

# **Microsoft, Refusal to License Intellectual Property Rights, and the Incentive Balance Test of the EU Commission**

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**Abstract:** This article contributes to the analysis of refusal to license cases as abuse of a dominant position pursuant Article 82 EC from an economic perspective. In the Microsoft case, the the European Commission introduced an “Incentives Balance Test” for assessing whether the refusal to give access to interface information can be justified by the argument that this information is protected by Intellectual Property Rights (IPRs): The Commission argued that if the overall innovative effects evoked by a compulsory license are significantly higher than without this access, the IPR owner is obliged to license. This should be assessed through balancing the different incentives to innovate of the dominant firm and its competitors. In the paper we pursue two objectives: Firstly, we analyze to what extent the decision of the Court of First Instance, which confirmed the decision of the Commission, helps to clarify the criteria in refusal to license cases; in fact, it is disappointing in this regard. Secondly, we demonstrate that the basic idea of the Incentive Balance Test can be interpreted as a test whether the specific IPRs of the dominant firm can be defended from the perspective of the economics of IPRs. This implies that Article 82 allows competition law to correct economically not optimal IPRs through a specific economic analysis. This is followed by a broad overview on theoretical and empirical insights from economics of IPRs, innovation economics and competition and network economics that can help to develop a more general and sophisticated Innovation Effects Test that can be applied in Article 82 refusal to license cases.

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## 1. Introduction

Last year the European Court of First Instance (CFI) upheld the decision of the EU Commission that Microsoft infringed Article 82 EC by not licensing its interface information of its working group server operating system to competing software companies to ensure interoperability.<sup>1</sup> Therefore Microsoft is not allowed to refuse the access to this information with the argument that it is protected by intellectual property rights (IPRs). For many scholars this clear judgment of the CFI was as surprising as the ensuing decision of Microsoft to accept this judgment by not appealing to the European Court of Justice (ECJ) and by announcing the disclosure of the required information. Beyond its impact on Microsoft and the software industry, this judgment of the CFI might be most interesting in regard to the clarification of the criteria for solving conflicts between IPRs and competition law. In the *Magill* case, the ECJ has decided that under exceptional circumstances the refusal to license copyright protected information by a dominant firm can be an infringement of Article 82 EC, i.e., European competition law can limit (the exercise of) IPRs.<sup>2</sup> However, the criteria under what conditions this is possible are so far not developed clearly. Especially from an economic perspective, the judgment of the CFI would have provided a great opportunity to clarify these criteria, because in the Microsoft decision of the EU Commission an innovative economic approach was used. This approach dealt with the problem of balancing the advantages and disadvantages of imposing mandatory access to this interoperability information, the so-called "Incentives Balance Test".

The basic idea of this Incentives Balance Test consists of comparing the impact of a compulsory license for this interoperability information on the incentives for the innovation of new software both for Microsoft and for its competitors on the market for application software. If the positive effects of a compulsory license on the innovation incentives for the other software firms outbalance any negative effects on the innovation incentives for Microsoft compared to the situation of refusing the access to this information, then such a limitation of IPRs would be justified within Article 82 EC. Therefore the impact of the compulsory license on the aggregated innovation incentives for the whole industry would be the decisive criterion. Such a test would be entirely in line with the basic philosophy of the "more economic approach" as the theoretical basis of recent reforms of European competition policy, because the "economic

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<sup>1</sup> European Commission decision in case COMP/C-3/37.792 Microsoft, C(2004) 900 final and Judgement of the Court of First Instance in Case T-201/04, 17.09.2007

<sup>2</sup> RTE and ITP v. European Commission ("*Magill*") (C-241/91 P & C-242/91 P), 1995, E.C.R. I-743.

effects" (here: on innovation) are seen as the crucial criterion for "refusal to license" cases. Therefore the Incentives Balance Test can also be viewed as a contribution to the concurrent efforts to apply the "more economic approach" to Article 82 EC.

How should this Incentives Balance Test be assessed from a legal and an economic perspective? So far both the economic and the legal literature on this new approach for solving this conflict between IP law and competition law are very limited. Besides contributions which reject this approach entirely or view it as irrelevant, there are also authors who (despite specific criticisms) acknowledge its innovative character and emphasize its potential for the future legal development in refusal to license cases.<sup>3</sup> The results of our article would support the latter view.

The main objectives of this article are two-fold:

(1) We want to analyze to what extent the Microsoft decision of the CFI has contributed to the clarification of the criteria of the legal test for refusal to license cases in Article 82 from an economic perspective (section 2). This investigation requires an analysis of the evolution of the jurisprudence of European courts in regard to limiting IPRs of firms with a dominant position. One of our main results is that the CFI (despite its clear backing of the decision of the EU Commission) has not used its decision in this landmark case Microsoft to clarify the legal test for refusal to license cases and its position towards this new economic Incentives Balance Test.

(2) In the second half of the article we analyze from an economic perspective how the Incentives Balance Test of the Commission can be interpreted and made more comprehensive as an instrument for solving conflicts between competition and IP law (section 3). First, we demonstrate that economically the Incentives Balance Test is fairly equivalent to the question, whether the IPRs in this specific case are defined properly. That is, a compulsory licensing can only be justified, if the IPRs themselves are ill-defined in respect to the promotion of innovation. Secondly, we argue that such a test must be much broader and more differentiated than it has been suggested so far in the decision of the EU Commission. Therefore, we will give a broad overview about relevant theoretical and empirical insights from the law and economics of IPRs, (evolutionary) innovation economics, competition and network economics that can be used for developing a more comprehensive set of economic criteria for assessing

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<sup>3</sup> See Killick 2004; Lévêque 2005 and Vezzoso 2006.

the overall innovation effects of a compulsory licensing of IPRs. However, the detailed elaboration of a specific legal test for such an Innovation Effects Test (as we would like to call it) is beyond the scope of this article.

## **2. Has the Microsoft Decision of the Court of First Instance Clarified the Assessment Criteria in Refusal to License Cases in Article 82 ?**

Before starting to analyze the Microsoft decision we briefly give an overview on the development in European case law regarding refusal to license (and refusal to deal) cases in Article 82 EC. After a brief introduction in the Microsoft case we examine whether both the European Commission and the Court of First Instance decided in line with the previous case law and whether they introduced significant improvement or changes.

### **2.1 European Case Law before the Microsoft Case**

In *Volvo/Veng*<sup>4</sup>, the European Court of Justice (ECJ) firstly recognized that a refusal to license an intellectual property right may constitute an abusive behaviour.

In the *Magill* case,<sup>5</sup> three TV companies refused to license their copyright protected program information to Magill that wanted to offer a comprehensive weekly TV guide in the UK and in Ireland. So far, the individual companies had offered solely guides for their own programs. The ECJ confirmed the decision of the Commission that the refusal to license these listings is abusive as it prevents the emergence of a new and as well needed product. Moreover, the refusal to license would enable the TV companies to leverage their market power in broadcasting activities to a secondary market, namely the market for TV guides (Dolmans et al. 2007, p. 119). Thus, in the *Magill* case the ECJ found that under *exceptional circumstances* the use of IPRs might be abusive and established criteria to identify these exceptional circumstances (*Magill*, para. 50 et seq.). If these criteria are met, the exercise of the intellectual property right infringes upon Article 82 EC (Thyri 2005, p. 389). According to these criteria, refusal to license intellectual property is abusive when (i) it prevents the appearance of a new product

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<sup>4</sup> See *AB Volvo v. Erik Veng (UK) Ltd.* (C-238/87), 1988 E.C.R. 6211.

<sup>5</sup> See *RTE and ITP v. European Commission ("Magill")* ( C-241/91 P & C-242/91 P) [hereinafter *Magill*], 1995, E.C.R. I-743.

for which a consumer demand exists, (ii) no objective justification for the refusal exists and when (iii) by this conduct the owner of the rights reserve a secondary market to themselves by excluding all competition on that market (Magill, para. 54-56).

As an alternative criterion to the new product criterion, the CFI introduced in the *Tiercé Ladbroke*<sup>6</sup> case the requirement of an essential facility function to infringe Article 82 EC. Tiercé Ladbroke, a Belgian company book maker on horse races abroad, required a license to show pictures and sounds of French horse races. PMU und PMI, the owners of these intellectual property rights, rejected to license the pictures and sounds. In consequence, Ladbroke accused PMU/ PMI of infringing Article 82 EC, because they abused their dominant position in the French market and impeded the introduction of a new product to the prejudice of the Belgium customers. In its decision, the CFI established, that it might be possible that the refusal to license an IP protected service may in fact constitute an abuse if

“it concerned a product or service which was either essential for the exercise of the activity in question, in that there was no real or potential substitute, or was a new product whose introduction might be prevented, despite specific, constant and regular potential demand on the part of consumers.” (Ladbroke, para. 131)

Nevertheless, in this case the CFI concluded that the TV coverage of horse races in France is not essential for the business of book making, especially because it is carried out after the bets are taken (Ladbroke, para. 132).

