

The unbundling ruling in EU antitrust proceedings against Microsoft*

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Introduction

In addition to requiring that Microsoft disclose technical information about the Windows desktop operating system to vendors of alternative server operating systems, in its current antitrust proceedings versus Microsoft, the European Commission also ruled that the company make available a version of Windows OS without Windows Media Player, citing Article 82 d of the EC Treaty (abuse of dominant market position).¹ The core of the economic problem addressed by the unbundling decision is as follows. By integrating the Windows Media Player into the Windows OS, the customer receives a package that enables him/her to play audio and video files without additional usage fees. That means that providers of comparable technologies are faced with the problem of trying to sell something that the Windows customer already possesses. The Commission is concerned that Microsoft's dominance of the desktop operating system market will therefore be passed on to the market for multimedia software (players, servers, file formats). The Commission claims that this would constitute a classic stifling of competition through bundling agreements (leveraging effect of market power transfer). It is questionable, however, whether the selected remedies are appropriate in the light of their unintended side-effects and whether the instruments take sufficient account of the special characteristics of markets for software and of operating systems in particular.² The discussion therefore commences with an introduction on the basic principles underlying the supply of software products.

Goods characteristics and forms of supply

In order to clarify issues relating to the optimal supply, goods are typically categorized into four classes according to the criteria of excludability and rivalry as depicted in Table 1.

Rivalry	Excludability	possible	impossible/too expensive
	yes	Private goods (e.g. bread)	Quasi-collective goods (e.g. deep-sea fishing stocks)
no	Club goods (e.g. TV programs, software)	Public goods (e.g. national defense)	

Table 1: Goods classes

The criterion of excludability refers to whether it is possible, at reasonable cost, to exclude potential users of a good who do not contribute to its production costs. If it is also

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¹ EU Commission ruling of March 24, 2004, COMP/C-3/37.792 Microsoft.

² For a discussion of the competition policy debate on the highly controversial pros and cons of bundling from the consumer perspective, see J. Tirole: The Analysis of Tying Cases: A Primer, in: Competition Policy International, Vol. 1 (2005), No. 1.

possible to exclude non-payers by means of civil law, then no state intervention is required to organize buyers and thus the level of demand. Copy protection measures in the software sector are a cost-efficient exclusion mechanism under civil law by means of which payers (licensed buyers) and non-payers (free riders) can be easily distinguished from one another.

The analysis of the rivalry aspect deals with whether or not a widening of the user group of a certain product is irrelevant for users of that product (non-rivalry) or whether such additional usage is perceived as detrimental (rivalry), as is obviously the case with individual goods (a loaf of bread can only be eaten once). Since, due to network effects, the benefits derived from software can even increase with growing numbers of users, there is no rivalry among software consumers over existing software. At the same time, however, software is a scarce good, because limited resources must be deployed in developing computer programs, so that not all user requirements can be satisfied. As a result, people really care about the nature and quantity of software that is developed. Consequently, there is always *ex ante* rivalry over the next software generation.

Due to the characteristics of excludability and *ex post* non-rivalry, software falls into the category of club goods. Also taking into consideration that software is excludable under civil law, it becomes clear that software can be supplied either by private clubs (voluntary cooperative grouping of all users) or by commercial firms. Since the club solution reaches organizational limits in mass markets (transaction cost problem), private supply from software companies has gained widespread acceptance. Not infrequently, the specific production conditions (high first-copy costs and associated license-related cost degression effects) lead to dominant market positions, which raise certain competition policy questions about the efficiency of the respective markets.

Supply quantity and bundling

The issue of bundling is directly relevant to determining the optimal supply quantity of a certain software program. For this purpose, we must first define the concept of supply quantity in software markets more precisely and differentiate it from the installed basis of a computer program. The economically relevant software supply level must not be confused with the number of licenses sold. Rather, it is a question of the functional scope (features) of the available software. By analogy, the "quantity" of a news program is measured by the sum of its reports (information content) and is independent of the number of viewers. Conceived in this way, an expansion of software supply is inevitably associated with marginal costs, just as it is impossible to extend news broadcasting time without incurring additional costs. Increasing economies of scale are extremely unusual for software production, and falling average costs, which are often confused with scale effects, only apply to the numbers of licenses sold.

