Free ICT Europe

Aftermarket Alliance for Freedom
to Support, Repair and Resell

Nurturing the ICT aftermarket, critical for hitting European environmental goals and economy

The growing value of independent providers

We have all come across phrases such as “Circular Economy”, “Reparability” and Programmed Obsolescence”. All of which are becoming increasingly part of the policy conversation worldwide.

The UN’s Sustainable Development Goals define the policy and their objectives, in particular the following three goals:

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 12. Ensure sustainable consumption and production patterns

In the European Union, these goals (in addition to congruent economic, social and ethical theories) have resulted in a number of directives regulations. Such as, the Eco-design Directive 2009/125/EC of 21 October 2009, the Energy-labelling Regulation 2017/1369 of 4 July 2017, or the Waste Framework Directive 2008/98/EC of 19 November 2008.

In the US, a recent example is the California Transparency in Supply Chains Act which went into effect on 1 January 2012.

This growing awareness of industry’s impact on the environment is, of course inextricably linked to major concerns like global warming.

The enclosed Report drafted by Deloitte ("ICT Aftermarkets in Europe", 29th July) is an admirable analysis of a significant dimension of these concerns i.e. maintenance, reuse and extension of end of life for most professional and private products.

It’s methodology and focus on reparability provides extremely relevant information on the implementation of a practical policy on addressing those concerns, and its conclusion is compelling:

Ensuring reparability as an economic paradigm is contingent upon the existence of a dynamic and healthy “maintenance industry”.

In this context, the Report focuses on third party maintenance in the IT sector (hardware and software services).

It is important to bear in mind that this is just an example of the general principles of sustainable development, as recognized by the international community.

The chosen market segment is, however, of major significance given the growing importance of ICT on the world economy and the highly consolidated nature of the market.

In addition to the favourable contribution to above policy goals, the Report demonstrates how cost savings arise from third party offerings and ultimately benefit consumers.

One of the main obstacles to the growth of alternative maintenance services is the highly attractive economic returns of this secondary market to the original manufacturers.

Third parties are confronted with substantial technical and legal barriers. Vigorous competition law enforcement is of vital importance if its contribution to above policy and economic goals is to be realized.

Without a heathy and dynamic maintenance industry, consolidation will be reinforced and a purely market driven development will under such circumstances, run afoul of the above policy goals.

It may be hoped that the European Commission will translate sustainability into competition law and prevent abusive downstream leveraging of dominant positions in primary markets.

For anybody interested in the above policy issues of sustainability, recycling, reuse, extension of life, reparability etc., I highly recommend this Report. The conclusions of which will hopefully influence policy makers, both domestically and internationally.

Dan Shefet

About the Author

Dan Shefet, the founder of Association for Accountability and Internet Democracy (AAID), is an internationally renowned International IT Law, Data Privacy and Content regulation specialist and is an expert in this field for the Council of Europe on the Internet Ombudsman. AAID organization has the main objectives of accountability on the internet as to protect the private integrity of individuals on the internet as well as the protection of societal and democratic values on the internet.

A French Lawyer as well as an honorary member of the European Lawyers' Union and a member of the California Lawyers Association, Shefet has published several papers and reports in the field of IT Law. Most notably, 'The Creation of the Internet Ombudsman Institution in Charge of Assessing the legal or illegal nature of Internet Content' for the Council of Europe and 'policy options and regulatory mechanisms for managing radicalization on the Internet' for UNESCO. In his role as Advisor to the French Senate on IT Law, Shefet has worked with the French Senate on the preparation of legislative bills, namely: Creation of an Internet Ombudsman, Sanctioning of Fake News, and the Prohibition of bitcoin ATMs. Originally from Denmark, Shefet studied Philosophy and Law in the University of Copenhagen and French Law in The Sorbonne.

Deloitte.

ICT Aftermarkets in Europe

29th July 2019
Prepared at the request of Free ICT

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Executive Summary

Information and Communication Technology (ICT) is the infrastructure and components that enable modern computing. It encompasses all devices, networking components, applications and systems allowing people and organizations to interact in the digital world. Information Technology (IT) services include ICT secondary markets (also called aftermarkets) which consist of consumable, non-durable products and services (for instance, software and hardware maintenance, repair and resale), whereas ICT primary markets consist of durable goods (computer, mainframe, software, etc.).

The ICT industry is one of the key drivers of the economy worldwide and in Europe. IT services alone represented around $280 billion in Europe in 2014. Among IT services, ICT aftermarkets were, at least, worth $46 billion in Europe and employed more than 220,000 people in 2015. Among market participants in ICT aftermarkets, one can distinguish between third party companies (TPM) and manufacturers of hardware and software (called Original Equipment Manufacturers or OEMs). TPMs provide secondary ICT services and are independent from OEMs. Independent service providers account for 15% ($3bn) of the hardware support market and 5% ($1bn) of the software support market, in total accounting for $4 billion in 2014.

Beyond their size, third parties in the ICT market are beneficial for customers, which can range from the public sector and SME's to Multi-Nationals. TPMs provide customers both alternative to OEMs' services and quality services. They offer more flexibility of contracts and extend the products' useful life. According to a survey from International Data Corporation[1], more than half of end-user customers choose third parties for maintenance services as they get better offers.

The higher quality provided by third parties relies especially on their ability to provide more flexible contracts, multi-vendor support, better availability of parts and maintenance after the End-of-Service-Life set by OEMs. The latter feature might be particularly important as TPMs reduce the total cost of ownership of products, and contribute to the Circular Economy promoted by the European Commission by extending life-cycles, reusing hardware, upgrading and reducing waste.

Third parties provide customers with at least the same service quality for half of **OEMs'** prices, according to a survey conducted by Microeconomix. The price difference between a TPM and an OEM can rise up to 80% for older hardware. The same holds true for software, as stressed by Cigref[2]. Third parties provide their services at lower maintenance fees than software editors.

The activities of repair, refurbishing and reuse provided by third parties are particularly important in the European Agenda regarding the Circular Economy. As stated by the European Commission, "*reparability has high potential for bringing added value to the economy*" and "*it has been estimated that 1/3rd of goods arriving at recycling centres are re-usable and could be sold second-hand. Reusing these products would create jobs in the second-hand market sector in the EU*".[3]

The benefits provided by TPMs are particularly decisive in a context where OEMs' clients are increasingly unsatisfied with their services.[4] Thus, it is important that these actors continue to exert competitive pressure on OEMs by delivering good quality services at lower prices. Given the important benefits brought to customers by TPMs and their contribution to the European economy, it is

[1] International Data Corporation, Worldwide x86, Server Attach Rate Study, 2015.
[2] Cigref (2014), The Secondary Software Market – Risks and Opportunities for Large Companies, page 31.
[3] European Commission (2019), Sustainable Products in a Circular Economy – Towards an EU Product Policy Framework contributing to the Circular Economy, Commission Staff Working Document.
[4] EuroCIO available at https://eurocio.org/news/

important to remain vigilant with regard to potential behaviors by OEMs that could hinder competition.

Indeed, economic theory stresses that competition concerns might arise in secondary markets when customers incur high switching costs as firms (OEMs) have an incentive to adopt a "bargain-then-rip-offs" pricing strategy. It is more likely in mature markets as the incentive to exploit locked-in customers is greater. Moreover, consumers may not accurately foresee the price of aftermarket services. In this case, the empirical academic literature stresses that firms have an incentive to hide aftermarket costs.

In the ICT markets, these competition concerns are far from being excluded. According to several clients' surveys[5], their switching costs are high in the software market but also in the hardware market. This has also been previously acknowledged by competition authorities. In some primary markets (e.g., software), clients stress that only a few big suppliers are active so competition may be limited.

Some markets are also mature so OEMs have higher incentive to harvest their customers' base by raising prices. Furthermore, some customers might be sophisticated, i.e., well-informed of the Total Cost of Ownership at first glance, but **OEMs' contracts are not always transparent** and they can change unilaterally their pricing policies once customers are locked-in.

Finally, reputation effects do not seem to have a disciplinary effect on OEMs as they can increase prices of ICT secondary services without fearing clients' switching the primary good in the short term. Thus, ICT aftermarket might require special attention from competition authorities in order to make sure that OEMs and TPMs compete on a fair playing field.

[5] See for instance, EuroCIO (2018), Supplier Satisfaction Survey Reveal Slowdown of Cloud Adoption and Increase of Exit Strategies and Actions due to Inflexible Vendor Licensing and Pricing Models.

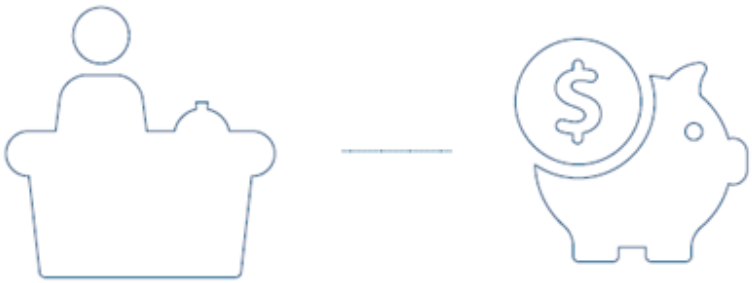
In Europe,

ICT aftermarket is worth more than $46 bn

and supports more than 227.000 iobs

with third-parties providing better offers

and 50% lower prices



and actively contributes to the Circular Economy

1 ICT Aftermarkets in Europe and the Benefits of Third Parties for Customers

1. Information and Communication Technology (ICT) is the infrastructure and components that enable modern computing. It encompasses all devices, networking components, applications and systems that allow people and organizations to interact in the digital world.

2. The ICT sector can be divided into three major segments:

    - Hardware: including various tangibles goods such as computers, mainframes, servers, mobiles devices, printers, networking equipment, etc.

    - Software: computer programs in a broad sense, e.g., operating systems, security software, mobile apps, professional applications, embedded software, etc.

    - IT services: including conception, development, operation, support, maintenance, resell services for hardware and software.

3. IT services encompass primary markets and secondary markets (also called aftermarkets). Primary markets involve durable goods (computer, mainframe, software, etc.), while ICT secondary markets include consumable, non-durable products and services (for instance, software and hardware maintenance and resale).

4. ICT aftermarkets can be split between hardware and software support and between resale and maintenance. They consist in four main areas:

    - Hardware maintenance: taking care of physical components with services such as preventive maintenance, repair, upgrading, firmware updates, etc.

    - Hardware resale: resale of hardware, recycling, refurbishing, etc.

    - Software maintenance: software's upgrades, security updates, debugging, etc.

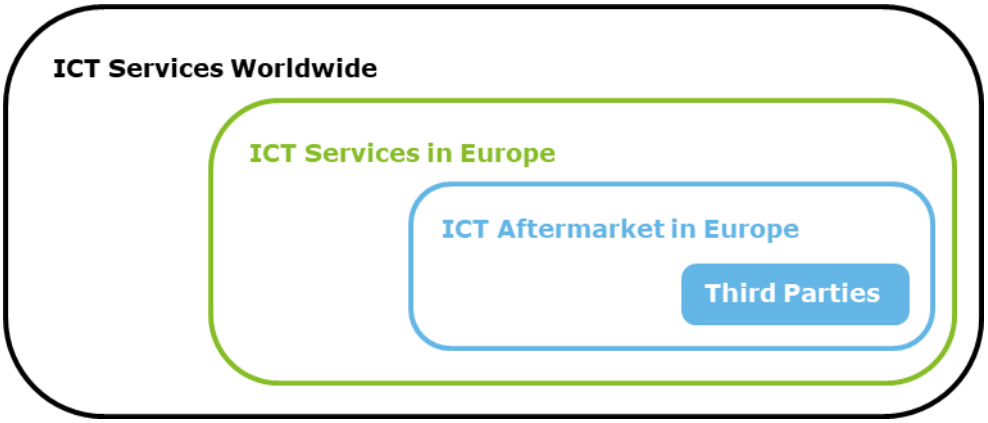
    - Software resale: resale of software licenses.

5. Among market participants in ICT aftermarkets, one can distinguish between third party companies (TPM) which are independent from manufacturers and manufacturers of hardware and software (called OEMs).

1.1 Sizing ICT Secondary Markets in Europe

6. Sizing the European ICT secondary markets is not an easy task as they constitute a complex ecosystem and public information on these specific services is hardly available. This is partly due to the fact that ICT aftermarkets include various services, for example trading, remanufacturing, repairing, maintenance of hardware or software, installation of equipment, etc. It is necessary to rely on several sources to get an idea of the size of the European ICT secondary markets. Therefore, this part first presents worldwide figures on ICT markets as a starting point as more information is available at this level. Then, data for the European market of ICT services is analyzed and the size of ICT aftermarket is inferred from different data sources as well as the market shares of independent players, as depicted in Figure 1.

