constraints in both the primary *and* the secondary market has been recognised also by agency guidelines on market definition. According to European Commission (1997), when considering primary and secondary markets competition authorities would need to assess not only customers' reactions to relative price changes, in terms of their purchasing decisions, but also the "*constraints on substitution imposed in the connected market*".[38] In addition, the Notice discusses various scenarios that can arise when defining relevant markets for purposes of aftermarket cases: *"[a] narrow definition of market for secondary products […] may result when compatibility with the primary product is important. Problems of finding compatible secondary products together with the existence of high prices and a long lifetime of the primary products may render relative price increases of secondary products profitable. A different market definition may result if significant substitution between secondary products is possible or if the characteristics of the primary products make quick and direct consumer responses to relative price increases of the secondary products feasible*".

Box 10. The importance of market definition in the EU Luxury Watch case

In 2010, the General Court of the European Union discussed the importance of market definition for the analysis of aftermarkets. In its initial decision in 2008,[39] the Commission had rejected complaints from independent watch repairers claiming that manufacturers of luxury watches refused to supply original spare parts to them. The Court agreed with the general analytical framework applied by the Commission to assess competition in aftermarkets but annulled the decision on grounds that the Commission had not properly assessed whether luxury watches and spare parts constituted one single market or two separate markets.[40]

In its decision, the Commission argued for a "system" market including the market for luxury watches and their spare parts. Such conclusion rested on two considerations: (1) on the demand side, *existing* customers could avoid high repair prices by selling their watch on a second-hand market and switch to a different watch brand; and (2) on the supply side, watch makers were constrained by the fact that *new* customers would choose a different brand if the prices for spare parts were to be perceived as non-competitive in the aftermarket.

The Court fully endorsed the analytical framework used by the Commission for defining markets, which represent the current law at European level, but it concluded that the Commission had not shown in the specific case of luxury watches that either of these two factors was met. According to the Court, the Commission should have demonstrated that selling the watch on the second-hand market and buying a new watch would have been more profitable than paying the over-charge from repair services. On constraints exercised by new customers, the Commission did not show the degree to which customers took into account life-cycle costs when purchasing luxury watches or indeed whether they were even aware of such costs. Following the General Court's judgment annulling the Commission's decision in 2008, the Commission reopened proceedings and on the basis of the judgment defined the multiple separate markets for spare parts, each associated with a particular watch brand.[41]

56. In the next sections, we will discuss the different possible outcomes of the hypothetical monopoly test to define relevant markets where a supplier manufactures both the primary product (e.g. an original equipment, such as a printer) and the secondary goods (e.g. the spare parts for such equipment, such as ink cartridges). In such cases, the relevant market may include the original equipment and the spare parts or it may be defined separately for the original equipment market and the aftermarket(s) depending on the circumstances of the case. It is generally acknowledged that there are three possible ways to define relevant markets for competition cases involving aftermarkets, namely: i) a system market, ii) multiple markets and iii) dual markets.[42] As it will be apparent from the descriptions below, competition concerns are likely to arise mostly when agencies can define multiple markets.

3.1.1 A market for "systems"

57. A "system" market refers to a broad market definition comprising both a market for the primary products and its secondary market. In case of a printer and ink cartridges, for example, this would mean defining one relevant market for all printers and all ink cartridges. According to OFT (2004) defining a market for the system is appropriate either where (i) customers consider the whole life-cycle cost of such system when purchasing the primary product, or (ii) the primary goods supplier does not charge a supra-competitive price for the secondary product due to possible decrease in profits on future sales of its primary product caused by its deteriorated reputation (i.e. where reputational effects exist).[43] Similarly, according to European Commission (2010a) if a significant proportion of customers take into account the life-cycle costs when making their initial purchasing decision, this would plead for the existence of a market for the system of primary and aftermarket products.[44]

58. There have been several aftermarket cases in which agencies and courts have defined a market for the "system". For instance, in the US, the existence of a market for the system is often at the core of the denial of claims by the plaintiffs in private litigations for seeking damages from alleged aftermarket monopolisation.[45] Obviously, defining a broad market for systems would usually encompass a greater number of suppliers and lower market shares, ultimately resulting in the denial of monopolisation claims. In the UK decision *ICL/Synstar*,[46] for example, the UK Office of Fair Trading (OFT) concluded against a separate relevant aftermarket from the market for hardware maintenance services for ICL mainframes. The OFT considered that the majority of customers made whole life-cycle cost calculations when purchasing the computer with mainframe. Moreover, an assessment of the degree of lock-in, of the possibility of switching and of a possible reputational effect showed the existence of constraints on the behaviour of the computer mainframe supplier when supplying secondary products.

3.1.2 Multiple markets

59. Where it is not possible to define a market for systems, agencies should consider if it is possible to define several ("multiple") relevant markets consisting of one market for the primary products on the one hand and separate aftermarkets for each primary market on the other. In case of printers and ink cartridges, for example, this would mean defining a market for all printers and separate aftermarkets for ink cartridge compatible with each printer. According to OFT (2004), agencies should define multiple markets "*where, having purchased a primary product, customers are locked in to using only a restricted number of secondary products that are compatible with the primary market.*"[47] Similarly, European Commission (2005) concludes that multiple markets should be defined where it may not be possible for customers to switch to the secondary products of other suppliers (because of incompatibility issues), or because of the high switching costs to another primary product.[48]

Box 11. Aftermarkets and the automotive industry

An application of the multiple markets approach can be found in the EU Motor Vehicle Distribution Regulation and Supplementary Guidelines of the European Commission.[49] According to the EU Guidelines, in most instances it is likely that there are brand-specific relevant markets for the repair and parts of each brand; such secondary markets are separate from the primary product. On each of these markets so defined, the main source of competition results from the competitive interaction between independent repairers and authorised repairers of the brand in question.[50] As a consequence, the document assumes that the market power of each car manufacturers on the aftermarkets should be assessed on the aftermarkets of its own cars only, without taking into account the competitive pressure on the primary market for car sales. The Commission considers that consumers are generally myopic as, in practice, it is very difficult for them to appreciate the amount of future expenses that they may incur in when maintaining the vehicle.

The Commission, however, does not exclude that in some circumstances a market which includes both motor vehicles and spare parts together (i.e. a system market) may be defined, depending on a number of factors:

- The life-time of the motor vehicle as well as the preferences and buying behaviour of the users.
- Whether a significant proportion of buyers make purchasing choices taking into account the life-time costs of the motor vehicle or not;[51] and
- The existence and relative position of spare parts suppliers, repairers and/or spare parts distributors operating in the aftermarket independently from the motor vehicle manufacturers.[52]

60. The implication of defining multiple markets is that a supplier active both in the primary market and in its aftermarket will likely hold a significant market share in the aftermarket, where there are often a small number of alternative suppliers. This is because when a supplier produces both original equipment and the repair or replacement parts, it will often be the only or the major supplier on that aftermarket. This may also arise where the supplier subcontracts the manufacturing of the repair or replacement parts. It will therefore be more likely to be considered to hold market power in the aftermarket despite being subject to strong competition in the primary market. Most of the early interventions by competition authorities with regard to aftermarkets involved multiple markets, as this is a case where a separate aftermarket can be defined as a relevant antitrust market where the equipment manufacturer enjoys market power.[53]

3.1.3 Dual markets

61. Where neither a market for systems nor multiple markets can be identified, the relevant markets may consist of a market for the primary products and a distinct market for the secondary products (so called dual market approach). In the case of printers and ink cartridges, for example, this would mean defining one market for all printers and a separate, common aftermarket for all ink cartridges. According to the OFT, dual markets exist "*where secondary products are compatible with all primary products (and perceived to be so by customers)*".[54] That means that consumers would be able to choose any combination of primary and secondary products.[55] There seems to be very few cases in which agencies have defined dual markets in practice.

Box 12. Examples of market definitions in aftermarket cases across jurisdictions

In the **European Union**, the Commission defined separate relevant markets for the aftermarket product(s) (i.e., either multiple or dual markets) in many aftermarket cases. In *Hugin*[56], the Commission defined a market for Hugin's spare parts required by independent service operators; in *Hilti*[57] the Commission defined a market for nails designed for Hilti nail guns; in *Pelican/Kyocera*[58] the Commission defined a market for the supply of toners and/or other consumables for printers of a specific brand; in *Tetra Pak International*[59] the Commission defined a market for aseptic cartons, aseptic filling machines, non-aseptic cartons and non-aseptic filling machines; in *IBM Maintenance Services*[60] the Commission defined a maintenance market for IBM mainframe hardware; in *Luxury Watch Repair*[61] the Commission defined multiple separate markets for spare parts, each associated with a particular watch brand.

In **Japan**, in the 2002 case *Mitsubishi Electric Building Techno-service*[62] and in the 2004 case *Tokyu Parking System*,[63] it seems that the Japan Fair Trade Commission (JFTC) defined the relevant market consisting of aftermarket for maintenance of the primary products of a specific brand. In **India**, in the 2014 auto spare parts case (*Shri Shamsher Kataria v Honda Siel Cars India Ltd. & Ors*),[64] the Competition Commission of India did not accept the parties' claim that a unified systems market existed and defined multiple markets for spare parts, diagnostic tools and after-sale repair and maintenance services of separate brands. In **Italy**, in the *Italian Elevators* case[65], the Italian Competition Authority defined multiple markets for proprietary spare parts of elevators of each brand. In **Spain**, in two cases related respectively to ink cartridges[66] and elevators[67], the Spanish competition authority identified multiple markets, although these cases were subsequently closed for lack of evidence. In **United Kingdom**, in the *ICL/Synstar* case[68] the OFT concluded that there was a single market for the supply and maintenance of computer equipment with ICL mainframe functionality in the UK.

3.2 Establishing market power in aftermarkets cases

62. Intrinsically related to the issue of market definition is the question of market power. In order to engage in an antitrust intervention, competition authorities must determine whether or not market power (or dominance) exists. As for the definition of the relevant market, the assessment of market power in aftermarkets does not differ significantly from other antitrust cases, although it must take into consideration the peculiar relationship between primary and secondary products.[69] To assess if a company has market power, competition authorities would typically need to examine factors such as competition constraints imposed on the company at issue based on its respective market position and that of its competitors, the existing barriers to expansion and entry, and the countervailing power of customers.[70] However, in aftermarket cases, it is generally acknowledged that competition in the primary market may be sufficient to discipline suppliers who are active in both fore and aftermarkets, regardless of the significant presence (possibly signalled by high market shares or high prices) that the firm may hold in the aftermarket. To our knowledge, there are very few competition infringement cases where the firm investigated was not found to be dominant also in the primary market.[71]

3.2.1 High market shares and high aftermarket prices may not be good indicators of market power

63. In general, although not a determining factor as such, the analysis of market shares in antitrust cases assumes that the competitive constraint exercised by a firm on its competitors is a reflection of its position in the market. The larger the market shares, the greater the competitive constraint, the higher their presumed market power. This basic assumption however does not hold true especially when assessing the market power of firms which sell complementary products, as is the case of fore and aftermarket products. If agencies were to apply a traditional market share analysis this might lead to over- or under-estimation of market power in the secondary market.[72]

64. As the US Supreme Court in *Kodak* stated clearly, the complementary nature of fore and aftermarkets affect the way in which enforcers must approach the question of market power: "*the ultimate inquiry is […] whether competition in the equipment market will significantly restrain power in the service and parts markets.*" Similarly, European Commission (2005) concludes that the strong position of a

supplier in the aftermarkets may not necessarily be indicative of the actual degree of its market power due to the constraint to which it may be subject by the competition in the primary market.[73] Some commentators argue that in practice dominance of the supplier in the aftermarket is established *only* if it is dominant in the *primary* market.[74]

65. According to European Commission (2005) "*aftermarkets typically appear in competition cases when they are proprietary, that is, when they are brand-specific in that secondary products that can be used with one brand of primary product cannot be used with another brand of primary product, although the primary products themselves are substitutes.*" [75] Under this scenario, if one were to look only at competition in the aftermarket a supplier active both in primary market and in the aftermarket would be likely to have a high market share in the aftermarket and therefore more likely to be considered enjoying a dominant position. For this reason, the same document recognises that "*[i]f an aftermarket consisting of the secondary products of one brand of primary product has been found to constitute a relevant product market, a dominant position on such a market can only be established after analysis of the competition on both the aftermarket and the primary market.*"[76]

Box 13. CRA (1998) - Dynamic competition and the impact of innovation in aftermarkets

The existence of time lags between sales in the fore and the aftermarkets means that competition analysis of aftermarkets requires particular care in the presence of intense dynamic competition. Economists use the term 'dynamic competition' to describe the temporal dimension of competition. In many industries, the key ingredient of competition over time is technological innovation – firms attempt to gain a competitive advantage either by reducing costs or introducing new products. A new product that can do more things –or do the same things faster, more cheaply, or more safely– will replace inferior earlier products. This gives the innovating firm the lion's share of new sales –at least until other firms catch up or the next innovation comes along. In such markets temporary market power is inevitable and indeed provides the incentive for firms to innovate. They compete to be the first, to win 'the prize'. When the pace of innovation is fast, the case for policy intervention to remove or prevent temporary market power is reduced. Ill-considered intervention can be harmful, by damaging future incentives to innovate. The principal role for competition policy in technologically innovative markets is to ensure that entry into the race to deliver the next innovation remains open.