Since every consumer (software user or television viewer) can use any quantity of a pure club good without any loss of value to other consumers, the degree to which a single unit of the good (software function and/or news report) is valued by the demand side, is reflected in the sum of the maximum willingness to pay (= reservation prices) of all potential users of this unit. Therefore, in order to construct a market demand curve, a vertical aggregation of the individual demand curves for all users is necessary. In this respect, there is a basic difference between collective (club or public) and private goods markets, for which aggregate demand (units demanded, depending on the price) is derived from the horizontal aggregation of individual demand curves. In the case of collective (non-rival) goods, the relevant question is: what is the value of a single unit to all club members? Conversely, in the case of individual goods, the quantity required to satisfy all consumer preferences at a given price is at issue.

In order to decide whether it is economically efficient to manufacture an additional unit of a certain individual good, it is sufficient to find a single consumer whose willingness to

pay at least covers the costs incurred, i.e. for whom the price lies below his reservation price. By contrast, an additional unit of a club good always makes economic sense whenever there is an adequate number of people within the group, such that the total sum of their potential payments (= reservation prices) covers the costs of production.

From a static-efficiency perspective, it is economically optimal to continue providing a piece of software, such as a desktop operating system, with additional functions as long as the marginal costs incurred can be covered by the users' combined additional willingness to pay. However, according to the EU Commission, an expansion of the software quantity is then nothing more than bundling. If user preferences are homogeneous, the incentives are compatible with the economically optimal software quantity (= market limit for bundling), even for a private monopolist. Thus, the main allocation problem arising from monopolistic positions in private goods markets, to lower supply strategically, does not apply to the commercial production of club goods. If a provider exceeds the economically optimal quantity of goods in the bundle, this impacts negatively on its own profit, because the additional revenue thus generated is not sufficient to cover the increase in costs. However, if user preferences are heterogeneous, that is, where there are widely varying individual reservation prices, the commercial firm does not provide the optimal quantity if price discrimination is not possible. This is because an equal price for all consumers makes it impossible to determine the true total amount that people are willing to pay for a certain software function. If the price is set relatively high, then the willingness to pay will be largely exploited in terms of those buyers who place a high value on the function in question. On the other hand, this will eliminate demand from potential buyers who do not value the function as highly and who are not willing to pay what they consider to be excessive prices (market price exceeds their reservation price). The costs of development are thus not fully covered. However, if the provider chooses a lower price, while this will exploit demand from a large number of users, it also means sacrificing a large portion of revenue from users with high reservation prices, who then also pay only the lower price.

Bundling and discriminatory pricing

The fact that different buyers attach different values to the various functions of an operating system (which, however, are offered as part of a package) leads to implicit price discrimination. This makes consumers more homogeneous in terms of their willingness to pay for the overall package.³

User	A	B	Market (A and B)
Component 1 (e.g. Media Player)	7	4	8 (price = 4)
Component 2 (e.g. Security Center)	4	9	9 (price = 9)
Component bundle	11	13	22 (price = 11)

Table 2: Reservation prices and market revenues for system components (numerical example)

The following example may illustrate this: Suppose two users (A and B) have the reservation prices listed in Table 2, for two different components of the Windows OS. The prices, on which the market sales in the last column are based, are the result of a revenue-maximizing strategy on the part of the supplier. This is also a profit-maximizing strategy, since the costs are independent of the number of users. The users' respective

³ Cf. W. J. Adams / J. L. Yellen: Commodity Bundling and the Burden of Monopoly; in: Quarterly Journal of Economics, Vol. 90 (1976), p. 475 ff.

reservation prices are the possible solutions in determining the optimal pricing strategy. If the provider sets the price for the first component at 7, user B will be deterred from buying the product and total revenue will correspond only to the revenue from user A (7). At a price of 4, user B will (only just) also want to buy the product, and, together with user A, who can now gain a consumer surplus of 3, this will yield a total turnover of 8. In the case of Component 2, a price of 9 is optimal for the supplier. While user B still wants the product at this price, a price of 4 would also motivate user A to buy, but would only yield total revenue of 8. Independent of the actual numerical value, the decisive factor in this example is that different types of users value the system components differently and no individual buyer-based price discrimination is possible.