In the *Bronner* case no intellectual property rights were involved. Mediaprint, a dominant newspaper publisher in Austria, rejected to open its distribution channels to Bronner, who published a newspaper with only local diffusion and a low circulation. Thus, Bronner accused Mediaprint of infringing Article 82 EC. It argued that the distribution system was essential to compete in the market and that it were too costly for Bronner to reproduce this system (Castaldo/ Nicita 2005, p. 1). In the Bronner judgement the ECJ based its decision primarily on the indispensability of the access to a facility, however, without discussing the new product criterion. Basically, this indispensability implies (i) that the access to the facility is essential for the intended activity or product of the competitor, and (ii) that it is not possible to duplicate the facility. Thus, with these criteria the Court provides clarity that the abusive conduct in refusal to license cases consists in the indispensability of the access/use of the intangible or

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<sup>6</sup> See *Tiercé Ladbroke SA v. European Commission* (Case T 540/93) [hereinafter: *Ladbroke*], 1997, E.C.R. II-923.

tangible property to maintain or to develop competition in a downstream market (Eilmansberger 2003, p. 14).

The last modification (before Microsoft) of the test has been made by the ECJ in the *IMS Health*<sup>7</sup> case. Here, IMS Health sued NDC for infringing its copyrights on a brick structure which it used to provide sales information on pharmaceutical products. Thus, NDC accused IMS Health of abusing its dominant position. Again, the Court reverts to the criteria of Magill. This time, the statement of the ECJ made clear that in addition to the mentioned criteria in *Bronner* the prevention of the development of a new product is essential to constitute an abuse in the sense of Article 82 EC. That is, the firm that requests the license needs to intend to offer a product which is not offered by the owner of the intellectual property and for which exists a potential consumer demand (IMS Health, para. 48-49). Regarding the indispensability criterion, the Court restates the conditions named in the *Bronner* judgment (Killick 2004, p. 25). Hence, to prove indispensability it has to be examined whether alternative solutions exist, even though they might be more expensive or technologically not as advanced as the concerned product or service. At least, it has to be proven that the use of these alternative solutions would lead to an unprofitable production of goods or services whereas the usage of the existing good or service would allow a viable supply (IMS Health, para. 28). Furthermore, the judgement confirms the necessity that two markets are involved. As the CFI explains, it is sufficient if a potential secondary market can be defined. In other words, the existence of two production stages is necessary in the sense that the product or service on the primary stages is indispensable for the production on the second stage (IMS Health, para. 44-45).

## **2.2 The Commission's Microsoft Decision**

In the *Microsoft* case the EU Commission circumstantiated that Microsoft abused its dominant position in the market for client PC operating systems because it refused to license certain interface information of its working group server (WGS) operating systems to its competitor *Sun Microsystems*.<sup>8</sup> Without this interface information the WGS-operating systems of the competitors cannot communicate with the Microsoft operating systems. Thus, Microsoft

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<sup>7</sup> See *IMS Health GmbH & Co OHG v NDC Health GmbH & Co KG* (Case C-418/01) [hereinafter: *IMS Health*], 2004., E.C.R. I-5039.

<sup>8</sup> European Commission decision in case COMP/C-3/37.792 *Microsoft*, C(2004) 900 final [hereinafter: *COMP Microsoft*]. A resume of the decision can be found in Banasevic et al. 2004. The accusation of tying Windows Media Player with Windows operating systems will not be considered in the following.

leverages its dominant position from the client PC operating system market to the market of WGS operating systems and creates barriers to entry for new competitors.

The Commission based the analysis of this case mainly on the criteria developed in *Magill* and *IMS Health*. It examined whether the refusal<sup>9</sup>

1. concerns a product or service which is indispensable to compete in a secondary market,
2. impedes the appearance of a new product which is not offered by the dominant firm and for which exists a demand,
3. eliminates competition, and
4. whether the refusal is objectively justified.

After examining the concrete circumstances of the first three conditions, the Commission came to the conclusion that Microsoft's refusal to disclose the specification for interoperability prohibits the development of compatible products of competitors (ibid, para. 572) and therefore "risks eliminating competition in the work group server operating system market" (ibid, para. 692). In consequence, "an increasing number of consumers are locked into homogenous solution at the level of work group server operating systems" (ibid, para. 694). This implies that those consumers cannot profit from innovations supporting the systems brought to the market by Microsoft's competitors. At the same time this lock-in effect hampers the success of the competitors on the market and therefore constitutes as well a disincentive to innovate.<sup>10</sup>

Regarding the fourth condition, Microsoft defended its refusal to license with its intellectual property rights on the interface information.<sup>11</sup> However, according to the Commission, the

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<sup>9</sup> For the following compare COMP Microsoft, para. 551-552 and 559.

<sup>10</sup> See COMP Microsoft, para. 694. "In a longer-term perspective, if Microsoft's strategy is successful, new products other than Microsoft's work group server operating systems will be confined to niche existences or not be viable at all. There will be little scope for innovation – except possibly for innovation coming from Microsoft," ibid, para. 700. Even if it is questionable whether these findings comply with the first two criteria developed in the *Magill* case, they will not be considered further because they are not decisive for the following analysis.

<sup>11</sup> "The objective justification for Microsoft's refusal to disclose its intellectual property rights is self-evident: those rights are meant to protect the outcome of billions of dollars of R&D investments in software features, functions and technologies. This is the essence of intellectual property right protection. Disclosure would negate and eliminate future incentives to invest in the creation of more intellectual property," NERA Report, Paragraph 53, appendix to Microsoft's submission from 17.10.2003, quoted according to COMP Microsoft, para. 709.

pure presence of intellectual property rights is not sufficient to justify the refusal to license.<sup>12</sup> In order to assess whether Microsoft's arguments regarding its incentives outweigh the negative effects mentioned above, the Commission applied the Incentives Balance Test. In this test, the effects of the refusal on the innovative behaviour of the firms in the relevant market are determined and weighed out against the effects of a compulsory license on the innovative conduct. Thus, a compulsory license is appropriate when the negative effects of a license on the dominant firm's incentives to innovate are prevailed by the positive effects on the innovative climate in the whole market (COMP Microsoft, para 783).

In the application of the test, the Commission focussed amongst others on Microsoft's fear, that it will be cloned as soon as it discloses its interface information. In the Commission's opinion, Microsoft's competitors are disadvantaged regarding the quality of the implementation of the relevant specifications in comparison to Microsoft's own product. Furthermore, Microsoft will have an advantage in time compared to its competitors as it discloses the specifications only when it already has a working implementation. Thus, to compete with Microsoft, the other software firms have to offer an additional service to the customers to convince them to buy their products instead of Microsoft's. Solely the interoperability of their products with Windows would not be enough for being successful on the market. However, there is no evidence for Microsoft's fear of getting cloned (*ibid.*, 721-722). Furthermore, concentrating on the accusation of cloning implies restricting innovation on interoperability and the underlying specifications (*ibid.*, para. 723). The Commission stressed that it is important to consider "Microsoft's incentives to innovate its products as a whole, not only in the design of its products' interfaces" (*ibid.*, para. 724). Above all, it is necessary to compare the innovation effects of a compulsory license with a situation in which Microsoft retains to its refusal to supply. If Microsoft continues with its abusive behaviour competition may be eliminated and this will have negative effects on Microsoft's innovative conduct. If, by contrast, Microsoft were obliged to disclose its interface information, its WGS operating systems would have to compete with implementations of other firms. Thus, consumers would no longer be locked-in to

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<sup>12</sup> See COMP Microsoft, para. 710. "It has been established ... that Microsoft's refusal to supply risks eliminating competition in the relevant market for work group server operating systems, that this is due to the fact that the refused input is indispensable to carry on business in that market and that Microsoft's refusal has a negative impact on technical development to the prejudice of consumers. In view of these exceptional circumstances, Microsoft's refusal cannot be objectively justified merely by the fact that it constitutes a refusal to license intellectual property. It is therefore necessary to assess whether Microsoft's arguments regarding its incentives to innovate outweigh these exceptional circumstances," *ibid.*, para. 712.



Microsoft's products and consequently Microsoft would have more incentives to innovate to keep and, even better, to extend the number of its consumers (ibid., para. 725).