Figure 1. From ICT Services to Aftermarket

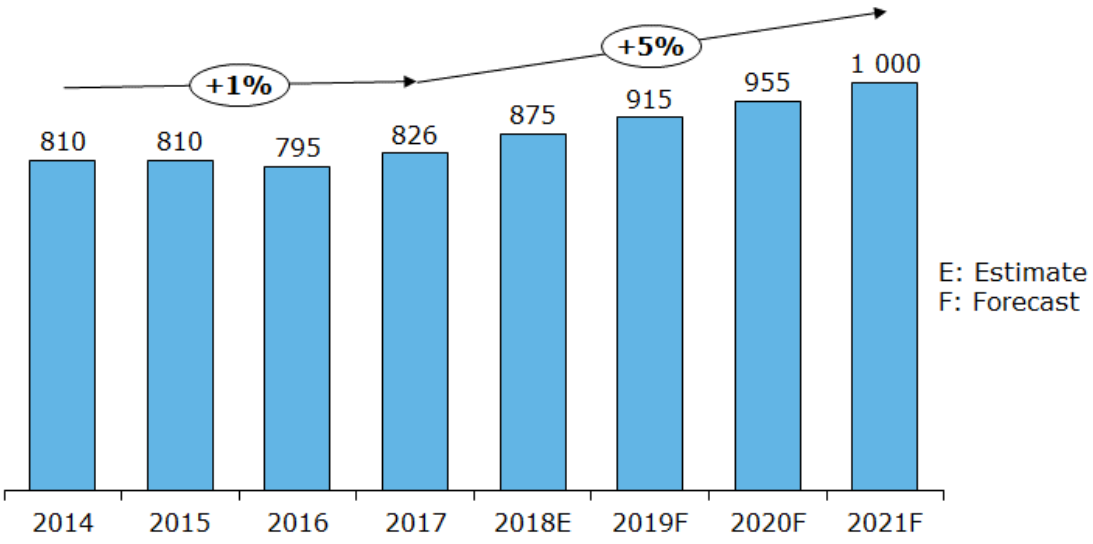


Source: Microeconomix

1.1.1 Global ICT markets

7. Worldwide ICT expenditures in 2017 reached €3,121 billion according to XERFI.[6] The market includes five main areas: i) data center systems, ii) enterprise software, iii) devices, iv) IT services and v) telecom services. Out of this, IT services are worth €826 billion and are expected to grow by 5% a year in the medium term.[7] This segment includes three main activities: consulting activities (€143.6 billion), implementation and IT outsourcing services (€460 billion) and business and process management & hardware and software support (€221 billion).[8]

Figure 2. The Global IT Services Market is set **to Reach €1,000 billion by 2020**



Source: XERFI Global (2018)

8. XERFI estimates that IT services growth will be driven next years by the development of cloud and artificial intelligence applications. [9] As these technologies are getting into every business, IT services companies should stand to benefit from increasing demand for cloud platforms,

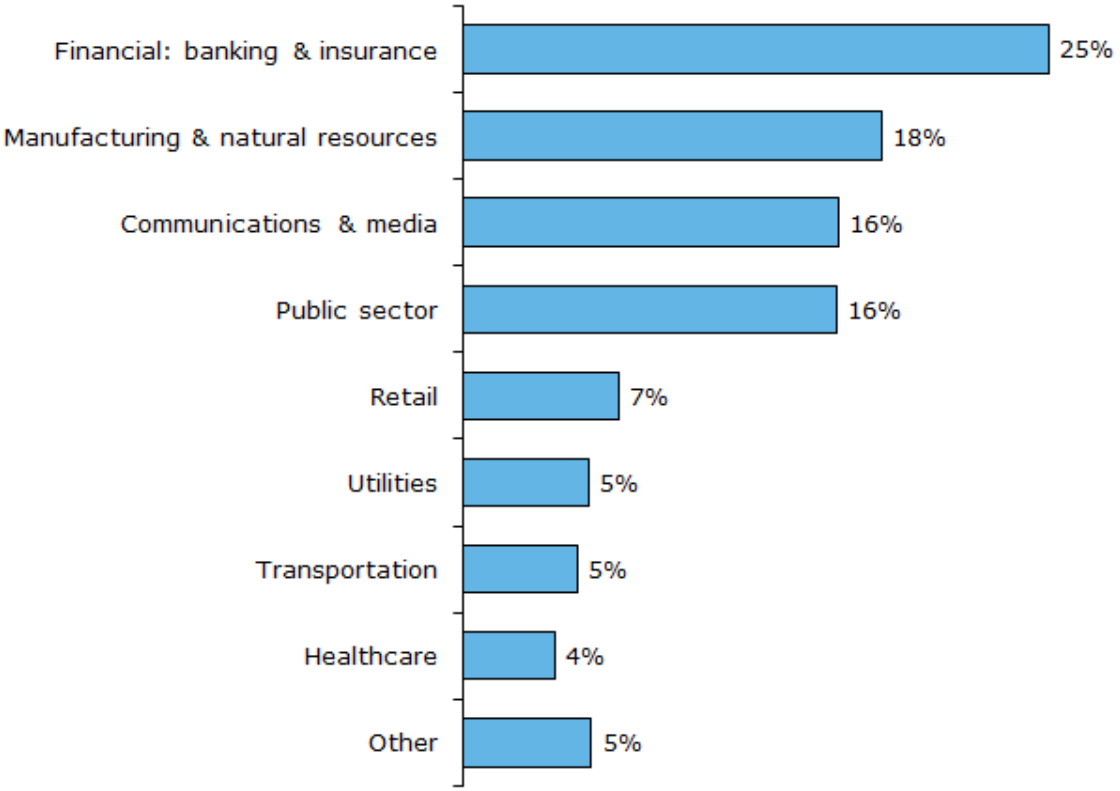
[6] XERFI Global (2018), "The Global IT Services Industry: the Market, Market Analysis _ 2018-2023 Trends Corporate Strategies", July.
[7] Op.cit.
[8] Op.cit.
[9] Op.cit.

mobile systems, and data analytics. Technologies such as cloud, data analytics using artificial intelligent process, as well as services required to integrate these technologies with legacy IT systems, will account for 80% of IT service sectors' growth by 2025.[10]

9. Businesses allocate a large share of their IT spending on IT services. This is especially true for the financial sector, where IT services represent 25% of its global ICT spending. Manufacturing and natural resources come next with 18%, followed by Communications & media 16%, as illustrated in Figure 3.

10. Most companies worldwide expect their IT budget to grow or stay steady in 2019. The need to update outdated IT infrastructure will drive budgets increase. Cloud applications will be the main driver of budgets increase for large companies while small businesses will increase their hardware budgets.[11]

Figure 3. Percentage Share of IT Services Spending in Global ICT spending

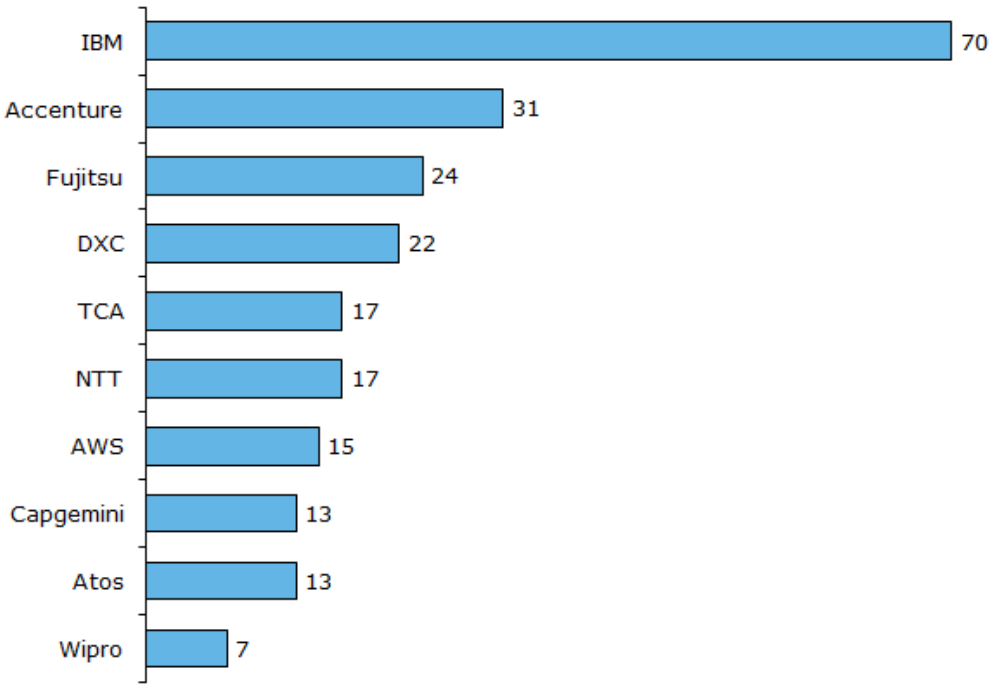


Source: XERFI Global (2018)

11. XERFI shows that the leading players of IT services are concentrated in mature economies and in India. As depicted in Figure 4, IBM is the largest player with a turnover of €70 billion in 2017, twice as large as its largest competitor (Accenture). Other leading players include Fujitsu, DXC Technology and NTT with a turnover ranging from €24 billion to €7 billion in 2017.

[10] Op.cit.
[11] Spicework, The State of the IT 2019, 2018.

Figure 4. Revenues **of the Top IT Services Companies in 2017 (€billion)**



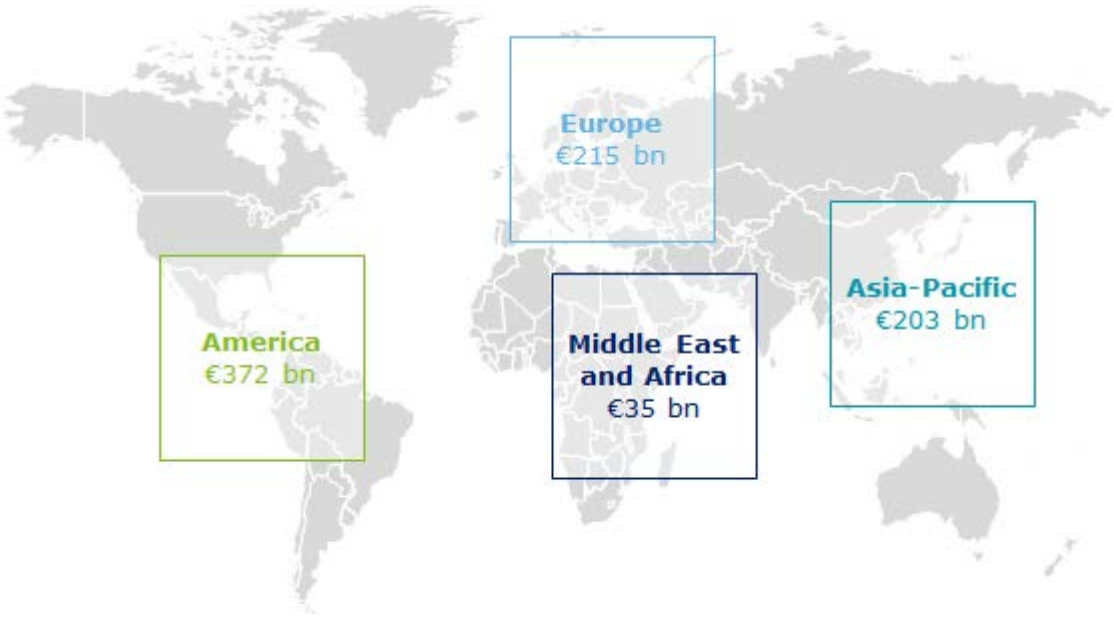
Source: XERFI Global (2018)

12. Beside IT services market players, the enterprise software market is a major element with a global turnover of $405 billion in 2018.[12] The main software vendors worldwide by decreasing importance in terms of turnover were SAP, MICROSOFT, ORACLE, Salesforce, Adobe, IBM, FIS, DASSAULT SYSTEMES and INTUIT in 2017.[13]

13. In 2017, North America was the largest IT services market with a 46% share (€371.8bn), followed by Western Europe with 26% share (€215bn).[14] According to the European Commission, the ICT sector is dynamic in Europe. With a 5.2% increase in value added in 2015, the sector has done better than the European economy as a whole since 1995. In 2015, the sector employed almost 6 million people with very high productivity (54% higher than average).[15]

[12] Gartner (2018), Gartner Says Global IT Spending to Grow 3.2 Percent in 2019.
[13] App Run The World, Apps Top 500 Report Webpage, visited the 22nd of July 2019.
[14] XERFI Global (2018).
[15] European Commission's Joint Research Centre, Prospective Insights on R&D in ICT (PREDICT) Key Facts report, 2018.

Figure 5. Europe is the Second-Largest Regional Market for IT services (2017)



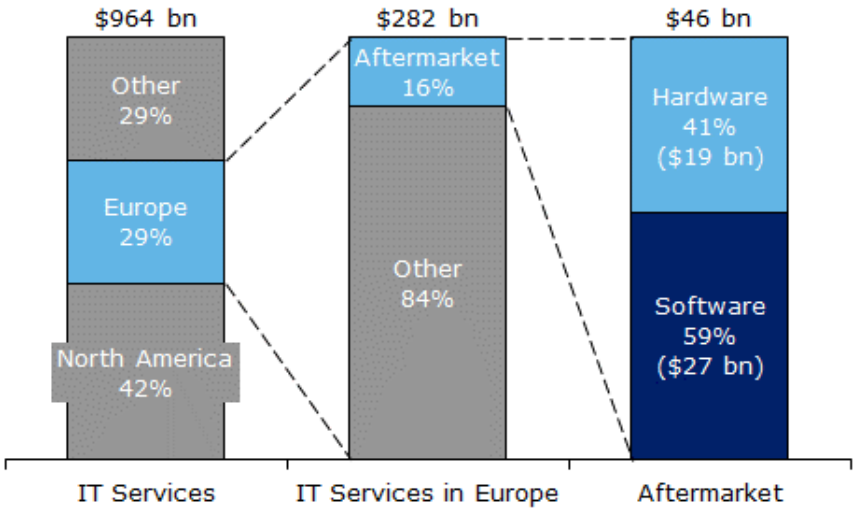
Source: XERFI Global (2018)

1.1.2 ICT Aftermarket in Europe

14. Although neither XERFI nor the European Commission release any specific figure on ICT secondary markets' size, it is possible to have an estimate of its size in Europe. According to a report from Oliver Wyman[16], hardware support and software support, which represent only a portion of ICT aftermarkets, were amounting alone to $46 billion in Western Europe in 2014. Figure 6 reproduces Oliver Wyman report's figures. Wyman also forecasted that software support services would grow worldwide by around 6% per year and by 0.8% for hardware support services by 2018. So one can expect that the figures for Europe have increased since 2014 as ICT markets are dynamic according to the European Commission.

[16] Oliver Wyman, It Services - Winning In The Next Decade: From Industrialized To Agile, 2014

Figure 6. Break down of ICT Services Markets



Source: Olivier Wyman (2014)

15. The Joint Research Centre of the European Commission publishes data on "Prospective Insight in ICT R&D" (PREDICT), and provides information on the gross output of ICT NACE categories. Looking at an even more narrow definition of ICT aftermarkets, the "Repair of computers and communication equipment"[17] as features in the European nomenclature, provides a lower bound for an estimate of European ICT aftermarkets' sizes.

