ANTI-COMPETITIVE STUMBLING STONES
ON THE WAY TO A CLEANER WORLD:
PROTECTING COMPETITION IN
INNOVATION WITHOUT A MARKET

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I. INTRODUCTION

This paper is about the shortcomings of modern competition law regarding competition at a stage when firms compete for future technology and future product markets by investing in research and development (so-called ‘competition in innovation’).1 Since traditional competition law analysis strongly relies on the effects of business conduct on ‘existing markets’, it runs the risk of not adequately responding to anti-competitive conduct that only affects future product markets. To highlight the practical importance of the topic, this paper will refer to one of the most fascinating future technological changes that will revolutionize our daily life in the not so distant future, namely the migration of modern society from fuel-driven cars to electric cars and the establishment of the infrastructure that is needed for operating such cars.

The growing energy crisis and the need to control climate change advocate a rapid substitution of conventional cars by electric cars powered by rechargeable batteries. Compared to fuel-driven cars, however, the use of batteries seems inferior in several respects. Batteries make electric cars more expensive than fuel-driven cars. At the same time, there are considerable use restrictions. With currently available batteries, cars have less range and, while a fuel tank can be refilled quickly at a gas station, recharging battery will take hours. But there seems to be a solution to all these problems. Renault and Nissan, the two car manufacturers that are currently closest to bringing 100% electric cars to the market, have now entered in a cooperation with a company called Better Place in view of developing a technology that would allow replacing exhausted batteries within two minutes.2 The exchange could be done, similar to the current refilling of a tank, at exchange stations along major streets. Gas stations

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1 The term of ‘competition in innovation’ is used in the most recently adopted European Guidelines on Horizontal Cooperation Agreements; see Communication from the Commission – Guidelines on the applicability of Article 101 of the Treaty on the functioning of the European Union to horizontal cooperation agreements, [2011] OJ C 11, p 1, paras 119-122.

could be transformed in battery exchange stations. In addition, consumers would only rent the battery that they use at a given time, which would reduce the purchase price for an electric car and, thereby, speed up the introduction to electric cars considerably.

So far so good for the environment! But what about competition? Indeed, the case presents a good example of the kind of competition problems we often have to face in the context of modern technologies. The major challenges stem from the fact that the infrastructure for exchanging batteries will depend on interoperability. In order to work and produce highest benefits, it is crucial that there will be one standard for the batteries and the technology for exchanging them in order to guarantee that future consumers will be able to get their batteries replaced at all exchange stations and for all brands of cars. In addition, establishment of the infrastructure will require high investment which, most likely, will have to come from the energy providers and the current operators of the gas stations. They will only engage in such investment if it is guaranteed that the technology they invest in will be the standard of the future. Hence, it is quite foreseeable that, at a not too distant point in time, all players will organize themselves in the framework of a standard-setting organisation and discuss the future standard. It will be for competition law to monitor this process in view of protecting competition in innovation against distortions in the selection of the best technology, of avoiding the emergence of a market dominant position of single firms that would otherwise exploit consumers and of guaranteeing access of all future market players to the standardized technology.

In addition competition law issues, are imaginable with regard to all three field of competition law enforcement: restrictive agreements, unilateral conduct and merger control. Take the following hypothetics:

Hypothetical 1: Since Renault and Nissan are the leading car manufactures investing in R&D for future technology used in electric cars, it is not unlikely that the future standard will be controlled by Renault and/or Nissan. Imagine, the two firms decide to merge. While it is obvious that the merger would not pose any challenge to competition in existing car markets, the competition agencies worry that, among a number of identifiable innovation poles controlled by the two merging firms, the new firm will concentrate on the development of inferior, but more profitable technology. Because of the merger and the upcoming standard, the better technology may never reach the market.

Hypothetical 2: Renault and Nissan enter into a research and development agreement in order to join their most advanced R&D efforts. Similar to hypothetical 1, competition agencies worry that the agreement excludes superior technology from being further developed.

Hypothetical 3: All car manufacturers, European energy providers, major petroleum providers who own gas stations in Europe and firms doing research in technology for exchanging car batteries establish a standard-setting organisation with the purpose of identifying the future technological standard for batteries and their exchange. One of the potential technology providers is Cleaner World. During the standard-setting process, Cleaner World conceals its patent policies against the rules of the SSO and finally leaves the SSO before the standard is set. Once the different players start to implement the standard, Cleaner World challenges them for patent infringement in order to extract excessive royalty
fees.

All these hypotheticals share a common feature: for assessing whether there is anti-competitive conduct, competition law enforcers will not be able to rely on an analysis of markets that exist at the time of the allegedly anti-competitive conduct, namely the merger, the conclusion of the R&D agreement or Cleaner World’s concealment of its patent policy.

The hypotheticals reject the conventional assumption, that competition presupposes the existence of a market. Especially as regards the development of ‘revolutionary’ technology, in contrast to ‘evolutionary’ technology that only introduces improvements to products sold in an existing market, firms compete for the market and not in a market. In such a situation, firms do not compete by price but by research and development efforts. Protection of such competition in innovation ‘without a market’ does not only pose theoretical and normative problems. For the development of modern society, the relevant cases belong to the economically most important ones and, therefore, should receive particular attention by competition law enforcers. This paper argues that, in the light of current rules, competition law is not well prepared for combatting restraints of competition in innovation.

The latter aspect is especially of a concern in the European Union. This concern arises in particular against the backdrop of the so-called ‘effects-based approach’ that has been advocated by the European Commission for more than a decade. In 1999, the European Union started to implement this arguably ‘more economic approach’ by replacing the formalistic system of a white list of exempted clauses in vertical agreements by a new model of block exemption based on the market shares of the contracting parties. This shift is explained by the assumption that the same contract clause may impact competition in the relevant market in very different ways depending on the market power of the contracting parties in the given case. Accordingly, it is assumed that the agreement, provided that it does not include any of the black-listed clauses, will not restrain competition if neither of the contracting parties exceeds the market share thresholds of the Block Exemption Regulation.

This paradigm shift was very timely at the end of the 20th century. Yet it is a completely different question whether the new paradigm also adequately responds to the needs of the 21st century. The effects-based approach, by assessing the effects of business conduct on existing markets, may work well for protecting static price competition. However, undertakings increasingly engage in dynamic competition in innovation, while price competition becomes less important. For instance, an originator pharmaceutical company has to invest in research and development and to bring new products to the market in order to

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4 One of the most outspoken critics of the former ‘form-based approach’ and the lack of economic analysis in European competition policy already in the 1990s was Valentine Korah. As to her current position see Valentine Korah, An Introductory Guide to EC Competition Law and Practice (9th edn 2007) at 452-474 (also evaluating the steps taken by to Commission to meet her former criticism).
succeed in competition with other originator companies, whilst price competition only kicks in after the patent expiry when generic companies are allowed to enter the market. Similarly, Apple applies a business strategy that is based on a continuous race for bringing new products to the market that offer new functionalities to consumers. Apple’s strategy mostly relies on lead time in combination with an intelligent design and trade-mark policy that provides the firm with a competitive advantage over its competitors. In addition to our electric car example, these two examples demonstrate that competition for future markets gradually becomes more important than competition in existing markets.

There is no doubt that protecting competition in innovation is a very difficult task for competition law enforcers. Competition in innovation, by definition, is about the future. Therefore, protecting competition in innovation obliges competition law enforcers to base their analysis on predictions on future and often uncertain developments. Also, depending on the kind of conduct, the applicable legal rules may limit the possibilities of agencies and courts to different degrees when they want to enforce the law against conduct that only affects future markets. Whilst in the field of merger control, assessing the effects of a given concentration on ‘future’ markets is in line with the preventive character of merger control, especially jurisdictions that follow the European approach of having a prohibition on abuse of market dominance, only allow for intervention against unilateral conduct if abusive conduct can be identified at the time when the undertaking has already attained market dominance in the relevant market.

In the following, after explaining a bit more the concept of competition in innovation (at II., below), this paper will attempt three things: first, it will demonstrate that the challenges are different ones in the three fields of competition law enforcement, namely of merger control, restrictive agreements and unilateral conduct. Secondly, it will explain how agencies and courts work with the existing rules and try to adapt such rules in order to meet the challenges of protecting competition in innovation. And finally, the paper will state the need for future legislative reform. Given that the challenges are different ones for the three fields of competition law enforcement, the paper will undertake this analysis in a consecutive way for merger control (at III., below), restrictive agreements (and IV., below) and unilateral conduct (at V., below). The paper will mainly focus on the situation under EU law but also take into account the debate and the law in the United States.

II. THE CONCEPT OF COMPETITION IN INNOVATION

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5 This was most strikingly expressed by Advocate General Jacobs’ Opinion in Case C-53/03 Syfait [2005] ECR I-4609, para 89 (describing innovation as an ‘important parameter of competition’ in the pharmaceutical sector).