Where fore and aftermarkets are closely linked, strong dynamic competition between manufacturers of durable goods will also reduce competition concerns about aftermarket power. While suppliers of the latest equipment achieve high sales today, their before-market share will drop fast as soon as a new product comes into the market and makes current systems obsolete. If a new generation of durable goods will be accompanied by new consumables, the present market leader's aftermarket share will drop too – albeit with a time lag, which is determined by the replacement cycle for the durable good. Any developments observed today in the before-market will give us a fair idea of how the aftermarket will develop over the coming years.

66. If market shares in the aftermarket alone may not necessarily be a good indicator of market power, a similar conclusion applies to high prices in the aftermarket. As discussed earlier in this paper, the complementary nature of primary and secondary goods implies that price changes in the aftermarket will have an effect on sales of the primary good as well. So it is important to recognise that over-pricing of aftermarket products will lead to corresponding under-pricing of the primary good. This link between primary and secondary products is the reason why high prices in the secondary market may not be the result of the exercise of market power: a seller can only have so much market power, and an increase in aftermarket power is compensated by an equal decrease in power in the primary market.

3.2.2 A case-by-case analysis is required to establish market power

67. The question of whether a firm can exercise market power in the aftermarket needs to be answered on a case-by-case basis. The answer to this question will depend on factors such as:

- *The ratio of locked-in customers to new customers*: Where new customers represent an important factor in the industry (e.g. because it is a nascent industry and demand from new customers is growing) this will provide a significant competitive constraint on aftermarket pricing.

- *The ability to price discriminate in favour of new customers*: The ability to price discriminate will facilitate aftermarket monopolisation as suppliers will have incentives to charge lower prices to new customers to encourage them to enter the market and higher prices to existing locked-in customers.[77]

- *The degree of sophistication or naivety of customers*: Agencies should check if aftermarket prices are available in advance and if the need for aftermarket products is predictable in advance (consumables/routine maintenance *vs* repairs or improvements). Outcomes will also be influenced by the types of consumers in a market. Professional purchasers have more sophisticated understanding of the market and will use a more detailed information set than occasional customers. Agencies should also assess if there is information available from rivals, from specialised reviews and websites, consumer associations, or repeat buyers' experience.

- *The price of the primary product and of the secondary product*: For example, it is important to assess if the choice of the primary product is based primarily on price or on other technical features or even on mere reputational effects. It is also important to assess if the relative cost of aftermarket products is trivial or significant as compared to the price of the primary equipment and whether there are alternatives or substitute products in the aftermarket.[78]

68. Other important factors to consider in this analysis are the effects of the aftermarket restraints at issue,[79] the average lifetime of the primary product, the amount of information on the total costs of the secondary product available to consumers;[80] the magnitude of the switching costs to competing primary products;[81] the importance of reputational concerns (e.g. fear of loss of future sales in the primary market); the existence of contractual provisions to prevent opportunistic behaviour in the aftermarket; and the compatibility of the secondary products with multiple primary products.[82]

Box 14. Assessment of dominance in EU aftermarket cases

The European Commission generally relies on four criteria to assess whether the company holds a dominant position in the aftermarket. Namely, dominance on the aftermarket can be excluded "*to the extent that a customer (i) can make an informed choice including lifecycle pricing, that he (ii) is likely to make such an informed choice accordingly, and that, (iii) in case of an apparent policy of exploitation being pursued in one specific aftermarket, a sufficient number of customers would adapt their purchasing behaviour at the level of the primary market (iv) within a reasonable time*".[83]

In the *Kyocera/Pelican* case,[84] the Commission applied the four criteria and concluded that competition in the printer market constituted effective discipline in the aftermarket and denied that Kyocera enjoyed dominance in the aftermarket. Similarly in the *Info-lab/Ricoh* case,[85] the Commission concluded that the market for toners for Ricoh photocopy machines was closely linked to the market for the photocopier machines and that Ricoh's dominance in the aftermarket could not be established because of the competitive pressure it was subject to in the primary market.

3.3 Anticompetitive behaviour involving aftermarkets

69. The purpose of this section is not to review in great detail the legal and economic theories behind possible anticompetitive conduct that firms might engage in when operating in aftermarkets. This is especially because agencies and courts have not identified a need to adjust the traditional antitrust standards and tools -let alone develop new ones- to assess such conduct in aftermarkets but have applied the analytical tools and standards developed in other types of antitrust cases. This section, nevertheless, will offer an overview of a variety of conduct that firms might engage in to attempt to monopolise the aftermarket by extending their market power and by limiting choices open to consumers as to the products or services available to them in the aftermarket.

70. Conduct that is generally analysed by agencies in aftermarket cases tend to be classified as a form of "*leveraging of market power*" that a firm has in one market (i.e. the market for the primary good) into another market (i.e. the aftermarket). To the extent that these practices contribute to a reduction in the number and diversity of sources for consumers to acquire the secondary product or service, there will be opportunities for sellers to attempt to raise prices, and sometimes these attempts may be successful and therefore require antitrust scrutiny. If competition authorities are able to establish market power, or a dominant position, they can examine whether any of these conduct can amount to an anticompetitive behaviour. In the context of aftermarkets, such abusive behaviour typically consists in unilateral exclusionary conduct,[86] but could also amount in some cases to exploitative conduct.

Box 15. Excessively high and excessively low (predatory) pricing in aftermarkets

Excessive or unfair pricing cases in aftermarkets are rare. Jurisdictions which pursue excessively high prices as abusive could apply unilateral conduct rules also to aftermarkets, especially if such high aftermarket prices would be set after the initial purchase of the primary product, under an "installed based opportunism" theory of harm. However, pursuing high prices is generally rare in OECD jurisdictions because of the challenges related to successful prosecution of exploitative cases.[87] Heimert (2016), for example, suggests that U.S. antitrust laws do not typically deal with exploitative abuses such as excessive pricing in aftermarkets. This is because, as extensively discussed throughout this paper, high prices in the aftermarket can be the result of the relatively low prices in the primary market, making it quite difficult, if not impossible, to pursue excessive pricing as infringement of competition laws in aftermarkets. Temple Lang (2011) reaches similar conclusions with reference to EU competition law.

Under an excessively low (predatory) pricing scheme the manufacturer would engage in a strategy of selling the primary product at low-cost prices, with the forgone profit on the primary product made up by higher prices in the secondary market. Again, because of the close linkages between prices of primary and secondary products it is often the case that the manufacturer of the primary product adopts pricing strategies taking into account both the primary and secondary market. Such strategy could involve charging low prices in the primary market (to increase sales of the equipment) and high prices in its proprietary aftermarket (to price discriminate between high/low users and to recoup the investments made on the development of the primary product). Such low pricing could amount to a predatory pricing. In order to establish that, however, a competition authority would need to take into account the price of the primary product and the aftermarket price because of the links of the two markets. This paper will not discuss this case further as the exclusionary effects of such a predatory strategy would usually take place in the primary market and not in the aftermarket.[88]

71. The next sections will focus on the most common exclusionary behaviours by dominant firms in the aftermarkets and not on exploitative conduct or on other theories of harm based on coordination of competitors' behaviour.[89] The most common exclusionary practices include tying and refusal to deal.

3.3.1 Tying involving aftermarkets

72. Tying is one of the most common behaviour analysed in competition cases involving aftermarkets. Under a tying arrangement the manufacturer conditions the sale of the primary product (the "tying product") to the purchase by the customer of an aftermarket product or service (the "tied product"). A similar result is obtained by contractually prohibiting customers from using any product in connection with the primary product other than one sold by or authorised by the seller. Regardless of the various forms that tying may take in practice,[90] an unlawful tying arrangement with specific reference to aftermarkets would include the following elements:

- Proof that there were two separate products, which is often the case in aftermarket cases;
- Proof that the seller required, or coerced, the buyer to acquire both products, rather than merely offering a package in which it was cheaper, more convenient, or more attractive to take both elements.
- Proof that the seller had market power in the tying product market, or in the case of aftermarkets, in the market for the primary product.
- Finally, proof that the tying strategy had some, not insubstantial effect on competition in the tied product market, i.e. in the aftermarket.

73. It is generally acknowledged that the supplier needs to be dominant in the *primary* market for the tying to be considered illegal. European Commission (2009) states that *"[i]n the special case of tying in after-markets, the condition is that the undertaking is dominant in the tying market and/or the tied after-market*".[91] This is consistent with the idea that the theory of harm from tying is leverage, namely, tying would be harmful if a dominant company distorts competition in the tied product market (i.e. in the context an aftermarket, the secondary market), by leveraging its market power in the tying product market (i.e. the primary market). Besides that, prerequisites for establishing an illegal tying would be similar to other tying cases that do not involve an aftermarket.[92]

74. It is widely acknowledged that tying often brings about pro-competitive effects and efficiency gains, either or both in the primary market and/or the aftermarket, because of the strong links between the two markets. Possible efficiency gains generally associated with a tying arrangement in the context of aftermarket include economies of scale, reduction of transaction costs, and encouragement of innovation and expansion of the overall output due to the relative low price of the primary product.[93] The economic literature also suggests the possibility of a trade-off between competition in the aftermarket and competition in the primary market, meaning that the fierce competition in the aftermarket would lead to the loose competition in the primary market.[94] In addition, firms investigated under alleged tying theories often claim that the conduct is objectively justified because of public considerations (typically health or safety reasons),[95] the need to safeguard the brand image, the guarantee of the quality or the proper usage of the products.[96] Competition authorities would need to carefully deal with these justifications and efficiency arguments before they condemn a *prima facie* abusive tying involving aftermarkets.

Box 16. Examples of aftermarkets tying cases

In the **European Union**, in *Hilti AG*[97] the Commission concluded that Hilti abused its dominant position by tying the sale of nails to the sales of cartridge strips. The General Court rejected an objective justification brought forward by Hilti which claimed that such tying was due to safety concerns, arguing that deficiencies in nails produced by its competitors rendered them incompatible with Hilti's nail guns, and that the tying was justified by Hilti's duty of care under product liability law. In *Tetra Pak International*,[98] the Commission found that Tetra Pak abused its dominant position by tying the sales of machinery for packaging to the sales of cartons, which was upheld by the General Court and the Court of Justice. The Court of Justice ruled that "*even where tied sales of two products are in accordance with commercial usage or there is a natural link between the two products in question, such sales may still constitute abuse […] unless they are objectively justified*". In *Digital*'s undertaking,[99] one of the competition concerns identified by the European Commission was that Digital had abused its dominant position in the EU markets for Digital software services and hardware services for Digital systems by "*tying the supply of hardware services and software services, i.a. due to the prices of software services being considerably more attractive when included into a hardware and software service package than when sold on a stand-alone basis*", which is considered as a sort of "economic tying".[100]

In **Japan**, in *Toshiba Elevator Service* private enforcement case,[101] antitrust damages were awarded to an independent maintenance company and an owner of a building installing an elevator manufactured by Toshiba for an illegal tying by a wholly-owned subsidiary of Toshiba (*Toshiba erebeta tekunosu*), which provided maintenance and repair service for elevators manufactured by Toshiba. The court concluded that the appellant (the wholly-owned subsidiary of Toshiba) tied the maintenance and inspection contract to the supply of spare parts through refusals to supply spare parts to independent service operators and delays in supplying such parts.