Therefore, after examining the circumstances of the Microsoft case and applying the Incentives Balance Test the Commission came to the conclusion that in the short run a compulsory license would have negative effects on Microsoft's incentives to innovate. However, these negative effects on Microsoft are outweighed by the positive impact on the innovative behaviour of its competitors (ibid., para. 693-700). Moreover, in the long run, this would also strengthen Microsoft's incentives to innovate as it needs to defend its leading position in the market against its competitors. Thus, the Commission concludes, the positive effects of the disclosure on innovation incentives would outweigh the negative effects on Microsoft's incentives to innovate. With this result the Commission rejected that Microsoft's refusal to supply the interface information is objectively justified (ibid., para. 783). Hence, the Commission obliges Microsoft to disclose the interface information.<sup>13</sup>

### **2.3 Judgement of the Court of First Instance in the Microsoft Case**

First of all, the Court of First Instance (CFI) pointed out that the mere ownership of an IPR cannot in itself constitute an objective justification. Otherwise, a refusal to license could never be considered to constitute an abuse in the sense of Article 82 EC.<sup>14</sup> Furthermore, the CFI highlights that disclosure of information which is necessary for interoperability is quite usual in this industry and that so far no claims had occurred regarding negative effects on innovation (CFI Judgement, para. 702). Regarding the individual examination steps the Court supported mainly the view of the Commission. For its analysis the CFI kept as well with the four following criteria developed in Magill and IMS Health which have to be fulfilled cumulatively (ibid., para. 332-333).

Taking the *indispensability criterion*, Microsoft rejects the opinion of the Commission that the interface information is indispensable to compete in the market (ibid., para. 337). According to Microsoft, at least five other ways exist to ensure the interoperability of working group server operating systems which are already used by suppliers of competing systems. Even

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<sup>13</sup> Of course, Microsoft is allowed to demand a 'fair and non-discriminatory' royalty for the access to the interoperability information (COMP Microsoft, Article 5a)

<sup>14</sup> See Judgement of the Court of First Instance in Case T-201/04, 17.09.2007 [hereinafter: CFI Judgement], para. 690.

though these methods do not ensure perfect substitutability to the required interface information they are sufficient to ensure effective competition (ibid., para. 345). However, the Court decided that it is necessary that the competitor's operating systems provide a comparable interoperability to Windows domain architecture like Microsoft's own products (ibid., para. 374). Furthermore, the Court finds that due to the very narrow linkages between the Windows client PC and the work group server operating systems, Microsoft has established a 'de facto' standard for working group computing (ibid., para. 392). Therefore, the Commission was correct in its appraisal that the full provision of the interface information has to be warranted. The CFI also points out that the Commission based its decision on complex economic assessments and, thus, the Court is limited in its review. According to the Court, the arguments put forward by Microsoft have not been convincing that the Commission's assessment was wrong (ibid., para. 378-381, 388-391).

Concerning the requisite of *elimination of competition*, Microsoft had argued that the refusal to license would not eliminate all competition in the secondary market. It complained that even the Commission only mentions the *mere risk* of elimination of competition in the market. It can be observed that there are still other competitors on the market for work group server operating systems (CFI Judgement, para. 371-442). Pointing out that it were not in line with Article 82 EC to wait until the elimination of competition has been realized, the Court rejected this plea. The existence of competitors in some niches is not sufficient to maintain effective competition. As the market is characterized by significant network effects, the Commission was correct in intervening before competition was eliminated (ibid., para. 561-563).

Furthermore, Microsoft challenges the development of a *new product* in dependence of the interoperability information. The Commission failed to identify a new product which would be developed on the basis of this information and moreover, the Commission did not prove that there is a consumer demand for this product. Microsoft suspects that its products would be copied (ibid., para. 621-625). In contrary, the CFI emphasises that Article 82 EC prohibits abusive conduct which limits production, markets or technological developments to the prejudice of consumers (ibid., para. 643). Following this line, the previous decision in Magill and IMS Health have indeed emphasised the requirement of a new product. But this criterion has to be seen in the light of consumer interests. That is, the new product condition in the mentioned case was an indicator whether the prevention of competition in a secondary market was

to the prejudice of the consumers. But as Article 82 EC states, not only the prevention of markets and products may constitute a prejudice to consumers but also the limitation of technological development. Thus, the decisive criterion in this context is whether consumer welfare is being reduced (ibid., para- 645-655). In the Microsoft case, due to the lacking interoperability, consumers are locked in to Windows products and thus, competitors cannot offer successfully their own innovative products. Hence, the Court explains that due to these circumstances the occurring effect is similar to a prevention of a new product (ibid., para. 655-665).

In contrary to Microsoft's plea in which Microsoft blames the Commission for using a new and legally not founded test to analyze the *objective justification*, the CFI argued that Microsoft misread the Commission decision and that the Commission did not base its decision on a balancing test (ibid., para. 704-710). In fact, the Commission showed that there is no evidence for objective justification to refuse licensing. According to the Court, the Commission, firstly, established that the exceptional circumstances defined by the Court in the cases Magill and IMS Health are present and then, secondly, proceeded to analyze the arguments put forward by Microsoft. The Commission assessed whether the justifications put forward by Microsoft outweigh the exceptional circumstances which establish the infringement of competition (ibid., para. 709). Altogether, the Court names four reasons brought up by the Commission to reject the objective justification of the refusal to license (ibid., para. 710-711):

1. Microsoft's fear of cloning is causeless,
2. the disclosure of interoperability is widespread in the industry concerned,
3. the commitment of IBM to the Commission in 1994 was not different from the requirements on Microsoft and
4. the decision is in line with Directive 91/250.

In its argumentation the CFI demonstrates that the Commission convincingly proved that Microsoft has no reason to fear that its products will be cloned. Moreover, the Court agreed with the Commission that none of the justifications put forward by Microsoft is solid. Therefore, so the argumentation of the Court, the proceeding and the decision of the Commission are in accord with case law.

## 2.4 Has the Decision of the CFI Clarified the Criteria in "Refusal to License" Cases?

### 2.4.1 Indispensability

Both in the Bronner and in the IMS Health judgement, the Court had made clear that a good or a service is only indispensable, if no other alternatives exist which allow a viable solution for the competitor requesting the license. Furthermore, the Bronner judgment explicitly states that it is not decisive whether the good or service to which access is demanded is the cheapest possibility or technically most advanced. Rather it is decisive that there are alternative possibilities, irrespective whether they provide the same quality or price as long as the competitor remains viable.

In this case, Microsoft refers to alternative possibilities to achieve interoperability. It points out, that the competitors can legally use five different methods to communicate with a Window client PC or server operating system. Microsoft illustrates the practicability of these methods with the example of Linux. According to Microsoft, Linux has an increasing market share on the work group server operating system market and that its products are continuously gaining ground on Windows server operating systems albeit Linux has no access to the interface information (CFI Judgement, para. 345-347).

Nevertheless, the Court overrules this objection. According to the CFI, the degree of interoperability is decisive. As Microsoft inhabits a de facto standard, the Court agrees with the Commission that it is necessary that the competitor's operating system achieves the same operability with the Windows domain architecture like the Microsoft products.<sup>15</sup> This "equal footing" can only be achieved, if the competitors dispose of the complete interface information. Thus, the Court confirms the Commission's opinion that a certain degree of interoperability is already possible, but that this degree is not sufficient to permit the competitors to remain viably in the market (CFI Judgement, para. 220-221; 229; 374; 377).

At large, in this case the CFI applies a low standard for indispensability. As long as the alternative solutions do not generate an outcome which puts the competitors on an equal ground to Windows products, these possibilities cannot constitute an appropriate alternative to the demanded interface information. Only the disclosure of the interface information would allow the development of equivalent products and, thus, the information is indispensable. Therefore,

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<sup>15</sup> According to Killick (2004), the Commission does not put a compulsory license on Microsoft but rather a "Compulsory standardization" (ibid., p. 45).

the decision of the Court cannot be interpreted as a renunciation of the criterion defined in Bronner and IMS Health, but it is construed in a noticeable wider way.

#### 2.4.2 Elimination of Competition

The assessment of elimination of competition goes hand in hand with the detection of indispensability. If the good or service to which access is demanded is indispensable to compete in the secondary market than the refusal to supply is on the verge of eliminating competition on that market. Thus, on a first glance, it seems stringent that the Court sees the criterion of elimination of competition fulfilled after it already confirms the indispensability criterion. Still, comparing the Microsoft judgment to previous judgments highlights a difference. For instance, in the Magill case, the refusal to license the information for the TV program made the continuity of Magill factually impossible. By refusing to license this program information Magill could not provide its weekly magazine for TV programs. Hence, due to the refusal competition was actually eliminated.

In the Microsoft case this is different. According to the Commission and the Court, there was only a *risk* of eliminating competition. Compared to the Magill case competitors could remain in the market, for instance because they had possibilities to ensure at least a minimum degree of interoperability. The refusal to disclose the demanded interface information obviously impedes competition, because the competitors could not offer perfect substitutes to Microsoft's own products and the interoperability to the Windows products was at least restricted. Nevertheless, in contrary to Magill, the refusal does not evoke immediately elimination of competition (Killick 2004, p. 38). Of course, this has also been recognized by the Court stating that there is a *risk* of elimination of effective competition. Therefore, in the long run, it is to fear that the competitor's disadvantage due to the incomplete interoperability will lead to a further extension of Microsoft's already dominant position and, thus, will eliminate competition.