Assuming that the costs of each individual component amount to 10, in the absence of discriminatory pricing, the willingness to pay will be insufficient to cover the production costs. If, however, consumers were willing to disclose their true willingness to pay (which they generally will not do) and if they accepted selective pricing (without evading it through arbitrage), then both components could be supplied profitably to the market and yield total revenues of 11 (7 + 4) and 13 (4 + 9), respectively. However, since such consumer behavior cannot be expected (especially not in anonymous software markets), both users would remain unsupplied, which would not be economically optimal.

On the other hand, a bundle could be sold profitably in the market at a price of 11, which would benefit both buyer and seller (increased welfare). Thus, from the perspective of collective-goods theory, bundling can also be interpreted as an instrument for organizing demand. Even if the above example is purely hypothetical, it nonetheless illustrates that bundling cannot be interpreted as a sales instrument that is intrinsically harmful to consumers.⁴

Pricing and monopoly rent

In terms of software pricing, above and beyond covering its production costs, a monopolist can extract the entire consumer surplus by setting the price for the overall package closely the buyers' reservation prices (the more homogeneous the consumers, the more successfully this can be accomplished). However, this is based on the assumption that the provider is completely immune to competition, a situation which does not exist in real software markets. In the real world, market entry costs for potential competitors and penetration costs for existing ones form an effective ceiling to the exploitation of consumer surplus. This is also the reason why the price of the Windows OS is well below the reservation prices of the large majority of consumers. Otherwise, a marginal rise in the license price would eradicate a large part of the demand, and this is obviously not the case. Due to the upheavals that accompany any technological advance, the software industry is much more strongly characterized by a sequence of dominant providers over time (in the extreme, natural monopolists) than is the case for many public utility companies, with, for example, rigid, partially state-protected monopolistic structures. Thus, competition in software markets is often a Schumpeterian contest for the market throughout the duration of a given technological stage, resulting in weak market leaders who cannot sit back and relax even when they have achieved a certain market position.⁵

However, the distribution of consumer surplus does not play a critical role in terms of static-efficiency. Inefficiencies only occur when users are deterred from use by the high bundle price even though their willingness to pay is sufficient enough to contribute to the

⁴ A model of the welfare effects of component bundling with the Internet Explorer and Windows operating system as examples can be found in M. T. Clements: System Components, Network Effects, and Bundling; in: Topics in Economic Analysis & Policy, Vol. 2 (2002), No. 1. However, the results seem quite ambiguous.

⁵ Cf. J. Katz: To Market, To Market: Strategy in High-Tech Business; in: Regional Review, Federal Reserve Bank of Boston, Vol. 6 (1996), No. 4.

development of the software components which they use. In terms of Windows OS, this argument would apply to those users who do not want the Windows Media Player at all (reservation price equals zero) and who are deterred from using the entire operating system by the proportion of Windows Media Player development cost in the total price for the full system. Thus, this group's reservation price is less than the price of the Windows license by that proportional amount of the Windows Media Player component. However, this probably only affects a very small number of users and is apparently also viewed as irrelevant by the European Commission.

Since, unlike private goods, an increase in the number of users of collective goods does not accompany additional economic resource consumption (marginal costs of a further license is zero), a clear distinction should be made between the economic efficiency effect of bundling in the case of software and that in traditional goods markets. For instance, if a dominant electricity supplier makes the conclusion of an agreement conditional on the simultaneous purchase of an electronic appliance, the factor input needed to produce the electronic appliances in all cases in which the electricity customers would not otherwise purchase such an appliance of their own accord, would constitute a waste of scarce resources. This is not the case with software components, provided the development costs of each component are covered by the willingness to pay of the user club as a whole. Even if individual consumers do not use certain software components at all, this is not a waste of resources.