3.3.2 Refusals to deal and other exclusionary practices in aftermarkets

75. Refusing to supply products to competitors in the secondary market is another unilateral exclusionary behaviour by the supplier of a primary product active in both the primary market and in the aftermarket. For example, if the spare parts are non-replicable or subject to exclusive rights, a refusal to supply spare parts to its (existing and potential) competitors in the aftermarket would *de facto* leave the manufacturer of the primary good as the sole supplier of secondary products since competitors would be unable to provide repair and maintenance service in the aftermarket. Such refusals to deal can also take various forms: a refusal to license intellectual property rights to the competitors in the aftermarket; refusals to disclose to the competitors in the aftermarket technical information necessary for entry into or effectively compete in the aftermarket; price discrimination strategies whereby the supplier charges higher prices to the (mostly independent or non-authorised) competitors to raise their costs in the aftermarket; intentional delays in supplying spare parts to the competitors in the aftermarket; and any other conduct aiming at raising rivals' costs.[102]

76. Conditions for establishing illegal refusals to deal in aftermarkets are similar to those applied by agencies and courts in other competition cases.[103] Generally, a number of elements have to be satisfied before a refusal to deal can be found to constitute a violation of competition law.[104] These include:

- The refusing firm must have a dominant position in some product or service. In aftermarket cases, agencies generally look at whether a firm has market power in the primary market.

- The refusing firm must not be willing to sell at terms and conditions which are deemed to be appropriate. The definition of what are "appropriate" commercial terms is, of course, a key issue in such cases and will vary from case to case.

- The denial of service at "appropriate" terms and conditions must have a material impact on competition in a related market, to the detriment of consumers. In aftermarket cases, agencies generally would need to look at the effects of the conduct on competition in the aftermarket.

- There must not be an objective commercial justification for the denial of service.[105]

Box 17. Refusals to deal in aftermarkets

In the **European Union**, in *Hugin*[106] the Commission established that Hugin refused to supply spare parts for its cash registers to independent maintenance and repair companies operating outside its own distribution network. In the *AB Volvo v Erik Veng* and *CICRA and another v Renault* cases,[107] the Commission concluded that a refusal to supply spare parts by the company holding an exclusive right to the production of such spare parts may amount to an infringement of the EU Treaty provisions on abuse of dominance. In the *IBM* case,[108] the cumulative effect of various conducts with respect to the supply of essential inputs might have amounted to a constructive refusal to deal. The practices identified by the Commission as raising concerns were that IBM restricted the business hours where independent maintainers could have access to its spare parts in comparison with its own customers; it imposed a non-returns or a much higher non-exchange price on the returns of the parts by the independent maintainers that failed to meet the deadline; and it appeared to delay such maintainers' access to technical information necessary to provide maintenance service.

In **India**, in the 2014 auto spare parts case (*Shri Shamsher Kataria v Honda Siel Cars India Ltd. & Ors*),[109] the Competition Commission of India found that the conduct of 14 car companies denying access to branded spare parts and diagnostic tools by independent repairers infringed the Indian Competition Act of 2002. The refusal was put in place by imposing restrictive covenants whose effect was to completely foreclose the aftermarkets. In particular, car companies restricted the range of spare parts available to independent repairers and limited the diagnostic tools and technical manuals that were necessary to service and repair the respective brands of automobiles of the OEMs.

3.3.3 Aftermarket restraints and IP rights

77. The analysis of aftermarket monopolisation is often closely related to the legitimate exercise of an IP right. Even a cursory review of the many antitrust cases involving aftermarkets shows that most concerns arise when aftermarkets are proprietary, that is, when they are brand-specific and often protected by a patent or another IP right.[110] The interaction between competition and IP in these cases raises interesting policy questions on the extent to which competition law should interfere with the legitimate exercise of IP rights including the right to exclude others from using its product. The spectrum of behaviour by IP holders which may be relevant to such a discussion on aftermarket monopolisation is wide. Here are some examples:

- ***Refusal to sell IP protected products***: the most common strategy for an IP holder is to refuse to sell IP protected products to competitors. This would be the case of a refusal to sell to independent service organisations the patented spare parts which they would need to service the primary product in competition with the manufacturer.

- ***Refusal of interoperability with IP protected products***: The seller may design or configure its primary product so that only its proprietary version of the secondary product will work with it, foreclosing other firms from providing alternatives in the secondary market to purchasers of the proprietary primary product.

- ***Raising rival costs***: The seller may withhold specifications or details of new IP-protected products before they are first sold on the market, thereby enjoying the goodwill associated with the first mover advantage.

- ***Abusive Design Patents***: In cases where there are original (patented) and non-original (non-patent protected) spare parts, the attempt of the manufacturer of the primary equipment to seek patent protection for spare parts which are not yet IP-protected may result in the exclusion from the aftermarket of independent service providers (in case the equipment manufacturer were to

decide to restrict sales to them of the newly patented spare parts) or to an increase of their costs (in case the equipment manufacturer were to decide to licence the newly patented spare parts).[111]

- ***Conditional sales of IP protected secondary products***: the IP holder could impose conditions on the sale of its IP protected product to limit its use after it is sold. One example is the sale by a printer manufacturer of patented toners at a discounted price on condition that the buyer will return the toner cartridge after its use. This will *de facto* prevent competitors in the toner market from refurbishing patented toner cartridges to compete with the original toners from the printer manufacturer, therefore limiting competition in the aftermarket.[112]

78. The general principles governing the enforcement of competition rules to conduct involving IP rights are quite well-established. In many jurisdictions, it is widely recognised by antitrust agencies and courts that competition law does not apply to conduct which represent a mere exercise of an IP right. This generally includes the IP right holder's right to unilaterally exclude others from using the IP. If it would be otherwise, the IP right would be emptied of its *raison d'être* and this would create a direct prejudice to the economic, cultural, social and educational benefits underpinning the grant of a monopoly right to the IP holder. On the other hand, any extension of the IP monopoly protection beyond the mere exercise of the IP right could potentially expose that IP holder to scrutiny under the competition law. This would be the case, for example, if an IP holder engages in conduct that creates, enhances or maintains market power in a separate market. An example of this would be where IP holder would tie a non-proprietary product (e.g. a product sold in the aftermarket) to a product covered by its IP right (i.e. the primary product).

79. While it is beyond this paper to discuss the intricate interplay between competition policy and intellectual property, the examples above show clearly how intertwined and complex the relationship between two policy objectives is: the legitimate exercise of IP rights and the safeguard of IP holders' incentives to innovate, on the one hand; and the need to ensure a sufficient degree of competition in aftermarkets, on the other. The perceived tension between IP and competition and the attempt to determine the proper role for competition policy when it comes into conflict with IP policy in aftermarket cases is resolved differently in different jurisdictions, depending on the various countries' cultures, their legal background and the different degree of commitments they have to competition values and intellectual property values.

Box 18. Balancing IP and competition objectives in aftermarket - US case law in *Kodak* and *Xerox*

Striking the optimal balance between competition and IP values, however, can prove to be difficult even within the same jurisdiction. In the United States, for example, different courts have reached different conclusions in the two seminal aftermarket cases: *Kodak* and *Xerox*.[113] Both cases involved refusals to sell patented spare parts to independent services suppliers that competed with Kodak and Xerox in the aftermarket for the maintenance of their original equipment. In both cases, the court was confronted with the question of whether the legitimate exercise of an IP right (which includes a right to refuse to sell) should take priority over the public interest to promote competition in the aftermarket.

The Ninth Circuit in *Kodak* ruled that a patent owner's right to exclude is a "*presumptively legitimate business justification*" for refusing to deal with a competitor, but added that this presumption is rebuttable if a plaintiff can show that the purported business justification "*does not legitimately promote competition or that the justification is pretextual.*" The court in *Kodak* therefore believed that IP rights generally deserve deference, but it left open a possibility for competition considerations to prevail depending on the facts of the case. In *Xerox*, the Federal Circuit took a more absolute approach and ruled that patent protection deserves unqualified priority. According to the court a patent owner has always a right to refuse to sell to others unless the plaintiff can show that the patent was illegally obtained. The Federal Circuit, moreover, explicitly rejected the Ninth Circuit's approach in *Kodak* ("*We decline to follow Image Technical Services*"),[114] stressing how these two opinions reveal striking differences in their consideration of IP rights protection under the antitrust laws.[115]

80. Economic research does not help in determining the "right" choice among various policy options, making the choice more of a value judgment than a cost/benefit determination. Policy makers and enforcers, however, can play an important role in shaping innovation policy, as choices they make on whether IP rights should be constrained by competition concerns will impact directly on efficiency and innovation patterns. According to Fox (1986) the available policy choices can be summarised by the following diagram:

	A	B
1	Freedom of the dominant firm to choose strategy and not to disclose	Freedom of the dominant firm, unless plaintiff proves that the dominant firm's strategy imposes costs on competitors in order to increase its dominance
2	Access of competitors to information necessary to make product compatible, unless the dominant firm proves that a duty to provide the information will unduly interfere with incentives to invent and will therefore harm consumers	Access of competitors to information necessary for compatibility

81. More freedom of the dominant firm (policy choice 1A) will imply less price competition in general, and less technological development by smaller firms; under this policy regime, innovation will likely come for the dominant firm, and the changes are more likely to be impervious to competitor penetration. More access by competitors to interface information (policy choice 2B) will imply less technological development by the dominant firm; competitors will have maximum incentives both to copy and to invent, and their more immediate competition will tend to push down prices.

82. The other two policy scenarios (2A and 1B) are intermediary scenarios and that is where agencies enforcing competition laws in IP environments can strike a different policy trade-off between innovation driven by dominant firms and innovation driven by fringe competitors. Such trade-off is not easy to reach, and its consequences may not be possible to predict. The expected net increase (or decrease) in efficiency and innovation will depend on a number of factors: the technological advances by the dominant firm, the expected contribution in innovation by smaller firms and the expected lower prices that the interaction between the dominant firm and these smaller firms may generate in the short and long term under the different policy scenarios.

83. These choices are also relevant when it comes to aftermarket strategies by firms and their impact on innovation. Because competition can take place at different levels in primary and secondary markets firms have developed different business models.

- ***System competition***: On one end of the spectrum, we have seen the development of integrated business models ensuring end-to-end control by the manufacturer of the original equipment also of the aftermarket services and of any add-on service or product used with the original equipment. Business models based on competition between integrated systems usually rely strongly on proprietary (i.e. IP protected) and closed systems. This integrated model allows the manufacturer to control quality throughout the value chain, to meter the use of the systems through customer discrimination and to obtain know-how from the use of the equipment that can be used to innovate and improve the primary product itself. Consumers benefit from competition

between systems, but once they have chosen a system they are locked-in and there is no scope for competitive constraints within the system chosen.

- ***Unbundled competition***: At the other end of the spectrum, firms have developed open systems based on open specifications of the primary product and cooperation between manufacturers of secondary products with the original equipment manufacturer allowing the development of competing secondary products. These business models foster improvements in the secondary market driven by independent manufacturers and over time may eventually promote entry in the primary market by such independent manufacturers. Unbundled business models rest more heavily on open systems, on cooperation and sharing of know-how between suppliers of primary and secondary products.

3.4 The role of efficiencies and defences based on objective justifications

84. As discussed earlier in this paper, an important strand of the economic literature (especially from the Chicago School) has looked at the efficiency rationales for aftermarket monopolisation. The thrust of these papers is that attempts by firms to retain or expand their market power in the aftermarket may not necessarily harm consumers and may actually increase consumer welfare or at least be welfare-neutral. Antitrust authorities have recognised that some of the antitrust conduct briefly reviewed above, which are typically seen in aftermarkets cases (e.g. tying and refusal to deal), are often likely to produce efficiency gains on which defendants can rely as defences against antitrust enforcement.

85. Such efficiencies would include economies of scale, reduction of transaction costs, encouragement of innovation and expansion of the overall output due to the relative low price of the primary product in case of tying,[116] and securing of an adequate return and avoidance of negative effects on incentives to innovate. For example, in the digital economy, it would be particularly important to take into consideration dynamic economics and efficiencies, so that intervention from competition authority would not discourage prospective innovation in the primary market.

86. Typical examples of defences brought forward in aftermarkets cases are public considerations (such as health-care and safety reasons), reputational effects linked to the proper functioning and usage of the two products,[117] maintenance of brand image, promotion of incentives for innovation, and exercise of intellectual property rights in particular in refusals to deal cases. It is up to the firm under investigation to demonstrate the existence of these efficiencies, to show that the conduct in question is necessary and proportionate and that such efficiencies cannot be achieved through less anticompetitive means.