16. The size of this "submarket" was estimated at €20 billion in 2015, making it a market as large as the distribution of motion pictures, video and television programs sector. As the "submarket" of "Repair of computers and communication equipment" is part of wider ICT aftermarkets, the total value of ICT aftermarkets is certainly much higher as the figures from the study of Oliver Wyman show.

17. PREDICT also estimates that this sector employed 227,000 people in 2015, roughly as many people as the publishing of journals and periodicals.

18. The sale of used equipment and parts is not captured by statistics. A study for the EU Ecodesign[18] indicates that about 50% of the hardware is being reused. This suggests that the market is large both in terms of quantity and turnover, though no valid estimation and market shares in Euro's can be given at this time.

19. A research by Munich Strategy Group estimates that the value of unused software in Europe would be approximatively €8.8bn in 2009. A more recent report "The Hidden Cost of Unused Software"[19] shows that on average, companies are wasting 37% of their software spend. The market for software reselling could take advantage of unused software to grow.

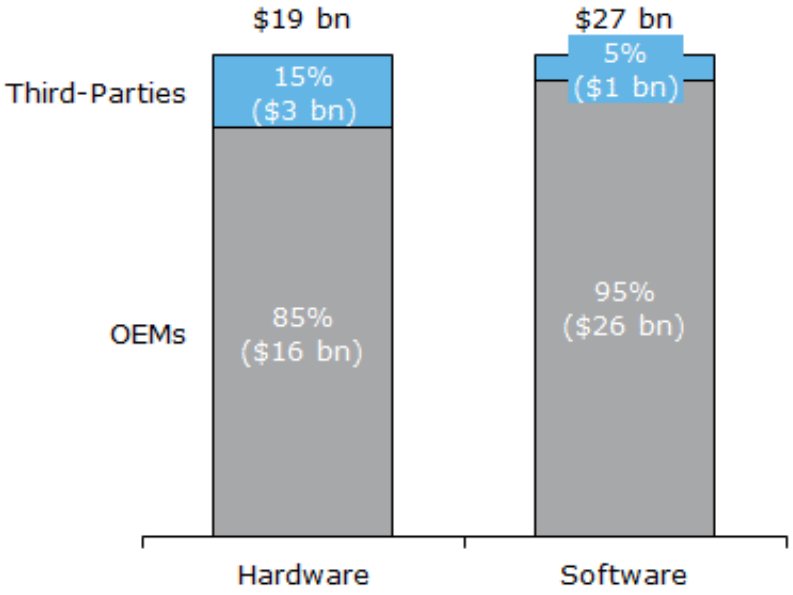
1.1.3 Market Shares and Profiles of Third Parties in ICT Aftermarket

20. GARTNER publishes companies' revenues in ICT markets and in particular in Western Europe.[20] Thus, it is possible to have a rough estimate of independent parties' market share in hardware

[17] Such as defined by the NACE Rev.2. It includes among others the repair and maintenance of computers peripheral equipment such as desktops, laptops, computer terminals, storage devices and printers
[18] European Commission (2015), Preparatory study for implementing measures of the Ecodesign Directive 2009/125/EC DG ENTR Lot 9 - Enterprise servers and data equipment Task 5: Environment & Economics
[19] 1E (2016), The Hidden Cost of Unused Software
[20] Xerfi (2014), Marketshare, IT Service

support and software support based on this data. Each company in GARTNER's database was sorted depending on their status (OEM/third party). It was assumed that the category "Other IT Services Vendors" only includes OEMs. Independents' market shares estimation is therefore conservative. According to this analysis, third party in hardware have 15% ($3 billion) of the hardware support market in Europe ($19 billion) and third party in software have around 5% ($1 billion) of the software support market. Based on these assumptions and on Oliver Wyman' study, third parties' revenues are estimated at around $4 billion in 2014.[21]

Figure 7. EU Market share of independent service provider



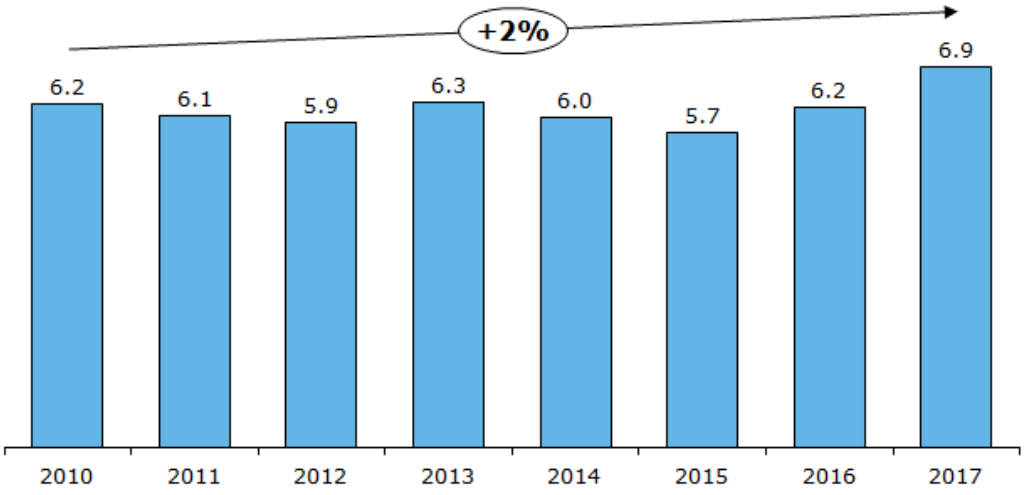
Source: Microeconomix Analysis Based on Olivier Wyman Data

21. Microeconomix conducted a survey among third party companies in the hardware and software aftermarkets through an online questionnaire. Respondents of this questionnaire are mainly involved in hardware activities. The data gathered through the survey provides useful insight on the average independent company on these markets though it may not be representative as the sample is limited. The next paragraphs present the results on the basis of the answers we received.

22. In 2017, the respondents' turnover are on average of €6.9 million sales per company. From 2010, the average turnover per company grew by 2% a year.[22]

[21] 15% of the companies in the hardware support market are independents. This percentage is applied to the market value of hardware market in Olivier Wyman' study. In the software market independents represent 5% of the companies and this percentage is applied to the software market value in Olivier Wyman' study.
[22] Forty companies answered this questionnaire reporting a total turnover of €277 million in Europe.

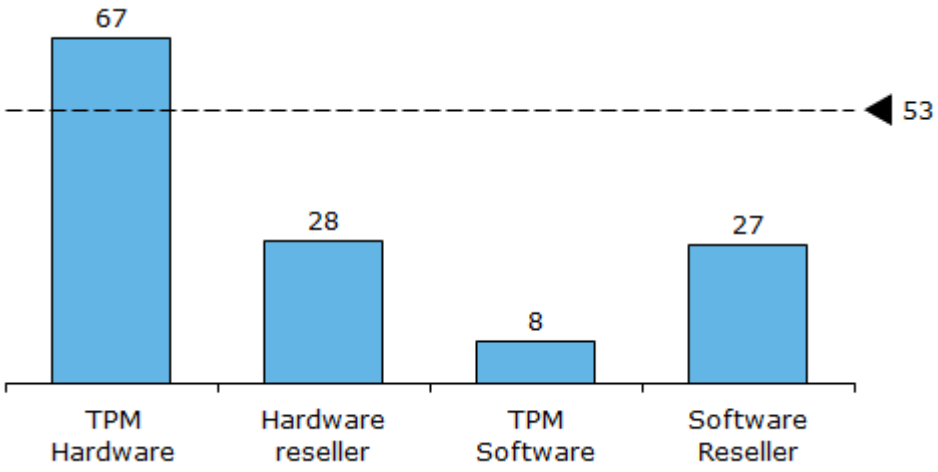
Figure 8. Average turnover per company (**€ million**)



Source: Microeconomix

23. Moreover, the companies that answered the questionnaire employ on average 53 persons per company, with important differences in the average number of employees per segment. TPMs in hardware support are again the largest contributors with 67 employees on average per company while TPMs in the software business have on average 8 employees. Resellers of hardware and software seem to be quite equivalent on this metric. Figure 9 represents these differences.

Figure 9. Average number of employees per company



Source: Microeconomix

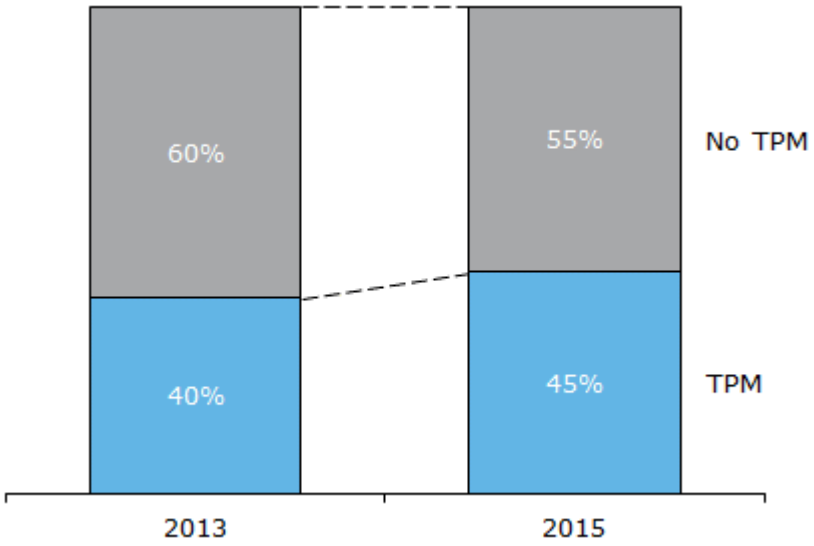
1.2 The Benefits of Third-Parties for Consumers in ICT Secondary Markets

24. ICT secondary markets are important in size in Europe but their impact goes beyond their size. This is especially the case of third parties. Indeed, third parties active on those markets provide valuable alternatives to OEMs' services.

25. Third parties' services are valued by clients because they offer lower prices and quality services. For example, third parties secure availability of products after they are no longer sold by OEMs. This way, they make it possible to add systems or licenses that are needed to be the same as those already in use by the organization. These benefits are reflected into the growing importance of third parties in customers' choice.

26. The International Data Corporation (IDC) surveyed more than 500 companies in 2015 and showed that more and more companies are using third parties maintainers (TPM), for example in the data centers industry. According to this survey, 46% of the respondents said they were relying on third-party maintainers for supporting their data center assets in 2015, a six points' increase in comparison with 2013.

Figure 10. Percentage of Companies Using Third Parties for Maintenance Services

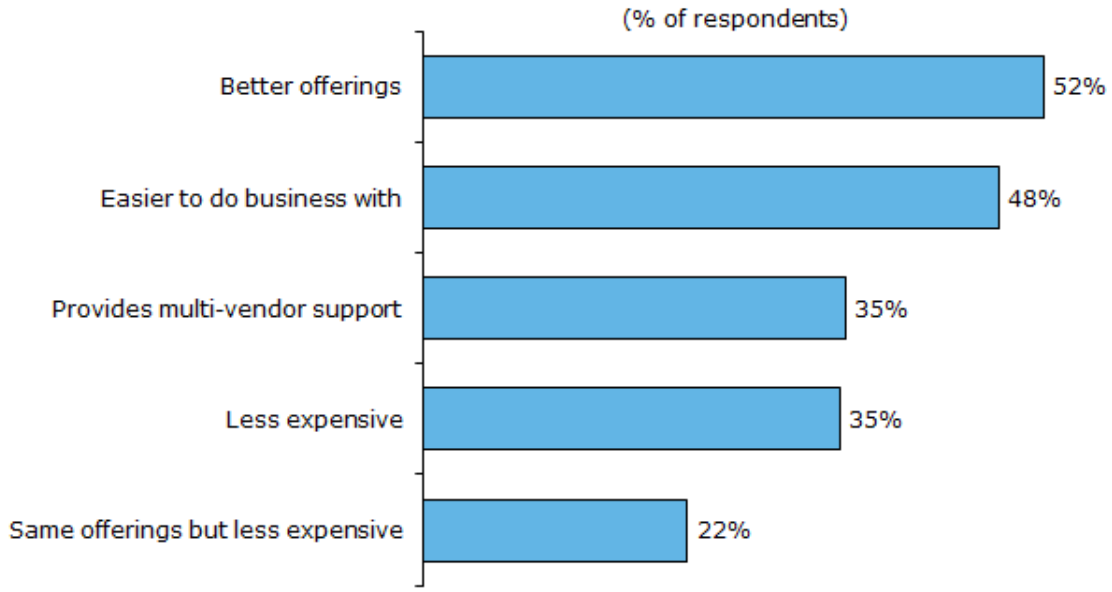


Source: International Data Corporation, Worldwide x86, Server Attach Rate Study, 2015

27. Among the respondents of IDC's survey, more than 200 companies said they were using TPMs for the support of their assets. The responses show that the main reason for choosing a TPM was because customers get better offerings (more than 50% of the sample). Customers also find it easier to do business with TPMs (48% of respondents).

28. The fact that they provide multi-vendor support is also valued by 35% of respondents. The price criterion comes in 4th position among the reasons given by respondents. 22% said that TPMs provide the same offerings as OEMs' but for a cheaper price. Thus, TPMs offer several advantages to final consumers in comparison to OEMs.

Figure 11. Reason for Choosing a TPM



Source: International Data Corporation, Worldwide x86, Server Attach Rate Study, 2015

29. A report from the CIGREF[23], a network of French large companies and administrations, also shows that third parties in the secondary software market bring new flexibilities to large companies. Moreover, the report states that "*by putting many new acquisition solutions at the disposal of the purchasing department, the secondary software market offers new alternatives to businesses, who were in general lacking them, and therefore offers new ways to rebalance relations with suppliers* [OEMs]".[24]

30. A survey by Forrester in 2015 confirmed that third parties offer better conditions and lower prices according to customers. [25] The survey goes into more details and explains some of the reasons why IT managers call on third parties, or would consider doing so. The answers are detailed in the following sub-sections.