6 On this issue see Josef Drexl, ‘Real Knowledge is to Know the Extent of One Owns Ignorance: On the Consumer Harm Approach in Innovation-Related Competition Cases’, 76 Antitrust L.J. 677 (2010).
Competition in innovation is not a newly identified phenomenon. Rather, it may be argued that Joseph Schumpeter, when he highlighted the prevailing importance of competition for better products for economic growth and described his idea of ‘creative destruction’ in 1942, he also prepared the theoretical foundations for the recognition that there is not only competition in existing markets but also competition in innovation for future markets. However, what is still relatively new is that competition law enforcers recognize innovation as a proper parameter of competition beyond the neoclassical focus on price and output. This paradigm shift poses a number of conceptual challenges, which will be discussed in this part of the paper. The first question is whether innovation as a parameter of competition can at all be captured by a market-based approach (at 1., below). Secondly, the question is whether ‘competition in innovation’ is in need of a completely new conceptual approach, or, conversely, whether it is possible to adopt a concept of an ‘innovation market’ for assessing cases where innovation as a parameter of competition is at stake (at 2., below). As a result, this part of the paper formulates a critique on the use of the traditional market-oriented approach in competition law for protecting competition in innovation (at 3., below).

1. Competition in innovation and product market analysis

When firms invest in R&D in order to compete better with other firms, such investment does not necessarily happen outside of existing markets. Innovation often leads to mere improvements of products or processes without creating new markets or replacing previous markets by new ones. Incremental or evolutionary innovation takes place in existing markets. For instance, in contrast to the above example on electric cars, the development of a better car engine that reduces the consumption of fuel only affects competition for better products in the existing car market. Accordingly, if for such innovation two car manufacturers enter into an agreement for jointly developing more advanced technology, the agreement may appropriately be assessed in the light of the effects on the already existing car market, although the concrete restraint may relate to R&D efforts prior to the implementation of the innovation in marketable products.

Yet, even in such a case where competition law enforcers may rely on an existing relevant market, the analysis differs from traditional competition analysis. When enforcers assess the effects on price or output-related restraints, they usually deal with distribution-related conduct. This is so with regard to both restrictive agreements and unilateral conduct. In such instances, enforcers make a decision whether the allegedly anti-competitive conduct has a negative impact on a parameter of competition in the relevant market, such as price, or

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7 Joseph Schumpeter, *Capitalism, Socialism and Democracy* (1942).
8 This is, indeed, the approach of the EU Block Exemption Regulation on research and development agreements. According to this Regulation, the block exemption regulation depends on the shares of the undertakings in existing product or technology markets. See Article 4(2) of the Commission Regulation No 1217/2010 of 14 December 2010 on the application of Article 101(3) of the Treaty on the functioning of the European Union to categories of research and development agreements, [2010] OJ L 335, p 36.
forecloses the relevant market for competitors. In contrast, with regard to an R&D agreement, enforcers have to assess the potential anti-competitive effect of conduct that takes place at a very preliminary stage of product development, i.e. often a long time before the new technology is implemented in a product and brought to an existing market. This raises the issue whether conduct at this stage can even be considered relevant conduct ‘in a market’ that can be addressed by competition law and assessed in the light of its rather indirect effects on the existing markets.

There are mainly two reasons why this question has to be answered in the affirmative: first, also business decisions that are made at the early stages of development and production have an impact on competition in the relevant product market. Of course, such impact is often of a very indirect and remote nature. Yet effects on existing product markets cannot be denied. If two car manufacturers exclude one of two available innovation poles they individually control from their joint R&D efforts, the agreement may well prevent certain improvements from reaching the existing market to the prejudice of consumers.

The second reason is explained by the vertical nature of the relationship of research and development, technology and products. Until a product is sold in a given market, innovation has to go through the earlier stages of R&D and production. In this regard, manufacturers have a choice between engaging in R&D efforts themselves and outsourcing R&D to suppliers of technology. Hence, from an economic perspective, R&D is to be considered as an input to the goods and services sold in the downstream product market. Just as it is possible to distinguish downstream between different levels of sales markets, namely the wholesale and the retail market, it is possible to distinguish between an upstream technology and a downstream product market. Indeed, vertical disintegration increasingly becomes a feature of the modern economy. Whilst, in the past, manufacturers tended to develop their own technologies that were then implemented in their products, they nowadays tend to become purchasers of technology that is offered and supplied by firms specialized in an upstream technology market. However, for the purposes of competition law analysis, the distinction between product and technology markets does not mark a paradigm shift. From a competition law perspective, an upstream technology market only appears as a particular market for an input which is needed for the production of a product to be offered on a downstream market. In this regard, upstream technology markets are not theoretically different from other upstream markets for labour, capital, raw materials or prefabricated parts. The recognition of a special technology market in addition to the product market is nevertheless important for the application of the law, for instance in the framework of the European Block Exemption Regulation on Research an Development

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9 See also Hanns Ullrich, Kooperative Forschung und Kartellrecht (1988), at 148 et seq; id, ‘Antitrust law relating to high technology industries – a case for or against international rules?’, in: Roger Zäch (ed), Towards WTO Competition Rules (1999), at 268 (convincingly rejecting the view that R&D efforts have to be excluded from competition law analysis as mere preliminary stages to market competition).
Agreements (in the following: R&D BER)\(^{10}\) and the Block Exemption Regulation on Transfer of Technology (in the following TTBER),\(^{11}\) since market shares in the technology markets will often be higher than in the product markets and, therefore, may make it less likely that a block exemption will be granted in the specific cases.

The distinction between technology and product markets is certainly a useful one with regard to the control of licensing agreements or – in European terms – technology transfer agreements. In the case of licensing agreements, competition law is applied to already available technology, that is distributed in a given technology market. At the same time, a restraint in the technology market may also produce anti-competitive effects on downstream product markets. With regard to R&D agreements, however, there are instances where enforcers cannot rely on an already existing technology or product market. Hence, the question arises whether it is possible to recognize something like a further upstream ‘innovation market’. Especially for cases, such as presented in hypothetical 2,\(^{12}\) where the agreements relates to new fields of technology that will lead to new product markets, recognition of a further upstream ‘innovation market’ may be crucial for being able to capture restrictions of competition in inovation which would otherwise escape competition law enforcement. A similar need for the recognition of an innovation market concept may arise, for instance, when two undertakings that dispose of the only two relevant poles of technology development decide to merge, or when an undertaking applies for a patent for the sole purpose to distort R&D activities of other firms that are considered to be potential competitors in future technology and product markets. Accordingly, the concept of innovation markets may be needed for all different fields of competition law enforcement.

2. The concept of innovation markets

The application of a concept of innovation markets for competition law purposes was first recommended for merger control in the United States. This debate was especially enhanced by an article by Gilbert and Sunshine, who, at the time of writing their article, held leadership position in the field of antitrust at the US DoJ.\(^{13}\) Their proposal to apply an innovation market analysis in merger control

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10 See n 8, above.
12 See at l, above.
responded to the conviction that economic growth is primarily driven by investment in research and development and that conventional merger analysis with its focus on downstream product markets would not sufficiently take into account the adverse effects of mergers on innovation. Based on a concept of a vertical relationship of R&D on the one hand and the resulting products on the other hand, they pointed out that the impact on innovation can be analyzed from two perspectives: first, with regard to the effects on downstream product markets, and second, with regard to the impact on structural effects on upstream innovation markets.\footnote{Id, at 570.} The latter perspective was recommended as a most important supplement to merger analysis, given that a given merger could also reduce incentives for innovation although the merging firms are neither actual nor potential competitors prior to the merger.\footnote{Id.} Accordingly, Gilbert and Sunshine argued that traditional merger analysis that only focuses on the effects on the downstream product market would not necessarily capture all relevant anti-competitive effects of the relevant merger.\footnote{Id, at 583.} Therefore, they recommended a five step test for the analysis of the effects of a merger on the innovation market:\footnote{Id, at 595-597.} (1) identification of the overlapping R&D activities of the merging firms; (2) identification of alternative sources of R&D as reasonable substitutes to the R&D activities of the merging firms; (3) evaluation of actual and potential competitive pressure from competition in downstream product markets;\footnote{This analysis reacts to the argument that the new firm is less likely to reduce upstream R&D efforts if it has to face intensive competition in a downstream product market.} (4) assessment of the increase of concentration of R&D due to the merger; and (5) assessment of the pro-competitive effects of the merger also in view of higher incentives to innovate of the new firm. Beyond merger control, they also recommended applying the innovation market concept to other fields of antitrust enforcement such as for the assessment of R&D agreements.\footnote{Gilbert & Sunshine (n 13, above), at 594.}

The concept of innovation markets quite rightly highlights the importance of innovation as a non-price parameter of competition. However, it is less convincing to draw direct conclusions from the structure of a so-called innovation market and the level of R&D concentration for incentives to innovate.\footnote{See also the criticism expressed by Richard T Rapp, ‘The Missapplication of the Innovation Market Approach to Merger Analysis’, 64 Antitrust LJ 19, 20 (1995-1996) (criticizing the lack of economic theory on the link between market structure, the concentration of R&D and the impact on innovation).} This approach does not only seem to rely on the questionable structure-conduct-performance paradigm. Reliance on a concept of concentration of R&D in an upstream ‘innovation market’ also depends on the existence of such an upstream market for R&D efforts as an input to production.\footnote{Gilbert & Sunshine (n 13, above), at 581-587.} Indeed, Gilbert and Sunshine seem to argue that such a market actually exists. They define the relevant innovation market as ‘a set of activities and a geographical area in which a hypothetical monopolist would impose at
least a small but significant and nontransitory reduction in R&D efforts. From this definition, however, it arises that the market concept used by Gilbert and Sunshine cannot be understood in the sense of an actual market for innovation. The two authors transfer the SSNIP test for assessing the effects of a merger on the incentives to invest in R&D. But R&D efforts in this context do not constitute a product that is offered for sale to customers in an actual market. The innovation market concept thereby fails to meet the most important requirement for a ‘market’, namely the existence of market transactions between a supplier and a customer of a product. Accordingly, the term of ‘innovation market’ appears as theoretically unsound. At best, the term ‘market’ is used by way of an analogy. The truth is that Gilbert and Sunshine tried to capture problems related to competition that occur outside existing markets. Yet they seemed to ignore this conceptual problem by recommending a transfer of the structural market-based analysis to the upstream level of R&D efforts, although they failed to prove why a market share analysis can be transferred from a true market with transactions to ‘market shares’ assessed in terms of R&D assets and activities.