87. One important function of aftermarkets restrictions is quality control and protection of the goodwill of the manufacturer of the primary product. If, for example, car dealers were to use replacement parts of an inferior quality of the original spare parts, and if consumers mistakenly believe that these parts are made by or are authorised by the manufacturer, the reputation of the car manufacturer would be adversely affected. In these cases, aftermarket restrictions may be an effective and efficient way of protecting the interests involved, first and foremost those of consumers. Agencies, however, would have to assess if there may be other, potentially less anticompetitive, ways of insuring quality control. For example, the supplier could specify the features and qualities of the secondary products to ensure quality, and combined it with the possibility to terminate the supply contract for the aftermarket products if these have an inferior quality than the one expected.

88. Another justification often put forward for aftermarket restraints is metering, which allows the seller of the primary good to engage in pro-competitive price discrimination among different purchasers or users of the product.[118] For example, Chen and Ross (1993), Emch (2003) and Klein (1996) argue that a seller may use the aftermarket as a “metering” device to discriminate between high-intensity, high-value

users and low-intensity, low-value users; whereas Carlton and Waldman (2010) show that behaviours that hurt competition in aftermarkets can be an efficient response to potential inefficiencies that can arise in foremarket. When it comes to metering, Hovenkamp and Hovenkamp, (2010) conclude that the "*great majority*" of tying arrangement benefit both consumer welfare and total welfare, and indeed "*only harm consumer welfare in the most flagrant situations*" and "*consumers likely benefit [from them] most of the time.*" Lambert (2011) concludes that metering ties "*typically enhance total welfare*" and "*most instances of metering enhance consumer welfare.*" According to Wright (2006), "*second-degree price discrimination in the metering context is therefore an approximate form of perfect price discrimination.*"[119]

Box 19. Justifications in aftermarket cases

In the **European Union**, in *Hilti,*[120] the General Court rejected the objective justifications brought forward by Hilti which claimed that its tying practice stemmed from safety concerns and from its duty of care under product liability law. In *Haladjian Fréres v Commission*,[121] Caterpillar limited the imports of spare parts from the US to the EU. The Court found that Caterpillar had a legitimate interest in protecting its authorised dealers from non-authorised spare parts resellers, since they had to bear the costs associated with setting up the distribution network, benefiting customers and enabling for a good distribution network ensuring the maintenance and repair of their machines. In *Luxury Watch Repair*,[122] the watch manufacturers submitted that the selective repair systems aimed at preserving quality (by avoiding inappropriate repairs by independent repairers) and at safeguarding the brand image in the eyes of the consumer. The Commission concluded that it *"cannot exclude"* that such selective repair systems generated efficiencies and they these practices were objectively justified.

In **Japan**, in the *Toshiba Elevator* private litigation case,[123] the Osaka High Court recognised that the need for ensuring safety can, in general, justify an abusive tying, although it ruled that the behaviour at stake was not justified since the independent suppliers were found to provide maintenance services at a certain level of quality and did not provide dangerous maintenance services.

4. Remedies for Aftermarket Monopolisation Strategies

89. Putting an end to an unlawful conduct is an obvious and essential objective of competition law as well as sanctioning it to deter future violations of the law. Rigorous enforcement of competition law, with effective and proportionate sanctions, can achieve these objectives. In this perspective, defining markets, establishing whether there is market power, identifying abusive conduct and assessing whether such conduct may be objectively justified are important and complex steps that competition authorities have to undertake when enforcing competition laws. However, correctly concluding that a firm is dominant and that it abused its dominance, and punishing it with a sanction, may do little good for competition if there are no subsequent remedies that can restore the level of competition that would have existed but for the violation, or if the remedy is not administrable, or otherwise poorly conceived or implemented.[124]

90. The question of the appropriate remedy in aftermarket cases has been a topic for debate in the literature because of the nature and type of the infringements that agencies have investigated in aftermarket cases. These controversies often involve a refusal to supply competitors, a refusal to deal or the setting a high price in the secondary market. In all these cases, if the agency finds an infringement, a simple cease and desist order may not necessarily achieve the desired results in terms of restoring competition unless the agency is in a position to decide (directly or indirectly) or just to give guidance to the firm on what should be its new sale policy in the aftermarket. This would entail determining, for example, at what price the secondary products should lawfully be sold. As price regulation is very difficult and not as desirable as ensuring the market is competitive and allowing the market to determine the price, competition agencies, which are not market regulators, have always steered away from attempting to define the "right" or lawful price that a firm should be allowed to charge in the market.

91. In exclusionary tying or bundling cases, untying or unbundling is a common and straightforward remedy. In aftermarket cases where monopolisation is attempted through refusals to deal, however, simply ordering the company to start supplying the necessary inputs (e.g. spare parts) to independent companies competing in the aftermarkets might not achieve the intended results unless there is some control over the aftermarket price.[125] A competition authority could not usefully or effectively order a dominant manufacturer to supply its competitors with spare parts without also determining the relationship between the price to competitors and the price to consumers.[126] Otherwise, a naked refusal to deal could be easily turned into a constructive refusal to deal, jeopardising the attempt of the agency to restore effective competition.

92. These difficulties with devising an effective remedy have led some commentators to support a cautionary approach to the use of competition law enforcement in aftermarkets cases even when it might seem to be justified to protect consumer welfare. Alternative approaches to traditional antitrust enforcement include remedial actions under contract law, the use of information remedies under consumer protection laws and the use of other competition law tools, such as commitments decisions. Last, some jurisdictions have attempted to resolve aftermarkets concerns through regulatory initiatives.

4.1 The use of contractual remedies

93. A way in which customers can be protected from the risks of aftermarket monopolisation is the use of contracts. As a matter of fact, Chicago scholars have long recognised that the use of contracts can be a way for the parties to self-regulate the risk of opportunistic behaviour in the aftermarket even in cases where there is no sufficient competition in the primary market to discipline the supplier of the primary product when pricing in the aftermarket. They submit that when the primary equipment is purchased, contractual commitments to a certain price level in the aftermarket can be the best solution to overcome issues in secondary markets, if they arise, thus avoiding the need for an antitrust intervention. In other words, the Chicago School accepts that under specific circumstances customer myopia and lack of competition in the primary market could lead to consumer harm, but it considers that contractual solutions, whereby consumers are protected from exploitation in the secondary market over time, are preferable and less costly than interventions under competition law.[127]

94. The Post-Chicago school has questioned this approach and argued that contracts are inevitably incomplete and do not necessarily provide sufficient protection to consumers for the risk of aftermarket monopolisation.[128] These scholars emphasise two arguments:

- Suppliers of primary and secondary goods cannot credibly commit to future low aftermarket prices at the time of the sale of the primary good. This is because it might be profitable to engage in supra-competitive aftermarket prices in the presence of locked-in customers especially in the presence of incomplete contracts. This argument is based on the idea that, at the time of purchase in the foremarket, equipment manufacturers are unable to commit to future low prices in the aftermarket and this inability to commit leads to the exploitation of the installed base through aftermarket monopolisation and supra-competitive prices, allowing manufacturers to enjoy higher profits. The limited commitment theory, associated with the possibility for a supplier to implement pricing changes in the secondary market over time, is the reason why contractual solutions are not viewed by the Post-Chicago School as an optimal solution from a consumer-welfare perspective to the risks of aftermarket monopolisation.

- Post-Chicago scholars also submit that even if suppliers could be bound to contractual solutions preventing them from raising aftermarket prices above competitive levels (i.e. in the presence of complete contracts), consumers would still not be in a position to discern what a competitive aftermarket price is or is likely to be in the future. Contractual solutions may help preventing

suppliers from exploiting one customer over another, but will not necessarily prevent myopic behaviour by uninformed customers overall. Borenstein et al. (2000) stress that "*absent perfectly contingent long-term contracts, firms will balance the advantages of marginal-cost pricing to future generations of consumers against the payoff from monopoly pricing for current, locked-in equipment owners*".

95. These conclusions bring alongside the idea that contractual solutions may indeed be unfeasible, in open contrast with Chicago School's theory which sees their use as a possibility to overcome aftermarket pricing issues in place of antitrust interventions. In such perspective, antitrust interventions bear the risk of chilling suppliers from adopting flexible policies in their secondary markets since this could carry the risk of fines and costly investigations.

4.2 Remedies under consumer protection laws

96. Opinions are divided on whether and to what extent competition policy should deal with issues that consumers would face in the primary market and aftermarket, and it has been suggested that there is a role to be played in promoting aftermarket competition and also for consumer protection policy, especially when the lack of market power in the foremarket would not support an antitrust intervention.[129] The first part of this paper explored the relationship between the ability of a firm to exercise aftermarket power and consumer myopia. Consumers may not be in a position to make informed and rational purchasing decisions because of the lack of information on aftermarket prices, contractual safeguards, warranty terms, products features and availability. Business strategies to ensure insufficient information disclosures to customers could potentially amount to deceptive, fraudulent or unfair trading practice, depending on the concepts in consumer protection laws in different jurisdictions. Consumer protection could offer tools to help addressing insufficient or asymmetric information on aftermarket prices allowing informed consumer choices based on a better knowledge of the total life-cycle cost of the primary product, the terms of warranty for the primary product, and the quality and credibility of the secondary products supplied by independent manufacturers in the aftermarket.[130]

97. Competition and consumer protection aim at same objective: improving consumer welfare.[131] Competition policy approaches markets from the supply side and its purpose is to ensure that through competition, consumers have the widest possible range of choice of goods and services at the lowest possible prices. Consumer policy, however, approaches markets from the demand side to ensure that consumers are able to exercise intelligently and efficiently the choices that competition provides. As such, consumer policies can assist by addressing information asymmetries between sellers and buyers, prohibiting false and misleading advertising, and ensuring that contract terms are fair and understandable.

98. Competition policy and consumer policy can therefore reinforce one another in ensuring competitive aftermarkets. As discussed earlier in the paper, the Chicago school emphasises that competitive markets provide producers with internal incentives to further consumer policy objectives, for example, by developing a commercial strategy that informs consumers on the quality of their products or by attracting customers away from rivals by providing the necessary information on secondary markets to minimise their switching costs. At the same time, when consumers are able to exercise their choices effectively, they can act as a competitive discipline upon producers. Thus, there is a strong case to be made in the context of aftermarkets for co-ordinating actions and remedies under competition and consumer protection policies. Co-ordinating the two policies has obvious benefits, even for a single case.

99. One of the remedies available under consumer protection laws is to encourage or even mandate easy to understand information disclosures to allow consumer to self-protect in line with their individual preferences. Information is also compatible with sellers' incentives, inducing them to compete on the basis of information disclosed. In addition, this competition increases the incentive to generate and disseminate

additional product information, thereby repeating the cycle. In this way, information remedies rely on private economic incentives to achieve regulatory goals, rather than on expensive direct enforcement by the regulator.[132]

Box 20. Remedies in the UK payment protection insurance case

In the **United Kingdom**, the Competition Commission ("CC") completed a market investigation into payment protection insurance ("PPI") in 2010. PPI covers repayments on credit products if the borrower is unable to keep up repayments due to accident, sickness, unemployment or death. The PPI market is regulated by the Financial Services Authority (FSA) and is normally considered a secondary product linked to the foremarket for credit facilities (e.g. personal loans, mortgages, overdrafts, credit cards, etc.).

The peculiarity of this market investigation relies on the fact that, contrary to classic aftermarket cases where competition issues often arise from the manufacturer's product compatibility advantage, here the controversial advantage pertained to the credit's point of sale. In other words, while PPI and credit products from different retailers/brands could potentially be combined without restrictions, in practice customers were more inclined to purchase their insurance from the same firm providing the primary product when purchasing the primary product, thus giving it an advantage over rivals competing in the secondary market.

Following its investigation, the CC concluded that specific characteristics of the supply of PPI could result in anticompetitive effects and concluded that a remedy package should include not only a requirement to improve information available to consumers but also a prohibition of the sale of the PPI during the sale of the associated primary product (e.g. credit products such as a personal loan). The point-of-sale prohibition in the original order was the subject of an appeal by one credit provider, alleging that this prohibition would increase transaction costs to the detriment of consumers. The Competition Appeal Tribunal upheld the decision by the CC, but required the CC to further consider overall effects of the remedies package at issue in detail. In October 2010, the CC concluded that the benefits of the point-of-sales ban would outweigh the possible downsides for consumers (inconvenience and increase of transaction costs).[133]

One of the most discussed remedies, as well as most relevant for behavioural and consumer protection considerations, is the ban on selling PPI at the credit's point of sale. The major goal of the ban was to force consumers to shop around before choosing which insurance to buy. In other words, the CC intended to protect customers from themselves. However, while trying to encourage them to align their behaviour and choices to the objectives of competition policy, it was argued that it failed to take into consideration the repercussions of the imperfect consumer decision-making process on the effectiveness of remedies.