1.2.1 Better offerings

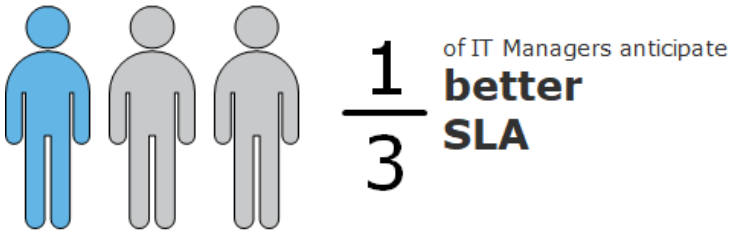
Flexible and customized contracts

31. More than 75% of respondents said they use TPMs because of OEMs' inability to respond quickly to their changing business needs. Most of those who already work with TPMs would likely recommend them to other companies.

32. Third parties provide custom service-level agreements (SLA) for all sizes of companies and for all kind of equipment. TPMs can customize their SLA to provide the right level of service based on the peculiarity of equipment and circumstance. They can also set the SLA according to individuals' machines and provide more flexible contracts.

[23] CIGREF (2014), The Secondary Software Market – Risks and Opportunities for Large Companies.
[24] Op.cit. page 13.
[25] Forrester (2015), Third-Party Maintenance Services Extend to Network Equipment – Not Only Can Third Parties Lower Costs, But They Will Extend The Life of Your Capex Investments.

Figure 12. A Third of IT Managers Anticipate Better SLA and Contract Structure from TPMs



Source: Forrester, Third-Party Maintenance Services Extend To Network Equipment

33. According to GARTNER, used-hardware resellers and third parties also offer contract length flexibility to their clients. [26] In particular, clients can enter into a month-to-month contract, so that they are not locked-in for multiple years. Contract term flexibility is another distinctive feature of hardware resellers and TPMs. Clients can terminate the contract at any time without penalty.

Multi-Vendors Support

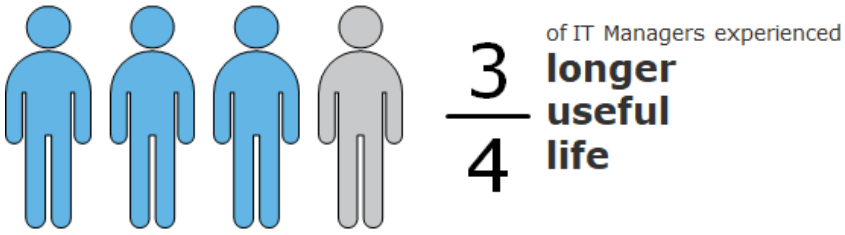
34. OEMs mainly provide support for the products they manufacture. OEMs also go toward providing maintenance for products other than their own but they rely on TPMs' services to support other brands hardware/software or when they lack coverage in some geographical zones.[27] This intermediation can result in higher costs and potentially lower service levels with poorer communications, whereas TPMs provide by definition multi-vendors support.

Maintenance after End-of-Service-Life

35. TPMs provide maintenance after products' End-of-Service-Life (EOSL). EOSL occurs when OEMs no longer offer support service, either primary or extended. OEMs do not have any incentives to extend the life of equipment, as they often want to push new products to the market. [28] Two third of companies have reported that they would have kept at least 25% of their equipment if OEMs would have continued to support it. [29] TPMs continue to provide maintenance for products after the EOSL, reducing the need to refresh hardware. Moreover, TPMs can also provide an independent audit on companies' need to renew products.

[26] Gartner (2016), Used-Hardware Resellers Offer Hardware and Support Cost Savings.
[27] Information provided by TPM during interviews.
[28] Reduce TCO for your Data Centre with a Streamlined Hardware Maintenance Strategy, IBM, Edge Conference, 2016.
[29] Forrester, Challenging The Status Quo On Maintenance Contracts And Refresh Cycles To Lower Costs

Figure 13. 75% of IT Managers Who Switched From OEM to TPMs Experienced an Improvement in their Ability to Employ Equipment for its Entire Useful Life



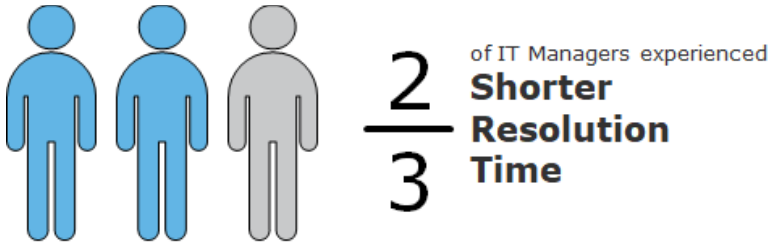
Source: Forrester, Third-Party Maintenance Services Extend To Network Equipment

36. This is confirmed by CIGREF: "*many businesses would like to extend the lifecycle of their hardware setups in order to reduce costs, rapid obsolescence* […] *and the rise of maintenance costs* […] *make them frequently renew their hardware, typically every 3 years*".[30] According to GARTNER, by giving customers the possibility to purchase used hardware, third parties give them "*the ability to stretch the functional life of assets where the manufacturer has identified planned obsolesce of hardware in terms of an announced timetable for "ends of sale" and "end of support"*.[31]

Better Availability of Parts

37. According to the survey, TPMs provide better availability of parts. Outsourcing all aftermarket operation (from basic maintenance to complex services, through inventory management) to a single provider can reduce backorder by more than 90%, and increase part availability by more than 10%.[32]

Figure 14. 68% of IT Managers Experienced a Reduced Issue Resolution Time



Source: Forrester, Third-Party Maintenance Services Extend To Network Equipment

38. For software, the CIGREF stresses, talking about resellers that "*their services differ from editors' seeing as they cannot offer updated versions. However, they focus on delivering high quality, responsive technical support services*".[33]

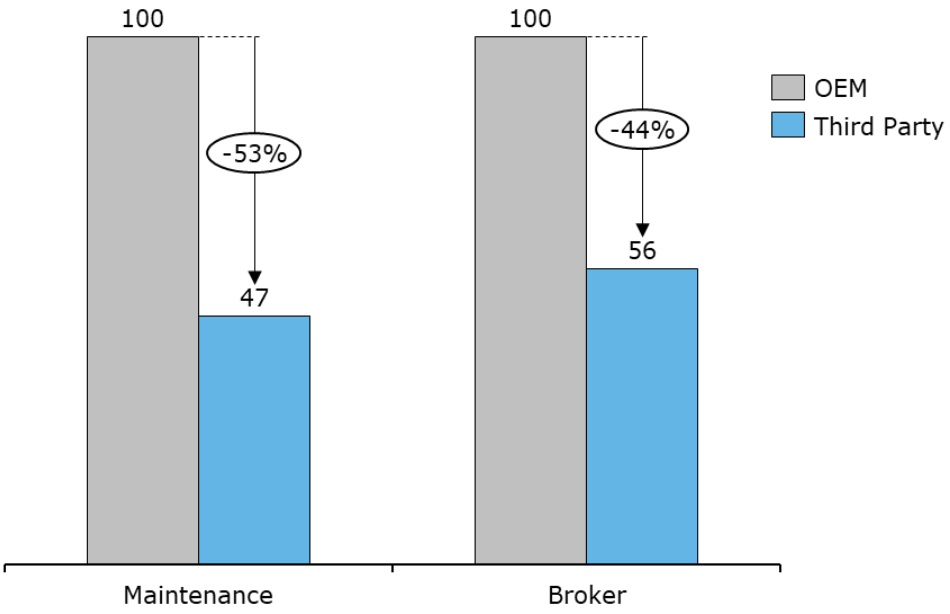
1.2.2 Less Expensive

39. Both clients and third parties also often highlight that third parties offer lower prices. Through its survey, Microeconomix asked TPMs and hardware brokers to estimate the prices of their services/product in comparison to those of OEMs' for the same service/product. According to

[30] CIGREF (2014), The Secondary Software Market – Risks and Opportunities for Large Companies, page 45.
[31] Gartner (2016), Used-Hardware Resellers Offer Hardware and Support Cost Savings.
[32] Accenture (2018), Burden To Bloom Aftermarket Opportunity.
[33] CIGREF (2014), The Secondary Software Market – Risks and Opportunities for Large Companies, page 31.

their responses, third parties provide equivalent service for around half the price, both for hardware maintenance and hardware resell services. Figure 15 illustrates the differences.

Figure 15. Third Parties are on Average Twice Less Costly for Hardware



Source: Survey of 10 maintainers and 17 resellers, Microeconomix

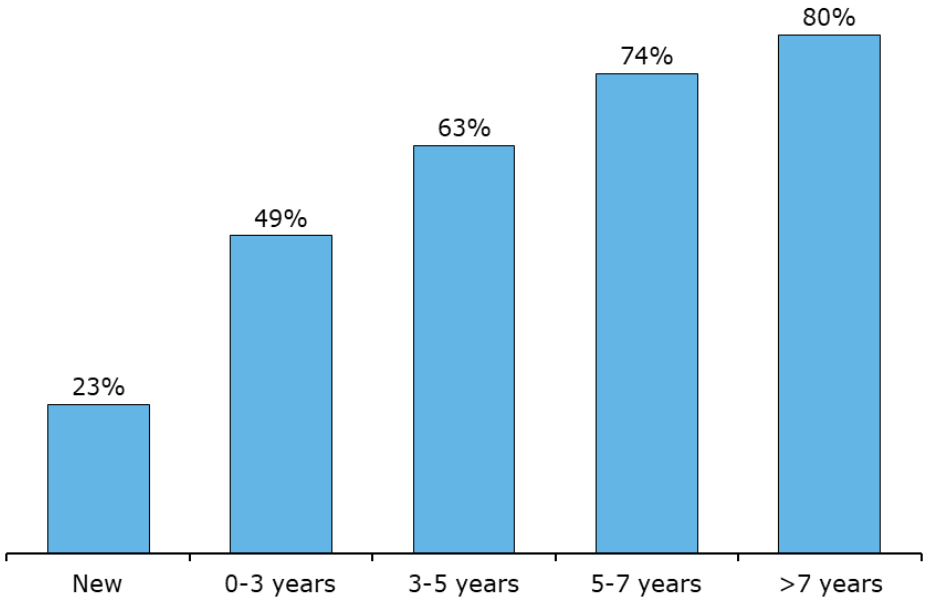
40. Several studies in Europe or in the U.S. confirm these findings. For GARTNER, "*TPM contracts will offer customers an average of 60% savings off OEM support list prices*".[34] GARTNER also underlines that the range of savings with third parties is from 50% off OEMs list up to 85%, depending on the equipment.

41. GARTNER further indicates that "*TPM providers often price on product density, and therefore, enterprises can leverage that more with a TPM provider than with most OEMs*".[35] The ability to save 50% to 60% on OEMs' hardware contracts is typical, but for contracts with high product density, it can be up to 85%. It also stresses that significant post-warranty service price increases are observed with OEMs while TMPs' pricing can be more indicative of net present value.

42. TPMs also provide support for many years. Thanks to their services, equipment lasts longer and the price differential between TPMs and OEMs is higher the longer a customer keeps its equipment. For instance, according to responses to Microeconomix' survey, TPMs' prices are 80% lower than OEMs' after seven years. This is especially true as OEMs can increase the price for older support to incentivize companies to switch to new products.

[34] Gartner (2017), Market Guide for Data Center and Network Third-Party Hardware Maintenance.
[35] Op.cit.

Figure 16. Average discounts from TPMs versus **OEMs' price**s with respect to hardware age



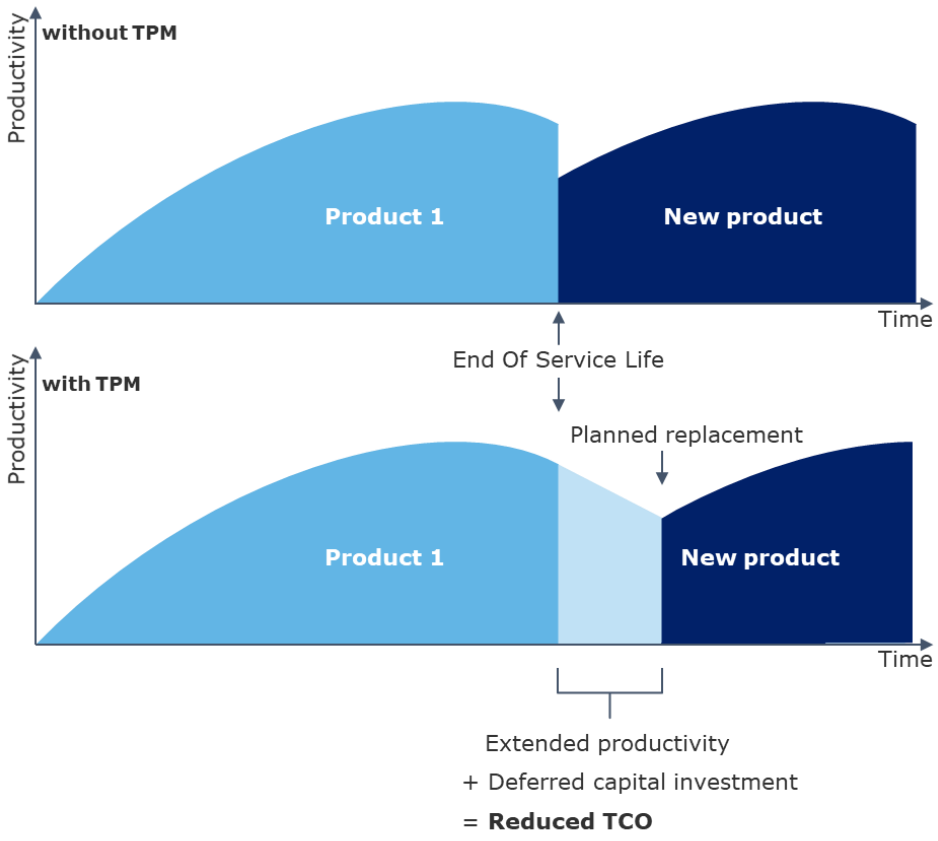
Source: Survey on 20 maintainers, Microeconomix

43. The same holds true for software as stressed by CIGREF. Third parties ask for lower maintenance fees than editors. According to CIGREF, "*with savings of up to 50% on licences and maintenance, the TCO* [Total Cost of Ownership] *of an application can be considerably reduced thanks to the secondary software market and to third-party maintenance*".[36]

44. The TCO takes into account the initial purchase and the future maintenance costs. The TCO per year is a way to measure the average cost of operating a particular product. Smartly extending the lifetime of a product will result in higher productivity and a deferred capital investment. This mechanically reduces the TCO and increases productivity. According to a study conducted by Edge, in the data center industry, one can observe "*up to 57% potential savings in capital costs [...] by moving to a 7-year refresh cycle*".[37] Figure 17 represent the mechanism behind these savings.