Therefore, it does not come as a surprise that the proposal of introducing an innovation market analysis in merger control produced quite some criticism in the scholarly debate. Some of the counter-arguments are the following: recognition of innovation in antitrust analysis is not new and innovation is frequently taken into account by antitrust analysis. It is important to note that in dynamic markets existing market shares are much less reliable. This, however, does not advocate a departure from traditional merger analysis. Even in cases where a market does not exist, it is possible to assess the anti-competitive effect with regard to future markets. In addition, the innovation market concept was criticized as ‘a leap into the unknown, with a potential for harm to economic welfare as great as any potential benefit’. Most importantly, it is argued that Gilbert and Sunshine did not provide any economic theory for justifying the link between market structure, the concentration of R&D and the impact on incentives for innovation, that there is no direct correlation between

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22 Id. at 594.
23 See also Rapp (n 20, above), at 27 (pointing out that, in contrast to other input in production, there are no transactions in innovation).
24 See also Rapp (n 20, above), at 27 (criticizing Gilbert and Sunshine for an ‘error’ or a ‘leap of faith’).
26 Hay (n 25, above), at 8-10 (arguing that innovation often justified mergers in view of the need of high investment in R&D, that, under Section 2 of the Sherman Act, enforcers would also challenge the use of R&D as a weapon to distort R&D by competitors, and that innovation traditionally often plays an important role in assessing licensing agreements).
27 Hay (n 25, above), at 13 et seq.; Rapp (n 20), at 37-46 (in favour of exclusively relying on the analysis of technology and product markets).
28 Hay (n 25, above), at 15.
29 Rapp (n 20, above), at 20.
30 Rapp (n 20, above), at 26-33. This criticism is most convincing in the light of the ongoing debate on whether, in the sense of Schumpeter, monopoly would produce higher rates of investment in R&D than competition; see also Rapp, id, at 28.
the level of investment in R&D and the level of innovation,\textsuperscript{31} and that it is hard to monopolize the capacity to innovate.\textsuperscript{32}

Yet, despite this criticism, the innovation market share approach was adopted in the US IP Licensing Guidelines of 1995.\textsuperscript{33} In line with the proposals of Gilbert and Sunshine, the Guidelines explain the concept of an ‘innovation market’ as follows:

An innovation market consists of the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development. The close substitutes are research and development efforts, technologies, and goods\textsuperscript{34} that significantly constrain the exercise of market power with respect to the relevant research and development, for example by limiting the ability and incentive of a hypothetical monopolist to retard the pace of research and development. The Agencies will delineate an innovation market only when the capabilities to engage in the relevant research and development can be associated with specialized assets or characteristics of specific firms.\textsuperscript{35}

This concept highlights two elements of traditional competition law analysis that are transferred to ‘innovation markets’, namely the idea that anticompetitive effects need to be assessed in the light of existing market power and that, for the purpose of market power, the relevant ‘innovation market’ is defined by using the concept of substitutability. Accordingly, the Guidelines aim to identify market power for R&D by identifying close substitutes for research and development. Such substitutes may exist in form of alternative research and development or available technology and goods. Yet using the term of a market remains a misconception, given that there are no customers for R&D and no transactions in R&D. Using the term ‘market’ would only make sense with regard to future markets. This fallacy of the US IP Licensing Guidelines becomes even more apparent where they try to assess ‘market shares’ in the framework of ‘Example 3’. There, the Guidelines argue as follows:

If the number of firms with the required capability and incentive is large (either because there are a large number of such firms in the jet turbine industry, or because there are many firms in other industries with the required capability and incentive), then the Agency will conclude that the innovation market is competitive. Under these circumstances, it is unlikely that any single firm or plausible aggregation of firms could acquire a large enough share of the assets

\textsuperscript{31} Rapp (n 20, above), at 33-36.

\textsuperscript{32} Id., at 36 et seq.


\textsuperscript{34} In a footnote, the Guidelines contain the following explanation: ‘For example, the licensor of research and development may be constrained in its conduct not only by competing research and development efforts but also by other existing goods that would compete with the goods under development.’

\textsuperscript{35} Id.
necessary for innovation to have an adverse impact on competition.

By simply counting the number of firms that may have the potential to engage in R&D for bringing products to future product markets, the Guidelines implicitly confirm that the concrete size of market shares cannot be assessed if there is no product that is sold to customers in such an innovation market. This criticism even has to be extended a step further: since nothing is sold to any customer in the so-called ‘innovation market’, the use of the concept of a ‘market’ cannot be justified. The use of the concept of a market, therefore, is not just a misnomer; it is even misleading in the sense that it creates the illusion that there can be something like market power on which enforcers can rely for their assessment of anti-competitive effects.

In a 1996 FTC staff report, adoption of the innovation market approach was also recommended for the US Merger Guidelines. In contrast, the recently adopted US Horizontal Merger Guidelines abstain from using any ‘innovation market’ concept. In contrast to the IP Licensing Guidelines, they rather apply a concept of ‘innovation competition’ that avoids reliance on existing or future markets as well as on the concept of market power based on R&D assets. As part of the chapter on unilateral effects, the Guidelines state as follows:

Competition often spurs firms to innovate. The Agencies may consider whether a merger is likely to diminish innovation competition by encouraging the merged firm to curtail its innovative efforts below the level that would prevail in the absence of the merger. That curtailment of innovation could take the form of reduced incentive to continue with an existing product-development effort or reduced incentive to initiate development of new products.

The Guidelines thereby confirm the importance of innovation as a non-price parameter of competition and simultaneously avoid the flaws that characterize the innovation market concept. By dealing with ‘innovation competition’ in the context of unilateral effects, the Guidelines also confirm that a merger may reduce the incentives for innovation although it does not lead to monopoly power of the emerging firm in the relevant technology and product markets.

In the European Union, competition law has developed in quite a similar way. This can best be demonstrated with regard to the rules on R&D agreements.

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36 See Federal Trade Commission, Office of Policy Planning, Anticipating the 21st Century: Competition Policy in the New High-Tech Global Marketplace chapter 7 (May 1996), available at: http://www.ftc.gov/opp/global/report/ge_v1.pdf. (by relying on the concept as it is used in the IP Licensing Guidelines). On the following hearings see Nicholas N Widnell, ‘The crystal Ball of Innovation Market Analysis in Merger Review: An Appropriate Means of Predicting the Future?’; 4:2 George Mason L Rev 369 (1996) (pointing out the two major arguments against employment of such a concept: (1) the risk of false positives by prohibiting a merger which should better be cleared; and (2) the fact that innovation concerns are sufficiently taken account of under the then existing system).


38 US Horizontal Merger Guidelines, (n 37, above), chapter 6.4. (Emphasis added).
In the recently adopted new EU Guidelines on Horizontal Cooperation Agreements, which are also designed to inform the public on the application of the EU competition rules to R&D agreements, the Commission distinguishes between three different levels of assessing such agreements: (1) ‘existing product markets’; (2) ‘existing technology markets’ and (3) ‘competition in innovation (R&D efforts)’. It is interesting to see that, with regard to the third level, the Commission avoids mentioning the term ‘market’. In this regard, the Commission states:

R&D co-operation may not only affect competition in existing markets, but also competition in innovation and new product markets. This is the case where R&D co-operation concerns the development of new products or technology which either may – if emerging – one day replace existing ones or which are being developed for a new intended use and will therefore not replace existing products but create a completely new demand. The effects on competition in innovation are important in these situations, but can in some cases not be sufficiently assessed by analysing actual or potential competition in existing product/technology markets.\(^\text{40}\)

It is interesting to see that the previous EU Horizontal Cooperation Guidelines still used the concept of innovation markets\(^\text{41}\) without, however, clarifying how an innovation market should be defined.

Quite rightly, in the new Guidelines, the Commission avoids using the term ‘market’ for situations in which R&D is expected to lead to new markets.\(^\text{42}\) It has to be concluded that competition in innovation may affect existing markets in some cases (evolutionary technology). However, in other cases, such as in the above electric car example, competition in innovation may also take place outside of existing markets (revolutionary technology). It is clear from the outset that, in the latter cases, the traditional market-oriented approach to assessing anticompetitive effects is in need of modifications. One way of assessing ‘competition in innovation without a market’ may be to analyse the likely effects on future technology and product markets. It is only in this context that the Commission explicitly uses the term of ‘innovation markets’ as a synonym for future markets.\(^\text{43}\) Yet, according to the Commission, anti-competitive effects constitute only one scenario in which it deems that intervention in order to protect competition in innovation would be mandated. The other scenario relates to distortions of competition arising from the exclusion of the development of one of several identifiable innovation poles in the framework of an R&D

\(^{39}\) EU Horizontal Cooperation Guidelines (n 1, above), paras 112-126.