Even though this judgement seems reasonable, it is obvious, that the criterion in Magill was stricter. In the Bronner judgement the Court also referred to older decisions (Commercial Solvents<sup>16</sup> and Telemarketing<sup>17</sup>), in which the refusal to supply was *likely* to eliminate all competition (Killick 2004, p. 39). Like in Magill, in both of these cases the refusal to supply would

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<sup>16</sup> See ICI & Commercial Solvents v Commission (Cases 6/73 & 7/73) 1974.

<sup>17</sup> See Telemarketing (Case 311/84), 1985.

have resulted in an immediate crowding-out of the competitor. Thus, the benchmark was significantly higher than in the Microsoft case.

### **2.4.3 New Product Requirement**

In the previous judgments (at least in IP cases) it has been made clear, that the criterion of a new product is essential. Especially in the IMS Health judgment the ECJ pointed out, that the refusal to allow access to the indispensable good is abusive,

“only where the undertaking which requested the license does not intend to limit itself essentially to duplicating the goods or services already offered on the secondary market by the owner of the intellectual property right, but intends to produce new goods or services not offered by the owner of the right and for which there is a potential consumer demand” (IMS Health, para. 49).

In the Microsoft case, the CFI parts with this criterion. According to the Court the prevention of the appearance of a new good cannot be the only parameter to determine whether the refusal to license may cause disadvantages for the customers. Rather such a prejudice can also be caused by the impediment of technical development (CFI Judgement, para. 647). Due to the lacking interoperability to the products of Microsoft’s competitors, the consumers’ buying decision were channelled towards Microsoft’s products. This conduct in turn deters the competitors from developing work group operating systems with innovative features. Thus, in comparison to Microsoft, the competitors are placed at a disadvantage which goes to the prejudice of consumers (ibid., para. 653). At large, the CFI affirms the position of the Commission that as soon as the competitors have access to the interoperability information, “those competitors will be able to offer work group server operating systems which, far from merely reproducing the Windows systems already on the market, will be distinguished from those systems with respect to parameters which consumers consider important”(CFI Judgement, para. 656).

Even though the Court initially declares that it follows the new product requirement, it extends this criterion in a manner that it entails also technical development, which need not necessarily result in the development of a new product but may comprise some technical im-

provements or add-ons.<sup>18</sup> From an economic point of view, this extension can be assessed positively.<sup>19</sup> Generally, European competition law aims at the increase of consumer welfare. Restricting the interpretation of Art. 82 EC to the appearance of new products does not cope with this standard. Moreover, broadening the scope of this criterion allows a better promotion of innovation.

#### **2.4.4 Objective Justification and the Incentive Balance Test**

Regarding the objective justification and the application of the Incentive Balance Test the CFI argued that Microsoft misinterpreted the Commission decision. The Commission did not base its decision on a balancing test, but showed that the arguments put forward by Microsoft were not solid (CFI Judgement, para. 704-710). In other words, Microsoft has failed to prove the existence of any objective justification (*ibid.*, para. 697 and 711). Consequently, as no objective justification exists and as no negative innovation incentives occur, a balancing of the different effects is not necessary and has not been conducted by the Commission. Thus, the Court is clear about the necessity of an objective justification and supports the Commission in its assessment that an insistence on IPRs is simply not enough. At the same time, the Court is also lucid regarding the burden of proof: it is on Microsoft to prove that its refusal to license is objectively justified (*ibid.*, para. 711)

Nevertheless, the Court is very reluctant regarding the Incentives Balance Test. On the one hand, the CFI does not endorse the test but, on the other hand, does not reject it. Instead, it simply argues that the Commission has not based its decision on the test and that Microsoft's arguments have not been convincing. This distinction makes an important difference: If the Court had rejected the applicability of such a test, it would have closed the door for such a balancing. Ignoring more or less the test provides the opportunity for an application of the test in future cases.

However, it is disappointing that the CFI does not give any opinion about this test, although Microsoft challenged it very explicitly.<sup>20</sup> So far is not at all clear how the criterion of objec-

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<sup>18</sup> According to Lévêque (2005) the Commission does not consider the new product criterion at all but focuses solely on the balancing of the incentives to innovate (*ibid.*, p. 85).

<sup>19</sup> Contrarily, Killick (2004) criticizes this approach. According to him, the extension of the new product cases makes it impossible to predict how the Commission (and the CFI) will apply it in prospective cases (*ibid.*, p. 38).

<sup>20</sup> For a similar point of view compare Körber 2007.

tive justification should be interpreted (Howarth/McMahon 2008). Recent case law is very imprecise about that; in fact, we do not know any Article 82 refusal to license case, in which an objective justification has been accepted or at least in which it had been clarified what would have been accepted. At the same time, the criterion for justification of refusal goes at the heart of the potential conflict between competition law and IP law (Lévêque 2004, Vezzoso 2006). Consequently, any clear criteria or even any approach how to solve this conflict would be desirable. At least, the Incentives Balance Test suggests an interesting approach from an economic perspective, through balancing the individual innovation incentives against each other. As a consequence, so far it is only clear that IPRs might be challenged through Article 82, but how the specific conflict between IPRs (and the argument of their function of providing innovation incentives) and competition law should be solved is not clearer than before. The Microsoft decision of the Court has not contributed to the clarification of this issue.

## **2.5 Conclusion**

The Microsoft decision of the CFI is a surprisingly clear backing of the Commission, but disappointing in its contribution for clarification of the criteria used in Art. 82 refusal to license cases. The Court based its argumentation in large parts on the previous case law, although its interpretation of the criteria for abusive behaviour is less strict. The Court applied weaker criteria in regard to indispensability and elimination of competition, and used a wider interpretation of the new product criterion in the direction of new innovation, which can be supported from an economic perspective. Since the Court avoided any positioning concerning the Incentives Balance Test, no clarification was achieved in regard to the criterion of objective justification. Of course, we should keep in mind that the Microsoft case is far more complex than the previous cases and, therefore, both the Court and the Commission had a difficult task. However, this does not solve the problem of a large legal uncertainty about future cases of refusal to license in Article 82. Despite the missing endorsement of the Incentives Balance Test by the CFI, we think that such an approach might be a good starting-point for solving this conflict between competition and IP law. Therefore, in our next section we will present a broad framework which can be used for the development of a more comprehensive test, which also might have more chances for being applied in Article 82 refusal to license cases.



### **3. Economic Analysis: From the Incentive Balance Test to a Broader Innovation Effects Test in Art. 82 EC**

#### **3.1 Competition Law, IP Law, and the Incentive Balance Test: The Basic Argument about Solving the Conflict**

What about the general relationship between IP law and competition law from a purely economic point of view? The Incentives Balance Test of the EU Commission can be understood as an attempt to solve a conflict between competition law and IP law from an economic perspective. Not only Microsoft raised the question, whether this kind of limitation of IPRs through competition law might not discourage the investment in R&D by reducing the innovation incentives, i.e. whether it might not be advisable that competition law should never intervene into IPRs.<sup>21</sup> However, the suggested Incentives Balance Test also aims at promoting innovation, and therefore dynamic efficiency (as one dimension of "effective competition" in European competition law). From that perspective it is not clear whether there really is a conflict between the main objectives of competition law and IP law in these refusal to license cases. It seems that the tension between competition law and IP law is much less a problem of different ultimate objectives (both want to promote innovation in order to increase social welfare), rather it is more a tension between different legal instruments for achieving the same objective. Whereas IP law attempts to achieve its aim through restricting competition by granting exclusive rights, competition law wants to promote innovation through protecting competition and free market entry. From an economic perspective both can be seen as pure instruments for achieving the common objective, and it depends on the specific circumstances whether IPRs or competition or some sophisticated mixture of both are the most appropriate solution.<sup>22</sup>

A similar result can also be derived from a property rights theory perspective. One of its most important new insights was the interpretation of property as a bundle of specific rights for using, modifying, or selling the tangible (or intangible) item. How these rights should be defined in detail, is subject to a welfare-theoretic analysis, which claims that the property rights should be defined in that way that welfare is maximized.<sup>23</sup> IPRs are no exception. Also the specific definition of IPRs should depend on its effects on social welfare. This also extends to

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<sup>21</sup> For an introducing discussion of this issue compare U.S. Dep't of Justice 2007.

<sup>22</sup> For a discussion of the interface between IPRs and competition law compare exemplarily Anderman/Schmidt 2007; Crampes et al. 2005; Gallini/ Trebilcock 1998; Régibeau/ Rockett 2007.