[36] CIGREF (2014), The Secondary Software Market – Risks and Opportunities for Large Companies, page 31.
[37] Edge (2016), Reduce TCO for your data centre with a streamlined hardware maintenance strategy.

Figure 17. Impact of an extended service life



Source: Microeconomix

Illustration: Impact on the Total Cost of Ownership (TCO)

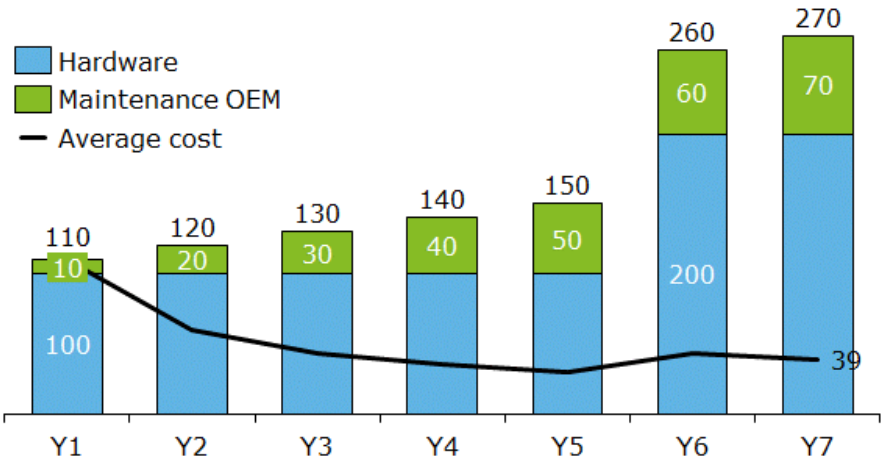
45. The following example illustrates the impact of TPMs on product's life and price. Let's assume that:

- The cost of hardware is 100 with an end of service life (EOSL) at 5 years
- The OEM's prices for maintenance services is 10 per year for a 5 year-contract;
- TPM offers maintenance for hardware at the beginning of the fourth year;
- TPM provides 2 additional years of maintenance after the EOSL
- TPM's price are 50% lower compare to the OEM's

46. With these settings, two scenarios are considered: (1) the client only uses OEM maintenance (2) the client uses OEM maintenance for the first 3 years and then switches to TPM for the following next 4 years. The following figures describe the total cost of ownership by year in the "OEM only" scenario and in "OEM then TPM"'s one.

47. In the scenario "OEM only", the client will pay 150 after the first 5 years, then he will have to renew its hardware and after 7 years, the OEMs' client spent 270 in maintenance and hardware.

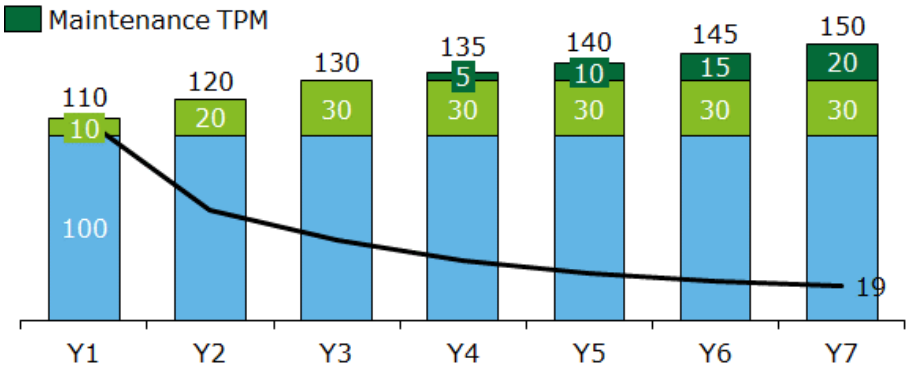
Figure 18. **Total cost of ownership in the scenario "OEM only"**



Source: Illustration Microeconomix

48. In the scenario "OEM then TPM", the client will pay 140 after the first 5 years. After 7 years, the client spent 150 in this scenario.

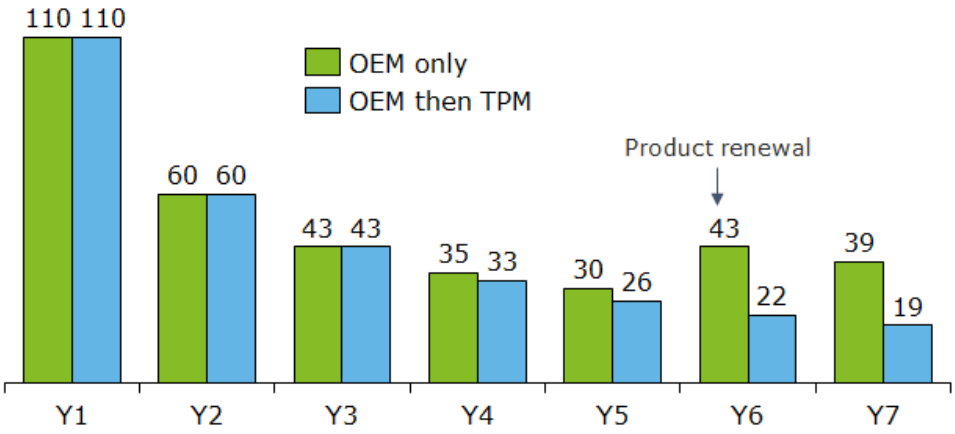
Figure 19. **Total cost of ownership in the scenario "OEM then TPM"**



Source: Illustration Microeconomix

49. The following figure compares the average cost in each scenario. The average cost per year of a hardware with support from a TPM is 19 (150 over 7 years) whereas it is 30 with an OEM (150 over 5 years). The direct impact of switching from an OEM to a TPM is a maintenance cost reduction of 30% over 7 years and a deferral of 2 years for the investment (100). Both impacts translate into an average TCO reduction of 51% over 7 years.

Figure 20. Average cost of ownership per year



Source: Microeconomix

50. All around, third parties provide better offers to final clients by providing a better quality service for the same level of service, but for a lower price.

1.2.3 **TPMs' Activities** Fit the European Commission Agenda on Circular Economy

51. On the 4th of March 2019, the European Commission adopted a comprehensive report on the implementation of its Circular Economy Action Plan. Circular activities not only include recycling but also repair and reuse of products. In 2016, those activities generated around €147 billion in value added according to the European Commission.

52. The EU Ecodesign directive contains 2 product groups of which Servers and Storage.[38] This group recently includes Material Aspects to stimulate repair, resale and extending life cycles.

53. Third-parties in the ICT aftermarket propose both repair and reuse services and therefore contribute actively to the Circular Economy. As stated by the European Commission: "*The repair sector offers particular potential for circular economy, addressing material efficiency (prolonged product lifetime), employment (jobs in repair in the EU, often including social employment) and economic added value*" and "*1/3rd of goods arriving at recycling centres are re-usable and could be sold second-hand. Reusing these products would create jobs in the second-hand market sector in the EU*". [39] This means that repair and reuse activities in the ICT sector are key to achieve the goal of the European Commission in terms of Circular Economy.

54. One of the key actions proposed by the European Commission in its comprehensive report is about turning waste into resources as "*environmentally sound management of waste, inside and outside the EU, is key to achieve a more circular economy*".[40] Third parties propose three kinds of services contributing to this goal.

55. First, third-parties provide a broad range of services regarding IT Asset Disposal (ITAD) and Waste Electrical and Electronic Equipment (WEEE) recycling. Recycling is a vital activity for avoiding environmental damage when products become obsolete. Independent services

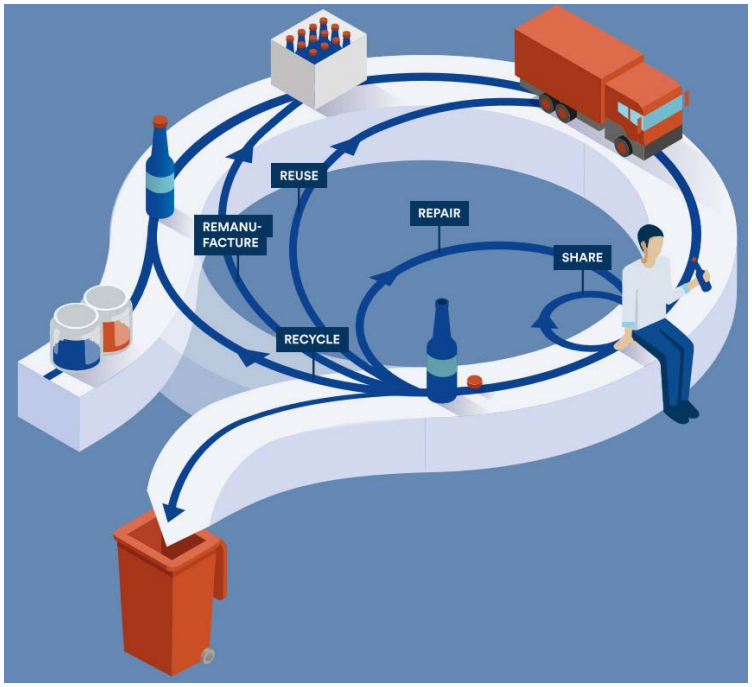
[38] Lot 3 Computers and ENTR Lot 9 Servers and Storage.
[39] European Commission (2019) Sustainable Products in a Circular Economy - Towards an EU Product Policy Framework contributing to the Circular Economy.
[40] European Commission (2019) Report From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions On The Implementation Of The Circular Economy Action Plan

providers in the ICT aftermarkets play a key role in recycling of parts. For example, EVERNEX, a French Multinational TPM, recycles more than 700 tons of IT equipment per year.[41]

56. Recycling is not the unique solution for a more Circular Economy, it needs to be complemented by repairing and reusing. Services provided by third parties effectively go beyond the classical "dissemble to recycle". They provide service to repair efficiently hardware or software along their useful life for a company. Secondary resellers also help users in reselling their devices by providing them with price estimates, product information, specifications and condition.

57. Finally, third parties also provide certified refurbishment and remanufacturing activities. As stated by the European Commission, "*Remanufacturing represents a vital loop in the circular economy as it maintains the value incorporated in products and components as a result of their design, manufacturing and maintenance, which is lost when the product is reduced back to the materials it consists of through recycling*".[42] Third parties are active in all these aspects to give a second life to products and effectively turning wastes into resources.

Figure 21. Flows of products and materials in a circular economy



Source: European Parliament Research Service

58. Another key driver to a more circular economy according to the European Commission is about "**e**mpowering consumers". The transition towards a more circular economy "*requires an active engagement of citizens in changing consumption patterns*".[43] For citizens to be engaged, they need to be informed about products and have the possibility to change their behaviour. TPMs and independent resellers are key to provide independent information to customers.

59. For example, IFIXIT provides technical documentation on how to repair 15,000 devices, helping private consumers to repair their product and inform them thanks to a Reparability Score before

[41] Source: https://www.evernex.com/fr/recyclage/.
[42] European Commission (2019) Sustainable Products in a Circular Economy - Towards an EU Product Policy Framework contributing to the Circular Economy
[43] Op. Cit.

they buy a new product.[44] [45] But more importantly, TPMs provide independent services that are as good as OEMs, giving consumers more choices and especially more circular-friendly alternatives. [46]

1.3 Conclusion

60. In conclusion, the ICT industry if one of the key drivers of the economy worldwide and in Europe. Among the European IT services, ICT aftermarkets are, at least, worth $46 billion and employ more than 220,000 people. Independent service providers account for 15% of the hardware support market and 5% of the software support market, for a total value of $4 billion in 2014.

61. Benefits arising from third parties go beyond economic activity; third parties provide customers alternatives to OEMs' services and offer quality products and services. They also offer more flexibility and increase equipment entire useful life. Last but not least, they provide customers with the same service quality for half of OEMs' prices and put competitive pressure on OEMs. Thus, TMPs limit the prices that OEMs can charge, benefiting the whole market beyond their own clients.

62. Third parties provide a broad range of services including recycling, repair, reuse and refurbish that all help to achieve the objectives set by the European Commission regarding the development of a more circular economy. The benefits provided by TPMs are particularly decisive in a context where OEMs' clients are increasingly unsatisfied with their services. Therefore, it is important that these actors continue to exert a competitive pressure on OEMs by delivering good quality services at lower prices. In this context, special attention must be paid to OEMs' behaviour, as they might hinder competition in secondary markets.

[44] Source: https://fr.ifixit.com/.
[45] Example of their Reparability Score for Laptops can be found at: https://www.ifixit.com/laptop-repairability
[46] See, section 1.2.1 of this report

2 Competition Issues in ICT Secondary Markets

63. Since the U.S. Kodak case in 1992[47], aftermarkets have received special attention from economists and practitioners. The main question discussed is whether firms operating both in primary and secondary markets can profit from monopolizing the aftermarket and whether this monopolization can harm consumers. The answers to these questions rely on the scrutiny of several factors such as the intensity of competition in the primary market, the quality of information available to consumers and the relative size of primary and aftermarkets.