\(^{40}\) Id, para 119.


\(^{43}\) Id, para 147.
agreement.\textsuperscript{44} In this regard, the Commission indicates that cases may be assessed in the light of direct effects on innovation.\textsuperscript{45}

Against the background of these rules, it becomes clear that the European Commission abstains from the adoption of an innovation market concept as it was advocated in the US in the 1990s. This is true with regard to both the terminology and the substance of the analysis. In particular, the Commission confirms that ‘competition in innovation’ relates to competition outside existing markets. In this regard, the Guidelines on Horizontal Cooperation Agreements state:

If the R&D aims at developing a product which will create a completely new demand, market shares based on sales cannot be calculated. Only an analysis of the effects of the agreement on competition in innovation is possible. …\textsuperscript{46}

Thereby, the Commission avoids transferring a structural market analysis and a concept of market dominance to the field of competition in innovation. Rather, it prefers a more open approach to assessing negative effects on innovation as a dynamic parameter of innovation. This approach may have the disadvantage of less certainty. At the same time, however, it has the advantage of providing sufficient flexibility for hosting different economic insights on the linkage between concrete business strategies and their impact on R&D efforts as a parameter of competition. By assessing cases in the light of innovation poles, without considering and assessing them against the background of a concept of dominance for R&D assets, the Commission takes better account of the dynamic aspects of competition in innovation.

To sum up: the concept of innovation markets as discussed mostly in the 1990s is based on theoretical misconceptions and, therefore, does not provide any guidance for assessing cases where firms distort incentives for innovation outside of existing technology and product markets. This, however, does not mean that competition law enforcers should not intervene when undertakings distort incentives for innovation. It is the task of the agencies and the courts to protect competition in all different variations. The mere reason that, regarding competition in innovation, enforcers will not be able to rely on existing markets should not be a justification a refusal to intervene. Otherwise, enforcers would only be able to protect competitive processes for ‘evolutionary’ innovation, although ‘revolutionary’ innovation matters much more from an economic perspective given its potentially long lasting effects on emerging markets. It is therefore welcomed that the agencies in the EU und the US nowadays rely on alternative concepts of ‘competition in innovation’ and ‘innovation competition’ and no longer on the concept of innovation markets.

3. A more fundamental critique on the market-oriented assessment

\textsuperscript{44} Id, para 120.
\textsuperscript{45} Id, paras 120 et seq.
\textsuperscript{46} EU Guidelines on Horizontal Cooperation Agreements (n 39, above), para 126.
Although the EU approach to competition in innovation avoids the concept of ‘innovation markets’, it may still be criticized for trying to assess innovation-related competition law cases in the light of existing technology and product markets to the extent possible. There are several fundamental concerns that question the soundness of such an approach:

Firstly, the market-based assessment has a natural tendency toward a static analysis. As part of this assessment, the question is asked whether, for instance, an R&D agreement for a technological improvement of products already sold in an existing product market will reduce competition in the existing market for this product. The static consequences of such conduct are also relied upon by the EU R&D BER\textsuperscript{47} that, in the blacklist of non-exempted hardcore restrictions, also includes distribution-related restrictions – such as price fixing and territorial restrictions – that are known from the Vertical Agreements Block Exemption Regulation.\textsuperscript{48} It is not to be criticized that the Commission wants to exclude such restrictions from the block exemption. Also, R&D agreements may be used to exclude price competition between the contracting parties. However, whether reliance on a form of analysis which was initially developed for vertical distribution agreements is the best approach for protecting dynamic competition in innovation is a different question that yet has not received sufficient discussion.

Secondly, a similar criticism has to be formulated for the use of the market power concept underlying the R&D BER. Whilst it is quite rightly accepted that vertical distribution agreements should be assessed in the light of the market power of the contracting parties, the question is how to assess market power where dynamic competition in innovation is at stake. The R&D BER also grants the block exemption based on a market-share analysis regarding existing markets,\textsuperscript{49} although existing market shares may not be a very good proxy for assessing market power in a dynamic situation in which market power very much depends on the ability to serve the market with better products in the future. Even large market shares of a competitor in existing markets are very weak indicators for market power if, at the same time, another firm controls the most important innovation pole for the future. This latter firm may even be a non-competitor or a potential competitor with a current market share of zero. Still, this potential competitor will be able to exercise considerable market power at the time it enters the market. It therefore seems that it is only for reasons of practicality that the R&D BER assesses market power in the light of the shares of the parties in existing technology and product markets.

Thirdly, what is most important for effective and adequate competition law enforcement in this context is to understand the economics of the dynamic processes of innovation as a basis for the analysis of dynamic competition. In this regard, economic theory still has to produce more insights. So far, industrial

\footnotesize{\textsuperscript{47} At n 8, above.}

\footnotesize{\textsuperscript{48} See, in particular, Article 5 lit c) to f) R&D BER (n 8, above).}

\footnotesize{\textsuperscript{49} According to Article 1 lit u) R&D BER (n 8, above), the relevant market which is the point of reference for assessing the market share thresholds of the exemption are defined by the ‘products capable of being improved, substituted or replaced’.}
organization economics may not be sufficient. Additional streams of economic thinking have to be taken into account as well. For instance, evolutionary economics argues in favour of protecting the process of innovation against distortions that may reduce the diversity of technological solutions and, therefore, the reduction of R&D incentives for competitors, which may slow down the innovation process.\(^{50}\) Accordingly, the challenge consists in addressing the artificial reduction of the pro-competitive incentives for innovation by agreements between undertakings, unilateral conduct and concentrations.

In the following parts, the paper will therefore turn to the different fields of competition law enforcement to answer the question whether competition law rules are well prepared to host such new approaches to protecting competition in innovation without a market.

### III. MERGER CONTROL

Merger control is the field of competition law where enforcers so far were least hesitant to take into account innovation as a parameter of competition. The reasons for this are clear: while it is true that merger control law requires a market-oriented approach, competition agencies are called upon to make predictions on how markets will develop in the future if the merger is cleared. In the framework of such an analysis, agencies can more easily take into account a reduction of the incentives to innovate for assessing the potential negative effect of the merger on competition in future product markets that, at the time of the merger, may not even exist. As exemplified by hypothetical 1,\(^{51}\) a merger between two firms that control the major innovation poles for future markets may lead to a significant impediment of dynamic competition in innovation and finally exclude superior technology from being implemented in products to the prejudice of consumers.

It is therefore no surprise that competition in innovation has gained most attention both in practice\(^ {52}\) and in economic and legal writing with regard to merger control law.\(^ {53}\) It is not the place here to analyze this case-law. It is more important to point out the advantages that merger law poses for taking account of innovation concerns in the framework of merger review.

The advantage does not only consist in the relative ease of taking account of

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\(^{51}\) At I., above.

\(^{52}\) In the US, it was in 1993, that the Antitrust Division applied the innovation market concept for the first time in a merger case. *See United States v. General Motors Corp.*, Civ. No. 93-530 (D.Del. filed Nov. 16, 1993).

the dynamic processes in the framework of a decision which is based on presumptions on future developments. The modern European merger control criterion also facilitates such an analysis by turning away from the previous market dominance test to the so-called SIEC (significant impediment of effective competition) test of Article 2(3) European Merger Control Regulation, according to which a showing that the merger creates or strengthens a market dominant position is no longer absolutely required. This weakening of the market dominance test is usually explained by the need identified by the European legislature to also capture unilateral effects of a merger.\(^{54}\) But the new standard may also facilitate the assessment of mergers where competition for innovation is at stake. In such cases, it may well be considered sufficient that the merger significantly reduces the incentives for innovation due to the merger without the need for even specifying more concretely the relevant future product markets and without the need for assessing the effects of the resulting market power.\(^{55}\)

Another aspect of merger control law that may help competition agencies to take account of the effects of a merger on innovation as a parameter of competition is the flexibility this field of law provides with regard to the remedies. Where agencies see problems for innovation, they may easily impose conditions on the merging firm, for instance, in form of a duty to sell a particular R&D unit or with regard to the later licensing practices. The latter is a way of dealing with mergers that competition agencies have already sufficiently developed in cases where the accumulation of IPRs may pose a threat to competition among different technologies.\(^{56}\)

Of course, taking into account the effects of mergers on incentives for innovation has also been strongly advocated by the proponents of the ‘innovation market concept’ in the United States.\(^{57}\) For the reasons explained above,\(^{58}\) this concept cannot be considered as good guidance for integrating dynamic effects in merger analysis. Rather, it seems advisable to further develop the concept of ‘innovation competition’ of the new US Horizontal Merger Guidelines, which is substantially similar to the European concept of ‘competition in innovation’ as explained in the Commission’s Guidelines on Horizontal Cooperation Agreements. Yet the US Horizontal Merger Guidelines provide little guidance as to the analytical framework to be used for assessing a

\(^{54}\) In this regard, it is also to be recalled that the new US Horizontal Merger Guidelines refer to the concept of ‘innovation competition’ within the chapter on unilateral effects. US Horizontal Merger Guidelines (n 37, above), chapter 6.4. See also text at n 38, above.