<sup>23</sup> See, e.g. Barrère 2004; Demsetz 1967; Hoppe 2004; Posner 1998; Rose 1999.

all rights how to use these IPRs. Therefore a "limitation" of an IPR by imposing a duty for giving access to the protected innovation to other parties under specific circumstances (compulsory licensing) can be seen as part of the specific definition of IPRs, which might be welfare-increasing in specific situations. The welfare-maximizing definition of IPRs implies a sophisticated delineation and balancing of the rights of the innovators, the rights of other (competing or later) innovators, and the rights of the public. Therefore a duty for giving access to information or a compulsory licensing can be an instrument for fine-tuning this delineation of rights between these different actors (Tandon 1982). The economic approach only claims that this fine-tuning should be made with the objective of maximizing social welfare.

Thus, the basic approach of the Incentives Balance Test to decide on the expediency of compulsory licensing in a specific case by asking what solution would lead to more overall innovation is generally in line with this welfare-theoretic property rights (or law and economics) perspective. This leads to the following question: Is the suggested Incentives Balance Test, which the Commission used for this fourth criterion "objective justification" of a refusal to license, really different from a test that asks for the optimal specification of IPRs in IP law itself? We cannot discuss this here in detail, but our thesis is that, in principle, we would ask the same questions from an economic perspective. This would mean that this fourth criterion in the legal test of refusal to license cases in Article 82 is equivalent with the question whether the IPRs of the dominant firm are optimally defined from an economic perspective. If this interpretation is correct, then this would be a very interesting and also clear result: The IPRs of the dominant firm would be "objectively justified", if they are optimally specified from an economic perspective in this specific case. This would also imply that there would be no real conflict between the application of Article 82 and IP law, at least from an economic point of view.

If we interpret the fourth criterion of this legal test, "objective justification of a refusal to license", as assessing whether the specific extent of the IPR of the dominant firm can be defended from an economic perspective, then it is clear that Article 82 can only correct the extent of IPRs (or limit their use), if they are more extensive than they should be in this specific case. Please note that this is not the question whether the firm has acquired its IPRs correctly according to the usual legal provisions. The problem is a different one: All kinds of IPRs (patents, copyrights etc.) are granted according to very general rules, which do not allow for much differentiation in respect to their length, breadth and the specific set of rights that follow

from them. In contrast to that, the law and economics of IPRs has proven very clearly that the optimal design of IPRs should be very different in regard to different industries, technologies, and a number of specific circumstances, in order to maximize welfare.<sup>24</sup> Since it is impossible to specify the IPRs in each case differently (due to lacking specific information, uncertainty and administrative costs), the approach to grant IPRs very generally and without much differentiation might be defended even from an economic perspective.<sup>25</sup>

However, a crucial implication of this non-differentiated granting of IPRs is that many of these IPRs are not optimal in regard to their effects on innovation. There will be many IPRs, which are too weak for setting optimal incentives, and also many, which are too strong, i.e. they are setting too large incentives for the innovators and might block the innovation activities of other firms too much.<sup>26</sup> Carrying out an economic analysis in a specific case, which asks whether a limitation of IPRs through compulsory licensing would increase overall innovation, might help to improve the IPRs in these cases, i.e. it would identify cases, in which IPRs are too extensive (from the perspective of its effects on innovation) and help to correct them. If we understand the Incentives Balance Test in this way, then the objective justification of refusal to license would mean that it can be shown that the specific extent (or use) of the IPR of the dominant firm is the optimal (or the efficient) one. Therefore, Article 82 would allow the Commission to limit the extent (or use) of IPRs of a dominant firm, if this IPR is not optimally defined in this specific case from an economic perspective.

However, this interpretation does not imply that Article 82 grants a general authority to the Commission to correct ill-defined IPRs. Firstly, it is restricted to IPRs of dominant firms. Secondly, the current legal situation, in which the Incentives Balance Test would only be carried out at the end of a four-step assessment implies that this test of the specific optimality of the IPRs is only made after the Commission has proved the criteria of indispensability, elimination of competition and the new product requirement. These criteria work as filters, which reduce considerably the number of IPRs, which might come under such a scrutiny.<sup>27</sup> These filters can fulfil the task to limit the interventions into the IPRs through Article 82 to a small number of special cases with "exceptional circumstances". This also would ensure that this

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<sup>24</sup> For an extended overview of this literature see section 3.2.

<sup>25</sup> This still might lead to the question, whether more differentiation might not be appropriate. This is closely connected with the general problem of the optimal complexity or optimal differentiation of law.

<sup>26</sup> See especially section 3.2.2 and 3.2.3.

<sup>27</sup> Whether these or other criteria should be recommended from an economic perspective, is not analyzed in this paper.

possibility to limit the exercise of IPRs through Article 82 would not really have negative effects on the general incentives to invest in innovation activities.

Another question is: Is competition law the right instrument for solving specific problems of a wrong (i.e., not welfare-maximizing) definition of IPRs? Why are these problems not solved within IP law itself? If according to such an economic analysis, compulsory licensing of an IPR is the welfare-maximizing solution, then an effective IP law system should lead to this result itself (without an intervention from competition law). Without being able to discuss this here in detail, we draw on the wide-spread opinion that the existing IP law system does not work very well in generating efficiently defined IPRs. There is a huge literature that demonstrates that within the IP law system there are a lot of problems through ill-defined IPRs. Also the existing remedies for challenging not properly defined IPRs seem to be seriously flawed, leading to the assessment that also courts are not effective institutions for solving these problems of ill-defined IPRs.<sup>28</sup> This leads to the conclusion that in exceptional cases competition law might be necessary to solve problems of ill-defined (or abused) IPRs, because the institutional structure of the IP law system is not capable to solve these problems themselves. This is confirmed by a wide-spread opinion among scholars, specializing in this interface between competition and IP law, that the problems that have to be dealt with in competition law are usually caused by defects within the IP law system (e.g. First 2006; Ullrich 2007). From that perspective, it is entirely defensible that competition law can limit (the use of) IPRs, e.g., by imposing a compulsory license. Therefore the basic decision of the ECJ, e.g., in the Magill case, that under exceptional circumstances the refusal to license IPRs can be an abuse of a dominant position in Article 82 can be defended from an economic perspective.

## **3.2 Towards an Innovation Effects Test: Broadening the Economic Analysis**

### **3.2.1 Introduction**

In the last section, we have seen that the Incentives Balance Test of the EU Commission can be interpreted as a test whether the IPRs of the dominant firm are really optimal from an economic perspective in this specific case. If such a test would come to the result that the overall effects on innovation are larger with a compulsory license than without, then Article 82 can

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<sup>28</sup> For a discussion on these issues compare exemplarily Bessen 2003; Chang, 1995; Crampes et al. 2005; Shapiro 2001.

be used for fine-tuning the IPRs. In that respect, no real conflict between competition law and IP law emerges.

However, another problem is how such an economic test should look like. i.e., how it can be carried out. In this respect, the EU Commission is very brief in its Microsoft decision: The Commission concedes that a compulsory license can reduce the incentives for Microsoft to invest into improvements of its interoperability software, but this measure would also increase the incentives for other software companies to invest more into the development of applied software. This larger competitive pressure would induce again Microsoft to increase its R&D efforts, leading to the conclusion that the overall innovation incentives for Microsoft need not be reduced at all. From an economic perspective, the Commission uses plausible but rather simple economic theories about direct innovation incentives from reduced IPRs, and theories about the impact of competitive pressure on the level of R&D investments. However, we do not want to discuss the Microsoft case here, and whether the Commission uses the appropriate theories or has made correct estimates about the quantitative size of the alleged effects.<sup>29</sup>

In this section, our aim is to demonstrate that a large number of insights from theoretical and empirical studies exist in the law and economics of IPRs, (evolutionary) innovation economics, and network and competition economics which can be used to develop a comprehensive test for analysing whether in a specific case compulsory licensing can enhance overall innovation or not. Since the perspective is the effects on innovation and not all of the following arguments focus on incentives, we would suggest calling this test very broadly an "innovation effects test". This would also be in line with the effects-oriented perspective of the "more economic approach" underlying the recent reforms in EU competition policy. In the following, we will not present how such a test might look like. This requires much more research. However, we want to present a broad overview about theoretical and empirical studies about the effects of IPRs on innovation and competition that can be used for the analysis of the innovation effects in specific refusal to license cases in Article 82. All of these arguments can be used for ascertaining whether an IPR might be ill-defined in a specific case, especially whether compulsory licensing might have positive or negative effects on innovation in this case. For analytical reasons and convenience, we have structured this material in four different groups.

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<sup>29</sup> For such a discussion, see Anderman 2004; Dolmans et al. 2007; Killick 2004; Lévêque 2005, Vezzoso 2006.