Although the OFT, the Financial Services Consumer Panel and the FSA all supported the so-called "point of sale prohibition", many strongly disagreed with it. Research conducted by GfK and reported by the CC showed that 91% of the survey's respondents identified convenience as the main reason for purchasing credit and insurance simultaneously.[134] In addition, the remedy envisaged that after seven days from the purchase of credit, customers could be contacted again by the credit provider and be offered payment protection insurance. However, it was found that already at that point "consumer engagement is significantly reduced". [135] In this respect, one of the main arguments put forward in the debate was indeed that customers' take-up rate of PPI could eventually decrease as a consequence of the ban, a considerably different outcome from the one anticipated by the CC. In fact, consumers could perceive the prohibition as an increase in their transaction costs instead of an incentive to shop around and obtain lower insurance prices, and therefore choose not to purchase the secondary product. As explained in Oxera's report on this case, "*even where consumers have access to sufficient information, and even where they can understand and process it, some may not necessarily act accordingly*".[136]

Ultimately, the CC disclosed its acknowledgement of the importance of convenience as a fundamental element of consumers' decision-making, but also stated that in general the increase in competition and the resulting lower prices would over-compensate the loss of convenience, thus the rationale for its choice. Overall, this case brings attention to the matter of behavioural considerations and consumer protection, both of which should be incorporated into the development of remedies to address anticompetitive problems. In particular, behavioural and consumer protection insights can assist in understanding the potential of certain remedies in achieving the desired outcomes, and to nudge consumers towards specific behaviours by providing them with the appropriate incentives.

100. While agencies with dual competition and consumer protection functions can benefit from the flexibility in remedies offered by the two policy areas, agencies with only traditional antitrust enforcement powers can always rely on their advocacy tools vis-à-vis relevant regulators, or potentially the business community itself, to correct market failures in the information market and facilitate aftermarket competition.[137]

101. Information remedies are not the only possible means to foster competition in the aftermarket. Agencies can advocate for a variety of other measures, such as increased compatibility between secondary products with proprietary primary products and better reliability of competing secondary products. Cooperation with responsible regulatory bodies, including standard setting bodies, and consumer protection agencies can enhance policies aimed at eliminating or reducing consumers' uncertainties and information asymmetries on quality, compatibility and reliability of secondary products which will improve the accuracy of consumer choices and a more efficient allocation of resources in aftermarkets.

4.3 The use of commitment decisions by competition agencies

102. Beyond increasing their advocacy efforts to allow efficient and rational consumer choices and to discipline suppliers' behaviour through traditional infringement procedures, competition authorities have explored other, more flexible, enforcement tools such as commitment decisions. As emphasised in OECD (2016b), commitment decisions can be beneficial for competition authorities not only in terms on resource savings and swifter case resolution, but can allow the agency to devise better remedies tailor-made to the case and the specific features of the market. In a negotiated remedy procedure, commitments can also go beyond what agencies could generally obtain in the context of an infringement procedure, where not all remedies may necessarily be available as a matter of law. This would include structural remedies and various types of proactive and tailor-made behavioural remedies, allowing competition authorities to more easily craft remedy packages that would proportionally cure the competition concerns identified, without incurring in adverse effects on competition.

103. Because they apply for a specified limited time, commitment decisions also allow the adjustment of the antitrust intervention over time when there has been a material change in the facts or the circumstance on which the decision was originally based. This can be particularly useful in dynamic markets where conditions of competition change and terms for commercial relationships can become quickly obsolete and require revisions and adjustments to new realities. The overwhelming growth of the digital economy is an area where flexibility over time in the regulatory interventions by competition authorities can be particularly valuable. Most agencies can decide to accept commitments for a specified period of time, at the end of which the agency may re-assess the competitive situation and decide whether to renew the commitments, amend them in light of the new market context or terminate them. Such review can also be asked by the parties themselves, or by competitors and other stakeholders. Moreover, the fact that the remedies proposed by the parties are subject to a market testing exercise where competitors, suppliers, consumers and other interested parties can contribute to ensuring a higher quality of the remedies themselves and their effectiveness.

Box 21. Examples of commitments in aftermarket cases

The IBM 1987 and 2010 decisions of the European Commission

One of the first settlements ever that the European Commission accepted in order to terminate an antitrust investigation dates back to 1987, i.e. to before Regulation 1/2003 and the introduction of formal powers of the Commission to accept commitment in competition cases. This is the well-known "informal" settlement with IBM, where the dominant US computer manufacturer at the time agreed to a number of marketing practices with regard to its most powerful range of computers at the time, the System/370. Among other undertakings, IBM agreed to a number of information disclosures, .i.e. to share with competitors sufficient interface information to enable them to attach both hardware and software products of their own design to System/370, for commercialisation in the European Community; and to disclose adequate and timely information to enable them to interconnect their systems or networks with IBM's System/370 Network Architecture.[138] These commitments, which were found by the Commission to have worked satisfactorily, were terminated in 1995.

In the 2011 *IBM commitment decision*,[139] the European Commission accepted legally binding commitments from IBM regarding the maintenance market for its mainframe computers. At the time, IBM was under investigation for a possible abuse of its dominant position on the secondary market for the maintenance of its own mainframe systems. The alleged constructive refusal to supply consisted in the imposition of unreasonable terms on ISOs for the supply of spare parts and in the refusal to provide them with the necessary technical information. In this case, the Commission agreed to accept commitments from IBM to ensure that for a period of 5 years: i) ISOs were provided with access to vital technical information to allow them to support IBM's mainframe systems; ii) ISOs received prompt delivery of spare parts; and iii) ISOs paid the same price for spare parts as those accorded to self-maintainers.[140]

The Digital's commitment decision of the European Commission

In 1997, the European Commission accepted a set of undertakings from Digital.[141] The investigation was initiated thanks to complaints by third party maintenance (TPM) companies, alleging that Digital had prevented effective competition in the supply of hardware maintenance services for Digital systems. The Commission identified the following problematic practices: 1) the tying of the supply of hardware services and software services, due to the prices of software services being considerably more attractive when included into a hardware and software service package than when sold on a stand-alone basis, 2) discriminatory practices, by offering, in the supply of software support services, highly different transactions at the same price and almost similar transactions at very different prices, and 3) exclusionary practices targeted at TPMs.

To address these concerns, Digital agreed to i) offer hardware maintenance services for Digital systems on a stand-alone basis and to implement a pricing policy for its software support services based on a single flat fee, ii) ensure a transparent and non-discriminatory discount policy and to publish or otherwise make known the eligibility provisions for all discount programs, and iii) not to restrict its distributors from distributing software updates and services to any person properly licensed to use the relevant software and to select its service distributors through the non-discriminatory application of objectively verifiable criteria. The Commission considered that these undertakings addressed its concerns and decided not to pursue this case for alleged infringement of EU competition law.

The French decision in the Nespresso case

In France, the Autorité de la Concurrence ("Autorité") investigated *Nespresso*[142] for tying the purchase of Nespresso-brand coffee machines to the purchase of Nespresso-brand capsules. The Autorité identified two main competition concerns: i) between 2007 and 2013 Nespresso made changes that prevented the compatibility of rivals' capsules with Nespresso machines; ii) Nespresso included language on the packaging, in the guarantee terms, as well as in public statements that encouraged consumers to buy only original Nespresso capsules.[143] To address these concerns by the competition authority Nespresso proposed a series of binding commitments whereby it agreed to i) notify competing capsule manufacturers of all technical modifications prior to the sale of the new machines; ii) provide competitors, through a trusted third party, with the prototypes of its new machines; and iii) modify the terms of the guarantee for the Nespresso coffee machines to cover all malfunctions and refrain from comments on rival capsules on the packaging or in public statements. After conducting a market test, the Autorité confirmed that the commitments were adequate to address its competition concerns and made them binding in September 2014.

4.4 Examples of regulatory remedies to aftermarket concerns

104. In seeking the right balance between competition in aftermarkets and intellectual property rights, some jurisdictions have opted for a more "regulatory" approach to the relationship between primary and secondary markets. We will briefly discuss two examples: the so-called repair clauses and statutory provisions on duty to deal.

105. We have described earlier in the paper developments in the US regarding use of IP laws on design patents in automobile industry to monopolise the secondary market by making it more difficult for rivals to use non-original spare parts. The example shows how the legitimate use of IP rights can prevent independent repairs or replacement companies in the aftermarket from competing in the aftermarket without risking infringing the IP laws, when such parts are design patented.[144] The concern is not exclusive to the US and a number of other jurisdictions have been confronted with similar aftermarket strategies.[145] To address this issue a number of jurisdictions have decided to enacting statutes with so-called "*repair clauses"*.[146] Under such clauses, the IP right holder is to some extent limited in terms of the coverage and the duration of the IP right. Repair clauses are not meant to affect the rules for registering industrial designs, which remain fully relevant in so far as visible spare parts can still be registered as industrial designs. However, the repair clause considerably limits the exclusive right that a registered design confers to its owner in the sense that an independent manufacturer may still produce visible spare parts, protected under the industrial design registration, provided that it uses them to repair a product so as to restore it to its original appearance. The use of such non-original spare parts for other purposes is of course not allowed.

106. Duty-to-deal statutory provisions, also referred to as "*right to repair statutes"* are under discussion in a number of jurisdictions and represent an alternative way of attempting to discipline the conduct of the manufacturer of the original equipment in the aftermarket.[147] These statutes mandate companies active in both the primary market with a proprietary product and in the aftermarket for its spare parts to supply the spare parts to rivals in the aftermarket and to share the technical information necessary to make sure that independent suppliers can have access to replacement parts as well as to the know-how necessary to install them. These bills intend to make spare parts and manuals available not only to independent repairers but also to final consumers, enabling them to self-repair the primary equipment. Such statutes, for example, are under discussion in a number of US states and represent a response to a call for regulatory intervention in markets where the aftermarket is monopolised by the original manufacturers and there is no scope for reliable independent repairers to enter the market.[148] Politicians promoting such statutes are not just responding to calls from voters for lower repair prices, but are also moved by concerns that unauthorised repairers would still try to offer repair services using either counterfeit spare parts or refitted pieces which may raise concerns under reliability, safety, health or other standards.

Box 22. The Motor Vehicle Owners' Right to Repair Act in the US

The Motor Vehicle Owners' Right to Repair Act is an example of duty-to-deal statute. The Act was introduced to the US Congress in 2011 and it requires the manufacturer of a motor vehicle sold, leased, or otherwise introduced into U.S. commerce to: (1) provide to the vehicle owner and service providers all information necessary to diagnose, service, maintain, or repair the vehicle; (2) offer for sale to the vehicle owner and service providers any related tool or equipment; and (3) provide the information that enables aftermarket tool companies to manufacture tools with the same functional characteristics. The proposal exempted trade secrets, so long as the information is not disclosed to authorised dealers or service providers. While the US Congress has not yet passed this proposal, a number of states have (including Massachusetts in 2012)[149] and such right-to-repair statutes are under consideration in a number of other states.

The purpose of this type of legislation was to protect consumers from the risk of repair monopoly by requiring that car manufacturers provide full access at a reasonable cost to all service information, tools, computer codes and safety-related bulletins needed to repair the motor vehicles. Their purpose is to level the playing field between official car dealerships and independent repair shops. The need for this type of legislation became apparent because of the growing use of computers and electronics which control nearly every function of a vehicle from air bags and brakes to ignition, fuel injection and tire pressure monitoring systems. Although these IT systems provide great benefits to consumers through improved efficiency, comfort and safety, they also provide increasing opportunities for car companies to foreclose access to secondary markets to car owners and to the independent repair shops where they normally obtain service for their vehicle.

5. Concluding remarks

107. While it is challenging to identify clear enforcement trends concerning aftermarket monopolisation cases, it appears that the standard of proof introduced by the Supreme Court in *Kodak* and subsequently followed by agencies and courts in other jurisdictions for establishing a successful aftermarket monopolisation case has made successful public and private enforcement cases in this area of antitrust law somewhat rare. The primary role that economic analysis plays in aftermarket cases, the complexity of assessing the effects of firms' commercial strategies on both the primary and the secondary market, the need to demonstrate lock-in effects and to assess whether the monopolisation strategy may be objectively justified are some of the reasons why aftermarket cases are not common in today's enforcement practice of most agencies.