\(^{55}\) Cf Simonetta Vezzoso, ‘Open Source and Merger Policy – Insights from the European Commission’s Oracle/Sun Decision’ (2011) 42 IIC 344, 350 et seq (indicating that, in Oracle/Sun, the Commission was helped by the new merger control standard in arguing that Oracle as the largest Open Source database provider exercised considerable competitive pressure on Sun despite the very low market share of Oracle in the general database market).

\(^{56}\) See in this regard Andreas Heinemann, ‘Intellectual property rights and merger control: How to secure incentives to innovate in the long run’ in: Josef Drexl et al. (eds), Technology and Competition: Contributions in Honour of Hanns Ullrich (2009) 601, 622-625 (on remedies).


\(^{58}\) At II. 2, above.
reduction of innovation competition as a consequence of a merger.\textsuperscript{59}

Although competition agencies on both sides of the Atlantic nowadays show more willingness to take account of non-price effects than in the past, there are also reasons that explain why it will remain extremely difficult to consider the adverse effects of mergers on competition in innovation more broadly: first, the assessment of the future effects on competition has become more controversial in recent years even with regard to price-related effects and produce increasingly controversial economic expert opinions in merger control proceedings. It may well be argued that for assessing the future effects of a given merger on innovation, competition agencies are even more in need of a crystal ball. It may therefore well turn out that agencies will not win cases where they aim to justify remedies in merger control proceedings in the light of protecting competition in innovation.\textsuperscript{60} Secondly, adverse effects on innovation produced by a merger may coincide with positive effects with regard to static price competition. This raises the issue of how to balance such effects in the light of a consumer surplus approach in a scenario where some consumers would prefer a higher level of innovation, whilst others prefer lower prices.

III. RESTRICTIVE AGREEMENTS

If it is correct that competition law has to intervene when undertakings restrain competition in innovation, it also has to address restraints of competition to be found in research and development (R&D) agreements in particular.

It is EU competition law that provides most insight regarding the assessment of the potential anti-competitive effects of R&D agreements. Yet EU law has to be criticized for its strong reliance on assessing the effects of such agreements on existing markets, although EU law fully admits that sometimes there is no existing relevant markets when the parties to such agreements enter into a cooperation to develop completely new technologies and new products.\textsuperscript{61}

The EU R&D BER\textsuperscript{62} designs its approach to the block exemption in line with the general market-share approach of European law. This requires two things: (1) identification of an existing relevant market; and (2) assessment of whether the parties to an R&D agreement are competitors or non-competitors. Both aspects are closely related.

First, the R&D BER, according to its Article 4(2), exempts an R&D

\textsuperscript{59} This criticism is also expressed by FTC Commissioner J Thomas Rosch. See Statement of Commissioner J. Thomas Rosch on the Release of the 2010 Horizontal Merger Guidelines 3 (August 19, 2010), available at: http://www.ftc.gov/speeches/rosch/100819horizontalmergerstatement.pdf (stating, for example, that the Guidelines do not provide any help in weighing conflicting effects when a reduction in innovation coincides with positive effects on price. He also raises the question of whether innovation competition may only be considered in the framework of the analysis of unilateral effects).

\textsuperscript{60} See Widnell (n 36, above), at 403 (rejecting innovation market analysis because of its speculative nature).

\textsuperscript{61} See at II. 2., above.

\textsuperscript{62} See n 8, above.
agreement among competitors provided that their joint market shares in the relevant technology or product markets do not exceed 25%. In case that the contracting parties are non-competitors, Article 4(1) grants a general block exemption for the time of research and development. This latter exemption is extended by additional seven years, if the R&D agreement also provides for common exploitation.

According to Article 1 lit r) of the R&D BER, the concept of ‘competitors’ include actual and potential competitors. ‘Actual competitors’ are defined as undertakings that offer products, technologies and processes that may be improved, substituted or replaced in the relevant technology or product market by the contract technology or product.63 The concept of a ‘potential competitor’ is not defined by the Regulation itself. However, the Guidelines on Horizontal Cooperation Agreements define a potential competitor as an undertaking that, in case of a small but permanent increase of price, would make the necessary investment to enter the relevant market within a short period of time. This definition clarifies that the concept of a ‘potential competitor’ still requires an existing market.

Against the background of these rules, it becomes clear that cases in which so far non-competing firms enter into an R&D agreement in view of developing completely new technology and products for which there do not yet exist any markets are assessed in a very generous way. First, such agreement is qualified as an agreement between non-competitors since, according to the approach of the Regulation, both the concept of actual and potential competitors requires an existing market. Secondly, Article 4(1) R&D BER provides for a general exemption for such an agreement, at least for the time of the research and development. Accordingly, an agreement of firms such as Renault and Nissan in hypothetical 2,64 benefits from the block exemption even if the agreements excludes identifiable innovation poles controlled by the parties for being further developed. The Regulation only black-lists a prohibition on independent R&D activities that are unrelated to the field of cooperation.65

This is a startling result. If the same kind of exclusion of further development of an existing innovation pole would be included in an agreement of competitors, i.e., who already sell technology or products in an existing market, the agreement would only be exempted under Article 4(2), if the joined market share does not exceed 25%. From an innovation policy perspective such a distinction does not make any sense. Quite on the contrary, it might be argued that the potential negative effects on innovation are much more severe in the first case of the development of completely new technology or products than in the second case of mere product improvements. Especially in the situation where markets are characterized by network effects and standardization, such as in hypothetical 2, the exclusion of individual innovation poles by R&D agreements may decisively define which technology will capture the standard,

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63 Article 1 lit s) R&D BER.
64 At 1, above.
65 Article 5(a) R&D BER only blacklists a prohibition on independent R&D that is unrelated to the field of cooperation.
while, in the second case of existing markets, the R&D agreement would only have less severe effects on follow-on innovation.

The reasons for this distinctions seem purely to arise from the conceptual problems of creating an analytical market-based framework for competition in innovation. In this regard, EU law turns out highly ambivalent. On the one hand, in its Guidelines on Horizontal Cooperation Agreements, the European Commission recognizes that there is competition in innovation without a market. On the other hand, undertakings that compete in innovation outside existing markets are categorized as non-competitors and, thereby, EU law accepts a very broad scope of the block exemption. The Commission implicitly confirms that these consequences are only due to said conceptual difficulties by stating:

If the R&D aims at developing a product which will create a completely new demand, market shares based on sales cannot be calculated. Only an analysis of the effects of the agreement on competition in innovation is possible. Consequently, the R&D Block Exemption Regulation treats those agreements as agreements between non-competitors and exempts them irrespective of market share for the duration of the joint R&D and an additional period of seven years after the product is first put on the market. However, the benefit of the block exemption may be withdrawn if the agreement eliminated effective competition in innovation. After the seven year period, market shares based on sales value can be calculated, and the market share threshold of 25% applies.66

It is to be conceded that there is one argument in favour of this very generous approach, namely the decision to promote investment in revolutionary innovation in particular. Nevertheless, the possibility of withdrawing the benefit of the block exemption in individual cases, in which the R&D agreements turns out to restrain competition in innovation, does hardly protect competition effectively. Under the block exemption, the parties have no incentive to inform anybody about the terms of their agreement. By the time a competition agency becomes aware of the anti-competitive effects and investigates, especially in a case such as in hypothetical 2, which is characterized by network effects and standards, the withdrawal may well come too late to repair harm to competition.

V. UNILATERAL CONDUCT

So far, there is very little theoretical insight on the application of unilateral conduct rules to competition in innovation outside existing markets. One reason for this may be that such rules are simply not applicable to restraints of competition in innovation. In the form of the European-style prohibition of abuse of market dominance, unilateral conduct rules do only apply to undertakings with a market-dominant position. This requires, of course, that the allegedly abusive conduct occurs at a time when the undertaking has already

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66 Guidelines on Horizontal Cooperation Agreements (n 1, above), para 126.
acquired dominance. Restraints of competition of innovation outside existing markets by definition occur when the relevant technology or product markets are still to emerge, hence, prior to the date when the acting undertaking will acquire market dominance. Hence, the question to be answered in the following is whether the current rules on unilateral conduct leave a loophole and, therefore, fail to provide adequate protection to competition in innovation. A related question is whether there are ‘ways around’ or more intelligent ways to apply existing unilateral conduct rules to restraints of competition in innovation although such rules require market dominance at the time of the allegedly abusive conduct. These questions will be discussed in the following in the light of hypothetical 3, which presents a case of patent ambush (at 1., below), and the allegations of the European Commission in its Pharma Sector Inquiry Report according to which also the application for patents as part of a strategy of defensive patenting could be considered a violation of Article 102 TFEU (at 2., below).68

1. Patent ambush

Hypothetical 3 presents a typical example of a patent ambush. Patent ambush – or ‘patent hold-up’ – consists of two elements or stages. At the first stage, a firm participates in a standard-setting process and, thereby, conceals its patent policy in contravention of the disclosure rules of the standard-setting organization. At the second stage, once the standard has been fixed and the market actors have started to make investment in the implementation of the standard, this firm challenges the users of the standard for patent infringement with the aim of extracting excessive royalty fees.69 Distinguishing between the two stages is important since the firm engaging in patent ambush will typically not be market-dominant at the time of the deceptive conduct and then acquire dominance once the standard is fixed. Under European unilateral conduct rules the question will be whether the prior deceptive conduct can be taken into account for a violation of competition law.