### 3.2.2 Mainstream Law and Economics of IPRs: The Complexity of Defining Optimal IPRs

This group of arguments is based upon the traditional microeconomic justification of IPRs, which starts with the assumption that innovation is a quasi public good, i.e., it is difficult to prevent others from using it and the usage of this information is non-rival.<sup>30</sup> Therefore IPRs are necessary for allowing the innovator to appropriate the returns of its investment and, hence, for ensuring sufficient incentives for innovation. Otherwise, imitators would copy the invention without bearing the cost for research and development. There are a huge amount of economic models based upon this incentive argument for analyzing the question of the optimal scope of protection in order to provide optimal incentives for maximizing social welfare. In the following, we give a brief (and incomplete) overview on this discussion which is based upon well-established mainstream microeconomics. The main result of this discussion is that no general conclusions about the optimal scope of protection for innovations can be derived. Rather the optimal extent of IPRs depends on a large number of specific determinants, leading to a wide variety of optimal IPRs in specific cases. This can be exemplified by the still unresolved debates about the optimal length and breadth of IPRs, differentiated further along the problem of stand alone or cumulative innovations (Besen/ Raskind 1991, p. 3).

In regard to the length of patent, Nordhaus showed that the optimal duration of a patent depends on the product and the market surrounding. According to his model, the optimal length of a patent is influenced inter alia by the demand elasticity and by the “ease” of the innovation, i.e. the possible cost reduction of an innovation with a given research budget or research effort.<sup>31</sup> The model indicates that in innovative industries patents should be shorter. In contrary, patents should be the longer, the lower the elasticity of demand, since with decreasing demand elasticity the dead weight loss falls as well. If elasticity tends to zero, no deadweight loss occurs and the optimal patent duration is infinite. Thus, even though this is a static model with very narrow assumptions, it illustrates that it is not possible to define an overall optimal patent life time.<sup>32</sup> Instead, it is necessary to determine the patent length at least industry-specifically. Gallini (1992) demonstrates the large complexity of the problem by extending

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<sup>30</sup> See exemplarily Gordon/ Bone (2000), pp. 192 et seqq.

<sup>31</sup> See here and in the following Nordhaus (1969), pp. 76 et seqq.

<sup>32</sup> Nevertheless, Nordhaus (1969, pp. 81 et seqq.) also analyzes the effects of deviation of optimal patent length. He concludes that only very short patent length, that is, below a period of 6 to 10 years, have significant effects on welfare. Thus, even though it is very difficult to determine the exact optimal duration, the consequences for total welfare are very small.

the Nordhaus model through introducing the possibility of imitation in the sense of inventing around. She assumes that with growing length of patents, competitors have more incentives to imitate. Thus, with increasing patent life time the incentives of the original innovator decrease as she has to fear legal imitation. Gallini concludes that optimal patents length has to be defined as short as to prevent all imitation.

In addition to patent length, it is also necessary to determine the optimal patent breadth, that is, the degree of legal monopoly power (Wright 1999, p. 419).<sup>33</sup> Therefore, for the optimal scope of patent, both length and breadth of patents have to be considered. Although we do not intend to deepen the question of the optimal mix, in sum it can be said, that the patent mix of breadth and length is influenced inter alia through the assumed market structure, the degree of competition and the elasticity of demand.<sup>34</sup> These results demonstrate that it is not possible to establish a universal optimal patent mix.

The problem of determining the optimal scope of protection is even more difficult in case of cumulative innovation. One of the main questions is how to reward the inventors of a basic innovation for its value as a stand-alone innovation and for its value for follow-on innovators. At the same time, it has to be guaranteed that the later innovators get an appropriate reward for their innovation. Under a regime of broad patents the second innovator will have few incentives to innovate, because she has to license from the first innovator and cannot appropriate all the returns from her innovation. Conversely, under a regime of narrow patent protection the first innovator has reduced incentives to innovate. A solution of this trade-off cannot be found in patent law but is only possible through ex ante licensing and other prior agreements.<sup>35</sup>

Similar results can be achieved in copyright protection. According to Landes and Posner (1989), at the optimal level of copyright protection, the amount of producer and consumer surplus per work must exceed the cost of creating the marginal work and at the same time the level of protection should be below the level that maximizes the number of works created. Furthermore, if growth in income and technological advances enlarge the size of the market for any given work and the cost of copying declines, copyright protection should expand (Landes/ Posner 1989). More differentiated results stem from Pollock (2007). Based upon an

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<sup>33</sup> The determination of the optimal patent breadth will not be discussed here. For details see Gilbert/ Shapiro (1990), Klemperer (1990) and Wright (1999).

<sup>34</sup> See exemplarily Denicolo (1996) and Wright (1999).

<sup>35</sup> For a detailed discussion on this topic compare exemplarily Scotchmer (1991).

empirical model, he comes to two complementary findings. First of all, he demonstrates that the optimal protection decreases with a decline in the costs of production and distribution of the copyright protected work. Secondly, he shows that the optimal term of copyright term should not be longer than approximately 15 years (Pollock 2007). Irrespectively of this result, in most laws the length of copyright covers the lifetime of the author plus 70 years. This result is supported by Boldrin/ Levine (2005), who show that the elasticity, with which creators react on changes in copyright term, seems to be very low. Consequently, if a decrease in copyright protection would not result in a decrease of works, a longer duration of protection is not justified, because this would needlessly maintain a higher deadweight loss than with a less broad protection (ibid.)

What are the conclusions from these results from mainstream law and economics of IPRs focussing solely on innovation incentives? Already this discussion demonstrates clearly that in specific cases the IPRs that are granted to (dominant) firms according to the general IP laws might be far away from those that would provide optimal incentives under the specific circumstances of the case. All these economic models can be used for analyzing in an Innovation Effects Test, whether the scope of the IPRs of a dominant firm might be too large from the perspective of optimal incentives, which would imply that its limitation by granting a compulsory license would not diminish the overall innovation incentives but, on the contrary, lead to a more optimal definition of IPRs.

### **3.2.3 Alternative Mechanisms for Appropriability and the Limited Relevance of IPRs**

IPRs are not the only possibility to appropriate the return of innovation. Instead, there are a lot of other different ways to reap the fruits of the own investments. Considering results of empirical research we see that often IPRs play only a minor role in appropriation. Support for these finding comes also from theoretical models. The following paragraphs present an overview on these empirical and theoretical studies.

In their empirical study Mansfield, Schwartz and Wagner (1981) asked the innovating firms whether they would have invested in innovations without patent protection. Apart from the pharmaceutical industry, more than three-fourth of the interviewed firms declared that they would have made the innovation in any case. According to their explanation, the absence of patent protection does not significantly enhance the competitive pressure on the innovating



firms, because the existence of patents does not influence decisively the rate of entry (*ibid.*, p. 916). In a more recent survey, Mansfield (1986) found out, that aside from pharmaceutical and chemical industries, 80 to 90% of the inventions would also have been introduced at the market in the absence of the patent protection. These results question the general relevance of IP protection.

Similar results are presented in the study of Cohen, Nelson and Walsh (2000). Analysing the effectiveness of different appropriability mechanisms, their survey shows that among secrecy, lead time, complementary sale or services and complementary manufacturing patents are the least important instrument to profit from R&D investments. Nevertheless, they also pointed out that in certain industries like medical equipment and drugs the importance of patents and other intellectual property rights is significantly higher (Cohen et al. 2000, p. 9). These results are consistent with earlier findings of Taylor and Silberston (1973) showing that patents have a significant influence in the chemical and pharmaceutical industries but not in others. In their survey Cohen et al. also asked why firms decide to patent. The most important reasons for patenting an invention are, firstly, the prevention of copying and, secondly, the prevention of other firms' attempts to patent a related invention (Cohen et al. 2000). Other motivations for patenting are the earning of licensing revenues, strengthening the firm's position in negotiations with other firms (like in cross-licensing agreements), and the prevention of infringement suits (*ibid.*, p. 17). Moreover, most firms rely on more than one appropriability mechanism (*ibid.*, p. 8). Similarly, Levin et al. (1987) examined amongst others the effectiveness of IP protection in their analysis of appropriability in industrial research and development projects. They showed that firms evaluate appropriability mechanisms like first-mover advantages, learning curve effects and secrecy much higher than patents (Levin et al. 1987, p. 794 ff). Several other studies support the finding that lead time and, in most cases, secrecy, are the most important mechanisms to profit from innovations.<sup>36</sup>

Besides these empirical results also theoretical analyzes show that the appropriation of returns in R&D depend on more factors than on intellectual property protection. Teece (1986), for example, purports that especially in regimes with low IP protection the ability to appropriate the returns of an innovation depends on the set of competences, so-called complementary assets. In order to commercialise successfully an innovation, not only knowledge in R&D or in manufacturing is necessary but also knowledge in finance, marketing, and legal aspects

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<sup>36</sup> See, e.g., Arundel 2001; Baldwin/ Hanel/ Sabourin 2002; Harabi 1995; McLennan 1995 cited in Arundel 2001.