108. Heimert (2016) suggests that in the United States there have been almost no successful aftermarket antitrust cases by the US competition agencies since *Kodak*. In Europe, after a series of early infringement cases due to narrow market definitions, in the last decade several complaints alleging abuses of dominance in aftermarkets were rejected by the European Commission, for example in *Caterpillar/Haladjian* on import ban for spare parts (Case No. 33.690) in 2006, *EFIM* on refusals to license (Case No. 39.391) in 2009, and *Luxury Watch Repair* on refusals to deal (Case No. 39.097) in 2014.[150] In Japan, more than ten years have elapsed since the Japan Fair Trade Commission issued recommendations against *Tokyu Parking Systems* in 2004 and *Mitsubishi Electric Building Techno-Service* in 2002 for engaging in illegal exclusionary conducts in maintenance aftermarkets for their proprietary products, in violation of the Antimonopoly Act.[151] Cases in other jurisdictions have also been also rather sporadic.

109. Such trend does not necessarily mean that aftermarkets never raise competition concerns. Rather it shows that pursuing aftermarket cases through infringement procedures can be challenging. For this reason some agencies have preferred to address possible competition concerns through more flexible procedures, such as commitments, rather than through full-fledged infringement decisions. This was the case for example for the *IBM* case in the European Union or for the *Nespresso* case in France. Some agencies have also pursued alternative routes to enforcement procedures. The 2012 Sector Inquiry into automobile industry by the French Autorité was initiated because of high aftermarket prices.[152] Similar sector inquiries, particularly into auto part and maintenance services, were conducted in various jurisdictions such as Romania in 2012[153] and Serbia in 2015.[154] Other agencies have issued sectorial rules and guidance which has touched upon aftermarkets issues. This is the case, for example, of the European Commission which published in 2012 FAQs on the application of EU antitrust rules in the motor vehicle sector.[155] Such initiative which was motivated by the desire to enhance competition in aftermarkets (spare parts and repair services) perceived to be less competitive than the primary market for cars and other motor vehicles.

110. From the perspective of the business community, aftermarkets are very common and it is important that the law is clear on what aftermarket conduct is allowed under the antitrust rules. General agency guidance on aftermarket monopolisation is not very common,[156] but there is a sufficiently large body of decisions and case-law to provide ample predictability and legal certainty to business in this area of antitrust

law. While unilateral conduct / abuse of dominance is an area where there may still be some differences between the way different agencies apply their antitrust laws, the approach to aftermarket cases appears to be largely consistent across jurisdictions. This is because the economic principles set out in the leading US case *Kodak* are widely followed on both sides of the Atlantic and by other jurisdictions around the world.

111. To sum up on the law on aftermarkets, independent service organisations can challenge manufacturers' conduct in aftermarkets, but competition agencies and courts tend to allow successful claims only in limited circumstances. Cases have been investigated almost exclusively under exclusionary theories of harm and the most common anticompetitive practices related to tying of primary with secondary products and to refusals by the equipment manufacturer to deal with independent service operators in the aftermarket. The high bar set by courts for establishing exclusionary behaviour in aftermarkets has made the role of plaintiffs and complainants difficult when bringing aftermarket monopolisation claims. In the US, for example, it is quite difficult to prevail on an aftermarket claim unless the plaintiff can show that purchasers of costly durable goods were locked-in and then made to pay supra-competitive prices for goods or services and more than they reasonably anticipated at the time of purchase, as a result of either information costs or an unexpected policy change.[157] Similarly, under EU competition law (and under the competition laws of most EU member states) successful claimants must prove that purchasers are locked into proprietary equipment through high switching costs and are unable to determine the whole life-cycle cost at time of purchase.[158] Lack of competition in the primary market seems to be also a prerequisite for successful competition enforcement actions. As this is an area where aftermarket strategies can be justified by efficiency reasons, agencies have been opened to consider objective justifications to allegedly exclusionary conduct.

112. The paper has also explored the strong influence that the economic debate has on the legal approach that agencies and courts have taken towards aftermarket cases. The result is that economic analysis plays a very important role in aftermarket cases. Scholars have crossed swords in this area of law and economics, and schools of thought (the Chicago and the Post-Chicago schools) have extensively debated whether consumers can self-protect from aftermarket monopolisation strategies through informed and rational decisions and if competitive market dynamics in the primary market are sufficient to address any risk of monopolisation in the aftermarket. While the two Schools disagree on the answers to these questions and reach different conclusions on the role that antitrust enforcement should play in order to discipline firms' conduct in the aftermarket, they both concur on what the main analytical framework should be when deciding if consumer welfare is affected by aftermarket monopolisation strategies:

- The availability to consumers of sufficient information on the life-cycle costs of the good at the moment of the purchase of the primary good and whether consumers can use that information to make informed and rational choices.

- The degree of the lock-in effect of old customers during the life time of the primary good and their ability to switch to suppliers of a competing primary goods, should the price of aftermarket products/services raise above competitive levels.

- The strength of reputational effects on the primary market and their ability to constrain opportunistic behaviour in the secondary market by the supplier of the primary good who would want to exploit locked-in consumers in the aftermarket.

- The fundamental importance of looking at effects on competition in both the primary and secondary market of any aftermarket monopolisation strategy, and the need to consider both pro- and anticompetitive effects of such strategies on both markets.

113. The Chicago School assumes that theoretically consumers are farsighted and rational and that competitive primary markets will discipline monopolistic behaviour in the secondary market. Conversely, the Post-Chicago School points at a number of empirical economic studies which insist that consumers are in many cases highly myopic towards sophisticated choices and that even when primary markets are competitive there is still a risk of consumer being exploited in the aftermarket due to lock-in effects and inability to switch. The economic literature reviewed in this paper strongly suggests that there can be no clear presumption on whether a specific aftermarket pricing strategy is problematic from a competition perspective. Overall, therefore, the most important lesson from this review is that a detailed case-by-case analysis is required in order for an agency to decide if an aftermarket monopolisation strategy is problematic from a competition perspective.

114. From the review of the cases on aftermarkets it appears that the economic debate has had a strong influence on the legal approach to aftermarket cases. The review also helps drawing a possible list of empirical factors that agencies should consider in their investigations as they may make aftermarket monopolisation more likely:

- High switching cost of original equipment;
- Lack of complete contracts;
- A large number of uninformed customers;
- Low quality information;
- Large aftermarket (i.e. large installed base);
- High proportion of locked-in customers relative to new customers; and
- Weak competition on the primary market.

115. It also appears that the key questions that tend to be at the core of any aftermarket cases relate to market definition and consequently to market power: is the aftermarket a proper antitrust market, separate from the primary market? Does a manufacturer have market power in its proprietary aftermarket? Market definition has always been at the core of any aftermarket case, and enforcement has been stronger when agencies and courts have defined separate and narrow antitrust markets for aftermarket products compatible with each primary product (so called *multiple markets*).

116. This paper has touched upon the role that IP rights play in the discussions on aftermarket monopolisation. Aftermarket concerns often occur when there are proprietary primary or secondary goods. The questions that often arise relate to the balance between the monopoly rights granted to IP holders, which include the right to exclude others from using the product, and the desire to ensure sufficient competition in the aftermarket. Such balance is a delicate one and has policy implications when it comes to innovation and to providing appropriate incentives to promoting quality in the primary market. Different jurisdictions, and even different courts within the same jurisdiction, may end up striking a different balance between protecting IP rights and promoting aftermarket competition, depending on the different weight they put on these different values. We have also discussed how some jurisdictions have relied on "regulatory" approaches to attempt to strike the right balance between competition and IP rights in the context of aftermarkets. Example of such regulatory approaches includes legislation enacting so-called repair clauses and statutory provisions on duty to deal.

117. Finally, we have discussed the importance of remedies other than antitrust enforcement actions. In this respect contract law can offer remedies that the parties can introduce in their commercial relations to reduce the risk of opportunistic behaviour vis-à-vis the locked-in installed customer base. While the success of such remedies is questioned by some authors, they may represent a less costly form of disciplining the behaviour of the manufacturer of the primary good when it operates in the secondary markets. Most importantly, effective information disclosures and other consumer protection remedies may be able to empower consumers to make informed choices based on a better understanding of the aftermarket products or services required, and the likely life-cycle costs involved in purchasing a particular primary good (or service).

ENDNOTES

[1] See Shapiro and Teece (1994) who define "aftermarket transaction" as any transaction with the two following characteristics: (1) "*the aftermarket product or service is used together with a primary product*," and (2) "*the aftermarket product or service is purchased after the primary product*." Shapiro (1995) further identifies three key elements: (1) "*the consumer purchases several (complementary) components that work together as a "system" to provide value to the customer*"; (2) "*these components are purchased at different points in time*"; and (3) "*there is some degree of "lock-in" or sunk costs, i.e., at least some of the expenditures on the initial component(s) cannot be recovered if the consumer later switches brands*."

[2] This paper will focus primarily on "aftermarkets" and not on general "secondary markets". Unlike the case of aftermarket products/services, in general secondary markets customers do not need to buy secondary products in order for the primary product to work and if they decide to purchase the secondary product the purchase may take place at the same time as the purchase of the primary product. The market for general secondary products therefore is not a pure "aftermarket", although it may share some of the same features. One notable difference is that secondary markets are not subject to the so-called "installed-base opportunism" and are therefore less exposed to risks of monopolisation.

[3] This pattern of low primary and high secondary prices and profits has typically been referred to as "waterbed effect", since "*the nature of primary and secondary product complementarity means that reducing one price tends to make another price go up – just as pushing down on an actual waterbed moves the water and in doing so makes other areas of the bed rise*" (OFT 2012).

[4] See *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451 (1992).

[5] These include not only the purchase price of the primary good but also the expected cost for the secondary product(s), i.e. maintenance costs, supplies of parts, and servicing that is expected to be required throughout the life of the primary good. While the cost of the primary good is a factor that is always part of customers' decision-making process, the aftermarket costs may not necessarily be so due to the so called customer "myopia", which may increase the risk of lock-in effects.

[6] This view is consistent with the general approach associated with the Chicago School that a seller can only have so much market power, and that an increase in aftermarket power is compensated by an equal decrease in power in the foremarket.

[7] Shapiro (1995) discusses a number of theories of aftermarket power. Under the "surprise theory", the primary equipment manufacturer can engage in exploitation of the installed base by changing its aftermarket policy to exclude aftermarket rivals and therefore extract profits from locked-in customers. Under the "limited commitment theory", the manufacturer of the primary good cannot or will not pre-commit to an aftermarket pricing, with the result of inefficient low-then-high pricing. Under the "costly information theory", myopic or naive consumers buy the initial item before realizing that aftermarket prices are high. On the "price discrimination theory", the low-then-high pricing pattern is a way for the supplier to charge more to high users than low users. Shapiro (1995) also discusses why the aggregate consumer harm that could be expected to result from these theories is relatively small when the primary market is competitive, and how antitrust law would not seem to be the best way to address aftermarket problems. He concludes that if aftermarket prices are high either because of a lack of commitment or because of consumers' myopia, then firms will compete hard in the foremarket, and aftermarket profits will largely be passed-back to consumers in the form of a subsidized base item. Similarly, if high aftermarket pricing is a way for suppliers to discriminate between high- and low-usage consumers, antitrust intervention against such discrimination may have a small impact on aggregate consumer welfare, but its primary effect would be to redistribute surplus from low to high users.

[8] See for example OFT (2002), according to which 3 out of 4 buyers of printers do not have any information on the cost of ink cartridges. See also Hall (1997), discussed later. Similarly, public procurement spending, which accounts for approximately 12% of GDP in the OECD area, generally does not take into account the lifecycle cost of the primary and secondary goods, but rather requires contracting authorities to choose goods based on their lowest price in each market.

[9] See UK Regulators Network (2016). However, the benefits from comparators may be undermined if consumers are unable to navigate the information presented to them, if they do not have confidence in the conduct or safety of the websites or if they do not shop around amongst comparators to find the best deal. See also CMA (2016). While there is a lot of information available online this still involves search costs and consumers may suffer from information overload. Further, it is not clear how much price comparison websites help for most aftermarkets. In particular, they are usually focussed on telecommunications, retail energy, mortgages or various forms of insurance. On the limited ability of consumers to process too much information and on why information intermediaries may not be a panacea to information asymmetries, see also Armstrong (2008).