64. This section of this report presents the framework developed by the European Commission to assess whether aftermarkets can present competitive concerns harmful to consumers as well as the conditions where aftermarket monopolization leads to consumer harm from an economic point of view. This economic framework is applied to ICT secondary markets in order to assess whether there is ground for competitive concerns on those markets.

2.1 Overview of Conditions for Consumer Harm to Arise in Secondary Markets

65. The European Commission has reviewed several claims of dominant position abuse in secondary markets since the 1990s, which are summarized in the appendix of this report. Over the years, the Commission has developed a framework for assessing whether there could be competition concerns in aftermarkets. In particular, it elaborated a test based on economic theory, known as "EFIM test". Most cases have been run under exclusionary theories of harm.

66. In the next section, the market definitions retained by competition authorities in aftermarket cases are briefly presented as well as the European Commission's framework to assess dominance in secondary markets.

2.1.1 Market Definitions and the European Commission's Framework for Assessing Dominant Position in Secondary Markets (the EFIM Test)

Market Definitions in Secondary Markets

67. Market definition is one of the first steps to underpin competition issues. It consists in defining the boundaries of a market in terms of product or service and from a geographical point of view. It is fundamental to assess whether a particular conduct is likely to produce anticompetitive effects: "*the main goal of market definition is to assess the existence, creation or strengthening of market power, which is defined as the ability of the firm to keep the price above the long-run competitive level. The market shares of the respective firms provide an indication of market power*".[48]

68. Competition authorities have considered three possible market definitions in aftermarkets cases: (i) system market, (ii) one market for the primary products or services and separate aftermarkets for each primary product, and (iii) several separate spare parts markets for each particular brand.

[47] Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451 (1992).
[48] OECD, « Market Definition » (2012).

69. When a significant number of customers take into account the life-cycle costs of products when purchasing a primary product or service, a market for systems can be defined. That is a market encompassing both primary and aftermarkets. The existence of reputational effects can also lead to such a market definition. This is the case if charging a supra-competitive price in the secondary market deteriorates the reputation of firms and entails a potential decrease in sales in the primary market.

70. The European Commission has defined the relevant market as system market in previous cases. In the luxury watches case, it initially defined a system market for luxury watches and their spare parts.[49] It considered that existing customers could avoid paying high repair prices by selling their watch on a second-hand market and switching to a different brand to buy a new watch. It further argued that new customers decide to buy their watch on a life-cycle basis and would choose a different brand if they perceive supra-competitive prices on the aftermarket.

71. Competition authorities have also defined distinct markets consisting in one market for the primary products or services and separate aftermarkets for each primary product. The European Commission states that multiple markets should be defined when it is not possible for consumers to use the secondary products of other suppliers or because of high switching costs in the primary market. The implication in defining separate markets is that a supplier active in both markets may be found dominant in the aftermarket despite facing strong competition in the foremarket.

72. After the General Court of the European Union annulled the European Commission's decision in the luxury watches case, the Commission defined several separate spare parts markets for each particular watch brand.[50] The European Commission followed the same approach in the Hugin case for cash registers spare parts and in the Pelican/Kyocera case for the supply of toners or consumables for a specific brand.[51] [52] It also defined a distinct maintenance market for IBM mainframe hardware in the IBM Maintenance Services case.[53]

73. Where these two market definitions do not apply, the relevant markets might be a global market for the primary products and a distinct aftermarket for any kind of primary product. In that case, it means that consumers would be able to choose any combination of primary and secondary products or services. According to practitioners, it seems that competition authorities have seldom retained this kind of market definition in antitrust cases.

The EFIM Test

74. Once markets are defined, the European Commission assesses dominance in aftermarkets based on the EFIM test since the Pelikan/Kyocera case in 1999. It consists in answering two sets of questions:

i. Can consumers make an informed choice including life-cycle pricing?
ii. Are they likely to make such an informed choice?
iii. In case of price increase in the aftermarket, would a sufficient number of consumers adapt their behavior at the level of the primary market?
iv. Within a reasonable time?

75. The first two questions aim at answering whether the primary and the secondary markets are interdependent. The two others serve to assess whether the primary market is competitive.

[49] COMP/E-1/39097 – Watch Repair, Decision C(2008) 3600.
[50] Case AT.39.097-Watch Repair, Commission Decision rejecting the complaint on 29 July 2014.
[51] Case 22/78
[52] XXV Report on Competition Policy (1996).
[53] Case COMP/C-3/39.692-IBM Maintenance Services.

76. The analysis of the degree of markets' interdependence relies on consumers' behavior when purchasing the primary product: do they foresee and take into account the price in the secondary market when they purchase the primary product? The European Commission states that other criteria can be considered such as whether the primary product is rented, whether the secondary product is purchased on a continuous basis, whether price discrimination between new and old customers is possible and the number of potential new customers. The analysis of competition in the primary market follows a traditional approach, i.e. customers' reaction to a price increase.

77. The Commission gives some more practical guidance on those four criteria. First, the DG Competition's discussion paper on the application of Article 82 of the Treaty to exclusionary abuses states that:

"*The amount of information available to consumers is an important factor for assessing the extent to which the customers, when buying the primary product, make a calculation of the overall cost of the bundle. The information available must enable customers to make accurate calculations. This is more likely to be so when the secondary product is a consumable used with the primary product in fixed proportions, than in the case of spare parts and services*.

Moreover, for this competitive constraint from the primary market to function effectively, a sufficient number of customers must engage in life cycle cost calculations, and the supplier concerned must not be able to discriminate between customers that make such calculations and those that do not. For instance, a primary product may be purchased by both private and professional buyers. If only professional buyers make (accurate) life cycle calculations, the supplier may still have substantial market power in the aftermarket vis-à-vis private customers."

78. Moreover, the Commission specifies in its 2010 Guidelines on Vertical Restraints, "*in the case of long-term contracts or in the case of after-markets with original equipment with a long replacement time, it becomes difficult for the customers to calculate the consequences of the tying*."

79. The European Commission usually excludes dominance in the aftermarket if the answers to the four questions are affirmative. It means that the two markets are interdependent and the primary market is competitive. Dominance cannot be established in the secondary market as firms are constraint by competition in the primary market. However, if the answer to one question is negative then it is necessary to further investigate the case with usual legal tests (depending on the theory of harm).

2.1.2 The Economic Framework for Assessing When Competition Issues Might Arise on Secondary Markets

80. The economic literature on aftermarkets was spurred by the U.S. Kodak case. The U.S. Supreme Court concluded that Kodak had abused its dominant position on the market for replacement for its own equipment. Since then, economic theory gave a special attention to aftermarkets and has identified both beneficial and anticompetitive effects of aftermarket monopolization. In the next sub-sections, the analysis focuses on the settings where market conditions are likely to raise anticompetitive concerns in secondary markets.

Consumers' Switching Costs

81. Switching costs are the costs that a consumer incurs as a result of changing suppliers or product. Switching costs imply that customers are locked-in after their initial purchase. This can be due for instance to the fact that a product is not compatible with other brands' products. The lock-in effect has been identified by the academic literature as one of the prerequisites for

aftermarket monopolization to harm consumers. The ability of manufacturers to exploit their installed base is mainly due to the inability of consumers to substitute the secondary product or to purchase a different primary good or service without incurring significant switching costs.[54]

82. 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 favor 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 or the possibility of the supplier to unilaterally change the terms of the contract.

83. The issue of switching costs and consumers' lock-in was comprehensively analyzed by Farrell and Klemperer (2007).[55] They show that the existence of switching costs can shift competition towards a broader target, i.e. customers' needs over multiple periods. This can create a phenomena called in the economic literature "bargain-then-rip off pricing" where firms set a low price in the primary market to attract consumers and then price high in the secondary market to extract their surplus once they are locked-in.

84. This pricing scheme can have a strong impact in terms of weaker competition when future prices are not specified in the contracts. These patterns create an ex-post monopoly for which firms compete ex-ante. In situations where competition for the market replaces traditional competition in the market, consumer harm often arises. Overall switching costs are believed to usually decrease efficiency as the ex-post rents are generally not fully competed away. Farrell and Klemperer encourage a thoughtful screening in those cases "*where incompatibility is strategically chosen rather than inevitable*".

Consumers' Information on the Life-Cycle Costs of the Primary and Secondary Products

85. Consumers' information prior to the purchase of a primary product is well debated in the economic literature.

86. Some economists consider that consumers are rational and informed. Therefore, they make their decision on a life-cycle costs basis, i.e., they take into account the costs of the aftermarket product when they purchase the primary product. Shapiro and Teece (1994) are among economists that put forward this argument.[56]

87. Other economists challenged this view as the economic empirical results shows that consumers may not foresee the price of aftermarket services (consumers are "myopic"). They conclude that consumer myopia makes it easier for firms to charge supra-competitive prices in aftermarkets. Indeed, empirical economic studies have shown that consumers are often not able to make efficient choices and are more sensitive to primary product's cost than to aftermarket cost.

88. For example, Hall (1997) shows that "*consumers have little knowledge of replacement ink prices when they purchase printers*". [57] His conclusion is based on two main findings. First, according to a famous magazine, the margin on OEMs cartridges for inkjet printers would be around 60%.

[54] Switching costs can be defined as the real or perceived costs that are incurred when changing supplier but which are not incurred by remaining with the current supplier. This means that a customer who has previously bought from one firm may incur extra costs in purchasing an otherwise identical product from a new firm, even if that product is sold at the same unit price.
[55] Farrell and Klemperer (2007), Coordination and Lock-In: Competition with Switching Costs and Network Effects, Handbook of Industrial Organization, 3, Edited by M. Armstrong and R. Porter.
[56] Shapiro and Teece (1994), "Systems competition and aftermarkets: an economic analysis of Kodak", Antitrust Bulletin, 39, Issue 1, pp. 135-162.
[57] Hall (1997), "The Inkjet Aftermarket: An Economic Analysis", Unpublished paper.

He also found thanks to a survey that customers buy inkjet printers without information on the overall cost. Some customers have an idea about the cartridges' price but few know the number of pages per cartridge or the price per page.

89. Evidence of consumers' myopia was also found in the energy-using appliance sector (Hausman, 1979).[58] Consumers prefer to buy a cheaper primary product even if the associated aftermarket costs are higher than if they choose a more expensive primary product. Thus, consumers in this sector do not engage in life-cycle pricing as they fail to take into account the future operating costs (energy consumption). Gately (1980) makes the same conclusion for refrigerators, consumers prefer to buy cheaper but low-efficiency products.[59]

90. Several authors have further shown that firms might have incentives to hide aftermarket costs, as this makes it more difficult for consumers to decide on a lifetime basis. Gabaix and Laibson (2006)[60] show that firms prefer to offer marketing schemes that hide add-on costs (on the secondary market) when some consumers are uninformed. This strategy holds because informed consumers know that they benefit from a lower price in the primary market without incurring the high costs in the secondary market. So they prefer to purchase the primary products from firms with high aftermarket prices because they end up with a subsidy from a scheme designed for myopic customers.

Competition in the Foremarket

91. Another aspect analyzed in the economic literature for assessing whether competition concerns might arise in aftermarkets is the level of competition in the primary market. For some economists, any overcharge in the aftermarket due to its monopolization might be competed away when competition in the foremarket is sufficient (Shapiro, 1995)[61]. The idea is that rivals in the primary market offer discounts to consumers in order to attract them that might partially or entirely offset overcharges in the aftermarket. Thus, consumers are protected from possible harm, the price for the overall package (the primary and secondary products) being competitive (Carlton, 2001).[62]

92. As said previously, other economists have questioned the assumption that competition in the foremarket is sufficient to compensate monopoly prices in the aftermarket (Farrell and Klemperer, 2007).[63] Indeed, the conditions for ex-ante competition to compete away ex-post rents are rather restrictive in economic models and not realistic. Firms must have homogenous cost structures, offer homogenous products and customers need to have homogenous switching costs. However, this is seldom observed in practice. Furthermore, firms should be able to incur losses in the primary market on the basis of expected profits in the aftermarket. If one of these conditions does not hold, consumers will pay more than in the absence of aftermarket monopolization.

93. Voortman (1993) argues that even if prices in the primary market are kept low as a result of the higher prices in the aftermarket, the net effect might be anticompetitive. The price of the product plus its maintenance cost is higher when there is a monopoly in the aftermarket than

[58] Hausman (1979), "Individual Discount Rates and the Purchase and Utilization of Energy-Using Durables", The Bell Journal of Economics, 10, pp. 33-54.
[59] Gately (1980), "Individual Discount Rates and the Purchase and Utilization of Energy-Using Durables: Comment", The Bell Journal of Economics, 11, pp. 373-374.
[60] Ganaix and Laibson (2006), "Shrouded attributes, consumer myopia and information suppression in competitive markets", The Quaterly Journal of Economics, May.
[61] Shapiro (1995), "Aftermarkets and consumer welfare: making sense of Kodak", Antitrust Law Journal Vol. 63, pp. 483-511.
[62] Carlton (2001), "A General Analysis of Exclusionary Conduct and Refusal to Deal – Why Aspen and Kodak are Misguided," National Bureau of Economic Research, Working Paper No. 8105.
[63] Farrell and Klemperer (2007), "Coordination and Lock-In: Competition with Switching Costs and Network Effects", Handbook of Industrial Organization, 3, Edited by Armstrong and Porter.

when there is competition in both markets. According to the author, it stands from the fact that these pricing schemes "*shift part of the total cost of using the equipment from the price of the equipment, a price that is known when the equipment is purchased, to the future. That makes it more difficult not only for the buyer to compare competing brands, but also to determine whether it is economical to invest in equipment of that kind*". [64]

94. Borenstein, MacKie-Mason, and Netz (2000) argue that firms will balance the present benefits of exploiting locked-in customers against the benefits of pricing low today and gaining new locked-in customers tomorrow. [65] The authors show that, regardless of the intensity of competition in the market for equipment, firms will always price above costs in the aftermarket as firms' value of the present gain is larger than their valuation of tomorrow's gain. The greater the present is valued over the future, the higher current prices will be in the aftermarket. Incentives to price high, and lose market share tomorrow, are also bigger when the market is declining.