(Teece 1986, p. 288). Therefore, the existence of complementary assets can help to appropriate the returns of an innovation (ibid., p. 292). However, also the degree of imitability depends not only on the legal protection like copyrights, patents and trademarks but also on the inherent reproducibility of the technology, for which the degree of tacit and explicit know-how is decisive (Teece 2006, p. 1134). That is, IP protection is only one aspect for appropriability. This is also supported by the concept of "absorptive capacity" introduced by Cohen and Levinthal (1990). They show that the firm's ability to evaluate and use knowledge from outside sources depends in large parts from prior investments in related knowledge. It encompasses both basic skills and knowledge of recent developments in certain technological or scientific fields (Cohen/ Levinthal 1990, p. 128). Therefore investing in own R&D activities increases the capability to absorb knowledge from external knowledge sources (ibid., p. 129). As a consequence, imitation can require considerable investments in R&D, questioning both the public good character of innovations and the ensuing thesis of under-investment in R&D in the absence of IP protection.

On a more general level, the differentiation between information and knowledge is important. Information is factual, whereas knowledge "establishes generalization and correlation between variables" (Saviotti 1998, p. 845). Pieces of information get only valuable and understandable in the context of certain knowledge, which also has an interpretive function. However, it can be differentiated between tacit, codified and cumulative knowledge. The latter evolves due to path dependencies or due to the creation of barriers. The firm's collective knowledge can be described as the knowledge used to produce and to operate in the market (ibid, p. 845). Especially in firms the codification of knowledge is important to communicate and to further improve the firm's collective knowledge base and, hence, to spur progress of firms' research activities. The newer a field of research or the kind of knowledge the more difficult is the process of codification as individuals have different associations, intuitions and definitions. Thus, according to Saviotti, a piece of knowledge can never be used to zero costs from others even if it is completely codified. To understand and use the information, the imitator always needs the same 'code' to retrieve the information. Therefore, if the person does not know the code she first has to learn this code and, hence, has cost of appropriability (ibid., p. 848). Consequently, this differentiation between knowledge and information is another argument showing that imitation is not as easy as the mainstream law and economics on IPRs might make believe. Considering that an imitator has to dispose over the same standard of

knowledge before copying invalidates as well the thesis of underinvestment in a regime without IP protection.

At large, this section has demonstrated that the relevance of IPRs varies across industries. In some industries like pharmaceuticals it is highly important, whereas in other industries it plays only a minor role. In these industries other appropriation mechanisms like first-mover advantages and secrecy are far more important. Moreover, the empirical results have shown that IP holders might also use them to impede her competitors, an aspect we will deepen in the next section. Also other factors, like complementary assets, absorptive capacity, and the kind of knowledge play a decisive role. Spillover of knowledge and imitation is not as easy as traditional economics might make believe. Due to these complex conditions for the appropriation of innovation advantages, a limitation of IPRs through compulsory licensing within the scope of Art. 82 EC need not have necessarily negative effects on innovation, because such a firm might have enough other effective appropriation mechanisms.

#### **3.2.4 Abuse of IPRs to the Prejudice of Innovation and Competition**

Due to the too general definition of IPRs through IP laws through a lacking differentiation between industries and non-consideration of alternative appropriation mechanisms, IPRs often are not optimally-defined and hence can also be detrimental to innovation. Another problem that should be taken into account stems from a number of possibilities, in which IPRs can be abused for impeding actual or potential competitors with additional negative consequences for innovation. In these cases, limiting the IPRs of dominant firms with competition law may very well reduce this problem and, thus, enhance incentives to innovation. In the following, a brief overview is given.

Especially in R&D intense industries various and overlapping patents and copyrights can create a so-called patent thicket impeding the development of new technologies. In general, the problems due to patent thickets can be described as 1) the complements problem and 2) the hold-up problem. The first arises when a firm needs to obtain licenses from a number of separate right holders to produce its own product. Consequently, the resulting price will be higher

as in a situation in which only one firm possesses the needed patents (Shapiro 2001, p. 123).<sup>37</sup> Each IP owner will probably use her market power to get licensing fees well above marginal costs (ibid., p. 124). Heller and Eisenberg (1998) call this phenomenon “the tragedy of the anticommons.” It emerges “when multiple owners each have a right to exclude others from a scarce resource and no one has an effective privilege of use” (Heller/ Eisenberg 1998, p. 698). Consequently, this will result in an underuse of resources, i.e. of the IPR protected technologies and goods. Furthermore, fewer products will be developed in the downstream markets (ibid., p. 701).

In regard to patents and submarine patents<sup>38</sup>, there can also emerge severe hold-up problems. Due to the opacity of the patent thicket, firms can easily infringe the patent of another company and thus, get involved in costly litigation (Shapiro 2001, p. 121). Some firms try to patent as many technologies as possible, not because they need them for their own production but to “raise rivals’ costs” (Rubinfeld/ Maness 2005). Consequently, some firms use the threat of patent litigation as a kind of exclusionary behaviour to incumbent and entrant firms. To avoid this insecurity and the potential costs due to litigation some firms decide not to develop own technologies. Instead they prefer licensing even though they would have been able to invent around legally and therewith to develop technological alternatives (Shapiro 2001, p. 124 ff). Obviously, in these cases a wrong, probably too broad assignment of IPRs raises transaction costs, creates inefficiencies and, hence, stifle innovation (Shapiro 2001, p. 120).

Cross-licensing agreements are a widespread possibility to thin out the thicket. Generally, two firms agree upon cross licenses when each firm holds patents that the other one needs for its own production.<sup>39</sup> If more companies are involved, a patent pool can be launched. Under a patent pool, a group of patents is licensed in one package, generally to everyone needing these technologies and willing to pay the demanded royalty. Advantages of patent pools are that they lower both transaction costs and the fear of infringing already existing patents. Usually, patent pools are created when various patents are necessary to produce a standardized good.

However, these solutions to the complements and the hold up problem may cause conflicts with competition law. Consider, for example, the case of patent pools, which can be differen-

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<sup>37</sup> The complement problem was first analyzed by Cournot in 1838. He explained that, in general, consumers are better off, if products being complementary from the demand side are produced and sold by only one firm (Geradin/ Layne-Farrar/ Padilla 2008, p. 2).

<sup>38</sup> Submarine patents are patents taking a very long period, in some cases already decades, to pass the Patent and Trademark Office (Shapiro 2001, p. 121).

<sup>39</sup> See here and in the following Shapiro (2002), p. 127.

tiated between welfare-increasing pools and pools probably causing primarily anti-competitive effects. If the patent pools contain only complementary (and hence essential) patents, they might lower transactions costs through solving the complement and hold up problem, leading to the consequence that the package is cheaper than buying licenses for each technology separately. The situation is different, if the pool contains substitute patents. In this case, patent pools eliminate competition because they prevent price competition between the patent holders. This is the reason why the complementarity or substitutability of patents is an important assessment criterion in competition law for patent pools (Ullrich 2007). Cross-licensing agreements and patent pools can also have other anti-competitive effects. They can be used to prevent potential competitors from market entry and to foreclose rivaling technologies or pools. Cross-licensing agreements can also facilitate the stabilisation of price collusion in oligopolistic market structures. Firms involved in such agreements may have fewer incentives to innovate because of reduced competition between them. Due to the created barriers to market entry we can expect less innovation and product improvements through new entrants.

Summing up, due to inherent defects in defining IPRs, they might lead to a lot of problems like raising transactions costs and exclusionary effects when they are used to threaten with litigation. The mentioned solutions for this patent thicket problem might indeed ease these negative effects but can be used to impede competition and innovation. Consequently, using a compulsory license to limit in special cases the extent of IPRs may not stifle innovation, but may help to solve problems which emerge within the IPR system.

### **3.2.5 Networks and Standards**

In markets with network effects and standards, innovation processes and the appropriability problem differ much from other markets. Their analysis requires the use of network economics and the economics of standards. In these markets, the access of downstream firms to these technological standards is a particularly critical issue and might imply solutions that limit IPRs in order to promote innovations on downstream markets.

Network benefits, for example, occur when the value of a good for a consumer increases with the number of other consumers who are using this good. Those network effects can lead to the problem that only one technology survives on the market (natural monopoly problem), i.e.

that the market is tipping towards one de facto standard (Katz/ Shapiro 1994, p. 105f). Even though standards evoke positive effects, like facilitating the transfer of data among users and applications in case of computer software, there can also be negative effects. As soon as a standard is established, competition between standards is eliminated. Users might refuse to change to a new, perhaps better standard, only because it has far less users and therefore less network benefits (Farrell 1989). Therefore, in network industries it might be much harder to replace an already existing product: Even if a consumer is willing to upgrade to another better product, the network benefits and switching costs force the entrant to offer the customer a deal that is clearly better than the value of the improvement (Scotchmer 2004, p. 296). This can lead to the problem that an industry might be locked into an inefficient standard. It is an open and not clearly answered question whether the protection of a standard by IPRs would aggravate the lock in problem and the replacement of an inefficient standard by a superior one. Since, however, a product with huge network externalities is already protected against competition through its natural monopoly characteristics, IPRs might be generally less important for providing innovation incentives.