On both sides of the Atlantic, competition agencies and courts have recently produced some practice on patent ambush in the Rambus case. The results on how this case was handled, demonstrates largely diverging principles of how to deal with unilateral conduct in general and patent ambush strategies in particular in the United States and Europe.

In the United States, the Federal Trade Commission (FTC) challenged Rambus for having monopolized the market for chip technology by concealing its patent policy, while the firm was a member of the standard-setting

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67 At I., above.
organisation JEDEC.\textsuperscript{70} However, the Court of Appeals for the District of Columbia (D.C. Circuit) rejected that view and held that Rambus had not violated Section 2 of the Sherman Act.\textsuperscript{71} In substance, the FTC had argued that there were two alternatives if Rambus had duly disclosed its patent policies. Either JEDEC had accorded the standard to another technology or JEDEC had obliged Rambus to enter into FRAND commitments. According to the D.C. Circuit, this reasoning was considered insufficient since at least the latter hypothetical would not qualify for a monopolization in the sense of Section 2. The Court held that the mere charging of higher prices, as in the FTC’s second hypothetical, would not constitute harm to competition but rather attract new competitors and that, therefore, the FTC had failed to show that Rambus’s conduct was exclusionary.

The D.C. Circuits decision demonstrates a very classical US-style antitrust analysis. According to this, US law only bans exclusionary practices, while purely exploitative practices remain legal. In addition, the Court did not enter into the dynamic aspects of the case and did not address the fact that Rambus concealed its patent policies at a stage of competition in innovation prior to the entry of the new technology to the market. Quite on the contrary, the Court missed the economics of the case with its argument that high prices would only attract new competitors rather than cause harm to competition. The implementation of the patented technology as a standard and the sunk costs involved for the chip manufacturers actually result in high entry barriers that make it very unlikely that a potential competitor would even try to convince chip manufacturers to switch the standard. More importantly, the decision invites firms like Rambus to cheat in the standard-setting process which will undermine trust of other SSO members and destroy the virtues of standard-setting as a particular form of promoting innovation.\textsuperscript{72}

In contrast to the FTC, the EU Commission successfully challenged Rambus for having violated Article 102 TFEU. After having started investigation, the Commission convinced Rambus to accept a so-called commitment decision\textsuperscript{73} in


\textsuperscript{72} This effect will only materialize if there are no other remedies against the patent ambusher. In Rambus Inc. v. Infineon Technologies AG, 318 F.3d 1081 (Fed.Cir. 2003), the Federal Circuit also rejected the claim that Rambus had committed contract fraud. See also David Alban, ‘Rambus v. Infineon: Patent Disclosures in Standard-Setting Organizations’, 19 Berkeley Tech LJ 309 (2004) (criticizing the decision).

\textsuperscript{73} Summary of Commission Decision of 9 December 2009, Case COMP/38.636 – Rambus, [2010] OJ C 30/717; the full version of the decision is available at
the sense of Article 9 of Implementation Regulation 1/2003.\textsuperscript{74} Thereby, Rambus agreed to lower its royalty rates considerably.

In the light of the normative concerns expressed above, the Commission decision in \textit{Rambus} comes as a surprise. While US law does not require market dominance at the time of the exclusionary conduct and, therefore, would also ban the acquisition of such power – ‘monopoly power’ as required by US practice –, the Commission had to explain that Rambus’s conduct violated Article 102 TFEU although the undertaking was not dominant at the time it concealed its patent policy within JEDEC. In this regard, the Commission’s reasoning is not too clear. Without even identifying the problem, the decision reads in this regard:

The Commission took the view that Rambus may have been abusing its dominant position by claiming royalties for the use of its patents from JEDEC-compliant DRAM manufacturers at a level which, absent its allegedly intentional deceptive conduct, it would not have been able to charge. In the preliminary assessment, the Commission provisionally concluded that claiming such royalties was incompatible with Article 102 TFEU, in light of the specific circumstances of this case, including Rambus’ intentional breach of JEDEC policy and the underlying duty of good faith in the context of standard-setting, which resulted in a deliberate frustration of the legitimate expectations of the other participants in the standard-setting process.\textsuperscript{75}

In this reasoning, the Commission directly relies on the concept of excessive pricing as a particular form of abusive conduct according to Article 102 lit a) TFEU. However, the Commission makes also clear that it only was willing to exceptionally control prices in this case because Rambus had engaged in deceptive conduct as part of a patent ambush strategy. There are two possible interpretations of the Commission’s reasoning:

First, it would be possible to conclude that the Commission considers the whole two-stage patent ambush conduct as the relevant abusive conduct under Article 102 TFEU. This approach, however, also requires recognition of the theory that a single and continuous conduct that extends over a certain period of time would suffice to constitute an abuse of market dominance, if market dominance exists only during one part of that period. Such a theory of a ‘single and continuous infringement’ has been accepted by European courts in Article 101 cases.\textsuperscript{76} Whether this theory can also be adopted in the framework of Article 102 TFEU, and especially in patent ambush cases, remains to be seen and is highly doubtful.\textsuperscript{77}


\textsuperscript{75} \textit{Rambus} (n 73, above), para 28.

\textsuperscript{76} See most recently Joined Cases T-101/05 and T-111/05 \textit{BASF and UCB v Commission} [2007] ECR II-4949.

\textsuperscript{77} See Fuchs (n 71, above), at chapter 3.2.1 (rejecting such a transfer by arguing that in a case like Rambus, such a theory would retroactively oblige a later dominant firm to obey to certain rules, although these rules were not applicable at the time of the conduct given the absence of market dominance).
Indeed, the Rambus decision also provides little ground for holding that the Commission actually wanted to argue in the sense of a single and continuous infringement. The Commission remains silent regarding such a theory. Furthermore, the Commission clearly relies on the excessive royalty rates as the basis for the abuse. Therefore, it has to be concluded that the Commission only wanted to rely on the Article 102 lit a) TFEU for justifying the abuse. What still needs to be explained are the reasons for limiting such price control to patent ambush cases and how the previous deceptive conduct of Rambus prior to the acquisition of market dominance can be considered for that abuse.

The first point can indeed be explained by protecting competition in innovation. Despite the prohibition of excessive pricing in Article 102 lit a) TFEU, European practice has so far not accepted a rule according to which the royalty fees for a patent license should generally be controlled by competition law. From the perspective of competition in innovation, this is the appropriate approach. Patent law is meant to exclude competition by imitation and, thereby, enhances competition by substitution. In a market characterized by patents, competitors will only be able by inventing around and by offering better product to consumers. Such competitive pressure from potential substitution will also force the right holder to further invest in better product. Accordingly, patent law and competition law are not inherently conflicting fields of law. They rather share complementary goals. Hence, patent law, in principle, has a pro-competitive effect. By limiting price competition, it is expected to enhance dynamic competition. If enforcers would generally use Article 102 TFEU to control the level of the patent royalties, they would take away the strongest incentives of firms to invest in R&D in the first place. Hence, it may, indeed, be held that, in principle, the possibility to charge whatever price is very much part of the patent system and in line with its pro-competitive, innovation-enhancing character.

However, the situation is very different in a patent ambush case: first, in a standardisation scenario, the pro-competitive goal of patent law only works until the standard is set. After that point in time, the position of the holder of the patent controlling the standard is almost unchallengeable. Hence, high royalty fees cannot work as an incentive for other firms to try to replace the incumbent by substitution. Yet standardisation alone will not suffice to control the royalty fees as a matter of competition law, since the prospect of being allowed to charge supra-competitive prices is the driving force for investing in R&D during the period of competition for the market before the standard is set.

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78 In the same sense Fuchs (n 71, above), at chapter 3.2.2.

79 However, it has to be noted that the ECJ applied Article 102 TFEU for the purpose of controlling the royalty fees imposed by collective management organisations (collecting societies) for copyright licences. See Case 395/87 Tournier [1989] ECR 2521, paras 34-46; Case 110/88 Lucazeau and others [1989] ECR 2811, paras 21-34.

80 This nowadays almost generally accepted theory of complementarity is also supported by the European Commission. See Commission Notice – Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements, [2004] OJ C 101, p 2, para 7. This view is also expressed in the US IP Licensing Guidelines (n 33, above), at chapter 1.0.