95. Even if rents in the secondary market are competed away, overall economic welfare is lower because of inefficient substitution away from secondary goods and services and towards original equipment. If the primary product is sold at cost and the secondary product or service is priced above costs, consumers will over purchase equipment and under purchase secondary products. Customers will change their equipment too often than optimal.

96. Mackie-Mason and Metzler (2002) argue that a manufacturer of a durable good with locked-in customers may profitably increase the price of services and spare parts to exploit such customers. [66] The authors make the assumption that the immediate gains from this strategy are higher than the future loss in equipment sales. Social welfare is hurt in two ways. First, locked-in customers purchase less than socially optimal amount of secondary goods and secondly they replace their equipment too quickly.

97. The economic literature shows that aftermarkets monopolization can raise competition issues. Consumers might be harmed the larger the locked-in customers' base is, as the incentives of manufacturers to monopolize and exploit their customers' base are higher. The same conclusion is reached when customers' switching costs are high, as it is harder for them to switch supplier, all else being equal. Customers' myopia also makes competition concerns more likely. Finally, the maturity of the market makes exploitation more likely as manufacturers might care less about their reputation.

2.2 Competition Issues in ICT Aftermarkets

98. Microeconomix has conducted a survey among TPMs active in ICT aftermarkets in Europe. Among the questions, one deals with the potential restrictive practices implemented by OEMs and one is related to the changes observed in the market over the last five years (e.g., OEMs policy change, ease of doing business). Other questions deal with third parties' activities, turnovers, growth, benefits provided to customers (see section 1.1.3).

99. From the answers to the questionnaire, it seems that OEMs might have:

[64] Voortman (1993), "Curbing aftermarket monopolization, Journal of Legislation, vol. 19:155
[65] Borenstein, Mackie-Mason and Netz (2000), "Exercising Market Power in Proprietary Aftermarkets," Journal of Economics and Managements Strategy, 9(2), 157-188.
[66] Mackie-Mason and Metzler. (2002), "Links Between Vertically Related Markets: Kodak (1997)," in The Antitrust Revolution, 4th edition, J. Kwoka and L. White, eds., Cambridge University Press.

- Restrict access (or delayed access) to input needed for the maintenance of hardware and software (firmware, microcode, spare parts, documentation, etc.);
- Warn customers in order to discourage them to switch to TPMs;
- Impose import restrictions from outside EU (especially from the U.S.);
- Impose restrictions to reduce resell or scrapping programs and;
- Limit access to diagnostics tools;
- Maintain Reinstatement Fee penalties
- Disclose limited information on products they sold.

100. Indeed, some TPMs argue that: "*Access to firmware required for updating component parts is made difficult by the OEMs. OEMs say and write to customers, that they are no longer allowed to download Microcodes/Firmware, if they haven't closed a maintenance contract with the OEM or the system is still under warranty. The manufacturer does not give access to firmware update if you do not have a valid software or hardware maintenance contract with the OEM. Some OEMs have policies that forbid goods sold in the US being used in Europe. However, information about which components were first sold in which region is very difficult to come by*".

101. The purpose of this subsection is to build on the economic literature and to assess whether competition concerns might arise in ICT aftermarkets because of OEMs' practices. However, its aim is not to provide any guidance as on the potential market definitions that could be retained by competition authorities in those markets. The analysis is based on previous competition cases in Europe as well as on two studies conducted by OEMs' clients.

2.2.1 Clients Incur High Switching Costs in some ICT Secondary Markets

102. As mentioned previously, switching costs and the level of switching costs that a customer incurs in order to change its primary product for an equivalent product or to change its secondary services will determine the potential exploitation of customers from an economic point of view. The higher the cost associated with switching from one product to another, the more a firm can exploit its customers without fearing that customers change for a competitor, all else being equal.

103. In the ICT sector, switching costs associated to some products are significant. Indeed, according to a survey on customer satisfaction among EUROCIO (the European representative for large IT-users)'s members, switching costs are high in the market for software. EUROCIO's members talk about "*prohibitively high costs for changing supplier*".[67]

104. The same finding was made by competition authorities in other ICT markets. In the IBM case, the European Commission noted, for large corporate servers, that switching to secondary products (spare parts, updates, etc.) of other producers was not possible and there were high switching costs in the market for the primary product.

105. The French competition authority and the European Commission also found out that it was costly for clients to change their relational database management system because of "*the high transfer*

[67] EuroCIO (2018), Supplier Satisfaction Survey Reveal Slowdown of Cloud Adoption and Increase of Exit Strategies and Actions due to Inflexible Vendor Licensing and Pricing Models.

costs that customers experience when trying to migrate their data to another database product".[68]

106. As a result of customers' high switching costs, OEMs can change their pricing policy and impose inflexible licensing or contract management models to their clients. EUROCIO stresses that recent changes in pricing models generate additional licensing costs for customers: "*the financial impact of these pricing policy changes for EuroCIO's large corporation members, as well as SMEs, results into significant higher costs*".[69]

2.2.2 Competition in the Primary Market is Weak According to Some Clients

107. Another criterion taken into account by the European Commission and the economic literature is competition in the primary market. Weak competition in the primary market implies higher possible exploitation of consumers by OEMs in the aftermarket as it is easier for them to take advantage of locked-in customers. So it is necessary to evaluate the degree of competition in the primary market in order to address this question.

108. According to EUROCIO, software markets are not competitive. The members of this representative consider that market power is concentrated in the hands of one or very few suppliers. EUROCIO presented and discussed the results of its survey with the European Commission and requested that the lack of alternatives be investigated by its services. The CIGREF came to the same conclusion: the software market and ICT services are dominated by a few major international players.[70]

109. IBM's case also shows that the European Commission has already had doubt about the state of competition in the market for large corporate servers as it did not exclude that IBM hold a dominant position in the market for certain inputs required to provide maintenance services for IBM mainframe hardware and operating system software products.

110. Competition in the market for relational database management systems seems also rather limited according to the French competition authority as one company leads the market.[71] Entry barriers are high because of the large sunk costs due to the necessity of massive investments. Consumers' switching costs are also high as it is costly and time consuming for clients to change their database. So clients have long-lasting relationships with their suppliers because of switching costs.

111. Another characteristic taken into account is the relative size of the aftermarket. A large aftermarket relative to the primary product market increases the potential gains from exploiting customers in the aftermarket. According to CIGREF, it is the case in the software market. Some editors can no longer increase their installed base of customers and therefore they raise prices in the secondary market in order to increase their turnover.[72]

2.2.3 Consumers are Sophisticated but Contracts are not Always Transparent

112. Another criterion is about the sophistication of consumers. Myopic or low informed customers will not assess the cost of a product through its whole life-cycle. In the ICT sector, the prices of

[68] Décision n° 12-D-01 du 10 janvier 2012 relative à une demande de mesures conservatoires concernant des pratiques mises en œuvre par les sociétés Oracle Corporation et Oracle France and Case n° COMP/M.5529 – ORACLE/SUN MICROSYSTEMS.
[69] https://eurocio.org/news/ on the 25/07/2019
[70] Les Echos, « Les directeurs informatiques haussent le ton face aux géants du logiciel », Edition of the 5th of December 2018.
[71] Autorité de la concurrence (2018), Décision n° 18-D-10 du 27 juin 2018 relative à des pratiques mises en œuvre dans le secteur de la maintenance informatique.
[72] CIA-ONLINE, Le CIGREF va accompagner ses membres pour quitter Oracle, 3rd July of 2017.

secondary products or services represent a significant part of the primary goods' prices. For instance, CIGREF indicates that software maintenance is expensive, typically between 17% and 22% of annual license fees.[73] The French competition authority also indicates that maintenance costs for hardware represent each year between 5% and 15% of the primary product's cost. So one can expect that clients take into account the Total Cost of Ownership when they buy products and are not myopic as the French competition authority shown in its decision.

113. However, OEMs' contracts are not always transparent according to some clients. CIGREF indicates for software that "*editors' pricing models do not dissociate between ongoing maintenance (i.e. financing upgrades) and corrective maintenance, even in simple contracts*" and that "*exceptions aside, companies have to buy upgrade rights they often don't need simply to gain access to editors' support services*".[74] According to EUROCIO, the contracts of some editors are also non-transparent and inflexible.[75] CIGREF also states that the maintenance costs of a hardware setup increase rapidly after a few months, "*by 59% according to a recent study by WiPro Product Strategy and Services*", and this does not seem to be foreseen by clients.[76]

2.2.4 The Reputation Effect Might not Prevent OEMs from Increasing their Prices

114. The last criterion is the magnitude of the reputation effect. Reputation is likely to discourage firms to enter into exploitative strategy of their clients' base. When a firm is engaging in exploitation practice, its reputation might be negatively affected and this can reduce its future sales and profits in the primary market.

115. If one looks at OEMs' practices, reputation might not be at stake in some ICT markets. Indeed, EUROCIO and CIGREF stress that OEMs active in the software market are changing their pricing policies and license policies. This results into significantly higher costs for their customers, going from a free licence to a paid one. OEMs also change the scope of the field on which they apply their services support premium.[77]

2.3 Conclusion

116. In ICT markets, competition concerns are far from being excluded from the perspective of economic theory. Clients' switching costs are high at least in the software market but also in the hardware's one as competition authorities have previously acknowledged. In the primary market, clients stress that only a few big suppliers compete and that some markets are mature so OEMs concentrate on the exploitation of their customers' base. Furthermore, customers might be sophisticated but OEMs' contracts are not always transparent and they can change unilaterally their pricing policies. Reputation effects do not seem to have a disciplinary effect on OEMs as they can increase prices without fearing clients' switching to competitors in the short term.

[73] CIGREF (2014), The Secondary Software Market – Risks and Opportunities for Large Companies.
[74] CIGREF (2014), The Secondary Software Market – Risks and Opportunities for Large Companies.
[75] The European CIO Association, EuroCIO Supplier Satisfaction Survey reveals slowdown of cloud adoption and increase of exit strategies and actions due to inflexible vendor licensing and pricing models, Press Release, November 2018.
[76] CIGREF (2014), The Secondary Software Market – Risks and Opportunities for Large Companies.
[77] The European CIO Association, EuroCIO Supplier Satisfaction Survey reveals slowdown of cloud adoption and increase of exit strategies and actions due to inflexible vendor licensing and pricing models, Press Release, November 2018

Conclusion

117. The ICT industry if one of the key drivers of the economy worldwide and in Europe. IT services alone represented more than $280 billion in Europe in 2014. Among the European IT services, ICT aftermarkets are, at least, worth $46 billion and employ more than 220,000 people. Independent service providers account for 15% ($3bn) of the hardware support market and 5% ($1bn) of the software support market, and represent a total value of $4 billion in 2014.

118. Beyond their size, third parties in the ICT market are beneficial for customers, ranging from the public sector and SME's to Multi-Nationals. TPMs provide customers alternative to OEMs' services and quality services. They offer more flexibility of contracts and extend the products' useful life. According to a survey from International Data Corporation[78], more than half of end-user customers choose third parties for maintenance services as they get better offers.

119. The higher quality provided by third parties relies especially on their ability to provide more flexible contracts, multi-vendor support, better availability of parts and maintenance after the End-of-Service-Life set by OEMs. The latter feature might be particularly important as TPMs reduce the total cost of ownership of products and contribute to the Circular Economy promoted by the European Commission by extending life-cycles, reusing hardware, upgrading and reducing waste.

120. Third parties provide customers with at least the same service quality for half of **OEMs'** prices, according to a survey conducted by Microeconomix. The price difference between a TPM and an OEM can rise up to 80% for older hardware. The same holds true for software as stressed by Cigref[79]. Third parties provide their services at lower maintenance fees than software editors. So TMPs exert a competitive pressure on OEMs.

121. The benefits provided by TPMs are particularly decisive in a context where OEMs' clients are increasingly unsatisfied with their services.[80] Thus, it is important that these actors continue to exert competitive pressure on OEMs by delivering good quality services at lower prices. Given the important benefits brought to customers by TPMs and their contribution to the European economy, it is important to remain vigilant with regard to potential behaviors by OEMs that could hinder competition.

122. Indeed, economic theory stresses that competition concerns might arise in secondary markets when customers incur high switching costs as firms have an incentive to adopt "bargain then rip-offs" pricing strategy. It is more likely in mature markets as the incentives to exploit locked-in customers are greater. Moreover, consumers may not accurately foresee the price of aftermarket services. In this case, the empirical academic literature stresses that firms have an incentive to hide aftermarket costs.

123. In the ICT markets, these competition concerns are far from being excluded from an economic point of view. According to clients' surveys, their switching costs are high in the software market but also in the hardware's market as competition authorities have previously acknowledged. In some primary markets (e.g., software), clients stress that only a few big suppliers exist so competition may be limited. Some markets are also mature so OEMs have higher incentives to harvest their customers' base by raising prices.

[78] International Data Corporation, Worldwide x86, Server Attach Rate Study, 2015.
[79] Cigref (2014), The Secondary Software Market – Risks and Opportunities for Large Companies, page 31.
[80] EuroCIO available at https://eurocio.org/news/

124. Furthermore, some customers might be sophisticated, i.e., well-informed of TCO at first glance, but **OEMs' contracts are not always transparent** and they can change unilaterally their pricing policies once customers are locked-in. Finally, reputation effects do not seem to have a disciplinary effect on OEMs as they can increase prices without fearing clients' switching in the short term. Thus, ICT aftermarkets might require special attention from competition authorities in order to make sure that OEMs and TPMs compete on a fair playing field.

Appendix: Competition Cases Review

125. Since the Pelikan/Kyocera case in 1999, the European Commission has developed a framework for assessing whether there could be competition concerns in aftermarkets. It elaborated a test based on economic theory, known as "EFIM test". Most cases have been run under exclusionary theories of harm but the high standard of proof has made successful cases rare. Where the European Commission found that companies might have abused their dominant position in aftermarkets, cases ended with commitments from investigated parties. [81]

126. To our knowledge, parties have proposed commitments in the Novo Nordisk case (1996)[82], the Digital case (1997)[83], and the IBM Mainframes Maintenance case (2011).[84] In other cases, the European Commission found that there were no competition concerns as the links between the fore and aftermarkets were strong, and the primary markets were competitive (Pelikan/Kyocera, Info-Lab/Ricoh[85], EFIM[86], and Luxury Watches[87]).