[10] Also known as "low to attract business, high to extract surplus" pricing.

[11] That is contracts that can overcome the commitment problems.

[12] See discussion in Chapter 4 of this paper.

[13] This argument has particular resonance where the primary product is protected by a form of intellectual property. Indeed, the rationale for protecting IP holders is that the grant of a "monopoly" will serve as an incentive to create more and better inventions and works of authorship. See Bauer (2007).

[14] This occurs "*[w]hen one product is priced at marginal cost while the price of a substitute is above marginal cost, the result is that consumers inefficiently substitute towards the good priced at marginal cost*".

[15] The complaint is that a high core charge is a way for a durable goods producer to monopolise the market for remanufactured parts used to repair its own products.

[16] Their paper is based on two assumptions: 1) consumer information is imperfect, in the sense that consumers cannot observe the quality of the durable prior to purchase; and 2) consumers are locked-in by their purchases of the durable good, so a tying arrangement permits the seller of the durable goods to charge the monopoly price for the complement throughout the product life span. The implication of these two assumptions is that the producer will offer only low-quality durables unless there is a mechanism for assuring consumers that quality is high prior to purchase. The reason is that low quality is cheaper to provide, and consumers could not tell high quality from low quality without a quality assurance mechanism. The authors conclude that tying can make it profitable to offer high-quality durables if the demand for the complement is sufficiently higher when the durable proves to be of high quality. If offering high quality generates additional complement profits that exceed the additional cost of producing a high-quality durable, durable producers will find it most profitable to offer high quality and to tie.

[17] E.g. less efficient appliances that require a higher consumption of energy to function, i.e. higher operating costs.

[18] Overall, this may also result in decisions strongly biased towards energy-intensive products.

[19] Indeed, firms do not benefit from educating myopic customers. Educated and far-sighted customers would be able to read into manufacturers hiding of aftermarket prices and infer that those prices are most likely high.

[20] That includes the primary product *and* the maintenance/replacement parts.

[21] An interesting application to "contingent charges" for financial services by Armstrong and Vickers (2012) shows the policy implications when sophisticated and naive customers coexist in the market. The authors conclude that there is a sharp difference between (i) markets where outcomes for the naive are linked to those of the sophisticated, and (ii) markets where the two types have contrasting outcomes. In the first case, the naive are protected by the sophisticated, and the market works better for all consumers when there are more sophisticated consumers. The case for consumer protection regulation of contingent charges is not so strong, and it could even be counterproductive by diminishing the incentive to become sophisticated. On the other hand, in markets with contrasting outcomes, there is redistribution from naive to sophisticated consumers and the latter benefit from the presence of the naive because competition between firms causes some profit from the naive to be channelled to them. To what extent one regards such redistribution as bad depends on the respective welfare weights of the two consumer types in the market in question.

[22] Shapiro (1995) stresses that aftermarket pricing essentially involves a trade-off between the temptation to exploit locked-in customers and the loss in reputation that this entails. When relatively few customers are locked in, firms need to compete for the vast majority of new customers. A declining customer base means that the number of new customers falls, while the number of locked-in customers declines more slowly and thus increases in relative terms. Under these circumstances, it might be expected that incentives to exploit a customer base would be higher.

[23] I.e. "*consumers strictly prefer servicing used equipment to buying new each period when both equipment and service are priced at marginal cost*".

[24] See Evans et al. (2002).

[25] Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451 (1992); https://supreme.justia.com/cases/federal/us/504/451/case.html

[26] The success of the ISOs' aftermarket claims strongly relied on consumer myopia and switching costs. Copiers were considered durable, expensive and complex goods, that is, with the typical features to lock-in consumers due to the high switching costs, thus increasing Kodak's potential to exercise market power and exploit consumers in its aftermarket.

[27] See Wright (2011).

[28] See Goldfine and Vorrasi (2004) who conclude that this is because lower courts have interpreted the Kodak doctrine as narrowly as possible and state that these courts have effectively overruled the US Supreme Court.

[29] See Economides (2014).

[30] See *Avaya Inc. v. Telecom Labs, Inc.*, September 30, 2016, available at http://www2.ca3.uscourts.gov/opinarch/144174p.pdf.

[31] See Pelikan/Kyocera, XXV Report on Competition Policy (1996), p. 41 and p. 140. Also available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/34330/34330_21_3.pdf

[32] See for example Hugin Cash Registers v Commission [1979] ECR 1869; and Case 238/87 Volvo v Veng, [1988] ECR 62/11.

[33] Case No IV/E 2/36.431 - Info-Lab/Ricoh.

[34] See Shapiro and Teece (1994).

[35] See European Commission (2005), at para. 245, suggesting that the simple application of traditional market definition tools such as the SSNIP test to aftermarkets may not work well.

[36] See Coppi (2007).

[37] Although the basic methodologies to define markets in aftermarkets cases are not distinctive or different from those applied in other antitrust cases, the debate on how to define markets in aftermarket cases is still open. Bourgeois (2011) for example suggests that a market for systems, although theoretically possible, would be difficult to establish under the 1997 European Commission Notice on Market Definition and therefore an exceptional outcome under the EU law. In contrast, Temple Lang (2011) seems to suggest that a separate aftermarket should be exceptionally defined, except for the case of luxury products, where customers' purchasing decisions on primary products generally will not be influenced by the cost of the secondary products.

[38] See European Commission (1997), at para 56.

[39] COMP/E-1/39097 – Watch Repair. Decision C(2008) 3600.

[40] Complainants argued for the relevant markets for luxury watch spare parts being distinct from the market for luxury watches. Consequently they submitted that each manufacturer was dominant over the spare parts for its own watches.

[41] Case AT.39.097-Watch Repair Commission Decision rejecting the complaint on 29 July 2014.

[42] See for example OFT (2004) and European Commission (2005).

[43] At para 6.3.

[44] See para 91. It is likely that the Internet and the development of a digital society have allowed access to more information on the possible costs of secondary products and have enabled customers to calculate total life-cycle costs more precisely and cheaply. If that is the case, the chances of defining a system market would be currently larger than in the past.

[45] See Bourgeois (2011).

[46] See Office of Fair Trading, Case No. CA98/6/2001, of 20 July 2001.

[47] At para 6.4.

[48] See also European Commission (1997), para 56, stating that a "*narrow definition of market for secondary products, for instance spare parts, may result when compatibility with the primary product is important*." It also refers to "*the existence of high prices and a long lifetime of the primary products*", which may render relative price increase of secondary products profitable.

[49] See European Commission (2010b).

[50] See para 57.

[51] As an example, European Commission (2010b) refers to different buying behaviour of professional buyers (e.g. those who purchase trucks or operate fleets of vehicles), and non-professional buyers (i.e. those who purchase motor vehicles for personal use). The first category is more likely to take into account maintenance costs at the moment of purchasing the motor vehicles than the latter.

[52] In most cases, there is likely to be a brand-specific aftermarket, in particular because the majority of buyers are private individuals or small and medium-size enterprises that purchase motor vehicles and aftermarket services separately and do not have systematic access to data permitting them to assess the overall costs of motor vehicle ownership in advance.

[53] See for example, the European Commission case in *Hugin* (Case 22/78, [1979] ECR 1869, [1979] 3 CMLR 345) and in *Hilti* (Case T-30/89, [1991] ECR II-1439, [1992] 4 CMLR 16).

[54] See OFT (2004), para 6.4, and European Commission (1997), para 56, stating that this market definition would be likely if "*significant substitution between secondary products is possible*" or if "*the characteristics of the primary products make quick and direct consumer responses to relative prices increases of the secondary products feasible*".

[55] See OECD (2012), p. 46.

[56] See Case 22/78, [1979] ECR 1869, [1979] 3 CMLR 345.

[57] See Case T-30/89, [1991] ECR II-1439, [1992] 4 CMLR 16.

[58] See XXV Report on Competition Policy (1996), p. 41 and p. 140. Also available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/34330/34330_21_3.pdf

[59] See Case C-333/94P [1996] ECR I-5951, [1997] 4 CMLR 662, and the General Court judgment Case T-83/91, [1994] ECR II-755, [1997] 4 CMLR 726.

[60] See Case COMP/C-3/39.692-IBM Maintenance Services.

[61] See Case AT.39.097-Watch Repair Commission Decision rejecting the complaint on 29 July 2014. Also see CEAHR v Commission, Case T-427/08, [2010] ECR II-5865, [2011] 4 CMLR 14.

[62] See JFTC Recommendation Decision, 26 July 2002, Heisei 14 (Kan) 7. See http://www.jftc.go.jp/eacpf/cases/6-1_MitsubishiTech_rev2.pdf.

[63] See JFTC Recommendation Decision, 12 April 2004, Heisei 16 (Kan) 1, http://www.jftc.go.jp/en/pressreleases/yearly_2004/mar/individual_000310.html.

[64] See Case No. 03/2011, available at http://www.cci.gov.in/sites/default/files/032011_0.pdf

[65] See Otis-Kone Italia-Schindler, case 8272/2000.

[66] See Cartuchos de Tinta, case S/0336/11.

[67] See Case S/0230/10 discussed in the contribution from Spain to the OECD Competition Committee roundtable on Market Definition (2012), available at http://www.oecd.org/daf/competition/Marketdefinition2012.pdf, pp. 289-292.

[68] OFT, Case No. CA98/6/2001, on 20 July 2001.

[69] See Shapiro and Teece (1994) which states that in principle "*assessing market power in aftermarkets is no different from assessing market power in any other context.*"

[70] See European Commission (2009), para 12.

[71] In *Hugin*, for example, the Commission and the Court of Justice did not establish that Hugin had a dominant position in the foremarket for cash registers itself but focussed their analysis exclusively on the aftermarket for spare parts of Hugin cash registers. See Case 22/78, *Hugin v Commission*, 3 CMLR 345, 1979.

[72] See Bishop and Walker (2010).

[73] See European Commission (2005), para 246. It further states that and that "*the stronger the competition on the primary market, and the weaker the position of the supplier in question on this market, the less likely it is that the supplier in question can be considered dominant on the aftermarket*" (para 260).

[74] See Temple Lang (2011).

[75] At para 244.

[76] At para 251.

[77] They degree of the lock-in effect, however, will determine the success of any price discrimination strategy. Reputational concerns will also matter significantly as new customers will discount the low price of the initial purchase against the expectation to be facing higher prices in the secondary market following the initial purchase.

[78] See European Commission (2010a), para 91.

[79] See Salop (2000).

[80] Temple Lang (2011) points to the difficulty in calculating the aftermarket costs in cases where such costs are not related to the amount of usage but are incurred irregularly, such as due to accidents. Similarly, Armstrong and Vickers (2012) state that contingent charges for unauthorised overdrafts are usually consumed inadvertently.

[81] For example, if aftermarket price rises, is switching easy, or lock-in into legacy? Is there a second-hand market for primary system?

[82] For example, is the lock-in effect due to proprietary software, data formats, training, branding, etc.?

[83] In *Kyocera/Pelican*, *Info-lab/Ricoh* (Case No. IV/E 2/36.431, available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/36431/36431_7_3.pdf), and *EFIM* (Case No. 39.391, available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/39391/39391_125_10.pdf).

[84] XXV Report on Competition Policy (1996), p. 41 and p. 140. Also available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/34330/34330_21_3.pdf.

[85] Case No. IV/E 2/36.431, available at http://ec.europa.eu/competition/antitrust/cases/dec_docs/36431/36431_7_3.pdf.

[86] A relatively high aftermarket price is likely to attract entrants into the aftermarket in which case the primary product supplier would have an incentive to exclude them.

[87] See OECD (2011).

[88] Of course, a strategy in which a dominant company in the aftermarket (and in the primary market) discounts the aftermarket prices below the cost (for example, average total cost) discriminatorily against the customers of rivals in the aftermarket to exclude them could amount to an infringement of competition law. See Digital's Undertaking, accepted by the European Commission in 1997, IP/97/868, at http://europa.eu/rapid/press-release_IP-97-868_en.htm.

[89] On this point, see for example Fong et al. (2016) who explores firms' abilities to tacitly collude when they each monopolize a proprietary aftermarket. They conclude that when firms' aftermarkets are completely isolated from foremarket competition, firms cannot tacitly collude more easily than single-product firms.