81 In contrast, Fuchs (n 71, above), at ch 3.2.2 explicitly relies on the argument of standardisation for justifying application of Article 102 lit b) TFEU to patent ambush cases.
Rather, the justification for controlling the royalty fees in patent ambush cases stems from the pro-competitive and pro-innovation character of the standard-setting process.\footnote{See also Josef Drexl, Intellectual property in competition: How to promote dynamic competition as a goal’ in: Josef Drexl, Warren S Grimes, Rudolph JR Peritz and Edward Swaine (eds), More Common Ground for International Competition Law (forthcoming), at chapter 2.} If the law did not protect against patent ambush as a particular form of cheating, the functioning of standard-setting would be undermined by destroying trust among the SSO members. This might well prevent an SSO from being established in the first place. The option would then consist in \textit{de facto} standardisation through competition for the market. Comparing the two, setting the standard by using an SSO has particular advantages. \textit{De facto} standardisation does not necessarily lead to the identification of superior technology as the standard. It will be the the firm that the most intelligent business strategy for tipping the market, that will win in competition for the market.\footnote{The standard example for this is the so-called Betamax/VHS war for the standard for video technology. See also Drexl (n 82, above), at chapter 2.1.} In addition, standard setting can be understood as a particular form of collective innovation. SSOs do not only choose among available technologies. The standard-setting process usually expands over a longer period of time during which the members discuss the pros and cons of different technological solutions while individual members continue their individual R&D efforts. And finally standard-setting may increase the willingness of users in investing in the implementation of the standard which may also lead to speeding up the market introduction of the standardized technology. This is especially important, like in the electric car example, when implementation of the standard requires high investment by the users of the technology. In our example, the energy providers and operators of current gas stations will hardly be willing to invest in the establishment of battery exchange technology if they have to fear that another technology will later emerge as the standard in the process of \textit{de facto} standardisation.

In its \textit{Rambus} decision, the Commission quite rightly referred to the pro-competitive and pro-innovation features of standard-setting for the purpose of justifying its intervention under Article 102 TFEU. The Commission held:

\begin{quote}
\textit{[T]}he Commission considered that such alleged behaviour by Rambus undermined confidence in the standard-setting process, given that an effective standard-setting process is, in the sector relevant to the present case, a precondition to technical development and the development of the market in general to the benefit of consumers.\footnote{Rambus (n 73, above), para 29.}
\end{quote}

\begin{quote}
\textit{[S]}tandards can have a positive economic effect insofar as they promote economic interpenetration on the internal market or encourage the development of new markets and improved supply conditions. Standards tend to increase competition and lower output and sales costs, benefiting economies as a whole. Standards ensure interoperability, maintain and enhance quality, and provide information.\footnote{Rambus (n 73, above), para 31.}
\end{quote}
In this perspective, standard-setting can be viewed as a particular form of organized competition in innovation prior to the emergence of the relevant technology market. In contrast to the ideal world of the complementary theory, allowing a firm that is specialized in developing new technology to charge whatever price for patent licences would amount to an incentive to cheat in the relevant SSO and, thereby, to distort competition in innovation. Conversely, controlling the royalty rates in a patent ambush case based on Article 102 lit a) TFEU amounts to a remedy to prevent R&D firms from distorting competition in innovation through cheating in the process of standard setting by taking away the incentive of gaining supra-competitive profits.

The European Rambus case thereby proves that also Article 102 TFEU can be applied for the purpose of protecting competition in innovation even prior to the emergence of market dominance. This is made possible by the particular rule of EU competition law according to which also excessive pricing may constitute an abuse of market dominance. The fact that the Commission thereby also looked at Rambus’s conduct prior to the acquisition of market dominance is not illegitimate and does not contradict the legal requirements of Article 102 TFEU. Whether the later patent holder has engaged in deceptive conduct during the process of standard setting only plays a role with regard to the question whether the charging of excessive royalty rates can exceptionally be considered to constitute illegal excessive pricing. The Commission looks at it only for assessing the pro and anti-competitive effects of the application of the prohibition. Hence, the rule applied the European Rambus case can be formulated as follows: ‘Royalty fees for patent licences can only be considered a violation of Article 102 lit a) TFEU when non-intervention would create prevailing incentives for undertakings to restrain competition in innovation.’

At the same time, the Rambus decision also demonstrates that the Commission relied on legal rules, namely the prohibition of excessive pricing, which were not created for the purpose of protecting competition in innovation. Indeed, in this case, Article 102 lit a) TFEU is not applied in order to prevent a form of exploitative abuse. Nor would it be correct to categorize the case as one on exclusionary abuse.86 In this regard, the availability of a remedy appears almost coincidental thanks to fact that there was identifiable conduct of Rambus after the acquisition of market dominance that could be controlled under the abuse prohibition.

Therefore, it is clear that Article 102 TFEU will not provide a sufficient legal basis for protecting competition against all forms of unilateral conduct that affect competition in innovation. Such loopholes can especially demonstrated in the case of so-called ‘abusive patenting’, which was recently highlighted by the Pharma Sector Inquiry Report of the European Commission.87

86 Note, however, that the Commission nevertheless stated that their were also alternative technologies. See Rambus (n 73, above), para 46. However, this does not seem to be an indispensible part of the reasoning. The argument is not that Rambus has excluded better technology from being excluded from the market, but more generally that protection of confidence in the standard-setting process is needed in order to incite as many market players to engage in this superior mode of standardisation as a particular form of competition in innovation.

87 At n 68, above.
2. Abusive patenting and devious patenting strategies

‘Abusive patenting’ is a rather broad concept. For the purposes of this paper, abusive patenting is understood as any patent strategy involving in particular the application for a patent, that distorts competition in innovation. The sole purpose of this part of the paper is to highlight the limitations of current competition law rules for capturing potentially abusive patenting cases. This paper does not aim to develop insights in how to distinguish competitive from anti-competitive patenting.

As to current EU competition law, however, two principles are currently emerging from the case-law as sufficiently clear:

First, the mere fact that patent applications typically occur a long time before the patented products or processes are brought to the market, does not argue as such against qualifying a patent application as abusive conduct in the sense of Article 102 TFEU. This principle has recently been recognized by the General Court in its *AstraZeneca* decision of 2010.88 Patent applications play a major role in competition in innovation. Especially pharmaceutical companies may easily be deterred from their own R&D efforts when they realize that another originator company has applied for a patent in their field of research.89

Secondly, the *AstraZeneca* decision of the General Court clarified that at least the presentation of incorrect information to the patent offices, which then results in the unjustified grant of a patent (so-called ‘patent fraud’), must be considered an abuse.

In this case, both the Commission and the General Court held that AstraZeneca had actually violated Article 102 TFEU. This is explained by the specificities of the case. AstraZeneca was charged for having presented incorrect information to the patent offices of several European states in the framework of an application for so-called supplementary protection certificates (SPCs), which are the European equivalent of the US patent term extension.90 AstraZeneca had applied for SPCs for its blockbuster drug Losec which is used for the treatment of ulcer diseases. According to the transitory rules of the SPC Regulation, AstraZeneca did not qualify for such protection given that it had acquired the market allowance for some Member States shortly before the date fixed by the Regulation. Nevertheless, some patent offices granted the SPC since AstraZeneca had instructed the patent attorneys to only provide the date at which AstraZeneca was actually able to sell the drugs in the given national

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89 This is one of the outcomes of the fact finding of the Commission in its sector inquiry. Firms may react very differently. They may sue for patent invalidity, approach the patent holder for negotiating a licence, rely on competition law for forcing the patent holder to grant a license or simply abstain from continuing previous R&D activities. The latter is the statistically most frequent case, according to the Commission.

markets for the first time, whilst according to the Regulation the relevant date was the formal grant of the marketing allowance by the health authorities. The Commission was able to prove that, due to the earlier patent, AstraZeneca had already acquired market dominance at the time when it applied for the SPCs. Therefore, AstraZeneca presents a case of an extension of market dominance rather than of a restraint of competition in innovation outside of existing markets.

Therefore, AstraZeneca does not provide any guidance for solving the question whether and under which conditions a patent application, prior to the entry of products in a new market, can be considered an abuse of market dominance in the sense of Article 102 TFEU.

This question has become very topical with the pharmaceutical sector inquiry conducted by the Commission in the years of 2008 and 2009. The Sector Inquiry Report of 2009 distinguishes between two different sets of cases: (1) those relating to competition between originator and generic companies involving conduct that would delay the market entry of generics; and (2) those relating to competition among originator companies. The latter are of particular importance for the discussion of competition in innovation, since the Commission expresses its concern that originator companies that compete with other originator companies by investment in R&D, may artificially reduce incentives for innovation of competitors by particular anti-competitive conduct. Thereby, the Commission delivers an appropriate description of the role of competition in innovation in the pharmaceutical sector:

In the pharmaceutical sector there are a number of therapeutic areas which are viewed by originator companies as being commercially particularly interesting, as the demand for treatments is high or is expected to be high in the future. Originator companies compete with each other for this demand. This means that they are often engaged in competing R&D activities with the aim of being the first to market a treatment for a given disease.

The Commission justified its inquiry into competition among originator companies by the obvious decline of the entry of novel drugs into the market. The question for the Commission therefore was whether this decrease of innovation has to be explained, at least partially, by the presence of anti-competitive conduct of originator companies that distorts R&D efforts of other originator companies.