127. Implementing the EFIM test requires to first define the relevant markets as in any other competition case. This step is not straightforward in aftermarkets because of the complementary nature of the products or services. One has to take into account the interdependence between the primary and secondary markets when applying the SNIPP test[88], i.e., the potential shift of demand in the fore and aftermarkets following a price increase in the secondary market.

128. In the next section, the market definitions retained by competition authorities in aftermarket cases are briefly presented. Then, the EFIM test and how the European Commission applied it are set out.

2.4 Cases Where the European Commission Excluded that Undertakings Might Have Abused Their Dominant Position

2.4.1 The Pelikan/Kyocera case (1999)

129. Following a change in Kyocera's terms of warranty, Pelikan lodged a complaint before the European Commission. It alleged that Kyocera tried to exclude it because it did not release approval for any kind of third party toners nor spare parts. It also alleged that Kyocera offered unlawful rebates to its clients. Pelikan was considering these practices as abuses of dominant position.

130. In this case, the European Commission defined two distinct markets: one for printers and one for Kyocera-compatible consumables. It concluded that Kyocera was not dominant in the primary market of printers as its market share was around 5% and not higher than 20%, if a narrow market definition was chosen. To assess whether it had a dominant position in the aftermarket, the Commission has examined in detail the four criteria of the EMI test. It came to the conclusion that it was not the case and rejected the complaint.

[81] Rejection Letter of 22 September 1999 in Case N°IV/34.330 – Pelikan/Kyocera.
[82] XXVIth Report on Competition Policy (1996), §62.
[83] Press Release IP/97/868 of 10 October 1997.
[84] Case 39.692 IBM Maintenance Services.
[85] Rejection Letter of 7 January 1999 in Case IV/E 2/36.431 - Info-Lab/Ricoh.
[86] Rejection of complaint of 20 May 2009 in case COMP/C-3/39.391 EFIM.
[87] Case n° COMP/E-1/39097/Independent Watch Repairers and Case AT.39097 – Watch Repair.
[88] Small but Significant and Non-transitory Increase in Price.

131. First, it considered that consumers (commercial or non-professional) would take into account the entire costs of printers and cartridges, which they will incur prior to making their decision on the equipment. The main reason was that the cost of toner and inks could amount to as much as 70% of the total cost of equipment (printer plus consumables). According to the Commission, consumers would take into account the cost per page prior to making a purchase. It further noted that this type of information was provided by printer manufacturers in their commercials.

132. The Commission further noted that it was not aware of "*significant possibilities for price discrimination between old and new customers in this market. Since users of old printers can usually use toner for newer models, there seems to be no reason why they should be exposed to an exploitative pricing policy of the manufacturer with regard to toner for old models. Moreover, a 'lock-in' effect with respect to the installed base is unlikely due to the relatively high proportion of consumables in the overall lifetime-price and to the absence of any specific training requirements and/or system compatibility considerations which would prevent such customers from switching to another printer manufacturer's brand.*"[89]

133. It also concluded that a sufficient number of new consumers would switch to competitors' products in case of monopolization in the aftermarket. "*The ratio between the large number of potential new customers compared to the small number of installed Kyocera-users seems to support the Commission's findings*".[90] As for the reasonable time criterion, the Commission considered that new customers would adapt their behavior if Kyocera were raising the price of its consumables, as prices were sufficiently transparent.

2.4.2 The Info-Lab/Ricoh case (1999)

134. The European Commission followed the same reasoning in the Info-Lab/Ricoh case, which was quite similar to the Pelikan one. The Commission defined two distinct markets: a market for photocopier machine and one for filled toner cartridges compatible with Ricoh copiers. Similar to the Pelikan/Kyocera case, the Commission took the view that Ricoh was not dominant in the market for toner compatible with its proprietary system. Ricoh's market share in the market for printers was relatively low (below 20%) and the competition was strong in this market.

135. The Commission found that the printer market and the consumable market were interrelated and that competition in the printer market disciplined the consumable market. The Commission concluded that competition in the primary photocopier market constrained Ricoh's conduct in the secondary market for toners and dismissed the case.

2.4.3 The EFIM case (2009)

136. The European Commission exposed the same arguments in the EFIM case. The European Federation of Ink and Ink Cartridge Manufacturers (EFIM) was an association of independent suppliers of generic ink cartridges. It complained about alleged practices of Hewlett-Packard, Lexmark, Canon, and Epson (so-called OEMs). These practices included denying access to the intellectual property rights of the four companies. Without access to those intellectual property rights, EFIM argued that it could not effectively compete with the OEMs on the market for ink cartridges. EFIM considered that this behavior constituted abusive conduct.

137. The Commission considered there was not sufficient degree of Community interest in the present case and decided not to conduct an in-depth analysis. It just noted "*that none of the four companies is prima farcie in a dominant position in the primary market* [and] *all four*

[89] European Commission, Case No IV/34.330, Rejection Decision, § 66.
[90] Op.cit., § 67.

manufacturers are subject to intense competition in the primary market for printers."[91] It also recalled its findings in the cases of Pelikan and Info-Lab and decided to dismiss the EFIM's complaint.

2.4.4 The Luxury Watches case (2014)

138. The fourth case related to watch manufacturers. The European Confederation of Watch and Clock Repairers (CEAHR[92]) lodged a complaint against several watch manufacturers for allegedly refusing to supply spare parts to independent watch repairers. They alleged that the practices aimed at foreclosing independent repairers and constituted an abuse of dominant position. The Commission initially dismissed the case as there was insufficient Community interest. [93] [94]

139. In this case, what was at stake was the market definition. Indeed, the General Court annulled the decision of the Commission on the ground that it did not properly define the relevant markets. [95] Therefore, the Commission opened proceedings against the watch manufacturers in 2011. It defined several distinct markets: the primary market for the sales of prestige watches and multiple separate markets for spare parts each associated with a particular brand.

140. For the aftermarkets definition, the analysis of the Commission relied on the facts "*that buyers of watches are unlikely to make informed decisions when taking into account the lifetime cost of a prestige watch since (i) repair needs are irregular and difficult to predict, (ii) buyers often neglect maintenance services, (iii) lifetime repair and maintenance services costs are not particularly significant in comparison with the price of the prestige watch, (iv) many buyers of prestige watches are insensitive to price and are unlikely to consider aftersales costs and (v) there is a lack of price transparency for repair and maintenance service*".[96]

141. It further stressed that spare parts are often specific to a particular brand and require specific technical knowledge. Furthermore, spare parts do not seem to be interchangeable due to difference of watches' size and design and customers seem to prefer original spare parts. Therefore, the Commission concluded on the existence of multiple separate markets for spare parts each associated with a particular watch brand.

142. The Commission did not apply the EFIM test in the case. It rejected the complaint on the ground that watch manufacturers had decided to introduce selective repair systems and because spare parts are not generic. Manufacturers appoint authorized third-party repairers on the basis of specific qualitative criteria such as their ability to provide quality repair services. These selective systems rely on objective justifications: preserving the brand image, high and uniform quality among repairers and preventing from counterfeiting. It also stressed that these systems are not restrictive as they do not prevent authorized repairers from competition.

[91] Case COMP/C-3/39.391 EFIM, § 23.
[92] Confédération Européenne des Associations d'Horlogers-Réparateurs.
[93] Case COMP/E-1/39097 – Watch Repair. Decision C(2008) 3600.
[94] The market segment had a limited size, national competition authorities were well place to pursue the case and the likelihood of anticompetitive infringement appeared limited.
[95] Judgement of 15 December 2010, CEAHR v Commission, T-427/08, ECR, EU:T:2010:517.
[96] Case AT.39097 – Watch Repair, § 89.

2.5 Cases Where the European Commission Did Not Exclude that Undertakings Might Have Abused Their Dominant Position

143. To our knowledge, little information about cases where the Commission has not excluded that undertakings abused their dominant position has been publicly released. Therefore, the information available on these cases is briefly summarized in the next sub-sections.

2.5.1 The Novo Nordisk case (1996)

144. Novo Nordisk was a major insulin producer, which introduced a new method of insulin self-injection. Other companies were also producing similar products, some of which were compatible with the Novo Nordisk system. Novo Nordisk disclaimed liability for the malfunction of its pen products, or refused to guarantee such products, when used in conjunction with the compatible components of other manufacturers. Following a complaint by a medical device manufacturer, the Commission found that Novo Nordisk abusively disclaimed liability or refused to guarantee such products. Novo Nordisk agreed no longer to use disclaimers in such circumstances and the Commission closed the case.

2.5.2 The Digital Case (1997)

145. Digital was one of the largest hardware and software suppliers in the world. It was also supplying software and hardware maintenance services for its systems (and for other systems as well). Following a third party maintenance companies (TPMs) complaint, the Commission investigated the case. It sent to Digital a statement of objections and alleged that it had abused its dominant position in the European markets for software and hardware services for its systems. The alleged practices were:

- Tying of the supply of hardware and software services where the prices of software services were more attractive when bundled with hardware services than on a stand-alone basis;
- Discriminatory practices consisting of offering different prices for the same software services or the same price for very different software services;
- Exclusionary practices targeted at the TPMs.

146. Digital contested the market definition and the allegation of market dominance. However, it modified its supply and pricing policy for computer maintenance services. It agreed among others to the following commitments:

- To offer the hardware services for its systems on a stand-alone basis and to price software services on a single flat fee per central processing unit. The price of the package will not be less than 90% of the sum of the individual component list prices;
- To ensure a transparent and non-discriminatory discount policy, to grant price reductions on individual services and not on the package and to ensure that rebates do not foreclose or distort competition;
- Not to restrict its distributors from distributing software updates and services to any person with licensed software.

2.5.3 IBM Mainframes Maintenance Case (2011)

147. To our knowledge, the IBM case is the most publicly documented case. The Commission opened proceedings against IBM following information received from TPMs. IBM was manufacturing and selling computer hardware and software and offered outsourcing services, hosting services and consulting services.

148. In its preliminary assessment of the case, the Commission defined several relevant markets. It first considered a primary market for large corporate servers. It also considered two possible aftermarkets: one for inputs required for the maintenance of IBM mainframes that only IBM can supply and one for the provision of IBM mainframe hardware and operating system software maintenance services.

149. The Commission then considered whether the two possible aftermarkets constitute separate markets or a system market. According to the European Commission preliminary assessment, the two markets were distinct from the primary market: "*if secondary products such as spare parts or operating system software updates for different brands are incompatible or not substitutable, and a moderate increase in the aftermarket prices does not affect customers' choices in the primary market (for instance because of high switching costs, "lock-in" effects or relative unimportance of prices in secondary markets), then there could be a separate market for the primary good and brand-specific aftermarkets*".[97]

150. The European Commission considered that it seemed that switching to secondary products of other producers was not possible and that there were high switching costs in the market for the primary product. It further concluded that IBM might hold a dominant position in the market for certain inputs required to provide maintenance services for IBM mainframe hardware and operating system software products as it was the only supplier of these inputs. It also noticed that entry in the market for inputs would be costly and would require IBM's agreement due to intellectual property rights.

151. The Commission took the view that "*IBM imposed unreasonable supply conditions, with regard to these inputs, on its competitors in the maintenance market, thus putting them at a competitive disadvantage*".[98] Three practices raised the Commission's concerns:

1. IBM gave preferential treatment to its customers in comparison to TPMs' one. It restricted access to mainframe spare parts for TPMs.
2. Certain parts of the mainframe were subject to an exchange-only policy. Therefore, TPMs could not store those parts and defective parts had to be returned to IBM within 48 hours after delivery. Otherwise, TPMs had to pay penalty.
3. IBM appeared to have delayed access and hide information on the existence of certain updates. Thus, TPMs were at risk of being unable to provide their customers with adequate answers to technical issues.

152. In response to the Commission's concerns, IBM commits to maintain the expeditious availability to TPMs under commercially reasonable and non-discriminatory terms and conditions. IBM had also to enter into a contract with any TPM interested in the maintenance of the mainframe. The contract had to be based on reasonable terms and conditions.

2.6 Conclusion

153. The number of antitrust cases related to aftermarkets in Europe is rather limited. The European Commission has set a framework based on economic theory to assess whether competition concerns might arise in those markets. So far, the Commission has either concluded that firms did not hold a dominant position in the secondary market as the primary markets were competitive or that they might have a dominant position but settle the cases with commitment. Those cases show that analyzing competition in aftermarkets is not straightforward and a case by case analysis is necessary.

[97] Case COMP/C-3/39692-IBM Maintenance Services, § 22.
[98] § 31.

Deloitte.

Today's Agenda

11h45	Welcome and coffee
12h00	Make a change, how "Circular Economy", "Reparability" and "Programmed Obsolescence" demand policy actions to create an open ICT market. By Dan Shefet.
12h15	Introduction of the Free ICT Europe Foundation, by Tomas O'Leary, president.
12h20	Launch of "The ICT Aftermarkets in Europe" report commissioned by Free ICT Europe and prepared by Microeconomix, an entity of Deloitte. By Tomas O'Leary.
12h45	Q & A, by Tomas O'Leary and Jan Hoogstrate
13h00	Interviews

ABOUT FREE ICT EUROPE

Free ICT Europe is a not-for-profit foundation actively promoting the ICT Secondary Market with European policy makers. Our objective is to secure the right of ownership and the freedom for consumers and businesses alike to freely choose their providers to trade, maintain and repair by:

- Address the restrictive practices undertaken by Original Equipment Manufacturers (OEMs)
- Ensure serviceability is included as a key component of the EU Digital Agenda
- Connect the Circular Economy with independent experts in extending life-cycles
- Promote common standards for reuse and resale of equipment and software
- Achieve contract transparency to protect end users against unfair business practices.

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