Static competitive aspects in component markets

In terms of static competition in market B, it should be noted that the bundling activities of a dominant supplier in market A (in this case, desktop operating systems) generally pose a problem only if market B (in this case, multimedia software) is oligopolistic. However, if the prevailing competition is perfect, it will not be possible to successfully expand market power from the monopoly in A to a competitive market B (Chicago argument). If, by contrast, an external provider were able to establish a monopoly in Market B, consumers would be worse off than would be the case given an integrated monopoly, since the monopoly price of the package is smaller than the sum of the individual monopoly prices.

With oligopolistic markets, which can be assumed to prevail in the area of file formats and streaming technology for audiovisual content, bundling does indeed constitute a competitive advantage for producers of operating systems, since alternative providers of comparable multimedia software are faced with the problem that Windows users are generally unwilling to pay for a further multimedia component which they perceive as homogenous.⁶ However, in the case of homogenous alternatives, there is no additional economic benefit, implying that allocation is not distorted. Generally speaking, this is true for all software products that merely copy the functions of operating system components. You only pay once for the "invention of the wheel".

Innovative incentives and barriers to market access

Sellers of alternative multimedia software have competitive advantages if they (1) acquire a technological edge through innovation or (2), given heterogeneous user preferences, if they adapt their product more effectively to certain user groups. In economic terms, this means that innovation incentives are not generally eroded, but rechannelled into the development of products that complement the operating system or improve specific aspects in qualitative terms. This may occur through the development of technology

⁶ Cf. B. Nalebuff: Bundling as an Entry Barrier; in: Quarterly Journal of Economics, Vol. 119 (2004), No. 1, as well as the literature discussed there.

with the distinct intention to sell it to the bundling firm that can then integrate it into the next generation of the operating system.⁷

As regards the commercial exploitation and enforceability of these innovations, it should be noted that there are practically no technological barriers to market access. The fact that the Windows Media Player is already available and alternative products have to be installed first, does not constitute a valid reason for state intervention. Direct access to the customer (or from the customer to the seller), which, for the market under discussion here, is possible with a few mouse-clicks, may, in comparison with many classical goods markets, be seen as especially 'open-door'. The Commission would have a particularly difficult task were it to attempt to bring about, in other product markets, anything approaching the unhindered market access in internet-backed software markets.

Were one to argue that some customers lack the technical awareness needed to install alternative products, the question arises as to how these consumers could possibly benefit from an operating system entirely without a playback function for media files (regarding OEM installations, such technical hurdles are of no significance anyway).

If these dynamic competitive aspects are also considered, it is not surprising that alternative providers have been able to assert themselves in the multimedia software market and that so far, there has been no evidence of monopolization or the suppression of market entry as the models without technical progress and dynamic competition would suggest. According to a recent study by Frost & Sullivan, Microsoft's global market share for streaming-capable multimedia formats in 2003 stood at 38.2 %, followed by Apple (36.8 %) and RealNetworks (24.9 %), with the outstanding performance of Apple's QuickTime format being attributable above all to technological reasons (early implementation of MPEG-4).⁸

Effectiveness of the regulation

Apart from the issue of whether the regulation considered by the EU Commission with respect to the Windows OS is advisable, it is important to consider the effectiveness of this measure and the consequences. The Commission's call for a Windows version without Windows Media Player is likely to come to nothing as long as the two versions continue to be sold at the same price. If this is the case, customers will continue to favor the previous version of Windows – regardless of whether or not they use Windows Media Player as their principle multimedia software. The contrary view held by Ayres and Nalebuff,⁹ according to which providers of alternative Media Players would make the unbundled version of Windows cheaper for OEMs and final customers through cross-subsidization, appears doubtful. In their opinion, the principal objective of regulation should be to destroy the ubiquity of the Windows Media Player, thus encouraging providers of audiovisual content to encode their material in media formats other than that developed by Microsoft. However, the authors contradict themselves by simultaneously assuming that the providers of alternative Media Players would be acting in the customers' best interests were they also to license the Windows formats, since this would again lead to the omnipresence of Windows media formats. Consequently, it seems clear that enforcing the objective associated with the unbundling regulation would involve either price regulation or a complete ban on integration. The present decision would therefore herald the beginning of a comprehensive spiral of regulations, of which the first signs are al-

⁷ Cf. D. Croson / A. Saunders: Competition and Cooperation in the Bundled Software Market; WISE Conference Paper (2004), <http://opim-sun.wharton.upenn.edu/wise2004/sun221.pdf>.