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91 The actual date of the market entry was delayed by the need to negotiate the appropriate price with the national administration.
92 It is important to note that the patent offices were not under a duty to control the data provided by AstraZeneca. This is different in a case where an undertaking applies for a patent and misrepresents the state of the art at the time of the application. In such a situation, in jurisdictions that examine patent applications, even after AstraZeneca it is still doubtful whether such a case constitutes patent fraud.
93 See Executive Summary of the Pharmaceutical Sector Inquiry Report (n 68, above).
94 Id, at 4.
96 Id, para 1085.
97 Executive Summary of the Pharmaceutical Sector Inquiry Report (n 68, above), at 26.
98 Id, at 15.
Thereby, so-called ‘defensive patenting strategies’ are of a particular importance. The Commission defines defensive patenting as follows:

In certain cases, however, companies apply patent strategies which may interfere with the development of a competing medicine. When such strategies mainly focus on excluding competitors without pursuing innovative efforts, they are called by some originator companies ‘defensive patent strategies’.99

Already this definition sufficiently underlines that it will be highly difficult to distinguish between legitimate and anti-competitive patenting. Whether a patent applicant intends to further pursue its own R&D in view of bringing products to the market or whether it simply intends to distort the R&D efforts of other originator companies, will not be easy to identify in specific cases. In addition, such intentions may change over time. A previous intention to further develop the patent may be given up later, and an initial intention to use the patent for producing products may be replaced by simply relying on the patent for the purpose of blocking the research activities of other firms.

Also the Commission does not even try to increase legal certainty regarding the distinction between legal and illegal patenting.100 The Sector Inquiry Report simply concludes as follows:

With regard to competition between originator companies in particular, defensive patenting strategies that mainly focus on excluding competitors without pursuing innovative efforts and/or the refusal to grant a license on unused patents will remain under scrutiny in particular in situations where innovation was effectively blocked.101

Hence, the future will show whether the Commission will investigate in more concrete cases of defensive patenting. So far, this has not happened.

While it is not the purpose of this paper to discuss the requirements for abusive patenting, it is interesting to see whether the Commission would also envisage to protect competition in innovation against defensive patenting in cases where the patent applicant and the other originator companies are not yet competitors in a particular product market. This would be the case where the patent applicant is not yet selling drugs in a given therapeutical field, but is engaging in specific R&D for bringing such drugs to the market.102

The answer to this question is not quite clear. In some instances, the Sector Inquiry Report at least alludes to existing competition between the originator companies in the context of defensive patent strategies. For instance, the Commission concludes at the end of its report:

The preliminary findings of the inquiry also suggest that originator companies apply patent strategies, which may interfere with the

99 Id. at 16.
100 The Commission explicitly declares that the Sector Inquiry Report does not have the purpose of providing guidance as to how competition law should be applied to specific forms of conduct. Rather, the Report is limited to provide factual data about the working of competition in this sector. See Executive Summary of the Pharmaceutical Sector Inquiry Report (n 68, above), at 6; Pharmaceutical Sector Inquiry – Final Report (n 68, above), para 1082.
101 Id. at 19. (Emphasis added).
102 Where the patent applicant already sells drugs in a given therapeutical field, defensive patenting may always be considered as competition in an existing market at least against a potential competitor.
development of a competing medicine. When such strategies mainly focus on excluding competitors without pursuing innovative efforts, they are called by some originator companies ‘defensive patent strategies’.103

However, by this statement the Commission does not clearly require that the patent applicant is actively selling a drug in the respective product market already at the time of the patent filing. Similarly, the Sector Inquiry Report continuously uses the concept of ‘disturbing competitors’ and similar phrases. Yet it remains unclear whether the Commission thereby only wants to restrict its fact finding to cases where the patent applicant is already selling drugs in the given market or whether the Commission alludes to the relationship with other firms on future product markets.

The latter would be the appropriate understanding in the light of the general approach of the sector inquiry, which is limited to fact finding on the potential competition problems in the pharmaceutical industry. The alleged adverse effects of defensive patenting on the R&D efforts of competitors do not depend on whether the patent applicant is already actively selling drugs in the relevant product market or not. In addition, at the early stage of patenting, it is often unclear for which diseases a future drug can be used. Quite often, the full range of properties will only be discovered during the stage of the clinical trials after the patent filing.104

Yet it is equally clear that defensive patenting can only be legally challenged as unilateral conduct against the backdrop of Article 102 TFEU. Hence, the Commission can only expect to successfully enforce competition law in such cases if it is not only able to prove that the patent applicant was not only actively selling drugs in the relevant market, but also that the patent applicant had market dominance in such markets. Hence, beyond the uncertainties regarding the abusive nature of defensive patenting strategies, the normative requirements of Article 102 TFEU pose considerable limitations to the ability of the agencies and courts to protect competition in innovation against such strategies. Indeed, the Sector Inquiry Report implicitly highlights considerable loopholes in European competition law regarding protection of innovation outside existing markets. Indeed, if defensive patenting is able to harm competition in innovation where the patent applicant is already dominant in a given drug market, it will also be able to harm such competition prior to the entry of the emergence of such markets. Since competition in innovation occurs outside of markets, market dominance should not be a requirement for defensive patenting to harm this form of dynamic competition.

VI. CONCLUSION

This paper highlights the importance of protecting competition in innovation as

103 Pharmaceutical Sector Inquiry – Final Report (n 68, above), para 1562.
104 A good example for this is Pfizer’s Viagra. The drug was first meant to be used for the treatment of angina pectoris. Later, it received market allowance for erectile dysfunction, for which it is sold most, and pulmonary arterial hypertension (high blood pressure).
a proper form of competition outside of exiting markets. Protecting this form of
competition is of primary importance for the promotion of innovation in modern
society and, in particular, for such cases where competition for future markets is
characterized by a need for interoperability and standardized technology. The
paper recommends rejecting a concept of innovation markets in line with the
most recent development in US and EU competition law and argues that, for
protecting competition in innovation, competition agencies should accept that a
market-based assessment will not always be the best approach to assess cases
most appropriately. Instead, enforcers should focus on the analysis of the
process of dynamic competition.

However, taking the non-existance of markets serious in such cases, leads to
the problem of considerable limitations of existing competition law rules
especially in the EU, where the law relies heavily on the concept of existing
markets. These problems arise to a different degree with regard to the different
areas of competition law enforcement. In the framework of merger analysis,
making predictions on the future effects is very much part of traditional
assessment. Merger control therefore allows more easily the integration of
dynamic considerations regarding the effects on future markets. In the field of
R&D agreements, the European Commission recognizes the existence of
competition in innovation outside existing markets, but simultaneously runs the
risk of not providing sufficient protection due to the focus of the block
exemption rules on existing markets for assessing market power and the general
general exemption of restraints on competition in innovation outside of existing
markets. Problems are most acute with regard to unilateral conduct. European
unilateral conduct rules require market dominance and, therefore, existing
markets at the time of the abuse. This creates considerable loopholes for
protecting competition in innovation where new markets still have to emerge.
The problem is best highlighted by the Pharmaceutical Sector Inquiry Report
which inter alia focuses on defensive patent strategies as potential restraints of
competition in innovation. However, in the Rambus case, the Commission has
also demonstrated its willingness to find ways around such loopholes for
protecting competition in innovation also outside existing markets by applying
the European prohibition on excessive pricing to a patent ambush case.

In the light of the foregoing analysis three major conclusions may be drawn
for the future:

First, European law may is in need of reconsidering its strong emphasis on
existing markets. Whether restraints of competition in innovation can be
analyzed in the light of more remote effects on existing markets needs further
discussion and economic insight. At least, competition law enforcers should be
aware of the need to complement traditional analysis of the effects on existing
markets with an analysis of the effects of the relevant conduct on the incentives
to innovate.

Second, the biggest challenge for the future consists in further developing the
understanding of the functioning of dynamic competition for innovation. This
cannot be done by lawyers alone. What is needed is close cooperation with
economists that are ready to look beyond the theoretical limitations of
neoclassical industrial organization theory. As the debate on the potential anti-
competitive effect of defensive patent strategies demonstrates, it will be extremely difficult to draw clear lines between what is legal and what will have to be prohibited in terms of dynamic competition.

Third, the question remains whether European law is in need of legislative reform to eliminate the loopholes that are especially created by its market-dominance approach to unilateral conduct. Although, as demonstrated by the European Rambus case, practice sometimes may solve cases appropriately, reform may also be needed in this regard, since even the most flexible application of Article 102 TFEU to cases involving competition in innovation will only offer ‘ways around’ as second best solutions that make it difficult to track down the dynamic rationale of the individual decision. Wherever Article 102 TFEU leaves true loopholes, it will also be important to ask the question whether there are other fields of law that can offer adequate remedies. As to patent ambush, a solution could also be found in contract or unfair competition laws. However, from the European perspective, the problem is that such laws are not harmonized. This may have been one reason why the Commission deemed it necessary to apply European competition law in order to guarantee the benefits of standard setting on a European level. In the case of defensive patenting, alternative remedies are even more difficult to find. In particular, patent offices will not be able to distinguish between pro and anticompetitive patenting since patent examiners will neither be able to assess the intention of the applicant how to use the patent in the future nor the impact of the patent on the incentives to innovate of other firms.

In general, modern competition law is not necessarily well prepared for guaranteeing that the introduction of new technologies for a cleaner world will not be delayed due to insufficient protection of competition in innovation and that the emerging new markets will not be characterized by long-lasting monopolization. Competition for innovation without existing markets presents many open question which still need considerable research, scholarly debate and imagination of competition law enforcers whenever relevant cases arise.