However, when their aftermarket power is contested by foremarket competition as equipment owners view new equipment as a substitute for their incumbent firm's aftermarket product, profitable tacit collusion is sustainable among a larger number of firms.

90 For example, European Commission (2012) FAQs on the application of EU antitrust rules in the motor vehicle sector mentions that conditional rebates or bonuses for the sourcing of captive parts of the vehicle supplier's with dominance could amount to illegal tying in the EU.

91 At para 50.

92 For details, see for instance European Commission (2009), paras 47 to 62; Dolmans and Graf (2004) and Evans et al. (2002). See also European Commission (2010a), para 217, emphasising that if customers have difficulty in calculating the consequences of the tying practice that might lead to supra-competitive prices.

93 For example, see Temple Lang (2011); Schwartz and Werden (1996) propose that tying would signal high quality and benefit consumers by overcoming information imperfection, which would serve as a justification.

94 For example, Laussel and Resende (2008).

95 See European Commission (2009), para 29.

96 See European Commission (2005), para 265.

97 See Case T-30/89, [1991] ECR II-1439, [1992] 4 CMLR 16.

98 See Case C-333/94P [1996] ECR I-5951, [1997] 4 CMLR 662, and the General Court judgment Case T-83/91, [1994] ECR II-755, [1997] 4 CMLR 726.

99 See an undertaking accepted by the European Commission in 1997, IP/97/868, at http://europa.eu/rapid/press-release_IP-97-868_en.htm

100 Andrews (1998).

101 See Osaka High Court Judgment, 30 July 1993, Hanrei Jiho Vol. 1479, p. 21 (*Kosei denki* et al. v. *Toshiba erebeta tekunosu*).

102 The term "refusal to deal" (or "refusal to supply") includes not only naked refusals to supply by dominant firms but also situations in which one firm is willing to sell but only at conditions (price or other contractual terms) that are considered "too high" or unacceptable to the buyer (so called "constructive" refusal to deal) or the sale is conditioned to the acceptance of other commercial terms (so called "conditional refusals to deal"). In these cases, the distinction with other anticompetitive conduct may be more blurred. For example, a refusal to deal can take the form of an exclusive dealing (I won't deal with you if you deal with my rivals), a tying (I won't deal with you unless you carry one or more of my other products), or a resale price maintenance (I won't deal with you if you discount my products). See OECD (2007).

103 For details, for instance, see European Commission (2009), paras 75 to 90.

104 See OECD (2007).

105 Competition authorities would also have to consider whether or not a refusal, in particular refusal to license, could be justified by the need to protect IP rights. The European Commission for example, is open to consider claims by the dominant firm that a refusal to supply is necessary to realise an adequate return on the investments required to develop its input business, thus generating incentives to continue to invest in the

future. The Commission will also consider claims that an obligation to supply/license may have a negative impact on the dominant firm's own innovation efforts, or on the development of follow-on innovation by competitors should this bring about structural changes in the market conditions. See European Commission (2009), paras 89 and 90.

106 Case 22/78, [1979] ECR 1869, [1979] 3 CMLR 345.

107 Case 238/87 and Case 53/87, judgments on 5 October 1988.

108 Case COMP/C-3/39.692-IBM Maintenance Services.

109 Case No. 03/2011, available at http://www.cci.gov.in/sites/default/files/032011_0.pdf.

110 See European Commission (2005).

111 Such behaviour took place in the American car industry where there has long been aftermarket competition between original and non-original equipment manufacturers of automobile repair parts. Recently, however, car manufacturers have started seeking design patents specifically on the exterior parts of cars (bumpers, fenders and grills) that are most likely to be replaced after a car accident and which did not use to be patented before. This has created a potential competitive threat to aftermarket competitors of the car manufacturers, who either have to risk infringement litigation (in case they use non-patented spare parts) or have to seek a (potentially expensive) license from the original car manufacturer (see Stutz, 2016). The European Commission also flagged similar potential concerns in its preliminary Report on the Pharmaceutical Sector Enquiry which reviewed a number of behaviours from IP holders including an equipment manufacturer patenting the design or production process for its consumables or spare parts as possible exclusionary conduct in the secondary market (see European Commission, 2008, Pharmaceutical Sector Inquiry Preliminary Report). However, these concerns were not further pursued in the final report of the Sector Inquiry.

112 See for example *Static Control v. Lexmark* case in the US, 387 F.3d 522 (6th Cir. 2004). Under the facts of the case, Lexmark sells toner cartridges designed for a single use, controlled by a microchip in the cartridge allowing only Lexmark cartridges to operate in a Lexmark printer. Lexmark sold these one-time-only cartridges at a discount. To prevent undesired competition, Lexmark has taken numerous steps to suppress the development of a used toner cartridge market, including public announcements that remanufacturing cartridges would violate Lexmark's legal rights, and litigation.

113 See *CSU, L.L.C. v. Xerox. Corp.* 203 F.3d 1322 (Fed. Cir. 2000).

114 At 1327.

115 See Boylston Herndon (2002).

116 This implies, for example, that if the price of one secondary product increases, the demand for this product will fall, but the demand for the other secondary complementary products will also fall. Thus, if the suppliers of the secondary products are different, they will maximise their own profit, without taking into account the negative externality exerted on the other suppliers. This can induce higher prices than if coordination is possible. This effect, called 'Cournot Effect', is similar to the double marginalisation problem in vertical restraints. The supply of the various components by the same firm can solve this coordination problem and create efficiency gains.

117 This would lead to decrease of unnecessary waste derived from improper usage of the two products, which would in turn serve as a basis for environmental consideration as another objective justification. In *Int'l Salt Co. v. United States*, 332 U.S. 392, 396-97 (1947), the defendant claimed among other things that their tie

arrangement of the salt machine and the salt was justified by quality control purposes and to prevent that the salt machine would be damaged if used with other (inferior) grades of salt.

118 See for example *Int'l Salt Co. v. United States*, 332 U.S. 392, 396-97 (1947), where by charging a relatively low price for its machines International Salt claimed that it might have been able to capture their added utility for each canner through an elevated price for the salt.

119 Elhauge and Nalebuff (2017) however question the claim that second-degree price discrimination in general, and metering ties in particular, are better forms of price discrimination than the more frequently analysed third-degree versions. They show that when a firm has market power over a capital good that is used with a competitive consumable, then (just like third-degree price discrimination) metering ties and second-degree price discrimination lower consumer welfare and total welfare unless they increase capital good output. Based on their conclusions the supports that, at a minimum, firms with market power should show that their metering ties have the procompetitive effect of expanding capital good output.

120 Case T-30/89, [1991] ECR II-1439, [1992] 4 CMLR 16.

121 Case T-204/03 [2006] ECR II-3779.

122 Case AT.39.097-Watch Repair Commission Decision rejecting the complaint on 29 July 2014.

123 Osaka High Court Judgment, 30 July 1993, Hanrei Jiho Vol. 1479, p. 21 (*Kosei denki* et al. v. *Toshiba erebeta tekunosu*).

124 See OECD (2006).

125 See Shapiro (1995) and Temple Lang (2011). Also see OECD (2007).

126 Similarly, if the secondary products are patented, a compulsory licensing of the patents would also involve defining what the "correct" royalty rate should be.

127 It is interesting to note that in its dissenting opinion in *Kodak*, Justice Scalia questioned if antitrust law is indeed the appropriate tool to protect the locked-in consumers from monopolisation practices. The installed base of locked-in customers is so inherently vulnerable to monopolization by the firm that sells them equipment that the customers should not be protected by the antitrust laws. In his dissent opinion, Justice Scalia recommended a hands-off approach towards this "*wretched class*" of consumers that suffers "*the supposed misfortune of being 'locked in' to Kodak equipment*" (*Kodak*, 504 U.S. at 499 n.3.) and stated that "*[w]e have never suggested that the principal players in a market with such commonplace informational deficiencies [...] exercise market power in any sense relevant to the antitrust laws*" (*id.* at 496).

128 On contract theory and the notion of complete contract see generally Hart (1995).

129 There are various types of customers in the market – vulnerable, myopic, sophisticated and unsophisticated customers – and it depends on each cases and its circumstances to what extent competition policy and/or consumer protection policy should intervene, in order to protect 'irrational' consumers and remedy allocative inefficiency. See, Armstrong and Vickers (2012).

130 For example, where information on the terms of warranty for the primary product is limited, consumers may be fearful of losing the warranty if using non-authorised independent repairers. Consumers in the aftermarket might tend to think that the quality and credibility of parts manufactured by independent suppliers or repair services by independent companies are inferior to those by the primary product manufacturer and its authorised or affiliated repairers. In Korea, in *Hyundai* and *Hyundai Mobis* in 2009, one of the abusive conducts analysed by the Korean Fair Trade Commission was that the equipment manufacturer referred to

competing parts as "non-original parts", which suggested an inferior quality and weakened their credibility in the eyes of customers. See, Shin (2016) and Annual Report to the OECD Competition Committee on competition policy development in Korea in 2009.

131 For a discussion on the relationship between competition and consumer policy see OECD (2008).

132 See Beales et al. (1980).

133 See Competition Commission (2010).

134 Competition Commission (2009).

135 Evidence collected by Capital One, one of the parties involved, and reported in Competition Commission (2009).

136 See Oxera (2009).

137 See for example the campaign of the US Federal Trade Commission to educate consumers on using third parties for auto servicing and the effect on warranties and on consumers rights under the Magnuson-Moss Warranty Act: https://www.consumer.ftc.gov/articles/0138-auto-warranties-routine-maintenance.

138 See European Commission (1984), points 94-95.

139 Case COMP/C-3/39692-IBM Maintenance Services.

140 With regard to market definition, the Commission appears to have considered the relevant market to be the secondary market for the maintenance of IBM mainframe systems, a market in which IBM was dominant. This seems to indicate that the Commission took the view that the secondary market was separate and distinct from the primary market. However, because this was a commitment decision rather than an infringement decision, the description of the Commission's case was somewhat limited. See Bell and Kramer, 2015.

141 See an undertaking accepted by the European Commission in 1997, IP/97/868, at http://europa.eu/rapid/press-release_IP-97-868_en.htm.

142 Annual report to the OECD Competition Committee on competition policy development in France in 2014.

143 The guarantee did not cover malfunctions due to the use of rival capsules.

144 See Stutz (2016).

145 In the last few years, there has been a similar debate in the EU on whether the use of visible spare parts originating from third party producers for repairing complex products is a blatant design right infringement or desirable competition.

146 According to the sector inquiry by the French Competition Authority, 11 countries had enacted the repair clause by 2012. See, http://www.autoritedelaconcurrence.fr/user/standard.php?id_rub=418&id_article=1985

147 See Kramer and Juhan (2015) for more details on Right to Repair statutes.

148 See, https://motherboard.vice.com/en_us/article/five-states-are-considering-bills-to-legalize-the-right-to-repair-electronics

149 See MA statute (H.4362).

150 See Dolmans (2016).

[151] See http://www.jftc.go.jp/en/pressreleases/yearly_2004/mar/individual_000310.html (*Tokyu Parking Systems*) and http://www.jftc.go.jp/eacpf/cases/6-1_MitsubishiTech_rev2.pdf (*Mitsubishi Electric Building Techno-Service*)

[152] See press release by Autorité de la concurrence in 2012, available at http://www.autoritedelaconcurrence.fr/user/standard.php?id_rub=418&id_article=1985

[153] See Annual report to the OECD Competition Committee on competition policy development in Romania in 2012.

[154] See http://www.kzk.gov.rs/en/sektorska-analiza-trzista-postprodajnih-usluga and Sofia Competition Forum Newsletter, November 2016, Issue 2, p. 12, available at http://scf.cpc.bg/uploads/data/2016/SCF%20Newsletter%202016.pdf

[155] Available at, http://ec.europa.eu/competition/sectors/motor_vehicles/legislation/mv_faq_en.pdf

[156] It is for example interesting to note that the European Commission, one of the few agencies which has issued formal guidance on abuse of dominance cases, proposed language on aftermarkets in its 2005 Discussion Paper on Article 82 EC (now Article 102 TFEU) (see DG Competition Discussion Paper on the application of Article 82 of the Treaty to exclusionary abuses, at para 243-265) but that there is no reference to aftermarket in the final Guidance Paper of 2009 (see Communication from the Commission—Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, OJ No. C-45/7, 24 February 2009).

[157] See Bell and Kramer, 2015.

[158] See Bell and Kramer, 2015.

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