⁸ Cf. J. Dalrymple: Who's Winning the Streaming Media Wars?; in: PCWORLD (18 June 2004), <http://www.pcworld.com/news/article/0,aid,116589,00.asp>.

⁹ Cf. I. Ayres / B. Nalebuff: Going Soft on Microsoft? The EU's Antitrust Case and Remedy; in: The Economists' Voice: Vol. 2 (2005), No. 2, <http://www.bepress.com/ev/vol2/iss2/art4>.

ready evident (e.g. even interfering in the naming of the unbundled version of Windows). Whether or not the regulatory authorities would be capable of determining the cost information relevant for an appropriate price adjustment, taking into account appropriate risk premiums, is doubtful, given the short innovation cycles that are typical of the software industry. A complete ban on the integration of Windows Media Player and Windows implies an even more far-reaching intervention and may, in extreme cases, result in a state-induced technical standstill. This could occur if the decision as to what constitutes the functions of an operating system are decided by the courts in the future, and at the same time, where some uncertainty prevails, the objectives of rival component providers even placed above the interests of consumers.

Operating systems as a business platform

If the regulatory approach of the EU Commission is extended consistently to other components of a dominant operating system, this will increasingly undermine the platform quality (standardization and integration of basic functions). The platform character of an operating system facilitates market access for software companies that use the technological platform as a basis for creating value added. Also, through access to the functions of the standardized operating system, companies develop complementary software products that are either used as application programs or extend the functions of the operating system.¹⁰ As the operating system becomes increasingly fragmented, these companies, which were so far able to ensure the executability of their programs by testing them for Windows compatibility, will have to adapt to more heterogeneous system landscapes. This, in turn, increases development expenditure and thus impedes market access, especially for smaller companies. Therefore, unbundling does not in itself improve the competitive opportunities for third-party software companies, but leads to a trade-off between the more simple access for providers of substitute and complementary software for the operating system platform.

Conclusions

Whereas enforceable bundling strategies in traditional goods markets typically represent a clear indication of economically detrimental and anticompetitive practice, the situation is different for operating system markets. On the one hand, they give platform producers a competitive advantage. On the other hand, they lead to an extension of functions within a software product, due to the club-good nature of software itself. In addition, the standardized platform also performs an economically vital function for providers of complementary software in that it serves as a basis for creating value added. It is therefore highly questionable whether the static market imperfection deriving from the platform character should be countered by modifying a product that is problematic in terms of competition policy. This aspect will become all the more relevant, the more comprehensively the regulation proceeds and the more the argumentation of the EU Commission is applied to progressively more components of the Windows OS.

In principle, it should always be borne in mind with respect to any market or company regulation, that the diagnosis of market imperfection or the identification of opportunities for abusing market power may merely present a necessary, but insufficient justification for intervention through competition policy, since the detrimental side-effects of state intervention may outweigh the intended promotion of competition. Hence, for regulatory

¹⁰ See also, the detailed notes of the US Court of Appeals, which, in "United States vs. Microsoft" takes a rather sceptical view of the per-se ban on bundling in platform product markets with respect to the integration of the Internet Explorer into the Windows operating system (U.S. Court of Appeals for the District of Columbia Circuit, No. 00-5212/00-5213, Ruling of 28 June 2001).

reasons, it may be advisable to dispense with state intervention, despite the identified market imperfections and market power constellations, especially if static competitive effects conflict with distinct incentives for innovation in highly dynamic markets.