Much more important is the impact of IPRs on a standard for innovation on downstream markets, if the compatibility of these innovations is crucial as in the software industry. The Microsoft case is a good example. Due to its dominant position on the market for client PS operating systems, the interface information of Microsoft is a de facto standard. A computer operating system "controls the interaction between the computer system's microprocessors, and peripheral devices such as display screens, disk drives, keyboards, printers, scanners, etc, allowing those elements to work in a co-ordinated manner" (Creuss/ Agustinoy 2000, p. 71). Thus, compatibility with its protocols is essential for the whole industry. With its refusal to disclose this interface information it endangers the interoperability of competitors' working group servers with their client PC operating systems. This might lead to the problem that consumers tend to buy Microsoft's products to achieve interoperability and therefore are locked in. Even the right to reverse engineering, which has been set up to promote compatibility, does not necessarily impede dominance of a certain standard and does not ensure interoperability (Marengo/ Vezzoso 2006, p. 12).<sup>40</sup> Therefore it might be right that "copyright protection makes it more difficult for society to reap the benefits of significant network externalities,

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<sup>40</sup> Please note that the right to reverse engineering can itself be interpreted as a limitation of IPRs, which is not undisputed within IP law.

discourages and distorts innovation in operating systems and complementary computer hardware, and slows diffusion of computer products” (Menell 1987, p. 1363).

From that perspective, it can be asked whether interfaces and other standards should be considered as an essential facility, to which all firms and entrants on downstream markets should have non-discriminatory access. A facility or a technology can be seen as essential, if it is indispensable for competing in the downstream market, if sufficient capacity is available to provide access and if its duplication is economically unfeasible (Creuss/ Agustinoy 2000, p. 69). In the economic theories of natural monopolies and essential facilities, there is broad consensus that non-discriminatory access to this essential facility (as here the IP protected standard) might be a suitable remedy for solving the problem of impeding competition and innovation in downstream markets. Evolutionary theories of innovation and competition would predict that competition on downstream markets through non-discriminatory access would lead to a much broader and diverse development of new products (in the Microsoft case: application software), then in the case that only the owner of the IP protected standard would develop applied software on the downstream market. Therefore it can be expected that the access to interoperability information broadens the range of innovations and enhances the diversity of software solutions.<sup>41</sup> Nevertheless, a compulsory license may also have negative effects on the owner, an aspect which has also been considered in the Microsoft case. Due to the availability of the interoperability information the innovator may fear to get simply imitated which would reduce further incentives to innovate. On the other hand, one may argue that in particular this competitive pressure motivates the owner of the standard to more innovation in order to prevent the success of a rival. (Scotchmer 2004, p. 296). If it can be demonstrated that a certain IP protected technology or information has the characteristics of an essential facility, a compulsory license might lead to more innovation, diversity, and welfare for the consumer.

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<sup>41</sup> A careful study of the Commission Microsoft judgement shows that this exactly what the Commission assumes. In detail, the Commission states that there is “ample scope for differentiation and innovation beyond the design of interface specification” (COMP Microsoft, para. 698): Furthermore, the Commission points out that in consequence to Microsoft’s refusal to license “various product characteristics that important to consumers and on which competition on the merits could unfold are currently artificially relegated to a secondary position” (ibid., para. 699).

### 3.2.6 Conclusion

In the last sections, we provided a broad (but still very incomplete) overview about theoretical and empirical results from the economics of IPRs, network and competition economics, and innovation research, which can be used for analysing in a specific case whether imposing a compulsory license would lead to more or less innovation. A crucial general result of all this research is that the existence and extent of any market failure problems in regard to the private provision of innovation is very different and depends on many determinants (as, e.g., industry and market characteristics, extent of technological opportunities, alternative appropriation mechanisms). Although we would not agree with some scholars, who deny the necessity of IPRs at all, it should be clear that from an economic perspective the necessity and optimal scope of IPRs (for inducing innovation) varies tremendously. This implies that IPRs granted according to the general patent and copyright laws will often deviate largely from those, which would be optimal in the specific cases from an economic perspective. Through a case-specific Innovation Effects Test it can be attempted to analyze whether a narrower definition of IPRs (e.g., through a compulsory license) might lead to more innovation and therefore enhances social welfare. Our broad overview of relevant research results gives an impression about the richness of insights, which can be used for applying such an Innovation Effects Test in a specific case. Of course, we are well aware that such a case-specific analysis might be difficult and is burdened with much uncertainty (as many other decisions in competition law), but it is clear that in Article 82 we only deal with a small number of very serious cases, i.e. that IPRs are only limited "under exceptional circumstances". We readily admit that our overview in this section does not provide a clear procedure how such a test should be carried out in a particular case. In that respect, much further research is necessary. We also admit that much more research is generally necessary about the determinants of innovation; however, competition law practitioners should also not underestimate the huge amount of insights we already have in this respect. We think that the effects-based approach of modern competition policy should not only focus on short-term price and quantity effects but also on often much more important innovation effects.<sup>42</sup> From that perspective, the development of a comprehensive Innovation Effects Test for refusal to license cases in Article 82 is a fruitful project.

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<sup>42</sup> For the claim to consider more also the innovation effects in merger policy, see Katz/ Shelanski (2006) and Linge (2008).



#### **4. Summarising the Results**

This article contributes to the analysis of refusal to license cases as abuse of a dominant position pursuant Article 82 EC from an economic perspective. The crucial question is how to deal with tensions between competition law and IP law. This tension became obvious in the Microsoft case, in which the Commission (ultimately backed by the Court of First Instance) obliged the dominant firm Microsoft to give non-discriminatory access to its interface information of its working group server operating system despite Microsoft's insistence that this information is protected by IPRs. The remedy "compulsory licensing" is a clear limitation of IPRs through the application of Article 82. The main focus in this article is to develop an economic framework for analysing how we should solve this conflict between competition law and IP law in Article 82 cases. For this question the Incentives Balance Test of the EU Commission in its Microsoft decision provides a very interesting starting-point, because it claims - very much in line with the effects-based "more economic approach" - that the decisive criterion should be whether the situation with or without compulsory licensing would lead to more overall innovation (through analysing the innovation incentives of Microsoft and its competitors).

In the first half of our article, we analyzed to what extent the recent judgment of the Court of First Instance in the Microsoft case has clarified the criteria for refusal to license cases in Article 82 EC. Although several judgments of the European courts (esp. Magill and IMS Health) had led to a structured legal test with four criteria (indispensability of the IPR, elimination of competition, new product requirement, objective justification of the refusal), it has remained very unclear how these criteria should be applied. In particular, this is true for the criteria whether a refusal to license can be objectively justified by the IPR owner, which is at the heart of the conflict between IP and competition law. The result of our analysis of the CFI judgment is disappointing in regard to a clarification whether the Incentives Balance Test, used by the Commission in its decision, might be a basis for solving these conflicts. The CFI very explicitly avoids taking a position in regard to this issue by contending that the Commission has not based its decision on this test. Otherwise the CFI very clearly backed the Commission, also by a wider interpretation of the other three criteria indispensability, elimination of competition, and the new product requirement. However, the CFI did not help to clarify the criteria from an economic perspective.

Since the perspective of an effects-based economic analysis on this conflict between competition and IP law is left open, we present a theoretical framework for the analysis of refusal to license cases from an economic perspective in the second half of this article. A first analysis of the basic idea of the Incentives Balance Test leads to the result that this test mainly asks whether the IPRs of the dominant firm are optimally defined from the perspective of the economics of IPRs, and whether a compulsory license would improve the optimal definition of the scope of these IPRs. These implications are crucial: Such an interpretation of "objective justification" of the refusal to license would imply that from an economic point of view, there is no real conflict between competition and IP law. Rather, the remedies in Article 82 would only correct scopes of IPRs, if the latter are not optimal from the perspective of the economics of IPRs, i.e. from the aim of optimizing the incentives to innovate as the basic economic rationale for both the existence and specific design of IPRs. The remainder of this second part of our article focuses on an overview about theoretical and empirical arguments which can be used for analysing the optimal scope of IPRs in specific cases. It demonstrates that from an economic point of view, optimal IPRs vary widely in dependence from the industry, the technologies, the existence of alternative appropriation mechanisms, the possibilities to abuse IPRs as well as from special situations as network effects and standards. Since the IPRs are granted according to very general principles, the specific IPRs are seldom optimal from an economic perspective. This opens up the possibility to correct IPRs through compulsory licensing in "exceptional circumstances", if a sophisticated general Innovation Effects Test, drawing on all relevant theoretical and empirical results of the economics of IPRs, (evolutionary) innovation economics, and network and competition economics, leads to the result that with this remedy the overall innovation in the industry is increased in comparison to the situation without compulsory licensing.

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